

ASSEMBLY THIRD READING
AB 2 (Ward)
As Amended May 18, 2023
Majority vote

SUMMARY

Requires manufacturers of solar photovoltaic (PV) panels to develop and implement an end-of-life management plan (Plan) for the safe, convenient, and environmentally sound management and recycling of solar PV panels. Requires the Department of Resources, Recycling and Recovery (CalRecycle) to adopt regulations for the implementation of a Plan that includes the adoption of an administrative fee, paid by manufacturers of solar PV panels to CalRecycle to cover their administrative costs.

Major Provisions

COMMENTS

Life expectancy of a solar panel: According to the Solar Energy Industries Association, "[Solar panels] are designed to last more than 25 years, and many manufacturers back their products with performance guarantees backed by warranties. The lifespan of a [solar panel] is approximately 20-30 years, while the lifetime of an inverter is approximately 10 years. Therefore, many solar products have not yet reached end-of-life, and in fact, panels installed in the early 1980s are still performing at levels nearly equal to the installation performance level. Thus, even accounting for the dramatic growth of the industry, annual [solar panel] waste will not exceed 10,000 tons until after 2014, and will not exceed 100,000 tons until after 2017."

Right now, solar panel recycling suffers from a chicken-or-egg problem: there currently are not many places to recycle old solar panels, and there are not enough defunct solar panels to make recycling them economically attractive.

Solar energy is ever-growing: Under California law, SB 350 (De León, Chapter 547, Statutes of 2015), the renewable portfolio standard (RPS) requires 50% of all of California's energy to be generated from eligible renewable energy resources, including solar energy, by 2030. Solar power will be an integral part in reaching the RPS requirements for 2030.

Are solar panels hazardous? End-of-life disposal of solar products in the United States is governed by the federal Resource Recovery and Conservation Act (RCRA), and the state hazardous waste control law (HWCL). Under RCRA, solar panels may be classified as hazardous waste if the solar PV panel fails to pass the Toxicity Characteristics Leach Procedure (TCLP) test. Many solar PV panels pass the TCLP test, and thus are classified as non-hazardous and are not regulated as a hazardous waste under RCRA. However, the production of solar PV panels involves toxic heavy metals, such as cadmium, copper, lead, and selenium; therefore, some solar panels are likely to exhibit the characteristic of toxicity that have adverse environmental and public health effects and could become hazardous waste under the HWCL.

On October 1, 2015, SB 489 (Monning), Chapter 419, Statutes of 2015, was enacted to add Section 25259 to Health and Safety Code, which authorizes the department of Toxic Substances

Control (DTSC) to adopt regulations to designate end-of-life PV modules that are identified as hazardous waste as a universal waste and subject those modules to universal waste management.

Universal waste: Universal wastes are hazardous wastes that are widely produced by households and many different types of businesses. Universal wastes include televisions, computers, other electronic devices, batteries, fluorescent lamps, mercury thermostats, and other mercury containing equipment, among others.

The hazardous waste regulations (California Code of Regulations (CCR), Title 22, Division 4.5, Chapter 11, Section 66261.9) establishes California's Universal Waste Rule, which identifies seven categories of hazardous wastes that can be managed as universal wastes. Any unwanted item that falls within one of these waste streams can be handled, transported, and recycled following the simple requirements set forth in the universal waste regulations (CCR, Title 22, Division 4.5, Chapter 23) versus the more stringent requirements for hazardous waste. The more relaxed requirements for managing universal wastes were adopted to ensure that they are managed safely and are not disposed of in the trash. The universal waste requirements are also less complex and easier to comply with, thereby increasing compliance.

Product stewardship (stewardship): Product stewardship, also known as Extended Producer Responsibility (EPR), is a strategy to place a shared responsibility for end-of-life product management on the producers, and all entities involved in the product chain, instead of the general public. Product stewardship encourages product design changes that minimize negative impacts on human health and the environment, at every stage of the product's lifecycle. This allows the costs of treatment and disposal to be incorporated into the total cost of a product. It places primary responsibility on the producer, or brand owner, who makes design and marketing decisions. It also creates a setting for markets to emerge that truly reflect the environmental impacts of a product, and to which producers and consumers respond.

Current state stewardship programs: There are several statewide EPR programs in California, all of which are overseen by the CalRecycle. They include: carpet materials management, paint product management, household batteries, mattress product management, and home-generated pharmaceutical waste and sharps waste.

This bill: It is important to note that this bill does not enact an EPR program for solar PV panels; however, AB 2 does enact one element of a solar PV panel EPR program by requiring manufacturers of solar panels to develop and implement an end-of-life management plan for solar PV panels. This bill is designed to work in tandem with AB 1238 (Ward) that is currently moving through the legislative process. AB 1238 requires DTSC to develop alternative management standards that are both protective of human health and the environment and that create flexibility for the solar PV panel recycling industry to recycle solar panels in California.

According to the Author

"In 2006, California launched the Million Solar Roofs Initiative to incentivize consumers and businesses to invest in solar. As of 2022, California has the largest solar market in the United States, supplying over 20% of its electricity. Unfortunately, given a 20-30 year life span, many of these panels are beginning to reach the end of their lifecycle. Assembly Bill (AB) 2 will establish the foundation for a convenient, safe, and environmentally sustainable system for the end-of-life management of solar photovoltaic (PV) panels. With the right conditions in place, end-of-life industries for PV panels can thrive as an important pillar of a sustainable solar industry in California."

Arguments in Support

According to Sierra Club California, "The International Renewable Energy Agency (IRENA) estimates that solar panel waste could total 78 million tons by 2050. Solar panel waste is expected to rise in the early 2030s as manufacturing innovation increases solar photovoltaic conversion efficiency and residential solar panel owners opt to replace their panels before the end of their 30-year lifetime.

Prioritizing the development of PV end-of-life management will help reduce the environmental impacts of solar energy, such as groundwater and soil contamination, and ultimately make solar energy more affordable.

As we continue to make the transition from fossil fuels to renewable energy alternatives, it is essential that the state lead by example in building upon existing PV module waste management regulations for the benefit of people and the planet."

Arguments in Opposition

None on file.

FISCAL COMMENTS

According to the Assembly Appropriations Committee, enactment of this bill could result in costs to CalRecycle of approximately \$1.7 million in fiscal year (FY) 2024-25, \$2.8 million in FY 2025-26, and \$3.0 million in FY 2026-27 and ongoing for new staff positions to develop regulations and guidelines, review and evaluate notices, plans, and reports from manufacturers, and provide ongoing assistance. These costs would be fully covered by fees paid to CalRecycle by manufacturers of PV panels.

VOTES

ASM ENVIRONMENTAL SAFETY AND TOXIC MATERIALS: 8-0-1

YES: Lee, Hoover, Arambula, Bauer-Kahan, Connolly, McKinnor, Pacheco, Zbur

ABS, ABST OR NV: Ta

ASM NATURAL RESOURCES: 10-0-1

YES: Luz Rivas, Addis, Friedman, Hoover, Mathis, Muratsuchi, Pellerin, Ward, Wood, Zbur

ABS, ABST OR NV: Flora

ASM APPROPRIATIONS: 12-2-2

YES: Holden, Bryan, Calderon, Wendy Carrillo, Mike Fong, Hart, Lowenthal, Mathis, Papan, Pellerin, Weber, Ortega

NO: Megan Dahle, Dixon

ABS, ABST OR NV: Robert Rivas, Sanchez

UPDATED

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