



UM 2111

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

2-15-2023



Agenda



Item	Schedule	Time
Welcome – Process Update – Meeting Notes Correction	9:00	15 min
Interconnection Trade Associations – Proposal: Interconnection Handbooks	9:15	15 min
Joint Utility Redline Presentation	9:30	60 min
Break	10:30	10 min
Joint Utility Redline Presentation	10:40	50 min
Fast-Track Screen Reports	11:30	20 min
Next Steps	11:50	10 min
Adjourn	12:00	

Process Update



Description	Event Date	Workshop Topic
Workshop 11	February 15, 2023	Joint Utilities present redlines Fast-track Screen Reports Remaining issues
Workshop 12	March 15, 2023	Staff proposal presented
Workshop 13	March 28, 2023	TBD – Staff intends to open a rulemaking in the second quarter of 2023. Final approach is not yet determined.
Additional Workshops	TBD	TBD

Remaining scheduled workshops, will add additional ones as needed.

Correction – Meeting Summary



January 17 meeting notes

- Under heading “Penetration Screen in Supplemental Review”:
...IREC expressed a willingness to compromise with a 90% minimum load penetration screen...
- The compromise noted should have referenced the Fast-track screening process, not the Supplemental Review process

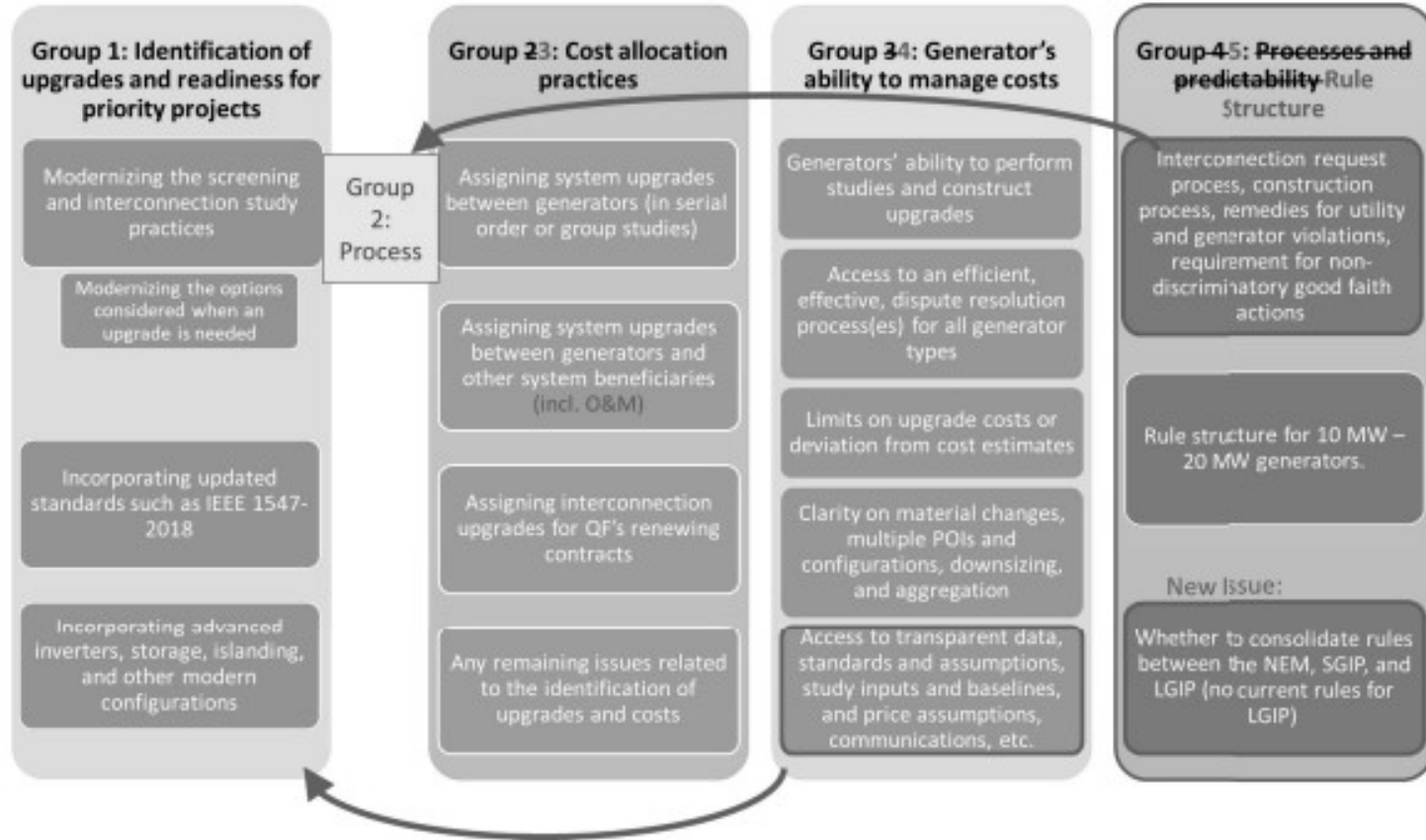
Interconnection Trade Associations – Proposal: Interconnection Handbooks



Joint Utilities' Division 82 Redlines

February 15, 2023

Phase 1 Scope



Scope of Joint Utilities' Redlines

- ▶ Joint Utilities focused on Group 1 issues discussed to date:
 - implementing IEEE 1547-2018,
 - modernizing the Tier 1 and Tier 2 screening procedures and methodologies,
 - export control, and
 - supplemental review
- ▶ Joint Utilities do not support implementing changes to interconnection process (timelines, application requirements, etc.) at this stage—the interconnection process should be reviewed holistically at a later stage in the docket.
- ▶ The Joint Utilities oppose making any changes to Tier 4 at this juncture because we are concerned that doing so will be complicated and delay implementation of the other Group 1 changes, the discussion of which is mostly complete.

Caveats

- ▶ Due to the timing of receiving IREC's additional redlines, the Joint Utilities provided initial responses but might not have identified all questions and concerns.
- ▶ Once we receive direction as to whether the Divisions 39 and 82 interconnection rules will be combined now, we will need to review both sets of rules to ensure there are not unintended consequences.
 - Our redlines flag a couple of places where the current rules differ, and we will need to consider the correct approach if they will be combined.
- ▶ After we have a full set of draft rules, we will need to review the definitions to ensure that we are not deleting definitions that are still used and that adding new definitions does not cause problems.
- ▶ We understand the export control and supplemental review documents will be translated into rules, and we will need to carefully review the draft rule language.

Tier 1 Screens

- ▶ Tier 1 projects should not be permitted to interconnect to a network, and the network screen can be removed.
 - The current Level 1 NEM rules do not allow interconnection to a network.
 - This prohibition is absent from the current Tier 1 rules. That has not been a significant issue to-date because there are so few Tier 1 projects, but it must be added if the rules will be combined.
 - Projects on network systems need to be studied to ensure safety and reliability.
- ▶ Substation Transformer Backfeed Screen: “Where existing protective devices and equipment cannot adequately support backfeed, the aggregated export capacity on the substation transformer must be less than 80 percent of the relevant minimum load for the substation transformer.”
 - The protection concern for Ground Fault Overvoltage (GFO, aka 3V0 damaging overvoltage) on the high side of the substation transformer starts at 70-80% according to IEEE 1547.2-2023.

Tier 1 Screens (Cont'd)

- ▶ Penetration Screen: The Joint Utilities are comfortable with the Penetration Screen as reflected in IREC's redlines (90% of minimum load) and believe this is a change that could help more projects interconnect.
- ▶ Single-Phase Shared Secondary Screen: "For interconnection of a DER to a single-phase shared secondary line, the aggregated export capacity on the shared secondary must not exceed 65 percent of the transformer nameplate power rating."
 - The Joint Utilities believe these revisions could help more projects interconnect.
 - The Joint Utilities support use of 65% because it accounts for the wide range of transformer sizes. 20kW does not make sense for very small (e.g., 15 kVA) transformers.
 - The Joint Utilities understand that they will not be required to immediately use export capacity for all existing projects, which would be extremely burdensome.

Tier 2 Screens

- ▶ The Joint Utilities revised the eligibility criteria so that the table applies to inverter-based DERs only (consistent with the FERC SGIP) and the existing 2-MW limit is retained for non-inverter-based generators.
 - We are willing to agree with IREC's proposal to use the table even though we are concerned that many generators eligible under the table will not pass the Tier 2 screens.
- ▶ Substation Backfeed Screen, Penetration Screen & Single-Phase Shared Secondary Screen: same recommendations and comments as Tier 1.
- ▶ Line Configuration Screen
 - The Joint Utilities propose retaining the existing rule language and oppose IREC's proposed table.
 - The Joint Utilities are not comfortable with the third row of the table because it would allow customer transformer configurations that could cause problems, such as ground fault overvoltage, on the distribution system. If a customer fails only this screen, the utility could review the transformer configuration to determine whether the utility can nevertheless approve the application.
- ▶ Network Screen
- ▶ Inadvertent Export Screen

IEEE 1547-2018 Implementation

- ▶ The Joint Utilities are comfortable with IREC's changes to the "IEEE 1547" and "IEEE 1547.1" definitions.
- ▶ We propose deleting references to specific subsections of IEEE 1547 in other definitions to make them easier to update in the future.
- ▶ Minor Equipment Modification: need to better understand what IREC intends with their new edits.
- ▶ The Joint Utilities oppose the separate RPA review process reflected in IREC's redlines, both because this type of process change is outside the scope of Phase 1 and because having a separate process to review RPA is unnecessary, confusing, and burdensome.

IEEE 1547-2018 Implementation (Cont'd)

- ▶ Effective date: The Joint Utilities still support July 2023 and do not currently believe it is necessary to push the effective date back to Jan. 1, 2024.
- ▶ The Joint Utilities oppose adding a new requirement that the Commission review and approve their handbooks.
 - These are not the types of documents the Commission typically reviews and approves.
 - Adding a new review and approval requirement would likely be burdensome for the Commission, Staff, and stakeholders.
 - A separate approval process would potentially be duplicative given that much of what is set forth in handbooks derives from regulatory proceedings or is otherwise based on regulatory or legal requirements, industry standards, or technical parameters.

Export Control

- ▶ The Joint Utilities continue to support their August 26, 2022 revisions and may identify additional revisions when they review draft export control rules.
- ▶ The Joint Utilities identified one additional edit to 4.3.1 Certified Power Control Systems:
 - “DER may use certified power control systems to limit export. DER utilizing this option must use a power control system and inverter certified per UL 1741 by a nationally recognized testing laboratory (NRTL) with a maximum open loop response time of no more than 30 seconds to limit Inadvertent Export. ~~NRTL testing to the UL Power Control System Certification Requirement Decision shall be accepted until similar test procedures for power control systems are included in a standard.~~ This option is not available for interconnections to area networks or spot networks.”
 - The Joint Utilities propose deleting one sentence so that power control systems either must be certified by UL 1741 or agreed upon by the utility under 4.3.2 “Agreed-Upon Means.”

Supplemental Review

- ▶ The Joint Utilities continue to support their August 26, 2022 revisions and may identify additional revisions when they review supplemental review draft rules.
- ▶ The Joint Utilities continue to oppose use of 100% in the penetration screen because it includes zero margin to allow for a decrease in minimum load.

Thank you!

Fast Track Screen Reports



- Principles
 - Transparency
 - Efficiency
- Require reporting of results of all fast-track screens

Next Steps



- Staff to post meeting summary notes, and potential questions
- Staff proposal scheduled for March 15
- Continued collaboration amongst parties
- Open rulemaking in second quarter 2023

Save the Dates



Workshop 12

- Date: March 15, 2023
- 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 13

- Date: March 28, 2023
- 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

Interconnection Trade Associations – Proposal: Interconnection Handbooks



Recommendation of the Interconnection Trade Associations in UM 2111

On January 31, 2023, the Interstate Renewable Energy Council (“IREC”) circulated a redline of the Small Generator Interconnection Rules (OAR 860-082) to stakeholders. The Renewable Energy Coalition (the “Coalition”), Oregon Solar + Storage Industries Association (“OSSIA”), and the Community Renewable Energy Association (“CREA”) (collectively the “Interconnection Trade Associations”) reviewed the proposal and have a few discrete comments on proposed rule OAR 860-082-0030(1)(b) related to interconnection handbooks.

In this document, the Interconnection Trade Associations are not taking positions on other provisions of the proposed rule OAR 860-082-0030(1)(b) but may individually or as a group take a position on some of the other aspects of the rules now or in the formal phase. The Interconnection Trade Associations recommend that the utilities should not be allowed to require any interconnection upgrade to bring the distribution system to an operation standard that is not in their respective interconnection handbook unless the upgrade relates to safety, reliability, or an adverse system impact. In addition, the Interconnection Trade Associations believe there should be a process for projects and developers to suggest updates to interconnection handbooks and requirements that reflect new technical methods or approaches to interconnection design that are employed by other utilities interconnecting similar types of projects in the region. In addition, any interconnection requirement that is not identified in the Oregon rules or their current interconnection handbooks would need to be updated through changes to their interconnection handbooks or Oregon rules, whichever is applicable.

The Interconnection Trade Associations recommend a process for any updates to the interconnection handbook. The utilities would conduct a notice and comment process with their updated interconnection handbooks. The utilities would be required to file the updated interconnection handbook with the Oregon Public Utility Commission (“Commission”), publicly post the proposed changes and the date for submission of comments, and provide actual notice to all interconnection customers or applicants. The Interconnection Trade Associations recommend 60 days. After the 60 days, if no interested party has challenged the updated interconnection handbook, then the utility would be allowed to make the changes to its handbook without a determination on the legality or reasonableness of the requirements. If an interested party did challenge the updated interconnection handbook, then it would go to the Commission for a formal determination on the objections before the utility was allowed to make changes to its interconnection handbook.

These recommended changes will provide more certainty to developers when selecting sites to develop. Currently, developers rely on information from the utilities, including their interconnection handbooks, when making business decisions, including but not limited to the cost and feasibility of projects, selection of land parcels for development, and obtaining financing. If the utility requires an upgrade unrelated to safety, reliability, or adverse system impacts that was not specified in the utility’s handbook, then that can disrupt the developer’s siting choices and add unplanned costs. These recommendations will increase transparency and improve the working relationship between the utilities and the developers.

Appendix



- Joint Utility Redlines

1-31-23 IREC Redline to Oregon Small Generator Interconnection Rules

- [860-082-0005](#) Scope and Applicability
- [860-082-0010](#) Waiver
- [860-082-0015](#) Definitions
- [860-082-0020](#) Pre-Application Process
- [860-082-0025](#) Applications to Interconnect a Small Generator Facility
- [860-082-0030](#) Construction, Operation, Maintenance, and Testing of Small Generator Facilities
- [860-082-0035](#) Cost Responsibility
- [860-082-0040](#) Insurance
- [860-082-0045](#) Tier 1 Interconnection Review
- [860-082-0050](#) Tier 2 Interconnection Review
- [860-082-0055](#) Tier 3 Interconnection Review
- [860-082-0060](#) Tier 4 Interconnection Review
- [860-082-0065](#) Recordkeeping and Reporting Requirements
- [860-082-0070](#) Metering and Monitoring
- [860-082-0075](#) Temporary Disconnection
- [860-082-0080](#) Arbitration of Disputes
- [860-082-0085](#) Complaints for Enforcement

[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). These rules do not apply to the interconnection of a net metering facility to a public utility that meets the requirements of ORS 757.300(9).

(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

Commented [YZ1]: Redlines attributed to ‘Author’ were distributed as IREC’s November 23, 2022 redline; redlines attributed to others are new in this version.

Commented [JU2]: The Joint Utilities have focused their edits on the issues that we believe are within the scope of Phase I and capable of being resolved on the expedited timeline for Phase I. To that end, the Joint Utilities have focused on the rules implementing IEEE 1547-2018 and the Tier 1 and 2 screens. The Joint Utilities have noted disagreement with IREC’s edits in certain places, but the lack of an objection or revision should not be construed as agreement.

Commented [JU3]: This is the carve out for Idaho Power from the existing net metering rules, which must be included here if the rules will be combined.

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 interconnecting 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 interconnecting 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:

Commented [JU4]: The Joint Utilities note that this language will require additional consideration and likely revision if the rules will be combined.

Commented [JU5]: The Joint Utilities continue to have concerns about attempting to combine the rules in this Phase 1 because doing so will require significant effort. At this time, the Joint Utilities have not analyzed the rules to identify all areas where combining will require edits or may have unintended consequences.

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 1547.6-2011, section 4.1.4. An area network is also referred to as a grid network or a street network.~~
- (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, any required witness tests are completed~~, 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

Commented [A6]: 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 [JU7R6]: Rather than revising existing definitions, which could affect rules that are not being revised in Phase 1, the Joint Utilities recommend retaining existing definitions and adding new ones, as necessary, unless we can confirm that the old definition will no longer be needed once these revised rules are adopted. The Joint Utilities have not yet reviewed the rules to determine which definitions need to be retained, and the lack of edit or comment related to a particular revision from IREC should not be construed as agreement.

Commented [MM8]: IEEE 1547-2018 does not define Area networks.

IEEE 1547.6-2011, which is the *IEEE Recommended Practice for Interconnecting Distributed Resources with Electric Power Systems Distribution Secondary Networks*, is the document that defines Grid/Area/Street network.

The right approach would be to use IEEE 1547.6-2011 here.

Commented [JU9R8]: The Joint Utilities felt that it could lead to confusion or disputes to include three synonyms in the definition. We reviewed the IEEE definition of “secondary grid network” to see whether we should add language from that definition to this one, and it did not appear to be substantively different from the “area network” definition in the rules.

Commented [JU10]: The Joint Utilities oppose deleting the inspection requirement. The inspection ensures that the interconnection is safe behind the meter and is a common requirement in other states.

Commented [A11]: 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.

Commented [JU12R11]: As noted above, the Joint Utilities will need to carefully review all the definitions once we have a complete set of draft rule revisions. Also, it would be helpful to understand where these definitions are coming from (e.g., are they used by IEEE? the OPUC? other Commissions or FERC?)

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 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 requirements 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 2018~~03~~ edition of the Institute of Electrical and Electronics Engineers (IEEE) Standard 1547, titled “IEEE Standard for Interconnecting and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces” and approved by the IEEE SA Standards Board on February 15, 2018~~June 12, 2003~~.

(12) “IEEE 1547.1” means the standards published in the 2020~~05~~ edition of the IEEE Standard 1547.1, titled “IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems and Associated Interfaces” and approved by the IEEE SA Standards Board on June 9, 2020~~March 5, 2020~~.

“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

Commented [A13]: 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.

Commented [JU14]: The Joint Utilities are comfortable with these definitions as revised.

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.

(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 ~~DER~~small generator facility or its associated interconnection equipment that:

(a) Includes a change or replacement of equipment that is a like-kind substitution in size, ratings, impedances, efficiencies, or capabilities of the equipment specified in the original interconnection application;

(b) Includes a replacement of existing inverters with new inverters that conform to standards in effect at the time of replacement;

(c) Includes a reduction in the nameplate rating and/or export capacity of the DER of 10 percent or less;

(d) For changes not specified in subsections (a) through (c) of this definition, the change must 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~~

~~(e) 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, apply.

Commented [JU15]: Consider adding the definition of “minor modification,” which is used and defined elsewhere in the rules, to avoid confusion.

Commented [JU16]: The Joint Utilities have not had an opportunity to fully review and consider the implications of this new change, but have identified one initial concern: The utility needs notice and an opportunity to review if a customer is making changes to its facility (even those characterized as minor in this definition), and it is not clear whether the rule as revised would provide that opportunity.

Commented [MM17]: Consistent with other references to IEEE 1547’s definitions, we recommend not including a section number. Note that 3.1.13 is not the current section number.

Commented [JU18R17]: The Joint Utilities agree with deleting the reference to the specific IEEE section and also propose deleting the reference to the definition in the NEM rules, because that definition is no longer used in Division 039, as edited by IREC.

Commented [A19]: 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.

The BTRIES toolkit offers procedures for the review of RPA that can be inserted into interconnection rules. This language is IREC’s default position.

“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.

Commented [A20]: IREC provides a new definition for a term used in the penetration screen.

(30) “Scoping meeting” means an initial meeting between representatives of an applicant and an interconnecting public utility that is conducted to discuss the reference point of applicability; 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.~~

(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, ~~subclause 11.3 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-type test and production-~~DER~~ evaluation according to IEEE 1547, ~~subclause 11.3 sections 5.1 and 5.2~~, as applicable to the specific interconnection equipment used.

Commented [JU21]: The Joint Utilities propose deleting the specific subclause references to make it easier to update the rules for subsequent versions of IEEE 1547 because the definitions may move around within the document. The Joint Utilities do not object to IREC’s other revisions to this definition.

(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 interconnecting 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.

Commented [JU22]: This process change is outside the scope, although it appears to be unobjectionable.

(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.

Commented [JU23]: This process change is outside the scope of Phase 1. Moreover, the Joint Utilities object to this revision for the reasons explained in their Dec. 15, 2022 comments. In brief: This requirement is unlikely to expedite the process and is likely to cause confusion and the potential for disputes.

(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 105 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.

Commented [JU24]: The Joint Utilities object to this process change, which is outside the scope of Phase 1.

(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.

(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) Reference Point of Applicability Review.

(A) For tier 4 applications, the public utility will raise any concerns about the reference point of applicability in the scoping meeting.

(B) For tier 1 through tier 3 applications, the following process will occur concurrently with the screening process in OAR 860-082-0045(2)-(3), OAR 860-082-0050(2)-(3), and OAR 860-082-0055(2)-(3). Within five business days after the public utility notifies an applicant that its application is complete, the public utility shall review the reference point of applicability denoted by the applicant and determine if it is appropriate.

Commented [YZ25]: See BTRIES toolkit section VII.C.I.

(i) If it is determined that the RPA is appropriate the public utility will notify the applicant when it provides screen results and proceed according to OAR 860-082-0045(3)-(4), OAR 860-082-0050(3), and OAR 860-082-0055(3).

(ii) If the public utility determines the RPA is inappropriate, within five business days after the public utility notifies an applicant that its application is complete, the public utility will notify the applicant in writing, including an explanation as to why it requires correction. The applicant shall resubmit the application with the corrected RPA within five business days. During this time the public utility will proceed with evaluating the application according OAR 860-082-0045(2)-(3), OAR 860-082-0050(2)-(3), and OAR 860-082-0055(2)-(3). The public utility shall review the revised application within five business days to determine if the revised RPA has been appropriately denoted. If correct, the public utility will proceed according to subsections OAR 860-082-0045(3)-(8), OAR 860-082-0050(3)-(7), and OAR 860-082-0055(3)-(7). If the applicant does not provide the appropriate RPA or a request for an extension of time within the deadline, the application will be deemed withdrawn.

(ef) Interconnection Agreement. If the proposed interconnection requires no construction of facilities by the public utility, the public utility must provide the applicant an executed interconnection agreement no later than five business days after the applicant options meeting, providing supplemental review screen results, or completing the last tier 4 study the date of approval of an interconnection application. If the public utility approves the proposed interconnection despite screen failure or at the applicant options meeting, the public utility must provide the applicant an executed interconnection agreement, along with a non-binding good faith cost estimate and construction schedule for any required upgrades, within fifteen 15 business days of approval despite screen failure or the applicant options meeting. The interconnection agreement must follow the standard form agreement developed by the public utility and approved by the Commission. ~~The~~ If the applicant does not ~~must~~ return an ~~executed~~ countersigned interconnection agreement to the public utility or request negotiation of a non-standard interconnection agreement within 15 business days of receipt of an executed interconnection agreement, ~~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.

(fg) 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 receipt of the certificate of completion.

(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 within three business days of receipt of the certificate of completion.

Commented [JU26]: The Joint Utilities oppose this process for the reasons explained in their Nov. 11, 2022 comments. In brief: a separate, expedited process and timelines for review of RPA is unnecessary, confusing, and burdensome.

More importantly, according to Staff's scope and process for UM 2111, which the Commission adopted in Order No. 22-126, process proposals belong in Phase 2—not in Phase 1, which is focused on methodology.

Commented [YZ27]: See IREC Model Sec. III.F.6.a and FERC SGIP Sec. 2.2.2, 2.2.3, 3.3.4, 3.5.7.

Commented [YZ28]: These changes clarify that this section would not apply to Tier 1 project where the IA was signed and submitted at the same time as the application.

Commented [JU29]: As explained in the comment above, the Joint Utilities oppose consideration of process changes in Phase 1 (and substantively object to at least some of these revisions).

Commented [YZ30]: See FERC SGIP Attachment 5, 6.0: "The Company is obligated to complete this witness test within ten Business Days of the receipt of the Certificate of Completion."

Commented [YZ31]: See IREC Model Rules III.A.8: "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."

(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 receipt of the certificate of completion 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 successful, then the public utility must provide the countersigned certificate of completion within three business days.

~~(E)~~ 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 or at a mutually agreeable time, then the application is deemed withdrawn.

~~(H)~~ 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) IEEE 1547. 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. For purposes of OAR 860-082-0030, capitalized terms not otherwise defined in Division 082 have the meaning set forth in IEEE 1547-2018.

~~(a)~~ Applications to interconnect new DERs submitted on or after July ~~January~~ 1, 2023~~4~~, or a later date set by Commission order, shall comply with IEEE 1547-2018. Applications submitted before January 1, 2024 that are reviewed under Tier 4 or supplemental review may, but are not required to, comply with IEEE 1547-2018. DERs compliant with IEEE 1547-2018 shall conform with the following minimum requirements:

(A) Abnormal performance requirements: Category III Ride-Through capabilities must be supported for inverter-based DERs. Rotating DERs must meet Category I Ride-Through capabilities, at minimum.

Commented [YZ32]: See IREC Model Rules III.A.8: "If the Generating Facility passes the inspection, the Utility shall provide written notice of the passage within three (3) Business Days."

Commented [JU33]: As explained in the comments above, the Joint Utilities oppose consideration of process changes in Phase 1 (and substantively object to at least some of these revisions). Rather than making piecemeal process changes, Staff and stakeholders should examine the process holistically to determine where changes are needed.

Commented [JU34]: This section introduces many terms that are not defined in the rules.

Commented [YZ35]: IREC proposes to put the 1547-2018 requirements in this section of the rule. The language in this section is driven by the Matrix utilized in the workshops.

Commented [MM36]: IREC proposes a January 1st, 2024 to mandate 1547-2018. At one point during the workshops, Staff had proposed a July 1st date, IREC is OK with that July date. However, Labs are currently running behind on certifications, so sliding the July date to January next year may make more sense.

As of the first week of Jan 2023, approximately 30% of inverters have been certified to IEEE 1547-2018.

Commented [JU37R36]: The Joint Utilities still support the July date or could support more flexible language like 30-60 days after the adoption of the rule revisions or as otherwise ordered by the Commission.

(B) Normal performance requirements: Inverter-based DERs must meet reactive power requirements of IEEE 1547-2018 Category B. Rotating DERs must meet Category A, and may meet Category B.

(C) Inverter-based interconnection equipment shall be tested to and certified as being compliant with UL 1741 Third Edition, Supplement SB, by a Nationally Recognized Test Laboratory (NRTL). Equipment that is not certified by a NRTL may require additional evaluation and commissioning testing to confirm compliance with IEEE 1547-2018.

(b) Interconnection requirements handbook. Each public utility shall post an interconnection requirements handbook on its public website. Interconnection requirements handbooks shall be filed with the commission for public notice and comment, Energy Trust of Oregon comment, and commission approval by September 1, 2023. Subsequent changes to interconnection requirements handbooks shall also be filed with the commission for public notice and comment, Energy Trust of Oregon comment, and commission approval.

(c) Preferred default settings. A public utility shall allow DERs to interconnect using preferred default settings, except when the application reviewed under Tier 4, OAR 860-082-0060, or the application fails the Tier 1, Tier 2, or Tier 3 approval criteria in OAR 860-082-0045(2), OAR 860-082-0050(2), or OAR 860-082-0055(2). Interconnection requirements handbooks shall include preferred default settings. For DERs compliant with IEEE 1547-2018 before July 1, 2023, these settings shall be determined by mutual agreement between the public utility and applicant. As applicable, the following shall be identified in the interconnection requirements handbook:

(A) Voltage and frequency trip settings;

(B) Frequency droop settings;

(C) Activated reactive power control function and default settings;

(D) Voltage active power (volt-watt) mode activation and default settings; and

(E) Communication protocols and ports requirements.

(2) Within 24 months from an applicant's execution of an interconnection agreement or six months of completion of any upgrades, whichever is later, the applicant shall commence operation of an approved small generating facility. However, the applicant and public utility may mutually agree to an extension of this time if warranted, which shall not be unreasonably withheld. 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 [YZ38]: We use "interconnection requirements handbook" here because that seems appropriate based on the discussions in the workshops and the title of the documents currently used PGN and PAC. Other possible names include: "Technical Interconnection and Interoperability Requirements (TIIR)" or "Technical Service Manual (TSM)". IREC is indifferent to the name used.

Commented [MM39]: The Commission should require that each utility submit its manual to the Commission for approval, after opportunity for public comment and review. While IREC does not anticipate that the utility's chosen settings will necessarily be controversial, these settings can meaningfully impact DER production and deployment and the Commission should exercise its authority to approve or disapprove the selected settings. Should the handbook requirements need to be updated in the future, the Commission should also require that utilities submit any subsequent changes for Commission approval.

As an Example:

In MN, the Commission thus required each utility to first make their initial handbook available to the existing distributed generation working group a month prior to filing it with the Commission. It then allowed parties to file objections within 30 days that clearly identified "the challenged provisions, the basis for the objection, and a preferred alternative approach where possible." If no objections are received, the handbooks automatically go into effect 30 days after filing. If objections are filed, the Commission will make a formal determination on the objections before allowing the handbooks to go into effect.

Commented [JU40R39]: As discussed in their Nov. 11, 2022 and Dec. 19, 2022 comments, the Joint Utilities are willing to post handbooks and any updates for public comment (similar to OATT business practices) but oppose requiring Commission approval of handbooks and any updates to them. These are not the types of documents the Commission typically reviews and approves. Adding a new review and approval requirement would likely be burdensome for the Commission, Staff, and stakeholders, and would potentially be duplicative given that much of what is set forth derives from regulatory proceedings or is ...

Commented [YZ41]: This allows the use of non-default settings when an application is approved despite screen failure, in supplemental review, or in tier 4. If a project passes fast track, use of default settings is required.

Commented [YZ42]: See IREC Model III.B.6, III.F.6.b.

Commented [JU43]: Joint Utilities oppose this change as outside the scope of Phase 1.

Commented [A44]: 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.

Commented [JU45R44]: Joint Utilities oppose this change as outside the scope of Phase 1. Moreover, this change will require additional consideration if the rules are being combined.

(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 interconnecting 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 interconnecting 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 interconnecting 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 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. The applicant must pay any study costs that exceed the deposit without interest within 30 calendar days on receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced fees, the public utility shall refund such excess within 30 calendar days of the invoice without interest.

Commented [A46]: IREC clarifies that this is not the process for supplemental review.

Commented [YZ47]: Based on language from FERC SGIP System Impact Study Agreement (Attachment 7, 12.0) & IREC Model Rules Interconnection Facilities Study (Agreement Attachment 7, B.8).

Commented [JU48]: Joint Utilities oppose this change as outside the scope of Phase 1.

(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. Within 60 calendar days of completing the construction and installation of the interconnection facilities or system upgrades, the public utility shall provide the applicant with a final accounting report of any difference between (1) the actual cost incurred to complete the construction and installation and the budget estimate provided to the applicant and (2) the applicant's previous deposit and aggregate payments to the public utility for such interconnection facilities or system upgrades. The public utility shall provide a written explanation for any actual cost exceeding a budget estimate by 25 percent or more. If the applicant's cost responsibility exceeds its previous deposit and aggregate payments, the public utility shall invoice the applicant for the amount due and the applicant shall make payment to the public utility within 30 calendar days. 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.

Commented [YZ49]: Based on IREC Model Rules IA Agreement (Attachment 5, 5.1.2).

Commented [JU50R49]: Joint Utilities oppose this change as outside the scope of Phase 1.

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 facilityDER 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~~
- (be) ~~The small generator facilityDER must not be interconnected to a transmission line, a spot network, or an area network.~~

(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 facilityDER 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 facilityDER interconnection must use existing public utility facilities.

(b) Substation transformer backfeed screen. Where existing protective devices and equipment cannot adequately support backfeed, the aggregated export capacity on the substation transformer must be less than 8099 percent of the relevant minimum load for the substation transformer.

(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 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.

(ed) 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:

Commented [JU51]: This requirement currently exists for Level 1 NEM projects. Projects on network systems need to be studied to ensure safety and reliability. Although this concern hasn't arisen in the Division 82 rules previously because there are so few Tier 1 projects, this is an important change to maintain safety and reliability--especially if the rules are being combined.

Commented [A52]: 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.

Commented [YZ53R52]: IREC provides this proposal as a compromise to avoid reopening the dispute concerning limited generation feeders. If we cannot reach agreement and the IOUs propose using a lower threshold than was provided in UM2099, IREC reserves the right to oppose any substation backfeed screen in the rulemaking.

Commented [JU54R52]: The Joint Utilities support this language as-revised. As discussed in workshops, the protection concern for Ground Fault Overvoltage (GFO, aka 3V0 damaging overvoltage) on the high side of the substation transformer starts at 70-80% according to IEEE 1547.2-2023.

Commented [A55]: 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.

Commented [YZ56R55]: If we can't reach agreement, IREC will propose that Oregon follow the lead of several other states that use a simplified 100% of minimum load screen in the fast track process.

Commented [JU57R55]: The Joint Utilities support revising this screen and the use of 90% and believe that the revisions could help more projects interconnect.

Commented [JU58]: The Joint Utilities deleted the Network Screen because it is unnecessary in light of the Joint Utilities' revision above making clear that Tier 1 projects may not interconnect to a network.

(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.

(de) **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.**

(ef) **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, **and if a net metering facility OAR 860-039**, 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 **745** business days from the date a Tier 1 interconnection application is deemed complete. **If a public utility does not notify an applicant whether the interconnection is approved or denied within 20 business days after the receipt of an application, the interconnection will be deemed approved.**

(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 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.**

Commented [JU59]: The Joint Utilities support revising this screen as proposed by the Joint Utilities and believe that the revisions could help more projects interconnect.

Commented [JU60]: The Joint Utilities support this change to export capacity on a forward-looking basis, with the understanding that the utilities are not required to immediately use export capacity for all existing projects, which would be extremely burdensome (as explained in the JUs' Dec. 15, 2022 comments and discussed in workshops).

Commented [JU61]: The Joint Utilities support use of 65% because it accounts for the wide range of transformer sizes. 20kW does not make sense for very small transformers, and Idaho Power has many 15kV transformers in service.

Commented [JU62]: The Joint Utilities oppose consideration of these process changes in Phase 1. And for the reasons explained in their Dec. 15, 2022 comments, the Joint Utilities oppose expediting the timelines, which are already challenging to meet.

Commented [JU63]: The Joint Utilities oppose consideration of these process changes in Phase 1. The Joint Utilities also substantively oppose at least some of the changes in this section.

(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~~

(e) 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

Commented [YZ64]: Change to allow for deemed approval per section (3) above.

Commented [JU65R64]: The Joint Utilities oppose the change above and this change as outside the scope of Phase 1.

(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 [DERsmall generator facility](#) that meets the following requirements:

(a) The [DERsmall generator facility](#) does not qualify for ~~or failed to meet~~ the Tier 1 interconnection review ~~requirements~~;

(b) ~~If the DER is inverter-based, 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 Tier 2 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

Commented [JU66]: The FERC SGIP table that is similar to this one applies only to inverter-based DERs. Synchronous and induction generators are limited to 2 MW for line voltages >5kV. The Joint Utilities propose applying IREC's table to inverter-based generators and retaining the current rules' 2-MW limit for all other generators.

The JUs reiterate their concern expressed in workshops that many generators who are eligible for Tier 2 under this table will not pass the Tier 2 screens, which could lead to frustration and disputes.

Commented [JU67]: Revised language to avoid confusion.

~~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) ~~If the DER is not inverter-based, the DER's export capacity is two megawatts or less;~~

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

~~(de)~~ The [DERsmall generator facility](#) must not ~~be~~ interconnected to a transmission line; and

~~(ee)~~ The [DERsmall 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 facilityDER](#) 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) Substation Transformer Backfeed Screen. Where existing protective devices and equipment cannot adequately support backfeed, the aggregated export capacity on the substation transformer must be less than 8090 percent of the relevant minimum load for the substation transformer.~~

Commented [A68]: See comments to Tier 1 screens (a) and (b)

Commented [JU69R68]: See Joint Utilities' explanatory comments in Tier 1.

~~(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.

(bc) 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.

(ed) 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.

(de) 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.

(ef) 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).

(fg) 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.

Commented [JU70]: The Joint Utilities are still reviewing this screen and have not yet finalized their position.

Commented [JU71]: The Joint Utilities oppose replacing the existing rule with this table, which allows any customers to pass if penetration is low enough. The existing rule should be retained because it prevents any risk of Ground Fault Overvoltage (GFO) on the distribution system (high side of the customer-owned transformer), given three-wire (ungrounded) systems must have a phase-to-phase customer transformer connection and four-wire (grounded) systems must have a line-to-neutral customer transformer connection with effective grounding. If a Tier 2 application simply fails the Line Configuration screen, the utility could review the customer transformer configuration to determine if it meets the utility's standard (like we do for Tier 4 applications). If it meets with approval, the utility could approve the Tier 2 application under OAR 860-082-0050(2)(l) which gives the utility the ability to approve an application even if it fails screening criteria.

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

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.

(gh) 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.

(hi) 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.

Commented [JU72]: The Joint Utilities restored this text that IREC had deleted.

Commented [JU73]: See comment above in Tier 1.

(j) Except as provided in subsection (2)(1), 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 existing 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:~~

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

Where:

$$\Delta P = (\text{DER apparent power Nameplate Rating} - \text{Export Capacity}) \times PF_s$$

$$\Delta Q =$$

$$(\text{DER apparent power Nameplate Rating} - \text{Export Capacity}) \times \sqrt{(1 - PF^2)},$$

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.~~

(3) ~~Timelines.~~ In addition to the timelines and requirements in OAR 860-082-0025, ~~and if a net metering facility OAR 860-039,~~ the following timelines and requirements apply to Tier 2 interconnection reviews:

Commented [JU74]: The Joint Utilities are continuing to review this screen and have not yet finalized their position.

Commented [A75]: moved to (4) below

Commented [JU76]: The Joint Utilities oppose the process changes in this subsection as outside of scope, although the Joint Utilities do not have a substantive objection to the proposal to remove the scoping meeting requirement.

~~(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 the proposed interconnection passes the screens, the public utility shall provide the applicant an executed interconnection agreement at the same time as the screen results. 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 ~~(42)~~(4) 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~~DER must have a nameplate capacity of 10 megawatts or less;
- ~~(e)~~ The ~~small generator facility~~DER must not be connected to a transmission line;
- ~~(d)~~ The ~~small generator facility~~DER must not export power beyond the point of interconnection; and
- ~~(e)~~ The ~~small generator facility~~DER 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~~DER under the Tier 3 interconnection review procedures if the ~~facility~~DER meets the Tier 2 approval criteria in OAR 860 082 0050(2)(a), ~~(b)~~, ~~(i)~~, ~~(j)~~ and the additional

Commented [YZ77]: IREC does not propose substantive modifications to the Tier 3 approval criteria at this time, because we don't expect it will be used much after the export controls section is added. The changes made here are just for consistency with modifications to the Tier 2 screens above.

Commented [JU78R77]: Any concerns raised above in Tier 1 & Tier 2 are incorporated here by reference when IREC proposes the same changes as above.

approval criteria in subsections (a), (b), or (c) of this section. A public utility may not impose different or additional approval criteria.

(a) For a ~~small generator facility~~DER 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~~rating of the ~~small generator facility~~DER must be 50 kilowatts or less;

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

(C) The aggregated nameplate ~~capacity~~rating 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~~DER 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~~DER to interconnect to a distribution circuit that is not networked, the small generator facility must meet the following criteria:

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

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

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

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

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

(F) Except as allowed in subsection (2)(c), 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; 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~~DER must not be a synchronous machine. If the ~~small generator facility~~DER is a synchronous machine, then the applicant must submit a Tier 4 application.

(c) If the ~~small generator facility~~DER fails to meet one or more of the Tier 3 approval requirements, but the public utility determines that the ~~small generator facility~~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 under Tier 3.

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

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

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

~~(c)~~ Provide written notice to the applicant stating whether the public utility approved the application. If the proposed interconnection passes the screens, the public utility shall provide the applicant an executed interconnection agreement at the time as the screen results. 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

(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.**

Commented [A79]: How does PacifiCorp propose to modify this section to incorporate its group study process?

Commented [JU80R79]: The Joint Utilities believe that changes to incorporate cluster study processes are outside the scope of Phase 1 and would require significant time to develop.

Commented [JU81]: The Joint Utilities have not fully reviewed the proposed changes to Tier 4, and note that most of them are process changes and therefore outside the Scope of Phase 1. The Joint Utilities recommend that Staff and stakeholder focus on finalizing the Tier 1-3 revisions and consider any revisions to Tier 4 later in the docket.

(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 send the applicant an executed interconnection agreement ~~approve the application~~ within ~~15~~ 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~~ DER 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~~ 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 send the applicant an executed interconnection agreement ~~approve the application~~ within 15 business days of receipt of the applicant's agreement to pay for the minor modifications.

(6) ~~If the applicant requests 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~~DER. 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 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~~DER does not require system upgrades or interconnection facilities different from or in addition to the applicant's proposed interconnection equipment.

Commented [YZ82]: Timeline in 0025(7)(f).

(B) If the public utility concludes that a facilities study is not required and that the ~~small generator facility~~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 ~~within 15 business days of receipt of the applicant's agreement to pay for the minor modifications.~~

Commented [YZ83]: Timeline in 0025(7)(f).

(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 system impact study shall be completed within 30 business days of the applicant's delivery of the executed system impact study agreement. 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.~~

Commented [YZ84]: See OAR 860-039-0040(4); FERC SGIP Att. 7, 9.0.

(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~~ DER if no modifications to the ~~small generator facility~~ DER 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 ~~when applicable~~, 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~~ DER, 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~~ 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 ~~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.

Commented [YZ85]: Timeline in 0025(7)(f).

Commented [YZ86]: Timeline in 0025(7)(f).

(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 facilities study shall be completed within 45 business days of the applicant's delivery of the executed facilities study agreement. 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.~~

Commented [YZ87]: See IREC Model Section III.F.5.d; FERC SGIP Att. 8 Sec. 7.0 (45 days from signed agreement if upgrades required; 30 days if no upgrades required and required facilities limited to interconnection facilities.)

(e) The facilities study must identify the interconnection facilities and system upgrades required to safely interconnect the ~~small generator facility~~ DER 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.~~

Commented [YZ88]: Timeline in 0025(7)(f).

(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~~DER 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

(1) 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 affect 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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