EFSEC's Clean Energy Project Certification Requirements Could Lead the Nation.

In fact, EFSEC has the potential to be the nation's go-to clean energy requirements model. Before this is possible, more groundwork needs to be completed before it can consider certifying any large-scale clean energy project in the state. I base this conclusion on reading RCW 80.50. Until this groundwork is complete, we should pause all large-scale clean energy projects in WA state.

Regional clean energy generation is soon-to-be urgently needed, as the Pacific Northwest population steadily increases, agricultural demand increases, and the need for electric vehicle (EV) battery charging is already increasing rapidly--all this is increasing regional power demands, exacerbated by the coming 2023 El Nino, amplified by climate change, and more drought in a few years hence. Combined, potentially, this will likely overload the existing power grid. And hydroelectric clean-energy generation is already at capacity, forcing out of state power purchases.

Without more regional power generation, the cost of residential and commercial power will continue to increase. According to the January 2023 Klickitat P.U.D newsletter*, "Utilities are facing reduced supply and increased demand within the power market. This combined with increased load and cost of doing business reinforces the rate increase decision was prudent to ensure ongoing reliability & stability."*

Increasing regional power generation is important and somewhat urgent. Nonetheless, *it's not so urgent that we need to risk sacrificing our best possible clean-energy future with hastily made decisions*. And this is what we're risking by prematurely approving, let alone expediting, any large-scale energy project, including the Carriger Solar, LLC's project application.

Why? The big picture is that we are shifting to greater reliance on clean electric energy, electric cars, electric trucks, and electric airplanes. This is new territory: The electric grid architecture is over a century old, and the electric energy generation needed soon will far exceed the nation's (and grid's) existing capacity.

"*Many estimates suggest electricity demand could more than double by 2050 to reach net zero.*"—Bill Gates

The planning decisions and the energy generation plants we build in the next few years based on today's groundwork will have consequences 50 years hence, possibly even longer. Let's now put in place the best possible planning for the best sustainable clean energy generation, for the long-term, and for sustained community quality of life.

What groundwork is needed?

EFSEC Needs a Certification Process Reflecting Unanimity of Purpose

We need to start by improving EFSEC's certification process. We—meaning WA state, all counties, cities, native American communities, and energy companies—need to work together to establish *one* set of certification criteria for clean energy projects that is designed to accommodate all affected.

As it is, we have a patchwork quilt of city and county ordinance's, concerned citizen's, including Native American's, driving loosely or incoherently defined requirements that EFSEC can consider. However, EFSEC is not mandated by law to meet those requirements and get approval by all affected jurisdictions to certify a project.

RCW 80.50.020(6) https://bit.ly/44vZkb7 could be modified to specify inclusivity. For example, RCW 80.50.020(6) could specify "'Certification' means a binding agreement between an applicant and *all affected jurisdictions* which shall embody compliance to the siting guidelines, in effect as of the date of certification, which have been adopted pursuant to RCW 80.50.040 as now or hereafter amended as conditions to be met prior to or concurrent with the construction or operation of any energy facility. *'All affected jurisdictions' means the following: (6a) Washington state (6b) each affected county (6c) affected Native American lands (6d) each affected city or town (6e) any affected bordering state.*"

If a proposed project can't meet negotiated certification criteria, then it probably needs to be redesigned, relocated, or terminated.

Today the law does not mandate an inclusive certification process. Without this inclusive mandate, we will face similar problems that are already happening in cities throughout California. Large construction companies are bypassing city or county ordinances by getting CA state approval based on laws these companies' lobbyists helped write. Just one example: http://bit.ly/3XWshZY

EFSEC Needs "Cradle to Grave" Requirements
EFSEC must establish stringent requirements for end-of-life recycling as a part of the certification process. Spent wind turbine parts, solar panels, batteries, and electronic components must be properly recycled and not end up in landfills, where soil and water can be contaminated. EFSEC must establish a costly consequence for any energy company that ignores these requirements at end-of-life for any energy system component.

Technological innovation occurs at an ever-faster pace. Today's high-tech megasolar plant will be tomorrow's forgotten pile of obsolete junk. When it becomes obsolete, hundreds of acres of solar-farm junk need to be completely removed, and the land restored. Energy companies must be responsible for restoring the land or waterways when they decide to move on to the next more profitable energy technology.

EFSEC Needs PV Panel Cleaning Requirements
EFSEC must establish requirements for recycling water or chemicals used for cleaning PV solar panels. Dusty or pollen covered—even a thin film—reduces panels' efficiency. Cleaning several hundred acres of PV panels with water could result in wasting precious water. Methods should be required to recycle this water. Similarly, if toxic cleaning chemicals are used instead of water, methods should be required to capture and/or recycle these chemicals so that the soil underlying panels won't be contaminated.

EFSEC Needs to Require Safe Alternatives to Lithium Energy Storage
The necessary groundwork includes evaluating battery technologies other than Lithium. Yes, there are several safe and just as cost-effective battery technologies that are available on the market today. They should all be evaluated, and EFSEC certification should require use of the safest and most recyclable battery technologies.

When EFSEC is required by state law to certify clean energy projects only when the negotiated requirements of all concerned are met, Washington State's EFSEC could serve as a model for all states.

Good Groundwork Includes Identifying Alternatives to Megasolar Farms
Comprehensive due diligence requires that we evaluate all viable clean energy generation technologies before making decisions about Washington States's clean energy future. The "pro" and "con" discussion about megasolar farms is stuck in the past, as it's not concurrent with advances in new technologies. We need to widen the scope of discussion of clean energy generation to address good alternatives to massive solar farms.

Moreover, from a cost-effective and profitability perspective, the Pacific Northwest (PNW) region and Klickitat County is not an especially good location for utility-scale megasolar farms due to low solar irradiance levels during six months of the year. These monthly Solar Irradiance maps support this assertion (check 120 degrees longitude, 46 degrees latitude). https://bit.ly/41Lh1l4 . *Please note residential- and small-scale solar is cost-effective in the PNW.*

Yes, there are good alternatives to megasolar farms in the PNW. The "right tool for the job" also applies to methods of clean energy production. Above 45 degrees latitude, PV solar arrays are a good choice for small-scale residential and business roof-top power generation. But this method is inadequate for meeting a substantial portion of the future daily power needs of WA state (or any northern state's location above 45 degrees latitude).

The first good alternative is offshore wind generators. ONE average-size land-based wind generator produces 2 MegaWatts (MW) at peak output and requires 1.5 acres, almost all of which is available for crop or livestock production. This ONE wind generator is equivalent to about 2-3 acres covered with 6,200 325W solar PV panels at peak output. Unless it's an agrivoltaic solar farm, virtually none of the land can be used for livestock or crops, and it could disrupt ecosystems and block wildlife thoroughfares.

Ocean winds are even better for generating wind power because they are more constant and tend to be strongest during hours of peak power demand. A big plus: more agricultural land is available for cattle and crop production, although the impact, if any, on fishing is still being studied.

Washington State's offshore wind generation potential is 29.4 GigaWatts. Even if only 10% of the total potential is developed, that's 5 times more peak power generated than all three of Washington's currently proposed megasolar farms combined!

in September 2022, development of offshore floating wind generation was incentivized by the federal government.

Other good alternatives. Agrivoltaic farms enable many small solar farms combined to contribute more power than a single mega solar farm. They are more robust without one point of failure. Furthermore, agrivoltaic farms can use existing grid-tie infrastructure. They aren't limited to locations near high-power transmission lines. And they double for livestock or crop production. Please see https://agrivoltaic.solar

Another possibility is to install agrivoltaic farms on land already used for wind farms. Imagine a "ribbon" of solar panels between each wind-generator mast. Such an installation on the Washington side alone could produce an estimated 180MW or more (20MW more than the Carringer solar farm). Moreover, most of the land would remain usable for crop or livestock production.

And there are other possibilities that go beyond wind and solar. We need to look at green hydrogen-based fuel cells. And yes, we need to include the possibility of nuclear power plants that use much safer Thorium (not Uranium) based Molten Salt Reactors (MSRs). Lastly and definitely not least, we need to investigate developing a "smart grid" distributed local network architecture that enhances the existing grid system. A high percentage of power is lost in the existing grid's power transmission lines. A "smart grid" architecture would use locally generated power for local use first to minimize power loss. The less efficient existing grid would only be used to import or export power from/to other remote power sellers or buyers.

Let's make sure we have a complete understanding of the technology and alternatives. We need to ensure we put in place the right planning and approval processes for the long-term to meet our future clean energy needs. For people, for state and county, and for energy businesses long-term profitability, let's aspire to achieving a win-win-win sustainable clean energy future.