CASCADE COMMUNITY WIND COMPANY

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UTC 112133 Comments by Cascade Community Wind Company

Cascade Community Wind Company (CCWC) is a developer of distributed generation in the state of Washington. Antiquated and inappropriate interconnection standards have been a major cause of delay, cost overrun, and in some cases cancellation of each of our projects. We would like to have our experience help the state form more appropriate interconnection standards for distributed generation projects such as ours. We see a huge potential for our business and businesses like ours once unnecessary barriers are removed.

CCWC recently interconnected two 120 kW wind turbines with PSE, and we have obtained power purchase agreements for future projects totaling about 4 MW. To their credit, PSE's renewable energy folks are great and the company's leadership has allowed the utility to lead this state in private utility renewable energy practices. That said, once we get to the system protection division things are not as friendly unless you are net metered PV.

Every project we have proposed has been over-studied by PSE at our expense. Interconnection equipment proposed by PSE as the result of each study is always more expensive than the turbine itself. Then we have shown them how it can be interconnected at a more reasonable cost, at which point they re-study, again at our expense. Once the interconnection architecture is decided upon, the services we must pay PSE to provide are charged at multiples of the rate an independent professional would charge for the same work and materials. We were able to absorb these excessive costs for our first two turbines because we had special grant funding from the State of Washington, and called it a learning experience for us and for PSE. Now our third turbine, a 225 kW machine costing ~$300k, is facing a $1.4 million interconnection bill. This is entirely due to PSE following antiquated standards that are intended for much larger generation and not taking into account modern protection devices.

1. **Insurance**

The standard minimum premium for the required insurance for wind turbines is $25k per year. We were able to negotiate that premium down to $10k a year, but the two installed turbines covered by this policy generate only a couple thousand dollars in revenue per year. Thus, if we were not planning on installing more turbines to share the premium cost, the insurance cost alone would put us out of business. At those rates, a farmer would be unable to own his own turbine because the insurance cost would exceed the revenue from the turbine.
Similarly, we have started work on a community Solar Project, with a minimum insurance premium of $3000 where the value of the electricity is less than $1000. Were it not for the very generous community solar incentives in this state, the required insurance again would exceed the value of power from the project.
This is a problem of a) minimum premiums for available insurance products cover an amount of property massively in excess of most distributed generation projects, and b) that we are required to insure the Utility's portion of the system which is already, and much more efficiently, insured by the utility.

2. **Redundant Disconnect Switch**

Our turbines have two identical switches right next to each other serving the same purpose of having a lockable disconnect, this is silly.

3. Direct Transfer Trip

This will be the primary focus of my testimony. Simply stated, IEEE 1547 certified DG interconnection inverters and relays provide the same protection for one thousandth of the cost the utility charges for DTT.

4. Studies

Currently required studies are way too costly and that cost is easily used to discourage projects from interconnecting. We are at the mercy of the utility's good will. Even PSE, which has a strong renewables program and supportive leadership, has parts of the company that are antagonistic toward distributed generation. One of these is the department that dictates what studies are required and how much they cost.

5. Process

Most DG interconnections are no more complex or impactful then installing a new load of similar size. IEEE/ANSI 1547 compliant inverters and relays provide complete protection for DG which is generating electricity and different from a load which is consuming it. Otherwise, the issues of power quality and line capacity are the same, and in most cases DG improves power quality rather than degrades it. The process for interconnecting DG should be as inexpensive, timely, and simple as connecting a new load.

3 Bar G Wind Turbine #1 Interconnection Example

My testimony will reference the following three attachments

- System Impact Study from PSE
- Communication string with PSE
- Portions of IEEE 1547 covering interconnection of distributed generation (This and the next are in the same PDF)
- Product sheet from an ANSI/IEEE 1547 compliant relay providing anti-islanding

In brief, the system impact study for our little turbine shows a $1.4 million dollar estimated interconnection cost. This is due primarily to the insistence on a direct transfer trip which has an exceptionally high cost in this specific instance because there is no line of sight radio link to the substation. The communication string with PSE shows our appeal to use an IEEE/ANSI compliant relay as an alternate method of anti-islanding protection. They have since verbally rejected this appeal and have not yet given us a written explanation after two requests.

The following is a quote from Southern California Edison's Rule 21 Covering distributed generation:

> Transfer Trip: For a Generating Facility that cannot detect Distribution System faults (both line-to-line and line-to-ground) or the formation of an Unintended Island, and cease to energize SCE's Distribution System within two seconds, SCE may require a Transfer Trip system or an equivalent Protective Function.

Note that they 'may' require tranfer trip, if the facility cannot detect faults. PSE has said that they 'must' require transfer trip even though my generating facility does detect these faults and disconnects within 2 seconds. The relay I use, a Beckwith M-3410A, is similar to the SEL relay in the attached product sheet. The M-3520 provides even more protection and might be appropriate in this situation. The relay detects these faults inlcuding an unintended island thus reqiring transfer trip would not be an option for a utility in California, yet PSE is saying that that they don't even have the option of waiving transfer trip. The following is from the product description of the M-3410A relay which I use;

> Meeting Utility Standards – The M-3410A and M-3520 have been approved for DG interconnection duty in California (Rule 21), Texas, New York and in other utilities and power pools. Both relays exceed the ANSI 1547 standard. Beckwith Electric will partner with you and provide support for utility approval should a utility not yet have approved the relays. The relays meet pertinent ANSI, IEC, UL, and CSA standards, including ANSI C37-90.2 RFI at 35 V/M—which is helpful for standardization purposes worldwide. The M-3410A also is CE compliant. Beckwith Electric is an ISO 9001 certified company.

If California, Texas, New York, and all of the other utilities with installs from my turbine manufacturer can accept the IEEE/ANSI 1547 standard and these devices that meet that standard, Washington certainly can as well. It is clear that utilities are currently using their discretion to require direct transfer trip in a hostile and predjudicial way.

The direct transfer trip requirement is the most egregios excess of the attached system impact study. The cost for the remainder of the components required is also exhorbitant. The cost charged by PSE is excessive compared to what a private contractor would charge to provide the same connection. For example, PSE charges $75/ft for cable that would otherwise cost $7/ft, and they don't even provide trenching and back fill! A transformer that I can get new for $15k costs $40k from PSE. I feel this is futher evidence of PSE abusing its authority to extort unreasonable amounts of money from DG applicants for the privilage of interconnection, thus driving us out of the market.

The cost of the studies themselves again are at the utility's discretion.In my experience the study results have been unsuitable to distributed generation installations, and in every case I have had to go back and have them re-do the interconnection study again at my expense. This may be due to the utilities limited experience with DG which causes them to apply 100 MW solutions to 100 kW projects. I feel the utility learning curve for DG interconnection should be at their cost rather than those of us brave enough to be the first applicants. Also, these studies are a substantial cost that a disgruntled distribution engineer can increase for a DG project without much accountability.

A fixed cost for interconnection studies would give applicants certainty going into a project, and would provide incentive for the utility to employ checklists, standard interconnection packages, and otherwise be as efficient as possible in determining the interconnection requirements for a project. As it is now, they have every incentive to make a science experiment out of every project that comes along. We have paid PSE tens of thousands of dollars to study and re-study the interconnection of some relatively small generators which should have been no more difficult or expensive (with the exception of the protection relay) than interconnecting an irrigation pump of the same size.

Please bring Washington to the 21st century in regards to interconnection of distributed generation. California and New York can provide good examples, as can the Interstate Renewable Energy Council. Businesses like mine, which should be thriving, are being held back for no good reason.

Thank you for your good work, and I look forward to a sensible interconnection policy.

Regards

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