UM 2111

Combined Screens, Study Methods, and Modern Configurations & IEEE 1547 Workshop

1-17-2023

Oregon Public Utility Commission

Agenda

Item	Schedule	Time
Welcome – Process Reset	9:00	20 min
Energy Trust-Joint Utilities Meeting - Update	9:20	10 min
Presentation Screens	9:30	60 min
Break	10:30	10 min
Presentation Screens (cont.)	10:40	70 min
Next Steps	11:50	10 min
Adjourn	12:00	

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Process Reset - Schedule

Description	Event Date	Workshop Topic
Workshop 11	January 31, 2023	Fast-track Screen Reports Tier 4 – Screen failure and export controls changes Remaining near-term issues
Workshop 12	February 15, 2023	TBD remaining issues – redline rule walk through
Workshop 13	February 28, 2023	TBD – Staff intends to open a rulemaking in the first/second quarter of 2023. Final approach is not yet determined, but these workshops could be held for that purpose.
Workshop 14	March 15, 2023	
Workshop 15	March 28, 2023	

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Database Discussion

- Database discussion on inverter ratings vs nameplate capacities
- Power Clerk – system of record
  - Relatively recent adoption by IOUs
  - Energy Trust – in use since 2003
- Appears data from Energy Trust could potentially allow for more efficient collection of data that more accurately reflects system export capacity by reducing the level of individual project research required.
  - Look to what generators actually put on the system – lesser of inverter or generator nameplate
- Flow of information into other utility systems will take significant effort and differ between utilities based on current IT limitations and future IT infrastructure plans

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Penetration Screens

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Break

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Penetration Screens (cont.)

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Next Steps

- Staff to post meeting summary notes, and potential questions directly
- Continued collaboration amongst parties
- Open rulemaking in first/second quarter 2023

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Save the Dates

Workshop 11

- Date: January 31
- Time: 9:00 AM – 12:00 PM
- Location: Zoom
  - **Link to Meeting**
  - Dial-In: 1-551 285 1373
  - Meeting ID: 161 631 5107
  - Passcode: 6623001161

Workshop 12

- Date: February 15
- Time: 9:00 AM – 12:00 PM
- Location: Zoom
  - **Link to Meeting**
  - Dial-In: 1-551 285 1373
  - Meeting ID: 161 631 5107
  - Passcode: 6623001161

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Appendix

- IREC Redlines Circulated to Service List on 11-23-22
- Oregon Level 1 Screens Comparisons
- Oregon Level 2 Screens Comparison

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Appendix:
IREC Redlines Circulated to Service List

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11-23-22 IREC Redline to Oregon Small Generator Interconnection Rules

860-082-0005 Scope and Applicability

(1) OAR 860-082-0005 through 860-082-0085 (the "small generator interconnection rules") govern the interconnection of a small generator facility with a nameplate capacity of 10 megawatts or less to a public utility's transmission or distribution system. These rules do not apply if the interconnection between the small generator facility and the public utility is subject to the jurisdiction of the Federal Energy Regulatory Commission (FERC).

(2) Except as specified in OAR 860-082-0025(1)(b), the small generator interconnection rules do not apply retroactively to a small generator facility that was interconnected to a public utility's transmission or distribution system prior to the effective date of the small generator interconnection rules (an "existing small generator facility"). These rules become applicable to

an existing small generator facility at the expiration of the agreement governing the terms of the interconnection of the existing small generator facility to the interconnected public utility's transmission or distribution system. If an existing agreement does not have an expiration date, then the small generator interconnection rules become applicable to the existing small generator facility 10 years after the effective date of the rules. An existing small generator facility must submit an application under OAR 860-082-0025(1)(e) to the interconnected public utility no later than 60 business days before the date that the small generator interconnection rules become applicable.

(3) ~~The small generator interconnection rules do not apply to the interconnection of a net metering facility, which is governed by OAR chapter 860, division 039.~~

~~(4)~~ A small generator facility that qualifies as a "small power production facility" under OAR 860-029-0010(25) must also comply with the rules in OAR chapter 860, division 029. If there is a conflict between the small generator interconnection rules and the rules in OAR chapter 860, division 029, then the small generator interconnection rules control.

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0010
Waiver

(1) Upon request or its own motion, the Commission may waive any of the Division 082 rules for good cause shown. A request for waiver must be made in writing, unless otherwise allowed by the Commission.

(2) A public utility and an applicant or interconnection customer may agree to reasonable extensions to the required timelines in these rules without requesting a waiver from the Commission.

(a) If a public utility and an applicant or interconnection customer are unable to agree to waive a timeline, then the public utility, applicant, or interconnection customer may request that the Commission grant a waiver.

(b) In deciding whether to grant a waiver of a timeline, the Commission will consider the number of pending applications for interconnection review and the type of applications, including review level, facility type, and facility size.

(c) Waiver of a timeline, whether by agreement or Commission order, does not affect an application's queue position.

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 6-2011, f. & cert. ef. 9-14-11
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0015
Definitions

As used in 860-082-0005 through 860-082-0085:

(1) "Adverse system impact" means a negative effect caused by the interconnection of a small generator facility that may compromise the safety or reliability of a transmission or distribution system.

(2) "Affected system" means a transmission or distribution system, not owned or operated by the interconnecting public utility, which may experience an adverse system impact from the interconnection of a small generator facility.

(3) "Aggregated ~~nameplate~~ export capacity" means the total combined ~~nameplate~~ export capacity of:

(a) A proposed DER~~small generator facility~~;

(b) Existing ~~small generator facilities~~DER, net metering facilities, FERC jurisdictional generators, and state jurisdictional generators with a nameplate capacity greater than 10 megawatts; and

(c) ~~Small generator facilities~~DER, net metering facilities, FERC jurisdictional generators, and state jurisdictional generators with a nameplate capacity greater than 10 megawatts that have pending completed applications with higher queue positions than the proposed small generator facility.

(4) "Applicant" means a person who has submitted an application to interconnect a small generator facility to a public utility's transmission or distribution system.

(5) "Application" means a written request to interconnect a small generator facility with a public utility's transmission or distribution system.

(6) "Area network" means a type of distribution system served by multiple transformers interconnected in an electrical network circuit in order to provide high reliability of service. This term has the same meaning as the term "secondary grid network" as defined in IEEE 1547, section 4.1.4.

(7) "Certificate of completion" means a certificate signed by an applicant and an interconnecting public utility attesting that a small generator facility is complete, meets the applicable requirements of the small generator interconnection rules, and has been inspected, tested, and certified as physically ready for operation. A certificate of completion includes the "as built" specifications and initial settings for the small generator facility and its associated interconnection equipment.

"Distributed energy resource" or "DER" means the equipment used by an interconnection customer to generate and/or store electricity that operates in parallel with the electric distribution system. A DER may include but is not limited to an electric generator and/or energy storage system, a prime mover, or combination of technologies with the capability of injecting power

Commented [A1]: IREC has not performed a comprehensive review of the definitions or attempted to incorporate all the new definitions everywhere in the rule. In this the redline, IREC started by incorporating the new definitions in the screening process.

Commented [A2]: IREC provided most of these new definitions to the parties earlier and discussed in the workshop; no party has raised an objection to their use.

and energy into the electric distribution system, which also includes the interconnection equipment required to safely interconnect the facility with the distribution system.

(8) "Distribution system" means the portion of an electric system that delivers electricity from transformation points on the transmission system to points of connection on a customer's premises.

"Energy storage system" or "ESS" means a mechanical, electrical, or electrochemical means to store and release electrical energy, and its associated interconnection and control equipment. For the purposes of these Interconnection Procedures, an ESS can be considered part of a DER or a DER in whole that operates in parallel with the distribution system.

"Export capacity" means the amount of power that can be transferred from the DER to the distribution system. Export capacity is either the nameplate rating, or a lower amount if limited using an acceptable means identified in OAR [NEW Export Controls].

(9) "Fault current" means an electrical current that flows through a circuit during a 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.

(10) "Field-tested equipment" means interconnection equipment that is identical to equipment that was approved by the interconnecting public utility for a different DER~~small generator facility~~ interconnection ~~under Tier 4 review~~ and successfully completed a witness test under the requirements included in the current version of the public utility's interconnection handbook ~~within three years~~ before the date of the submission of the current application.

"Host load" means electrical power, less the DER auxiliary load, consumed by the customer at the location where the DER is connected.

(11) "IEEE 1547" means the standards published in the 2003 edition of the Institute of Electrical and Electronics Engineers (IEEE) Standard 1547, titled "Interconnecting Distributed Resources with Electric Power Systems" and approved by the IEEE SA Standards Board on June 12, 2003.

(12) "IEEE 1547.1" means the standards published in the 2005 edition of the IEEE Standard 1547.1, titled "Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems" and approved by the IEEE SA Standards Board on June 9, 2005.

"Inadvertent export" means the unscheduled export of active power from a DER, exceeding a specified magnitude and for a limited duration, generally due to fluctuations in load-following behavior.

(13) "Interconnection agreement" means a contract between an applicant or interconnection customer and an interconnecting public utility that governs the interconnection of a small generator facility to the public utility's transmission or distribution system and the ongoing operation of the small generator facility after it is interconnected.

(14) "Interconnection customer" means a person with one or more small generator facilities interconnected to a public utility's transmission or distribution system.

Commented [A3]: IREC does not oppose a requirement to field-test non-certified equipment. However, with the addition of supplemental review, IREC would like to provide the utility discretion to approve non-certified projects in supplemental review or otherwise.

IREC suggests that approval must be under the requirements in the utility's current interconnection handbook, as all new equipment should meet current standards. That seems like a more appropriate trigger than a three-year timeline. If the requirements in the handbook have changed more recently than three years, the new project should meet the most recent standards. If the requirements in the handbook have not changed in many years, then existing approval should be sufficient. As always, we welcome feedback from other stakeholders on this idea.

(15) “Interconnection equipment” means a group of components or an integrated system provided by an interconnection customer or applicant to connect a small generator facility to a public utility’s transmission or distribution system.

(16) “Interconnection facilities” means the facilities and equipment required by a public utility to accommodate the interconnection of a small generator facility to the public utility’s transmission or distribution system and used exclusively for that interconnection. Interconnection facilities do not include system upgrades.

(17) “Interconnection service” means service provided by an interconnecting public utility to an interconnection customer.

(18) “Lab-tested equipment” means interconnection equipment that has been designed to comply with IEEE 1547, tested in accordance with IEEE 1547.1, and certified and labeled as compliant with these IEEE standards at the point of manufacture by a nationally recognized testing lab. For interconnection equipment to be considered lab-tested equipment under these rules, the equipment must be used in a manner consistent with the certification.

“Limited export” means the exporting capability of a DER whose export capacity is limited by the use of any configuration or operating mode described in OAR [NEW Export Controls].

(19) “Line section” means that portion of a public utility’s transmission or distribution system that is connected to an interconnection customer and bounded by automatic sectionalizing devices or the end of a distribution line.

(20) “Minor equipment modification” means a change to a small generator facility or its associated interconnection equipment that:

(a) Does not affect the application of the approval requirements in Tiers 1, 2, or 3;

(b) Does not, in the interconnecting public utility’s reasonable opinion, have a material impact on the safety or reliability of the public utility’s transmission or distribution system or an affected system; and

(c) Does not affect the nameplate capacity of a small generator facility.

(21) ~~“Nameplate capacity” means the full-load electrical quantities assigned by a facility’s designer to a generator and its prime mover or other piece of electrical equipment, such as transformers and circuit breakers, under standardized conditions, as expressed in amperes, kilovoltamperes, kilowatts, volts, megawatts, or other appropriate units. Nameplate capacity is usually indicated on a nameplate attached to the individual device.~~ “Nameplate rating” means the sum total of maximum rated power output of all of a DER’s constituent generating units and/or ESS as identified on the manufacturer nameplate in Alternating Current (AC), regardless of whether it is limited by any approved means.

(22) “Nationally recognized testing laboratory” or “NRTL” means a qualified private organization that performs independent safety testing and product certification. Each NRTL must meet the requirements set forth by the United States Occupational Safety and Health Administration.

(23) “Net metering facility” has the meaning set forth in ORS 757.300(1)(d).

“Non-export or non-exporting” means when the DER is sized and designed, and operated using any of the methods in OAR [NEW Export Controls], such that the output is used for host load only and no electrical energy (except for any Inadvertent Export) is transferred from the DER to the distribution system.

(24) “Pending completed application” means an application for interconnection of a small generator facility, a net metering facility, or a FERC jurisdictional generator that an interconnecting public utility has deemed complete.

(25) “Person” has the meaning set forth in OAR 860-011-0035(8).

(26) “Point of interconnection” means the point where a small generator facility is electrically connected to a public utility’s transmission or distribution system. This term has the same meaning as “point of common coupling” as defined in IEEE 1547, section 3.1.13. This term does not have the same meaning as “point of common coupling” as defined in OAR 860-039-0005(3)(p).

“Power control system” or “PCS” means systems or devices which electronically limit or control steady state currents to a programmable limit.

(27) “Primary line” means a distribution line with an operating voltage greater than 600 volts.

(28) “Public utility” has the meaning set forth in ORS 757.005 and is limited to a public utility that provides electric service.

(29) “Queue position” means the rank of a pending completed application, relative to all other pending completed applications, that is established based on the date and time that the interconnecting public utility receives the completed applications, including application fees.

“Reference point of applicability” (RPA) means the location where the interconnection and interoperability performance requirements, as specified by IEEE 1547-2018, apply.

“Relevant minimum load” means the lowest measured load coincident with the generating facility’s production. For solar-only facilities this shall be the daytime minimum load.

(30) “Scoping meeting” means an initial meeting between representatives of an applicant and an interconnecting public utility that is conducted to discuss alternative interconnection options; to exchange information, including any relevant transmission or distribution system data and earlier studies that would reasonably be expected to affect the interconnection options; to analyze such information; and to determine the potentially feasible points of interconnection.

(31) “Secondary line” means a service line with an operating voltage of 600 volts or less.

~~(32) “Small generator facility” means a facility for the production of electrical energy that has a nameplate capacity of 10 megawatts or less. A small generator facility does not include interconnection equipment, interconnection facilities, or system upgrades.~~

Commented [A4]: Based on discussions at the IEEE 1547-2018 workshop, it appears that both IREC and the IOUs agree on this definition of RPA, and that RPA should be reviewed as part of the initial review process.

However, IREC and the IOUs propose different procedures for the review of the RPA. This redline does not include procedures for the evaluation of the RPA.

The BATRIES toolkit offers procedures for the review of RPA that can be inserted into interconnection rules. This language is IREC’s default position. If we don’t reach consensus, this is what IREC plans to propose for Oregon’s rules.

IREC is interested in seeing the IOU’s redline to the rules for a RPA review procedure to understand how the proposal would be implemented and evaluate if we can support it.

Commented [A5]: IREC provides a new definition for a term used in the penetration screen.

(33) “Spot network” means a type of transmission or distribution system that uses two or more intertied transformers protected by network protectors to supply an electrical network circuit. A spot network may be used to supply power to a single customer or a small group of customers.

(34) “System upgrade” means an addition or modification to a public utility’s transmission or distribution system or to an affected system that is required to accommodate the interconnection of a small generator facility.

(35) “Transmission line” means any electric line operating at or above 50,000 volts.

(36) “Transmission system” means a public utility’s high voltage facilities and equipment used to transport bulk power or to provide transmission service under the public utility’s open access transmission tariff.

(37) “Witness test” means the on-site visual verification of the interconnection installation and commissioning as required in IEEE 1547, sections 5.3 and 5.4. For interconnection equipment that does not meet the definition of lab-tested equipment, the witness test may, at the discretion of the public utility, also include a system design and production evaluation according to IEEE 1547, sections 5.1 and 5.2, as applicable to the specific interconnection equipment used.

(38) “Written notice” means a notice required by the small generator interconnection rules sent via First Class United States mail. The duty to provide written notice is deemed fulfilled on the day that the notice is deposited in the mail. A public utility and an applicant or interconnection customer may agree in writing to accept written notice via electronic mail. If using electronic mail by agreement, then the duty to provide written notice is deemed fulfilled on the day the notice is sent. A public utility and an applicant or interconnection customer are responsible for informing one another of changes to the physical or electronic address used to receive notifications.

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0020
Pre-Application Process

(1) Each public utility must designate an employee or office from which relevant information about the small generator interconnection process, the public utility’s transmission or distribution system, and affected systems may be obtained through informal requests for a potential applicant proposing a small generator facility at a specific site. The public utility must post contact information for the employee or office on the public utility’s website. The information provided by the public utility in response to a potential applicant’s request must include relevant existing studies and other materials that may be used to understand the feasibility of interconnecting a small generator facility at a particular point on the public utility’s transmission or distribution system. The public utility must comply with reasonable requests for access to or copies of such information, except to the extent that providing such materials would violate security requirements, confidentiality obligations to third parties, or be contrary to federal or state regulations. The public utility may require a person to sign a confidentiality agreement if

required to protect confidential or proprietary information. For potential small generator facilities requiring Tier 4 review, and at the potential applicant's request, the public utility must meet with the potential applicant to exchange information. A public utility employee with relevant technical expertise must attend any such meeting.

(2) A person requesting information under section (1) must reimburse the public utility for the reasonable costs of gathering and copying the requested information.

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0025
Applications to Interconnect a Small Generator Facility

(1) A person may not interconnect a small generator facility to a public utility's transmission or distribution system without authorization from the public utility.

(a) A person proposing to interconnect a new small generator facility to a public utility's transmission or distribution system must submit an application to the public utility.

(b) A person with an existing interconnected small generator facility who proposes to make any change to the facility, other than a minor equipment modification, must submit an application to the public utility. This includes changes affecting the nameplate capacity of the existing interconnected small generator facility or the output capacity authorized in the agreement governing the terms of the interconnection.

(c) An applicant with a pending completed application to interconnect a small generator facility must submit a new application if the applicant proposes to make any change to the small generator facility other than a minor equipment modification. This includes changes affecting the nameplate capacity of the proposed small generator facility.

(A) The applicant relinquishes the queue position assigned to the pending completed application, and the public utility assigns a new queue position based on the date and time the public utility receives the new application.

(B) If the new application is submitted within 30 business days of the date of submission of the original application, then the public utility must apply the original application fee to the application fee required for the new application.

(d) A person with a pending completed application to interconnect a net metering facility or a FERC jurisdictional generator who proposes to change the facility to a small generator facility must submit a new application under the small generator interconnection rules.

(A) The applicant relinquishes the queue position assigned to the pending completed application, and the public utility assigns a new queue position based on the date and time that the interconnecting public utility receives the small generator interconnection application.

(B) If the small generator interconnection application is received within 30 business days of the date of submission of the original net metering or FERC jurisdictional generator interconnection application, then the public utility must apply the original application fee to the application fee required for the new application.

(e) An interconnection customer must submit an application before the expiration of the interconnection agreement between the interconnection customer and the interconnected public utility. The application must be submitted no later than 60 business days before the interconnection agreement's expiration date.

(A) A public utility may not unreasonably refuse to grant expedited review of an application to renew an existing small generator facility interconnection if there have been no changes to the small generator facility other than minor equipment modifications.

(B) A public utility may not require an existing small generator facility to undergo Tier 4 review if there have been no changes to the small generator facility other than minor equipment modifications and there have been no material changes to the portion of the public utility's transmission or distribution system affected by the interconnection of the small generator facility.

(C) A public utility may require the interconnection customer to pay for interconnection facilities, system upgrades, or changes to the small generator facility or its associated interconnection equipment that are necessary to bring the small generator facility interconnection into compliance with the small generator interconnection rules or IEEE 1547 or 1547.1.

(D) If the public utility has not completed its review of an application to renew and a new interconnection agreement is not signed before the expiration of the current interconnection agreement governing the interconnection of an existing small generator facility to a public utility's transmission or distribution system, then the current interconnection agreement remains in effect until the renewal process is completed and a new interconnection agreement is signed.

(2) All applications must be made using the appropriate application form and must follow the standard form applications developed by the public utility and approved by the Commission. The public utility must provide separate application forms for review under Tier 1 and for review under Tiers 2, 3, and 4. The Tier 1 application form must include an interconnection agreement. The public utility must provide a copy of an application form to any person upon request and must post copies of the application forms on the public utility's website.

(a) Applicants ~~must~~may use the Tier 1 application form only for DER ~~small generator facilities~~ that meet the requirements of OAR 860-082-0045(1)~~will not be interconnected with a transmission line and will use lab-tested, inverter-based interconnection equipment with a nameplate capacity of 25 kilowatts or less~~. When submitting a Tier 1 application, the applicant simultaneously submits an executed interconnection agreement.

(b) All applicants ~~must~~may use the application form for ~~review under~~ Tiers 2, 3, or 4 ~~for interconnection of all other small generator facilities~~.

(3) A public utility may require payment of a nonrefundable application processing fee. The amount of the fee depends upon the review tier requested in the application and is intended to cover the reasonable costs of processing and evaluating the application.

(a) The application fee may not exceed $100 for Tier 1 review, $500 for Tier 2 review, and $1000 for review under Tiers 3 and 4.

(b) An applicant must pay the reasonable costs incurred by the public utility to perform any studies and engineering evaluations permitted by these rules and necessary to evaluate the proposed application to interconnect. Before the public utility may assess any costs in excess of the application fee, the public utility must receive written authorization from the applicant. If the applicant does not authorize the additional costs, then the application is deemed withdrawn and the original application fee is forfeited.

(c) If an application is denied at one review tier, and the applicant resubmits the application at a higher review tier within 10~~5~~ business days after the date the applicant received notification of the denial, then the applicant maintains the queue position assigned to the original application and the public utility must apply the original application fee and any other fees paid in conjunction with the original application to the fees applicable to the resubmitted application.

(4) If an applicant proposes to interconnect multiple small generator facilities to the public utility's transmission or distribution system at a single point of interconnection, then the public utility must evaluate the applications based on the combined total nameplate capacity for all of the small generator facilities. If the combined total nameplate capacity exceeds 10 megawatts, then the small generator interconnection rules do not apply.

(5) An applicant must provide documentation of site control with an interconnection application. Site control may be demonstrated through ownership of the site, a leasehold interest in the site, or an option or other right to develop the site for the purpose of constructing the small generator facility. Site control may be documented by a property tax bill, deed, lease agreement, or other legally binding contract.

(6) A public utility may propose to interconnect multiple small generator facilities at a single point of interconnection to minimize costs, and an affected applicant or interconnection customer may not unreasonably refuse such a proposal. An applicant or interconnection customer may, however, elect to maintain a separate point of interconnection if the applicant or interconnection customer agrees to pay the entire cost of the separate interconnection facilities.

(7) Application review process.

Commented [A6]: IREC is in the process of comparing the timelines in the rules to the IREC model, and may propose additional timeline modifications in the future.

(a) Within 10 business days of receipt of an application to interconnect a small generator facility, the interconnecting public utility must provide written notice to the applicant stating whether the application is complete.

(A) If the application is incomplete, then the public utility must provide the applicant with a detailed list of the information needed to complete the application. An application is deemed complete when the public utility receives the listed information. The applicant must provide the listed information within 10 business days of receipt of the list or the application is deemed withdrawn.

(B) If a public utility does not have a record of receipt of an application or cannot locate an application, then the applicant must provide an additional copy of the application to the public utility. If the applicant can demonstrate that a complete application was originally delivered to the public utility at a particular time on a particular date, then the public utility must assign a queue position to the application based on the original time and date of delivery.

(b) Once the public utility deems an application to be complete, the public utility must assign the application a queue position. An applicant must meet all applicable deadlines in the small generator interconnection rules to maintain its queue position unless the deadlines have been waived by agreement with the interconnecting public utility or by Commission order.

(c) If the public utility determines during the evaluation process that supplemental or clarifying information is required, then the public utility must request the information from the applicant. The time necessary to complete the evaluation of the application may be extended by the time required for the receipt of the additional information. Requests for information do not affect the applicant's queue position.

(d) A public utility must use IEEE 1547 and IEEE 1547.1 to evaluate small generator interconnection applications unless otherwise specified in these rules or unless the Commission grants a waiver to use different or additional standards.

(e) A public utility must provide an executable interconnection agreement no later than five business days after the date of approval of an interconnection application. The interconnection agreement must follow the standard form agreement developed by the public utility and approved by the Commission. The applicant must return an executed interconnection agreement to the public utility or request negotiation of a non-standard interconnection agreement within 15 business days of receipt or the application is deemed withdrawn.

(A) An applicant or a public utility is entitled to the terms in the standard form agreement, but may choose to negotiate for different terms.

(B) If negotiated changes to a standard interconnection agreement are materially inconsistent with the small generator interconnection rules, then the applicant and the public utility must seek Commission approval of the negotiated interconnection agreement.

(f) The applicant must provide the public utility written notice at least 20 business days before the planned commissioning for the small generator facility.

(A) The public utility has the option of conducting a witness test at a mutually agreeable time within 10 business days of the scheduled commissioning.

(B) The public utility must provide written notice to the applicant indicating whether the public utility plans to conduct a witness test or will waive the witness test.

(C) If the public utility notifies the applicant that it plans to conduct a witness test, but fails to conduct the witness test within 10 business days of the scheduled commissioning date or within a time otherwise agreed upon by the applicant and the public utility, then the witness test is deemed waived.

(D) If the witness test is conducted and is not acceptable to the public utility, then the public utility must provide written notice to the applicant describing the deficiencies within five business days of conducting the witness test. The public utility must give the applicant 20 business days from the date of the applicant's receipt of the notice to resolve the deficiencies. If the applicant fails to resolve the deficiencies to the reasonable satisfaction of the public utility within 20 business days, then the application is deemed withdrawn.

(g) A public utility must meet all applicable deadlines in the small generator interconnection rules unless the deadlines have been waived by agreement with an applicant or interconnection customer or by Commission order. If the public utility cannot meet an applicable deadline, then the public utility must provide written notice to the applicant or interconnection customer explaining the reasons for the failure to meet the deadline and an estimated alternative deadline. A public utility's failure to meet an applicable deadline does not affect an applicant's queue position.

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0030
Construction, Operation, Maintenance, and Testing of Small Generator Facilities

(1) An interconnection customer or applicant must construct, operate, and maintain a small generator facility and its associated interconnection equipment in compliance with IEEE 1547 and 1547.1.

(2) The applicant must provide written notice to the interconnecting public utility 10 business days before beginning operation of an approved small generator facility.

(3) Before beginning operation of a small generator facility, an interconnection customer or applicant must receive approval of the facility under the small generator interconnection rules and must execute an interconnection agreement with the interconnecting public utility. ~~Applicants or interconnection customers are entitled to a maximum 20-year term for an interconnection agreement.~~

Commented [A7]: IREC is not opposed to the use of a 20 years term in the IA itself. However, IREC recommends removing this sentence to add flexibility. This will allow (but not require) utilities to provide a longer term for the IA.

(4) A small generator facility must be capable of being isolated from the interconnecting public utility's transmission or distribution system. An interconnection customer may not disable an isolation device without the prior written consent of the interconnected public utility.

(a) For small generator facilities interconnecting to a primary line, the interconnection customer or applicant must use a lockable, visible-break isolation device readily accessible to the public utility.

(b) For small generator facilities interconnecting to a secondary line, the interconnection customer or applicant must use a lockable isolation device that is readily accessible by the public utility. The status of the isolation device must be clearly indicated. An exception from the requirement to use a lockable isolation device is allowed for a small generator facility that has a maximum total output of 30 amperes or less; is connected to a secondary line; uses lab-tested,

inverter-based interconnection equipment; and is interconnected to the distribution system through a metered service owned by the interconnected public utility. In this limited case, the meter base may serve as the required isolation device if it is readily accessible to the public utility.

(A) A draw-out type circuit breaker with the provision for padlocking at the draw-out position can be considered an isolation device.

(B) The interconnection customer or applicant may elect to provide the public utility 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 public utility. The interconnection customer or applicant must provide a lockbox capable of accepting a lock provided by the public utility that provides ready access to the isolation device. The interconnection customer or customer must install the lockbox in a location that is readily accessible by the public utility and must affix a placard in a location acceptable to the public utility that provides clear instructions to utility personnel on how to access the isolation device.

(c) Other than the exception in (4)(b), all isolation devices must be installed, owned, and maintained by the interconnection customer or applicant; must be capable of interrupting the full load of the small generator facility; and must be located between the small generator facility and the point of interconnection.

(5) An interconnecting public utility must have access to an interconnection customer's or an applicant's premises for any reasonable purpose related to an interconnection application or an interconnected small generator facility. The public utility must request access at reasonable hours and upon reasonable notice. In the event of an emergency or hazardous condition, the public utility may access the interconnection customer's or applicant's premises at any time without prior notice, but the public utility must provide written notice within five business days after entering the interconnection customer's or applicant's premises that describes the date of entry, the purpose of entry, and any actions performed on the premises.

(6) When a small generator facility undergoes maintenance or testing in compliance with the small generator interconnection rules, IEEE 1547, or IEEE 1547.1, the interconnection customer must retain written records for at least seven years documenting the maintenance and the results of testing. The interconnection customer must provide copies of these records to the interconnected public utility upon request.

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0035
Cost Responsibility

(1) Study costs. Whenever a study is required under Tier 4 of the small generator interconnection rules, the applicant must pay the public utility for the reasonable costs incurred in performing the study. The public utility must base study costs on the scope of work determined and documented in the feasibility study agreement, the system impact study agreement, or the facilities study

Commented [A8]: IREC clarifies that this is not the process for supplemental review.

agreement, as applicable. The estimated engineering costs used in calculating study costs must not exceed $100 per hour. A public utility may adjust the $100 hourly rate once in January of each year to account for inflation and deflation as measured by the Consumer Price Index. Before beginning a study, a public utility may require an applicant to pay a deposit of up to 50 percent of the estimated costs to perform the study or $1000, whichever is less.

(2) Interconnection facilities. For interconnection review under Tier 4, a public utility must identify the interconnection facilities necessary to safely interconnect the small generator facility with the public utility's transmission or distribution system. The applicant must pay the reasonable costs of the interconnection facilities. The public utility constructs, owns, operates, and maintains the interconnection facilities.

(3) Interconnection equipment. An applicant or interconnection customer must pay all expenses associated with constructing, owning, operating, maintaining, repairing, and replacing its interconnection equipment. Interconnection equipment is constructed, owned, operated, and maintained by the applicant or interconnection customer.

(4) System upgrades. A public utility must design, procure, construct, install, and own any system upgrades to the public utility's transmission or distribution system necessitated by the interconnection of a small generator facility. A public utility must identify any adverse system impacts on an affected system caused by the interconnection of a small generator facility to the public utility's transmission or distribution system. The public utility must determine what actions or upgrades are required to mitigate these impacts. Such mitigation measures are considered system upgrades as defined in these rules. The applicant must pay the reasonable costs of any system upgrades.

(5) A public utility may not begin work on interconnection facilities or system upgrades before an applicant receives the public utility's good-faith, non-binding cost estimate and provides written notice to the public utility that the applicant accepts the estimate and agrees to pay the costs. A public utility may require an applicant to pay a deposit before beginning work on the interconnection facilities or system upgrades.

(a) If an applicant agrees to make progress payments on a schedule established by the applicant and the interconnecting public utility, then the public utility may require the applicant to pay a deposit of up to 25 percent of the estimated costs or $10,000, whichever is less. The public utility and the applicant must agree on progress billing, final billing, and payment schedules before the public utility begins work.

(b) If an applicant does not agree to make progress payments, then the public utility may require the applicant to pay a deposit of up to 100 percent of the estimated costs. If the actual costs are lower than the estimated costs, then the public utility must refund the unused portion of the deposit to the applicant within 20 business days after the actual costs are determined.

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0040
Insurance

(1) A public utility may not require an applicant or an interconnection customer with a small generator facility with a nameplate capacity of 200 kilowatts or less to obtain liability insurance in order to interconnect with the public utility's transmission or distribution system.

(2) A public utility may require an applicant or an interconnection customer with a small generator facility with a nameplate capacity greater than 200 kilowatts to obtain prudent amounts of general liability insurance in order to interconnect to the public utility's transmission or distribution system.

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0045
Tier 1 Interconnection Review

(1) A public utility must use the Tier 1 review procedures when an applicant submits a Tier 1 ~~for an~~ application to interconnect a ~~small generator facility~~DER that meets the following requirements:

(a) ~~The small generator facility must use lab-tested, inverter-based interconnection equipment;~~

~~(b)~~ The ~~small generator facility~~DER must have an export ~~nameplate~~ capacity not greater than~~of~~ 25 kilowatts ~~or less~~, a nameplate rating not greater than 50 kilowatts and use a UL 1741 certified inverter; and

(b~~e~~) The ~~small generator facility~~DER must not be interconnected to a transmission line.

(2) Tier 1 Approval Criteria. A public utility must approve an application for interconnection under the Tier 1 interconnection review procedures if the ~~small generator facility~~DER meets the approval criteria in subsections (a) through (e). A public utility may not impose different or additional approval criteria.

(a) A Tier 1 ~~small generator facility~~DER interconnection must use existing public utility facilities.

(b) Substation backfeed screen. Where existing protective devices and equipment cannot adequately support backfeed, the aggregated export capacity on the substation must be less than 90 percent of the relevant minimum load for the substation.

(c) Penetration Screen for ~~For~~ interconnection ~~of a small generator facility~~ to a radial distribution circuit.

(A) If 12 months of minimum load data (including onsite load but not station service load served by the proposed DER) are available for the line section, the aggregated export capacity on the

Commented [A9]: IREC provides this substation backfeed screen to replace the limited generation feeder designation exception to the current rules. When adopting the new rules, the commission would remove the limited generation feeder exception and this screen would serve the same purpose.

line section is less than 90 percent of the relevant minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed DER;

(B) If 12 months of minimum load data (including onsite load but not station service load served by the proposed DER) are not available for line section, the aggregated export capacity on the circuit is less than 90 percent of the relevant minimum load for the feeder;

(C) If minimum load data are not available for the line section or the circuit, the aggregated ~~nameplate~~ export capacity on the circuit must not exceed 15 percent of the line section annual peak load as most recently measured at the substation or calculated for the line section.

(~~c~~d) Network Screen. For interconnection of a DER within a spot network or area network, the aggregate nameplate rating including the DER's nameplate rating may not exceed 50 percent of the spot network or area network's anticipated minimum load. If solar energy generating facilities are used exclusively, only the anticipated daytime minimum load shall be considered. The public utility may select any of the following methods to determine anticipated minimum load:

(A) the spot network or area network's measured minimum load in the previous year, if available;

(B) five percent of the spot network or area network's maximum load in the previous year;

(C) the applicant's good faith estimate, if provided; or

(D) the public utility's good faith estimate if provided in writing to the applicant along with the reasons why the public utility considered the other methods to estimate minimum load inadequate.~~For interconnection of a small generator facility to the load side of spot network protectors, the aggregated nameplate capacity on the load side of the spot network protectors must not exceed five percent of a spot network's maximum load or 50 kilowatts, whichever is less.~~

(~~d~~e) Single-Phase Shared Secondary Screen. For interconnection of a ~~small generator facility~~DER to a single-phase shared secondary line, the aggregated export ~~nameplate~~ capacity on the shared secondary~~line~~ must not exceed the higher of 20 kilowatts or 65 percent of the transformer nameplate power rating.

(~~e~~f) Service Imbalance Screen. For interconnection of a single-phase ~~small generator facility~~DER to the center tap neutral of a 240-volt service line, the addition of the ~~small generator facility~~DER must not create a current imbalance between the two sides of the 240-volt service line of more than 20 percent of the nameplate rating of the service transformer.

(3) Written notice. In addition to the timelines and requirements in OAR 860-082-0025, the public utility must provide written notice to the applicant stating whether the ~~small generator facility~~DER meets the Tier 1 approval criteria no later than 7~~15~~ business days from the date a Tier 1 interconnection application is deemed complete.

(4) Interconnection after passing screens. If the proposed interconnection passes the screens, the public utility shall provide the applicant with a copy of the Tier 1 application form, signed by the

Commented [A10]: As an attempt at compromise, IREC places the IOUs' threshold for supplemental review penetration screen, which will fail more projects, here in fast track. This is an attempt at compromise. If we cannot reach agreement, IREC reserves the right to make a different proposal for the penetration screen in the rulemaking.

public utility, forming the Tier 1 interconnection agreement, at the time the screen results are provided. If the public utility does not notify an applicant whether an application is approved or denied in writing within twenty business days after notification of the Tier 1 review results, the interconnection agreement signed by the applicant as part of the Tier 1 application shall be deemed effective.

(5) Approval despite screen failure. Despite the failure of one or more screens, the public utility, at its sole option, may approve the interconnection provided such approval is consistent with safety and reliability. If the public utility determines that the DER can be interconnected safely if minor modifications to the transmission or distribution system were made (for example, changing meters, fuses, or relay settings), then the public utility must offer the applicant a good-faith, non-binding estimate of the costs of such proposed minor modifications. Modifications are not considered minor under this subsection if the total cost of the modifications exceeds $10,000. If the applicant authorizes the public utility to proceed with the minor modifications and agrees to pay the entire cost of the modifications, then the public utility must approve the application.

(6) Process after screen failure. If the public utility cannot determine that the DER may nevertheless be interconnected consistent with safety, reliability, and power quality standards, at the time the public utility notifies the applicant of the Tier 1 review results the public utility shall provide the applicant with specific information on the reason(s) for failure in writing using a standard format approved by the Commission. In addition, the public utility shall allow the applicant to select one of the following, at the applicant's option:

(a) Request an applicant options meeting;

(b) Undergo supplemental review in accordance with OAR [NEW SUPPLEMENTAL REVIEW];

(c) Continue evaluating the application under Tier 4.

The applicant must notify the public utility of its selection within 10 business days or the application will be deemed withdrawn.

(7) Applicant options meeting. At the time the public utility notifies the applicant of the Tier 1 review results, the public utility shall provide the applicant the option of participating in an applicant options meeting with the public utility to review possible DER modifications or the screen analysis and related results, to determine what further steps are needed to permit the DER to be connected safely and reliably. If the applicant requests an applicant options meeting, the public utility shall offer to convene a meeting at a mutually agreeable time within 15 business days of the applicant's request.

(8) The interconnection process is not complete until:

(a) The public utility approves the application;

(b) The witness test, if conducted by the public utility, is successful; and

(c) The applicant and public utility execute a certificate of completion. The certificate of completion must follow the standard form certificate developed by the public utility and approved by the Commission.

~~(5) If a small generator facility is not approved under the Tier 1 interconnection review procedure, then the applicant may submit a new application under the Tier 2, Tier 3, or Tier 4 review procedures. At the applicant's request, the public utility must provide a written explanation of the reasons for denial within five business days of the request.~~

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0050
Tier 2 Interconnection Review

(1) A public utility must use the Tier 2 interconnection review procedures when an applicant submits ~~for~~ an application requesting Tier 2 review to interconnect a DER~~small generator facility~~ that meets the following requirements:

(a) The DER~~small generator facility~~ does not qualify for ~~or failed to meet~~ the Tier 1 interconnection review ~~requirements~~;

(b) The ~~small generator facility must have a nameplate~~ DER's export capacity does not exceed the limits identified in the table below, which vary according to the voltage of the line at the proposed point of interconnection.

Line Voltage	Export Capacity for Fast Track Eligibility	
	Regardless of location	On > 600 amp line and < 2.5 miles from substation
< 5 kV	< 1 MW	< 2 MW
5 kV – 14 kV	< 2 MW	< 3 MW
15 kV – 30 kV	< 3 MW	< 4 MW
31 kV – 69 kV	< 4 MW	< 5 MW

DER located within 2.5 miles of a substation and on a main distribution line with minimum 600-amp capacity are eligible for Tier 2 interconnection under higher thresholds~~of two megawatts or less~~;

~~(c) The small generator facility must be interconnected to either a radial distribution circuit or a spot network distribution circuit limited to serving one customer;~~

(~~d~~c) The DER~~small generator facility~~ must not ~~be~~ interconnect~~ed~~ to a transmission line; and

(~~e~~d) The DER~~small generator facility~~ must use interconnection equipment that is either lab-tested equipment or field-tested equipment. For equipment to gain status as field-tested equipment, the

applicant must provide all the documentation from the prior ~~Tier 4 study, review, and~~ approval~~,~~ including any interconnection studies and the certificate of completion.

(2) Tier 2 Approval Criteria. A public utility must approve an application to interconnect a ~~small generator facility~~DER under the Tier 2 interconnection review procedures if the facility meets the approval criteria in subsections (a) through (l). A public utility may not impose different or additional approval criteria.

(a) Where existing protective devices and equipment cannot adequately support backfeed, the aggregated export capacity on the substation must be less than 90 percent of the relevant minimum load for the substation.

Commented [A11]: See comments to Tier 1 screens (a) and (b)

(b) Penetration Screen for ~~For~~ interconnection ~~of a small generator facility~~ to a radial distribution circuit.

(A) If 12 months of minimum load data (including onsite load but not station service load served by the proposed DER) are available for the line section, the aggregated export capacity on the line section is less than 90 percent of the relevant minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed DER;

(B) If 12 months of minimum load data (including onsite load but not station service load served by the proposed DER) are not available for line section, the aggregated export capacity on the circuit is less than 90 percent of the relevant minimum load for the feeder;

(C) If minimum load data are not available for the line section or the circuit, the aggregated export ~~nameplate~~ capacity on the circuit must not exceed 15 percent of the line section annual peak load as most recently measured at the substation or calculated for the line section.

(~~b~~c) Network Screen. For interconnection of a DER~~small generator facility to the load side of spot network protectors, the aggregated nameplate capacity on the load side of the spot network protectors must~~ within a spot network or area network, the DER must be inverter-based and use a minimum import relay or other protective scheme that will ensure that power imported from the public utility to the network will, during normal public utility operations remain above one percent of the network's maximum load over the past year or will remain above a point reasonably set by the public utility in good faith. At the public utility's discretion, the requirement for minimum import relays or other protective schemes may be waived~~not exceed the lesser of five percent of a spot network's maximum load or 50 kilowatts~~.

(~~c~~d) Fault Current Screen. The DER, aggregated with other generation on the distribution circuit~~aggregated nameplate capacity, must~~ will not contribute more than 10 percent to the distribution circuit's maximum fault current at the point on the primary voltage distribution line nearest the point of interconnection.

(~~d~~e) Short-Circuit Interrupting Capability Screen. The DER, aggregated with other generation ~~aggregated nameplate capacity~~ on the distribution circuit must not cause any distribution protective devices and equipment (including substation breakers, fuse cutouts, and line reclosers) or other public utility equipment on the transmission or distribution system to be exposed to fault currents exceeding 90 percent of the short circuit interrupting capability. The ~~small generator~~

~~facility~~DER's point of interconnection must not be located on a circuit that already exceeds 90 percent of the short circuit interrupting capability.

(~~e~~f) Transient Stability Screen. The ~~aggregated nameplate capacity~~DER's nameplate rating, in aggregate with other DERs interconnected to ~~on~~ the distribution side of a substation transformer feeding the circuit where the ~~small generator facility~~DER proposes to interconnect must not exceed 10 megawatts 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).

(~~f~~g) Line Configuration Screen. Using the table below, determine the type of interconnection to a primary distribution line. This screen includes a review of the type of electrical service provided to the project, including line configuration and the transformer connection to limit the potential for creating over-voltages on the interconnecting public utility's electric power system due to a loss of ground during the operating time of any anti-islanding function.

Primary Distribution Line Type	**Type of Interconnection to Primary Distribution Line**	**Result/Criteria**
Three-phase, three-wire	If ungrounded on primary or any type on secondary	Pass screen
Three-phase, four-wire	Single-phase line-to-neutral	Pass screen
Three-phase, four-wire or mixed three-wire and four-wire	All others	Pass screen for inverter-based generation if the aggregate nameplate rating, including the nameplate rating of the proposed project, is • ≤ 100 percent feeder or line section minimum load, or • if minimum load data is not available: ≤ 30 percent feeder or line section peak load. Pass screen for rotating generation if the aggregate nameplate rating, including the nameplate rating of the proposed project, is: • ≤ 33 percent of feeder or line section minimum load, or • if minimum load data isn't available: ≤ 10 percent of feeder or line section peak load.

~~If the small generator facility interconnection is to a primary line on the distribution system, then the interconnection must meet the following criteria:~~

~~(A) If the small generator facility is three-phase or single-phase and will be connected to a three-phase, three-wire primary line, then the small generator facility must be connected phase-to-phase.~~

~~(B) If the small generator facility is three-phase or single-phase and will be connected to a three-phase, four-wire primary line, then the small generator facility must be connected line-to-neutral and effectively grounded.~~

(~~g~~h) Single-Phase Shared Secondary Screen. For interconnection of a ~~small generator facility~~DER to a single-phase shared service line on the transmission or distribution system, the aggregated export~~nameplate~~ capacity on the shared secondary ~~line~~ must not exceed the higher of 20 kilowatts or 65 percent of the transformer nameplate power rating.

(~~h~~i) Service Imbalance Screen. For interconnection of a single-phase ~~small generator facility~~DER to the center tap neutral of a 240-volt service line, the addition of the ~~small generator facility~~DER must not create a current imbalance between the two sides of the 240-volt service line of more than 20 percent of the nameplate rating of the service transformer.

(~~i~~j) Except as provided in subsection (2)(l), the interconnection of the ~~small generator facility~~DER must not require system upgrades or interconnection facilities different from or in addition to the applicant's proposed interconnection equipment.

~~(j) The aggregated nameplate capacity, in combination with exiting transmission loads, must not cause the transmission system circuit directly connected to the distribution circuit where the small generator facility interconnection is proposed to exceed its design capacity.~~

(k) If the public utility's distribution circuit uses high speed reclosing with less than two seconds of interruption, then the ~~small generator facility~~DER must not be a synchronous machine. If the DER ~~small generator facility~~ is a synchronous machine, then the applicant must submit a Tier 4 application.

(l) Inadvertent Export Screen. For interconnection of a proposed DER that can introduce inadvertent export, where the nameplate rating minus the export capacity is greater than 250 kilowatts, the following inadvertent export screen is required. With a power change equal to the nameplate rating minus the export capacity, the change in voltage at the point on the medium voltage (primary) level nearest the point of interconnection does not exceed three percent. Voltage change will be estimated applying the following formula:

$$\frac{(\mathbf{R_{SOURCE}} \times \Delta\mathbf{P}) - (\mathbf{X_{SOURCE}} \times \Delta\mathbf{Q})}{\mathbf{V^2}}$$

Where:

$$\Delta\mathbf{P} = (\textbf{DER apparent power Nameplate Rating} - \textbf{Export Capacity}) \times \mathbf{PF},$$

$$\Delta\mathbf{Q} = (\textbf{DER apparent power Nameplate Rating} - \textbf{Export Capacity}) \times \sqrt{(\mathbf{1} - \mathbf{PF^2})},$$

R_{SOURCE} is the grid resistance, X_{SOURCE} is the grid reactance, V is the grid voltage, PF is the power factor

~~If the small generator facility fails to meet one or more of the criteria in subsections (2)(a) through (k), but the public utility determines that the small generator facility could be interconnected safely if minor modifications to the transmission or distribution system were made (for example, changing meters, fuses, or relay settings), then the public utility must offer the applicant a good-faith, non-binding estimate of the costs of such proposed minor modifications. Modifications are not considered minor under this subsection if the total cost of the modifications exceeds $10,000. If the applicant authorizes the public utility to proceed with the minor modifications and agrees to pay the entire cost of the modifications, then the public utility must approve the application under Tier 2.~~

Commented [A12]: moved to (4) below

(3) Timelines. In addition to the timelines and requirements in OAR 860-082-0025, the following timelines and requirements apply to Tier 2 interconnection reviews:

(a) ~~A public utility must schedule a scoping meeting within 10 business days after notifying an applicant that its application is complete. The public utility and the applicant may agree to waive the scoping meeting requirement.~~

~~(b)~~ Within 20 business days after a public utility notifies an applicant that its application is complete ~~or a scoping meeting is held, whichever is later~~, the public utility must:

(A) Evaluate the application using the Tier 2 approval criteria in section (2);

(B) Review any independent analysis of the proposed interconnection provided by the applicant that was performed using the Tier 2 approval criteria; and

(C) Provide written notice to the applicant stating whether the public utility approved the application. If applicable, the public utility must include a comparison of its evaluation to the applicant's independent analysis.

(4) Approval despite screen failure. Despite the failure of one or more screens, the public utility, at its sole option, may approve the interconnection provided such approval is consistent with safety and reliability. If the public utility determines that the DER could be interconnected safely if minor modifications to the transmission or distribution system were made (for example, changing meters, fuses, or relay settings), then the public utility must offer the applicant a good-faith, non-binding estimate of the costs of such proposed minor modifications. Modifications are not considered minor under this subsection if the total cost of the modifications exceeds $10,000. If the applicant authorizes the public utility to proceed with the minor modifications and agrees to pay the entire cost of the modifications, then the public utility must approve the application.

(5) Process after screen failure. If the public utility cannot determine that the DER may nevertheless be interconnected consistent with safety and reliability standards, at the time the public utility notifies the applicant of the Tier 2 review results the public utility shall provide the applicant with specific information on the reason(s) for failure in writing using a standard format

approved by the Commission. In addition, the public utility shall allow the applicant to select one of the following, at the applicant's option:

(a) Request an applicant options meeting; or

(b) Undergo supplemental review in accordance with OAR [NEW SUPPLEMENTAL REVIEW];

(c) Continue evaluating the application under Tier 4.

The applicant must notify the public utility of its selection within 10 business days or the application will be deemed withdrawn.

(6) Applicant options meeting. At the time the public utility notifies the applicant of the Tier 2 review results, the public utility shall provide the applicant the option of participating in an applicant options meeting with the public utility to review possible DER modifications or the screen analysis and related results, to determine what further steps are needed to permit the DER to be connected safely and reliably. If the applicant requests an applicant options meeting, the public utility shall offer to convene a meeting at a mutually agreeable time within 15 business days of the applicant's request.

(7) The interconnection process is not complete until:

(a) The public utility approves the application;

(b) Any minor modifications to the transmission or distribution system required under subsection (4~~2~~)(~~d~~) are complete;

(c) The witness test, if conducted by the public utility, is successful; and

(d) The applicant and public utility execute a certificate of completion. The certificate of completion must follow the standard form certificate developed by the public utility and approved by the Commission.

~~(5) If a small generator facility is not approved under the Tier 2 interconnection review procedure, then the applicant may submit a new application under the Tier 3 or Tier 4 review procedures. At the applicant's request, the public utility must provide a written explanation of the reasons for denial within five business days of the request.~~

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0055
Tier 3 Interconnection Review

(1) A public utility must use the Tier 3 interconnection review procedures when an applicant submits ~~for~~ an application requesting Tier 3 review to interconnect a DER~~small generator facility~~ that meets the following requirements:

(a) ~~The small generator facility does not qualify for or failed to meet the Tier 1 or Tier 2 interconnection review requirements;~~

~~(b)~~ The small generator facility must have a nameplate capacity of 10 megawatts or less;

(~~c~~b) The small generator facility must not be connected to a transmission line;

(~~d~~c) The small generator facility must not export power beyond the point of interconnection; and

(~~e~~d) The small generator facility must use low forward power relays or other protection functions that prevent power flow onto the area network.

(2) Tier 3 Approval Criteria. A public utility must approve an application to interconnect a small generator facility under the Tier 3 interconnection review procedures if the facility meets the Tier 2 approval criteria in OAR 860 082 0050(2)(a) (h), (j) and the additional approval criteria in subsections (a), (b), or (c) of this section. A public utility may not impose different or additional approval criteria.

Commented [A13]: IREC has not yet considered modifications to this section.

(a) For a small generator facility to interconnect to the load side of an area network distribution circuit, the small generator facility must meet the following criteria:

(A) The nameplate capacity of the small generator facility must be 50 kilowatts or less;

(B) The small generator facility must use lab-tested, inverter-based interconnection equipment;

(C) The aggregated nameplate capacity on the area network must not exceed five percent of an area network's maximum load or 50 kilowatts, whichever is less; and

(D) Except as allowed in subsection (2)(c), the interconnection of the small generator facility must not require system upgrades or interconnection facilities different from or in addition to the applicant's proposed interconnection equipment.

(b) For a small generator facility to interconnect to a distribution circuit that is not networked, the small generator facility must meet the following criteria:

(A) The small generator facility must have a nameplate capacity of 10 megawatts or less;

(B) The aggregated nameplate capacity on the circuit must be 10 megawatts or less;

(C) The small generator facility must not export power beyond the point of interconnection;

(D) The small generator facility's point of interconnection must be to a radial distribution circuit;

(E) The small generator facility must not be served by a shared transformer;

(F) Except as allowed in subsection (2)(c), the interconnection of the small generator facility must not require system upgrades or interconnection facilities different from or in addition to the applicant's proposed interconnection equipment; and

(G) If the public utility's distribution circuit uses high speed reclosing with less than two seconds of interruption, then the small generator facility must not be a synchronous machine. If the small generator facility is a synchronous machine, then the applicant must submit a Tier 4 application.

(c) If the small generator facility fails to meet one or more of the Tier 3 approval requirements, but the public utility determines that the small generator facility could be interconnected safely if minor modifications to the transmission or distribution system were made (for example, changing meters, fuses, or relay settings), then the public utility must offer the applicant a good-faith, non-binding estimate of the costs of such proposed minor modifications. Modifications are not considered minor under this subsection if the total cost of the modifications exceeds $10,000. If the applicant authorizes the public utility to proceed with the minor modifications and agrees to pay the entire cost of the modifications, then the public utility must approve the application under Tier 3.

(3) In addition to the timelines and requirements in OAR 860-082-0025, the following timeline~~s~~ and requirements apply to Tier 3 interconnection reviews. ~~:~~

~~(a) An interconnecting public utility must schedule a scoping meeting within 10 business days after notifying an applicant that its application is complete. The public utility and the applicant may agree to waive the scoping meeting requirement.~~

~~(b)~~ Within 20 business days after a public utility notifies an applicant its application is complete ~~or a scoping meeting is held, whichever is later~~, the public utility must:

(a~~A~~) Evaluate the application using the Tier 3 approval criteria;

(b~~B~~) Review any independent analysis of the proposed interconnection provided by the applicant that was performed using the Tier 3 approval criteria; and

(c~~C~~) Provide written notice to the applicant stating whether the public utility approved the application. If applicable, the public utility must include a comparison of its evaluation to the applicant's independent evaluation.

(4) Approval despite screen failure. Despite the failure of one or more screens, the public utility, at its sole option, may approve the interconnection provided such approval is consistent with safety and reliability.

(5) Process after screen failure. If the public utility cannot determine that the DER may nevertheless be interconnected consistent with safety and reliability standards, at the time the public utility notifies the applicant of the Tier 3 review results the public utility shall provide the applicant with specific information on the reason(s) for failure in writing using a standard format approved by the Commission. In addition, the public utility shall allow the applicant to select one of the following, at the applicant's option:

(a) Request an applicant options meeting; or

(b) Undergo supplemental review in accordance with OAR [NEW SUPPLEMENTAL REVIEW];

(c) Continue evaluating the application under Tier 4.

The applicant must notify the public utility of its selection within 10 business days or the application will be deemed withdrawn.

(6) Applicant options meeting. At the time the public utility notifies the applicant of the Tier 3 review results, the public utility shall provide the applicant the option of participating in an applicant options meeting with the public utility to review possible DER modifications or the screen analysis and related results, to determine what further steps are needed to permit the DER to be connected safely and reliably. If the applicant requests an applicant options meeting, the public utility shall offer to convene a meeting at a mutually agreeable time within 15 business days of the applicant's request.

(7) The interconnection process is not complete until:

(a) The public utility approves the application;

(b) Any minor modifications to the transmission or distribution system required under subsection (2)(c) are complete;

(c) The witness test, if conducted by the public utility, is successful; and

(d) The applicant and public utility execute a certificate of completion. The certificate of completion must follow the standard form certificate developed by the public utility and approved by the Commission.

~~(5) If a small generator facility is not approved under the Tier 3 interconnection review procedures, then the applicant may submit a new application under the Tier 4 review procedures. At the applicant's request, the public utility must provide a written explanation of the reasons for denial within five business days of the request.~~

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0060
Tier 4 Interconnection Review

Commented [A14]: How does PacifiCorp propose to modify this section to incorporate its group study process?

(1) (a) A public utility must use the Tier 4 interconnection review procedures when an applicant submits an application requesting Tier 4 review ~~for an application~~ to interconnect a ~~small generator facility that meets the following requirements:~~

~~(a) The small generator facility does not qualify for or failed to meet the Tier 1, Tier 2, or Tier 3 interconnection review requirements; and~~

~~(b) The small generator facility must have~~ DER with a nameplate rating~~capacity~~ of 10 megawatts or less.

(b) An applicant whose Tier 1, Tier 2, or Tier 3 application was denied may request that the public utility treat that existing application already in the public utility's possession as a new Tier 4 application. Within three business days of receipt of the applicant's request to use the existing

application, the public utility shall transfer of the existing application to the Tier 4 process and notify the applicant whether or not the application is complete. If the application is incomplete, the public utility shall provide a written list detailing all information that the applicant must provide to complete the application. The applicant will have 20 business days after receipt of the list to submit the listed information. Otherwise, the application will be deemed withdrawn. The public utility shall notify the applicant within three business days of receipt of the revised application whether the revised application is complete or incomplete. The public utility may deem the application withdrawn if it remains incomplete.

(2) A public utility must approve an application to interconnect a small generator facility under the Tier 4 interconnection review procedures if the public utility determines that the safety and reliability of the public utility's transmission or distribution system will not be compromised by interconnecting the small generator facility. The applicant must pay the reasonable costs of any interconnection facilities or system upgrades necessitated by the interconnection.

(3) In addition to the timelines and requirements in OAR 860-082-0025, the timelines and requirements in sections (5) through (12) of this rule apply to Tier 4 interconnection reviews.

(4) A public utility and an applicant may agree to waive the requirement for a scoping meeting, ~~the feasibility study~~, the system impact study, or the facilities study. The applicant may waive the requirement for a feasibility study.

(5) A public utility must schedule a scoping meeting within 10 business days after notifying an applicant that its application is complete.

(a) The public utility and the applicant must bring to the scoping meeting all personnel, including system engineers, as may be reasonably required to accomplish the purpose of the meeting.

(b) The public utility and applicant must discuss whether the public utility should perform a feasibility study or proceed directly to a system impact study, a facilities study, or an interconnection agreement.

(c) If the public utility determines that no studies are necessary, then the public utility must approve the application within 15 business days of the scoping meeting if:

(A) The application meets the criteria in section (2); and

(B) The interconnection of the small generator facility does not require system upgrades or interconnection facilities different from or in addition to the applicant's proposed interconnection equipment.

(d) If the public utility determines that no studies are necessary and that the small generator facility could be interconnected safely if minor modifications to the transmission or distribution system were made (for example, changing meters, fuses, or relay settings), then the public utility must offer the applicant a good-faith, non-binding estimate of the costs of such proposed minor modifications. Modifications are not considered minor under this subsection if the total cost of the modifications exceeds $10,000. If the applicant authorizes the public utility to proceed with the minor modifications and agrees to pay the entire cost of the modifications, then the public

utility must approve the application within 15 business days of receipt of the applicant's agreement to pay for the minor modifications.

(6) If a public utility reasonably concludes that an adequate evaluation of an application requires a feasibility study, then the public utility must provide the applicant with an executable feasibility study agreement within five business days of the date of the scoping meeting.

(a) The feasibility study agreement must include a detailed scope for the feasibility study, a reasonable schedule for completion of the study, and a good-faith, non-binding estimate of the costs to perform the study.

(b) The feasibility study agreement must follow the standard form agreement developed by the public utility and approved by the Commission.

(c) The applicant must execute the feasibility study agreement within 15 business days of receipt of the agreement or the application is deemed withdrawn.

(d) The public utility must make reasonable, good-faith efforts to follow the schedule set forth in the feasibility study agreement for completion of the study.

(e) The feasibility study must identify any potential adverse system impacts on the public utility's transmission or distribution system or an affected system that may result from the interconnection of the small generator facility. In determining possible adverse system impacts, the public utility must consider the aggregated nameplate capacity of all generating facilities that, on the date the feasibility study begins, are directly interconnected to the public utility's transmission or distribution system, have a pending completed application to interconnect with a higher queue position, or have an executed interconnection agreement with the public utility.

(f) The public utility must evaluate multiple potential points of interconnection at the applicant's request. The applicant must pay the costs of this additional evaluation.

(g) The public utility must provide a copy of the feasibility study to the applicant within five business days of the study's completion.

(h) If the feasibility study identifies any potential adverse system impacts, then the public utility must perform a system impact study.

(i) If the feasibility study does not identify any adverse system impacts, then the public utility must perform a facilities study if the public utility reasonably concludes that a facilities study is necessary to adequately evaluate the application.

(A) If the public utility concludes that a facilities study is not required, then the public utility must approve the application with 15 business days of completion of the feasibility study if the application meets the criteria in section (2) and the interconnection of the small generator facility does not require system upgrades or interconnection facilities different from or in addition to the applicant's proposed interconnection equipment.

(B) If the public utility concludes that a facilities study is not required and that the small generator facility could be interconnected safely if minor modifications to the transmission or distribution system were made (for example, changing meters, fuses, or relay settings), then the

public utility must offer the applicant a good-faith, non-binding estimate of the costs of such proposed minor modifications. Modifications are not considered minor under this subsection if the total cost of the modifications exceeds $10,000. If the applicant authorizes the public utility to proceed with the minor modifications and agrees to pay the entire cost of the modifications, then the public utility must approve the application within 15 business days of receipt of the applicant's agreement to pay for the minor modifications.

(7) If a public utility is required to perform a system impact study under subsection (6)(h), or if an applicant and a public utility agree in the scoping meeting to waive the feasibility study and proceed directly to the system impact study, then the public utility must provide the applicant with an executable system impact study agreement within five business days of completing the feasibility study or from the date of the scoping meeting, whichever is applicable.

(a) The system impact study agreement must include a detailed scope for the system impact study, a reasonable schedule for completion of the study, and a good-faith, non-binding estimate of the costs to perform the study.

(b) The system impact study agreement must follow the standard form agreement developed by the public utility and approved by the Commission.

(c) The applicant must execute the system impact study agreement within 15 business days of receipt of the agreement or the application is deemed withdrawn.

(d) The public utility must make reasonable, good-faith efforts to follow the schedule set forth in the system impact study agreement for completion of the study.

(e) The system impact study must identify and detail the impacts on the public utility's transmission or distribution system or on an affected system that would result from the interconnection of the small generator facility if no modifications to the small generator facility or system upgrades were made. The system impact study must include evaluation of the adverse system impacts identified in the feasibility study and in the scoping meeting.

(f) In determining possible adverse system impacts, the public utility must consider the aggregated nameplate rating and export capacity of all generating facilities that, on the date the system impact study begins, are directly interconnected to the public utility's transmission or distribution system, have a pending completed application to interconnect with a higher queue position, or have an executed interconnection agreement with the public utility. The system impact study must take into account the proposed DER's design and operating characteristics, including but not limited to the proposed operating profile, and study the DER according to how it is proposed to be operated. If the DER limits export pursuant to OAR [NEW EXPORT CONTROLS], the system impact study must use export capacity instead of the nameplate rating, except when assessing fault current contribution. To assess fault current contribution, the system impact study must use the rated fault current; for example, the customer may provide manufacturer test data (pursuant to the fault current test described in IEEE 1547.1-2020 clause 5.18) showing that the fault current is independent of the nameplate rating.

(g) The system impact study must include:

(A) A short circuit analysis;

(B) A stability analysis;

(C) A power flow analysis;

(D) Voltage drop and flicker studies;

(E) Protection and set point coordination studies;

(F) Grounding reviews;

(G) The underlying assumptions of the study;

(H) The results of the analyses; and

(I) Any potential impediments to providing the requested interconnection service.

(h) If an applicant provides an independent system impact study to the public utility, then the public utility must evaluate and address any alternative findings from that study.

(i) The public utility must provide a copy of the system impact study to the applicant within five business days of completing the study.

(j) If a public utility determines in a system impact study that interconnection facilities or system upgrades are necessary to safely interconnect a small generator facility, then the public utility must perform a facilities study.

(k) If the public utility determines that no interconnection facilities or system upgrades are required, and the public utility concludes that the application meets the criteria in section (2), then the public utility must approve the application with 15 business days of completion of the system impact study.

(l) If the public utility determines that no interconnection facilities or system upgrades are required and that the small generator facility could be interconnected safely if minor modifications to the transmission or distribution system were made (for example, changing meters, fuses, or relay settings), then the public utility must offer the applicant a good-faith, non-binding estimate of the costs of such proposed minor modifications. Modifications are not considered minor under this subsection if the total cost of the modifications exceeds $10,000. If the applicant authorizes the public utility to proceed with the minor modifications and agrees to pay the entire cost of the modifications, then the public utility must approve the application within 15 business days of the applicant's agreement to pay for the minor modifications.

(8) If a public utility is required to perform a facilities study under subsection (6)(i) or 7(j), or if an applicant and a public utility agree in the scoping meeting to waive the system impact study and proceed directly to the facilities study, then the public utility must provide the applicant with an executable facilities study agreement within five business days of completing the system impact study or within five business days from the date of the scoping meeting, whichever is applicable.

(a) The facilities study agreement must include a detailed scope for the facilities study, a reasonable schedule for completion of the study, and a good-faith, non-binding estimate of the costs to perform the study.

(b) The facilities study agreement must follow the standard form agreement developed by the public utility and approved by the Commission.

(c) The applicant must execute the interconnection facilities study agreement within 15 business days after receipt of the agreement or the application is deemed withdrawn.

(d) The public utility must make reasonable, good-faith efforts to follow the schedule set forth in the facilities study agreement for completion of the study.

(e) The facilities study must identify the interconnection facilities and system upgrades required to safely interconnect the small generator facility and must determine the costs for the facilities and upgrades, including equipment, engineering, procurement, and construction costs. Design for any required interconnection facilities or system upgrades must be performed under the facilities study agreement. The public utility must also identify the electrical switching configuration of the equipment, including transformer, switchgear, meters, and other station equipment.

(f) The public utility may contract with a third-party consultant to complete the interconnection facilities and system upgrades identified in the facilities study. A public utility and an applicant may agree in writing to allow the applicant to hire a third-party consultant to complete the interconnection facilities and system upgrades, subject to public utility oversight and approval.

(g) The interconnection facilities study must include a detailed estimate of the time required to procure, construct, and install the required interconnection facilities and system upgrades.

(h) If the applicant agrees to pay for the interconnection facilities and system upgrades identified in the facilities study, then the public utility must approve the application within 15 business days of the applicant's agreement.

(9) The public utility may contract with a third-party consultant to complete a feasibility study, system impact study, or facilities study. A public utility and an applicant may agree in writing to allow the applicant to hire a third-party consultant to complete a feasibility study, system impact study, or facilities study, subject to public utility oversight and approval.

(10) The interconnection process is not complete until:

(a) The public utility approves the application;

(b) Any interconnection facilities or system upgrades have been completed;

(c) Any minor modifications to the public utility's transmission or distribution system required under subsections (5)(d), 6(i)(B), or (7)(l) have been completed;

(d) The witness test, if conducted by the public utility, is successful; and

(e) The applicant and public utility execute a certificate of completion.

(11) If a small generator facility is not approved under the Tier 4 interconnection review procedures, then the public utility must provide a written explanation of the denial to the applicant.

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0065
Recordkeeping and Reporting Requirements

(1) The public utility must maintain a record of the following information for at least two years:

(a) The number of complete small generator interconnection applications received;

(b) The time required to complete the review process for each application; and

(c) The reasons for the approval or denial of each application.

(2) For as long as an interconnection customer's small generator facility is interconnected to a public utility's transmission or distribution system, the interconnecting public utility must maintain copies of the interconnection application, interconnection agreement, and certificate of completion for the small generator facility. The public utility must provide a copy of the interconnection customer's records to the interconnection customer within 15 business days after receipt of a written request.

(3) The public utility must submit an annual report to the Commission summarizing the public utility's interconnection activities for the previous calendar year. The annual report must be filed by May 30 and must include the following information:

(a) The number of complete small generator interconnection applications received;

(b) The number of small generator facility interconnections completed;

(c) The types of small generator facilities applying for interconnection and the nameplate capacity of the facilities;

(d) The location of completed and proposed small generator facilities by zip code;

(e) For each Tier 3 and Tier 4 small generator interconnection approval, the basic telemetry configuration, if applicable; and

(f) For each Tier 4 small generator interconnection approval:

(A) The interconnection facilities required to accommodate the interconnection of a small generator facility and the estimated costs of those facilities; and

(B) The system upgrades required to accommodate the interconnection of a small generator facility and the estimated costs of those upgrades.

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0070
Metering and Monitoring

(l) The public utility must install, maintain, test, repair, operate, and replace any metering and data acquisition equipment necessary under the terms of the public utility's interconnection agreement, power purchase agreement, or power service agreement with an applicant or interconnection customer. The applicant or interconnection customer is responsible for all reasonable costs associated with the metering and data acquisition equipment. The public utility and the applicant or interconnection customer must have unrestricted access to such equipment as necessary to conduct routine business or respond to an emergency.

(2) Except as provided in subsection 3(b), a public utility may not require an applicant or interconnection customer with a small generator facility with a nameplate capacity of less than three megawatts to provide or pay for the data acquisition or telemetry equipment necessary to allow the public utility to remotely monitor the small generator facility's electric output.

(3) At its discretion, a public utility may require an applicant or interconnection customer to pay for the purchase, installation, operation, and maintenance of the data acquisition or telemetry equipment necessary to allow the public utility to remotely monitor the small generator facility's electric output if:

(a) The small generator facility has a nameplate capacity greater than or equal to 3 megawatts; or

(b) The small generator facility meets the criteria in OAR 860-082-0055(1) for Tier 3 interconnection review and the aggregated nameplate generation on the circuit exceeds 50 percent of the line section annual peak load.

(4) A public utility and an applicant or interconnection customer may agree to waive or modify the telemetry requirements in this rule.

(5) Telemetry Requirements.

(a) The communication must take place via a private network link using a frame relay, fractional T-1 line, or other suitable device. Dedicated remote terminal units from the interconnected small generator facility to a public utility's substation and energy management system are not required.

(b) A single communication circuit from the small generator facility to the public utility is sufficient.

(c) Communications protocol must be DNP 3.0 or another reasonable standard used by the public utility.

(d) The small generator facility must be capable of sending telemetric monitoring data to the public utility at a minimum rate of every two seconds from the output of the small generator facility's telemetry equipment to the public utility's energy management system.

(e) A small generator facility must provide the following minimum data to the public utility:

(A) Net real power flowing out or into the small generator facility (analog);

(B) Net reactive power flowing out or into the small generator facility (analog);

(C) Bus bar voltage at the point of common coupling (analog);

(D) Data processing gateway heartbeat (used to certify the telemetric signal quality); and

(E) On-line or off-line status (digital).

(f) If an applicant or interconnection customer operates the equipment associated with the high voltage switchyard interconnecting the small generator facility to the transmission or distribution system and is required to provide monitoring and telemetry, then the interconnection customer must provide the following data to the public utility in addition to the data in subsection (e):

(A) Switchyard line and transformer megawatt and mega volt ampere reactive values;

(B) Switchyard bus voltage; and

(C) Switching device status.

Statutory/Other Authority: ORS 183, 756 & 757
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0075
Temporary Disconnection

(1) Under emergency conditions, a public utility or an interconnection customer may suspend interconnection service and temporarily disconnect a small generator facility from the public utility's transmission or distribution system at any time and for as long as reasonably necessary.

(a) A public utility must notify an interconnection customer immediately after becoming aware of an emergency condition that may reasonably be expected to affect a small generator facility's operation. To the extent possible, the notice must describe the emergency condition, the extent of the damage or deficiency, the expected effect on the small generator facility, the anticipated duration of the condition, and the necessary corrective action.

(b) An interconnection customer must notify the public utility immediately after becoming aware of an emergency condition that may reasonably be expected to affect the public utility's transmission or distribution system. To the extent possible, the notice must describe the emergency condition, the extent of the damage or deficiency, the expected effect on the public utility's transmission or distribution system, the anticipated duration of the condition, and the necessary corrective action.

(2) A public utility or an interconnection customer may suspend interconnection service and temporarily disconnect a small generator facility to perform routine maintenance, construction, or repairs. A public utility or an interconnection customer must provide written notice five

business days before suspending interconnection service or temporarily disconnecting the small generator facility. A public utility and an interconnection customer must use reasonable efforts to coordinate interruptions caused by routine maintenance, construction, or repairs.

(3) A public utility must use reasonable efforts to provide written notice to an interconnection customer affected by a forced outage of the public utility's transmission or distribution system at least five business days before the forced outage. If prior written notice is not given, then the public utility must provide the interconnection customer written documentation explaining the circumstances of the disconnection within five business days after the forced outage.

(4) A public utility may disconnect a small generator facility if the public utility determines that operation of the small generator facility will likely cause disruption or deterioration of service to other customers served by the public utility's transmission or distribution system, or if the public utility determines that operation of the small generator facility could cause damage to the public utility's transmission or distribution system.

(a) The public utility must provide written notice to the interconnection customer of the disconnection at least five business days before the disconnection. If the condition requiring disconnection can be remedied, then the public utility must describe the remedial action necessary.

(b) If requested by the interconnection customer, the public utility must provide documentation supporting the public utility's decision to disconnect.

(c) The public utility may disconnect the small generator facility if the interconnection customer fails to perform the remedial action identified in the notice of disconnection within a reasonable time, but no less than five business days after the interconnection customer received the notice of disconnection.

(5) A public utility may temporarily disconnect a small generator facility if an interconnection customer makes any change to the facility, other than a minor equipment modification, without the public utility's prior written authorization. The public utility may disconnect the small generator facility for the time necessary for the public utility to evaluate the ~~ca~~effect of the change to the small generator facility on the public utility's transmission or distribution system.

(6) A public utility has the right to inspect an interconnection customer's small generator facility at reasonable hours and with reasonable prior written notice to the interconnection customer. If the public utility discovers that the small generator facility is not in compliance with the requirements of the small generator interconnection rules, then the public utility may require the interconnection customer to disconnect the small generator facility until compliance is achieved.

Statutory/Other Authority: ORS 183 & 756
Statutes/Other Implemented: ORS 756.040 & 756.060
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0080
Arbitration of Disputes

(1) An interconnecting public utility or an interconnection applicant may petition the Commission for arbitration of disputes arising during review of an application to interconnect a small generator facility or during negotiation of an interconnection agreement. If the public utility or the applicant petitions the Commission to arbitrate their dispute, then the Commission will use an administrative law judge (ALJ) as arbitrator unless workload constraints necessitate the use of an outside arbitrator.

(2) A petition for arbitration of an interconnection agreement must contain:

(a) A statement of all unresolved issues;

(b) A description of each party's position on the unresolved issues; and

(c) A proposed agreement addressing all issues, including those on which the parties have reached agreement and those that are in dispute.

(3) A petition for arbitration of a dispute arising during review of an application to interconnect a small generator facility must contain:

(a) A statement of all unresolved issues;

(b) A description of each party's position on the unresolved issues; and

(c) A proposed resolution for each unresolved issue.

(4) Respondent may file a response within 25 calendar days of the petition for arbitration. In the response, the respondent must address each issue listed in the petition, describe the respondent's position on those issues, and present any additional issues for which the respondent seeks resolution.

(5) The filing of a petition for arbitration of a dispute arising during review of an application to interconnect a small generator facility does not affect the application’s queue position.

(6) The arbitration is conducted in a manner similar to a contested case proceeding, and the arbitrator has the same authority to conduct the arbitration process as an ALJ has in conducting hearings under the Commission's rules, but the arbitration process is streamlined. The arbitrator holds an early conference to discuss processing of the case. The arbitrator establishes the schedule and decides whether an oral hearing is necessary. After the oral hearing or other procedures (for example, rounds of comments), each party submits its final proposed interconnection agreement or resolution of disputed issues. The arbitrator chooses between the two final offers. If neither offer is consistent with applicable statutes, Commission rules, and Commission policies, then the arbitrator will make a decision that meets those requirements.

(7) The arbitrator may allow formal discovery only to the extent deemed necessary. Parties are required to make good faith attempts to exchange information relevant to any disputed issue in an informal, voluntary, and prompt manner. Unresolved discovery disputes are resolved by the arbitrator upon request of a party. The arbitrator will order a party to provide information if the arbitrator determines the requesting party has a reasonable need for the requested information and that the request is not overly burdensome.

(8) Only the two negotiating parties have full party status. The arbitrator may confer with Commission staff for assistance throughout the arbitration process.

(9) To keep the process moving forward, appeals to the Commission are not allowed during the arbitration process. An arbitrator may certify a question to the Commission if the arbitrator believes it is necessary.

(10) To accommodate the need for flexibility, the arbitrator may use different procedures so long as the procedures are fair, treat the parties equitably, and substantially comply with the procedures listed here.

(11) The arbitrator must serve the arbitration decision on the interconnecting public utility and the interconnection applicant. The parties may file comments on the arbitration decision with the Commission within 10 calendar days after service.

(12) The Commission must accept, reject, or modify an arbitration decision within 30 calendar days after service of the decision.

(13) Within 14 calendar days after the Commission issues an order on a petition for arbitration of an interconnection agreement, the petitioner must prepare an interconnection agreement complying with the terms of the decision and serve it on respondent. Respondent must either sign and file the interconnection agreement or file objections to it within 10 calendar days of service of the agreement. If objections are filed, respondent must state how the interconnection agreement fails to comply with the Commission order and offer substitute language complying with the decision. The Commission must approve or reject a filed interconnection agreement within 20 calendar days of its filing or the agreement is deemed approved.

(14) If petitioner, without respondent's consent, fails to timely prepare and serve an interconnection agreement on respondent, respondent may file a motion requesting the Commission dismiss the petition for arbitration with prejudice. The Commission may grant such motion if the petitioner's failure to timely prepare and serve the interconnection agreement was the result of inexcusable neglect on the part of petitioner.

(15) The public utility and the applicant may agree to hire an outside arbitrator rather than file a petition with the Commission. The public utility and the applicant must share equally the costs of an outside arbitrator unless they mutually agree to a different payment arrangement.

Statutory/Other Authority: ORS 756
Statutes/Other Implemented: ORS 756.040 & 756.500
History:
PUC 10-2009, f. & cert. ef. 8-26-09

860-082-0085
Complaints for Enforcement

(1) This rule specifies the procedure for a public utility, an interconnection customer, or an applicant to file a complaint for the enforcement of an interconnection agreement. Filing dates for enforcement complaint proceedings are calculated and enforced per OAR 860-001-0150.

(2) At least 10 days prior to filing a complaint for enforcement, complainant must give written notice to defendant and the Commission that complainant intends to file a complaint for enforcement. The notice must identify the provisions in the agreement that complainant alleges were or are being violated and the specific acts or failure to act that caused or are causing the violation, and whether complainant anticipates requesting temporary or injunctive relief. On the same day the notice is filed with the Commission, complainant must serve a copy of the notice on defendant's authorized representative, attorney of record, or designated agent for service of process. Complainant must also serve the notice on all persons designated in the interconnection agreement to receive notices;

(3) A complaint for enforcement must:

(a) Contain a statement of specific facts demonstrating that the complainant conferred with defendant in good faith to resolve the dispute, and that despite those efforts the parties failed to resolve the dispute;

(b) Include a copy of the written notice, required by section (2), indicating that the complainant intends to file a complaint for enforcement;

(c) Include a copy of the interconnection agreement or the portion of the agreement that the complainant contends that defendant violated or is violating. If a copy of the entire agreement is provided, complainant must specify the provisions at issue;

(d) Contain a statement of the facts or law demonstrating defendant's failure to comply with the interconnection agreement and complainant's entitlement to relief. The statement must indicate that the remedy sought is consistent with the dispute resolution provisions in the agreement, if any. Statements of facts must be supported by written testimony with affidavits made by persons competent to testify and having personal knowledge of the relevant facts. Statements of law must be supported by appropriate citations. If exhibits are attached to the affidavits, the affidavits must contain the foundation for the exhibits;

(e) Designate up to three persons to receive copies of pleadings and documents;

(f) Include an executive summary, filed as a separate document not to exceed 8 pages, outlining the issues and relief requested; and

(g) Include any motions for affirmative relief, filed as a separate document and clearly marked. Nothing in this subsection precludes complainant from filing a motion subsequent to the filing of the complaint if the motion is based upon facts or circumstances unknown or unavailable to complainant at the time the complaint was filed.

(4) On the same day the complaint is filed with the Commission, complainant must serve a copy of the complaint on defendant's authorized representative, attorney of record, or designated agent for service of process. Service may be by telephonic facsimile, electronic mail, or overnight mail, but the complaint must arrive at defendant's location on the same day the complaint is filed with the Commission. Service by facsimile or electronic mail must be followed by a physical copy of the complaint the next day by overnight delivery.

(5) Within 10 business days after service of the complaint, defendant may file an answer with the Commission. Any allegations raised in the complaint and not addressed in the answer are deemed admitted. The answer must:

(a) Contain a statement of specific facts demonstrating that the defendant conferred with complainant in good faith to resolve the dispute and that despite those efforts the parties failed to resolve the dispute;

(b) Respond to each allegation in the complaint and set forth all affirmative defenses;

(c) Contain a statement of the facts or law supporting defendant's position. Statements of facts must be supported by written testimony with affidavits made by persons competent to testify and having personal knowledge of the relevant facts. Statements of law must be supported by appropriate citations. If exhibits are attached to the affidavits, then the affidavits must contain the foundation for the exhibits; and

(d) Designate up to three persons to receive copies of other pleadings and documents.

(6) On the same day as the answer is filed, the defendant must also file its response to any motion filed by complainant and its motions for affirmative relief. Each response and each motion must be filed as a separate filing. Nothing in this section precludes defendant from filing a motion subsequent to the filing of the answer if the motion is based upon facts or circumstances unknown or unavailable to defendant at the time the answer was filed.

(7) On the same day the answer is filed with the Commission, the defendant must serve a copy of the answer to the complainant's authorized representative, attorney of record, or designated agent for service of process.

(8) Complainant must file a reply to an answer that contains affirmative defenses within 5 business days after the answer is filed. On the same day the reply is filed with the Commission, complainant must serve a copy of the reply to defendant's authorized representative, attorney of record, or designated agent for service of process.

(9) A cross-complaint or counterclaim must be answered within the 10-business day time frame allowed for answers to complaints.

(10) The Commission will conduct a conference regarding each complaint for enforcement of an interconnection agreement.

(a) The administrative law judge (ALJ) schedules a conference within 5 business days after the answer is filed, to be held as soon as practicable. At the discretion of the ALJ, the conference may be conducted by telephone.

(b) Based on the complaint and the answer, all supporting documents filed by the parties, and the parties' oral statements at the conference, the ALJ determines whether the issues raised in the complaint can be determined on the pleadings and submissions without further proceedings or whether further proceedings are necessary. If further proceedings are necessary, the ALJ establishes a procedural schedule. Nothing in this subsection is intended to prohibit the bifurcation of issues where appropriate.

(c) In determining whether further proceedings are necessary, the ALJ must consider, at a minimum, the positions of the parties, the need to clarify evidence through the examination of witnesses, the complexity of the issues, the need for prompt resolution, and the completeness of the information presented.

(d) The ALJ may make oral rulings on the record during the conference on all matters relevant to the conduct of the proceeding.

(11) A party may file with the complaint or answer a request for discovery, stating the matters to be inquired into and their relationship to matters directly at issue.

(12) When warranted by the facts, the complainant or defendant may file a motion requesting that an expedited procedure be used. The moving party must file a proposed expedited procedural schedule along with its motion. The ALJ must schedule a conference to be held as soon as practicable to determine whether an expedited schedule is warranted.

(a) The ALJ will consider whether the issues raised in the complaint or answer involve a risk of imminent, irrevocable harm to a party or to the public interest.

(b) If a determination is made that an expedited procedure is warranted, the ALJ will establish a procedure that ensures a prompt resolution of the merits of the dispute, consistent with due process and other relevant considerations. The ALJ will consider, but is not bound by, the moving party's proposed expedited procedural schedule.

(c) In general, the ALJ will not entertain a motion for expedited procedure where the dispute solely involves the payment of money.

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Appendix:
Oregon Level 1 Screens Comparison

Oregon Public Utility Commission

	OAR 860-082-0045 SGIP	2019 IREC Model Rules, as modified by the 2022 Energy Storage Interconnection Toolkit	OAR 860-039-0030 NEM
	Tier 1 Interconnection Review	**Level 1**	**Level 1 Net Metering Interconnection Review**
Application		IIIA.1. Application: An Applicant must submit a Level 1 Application, pursuant to Section I.C.1, using the standard form provided in Attachment 3 to these Interconnection Procedures, which may be sent electronically to a recipient designated by the Utility. An Applicant executes the standard Interconnection Agreement for Level 1 by submitting a Level 1 Application. A Utility may elect to charge a standard Application fee of up to $100 for Level 1 review.	*The rules allow a customer to sign an interconnection agreement at the same time as submitting an application. Consider requiring all OR NEM & OR SGIP Level 1 applications to include a signed interconnection agreement.*
Eligibility/Size	(1) A public utility must use the Tier 1 review procedures for an application to interconnect a small generator facility that meets the following requirements: (a) The small generator facility must use lab-tested, inverter-based interconnection equipment; (b) The small generator facility must have a nameplate capacity of 25 kilowatts or less; and	III.A.2.a. Facility Size: The Generating Facility has an Export Capacity not greater than 25 kW, a Nameplate Rating not greater than 50 kW and uses a UL 1741 Certified inverter. *FERC SGIP, OR SGIP, and IREC Model allow interconnections to network systems, while OR NEM does not. Consider standardizing to allow any projects on a network to use OR NEM & OR SGRIP Level 1 & Level 2.*	(1) A net metering facility meeting the following criteria is eligible for Level 1 interconnection review: (a) The facility is inverter-based; and (b) The facility has a capacity of 25 kilowatts or less. (2)(b) A net metering facility's point of common coupling will not be on a transmission line, a spot network, or an area network.

	(c) The small generator facility must not be interconnected to a transmission line.		
Fault Current Screen	*Not included*	*Not included. Consider stanadarizing no fault current screen for OR NEM Level 1 projects.*	(2)(a) The aggregate generation capacity on the distribution circuit to which the net metering facility will interconnect, including the capacity of the net metering facility, will not contribute more than 10 percent to the distribution circuit's maximum fault current at the point on the high voltage (primary) level that is nearest the proposed point of common coupling.
Penetration Screen	(2)(b) For interconnection of a small generator facility to a radial distribution circuit, the aggregated nameplate capacity on the circuit must not exceed 15 percent of the line section annual peak load as most recently measured at the substation or calculated for the line section.	*Since the 2019 IREC Model Rules were published, leading states have switched to using 100% of daytime minimum load, i.e., IL, or a hosting capacity analysis, i.e., CA, instead of 15% of peak load.* *As noted in IREC's July 15 presentation, IREC supports, where the data is available, switching to a 100% of min load threshold. However, the threshold for the Level 1 and Level 2 Penetration Screens would look different than the detailed calculations found in the Supplemental Review Penetration Screen. The Level 1 and Level 2 Penetration Screens are typically designed to fail more projects than the Supplemental Review Penetration Screen. Considering Oregon's current use of substation minimum load data to establish generation limited feeders, IREC requests that the work group have a discussion before designing new Level 1 and Level 2 penetration screens.*	(2)(c) If a net metering facility is to be connected to a radial distribution circuit, the aggregate generation capacity connected to the circuit, including that of the net metering facility, will not exceed 10 percent (15 percent for solar electric generation) of the circuit's total annual peak load, as most recently measured at the substation.

Network Screen	(2)(c) For interconnection of a small generator facility to the load side of spot network protectors, the aggregated nameplate capacity on the load side of the spot network protectors must not exceed five percent of a spot network's maximum load or 50 kilowatts, whichever is less.	IIIA.2.e. For interconnection of a Generating Facility within a Spot Network or Area Network, the aggregate Nameplate Rating including the Generating Facility's Nameplate Rating may not exceed 50 percent of the Spot Network or Area Network's anticipated minimum load. If solar energy Generating Facilities are used exclusively, only the anticipated daytime minimum load shall be considered. The Utility may select any of the following methods to determine anticipated minimum load: i. the Spot Network or Area Network's measured minimum load in the previous year, if available; ii. five percent of the Spot Network or Area Network's maximum load in the previous year; iii. the Applicant's good faith estimate, if provided; or iv. the Utility's good faith estimate if provided in writing to the Applicant along with the reasons why the Utility considered the other methods to estimate minimum load inadequate.	*Note: FERC SGIP, OR SGIP, and IREC Model allow interconnections to network systems, while OR NEM does not.*

Single-Phase Shared Secondary Screen	(2)(d) For interconnection of a small generator facility to a single-phase shared secondary line, the aggregated nameplate capacity on the line must not exceed 20 kilowatts.	III.A.2.c. If the Generating Facility is to be interconnected on a single-phase shared secondary, then the aggregate Export Capacity on the shared secondary, including the Generating Facility's Export Capacity, will not exceed 65 percent of the transformer nameplate power rating. *Consider using the 65% threshold instead of 20 kW. Consider using Export Capacity instead of Nameplate Rating.*	(2)(d) If a net metering facility is to be connected to a single-phase shared secondary, the aggregate generation capacity connected to the shared secondary, including the net metering facility, will not exceed 20 kilovolt-amps.
Service Imbalance Screen	(2)(e) For interconnection of a single-phase small generator facility to the center tap neutral of a 240-volt service line, the addition of the small generator facility must not create a current imbalance between the two sides of the 240-volt service line of more than 20 percent of the nameplate rating of the service transformer.	III.A.2.d. If the Generating Facility is single-phase and is to be interconnected on a transformer center tap neutral of a 240-volt service, its addition will not create an imbalance between the two sides of the 240-volt service of more than 20 percent of the nameplate rating of the service transformer.	(2)(e) If a single-phase net metering facility is to be connected to a transformer center tap neutral of a 240 volt service, the addition of the net metering facility will not create a current imbalance between the two sides of the 240 volt service of more than 20 percent of nameplate rating of the service transformer.

Approval Timeline	(3) In addition to the timelines and requirements in OAR 860-082-0025, the public utility must provide written notice to the applicant stating whether the small generator facility meets the Tier 1 approval criteria no later than 15 business days from the date a Tier 1 interconnection application is deemed complete.	III.A.3. Time to process screens: Within seven (7) Business Days after the Utility notifies the Applicant that the Application is complete, the Utility shall notify the Applicant whether the Generating Facility meets all of the applicable Level 1 screens. *Consider standardizing the timeline for projects at 7 business days for OR NEM & OR SGIP Level 1 applications.*	(3) Within 10 business days after the public utility notifies a Level 1 applicant that the application is complete, the public utility must notify the applicant that: (a) The net metering facility meets all applicable criteria and the interconnection will be approved upon installation of any required meter upgrade, completion of any required inspection of the facility, and execution of an interconnection agreement; or (b) The net metering facility has failed to meet one or more of the applicable criteria and the interconnection application is denied.
Deemed Approval	*Not included.* *Consider standardizing deemed approval for OR SGIP Level 1.*	III.A.5. Approval: If the proposed interconnection passes the screens, the Application shall be approved, and the Utility will provide the Applicant an executable Interconnection Agreement within the following timeframes. a. If the proposed interconnection requires no construction of facilities by the Utility on its own system, the Utility shall provide the Applicant with a copy of the Level 1 Application form, signed by the Utility, forming the Level 1 Interconnection Agreement, at the time the screen results are provided. If the Utility does not notify an Applicant whether an Application is approved or denied	(4) If a public utility does not notify a Level 1 applicant in writing or by electronic mail whether the interconnection is approved or denied within 20 business days after the receipt of an application, the interconnection will be deemed approved. Interconnections approved under this section remain subject to section 7 below.

		in writing within twenty (20) Business Days after notification of the Level 1 review results, the Interconnection Agreement signed by the Applicant as part of the Level 1 Application shall be deemed effective.	
Inspection Timelines		III.A.7. Within ten (10) Business Days of receiving the notice of the anticipated start date of the Generating Facility, the Utility may conduct an inspection of the Generating Facility at a time mutually agreeable to the Parties. If the Generating Facility passes the inspection, the Utility shall provide written notice of the passage within three (3) Business Days. If a Generating Facility initially fails a Utility inspection, the Utility shall offer to redo the inspection at the Applicant's expense at a time mutually agreeable to the Parties. If the Utility determines that the Generating Facility fails the inspection, the Utility must provide the Applicant with a written explanation detailing the reasons for the failure and any standards violated. If the Utility determines no inspection is necessary, it shall notify the Applicant within three (3) Business Days of receiving the notice of the anticipated start date.	*Do the rules include a requirement for utility to schedule the inspection on a specific timeline?*

	(5) If a small generator facility is not approved under the Tier 1 interconnection review procedure, then the applicant may submit a new application under the Tier 2, Tier 3, or Tier 4 review procedures. At the applicant's request, the public utility must provide a written explanation of the reasons for denial within five business days of the request. *Consider providing written information on any screen failure to all projects. See recommendations from the Energy Storage Interconnection Toolkit.*	III.A.4. Screens failure: Despite the failure of one or more screens, the Utility, at its sole option, may approve the interconnection provided such approval is consistent with safety and reliability. If the Utility cannot determine that the Generating Facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the Utility shall provide the Applicant with specific information on the reason(s) for failure in writing. In addition, the Utility shall allow the Applicant to select one of the following, at the Applicant's option: a. Undergo Supplemental Review in accordance with Section III.D; or b. Continue evaluating the Application under Level 4, Section III.F. The Applicant must notify the Utility of its selection within ten (10) Business Days or the Application will be deemed withdrawn.	(8) If an application for Level 1 interconnection review is denied because it does not meet one or more of the applicable requirements in this section, an applicant may resubmit the application under the Level 2 or Level 3 interconnection review procedure, as appropriate. *Consider providing written information on any screen failure to all projects. See recommendations from the Energy Storage Interconnection Toolkit.*

Appendix:
Oregon Level 2 Screens Comparison

Oregon Public Utility Commission

<table>
<tr><td></td><td>OAR 860-082-0050 SGIP</td><td>2019 IREC Model Rules, as modified by the 2022 Toolkit</td><td>OAR 860-039-0035 NEM</td></tr>
<tr><td></td><td>Tier 2 Interconnection Review</td><td>Level 2</td><td>Level 2 Net Metering Interconnection Review</td></tr>
<tr><td rowspan="2">Fast Track Eligibility</td><td>(1)(b) The small generator facility must have a nameplate capacity of two megawatts or less;</td><td>III.B.2.a. Facility Size: Generating Facility’s Export Capacity does not exceed the limits identified in the table below, which vary according to the voltage of the line at the proposed Point of Interconnection. Generating Facilities located within 2.5 miles of a substation and on a main distribution line with minimum 600-amp capacity are eligible for Level 2 interconnection under higher thresholds.
<table>
<tr><th>Line Capacity</th><th colspan="2">Level 2 Eligibility</th></tr>
<tr><th></th><th>Regardless of location</th><th>On ≥ 600 amp line and ≤ 2.5 miles from substation</th></tr>
<tr><td>≤ 4 kV</td><td>< 1 MW</td><td>< 2 MW</td></tr>
<tr><td>5 kV – 14 kV</td><td>< 2 MW</td><td>< 3 MW</td></tr>
<tr><td>15 kV – 30 kV</td><td>< 3 MW</td><td>< 4 MW</td></tr>
<tr><td>31 kV – 60 kV</td><td>≤ 4 MW</td><td>≤ 5 MW</td></tr>
</table></td><td>(1)(a) The facility has a capacity of two megawatts or less; and</td></tr>
<tr><td>(1)(d) The small generator facility must not be interconnected to a transmission line</td><td>III.B.2.i. The Generating Facility’s Point of Common Coupling will not be on a transmission line.</td><td>(2)(i) A net metering facility's point of common coupling will not be on a transmission line.</td></tr>
</table>

Penetration Screen	(2)(a) For interconnection of a small generator facility to a radial distribution circuit, the aggregated nameplate capacity on the circuit must not exceed 15 percent of the line section annual peak load as most recently measured at the substation or calculated for the line section	*Since the 2019 IREC Model Rules were published, leading states have switched to using 100% of daytime minimum load, i.e., IL, or a hosting capacity analysis, i.e., CA, instead of 15% of peak load.* *As noted in IREC's July 15 presentation, IREC supports, where the data is available, switching to a 100% of min load threshold. However, the threshold for the Level 1 and Level 2 Penetration Screens would look different than the detailed calculations found in the Supplemental Review Penetration Screen. The Level 1 and Level 2 Penetration Screens are typically designed to fail more projects than the Supplemental Review Penetration Screen. Considering Oregon's current use of substation minimum load data to establish generation limited feeders, IREC requests that the work group have a discussion before designing new Level 1 and Level 2 penetration screens.*	(2)(d) If a net metering facility is to be connected to a radial distribution circuit, the aggregate generation capacity connected to the electric distribution system by non-public utility sources, including the net metering facility, will not exceed 10 percent (or 15 percent for solar electric generation) of the total circuit annual peak load. For the purposes of this subsection, annual peak load will be based on measurements taken over the 12 months previous to the submittal of the application, measured for the circuit at the substation nearest to the net metering facility.

Network Screen	(2)(b) For interconnection of a small generator facility to the load side of spot network protectors, the aggregated nameplate capacity on the load side of the spot network protectors must not exceed the lesser of five percent of a spot network's maximum load or 50 kilowatts. *Note: Only projects on "a spot network distribution circuit limited to serving one customer" are eligible. (1)(c).* *Consider standardizing to allow any projects on a network to use OR NEM or OR SGIP Level 1 and Level 2.*	III.B.2.j. For interconnection of a Generating Facility within a Spot Network or Area Network, the Generating Facility must be inverter-based and use a minimum import relay or other protective scheme that will ensure that power imported from the Utility to the network will, during normal Utility operations, remain above one percent of the network's maximum load over the past year or will remain above a point reasonably set by the Utility in good faith. At the Utility's discretion, the requirement for minimum import relays or other protective schemes may be waived. *Note: Any project on a network eligible in 2019 IREC Model, FERC SGIP, and Oregon NEM.*	(2)(j) If a net metering facility's proposed point of common coupling is on a spot or area network, the interconnection will meet the following additional requirements: (A) For a net metering facility that will be connected to a spot network circuit, the aggregate generation capacity connected to that spot network from the net metering facilities, and any generating facilities, will not exceed five percent of the spot network's maximum load; (B) For a net metering facility that utilizes inverter-based protective functions, which will be connected to an area network, the net metering facility, combined with any other generating facilities on the load side of network protective devices, will not exceed 10 percent of the minimum annual load on the network, or 500 kilowatts, whichever is less. For the purposes of this paragraph, the percent of minimum load for solar electric generation net metering facility will be calculated based on the minimum load occurring during an off-peak daylight period; and (C) For a net metering facility that will be connected to a spot or an area network that does not utilize inverter-based protective functions, or for an inverter-based net metering facility that does not meet the requirements of paragraphs (A) or (B) of this subsection, the net metering facility will utilize low forward power relays or other protection devices that ensure no export of power from the net metering facility, including inadvertent export (under fault conditions) that could adversely affect protective devices on the network.

Fault Current Screen	(2)(c) The aggregated nameplate capacity must not contribute more than 10 percent to the distribution circuit's maximum fault current at the point on the primary voltage distribution line nearest the point of interconnection.	III.B.2.c. The Generating Facility, aggregated with other generation on the distribution circuit, will not contribute more than 10 percent to the distribution circuit's maximum Fault Current at the point on the high-voltage (primary) level nearest the proposed Point of Common Coupling.	(2)(c) The aggregate generation capacity connected to the distribution circuit, including the net metering facility, will not contribute more than 10 percent to the distribution circuit's maximum fault current at the point on the high voltage (primary) level nearest the proposed point of common coupling.
Short-Circuit Interrupting Capability Screen	(2)(d) The aggregated nameplate capacity on the distribution circuit must not cause any distribution protective devices and equipment (including substation breakers, fuse cutouts, and line reclosers) or other public utility equipment on the transmission or distribution system to be exposed to fault currents exceeding 90 percent of the short circuit interrupting capability. The small generator facility's point of interconnection must not be located on a circuit that already exceeds 90 percent of the short circuit interrupting capability.	III.B.2.d. The Generating Facility, aggregated with other generation on the distribution circuit, will not cause any distribution protective devices and equipment (including but not limited to substation breakers, fuse cutouts, and line reclosers), or Utility customer equipment on the system, to exceed 90 percent of the short circuit interrupting capability; nor is the interconnection proposed for a circuit that already exceeds 90 percent of the short circuit interrupting capability.	(2)(a) The aggregate generation capacity on the distribution circuit to which the net metering facility will interconnect, including the capacity of the net metering facility, will not cause any distribution protective equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or customer equipment on the electric distribution system, to exceed 90 percent of the short circuit interrupting capability of the equipment. In addition, a net metering facility will not be connected to a circuit that already exceeds 90 percent of the short circuit interrupting capability, prior to interconnection of the facility.

Transient Stability Screen	(2)(e) The aggregated nameplate capacity on the distribution side of a substation transformer feeding the circuit where the small generator facility proposes to interconnect must not exceed 10 megawatts 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).	III.B.2.h. The Generating Facility's Nameplate Rating, in aggregate with other generation interconnected to the distribution low-voltage side of the substation transformer feeding the distribution circuit where the Generating Facility proposes to interconnect, will not exceed 10 MW in an area where there are known or posted transient stability limitations to generating units located in the general electrical vicinity (e.g., three or four transmission voltage level busses from the Point of Common Coupling), or the proposed Generating Facility shall not have interdependencies, known to the Utility, with earlier-queued Interconnection Requests, that would necessitate further study.	(2)(b) If there are posted transient stability limits to generating units located in the general electrical vicinity of the proposed point of common coupling, including, but not limited to within three or four transmission voltage level busses, the aggregate generation capacity, including the net metering facility, connected to the distribution low voltage side of the substation transformer feeding the distribution circuit containing the point of common coupling will not exceed 10 megawatts.

<table>
<tr>
<td>Line Configuration Screen</td>
<td>(2)(f) If the small generator facility interconnection is to a primary line on the distribution system, then the interconnection must meet the following criteria:

(A) If the small generator facility is three-phase or single-phase and will be connected to a three-phase, three-wire primary line, then the small generator facility must be connected phase-to-phase.

(B) If the small generator facility is three-phase or single-phase and will be connected to a three-phase, four-wire primary line, then the small generator facility must be connected line-to-neutral and effectively grounded.</td>
<td>The latest national model for this screen is found in the Toolkit and Guidance for the Interconnection of Energy Storage and Solar-Plus-Storage at pp. 132-135, as shown below:

Using the table below, determine the type of interconnection to a primary distribution line. This screen includes a review of the type of electrical service provided to the Project, including line configuration and the transformer connection to limit the potential for creating over-voltages on the Interconnecting Utility's electric power system due to a loss of ground during the operating time of any anti-islanding function.

<table>
<tr><th>Primary Distribution Line Type</th><th>Type of Interconnection to Primary Distribution Line</th><th>Result/Criteria</th></tr>
<tr><td>Three-phase, three-wire</td><td>If ungrounded on primary or any type on secondary</td><td>Pass screen</td></tr>
<tr><td>Three-phase, four-wire</td><td>Single-phase line-to-neutral</td><td>Pass screen</td></tr>
<tr><td>Three-phase, four-wire or mixed three-wire and</td><td>All others</td><td>Pass screen for inverter-based generation if the aggregate Nameplate Rating, including the Nameplate Rating of the proposed Project, is
• ≤ 100% feeder or line section minimum load,</td></tr>
</table>
</td>
<td>(2)(e) If a net metering facility is to be connected to three-phase, three wire primary public utility distribution lines, a three-phase or single-phase generator will be connected phase-to-phase.

(2)(f) If a net metering facility is to be connected to three-phase, four wire primary public utility distribution lines, a three-phase or single-phase generator will be connected line-to-neutral and will be effectively grounded.</td>
</tr>
</table>

		four-wire		or • if minimum load data is not available: ≤ 30% feeder or line section peak load. Pass screen for rotating generation if the aggregate Nameplate Rating, including the Nameplate Rating of the proposed Project, is: • ≤ 33% of feeder or line section minimum load, or • if minimum load data isn't available: ≤ 10% of feeder or line section peak load.	
Single-Phase Shared 2ndry	(2)(g) For interconnection of a small generator facility to a single-phase shared service line on the transmission or distribution system, the aggregated nameplate capacity on the shared secondary line must not exceed 20 kilowatts.			III.B.2.f. If the Generating Facility is to be interconnected on a single-phase shared secondary, then the aggregate Export Capacity on the shared secondary, including the Generating Facility's Export Capacity, will not exceed 65 percent of the transformer nameplate power rating. *Consider using the 65% threshold instead of 20 kW. Consider using Export Capacity instead of Nameplate Rating..*	(2)(g) If a net metering facility is to be connected to a single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the net metering facility, will not exceed 20 kilovolt-amps.

Service Imbalance Screen	(2)(h) For interconnection of a single-phase small generator facility to the center tap neutral of a 240-volt service line, the addition of the small generator facility must not create a current imbalance between the two sides of the 240-volt service line of more than 20 percent of the nameplate rating of the service transformer.	III.B.2.g. If the Generating Facility is single-phase and is to be interconnected on a transformer center tap neutral of a 240-volt service, its addition will not create an imbalance between the two sides of the 240-volt service of more than 20 percent of nameplate rating of the service transformer.	(2)(h) If a net metering facility is single-phase and is to be connected to a transformer center tap neutral of a 240 volt service, the addition of the net metering facility will not create a current imbalance between the two sides of the 240 volt service that is greater than 20 percent of the nameplate rating of the service transformer.
	(2)(i) Except as provided in subsection (2)(l), the interconnection of the small generator facility must not require system upgrades or interconnection facilities different from or in addition to the applicant's proposed interconnection equipment.		
	(2)(j) The aggregated nameplate capacity, in combination with exi[s]ting transmission loads, must not cause the transmission system circuit directly connected to the distribution circuit where the small generator facility interconnection is proposed to exceed its design capacity.		

	(2)(k) If the public utility's distribution circuit uses high speed reclosing with less than two seconds of interruption, then the small generator facility must not be a synchronous machine. If the small generator facility is a synchronous machine, then the applicant must submit a Tier 4 application.		

Inadvertent Export Screen		For interconnection of a proposed DER that can introduce Inadvertent Export, where the Nameplate Rating minus the Export Capacity is greater than 250 kW, the following Inadvertent Export screen is required. With a power change equal to the Nameplate Rating minus the Export Capacity, the change in voltage at the point on the medium voltage (primary) level nearest the Point of Interconnection does not exceed 3%. Voltage change will be estimated applying the following formula: $$\frac{(\mathbf{R_{SOURCE}} \times \Delta\mathbf{P}) - (\mathbf{X_{SOURCE}} \times \Delta\mathbf{Q})}{\mathbf{V^2}}$$ Where: $$\Delta\mathbf{P} = (\textbf{DER apparent power Nameplate Rating} - \textbf{Export Capacity}) \times \mathbf{PF},$$ $$\Delta\mathbf{Q} = (\textbf{DER apparent power Nameplate Rating} - \textbf{Export Capacity}) \times \sqrt{(\mathbf{1} - \mathbf{PF^2})},$$ $\mathbf{R_{SOURCE}}$ **is the grid resistance,** $\mathbf{X_{SOURCE}}$ **is the** $\mathbf{V}$ **is the grid voltage,** $\mathbf{PF}$ **is the power factor**	