UM 2111

Scoping Workshop

3-9-2022

Oregon Public Utility Commission

Agenda

- Welcome and Introductions
- Presentations
  - Staff
  - Portland General Electric
  - Interconnection Trade Associations:
    - Community Renewable Energy Association (CREA)
    - Northwest & Intermountain Power Producers Coalition (NIPPC)
    - Renewable Energy Coalition (REC)
  - Oregon Solar + Storage Industries Association (OSSIA)
  - Interstate Renewable Energy Council, Inc. (IREC)
- Discussion
- Next Steps

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Process - Timeline

- Current schedule
- Input from today's discussion will be incorporated in Staff's memo for the April 5 Public Meeting
- Following Public Meeting investigation will proceed

Date	Activity
Feb 11	Release Relaunch Announcement
Feb 24	Comments on Issues, Prioritization, Phase 1 work group process from Stakeholders
March 9	Workshop to discuss issues lists and prioritization
April 5	Public Meeting for Commission to opine on Staff's suggested approach
April →	Work sessions scheduled

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Approach

- Prioritization
  - **Root cause**: Issues that address the root causes of interconnection barriers, complaints, and disputes; Issues that reduce interconnection barriers across multiple state-jurisdictional generator types
  - **Customer and community benefits**: Issues that reduce barriers to projects that provide direct customer and community benefits, including resiliency-focused projects, small-scale projects, and community-based projects; issues that best position utilities to interconnect and help maximize the impact of incentives and grant opportunities.
  - **Decarbonization**: Issues that will help enable smarter, flexible resources that minimize the costs and maximize the benefits of decarbonization, e.g., fossil dispatch offset, grid services, T&D avoidance.

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Approach – Group 1 Issues

Distribution-level ~~"hosting capacity"~~ interconnection study and screening thresholds

Modernizing analytical methods and threshold levels; and

Reasonable technologies to mitigate impacts when thresholds are reached.

Advanced inverters

Incorporate IEEE 1547-2018 and policies needed to incorporate advanced inverters into existing interconnection rules and practices.

Storage and flexibility

Integrate storage, islanding, and other modern configurations more explicitly into interconnection rules, policies, and practices.

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Clarifications

Distribution-level ~~"hosting capacity"~~ interconnection study and screening thresholds

- What is overlap for HCA analysis between UM 2005 and UM 2111?
- What is included in "Modernizing the screening and interconnection study practices"?
- Is "modernizing and right-sizing the upgrade options considered when an upgrade is needed" intended to explore the possibility of undertaking larger than needed upgrades to make room for future interconnections? Or does Staff simply intend to reevaluate the current approach of designing upgrades to produce the minimum incremental capacity required to facilitate the specific interconnection?

Advanced inverters

- What does Staff plan to incorporate, "advanced inverters"? storage, islanding and other modern configurations" into?

Storage and flexibility

- What does Staff plan to incorporate, "storage, islanding and other modern configurations" into?

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Comments

- Generally supportive of Staff approach
- Concerns/clarification of timing
  - If a year per grouping – may need to examine priorities
  - Some issues may be better considered earlier in process
    - Group 4 “Interconnection Process”
    - Commission decision on treatment of NEM customers
- Process
  - Phased approach generally supported
    - Due to overlap issues may appear in multiple phases
  - Workgroup format generally seems appropriate
    - Good format for exchange of information
    - Some issues not best fit for workgroups due to differing opinions
    - May need separate workgroups for highly technical issues

Investor-Owned Utilities

- **PacifiCorp**
- **Portland General Electric**

Trade Association

- **Community Renewable Energy Association (CREA)**
- **Northwest & Intermountain Power Producers Coalition (NIPPC)**
- **Renewable Energy Coalition (REC)**

Interstate Renewable Energy Council, Inc. (IREC)

Oregon Solar + Storage Industries Association (OSSIA)

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Comments cont.

Issues suggested for inclusion in Group 1

- Interconnection Process
- Maintenance of and responsibility for customer quality of service
- Customer's ability to perform interconnection studies
- Customer's option to build interconnection facilities and network upgrades
- Process to challenge cost estimates and provide alternatives
- Treatment of net energy metering in interconnection (stand-alone, part of SGIP)
- Discussion of engineering stamps in order to determine which technologies are appropriate and to ensure objectivity when it comes to interconnection technologies

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Additional Questions

From Staff Scoping Memo

Gauging potential to address questions prior to workshop(s) start:

1. Should net energy metering (NEM) interconnection procedures be covered by small generator interconnection process (SGIP) rules.

2. Should rules for 10 MW – 20 MW Oregon jurisdictional generators be adopted, and if yes should these be included in SGIP, LGIP, or have their own set of rules?

Optional process to relieve resource constraints:

3. While Staff does not have the resources to add issues to the Staff-led process for Group 1, without removing some currently proposed, Staff is open to a stakeholder-led process where parties try to reach agreement on a proposal for interconnection process improvements from Group 4 (e.g., predictability and enforcement of timelines, responsiveness, preventing congestion, remedies for utility and generator violations, good faith actions). Staff would like to gauge interest in this approach to accommodate multiple parties' interest in accelerating consideration of those issues.

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Appendix

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Group 1: Focus on underlying methodologies and ensuring readiness for the types of projects being promoted by state policy (community, resiliency, flexible decarb) • Ensuring rules, policies, and practices for identification of upgrades account for modern technologies and industry best practices including, but not limited to: • Modernizing the screening and interconnection study practices • Incorporating updated standards such as IEEE 1547-2018 • Incorporating advanced inverters, storage, islanding, and other modern configurations • Modernizing and right-sizing the upgrade options considered when an upgrade is needed	**Group 2: Focused on cost allocation practices** **Assigning system upgrades between generators, including use of cluster studies** • Assigning system upgrades between generators and other system beneficiaries (utilities and customers), e.g., more clarity on "reasonable costs" to be borne by a generator • Assigning interconnection upgrades for QF's renewing contracts • Explore any additional improvements to rules and utility practices for identification of upgrades that account for modern technologies and industry best practices that weren't addressed in Group 1
Group 3: Focused on generator ability to manage costs **Generators' ability to perform studies and construct upgrades** • Ensuring there is an efficient, effective, and accessible dispute resolution process(es) for all generator types, and any other processes to ensure sufficient ability to verify and challenge interconnection studies and results • Limits on upgrade costs or deviation from cost estimates • Clarity on material changes, option to request multiple POIs and other configurations, downsizing, and aggregation (includes net metering) • Requirements for transparent communications, access to in-person meetings with engineers, professional engineer stamps, access to standards and assumptions, study inputs, baseline data, and price assumptions	**Group 4: Focused on efficient processes and predictability:** Interconnection process • Predictability and enforcement of timelines, responsiveness, and preventing congestion in the queue. Includes publishing interconnection application processing metrics. • Predictability, speed, and enforcement of construction timelines • Remedies for utility and generator violations of rules/processes, reasonable, non-discriminatory, good faith actions. Rule structure • Whether to adopt rules for 10 MW – 20 MW Oregon jurisdictional generators. • Whether to continue to have separate rules for NEM, SGIP and separate LGIP.

Portland General Electric

PGE Comments on UM 2111 Scope

MARCH 9, 2022

PGE Goals for UM 2111

- Increase clarity in interconnection rules and process that are consistent across commercial paradigms and enable an affordable, equitable, flexible, and resilient energy platform to maximize value for PGE's retail customers
- Serial queue methodology may need updated for larger, non-NEM projects
- Ensure appropriate and fair interconnection cost responsibility for interconnections while also ensuring protection from unreasonable cost-shifting for utilities and their customers
- Enable utilities to recover costs and earn on proactive investments to enable DERs; explore cost sharing mechanisms for interconnection
- Modernize OARs to adopt current and future iterations of IEEE 1547 smart inverter standards
- Establish clarity, common methodology, and standard of review for any independent system impact study
- Explore alignment between interconnection and power purchase agreement processes.

Summary of PGE's Response to Staff's Scoping Announcement

Reprioritize: Interconnection Process Issues in Group 4 – should happen before Groups 2 and 3.

HCA should not be duplicated across multiple dockets.

PGE supports integrating Storage and Flexibility into interconnection rules, policies and practices. Staff and Stakeholders should consider how an affordable and equitable, flexible, and resilient energy platform can empower customer choice and maximize value for customers, communities, and utilities.

Consider how utilities will recover costs imposed upon them by interconnection customers and the costs of utility investments that proactively expand the utilities' ability to interconnect small generating facilities.

PGE supports the evolution of the interconnection process and corresponding regulations to allow distributed energy resources to be active participants in the power system.

Summary of Improvements PGE has already undertaken

PGE created an internal initiative to improve the Customer Interconnection Experience. Engaged with external stakeholders like ETO.

Key Outcomes
• Interviewed stakeholders, customers, developers, and installers
• Successfully processed 300% increase in NEM applications in 2021
• Revamped web pages and content for developers and installers
• Enhanced the Interconnection Standards to be more user-friendly and accessible
• Developed v1 of HCA tools that enable siting/sizing of distributed generation

Approach and Goals

Interconnection Goals	Achievements
Enhancing the customer experience through end-to-end journey mapping, reduction/mitigation of customer friction points, and responsiveness to survey feedback or other feedback inputs	• **Website refresh** • **Interconnection Handbook development** • **Coordinating with ETO to communicate with trade ally network**
Improving communication and alignment between PGE, its customers, and the interconnection community through tools, data, and technical outreach and facilitation	• **Coordinated internal systems** • **Instituted monthly meetings internally and externally** • **Reviewed/revised all communications with customers**
Streamlining all phases of the interconnection process and identifying future areas of improvement, including but not limited to organizational structure or role changes	• **Implemented process improvements/addressed pain points in all phases of the interconnection process**
Increasing transparency into the interconnection process by developing visualization tools for hosting capacity	• **Published an enhanced HCA map to enable installers/developers to more easily size/site distributed generation**

Staff's Questions

1. Should net energy metering (NEM) interconnection procedures be covered by small generator interconnection process (SGIP) rules.
2. Should rules for 10 MW – 20 MW Oregon jurisdictional generators be adopted, and if yes should these be included in SGIP, LGIP, or have their own set of rules?
3. While Staff does not have the resources to add issues to the Staff-led process for Group 1, without removing some currently proposed, Staff is open to a stakeholder-led process where parties try to reach agreement on a proposal for interconnection process improvements from Group 4 (e.g., predictability and enforcement of timelines, responsiveness, preventing congestion, remedies for utility and generator violations, good faith actions). Staff would like to gauge interest in this approach to accommodate multiple parties' comments about accelerating consideration of those issues.

Let's meet the future together.

Interconnection Trade Associations:
Community Renewable Energy Association
Renewable Energy Coalition
Northwest & Intermountain Power Producers Coalition

UM 2111
Presentation on Issues Lists and Prioritization

Interconnection Trade Associations: Community Renewable Energy Association, Northwest & Intermountain Power Producers Coalition, and Renewable Energy Coalition

03/09/2022 Staff Workshop

Interconnection Trade Associations

NIPPC

COMMUNITY RENEWABLE ENERGY ASSOCIATION

RENEWABLE ENERGY COALITION

Interconnection is a Key PURPA Implementation Issue

"On January 31, 2019, the Commission held a workshop to hear stakeholder comments on issues related PURPA implementation…. The [PURPA] implementation issue brought up by a majority of the non-utility commenters is **the high cost of interconnection** and **difficulty in obtaining interconnection agreements**"

- February 4, 2019 Staff Report in UM 2000

Top 3 Interconnection Issues/Solutions

- An interconnection customer's option to build (or hire third parties to build) interconnection facilities and network upgrades;
- An interconnection customer's opportunities to hire third parties to perform meaningful interconnection studies; and
- A process through which an interconnection customer may challenge utility cost estimates and propose alternatives.

List of Interconnection Issues/Solutions for UM 2111

- Providing appropriate process and remedies for utility actions (e.g., providing extension of commercial operation date for delays, damages for utility delays and other actions, responsibility for cost overruns, jurisdiction in court, etc.).
- Providing appropriate checks on the utility's work to ensure they are not gold-plating or imposing unreasonable requirements.
- Providing appropriate mechanism for cost sharing or reimbursement.
- Appropriate rules to apply to interconnections sized between 10 and 20 MW.
- Address the issue regarding what changes to the facility constitute a material change that would require the QF to restart the interconnection process and/or request a new PPA and the right to upgrade after PPA execution.
- Address interconnection operations and maintenance ("O&M") reimbursements to the utility-owned interconnection facilities paid for by the customer.

List of Interconnection Issues/Solutions for UM 2111

- Whether utilities must be reasonable, non-discriminatory and act in good faith in the interconnection process.
- Improving transparency, communication, access to in-person meetings with engineers, access to standards and assumptions, study inputs, baseline data, and price assumptions.
- Allowing prompt resolution of disputes between the utility and interconnection customer without loss of queue position.
- Eliminating the utility's ability to hold up the process and imposing concrete and enforceable timelines.
- Consideration of interconnection options, i.e., transmission versus distribution, various routes, other options.
- Consideration of alternative means of meeting functional requirements.
- Whether utility studies need to be endorsed and stamped by professional engineers

Oregon Solar + Storage Industries Association

OSSIA

OREGON SOLAR + STORAGE INDUSTRIES ASSOCIATION

Angela Crowley-Koch

Executive Director

Interconnection: one of the biggest barriers to decarbonization

“The scientific evidence is unequivocal: climate change is a threat to human wellbeing and the health of the planet. Any further delay in concerted global action will miss a brief and rapidly closing window to secure a liveable future.”

- Hans-Otto Pörtner, IPCC Working Group II Co-Chair, IPCC Working Group II report, *Climate Change 2022: Impacts, Adaptation and Vulnerability*

Interconnection challenges for solar

Overall barriers – Root Causes

- Lack of transparency
- Lack of access to data
- Lack of third party oversight for reasonableness and good faith
- Undervaluing solar and storage contributions to the grid

Protecting low-income customers

- How real is the "cost shift"?
- HB 2475

Recurring specific barriers

- High costs
- Delays
- "Gold Plated" or unnecessary requirements
- Rigidity in solutions/lack of process for independent work

Recent Barriers

- Lack of regulation regarding storage, electrolysis, and smart inverters
- Lack of incentive to focus on locational reliability, resiliency, of both the grid and the community

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OSSIA

OREGON SOLAR + STORAGE INDUSTRIES ASSOCIATION

Interstate Renewable Energy Council, Inc.

Scope of UM 2111 - Phase 1

Oregon Public Utility Commission – March 9, 2022

IREC

INTERSTATE RENEWABLE ENERGY COUNCIL

Independent leadership. Trusted clean energy expertise.

Yochi Zakai
Attorney at Shute, Mihaly
and Weinberger, LLP

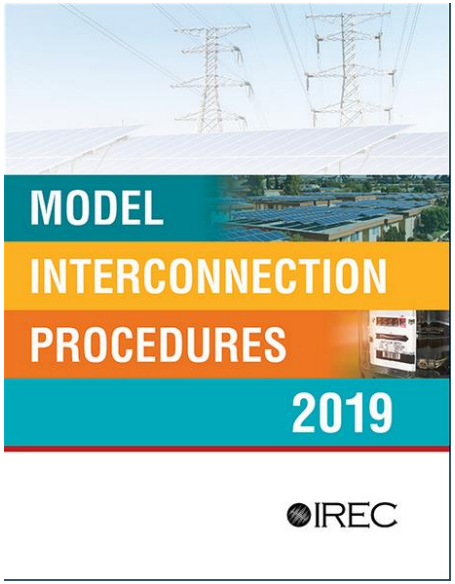
About IREC

IREC builds the foundation for rapid adoption of clean energy and energy efficiency to benefit people, the economy, and our planet via:

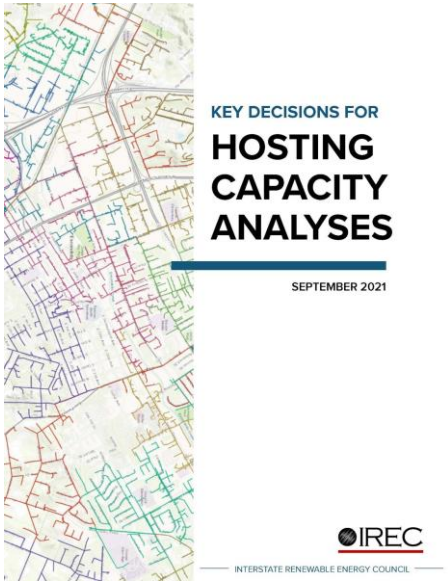
- Clean Energy Workforce Development
- Local Clean Energy Initiatives
- State Regulatory Reform and Adoption Of Policy Best Practices

IREC

IREC Publications



https://irecusa.org/resources/irec-model-interconnection-procedures-2019/



https://irecusa.org/our-work/hosting-capacity-analysis/

IREC

Building a Technically Reliable Interconnection Evolution for Storage (BATRIES)

- IREC is leading three-year project to simplify the interconnection process for energy storage and solar-plus-storage projects.
- Later this month, BATRIES will publish a toolkit of solutions for regulators, utilities, and storage developers, including model interconnection rule language that incorporates the concept of **limited export projects** and **power control systems** into the interconnection screening and study process.

https://irecusa.org/programs/batries-storage-interconnection/

What issue does each interconnection screen identify, and is that issue evaluated in the Hosting Capacity Analysis?

For example, SGIP tier 2, OAR 860-082-050(2), screens for:

(a) 15% of Peak Load: rule-of-thumb based on generic feeder assumptions to approximate when the increased penetration of DERs on a feeder could trigger voltage, thermal, or protection problems

(b) Spot Network Load

(c) Fault Current

(d) Short Circuit

(e) Transient Stability

(f) Single phase, shared secondary, et al.

What Limiting Criteria and Violation Thresholds should the HCA use?

Criteria	Description	Threshold	Basis
Primary Over-Voltage	High voltage exceeds nominal voltage by threshold	105%	ANSI C84.1 Range A – maintain quality of service to customers
Primary Voltage Deviation	Change in Voltage from no DER to full DER in aggregate	5%	MN Tariff Section 10, Sheet No. 146 – maintain power quality for customers
Regulator Voltage Deviation	Change in bandwidth from no DER output to full DER output at a regulated node	50%	Prevent reliability and power quality issues by avoiding excessive regulator operations
Thermal for Discharging DER	Element rating	100%	Continue reliable customer service by staying within the normal ratings of existing elements
Additional Element Fault Current	Deviation in feeder fault currents	20%	Based on worst case scenarios from internal studies – maintain customer reliability
Reverse Power Flow	Element minimum loading	80%	Potential protection and thermal issues can occur with reverse power flow into the substation
Primary Under-Voltage	*Low voltage below nominal voltage threshold*	*Not used*	*Not a condition typically created by DER, unless considering the load aspects of energy storage*
Ground Fault Overvoltage (3V0)	*Power flow through substation not to be reduced by more than a percentage of minimum load power flow*	*Not used*	*Criteria not used in interconnection process*
Sympathetic Breaker Tripping	*Breaker zero sequence current due to an upstream fault*	*Not used*	*For the analysis method used (Large Centralized) the criteria does not affect the hosting capacity*

Sample criteria from Xcel Energy's 2021 Hosting Capacity Analysis Report.
This slide does not indicate IREC's support for the criteria or thresholds listed.

Adopting IEEE 1547-2018 may benefit from a separate work group or subgroup

- Often, fewer parties participate in the technical 1547-2018 discussions.
- Many parties assign specialized engineering staff to participate in IEEE 1547-2018 discussions.
- IREC's comments provide detailed process recommendations.

Thank you!
Questions?

Yochi Zakai
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Appendix

Evaluation Criteria and Thresholds

Category	Criteria	Threshold
Voltage	Primary Over-Voltage*	Feeder voltage at any location not to go above a specified voltage magnitude
	Primary Under-Voltage*	Feeder voltage at any location not to go below a specified voltage magnitude
	Primary Voltage Deviation*	Feeder voltage at any location not to change by more than a specified amount
	Regulator Voltage Deviation	Feeder voltage observed at any regulating device not to change by more than a specified amount of the regulating devices bandwidth
Thermal	Feeder Thermal*	Power flow through any element not to exceed a percentage of the elements normal rating
	Substation Thermal*	Power flow through substation not to exceed a percentage of the substation's normal rating (requires knowledge of additional feeders served from substation)
Protection	Additional Element Fault Current	Feeder fault current not to increase by more than a percentage of fault current prior to generation
	Sympathetic Breaker Relay Tripping	Breaker zero sequence fault current not to exceed a specified amount in amps
	Breaker Relay Reduction of Reach	Breaker fault current not to decrease by more than a percentage of fault current prior to generation
	Reverse Power Flow	Power flow through specified elements not to flow in the direction toward the feeder head
	Unintentional Islanding	Power flow through specified elements not to be reduced by more than a percentage of minimum load power flow
	Ground Fault Overvoltage (3V0)	Power flow through substation not to be reduced by more than a percentage of minimum load power flow (requires knowledge of additional feeders served from substation)
Reliability	Operational Flexibility	Maintain ability to reconfigure by 1) Power flow through specified elements not to be reduced by more than a percentage of minimum load power flow 2) Hosting capacity based on adjacent feeders (requires knowledge of additional feeders and the sections that switch) 3) Reanalysis with reconfigured feeders
Power Quality	Flicker	Pst not to exceed the defined value

* Load induced voltage and thermal issues are due to active power flow in the direction away from the feeder head, while generation induced issues are due to active power flow toward the feeder head.

Break

Additional Questions

From Staff Scoping Memo

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