

PROPONENT TESTIMONY – SB 52
Senate Energy and Public Utilities Committee
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Chairman Peterson, Vice Chair Schuring, Ranking Member Smith and members of the Committee, I would like to address the Ohio Utility Scale Solar Decommissioning Paradox:

In my view, the goal of SB 52 is to inject some accountability and common sense into the decision making process regarding ‘significant’ solar and wind installations. The current system establishes a court made up of Governor Appointees that completely preempts elected local zoning officials. Proponents of this policy claim dealing with individual zoning authorities is somehow overly burdensome to potential land developers, however this is a blatant lie. Nearly every other state in our Nation respects and relies heavily on local zoning authorities when considering commercial development and land use decisions. Even those states with State level oversight boards actively include local officials in the siting process.

Since its inception, this absurd approach has made every renewable project the bane of the community in which they reside. With no established State standards, the OPSB treats every case as its own isolated case; ignoring years of protest from local leaders and citizens, crying out for help in an unjust system. Disenfranchised local elected leaders are forced to ‘opt in’ to proceedings and beg hat-in-hand for even the most seemingly obvious concessions, like following wind turbine manufacturer’s guidelines for safe distances from residents and dwellings.

While most supporters of SB 52 focus on the siting aspect of this apparent ‘renewable at all costs’ system, there is one even more nefarious wrinkle that has yet to be addressed: Decommissioning.

The OPSB not only preempts local zoning for the entire siting and commissioning process they promptly dump all decommissioning and disposal responsibilities back on the local communities (1).

For project approval the OPSB only requires a decommissioning bond be posted and a loose plan be submitted. The removal plans are as laughably sparse as the construction documents themselves. In most solar filings, construction documents contain no engineered drawings; rather they contain vague language such as:

- Entire site to be graded and compacted. Swales greater than 5% slope will be flattened
- Steel pilings driven 6-10ft deep
- Raised compacted gravel access roads will be constructed as needed

Meanwhile decommissioning plans state

- All gravel from access roads will be collected and sold
- All fencing, solar panels and support structures will be removed

- Structures and materials within 3ft of the surface will be removed, all others will be buried.
- soil *may* be loosened and returned to pre commissioning state

Aside from the basic logic failure regarding piling depth vs ‘burial’, there are no quotes provided for labor, transport, PV recycler handling, no adjustment for inflation etc. Without this basic due diligence, how can a bond amount be established with any confidence? **The local zoning authority is somehow expected to execute a non-existent plan they had no role in forming on a budget not based in reality, let alone evaluated for risk and adjusted for contingency. Local tax payers will not only be stuck with any budgetary short falls, it is very likely these sites will be impossible to reclaim for agricultural use... At best they will become brown sites. Many legislators in states more experienced in utility grade solar are predicting far worse: Most sites are destined for Superfund designation (2).**

Though HSB 52 would help address decommissioning concerns for both wind and solar, solar is of particular concern: Despite their looming height, wind turbine end of life decommissioning is relatively straight forward. The structures are made from commodity components and materials with well-established market values and recycling chains; PV panels however have none of this.

Solar proponents claim there will be a secondary market for reused panels. Not that there IS one, that there WILL BE one. PV panels are considered end of life when output falls below 80%. When the US made the transition to digital broadcast, millions of CRT Televisions went from having second/third/fourth hand owners to being untouchable toxic waste nearly over night. Today PV technology from 10 years ago is essentially useless and out of date. With millions in R&D being spent every year, PV panel prices will continue to fall, yield will continue to rise and current technology maybe obsolete in as few as 5 years. Even if removal, shipping and recommissioning costs were zero, why would anyone waste the effort or land to commission degrading substandard panels?

Proponents also push the narrative that PV panels are made from highly recyclable materials. On face value this is true: PV panels are mostly glass, aluminum and copper; all desirable recyclables. What they fail to mention is that recycling PV panels is cost prohibitive and none of these materials have any real value in the open market after extraction. Though making up 5% or less of a PV panel, conductor metals like copper and silver are normally of high value, however the copper and silver content of PV panels has dropped sharply in recent years to help reduce cost. Thus recycling feasibility relies on the bulk components, glass and aluminum. By a wide margin, solar panels are primarily glass, a highly recyclable material under most circumstances. However, after recovery, PV panel glass is contaminated with hazardous heavy metals and has very limited commercial application; essentially it can only be used to make more solar panels. This leaves aluminum, another highly recyclable material. Unfortunately, decades of exposure will result in significant corrosion; combined with inevitable contamination from adhesives and other assembly materials, the aluminum extrusions are likely to be very low quality and therefore low value to recyclers.

Raw material values aside, there is an even larger issue at hand: Even if the recycled materials had value, there is no recycling supply chain or infrastructure anywhere in the world. This lack of infrastructure is of no concern to the predatory land developers and their crony politicians seeking to

make a quick buck on overly generous subsidies and lax regulations. However, the environmental purists in the renewable energy movement know there is a tsunami of toxic waste on the horizon.

Modern commercial grade PV panel technology has only been on the market for about 10 years. Since then, global grid connected solar capacity has risen exponentially from 17 gigawatts (GW) to 580 GW at the end of 2019 (3) and is expected to reach 4,500 GW by 2050. (4) While proponents all champion the CO2 emission savings over other sources, they are hiding an ugly truth: With an expected useful life of 30 years, the world is facing an exponential increase in solar panel hazardous waste (5). This year alone, solar panel waste is expected to reach nearly 220,000 tons globally. Bear in mind, this is waste from installations prior to the 2010 boom... Following the exponential installation trend, these numbers explode to an estimated:

1.7 million tons 2030
15 million tons 2040
60 million tons 2050 (4)

The figures above represent an optimistic best case scenario; adjusting for manufacturer failure rates and other in field failure modes yields:

8 million tons 2030
32 million tons 2040
78 million tons 2050 (4)

These numbers should scare any rational person, regardless of individual politics or opinion of renewable energy sources.

With no clear path forward in dealing with this waste at the local, State, Federal or even International level, I submit passing SB 52 is but the tiniest first step in moving towards a more measured, robust and inclusive approach to achieving renewable energy goals.

References

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3. **Bellini, Emiliano.** World now has 583.5 GW of operational PV. *PV Magazine.* [Online] April 6, 2020. [Cited: March 7, 2021.] <https://www.pv-magazine.com/2020/04/06/world-now-has-583-5-gw-of-operational-pv/>.

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5. **Beetz, Eric Wesoff and Becky.** Solar panel recycling in the US — a looming issue that could harm industry growth and reputation. *PV Magazine.* [Online] December 3, 2020. [Cited: March 7, 2021.] <https://pv-magazine-usa.com/2020/12/03/solar-panel-recycling-in-the-us-a-looming-issue-that-could-harm-growth-and-reputation/>.