

Senate Energy and Natural Resources Committee

Daley Frenette 271-3042

HB 1459-FN, relative to recycling solar panels.

Hearing Date: March 29, 2022

Members of the Committee Present: Senators Avard, Giuda, Gray, Watters and Perkins Kwoka

Members of the Committee Absent : None

Bill Analysis: This bill establishes a program and fund for the recycling of photovoltaic solar panels.

Sponsors:
Rep. Plett

Who supports the bill: 3 people signed in support.

Who opposes the bill: 102 people signed in opposition.

Who is neutral on the bill: None.

Sign in Sheets are Available Upon Request

Summary of testimony presented:

Representative Plett, Hillsborough-District 6

- HB 1459-FN establishes a program and fund for the recycling of photovoltaic solar panels. It is modeled after a law adopted in Washington State, chapter 70.355 RCW. California has a rule to facilitate recycling that took effect in January of 2021.
- Some states such as New Jersey and North Carolina, passed laws in 2020 to require the study of end-of-life PV management options to help develop options for legislative or regulatory considerations. As of May 2020, Hawaii had pending legislation that would require a comprehensive study of issues related to PV module recycling and end of life management. Rhode Island has considered legislation that, if enacted, would create a PV module manufacturer

stewardship and takeback program. The US Department of Energy just announced that they are studying this issue.

- In most states, the responsibility of residential solar panel disposal currently falls on homeowners, adding another financial barrier to solar technology. Depending on the type of solar panel, solar waste has the potential to leach hazardous materials such as cadmium, lead, silver, telluride, and selenium into soil and water, which could harm surrounding communities and ecosystems. Close to 100% of the materials in a solar panel are recyclable or reusable, but the heavy metals are a concern. The panels also have adhesives and sealants that make breaking them apart challenging. Solar panels are complicated to recycle.
- Most solar panel recyclers can mechanically recover the layers of glass, aluminum, and copper wiring. However, strategies for improving recovery of the semiconductor layer, especially the market-dominant silicon, are being developed by a limited number of companies in the US.
- “The longevity of these panels, the way they are put together and how they make them make it inherently difficult to, to use a term, de-manufacture,” said Mark Robards, director of special projects for ECS Refining, one of the largest electronics recyclers in the US. The panels are torn apart mechanically and broken down with acids to separate out the crystalline silicon, the semiconducting material used by most photovoltaic manufacturers. Heat systems are used to burn up the adhesives that bind them to their armatures, and acidic hydro metallurgical systems are used to separate precious metals.
- The installer could choose to contract with solar recycling companies to affect the take back. A quick Internet search will identify several companies.
- Through 2020, 153 MW of solar panels have been installed in New Hampshire. 389 MW are projected through 2025. This translated in round terms to two million panels, 400 acres worth. The installations are rapidly proliferating. And that means that there will be a lot of solar panels heading for the scrap pile. Panels may have an economic life of 15 to 30 years, or less. Some installed early in the period of solar growth may be headed there. Decommissioned PV modules could total 1,000,000 tons of waste in the United states by 2030, or 1% of the world e-waste.
- What is a solar panel useful life? Just like a lot of other equipment, solar panels do not perform at 100% for their entire life and then just stop working in year 30. Instead, solar panels, at a very slow rate, produce less electricity as they age. This process is called degradation. because of solar panel degradation, most panels production warranties change as they age. Manufacturers typically guarantee 90% of the panels production until the first ten years period after 10 years, that percentage drops back to 80% for the remaining 15 to 20 years period after the systems useful life, the panels can go on producing electricity, but at a diminished rate, so economics may dictate replacement with new panels, especially if new solar panels become more efficient and cheaper.

- This is an incipient problem, that getting ahead of it, as is bill does, saves precious landfill space, and major costs to municipal or private waste management entities money by keeping the panels out of the waste stream.
- The difference between solar panels and other power production is that solar panels are dispersed through large area, each being of relatively little economic value at end of life. Central station power plants can be can be and are remanufactured or repurposed, on the other hand.
- It differs from small electronics and appliances that a local DPW can handle for typically \$25 or under. The cost per solar panel may run 25 to \$30 to recycle as the cost per homeowner can run well over \$600. This recent inflation, this could be over \$1000.
- The bill before you passed the STE committee of the house, and then the full house, with minor typographical errors that needed fixing, which could be repaired by an amendment from the body or by legislative services on final passage. in many places the text refers to a installer when an installer would be better English. On page 2, lines 22 and 32, there is reference to “distributor, installer or installer”, when the second instance of the installer should be “retailer”.
- And the clerk of the house should have designated this bill as an early bill but did not. He admits that this was an error. The result is this did not get referred to the Finance Committee. This needs fixing by this body.
- In conclusion, this bill anticipates a problem that will certainly come about without addressing it. It does not kick the can down the road.
- Senator Giuda asked a question in reference to page 2 lines 25-26 which says that the photovoltaic modules can be delivered to take back locations without cost to the last owner or holder. He asked who would assume those costs. Representative Plett clarified that the installer would pick up the cost. These costs would be at the beginning of life and not the end of life. It ended up being on the installer because there is no way to chase international retailers in countries like China and Mexico.
- Senator Giuda asked if there is a market for the recycled heavy metals or the materials we are trying to keep from leaching into the ecosystem. Representative Plett stated that he found several entities on the internet who do that.

Mark Sanborn, Department of Environmental Services

- DES opposes the bill for two reasons. Firstly, they do not feel like they have enough information, and the waste management division does not feel like they understand the topic of recycling this equipment well enough at this point to effectively implement this legislation. They believe that this should be included in the study bill that is part of HB 1049 that is looking at waste management in the state overall. The second issue they have with the bill is that there is a fee

attached. They do not feel comfortable establishing a fee on something that they do not feel ready to administer. DES would like to study this and gain a better understanding of how it fits into other waste management and landfill issues we are dealing with in NH.

Sam Evans, CENH

- CENH opposes the bill. The national renewable energy laboratory suggests that by 2030, solar panels could be as much as 1 percent of the nation's e-waste. E-waste makes up 2 percent of our waste stream. We are coming in with a program that is aimed at a single product that would make up 1 percent of 2 percent of our waste. There is no stewardship plan for any products such as laptops and cell phones.

James Hasselbeck , Revision Energy

- Mr. Hasselbeck testified in opposition to HB 1459-FN. He has been personally involved in the design, installation, construction, and maintenance of solar panels in NH since 2008.
- His role as director of operations at Revision Vision energy allows him to represent 340 employee owners in our state and in Maine and Massachusetts. Since 2018, he has also served on the board of directors of the Amicus Operations and Maintenance Cooperative. Operations and maintenance are part of the industries term that deals directly with end-of-life care in these solar systems. The Amicus operations and Maintenance Cooperative was a result of a national Department of Energy sunshot grant in our mission was directly focused to improve, streamline, and reduce the costs of operations and maintenance and end of life planning for solar systems. He has experience at the local, state and national levels and has perspective on what the industry is already doing to solve this problem.
- Mr. Hasselbeck opposes the bill for four reasons. Firstly, New Hampshire does not currently have a problem related to an overabundance of solar panels. Solar panels most commonly installed in our region are 99% nonhazardous and 95% recyclable with technology readily available today. These percentages and costs will continue to drop in the multi decades between now and the time we need to decommission these systems.
- Secondly, renewable energy companies are uniquely focused on environmental impacts as a part of their business model. End of life considerations for solar systems are real and as an industry they are 100% committed to solving them. This work is well underway in New Hampshire and nationally.
- Thirdly, this bill places an inordinate financial penalty on small businesses operating in an already challenging environment. It will ultimately result in

increasing costs to end user consumers and worse yet, the potential loss of jobs in clean energy companies in NH.

- Finally, this bill seems uniquely un-New Hampshire because it imposes a legislatively mandated and administrative and compliance burden to one particular segment of the free economy. The precedent this bill would set for consumer electronics which has other significantly more dangerous components inside would be pretty troubling if we take into account televisions, cell phones, computers, and air conditioners. The federal government is working on this, the Department of Energy is working on this, and there are a great deal of resources out there putting hundreds of millions of dollars into this exact problem because this is not a cost, this is a future revenue stream. There is a debate called circular manufacturing economy and they are doing this already. There is one particular company that Mr. Hasselbeck has worked with that paid paid hosts \$2 million last year for the “privilege” to recycle their solar panels. This is happening already, and he worries that if this bill adds first cost right today to his industry, we will have one more challenge to overcome in creating jobs.
- Currently, Mr. Hasselbeck has 155 well paid electricians working for his team. He stated that in 2022 he will hire 90 more people and 15 of those jobs will be in the state of New Hampshire. There is more opportunity in Maine and Massachusetts. The only difference in our growth trajectories in New Hampshire is policy and it is hard enough in New Hampshire already. Mr. Hasselbeck stated that he is a job creator and he wishes to continue to be one in New Hampshire.
- Senator Avard asked where the 95% recyclable materials get recycled. Mr. Hasselbeck stated that there is a variety of different resources including a company he works with in Goffstown. There are other national providers as well with some located in Massachusetts.

Rick Russman

- Mr. Russman opposes HB 1459-FN. He believes it is anti-consumer and anti-business because it drives up costs. He stated that the New Hampshire way is to protect job creators. We are supposed to be welcoming of small businesses and this bill does not do that. The bill expands government, increases regulation, and it essentially adds a new tax. The DOE is already working on this issue at the federal level.
- Due to international events surrounding Russia and Ukraine, we will likely be mining these materials to avoid dealing with other countries. Mr. Russman had panels on his office in the past and he expects that by the time they reach their end of life in 20 years we will have invented more efficient solar panels. He also expects that the company will take the old ones away for him.
- He serves as the Chair of the Solar Energy Committee in Kingston. They will be putting solar panels on their landfill as part of their proposal they are requesting that end of life issues be taken care of.

Representative Plett, Hillsborough-District 6

- Representative Plett stated that the opposition from DES was a surprise for him. He spoke with their staff, and they were neutral at the time. They never testified when the bill was in the House.

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Date Hearing Report completed: April 5, 2022