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Utilities and Transportation Commission
PO Box 47250
Olympia WA, 98504-7250

Subject: Docket UE-110667
Comments on UTC Study of the Potential for Distributed Energy in Washington State

Thank you for the opportunity to provide input into your study on distributed energy in Washington. The Air Quality Program of the Department of Ecology provides the following comments, observations, and information based on our experiences in permitting electric generating facilities in Washington.

Based on the Notice issued to solicit information for this study, the scope of what is included as distributed generation is unclear. The information request seems to be limited to alternative energy sources based on renewable energy sources. With the exception of large wind farms and biomass (wood) fired boiler/steam-electric generation/cogeneration facilities, these are usually small and geographically distributed around the state. Renewable energy sources can be stand-alone electric generation systems (like solar or wind power) or can be cogeneration systems (like industrial biomass combustion systems or farm level anaerobic digestion based systems).

Distributed energy can also be comprised of generation utilizing conventional/non-renewable resources such as small gas turbine or diesel engine generators located at individual industrial and commercial plants, or cogeneration at various industrial facilities.

Discussions of distributed generation a decade and more ago focused on non-renewable resource based generation installed at industrial and commercial plants to provide alternative sources of baseload power, to provide plant level peak shaving power, or to just take an individual facility off the grid for normal power and purchase power off the grid when the onsite generation is off-line or inadequate.

Distributed energy systems intended to enable a plant to reduce its need for generation from the grid have different impacts on the electrical system than would come from numerous grid connected small generation sources. As a result, these differing forms of distributed energy need to be evaluated separately for their impacts on the electrical supply system, but may well be addressed by the same regulatory and policy decisions.

As a result of the ability of these smaller technologies to be located in and near the load centers (provided local land use regulations will allow them to locate there), will impact the changes to the distribution system to incorporate those new generation sources. This will likely require the utility to either spend funds to upgrade power lines and substations, add new substations or require the proposed generation to fund those improvements and changes necessary to accommodate the new generation source. Either approach will affect the ultimate costs to the ratepayers.

7. We suggest that these questions be amended or replaced with an alternative question:

What is the best use of specific alternative energy sources to meet load? Which alternative energy forms can supply load for daily or seasonal peak demand and which can be depended on to supply next day/next hour needs?
Each alternative energy source will have different set of issues in meeting load and in environmental impacts. The following table provides an indication of the restrictions and environmental impacts of various alternative energy sources that could be implemented.

Energy source	Seasonal/daily restrictions	Environmental impacts
Solar photovoltaic	Limited to daylight hours, reduced generation during winter season due to clouds and decreased insolation.	GHGs and toxic chemical discharges during manufacture and transport of panels. No direct environmental impacts during use. If installed on existing structures, minimal impacts on land and wildlife
Solar – concentrating	Limited to daylight hours, reduced generation during winter season due to clouds and decreased insolation.	Land area requirements to install mirror arrays. GHGs and toxic chemical discharges during manufacture and transport of components. Water supply required, cooling water and excess heat disposal issues.
Wind	Unavailable during calms, strong winds can damage towers and components. Not suitable as baseload power when looking at a single generator or wind farm.	GHGs and toxic chemicals during component manufacture. Oils and toxic chemicals during maintenance activities (paint, lubricants, etc). Can affect insect, bat and bird populations and may interfere with migration routes.
Hydrokenetic – wave energy	Available all the time, though output partially dependent on wave height. Suitable for baseload power, but limited ability to address peak loads.	Demonstrations offshore in ocean waters. Other than GHGs and toxic chemicals from manufacture of components and leaching of toxic chemicals leaching into the water from antifouling paints and their

Energy source	Seasonal/daily restrictions	Environmental impacts
anaerobic digestion	systems are off-line for maintenance.	air pollutants from combustion and leaked landfill gas. Other environmental impacts may change based on type of generation system involved. Gas not collected and burned can contain toxic concentrations of hydrogen sulfide. This resource may also be available for cleaning and injection into natural gas pipeline system or used as compressed natural gas for transportation or residential use.

9. Should there be a change to the least-cost planning principles for power purchase rules be modified to recognize the costs or lack of commercialization of alternative energy sources?

In order to encourage the cost effective development and long-term implementation of alternative energy sources, the least cost approach will need to be modified to both allow for and encourage the innovation and development of alternative energy sources.

Alternative energy sources are often more expensive than coal, gas or hydropower. Those alternatives that have not been able to get subsidies for development of plant and commercial scale demonstrations cannot be considered to be commercial products. As a result basing acquisition and dispatch based on the least cost model will penalize these resources. Conversely, preferential treatment for innovative technologies changes the current unequal regulatory playing field to a different equally unequal field.

However, revisions to the basis for selecting and approving new generation resources that balance cost, direct environmental impacts and benefits, and sustainability of the generating resource over time will tend to level the playing field for all types of generation. The Ecology Air Quality Program suggests that as changes to the rules and laws governing the acquisition of new generation occur, the overall environmental impacts and benefits of a particular generation source become part of the analysis of determining acceptability of approving a generating resource acquisition for inclusion in the rate base. For greenhouse gas emissions, RCW 80.80 already requires a consideration like we suggest.

10. Should the Commission make changes to the Avoided cost model to account for certain types of renewable resources?

There should be some sort of explicit or tacit support of nascent or pre-commercial power generation technologies. One concept might be to allow companies to use a small percentage of their income for power purchases for these usually expensive experimental technologies. Due to their innovative nature, pre-commercial technologies should get different treatment than their commercialized competitors.

The concept of expanding the utilization of cogeneration from nontraditional facilities needs to be part of the distributed energy discussion. There are numerous facilities that use combustion as part of the process, but do not recover useful energy from the excess heat generated. Prime examples are cement kilns and many oil refinery process heaters and coking systems. These facilities are capable of being economically retrofit with bottoming cycle cogeneration systems. Where cost effective to install, these bottoming cycle systems can be utilized as baseload generation. Connection and power sale regulations should not prevent the development of these types of installations.

Similarly the connection standards should encourage existing facilities with boilers to add electric generation to their operations. This could be a facility like a district heating plant or a boiler used to generate process steam at a food processing plant.

In general, the more useful energy that can be recovered from thermal power generation and from other thermal energy uses will reduce the emissions of all types of air pollution. The Air Quality program advocates changes to the laws and regulations used to guide power supply purchases and contracting that would increase the flexibility in UTC and publicly owned utility to support and acquire new power derived from the addition of cogeneration (combined heat and power) at existing and new industrial operations.

Thank you for the opportunity to provide our opinions on this matter.

Sincerely,

Alan Newman
Air Quality Program

cc: Laurie Davies, W2R
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Gail Sandlin, AQ