

To: Mattias Jarvegren, Utility Services Advisor, Clallam PUD

Dec 16, 2014

Cc: Clallam PUD Commissioners Haffner, Simpson, & Purser

From: Andy Cochrane, Power Trip Energy Corp, Port Townsend, WA, Electrical Lic #

POWERTE964JN

Re: Comments on Proposed Interconnection Standards Draft November 2014

I would like to be a party of record and be made aware of the public process during which this draft will be considered. I would like to have any opportunity to appear before the staff and commissioners to ask questions and have concerns addressed.

We have installed more than 75 grid-tied PV systems on the Clallam PUD which are governed by these Interconnection Standards. Grid-tied PV is wildly popular among the Clallam PUD ratepayers, the City of Sequim has dubbed itself a "Solar City", and Governor Inslee recently signed an executive order in which he directed his agencies to identify and remove barriers to increased installation of solar. This is perspective from which I reviewed this draft, as a practical installer of grid-tied PV operating in a political environment which is overwhelmingly embracing increased installation of solar.

From the outset of this proposed draft of new Interconnection Standards, these new proposed interconnection requirements appear to belie a new bias since the previous version of these standards. The introductory section contains no binding rules and so hardly seems worthy of comment, however in **Section 1.C.** states the intention they are intended to protect the utility from the possible adverse impact of distributed renewable energy. Of course that is an important goal, however that specific language is among much of the language added in this draft of new standards and sets the tone for the changes found in the document to which we are objecting below. In the existing Interconnection agreement in the opening section, the goals are simply stated as complying with the existing state laws and federal regulations. The addition of language about protecting utility from adverse effects is laudable but unnecessary. I would suggest either elimination of that wording or the addition of 1.D. recognizing the benefits of locally generated renewable energy in terms of our region's economy and in terms of reduced carbon emissions, environmental degradation, wildlife loss and other pollution associated the BPA power purchased by the PUD.

Here is the link to the current PUD Interconnection standards referenced:

http://www.clallampud.net/uploadedFiles/Conservation/documents/Interconnection_w_Electric_Generators.pdf

In Section 5, which defines the tiers, again there is the unnecessary language stating the potential detriments to the system. Is there any evidence of such detriments occurring in the real world?

From this point on, I will only address the Tier 1 requirements. The technical aspects of the proposed requirements for Tier 2 and Tier 3 projects are beyond my ability to comment because I do not have the expertise to comment on the specs of such systems relative to the grid specs as in the

requirements. We have only installed one system on the PUD grid larger than 25 kw – a 33 KW system. I strongly recommend that these standards be reviewed by an independent authority on renewable from outside the PUD prior to adoption. I am concerned these standards are written in a manner making the interconnection of systems larger than 25 KW unlikely if they are adopted as written.

Tier 1 Technical and Safety Requirements – the stated purpose is to prevent islanding. There is also the requirement that inverters meet UL 1741 – which prevents islanding. Then there are additional unnecessary requirements.

The key point to bear in mind is that state law and the NEC require the usage of inverters that meet the UL 1741 standard, which requires anti-islanding features preventing their operation during an electrical outage. After 12 years in the business, installing and maintaining over 400 grid-tied PV systems, I have never seen nor heard of any instance of a grid-tied inverter continuing to operate during an outage. Yet there are new and expensive requirements included in this draft to incorporate additional protections against this beyond this UL certification. Has anyone seen an instance wherein a synchronous UL 1741 listed inverter continued to provide power during an outage?

Visible and Lockable Disconnect – in requirement b. 4) this disconnect is required to be within 10 feet of the utility revenue meter. The existing standards allow for this disconnect to be installed at the point of interconnection with the customers system, and if not at the meter, a plaque may be placed at the meter telling where that disconnect is located, at the PUD's prior approval, effectively getting a variance for this location and verbiage in advance of the installation. This existing system is working fine, and eliminates the need for unnecessary expense.

The elimination of the variance process in this draft requirement will require expensive trenching, often through pavement and existing utilities, which will increase the expense of such projects to the point of being impractical, which is a huge step backwards after the successful price decreases in the solar industry.

An example of how this works in reality is that the meter is commonly on a pedestal at the base of the customer's driveway, at the edge of the property, sometimes where the transformer is located. The customer's service panel is on the house, and the PV system is installed on the customer's house. The PV system is on the roof, and is interconnected at the service panel, and the superfluous disconnect is placed there at the main service panel, where all the breakers are. There is a plaque installed at the meter telling utility personnel that the property is served by a grid-tied PV system, and that there is a disconnect at the service panel on the east exterior wall of the house, for example.

Requiring this disconnect to be placed at the meter is excessively expensive and onerous, addressing a problem that does not exist, in a document that is needlessly focused on preventing adverse impacts that are not seen in the real world. The trenching may be avoided by installing a "Meter / Main Combination" at this location, and this retrofit costs between \$1000-2500, which is an entirely unnecessary expense making PV systems less attractive and less likely to be installed on Clallam PUD's grid.

Section v. Enhanced Inverter and Control in the draft allows the PUD the discretion to require "Advanced Inverters" that do not currently exist in sizes under 500 KW. These inverters allow utility

control of the inverter, supposedly to prevent these anticipated problems which do not currently exist along with the Advanced Inverters not existing.

Section v. a. 2) is especially egregious, allowing the utility the discretion to require all existing systems to be retrofitted with Advanced Inverters when or if they ever become available. This is ridiculous, based on a fear of potential problem which has not been demonstrated. Reserving the ability to require expensive and impractical replacement of existing equipment that has been demonstrated as safe by UL, the NEC and all other authorities having jurisdiction is way beyond reasonable. In the absence of any reasonable evidence justifying this section, the entire section should be removed from the draft standards.