



Testimony of Scott Elias, Senior Manager of Mid-Atlantic State Affairs, Solar Energy Industries Association (SEIA)

To the

House Environmental Resources and Energy Committee

Public Hearing on HB 2104 and Bonding and Decommissioning of Solar and Wind Installations

Dec 15, 2021

Introductions

Chairmen Metcalfe and Vitali, members of the House ERE Committee, thank you for having me here today and for your interest in responsible solar development in the Commonwealth of Pennsylvania.

The Solar Energy Industries Association (SEIA) is the national trade association for the United States solar industry. SEIA works with its 1,000 member companies and other strategic partners to fight for policies that create jobs in every community and shape fair market rules that promote competition and the growth of reliable, low-cost solar power. SEIA has more than 30 member companies located in Pennsylvania with many more national firms also conducting business in the state.

Solar Means Business and Remains an Untapped Economic Opportunity in Pennsylvania

In the last decade alone, solar has experienced an average annual growth rate of 42%. Solar's share of total U.S. electrical generation has gone from just 0.1% in 2010 to nearly 4%, more than 80 times its share a decade ago. In Pennsylvania, the solar industry has invested nearly \$3 billion and employs over 4,000 workers. And today, there are over 400 projects being planned in Pennsylvania in the PJM queue, totaling over 15 gigawatts of power.

Before I dive into HB 2104, I think it's important to note that solar can be an economic driver for communities across the Commonwealth, including rural communities. At a time when many agricultural producers are struggling, solar creates additional revenue streams and helps support farmer incomes. Increasingly, farmers can rely on solar lease payments as a steady revenue stream to help mitigate market volatility, droughts and other threats to their livelihoods. Put simply, the solar industry can help family farms stay in the family and counteract the ongoing trend of farms being lost due to economic hardships.

We also recognize that as an industry we must anticipate risks and challenges and proactively mitigate their impact. That's why SEIA supports smart decommissioning policies and is working to make it easier for the industry to select cost-effective and environmentally responsible end-of-life management solutions.

HB 2104 Incorporates Elements of Reasonable Decommissioning Policy

At the end of the expected performance period of a PV plant, there are several options. Like many other durable products and construction materials, solar equipment can last for 2-3 decades, particularly with proper maintenance. In some cases, PV modules can be reused or refurbished and can have a "second life" generating electricity, thereby maximizing their overall use and potential. However, at some point solar power systems will reach the end of their usable life and be decommissioned. When this occurs, it's important that this happens safely and responsibly and that our industry and not landowners are responsible for decommissioning.

HB 2104 does not have a retroactive application of decommissioning requirements, which is extremely important for preserving existing investments based on the terms of leases executed prior to this bill.

But moving forward, SEIA supports a state-wide, general requirement that decommissioning provisions be included in landowner/developer agreements. It is already an industry best practice that such provisions be included in solar lease agreements to ensure that solar power systems are decommissioned safely and responsibly.

SEIA also supports HB 2104's establishment of appropriate state-wide standardized requirements for decommissioning no later than 18 months after a facility stops producing electricity. These include removing solar equipment and restoring the land to its original condition or adapting it to a new use, based on the preference of the landowner.

SEIA supports the amount of financial assurance being calculated and periodically re-calculated based on decommissioning cost estimates completed by a third-party professional engineer, at the facility owner's expense. As we've stated at other hearings on this topic, including decommissioning costs in the upfront price of solar projects increases overall project costs, which could discourage solar development and thus the ability for landowners to receive a new source of revenue via stable lease payments. As a result, SEIA appreciates that HB 2104 phases in increasing amounts of financial assurance over the duration of the project's operation instead of requiring it all up front.

Smart Decommissioning Policy Provides Flexibility in Posting Financial Assurance

As we've stated at other hearings on this topic in Pennsylvania, smart decommissioning policy provides flexibility in posting financial assurance. It is reasonable to demonstrate proof of financing from a banking institution that a solar developer or facility owner has the responsibility and means to remove a solar facility at the end of its useful life. Some solar developers may prefer

to establish a cash account or trust fund for decommissioning purposes where the developer makes a series of payments during the project's lifecycle until the fund reaches the estimated cost of decommissioning. Other developers prefer financial assurance in the form of bonds to guarantee the availability of funds for system removal. Another mechanism that is used to provide financial assurance is an irrevocable letter of credit. A letter of credit is a document issued by a bank that assures landowners a payment up to a specified amount, given that certain conditions have been met. In the case that the owner of the solar facility fails to remove the system or goes bankrupt, just like in a bond or an escrow account, the landowner can claim the specified amount to cover decommissioning costs. It's the same mechanism offered as an option in the oil and gas bonding program, and we recommend that the bill be amended to include the option for utilizing a letter of credit.

PV Recycling (along with reuse and refurbishment) is the preferred method for equipment disposal over landfilling

Last, I want to speak briefly about landfilling, and HB 2104's requirement that by the 20th year, an updated decommissioning plan show how much material will be salvaged, recycled, refurbished or disposed of in a landfill. I want to be clear: Solar panels are safe. According to the National Renewable Energy Laboratory, finished solar modules undergo rigorous environmental testing to ensure they withstand strong weather conditions and do not pose a danger to surrounding soil or water.¹ While sound science demonstrates that PV modules can be landfilled, it is SEIA's belief that recycling, along with reuse and refurbishment, are preferred methods for equipment disposal over landfilling.

While solar panels are built to last decades and we do not expect significant module retirements in Pennsylvania in the near term, the industry must plan to ensure PV modules are disposed of responsibly. SEIA embarked on this initiative by launching a National PV Recycling Program over five years ago, which led to the development of PV recycling resources across the nation. In 2016, only one PV module recycler was in operation; now, numerous recyclers with multiple locations operate across the country.

Recycling today is more expensive than it will be in 10-15 years, because there are not enough solar panels ready to be disposed. But we are actively working on bringing down the cost to recycle. Solar panels typically consist of glass, aluminum, copper, silver, and semiconductor materials that can be successfully recovered and reused. Other solar energy system components, such as metal racks, steel posts and inverters, can readily be reused or recycled. Fortunately, the solar industry is proactively working on responsible end-of-life management and it's now an emerging business opportunity, with new companies now specializing in services such as resale of used PV modules and parts, decommissioning, and recycling.

¹ See P. Sinha, G. Heath, A. Wade, K. Komoto, 2020, Human health risk assessment methods for PV, Part 3: Module Disposal risks, International Energy Agency (IEA) PVPS Task 12, Report T12-16:2020.

Conclusion

It is SEIA's belief that the ability for the solar industry to become a major source of electricity generation will rely on the way we pro-actively manage our growth and how we address potential barriers before they pose greater risks to our long-term success. As a result, SEIA appreciates the opportunity to work with the committee and prime sponsor to craft a decommissioning and financial assurance program that produces the desired results for an industry eager to develop and invest within Pennsylvania, while assuring that solar facilities will be decommissioned safely and responsibly.

Thank you for your time and attention.

Sincerely,

A handwritten signature in black ink that reads "Scott Elias". The signature is written in a cursive style with a prominent initial "S".

Scott Elias
Senior Manager of State Affairs, Mid-Atlantic
Solar Energy Industries Association

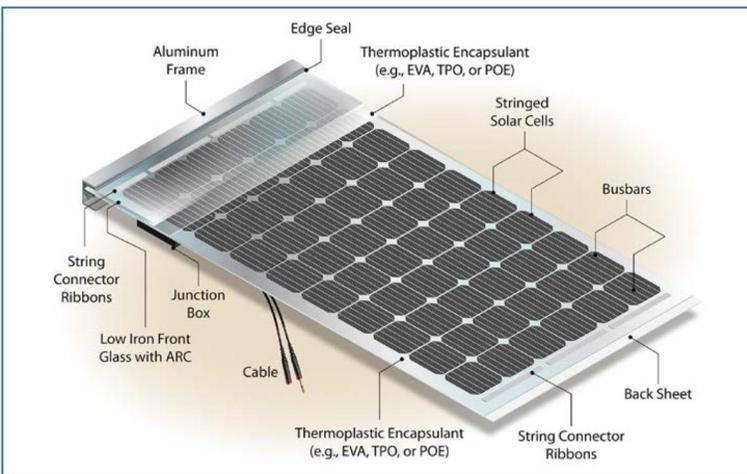
End-of-Life Considerations for Solar Photovoltaics

Engaging the circular economy approach

Photovoltaic equipment and options for first end-of-life stages

The falling cost of solar has made renewable energy accessible to more people than ever before and has resulted in an exponential increase in solar adoption. With more than 400 gigawatts (GWdc) of photovoltaic (PV) modules installed globally (including 62 GWdc in the U.S. through 2018), end-of-life management is important for all PV technologies to ensure clean energy solutions are a sustainable component of the energy economy for future generations.

Like many other durable products and construction materials, solar equipment can last for decades, particularly with proper maintenance. In some cases, PV modules can be reused or refurbished to have a 'second life' of generating electricity. The other components of solar systems can also be handled responsibly. Inverters can be recycled as e-Waste and racking equipment can be re-utilized with newer technology or recycled like other metals.



Source: NREL, *Crystalline Silicon Photovoltaic Module Manufacturing Costs and Sustainable Pricing*, 2019

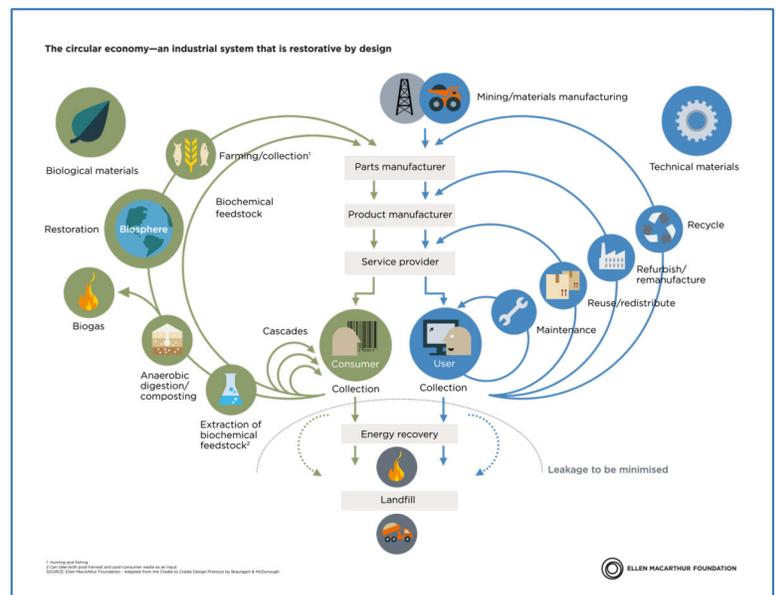
Refurbishment

PV modules can be damaged during transit, installation or moving. Some of these modules can be repaired for minor issues and there are several new organizations pursuing this option. If the product is still under warranty, the installer or manufacturer should be contacted to determine if repair is an option. Many modules that are repaired today are often reused in off-grid or non-grid connected applications. While this channel is not as developed as other end-of-life options, SEIA is actively exploring the related options with our members and other stakeholder

Reuse

PV systems may be decommissioned for several reasons. Repowering a solar system with newer technology that is more efficient or has a higher nameplate capacity can provide even more electricity from the same amount of space.

The replaced PV modules can be reused in other projects as they may still have plenty of useful life left. Often these modules can find new opportunities in charitable, off-grid or even grid-connected projects, provided they continue to meet the appropriate building codes and safety standards.

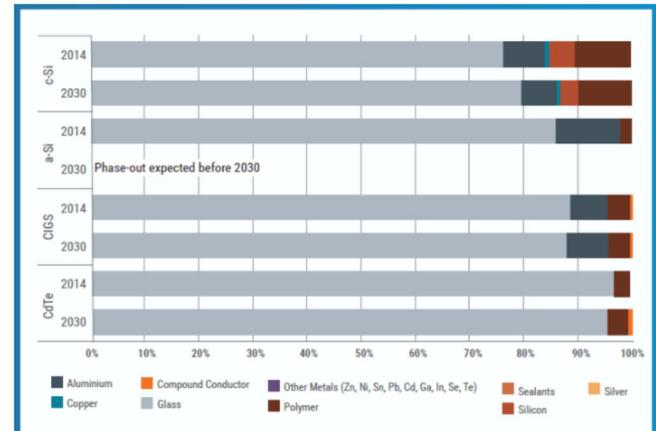


End-of-Life Considerations for Solar Photovoltaics

Recycling

Although most PV panels produced today will have a useful life for decades, there is inevitable waste created when panels are damaged during shipment or installation, determined to be defective, become obsolete or reach their end-of-life. High-value recycling can help minimize life-cycle impacts and recover valuable and energy-intensive materials, thereby increasing sustainability within the PV industry.

Recycling of solar equipment is increasingly possible as more recyclers accept modules. PV panels typically consist of glass, aluminum, copper, silver and semiconductor materials that can be successfully recovered and reused. By weight, more than 80 percent of a typical PV panel is glass and aluminum – both common and easy-to-recycle materials.



Source: IRENA and IEA-PVPS (2016), "End-of-Life Management: Solar Photovoltaic Panels," International Renewable Energy Agency and International Energy Agency Photovoltaic Power Systems.

Cooperation throughout the value chain



Research and development of PV-specific recycling equipment can optimize the recoverability and purity of reclaimed materials. The start-up and support of new organizations will help the industry extend the useful life of existing products while maintaining the quality and safety of the equipment. Working together with stakeholders from all these areas will help inform and develop policy appropriately so that end-of-life management solutions complement the deployment of solar.

SEIA PV Recycling Partner Network



SEIA PV Recycling Partner Network Pending



SEIA's PV Recycling Working Group actively seeks and develops recycling partners across the U.S. While the majority of PV modules installed today will stay in service for more than 20+ years, some waste is generated from weather events, manufacturing scrap and warranty-related claims. The recyclers provide their services to installers, project and system owners, developers, distributors and other parties.