Public Comments re: WUTC Docket UE-060649

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The State of Washington is to be commended for their effort to create a meaningful interconnection standard for electric generators under 300kW, and the author wishes to express gratitude for the opportunity to provide comments toward the proposed rulemaking. I would like to offer a few general comments about the rulemaking itself and the process to develop it, and then some comments regarding the language of the rulemaking and specific suggestions for revision.

General comments on the proposed rulemaking:

This proposed rulemaking brings much improvement over the previous version, and shows that the UTC staff is cognizant of the importance of this issue. The process, however, being used to create such an important rulemaking is not as interactive and collaborative as one would think is necessary, especially when compared to what has been done in other states. A better, more functional rule tends to come out of states where small working groups and steering committees have helped to develop the language for interconnection rules. This approach is slightly different from the one being taken by the commission on this issue, where comments are being solicited from various parties through the public hearing process and then are being worked into a rulemaking framework that has already been developed. It will be virtually impossible to achieve a rulemaking that satisfies all parties unless more of them take part in this development process. A possible solution would be to create a working group that meets quarterly - for up to two years – which would give plenty of time and opportunity for all parties to help develop some of the more onerous details of this type of interconnection rulemaking (such as grid network interconnection procedures, tariff issues, and pre-certification of certain equipment), and would create an open forum to bring up new methods and introduce new technologies as the industry itself changes. This working group could also develop the various documents and specifications needed for a more complete 300kW – 20MW interconnection rulemaking.

This proposed rulemaking should incorporate more elements and concepts of interconnection rules from other states, not only to reduce the time and effort needed to create the language – but because some of these ideas actually work! In Texas, for example, technical standards for grid network interconnections are provided in their interconnection rule and lay out the role of the customer and electricity company in these more difficult types of interconnection applications. The section in the Texas interconnection rule that deals with grid network interconnections is provided as Appendix A to this comment letter, and can serve as a guide for developing a grid network interconnection procedure that is sufficient to facilitate the request from a prospective electricity producer.

The State of California's interconnection rule (aka, "Rule 21") uses an innovative method of 'tiered-review' for certain generator interconnection requests, whereby the complexity of the request will determine the type of review that is required by the electricity company. It does not make sense for an electricity company to comprehensively review each individual interconnection request when many of them have a lot in common and can be grouped into a few 'categories'. If a request has certain equipment is deemed "pre-certified" then it goes through a 'simplified' review process, and a more complicated one will go through a 'supplemental' review. Both of the review processes have been agreed on by the Rule 21 working group. An advantage to this method is that interconnection requests will become simpler and quicker as time goes on, because the working group will be continuously adding new equipment to the list. As more and more equipment makes the "pre-certified" list, more and more interconnection applications will only have to go through the simplified review process – thus reducing the time and cost of each application.

Both Texas and California (and other states) use a "pre-certification" process for interconnection equipment (see Appendix B), so as to reduce the time and effort needed for inspection and to allow for provisions to 'fast-track' applications that have certain "pre-certified" equipment. By employing a combination of the 'pre-certification' and 'tiered-review' processes, generator interconnection requests turn out to be much simpler, quicker, and less costly for both applicants and electricity companies. Adding a new section under WAC 480-108-030 to include screens for a 'simplified review process' and 'supplemental review process' would help to acknowledge the complexity of certain types of interconnection requests, and would lay out a specific process to follow. As written, the current version of the rulemaking puts a grid network interconnection request through the same review process as one for a much simpler radial network interconnection, and increases its uncertainty because of the negotiation leverage held by the electricity companies in the current language.

As the commission continues to fine-tune this rulemaking, it will be important to continue to simplify the process for the applicants and electricity companies, alike.

Specific comments on proposed rulemaking:

WAC 480-108-020, section 2, part (d)

Current language:
Nominal voltage and phase configuration of the interconnection customer's generating facility must be compatible with the electrical company's system at the point of common coupling.

Note: The term "compatible" is not defined earlier in this rulemaking. It is a somewhat relative term, and so it should not be included in the rule. Instead, some degree of error (± a certain percentage, or some similar way of accounting for error) should be offered to give some level of certainty to independent power producers as to what is compatible and not compatible. These 'margins of error' can then be used to define what is compatible and what is not, and form the basis for how a prospective applicant knows if their generator is going to be compatible with a electricity company's system or not.

Appendix C of this letter has an excerpt from California's Rule 21 that addresses margin of error for various forms of interference.

WAC 480-108-020, section 2, part (f) and WAC 480-108-020, section 2, part (g)

Current language:
All instances of interconnection to spot network distribution systems require review, studies as necessary, and written approval by the electrical company.

All instances of interconnection to grid network distribution systems require review, studies as necessary, and written approval by the electrical company.

Suggested language (combine part f and g)
All interconnection requests will go through at least two stages or review. First is the initial review, where the electricity company will assess completeness of the application. Second is the "Simplified Review Process", where requests will be assessed for technical complexity, cost and benefit, and impacts to the local electricity company's distribution system. If a request fails one or more of the review criteria in the Simplified Review, then it goes through a "Supplemental Review Process" to determine if any additional requirements or studies are needed to complete the application. Written approval by the electrical company is required for interconnection to either a spot or grid network distribution system.

Note: This 'tiered review' is somewhat reflected in the newly added WAC 480-108-035 "Model Interconnection Agreement, Review and Acceptance of Interconnection Agreement and Costs". Nomenclature for the different types of reviews would help customers distinguish where in the spectrum of complexity their interconnection request lies, and would add some level of certainty as to the timeline, cost, etc. Calling it a

"Simplified Review" and "Supplemental Review", or something of the sort, would give stakeholders in the State an easy way to identify these different review processes.

WAC 480-108-040, section 6

Current language:
To ensure reliable service to all electrical company customers and to minimize possible problems for other customers, the electrical company will review the need for a dedicated-to-single-customer distribution transformer. If the electrical company requires a dedicated distribution transformer, the interconnection customer must pay all costs of the new transformer and related facilities.

Proposed language:
To ensure reliable service to all electrical company customers and to minimize possible problems for other customers, the electrical company will review the need for a dedicated-to-single-customer distribution transformer. If the electrical company requires a dedicated distribution transformer, the interconnection customer and the electrical company must share the costs of the new transformer and related facilities. The company and applicant portions will be cost-based, and will be determined by a UTC-sanctioned distributed generation system benefits analysis.

WAC 480-108-040, section 7, part (10)

Current language:
The electrical company must review and approve any future modification or expansion of an interconnected generation facility. The electrical company may require the interconnection customer to provide and pay for corrections or additions to existing electrical devices if government of industry regulations and standards are modified.

Note: A timeline should be given for compliance. Also, should clarify what is meant by "electrical devices", and which devices are being referenced.

WAC 480-108-040, section 7, part (14)

Current language:
The interconnection customer is responsible for costs associated with future upgrades or modification to its generation facility or interconnection facilities made necessary by modifications the electrical company makes to its system.

Proposed language:
Future modifications made by an electrical company to its system does not require the interconnection customer to be responsible for upgrades or modifications to its generation facilities. If potentially adverse conditions will exist as a result of the electrical company's modifications, then the electrical company will share in the cost of the customer's equipment upgrade – to ensure distribution system safety and reliability.

Conclusion:
Generator interconnection rules and tariffs are among the toughest business details for a state to engage in, and require a significant amount of time and thought to ensure overall electric system reliability and safety. Fortunately, to develop an all-important interconnection standard, each state does not have to invent their own and can instead pull examples and logic from existing ones in other states. However, cost-benefit methodology, including tariffs, for distributed generation have not yet been adopted by the State, and so various aspects around 'who bears the cost for interconnection' will continue to be disputed until this is resolved.

Through a number of recent Legislative and public-led efforts, the State is poised to move forward significantly with customer-owned distributed generation. The Washington UTC serves in an important role, acting both as a facilitator and as a referee for generation interconnection requests. Because State lawmakers have made clear their intent to modernize the electric grid and increase the prosperity of the local economy, the commission must facilitate this intended shift and work with electricity companies and customers to accommodate a simpler interconnection process. An interconnection standard should address the technical, cost and procedural aspects of generator interconnections in enough detail so that the commission does not have to micro-manage the shift toward a next-generation electric grid and accompanying economy.

Sincerely,

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cc: Dick Byers

Appendix A

Texas Administrative Code (TAC) 25.211, section (h), (2006) "Interconnection of On-site Distributed Generation".

(h) **Network interconnection of distributed generation.** Certain aspects of secondary network systems create technical difficulties that may make interconnection more costly to implement. In instances where customers request interconnection to a secondary network system, the utility and the customer shall use best reasonable efforts to complete the interconnection and the utility shall utilize the following guidelines:

(1) A utility shall approve applications for distributed generation facilities that use inverter-based protective functions unless total distributed generation (including the new facility) on affected feeders represents more than 25% of the total load of the secondary network under consideration.

(2) A utility shall approve applications for other on-site generation facilities whose total generation is less than the local customer's load unless total distributed generation (including the new facility) on affected feeders represents more than 25% of the total load of the secondary network under consideration.

(3) A utility may postpone processing an application for an individual distributed generation facility under this section if the total existing distributed generation on the targeted feeder represents more than 25% of the total load of the secondary network under consideration. If that is the case, the utility should conduct interconnection and network studies to determine whether, and in what amount, additional distributed generation facilities can be safely added to the feeder or accommodated in some other fashion. These studies should be completed within six weeks, and application processing should then resume.

(4) A utility may reject applications for a distributed generation facility under this section if the utility can demonstrate specific reliability or safety reasons why the distributed generation should not be interconnected at the requested site. However, in such cases the utility shall work with the customer to attempt to resolve such problems to their mutual satisfaction.

(5) A utility shall make all reasonable efforts to seek methods to safely and reliably interconnect distributed generation facilities that will export power. This may include switching service to a radial feed if practical and if acceptable to the customer.

Appendix B

Texas Administrative Code (TAC) 25.211, section (k), (2006) "Interconnection of On-site Distributed Generation".

(k) **Equipment pre-certification.**

(1) Entities performing pre-certification. The commission may approve one or more entities that shall pre-certify equipment as defined pursuant to this section.

(2) Standards for entities performing pre-certification. Testing organizations and/or facilities capable of analyzing the function, control, and protective systems of distributed generation units may request to be certified as testing organizations.

(3) Effect of pre-certification. Distributed generation units which are certified to be in compliance by an approved testing facility or organization as described in this subsection shall be installed on a company electricity system in accordance with an approved interconnection control and protection scheme without further review of their design by the utility.

Appendix C

Texas Administrative Code (TAC) 25.212, section (c), (2006) "Interconnection of On-site Distributed Generation".

c) **Prevention of interference.** To eliminate undesirable interference caused by operation of the customer's generating equipment, the customer's generator shall meet the following criteria:

(1) Voltage. The customer will operate its generating equipment in such a manner that the voltage levels on the utility system are in the same range as if the generating equipment were not connected to the utility's system. The customer shall provide an automatic method of disconnecting the generating equipment from the utility system if a sustained voltage deviation in excess of +5.0 % or -10% from nominal voltage persists for more than 30 seconds, or a deviation in excess of +10% or - 30% from nominal voltage persists for more than ten cycles. The customer may reconnect when the utility system voltage and frequency return to normal range and the system is stabilized.

(2) Flicker. The customer's equipment shall not cause excessive voltage flicker on the utility system. This flicker shall not exceed 3.0% voltage dip, in accordance with Institute of Electrical and Electronics Engineers (IEEE) 519 as measured at the point of common coupling.

(3) Frequency. The operating frequency of the customer's generating equipment shall not deviate more than +0.5 Hertz (Hz) or -0.7 Hz from a 60 Hz base. The customer shall automatically disconnect the generating equipment from the utility system within 15 cycles if this frequency tolerance cannot be maintained. The customer may reconnect when the utility system voltage and frequency return to normal range and the system is stabilized.

(4) Harmonics. In accordance with IEEE 519 the total harmonic distortion (THD) voltage shall not exceed 5.0% of the fundamental 60 Hz frequency nor 3.0% of the fundamental frequency for any individual harmonic when measured at the point of common coupling with the utility system.

(5) Fault and line clearing. The customer shall automatically disconnect from the utility system within ten cycles if the voltage on one or more phases falls below - 30% of nominal voltage on the utility system serving the customer premises. This disconnect timing also ensures that the generator is disconnected from the utility system prior to automatic re-close of breakers. The customer may reconnect when the utility system voltage and frequency return to normal range and the system is stabilized. To enhance reliability and safety and with the utility's approval, the customer may employ a modified relay scheme with delayed tripping or blocking using communications equipment between customer and company.