

**Interconnection Rulemaking  
Docket UE-112133  
Comment Summary – March 26, 2012**

Topic / WAC Section	Commenter	Discussion
<b>General</b>		
	PacifiCorp	No changes are required to existing rules to accommodate more distributed energy. The existing rules are equitable and reasonable. The company will continue to participate in the rulemaking to evaluate specific proposals offered by other parties.
	Puget Sound Energy (PSE)	The present rules are workable. Clarifying how the various laws and rules on the issue work together could be useful.
	Interstate Renewable Energy Council (IREC)	<p>The time and money required to safely interconnect a generator should be fairly proportionate to the size (MW) and complexity of the interconnection request. Recommends ten best practices to address the proportional treatment of generator interconnections, including using IREC’s Model Interconnection Procedures, or alternatively, Oregon’s small generator rules as templates for replacing the current UTC rules.</p> <p>A best practice in interconnection is one that fairly balances safety and reliability concerns and delivers the maximum amount of time and cost savings to encourage greater utilization of distributed generation.</p>
	Renewable Northwest Project (RNP)	Recommends rules be amended to allow more streamlined and affordable interconnection process for renewable energy distributed energy projects, while minimizing adverse consequences for grid safety and reliability. Adopting these recommendations will provide greater consistency with interconnection standards in Oregon, improving uniformity for contractors working across state lines and for utilities operating in both states.

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	Cascade Community Wind Company (CCWC)	Antiquated and inappropriate interconnection standards have been a major cause of delay, cost overrun and in some cases cancellation of projects. Lack of standardized application requirements, as well as the discretion utilities have to require studies, greatly increases the cost of the installation. Recommends using California, New York or IREC standards for interconnection.
	Local Energy Alliance of Washington (WALEA)	The UTC should create an environment for long-term growth and development of distributed generation for the benefit of all Washingtonians. Barriers to interconnection need to be removed so a local energy economy can thrive in Washington.
<b>Disconnect Switch – <a href="#">WAC-480-108-020(2)</a></b>		
	Parker Holden	<p>Inverters are not safe when connected to the grid without a disconnect switch. Only induction generators should be exempt from using a disconnect switch. If no disconnect switch is used, people working on the system must be able to stop the induction generator, which must not be able to restart if the system is de-energized.</p> <p>If the distributed generation is manned with an operator or under supervision of an operator on a 24/7 basis, it should be exempt from the requirement. All other DG needs an accessible lockable disconnect registered with the utility.</p> <p>Lockout rules should not be changed; this is the responsibility of the person working on the equipment when re-energizing is a possibility.</p> <p>Grounding is not the responsibility of the independent generator. Mr. Holden provides best practices for grounding.</p>

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	Avista	<p>Recommends no change to the current rule to avoid safety issues due to generation back feed to the utility during power outages.</p> <p>The disconnect switch that Avista requires is in compliance with NESC Section 444.C to protect the safety of utility personnel. If disconnect switches are no longer required, utility personnel making electrical line repairs will turn off the entire service for a generation customer, and possibly all other customers on the same disconnect switch feeding a certain transformer.</p>
	PacifiCorp	<p>The purpose of manual disconnect switches is to ensure safety of utility personnel working on customer meters or electrical lines. This requirement can pose additional cost for interconnecting generators.</p> <p>To balance safety and cost, proposes that a well-drafted exemption, similar to Oregon's <a href="#">OAR 860-039-0015</a>, that formalizes the current waiver provision (<a href="#">WAC 480-108-020(2)(b)</a>), could address the issue. This could allow contractors to more accurately predict interconnection costs upfront.</p>
	PSE	<p>A disconnect switch provides a visible break between PSE's electrical system and the customer generator's system, ensuring worker safety while working on the system. Department of Labor and Industries (LNI) rules (<a href="#">WAC 296-45-335</a>) state that a visible break of all phases is regarded as clearing a line or equipment. Any change should be considered jointly with LNI.</p> <p>PSE does not oppose eliminating the requirement, but recommends the UTC examine the impacts of such a change, including the cost to the utility. Eliminating the requirement will require PSE to use an upstream switch to clear a line, affecting more customers than the customer generator. Eliminating the requirement will affect PSE's service quality indices that track the duration and frequency of outages.</p>

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	Cascade Power Group (CPG)	Small systems using UL-1741 approved inverters should be exempt from the requirement for an external disconnect switch. External disconnect switches are redundant and can be a detriment to project. Safety concerns are outdated and inaccurate relative to inverter-based systems.
	IREC	<p>In the event of power outage, there is a possibility that a grid-tied system may continue generating electricity and export it to the grid putting workers at risk. If a generator is inverter-based and will not export power when the grid is de-energized, interconnection procedures should waive or prohibit utilities from requiring external disconnect switches for such generators.</p> <p>Current rules require UL-1741 standards for inverter-based systems under 300 kW, but also require external disconnect switches, which is unnecessary given the requirements for UL-1741 certified inverters. This requirement is a barrier to new technology and could create inefficiencies for utilities.</p>
	NW Seed	Recommends eliminating the requirement for an external disconnect device for generation systems of 300 kW or less. Current rules require compliance with UL-1741, which applies only to inverters with automatic shut-off capabilities. Given UL-1741 standards, the requirement for an external disconnect switch is redundant and unnecessarily increases costs for small renewable energy systems.
	RNP	Recommends eliminating the requirement for an external disconnect switch for small inverter-based DG systems. Oregon rules do not require such switches for inverter-based systems up to 25 kW.
	Distributed Wind Energy Association (DWEA)	The external disconnect switch requirement for systems of 300 kW or less is unnecessary. Small generation systems are required to have inverters certified to UL 1741 or relays certified to IEEE 1547 to detect whether the grid is off, and if so, switches off until utility service is restored.

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	CCWC	Our wind turbines have two identical switches right next to each other that serve the same purpose of a lockable disconnect.
	WALEA	Recommends that external disconnect switch requirements be eliminated for grid-connected solar arrays that comply with UL-1741 standards, as recommended in IREC best practices. Larger hydro or wind installations with induction motors are protected by IEEE 1547 certified where a lock out – tag out visible disconnect is appropriate. These installations are already required to have two such switches, which is redundant. The requirement to install redundant disconnect switches provides no additional safety benefit but adds significant costs for each solar installation.
<b>Insurance – <a href="#">WAC 480-108-040(9)</a>; <a href="#">WAC 480-108-090(1)(d)</a></b>		
	Parker Holden	Insurance is only necessary when the risk is hard to control. The risk associated with properly executed DG is extremely low. If the investment is made in disconnect switches, transfer trip equipment, and data highway expense, DG will be compatible with radial utility distribution, and the insurance requirement will not be necessary.
	PSE	The size of the generator and purpose of the generation should be considered when determining insurance requirements. A waiver of insurance requirements may be appropriate for net metering customers who seek to offset part of or all of customer's usage. This is reflected in <a href="#">PSE's Schedule 80</a> . If the purpose of interconnection is a commercial generator for selling electricity to PSE, the costs of insurance should be paid by the generator not utility ratepayers. PSE does not require insurance for entities interconnecting solely for the purpose of emergency back-up.
	IREC	Recommends eliminating additional insurance requirements for any generator 1 MW or less. Additional or excessive insurance requirements create a cost barrier that can discourage customers from investing in DG. While UTC rules currently exempt net metering systems (up to 100 kW) from additional insurance requirements, there is no reason to impose insurance requirements on other interconnecting generators. The

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		UTC should not regulate how customers manage their on-site risks; the risk to the utilities is minimal.
	NW Seed	Supports existing rule ( <a href="#">WAC 480-108-040(9)</a> ) which requires no additional insurance for systems less than 300 kW. <b>[NOTE:</b> The rule only exempts net-metered customers up to 100 kW.] Requests change to <a href="#">WAC 480-108-090(1)(d)</a> , which requires interconnecting customers to pay all costs, including insurance, as these requirements are cost prohibitive. Suggests adopting IREC’s model insurance rules, which prohibit insurance for systems in the 300 kW to 1 MW range, and require up to \$1 million coverage for the 1 MW to 5 MW range, and up to \$2 million in coverage for systems over 5 MW.
	RNP	Recommends eliminating the requirement for additional insurance for generators with nameplate capacity of 1 MW or less. Oregon does not require additional insurance for interconnecting generators, except that generators over 200 kW must have general liability insurance.
	DWEA	It is appropriate that the current rules do not impose additional insurance requirements for interconnecting under net metering. ( <a href="#">WAC 480-108-040(9)</a> ) The rules imposing additional insurance on non-net metering generation are cost prohibitive. ( <a href="#">WAC 480-108-090(1)(d)</a> ). Recommends following IREC’s Model Interconnection Procedures, in which systems under 1 MW do not have additional insurance requirements, while systems between 1 and 5 MW have \$1 million coverage, and systems between 5 and 20 MW have \$2 million coverage.
	CCWC	Standard insurance premiums for the required insurance for wind turbines are, on most CCWC projects, more than the value of the energy produced by the project. This creates an unnecessary burden. The problem is that minimum premiums cover an amount of property far greater than most DG projects, and the project is required to insure the utility’s portion of the system, which is already insured by the utility.

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	WALEA	<p>Recommends that utilities should be able to accept safely interconnected DG without additional insurance requirements of the DG customer. The current requirement alone can make an otherwise viable project impossible, as the policies are designed for very large installations and minimum premium can exceed the retail value of the electricity produced in a smaller DG project.</p>
<p><b>Interconnection Application Process – Simplified Rules – <a href="#">WAC 480-108-080</a></b></p>		
	Avista	<p>The standards, processes and agreements in <a href="#">WAC 480-108</a> only apply to net-metered and non-PURPA project up to 20 MW. The vast majority of projects over 100 kW interconnected with Avista are not subject to WAC 480-108.</p> <p>The company has a net metering agreement for generation up to 100 kW, which is streamlined and would not benefit from addressing technological changes.</p> <p>For systems between 300 kW and 20 MW, Avista uses the FERC Small Generator Interconnection Process (SGIP) as a template. The process includes a fast-track process for approved inverter technologies. Adding fast-tracking for other systems has the potential to impact system reliability for other retail customers.</p>
	PacifiCorp	<p>Under current rule, for facilities with a name plate generating capacity of greater than 300 kW but no more than 20 MW, utilities must offer service equivalent in all procedural and technical aspects to that it offers under the small generator interconnection provisions of the utility’s FERC open access transmission tariff (OATT). It is appropriate to continue to treat OATT and non-OATT projects on a comparable basis.</p> <p>If the UTC considers changes to these rules to increase the project size threshold, the rules should be modified to consider criteria other than just size of the generating unit.</p>

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	PSE	Generators above 300 kW have the choice, depending on location, whether to interconnect with the transmission or distribution system. Interconnection to the distribution system is governed by UTC rules ( <a href="#">WAC 480-108</a> ) and PSE's tariff, while interconnection to the transmission system is governed by FERC's rules and PSE's OATT tariff. An additional set of standards or requirements for interconnection depending upon size may be more confusing and lead to cost shifting.
Multi-Tiered Approach	CPG	<p>The size categories in existing rules are insufficient to fully promote the development of distributed energy systems. There should be three tiers:</p> <p>(1) Less than 25 kW or 100 kW:</p> <ul style="list-style-type: none"> <li>• Inverter-based systems; simple systems connect on the backside of the inverter.</li> <li>• Processed in less than 30 days, with nominal or no fee.</li> </ul> <p>(2) Greater than 100 kW and less than 2 MW:</p> <ul style="list-style-type: none"> <li>• Inverter or direct-generator interconnection, and customer should share in facility costs.</li> <li>• Processed in less than 75 days, \$100 application fee.</li> </ul> <p>(3) Greater than 2 MW:</p> <ul style="list-style-type: none"> <li>• Not inverter-based, but direct interconnection; with capability to back feed into distribution system</li> <li>• Processed in less than 120 days; generator should assume all costs of interconnection unless there are proven benefits to the utility infrastructure or ability to deliver power efficiently to customers.</li> </ul>
	IREC	<p>Recommends a four-tiered approach to interconnection review using system size (MW) and technical screens. The tiered approach allows for expedited review of smaller generators that pose less likelihood of adverse system impacts while providing a more exhaustive review process for larger generator where grid impacts are more likely. The four tiers are:</p> <ul style="list-style-type: none"> <li>• Inverter-based systems of 10 kW or less (some states use 25 kW);</li> </ul>



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		<ul style="list-style-type: none"> <li>• Systems of 2 MW or less using a fast track or expedited technical review screen process;</li> <li>• Non-exporting systems of 10 MW or less;</li> <li>• All other systems at 20 MW or less, using a detailed study process.</li> </ul> <p>IREC's proposed processes are similar to FERC's (SGIP).</p> <p>The divide in the current rules at 300 kW is arbitrary and does not reflect operational realities or match the practice in other states.</p>
	RNP	<p>Recommends adopting tiered costs for interconnection based on project size (MW), and a standardized timeline for interconnection.</p>
Streamlined Process	NW Seed	<p>Recommends adopting IREC's Model Interconnection Procedures, including fast-tracking interconnection requests using screens and timelines. These interconnection procedures could serve as a model for consumer-owned utilities in the state. Establishing a model for a streamlined process with help reduce the cost of interconnecting small renewable energy systems in Washington.</p>
	DWEA	<p>Recommends adopting IREC's Model Interconnection Procedures. The model procedures follow best practices and provide a platform for state regulatory agency standards.</p>
	CCWC	<p>The process for interconnecting DG should be inexpensive, timely and as simple as connecting a new load. IREC, California and New York standards are good examples.</p>
	WALEA	<p>Recommends adoption of IREC's Model Interconnection Procedures, including checklists to move projects into a fast track process.</p>

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Objective Technical Screens	IREC	<p>Recommends use of fast track screens, such as those in IREC’s Model Interconnection Procedures, the FERC SGIP or Oregon procedures. Technical screens provide a means to interconnection that is not dependent on utility discretion or a more detailed, costly and time-intensive impact study.</p> <p>Current rules do not include objective technical review standards designed for expedited review consistent with best practices. The minimal requirements in WAC 480-108-020 do not provide assurance that a generator may safely interconnect at any point on the distribution system, and leave too much discretion to utilities.</p>
Supplemental Technical Review Screens	IREC	<p>A fast track technical screen of generator impact on a line section, such as restricting aggregate generation on a line segment to 15 percent of peak loading, is a common cause of screen failure. An alternative screen for generators that fail this screen, such as a 50 percent minimum daytime load screen, is being considered in Hawaii, California and New Jersey.</p>
Fees and Engineering Charges / Studies	IREC	<p>Recommends waiving or exempting fees for small net metered customers, as well as establishing fixed application fees that vary by application tier and capacity, and fixed engineering fees to establish certainty for developers and generators.</p>
	CWCC	<p>Recommends a fixed cost for interconnection studies to give applicants certainty when initiating a project. Under the current rule, the cost of a study is at the utility’s discretion. A fixed charge would give utilities an incentive to use standard checklists, interconnection packages and be more efficient in determining interconnection requirements.</p>
	WALEA	<p>Recommends a standard fee for interconnection that includes all studies a utility believes is necessary to integrate a system. The fee should be a standard amount that escalates based on system size, such as \$500 plus \$1 per kW of system size. A flat fee would create an incentive for the utility to perform the minimum amount of study necessary to ensure safe, effective interconnection and to develop checklists such as</p>

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		those in the IREC Model Interconnection Procedures. Currently, utilities can require up to three studies – a feasibility study, a system impact study and a facilities study which can create a barrier to entry.
Standard Forms	IREC	Recommends uniform standardized forms, across all in-state utility areas, to lead to greater efficiency and lower transaction costs for installers and contractors. Standard forms may also lead to market confidence that generators are getting a good deal. IREC Model and FERC SGIP could be templates for such standard forms.
<b>Cost</b>		
	Parker Holden	Relaying and fuse protection are the responsibility of the electric utility. Ratepayers will have to pay this cost and the UTC must support these increases as the future of efficient and affordable electric supplies lies in distributed generation. While radial distribution systems are not compatible with DG, utilities must accommodate DG.
	Avista	The standards, processes and agreements in <a href="#">WAC 480-108</a> only apply to net-metered and non-PURPA project up to 20 MW. The vast majority of sizable projects interconnected with Avista are not subject to <a href="#">WAC 480-108</a> .
	PacifiCorp	The existing framework, in which all interconnection costs are paid for by the interconnecting customer, continues to be appropriate and equitable. Under the FERC OATT, the burden of the costs of interconnection is allocated between costs borne by the customer generator and others spread across the remaining customers.
	PSE	Similar to the discussion about insurance costs, the purpose of the interconnection should determine who bears the costs of the interconnection. Generally – interconnection costs should be borne by the generator. If the UTC changes who bears the cost, utilities should be allowed a process to recover costs imposed on the utility.

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		<p>Net metering customers should pay the costs of interconnection as the benefit of the interconnection is customer specific.</p> <p>Where the purpose of interconnection is to sell power to the utility or another party, the costs should be paid by the customer-generator or reflected in the rate the utility pays to the customer-generator. FERC rules determine who should bear the costs for connection to a utility's transmission system.</p> <p>PSE suggests the UTC consider the work under the Dept. of Commerce grant from the federal SunShot program regarding permitting processes for residential solar net metering installations.</p>
<b>Rulemaking Process</b>		
	WAPUDA, WRECA, AWC	<p>Recommend that in this docket the UTC allow a stakeholder process, similar to the one engaged in during the 2006 Interconnection rulemaking, in which technical people and other stakeholders, including operations and engineering staff from public and private utilities discussed highly complex engineering, safety, reliability and network issues that must be addressed in rules governing interconnection standards. In 2006, the collaborative group developed a model rule that the UTC then considered and adopted, as did most consumer-owned utility governing boards.</p> <p>A collaborative process would address and stay within the direction provided in the CR-101 in this rulemaking. The stakeholder process would be open to all stakeholders in the rulemaking.</p>
<b>Other Topics</b>		
Definitions:	CPG	AC and DC power are not currently defined and should be included in the rule.

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Safety	Parker Holden	<p>Urges UTC not to adopt unsafe procedures due to commercial pressure.</p> <p>Induction generators should be encouraged in lieu of synchronous generators, except that variable resources, such as solar and wind, are exceptions which require inverters.</p> <p>Safety associated with DG should be separated from issues relating to protective relaying, although they are related.</p>
Direct Transfer Trip (DTT) Requirements	Parker Holden	<p>Ignore small independent generators as it relates to fault current contribution and protection schemes. The definition of small depends on the capacity of the utility grid at the point of the DG connection and the size of the DG unit.</p> <p>Provides technical recommendations about interconnecting DG systems, specifically about the need to transfer tripping to the DG unit if the fault energy from the DG unit is significant. Recommends using more shunt rips, more breakers, fewer fuses and a computer and data highway to send trip signals and feed energy data to a computer based system control, which should be less expensive than replacing the radial distribution with a network or loop distribution system.</p>
	DWEA	<p>Protecting the network by islanding small distributed energy installations is not necessary where certified inverters or protection relays are used. The requirement to that an interconnection include such islanding function imposes costs on the generator that are based on old technology. Relays and inverters that meet the IEEE 1547 standards provide comparable and acceptable protection as IREC and other states have concluded.</p>
	CCWC	<p>Inverters and relays certified under IEEE 1547 for DG interconnection provide the same protection for one thousandth the cost that a utility charges DTT. The requirement is not necessary for this equipment.</p>

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		<p>Utility insistence on the use of DTT has resulted in exorbitant interconnection costs for CWCC's 3 Bar G Wind Turbine #1 Interconnection. Southern California Edison has a rule that provides an exemption from DTT for certain equipment that meets the IEEE 1547 standards. Washington utilities should not have the discretion to impose DTT requirements.</p>
	WALEA	<p>DTT is often required by utilities when the cumulative generation of interconnected DG exceeds a threshold of the load on a given line i.e., greater than 50 % of the minimum load). Many of the lines where DG may interconnect are lightly loaded and the threshold is reached at a fairly small generator sizes.</p> <p>Recommends eliminating requirements for DTT where a distributed generation system uses a relay or inverter certified to meet IEEE 1547 standards. Such equipment is tested and certified to protect against islanding and costs significantly (a hundred) times less than DTT. DTT may be suitable for a wind farm or major dam, but is not necessary to protect the grid and line workers from a single small wind turbine or micro-hydro project.</p>
Stakeholder Review	CPG	<p>The UTC should hold stakeholder meetings twice a year to update interconnection standards to reflect legislative and technological changes. This will help the UTC in determining the appropriate interconnection rules.</p>
	IREC	<p>The UTC should create an informal, ongoing collaborative process for UTC staff, utilities and stakeholders to meet annually to identify problems encountered with standards and to provide a forum to discuss future changes.</p>
Dispute Resolution	IREC	<p>Parties should have a low-cost means of expert resolution available, other than a formal complaint proceeding, such as a telephone call with a technical master employed by the UTC.</p>

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Publication of DG Information	IREC	Utilities should provide detailed maps with distribution circuit information to assist developers and customers in identifying suitable points of interconnection. Utilities could minimize the risk that a project would require a costly, detailed study process by providing the interconnecting generators sufficient information. California has adopted this practice.