To: The Washington State UTC

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Subject: Comments regarding Docket # UE-131883, "Investigation of the costs and benefits of distributed generation and the effect of distributed generation on utility provision of electric service."

1. **Washington State net metering encourages self-consumption; California's does not.**

   In Washington, the net metering customer's "bank" is reset to zero at the end of April each year.[i] Unused or excess exported (banked) energy becomes, in essence, a donation to the serving utility. For prosumers who will produce significant excess exported energy, alternate connection agreements such as Power Purchase Agreements (PPAs) provide a mechanism for reimbursement for all energy produced.

   Conversely, as shown in the CPUC study referenced in this Docket, California's net metering[ii] requires utilities to pay the prosumer for excess exported energy at the end of the annual period. This payout encourages installation of larger arrays under net metering because prosumers owning these arrays find net metering agreements to be more advantageous than negotiated PPAs or other mechanisms.

2. **In Washington State, DG is already limited to a manageable amount per circuit.**

   RCW 480-108-020 limits interconnections to 15% of the annual peak load for the circuit.

   Unlike large non-utility generators, small DG disbursed around the service area do not have large ramp rates even if they are variable. Several studies have shown methods for calculating probabilities of ramps of a certain rate and maximum probable ramp rates.

3. **In the case of solar PV as DG, residential rooftop PV is dispersed; aggregation smoothes out the ramp rates in PV output variation over the utility's service area.**

   Studies of ramp rate versus geographic dispersion provide methods of quantifying maximum ramp rates.[iii]

4. **Up to reasonable levels of penetration, exported energy from residential net metered prosumers goes to other residences in the neighborhood, rather than through the substation**.

   In urban and suburban areas, up to reasonable levels of penetration (Germany's experience suggests about 30%), exported energy (energy not immediately used by the prosumer) goes from residential net metering to other residences in the neighborhood, rather than through the substation for distribution throughout the utility service area. The exported power often does not travel through the neighborhood service transformer, given the 15% penetration limit embodied in RCW 480-108-020.

5. **DG reduces loading on local feeders to the extent that DG either aligns with or is available during, peak load.**

The line losses of feeders are reduced by DG. With less load supplied from the substation, less line losses are incurred.[iv] In effect, the utility is able to supply other customers on the feeder with lower loss, proportional to the distribution of load along that feeder. The WECC regional transmission plan calculates that solar PV generation has a 60% correlation with peak loads within WECC.[v]

Dr. Richard Brown conducted a study relating reliability and DG[vi]. He concluded that while residential distributed generation (DG) does not usually decrease a feeder's SAIDI, neither does it increase it. DG penetration of up to 15% on commercial or industrial feeders may decrease the SAIDI because these feeders are typically more heavily loaded than residential feeders and the DG helps reduce the peak loading during restoration.

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[i] RCW 80.60.030.

[ii] California Public Utilities Commission, "California Net Energy Metering (NEM) Draft Cost-Effectiveness Evaluation", Sept 26, 2013.

[iii] T.E. Hoff and Richard Perez, "Modeling PV Fleet Output Variability", 2010, Clean Power Research.

[iv] Keyes, Fox & Wiedman LLP, "Unlocking DG Value: A PURPA-based approach to promoting DG growth", Interstate Renewable Energy Council, May 2013.

[v] WECC, "10-Year Regional Transmission Plan: Plan Summary", Sept. 2011, p. 80.

[vi] R. E. Brown, "Reliability Benefits of Distributed Generation On Heavily Loaded Feeders", IEEE, 2007, document 1-4244-129806/07.