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## SENATE COMMITTEE ON APPROPRIATIONS

Senator Anthony Portantino, Chair  
2023 - 2024 Regular Session

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### AB 2 (Ward) - Recycling: solar photovoltaic modules

**Version:** June 28, 2023

**Urgency:** No

**Hearing Date:** August 14, 2023

**Policy Vote:** E.Q. 5 - 0

**Mandate:** Yes

**Consultant:** Ashley Ames

**Bill Summary:** This bill would add customer-owned solar panels to the existing electronic waste recycling program, establish a recycling fee on covered solar panels, and require solar panels not owned by customers to be included in an end-of-life plan.

#### **Fiscal Impact:**

- The Department of Resources Recycling and Recovery (CalRecycle) estimates one-time costs of about \$2 million each year in 2024-25 and 2025-26 for 14 positions to promulgate regulations, develop guidelines, and receive written notices. CalRecycle also estimates ongoing annual costs of \$3.3 million beginning in 2026-27 for 23 positions to review plans and reports and to provide ongoing assistance. CalRecycle notes that this bill as currently written would provide the department with only limited enforcement authority, and therefore its estimate does not include enforcement costs.

**Background:** California has established an ambitious path toward solar energy deployment, aiming for 100% clean energy, including solar, by 2045. To reach this goal, the state has enacted various policies and laws to foster residential and commercial solar energy development. Key initiatives include the 1978 Solar Energy Development Act, targeting 20% solar energy by 2020; the 2006 Solar Initiative, offering incentives for solar panel installations; the 2018 Self-Generation Incentive Program (SGIP), promoting self-generated electricity, including from solar; and AB 1414 (Friedman, Chapter 849, Statutes of 2017), requiring new homes to have proper infrastructure for solar installation. As a result, about 1.5 million homes and businesses have installed rooftop solar systems. California leads the nation in solar power generation, accounting for approximately 13% of the state's electricity in 2018. The burgeoning solar industry supports a growing number of businesses and jobs, with 403 manufacturers, 1103 installers/developers, and 874 other solar-related businesses recorded in the first quarter of 2023.

*End-of-life solar panels.* According to a 2020 report by SEIA, there are an estimated 100,000 metric tons of solar panels in landfills in the United States. The majority of these panels are located in California, which has the largest solar market in the country. These numbers will grow at an increasing rate to reflect the increase in solar panel deployment over the last decades. The SEIA report estimates that between 200,000 and 300,000 metric tons of solar panels will reach the end of their lifespan and be headed to landfills in the next ten years.

*Extended producer responsibility (EPR).* EPR refers to a waste management strategy that makes the manufacturer of a product responsible for the products' entire life-cycle costs including its end-of-life costs associated with recycling or disposal. These costs

have traditionally been borne by local governments (and ultimately tax payers) through municipal waste disposal programs. This traditional structure results in an “externality” or a situation where the costs of recycling or disposal are not paid by the buyer or seller of the product, but rather by a third party (such as tax payers). EPR shifts the costs of managing a product at its end of life from waste disposal programs to the manufacturer of the product. By requiring manufacturers to cover end-of-life costs, these costs are incorporated or “internalized” into the total cost of the product when it is sold. Therefore, the price that consumers pay reflects the entire cost of the product—its production and disposal. This means that the people making and using the product cover all of its costs, rather than local governments and taxpayers covering a share of disposal costs. Moreover, manufacturers have a financial incentive to design products that are inexpensive to recycle. In California, EPR is already used for carpet, mattresses, and paint.

*Mixed results for California EPR programs.* To date, the Legislature has enacted four EPR programs of which CalRecycle has enforcement authority – paint, carpet, mattresses, and pharmaceutical and sharps waste – showing varying degrees of success. While CalRecycle does not appear to have oversight issues with the paint stewardship program, CalRecycle was subject to an audit for its oversight of the mattress recycling program. The carpet recycling program has encountered the most challenges of the EPR programs with the enforcement history of the carpet stewardship organization being extensive and complicated. Only enacted in 2018, the pharmaceutical and sharps waste program is still in development.

*Existing Solar Panel Management Policies.* In 2017, Washington State passed legislation that established an EPR program for solar PV modules. Under this law, manufacturers or other producers of solar panels are responsible for developing and implementing a stewardship plan that, among other things, sets a combined reuse and recycling rate of at least 85% by weight of solar PVs. The program will begin July 1, 2025. Washington is the first state in the nation to develop an EPR program for solar panels. In the European Union, regulations have required an 85% collection and 80% recycling rate of the materials used in PVs under the Waste Electrical and Electronic Equipment Directive since 2012.

**Proposed Law:** This bill would add consumer-owned solar panels to the existing electronic waste recycling program, establish a recycling fee on covered solar panels, and require solar panels not owned by customers to be included in an end-of-life plan. Specifically, this bill would:

1. Add customer-owned solar photovoltaic (PV) modules as a covered electronic device under the Electronic Waste Recycling Act.
2. Require CalRecycle to establish a covered solar PV recycling fee by October 1, 2026 and adjust the fee on or before October 1 of every year based on the Consumer Price Index in order to cover the regulatory and administrative costs of covered electronic waste recycling.
  - a. Require consumers to pay the fee on the purchase of a new or refurbished covered solar PV module product.

3. Require noncustomer-owned solar PV modules be included in a plan that describes how the module will be managed at the end of its useful life, who is responsible for managing it, and how it will be recycled, refurbished, or reused by January 1, 2028.
4. Require CalRecycle to develop guidelines for the development of the plan, and adopt regulations to implement the bill by January 1, 2026.
5. Require that all records provided to CalRecycle pursuant to these provisions be under penalty of perjury.

**Related Legislation:**

AB 1215 (Newman, Chapter 370, Statutes of 2022) expanded the Electronic Waste Recycling Act to include battery-embedded products.

AB 2440 (Irwin, Chapter 351, Statutes of 2022) required producers of covered batteries, as defined, to establish a stewardship program for the collection and recycling of covered batteries.

SB 244 (Archuleta, 2021) would have required CalRecycle, in consultation with DTSC, to develop guidance for the proper handling and disposal of lithium-ion batteries and would have required the Department of Forestry and Fire Protection to develop protocols and training for the detection, safe-handling, and suppression of fires started from discarded lithium-ion batteries in the waste-handling system to be adopted by solid waste enterprises. SB 244 was vetoed by the Governor.

**Staff Comments:** CalRecycle notes that this bill as currently written would provide limited enforcement authority, and therefore its estimate does not include enforcement costs. Any amendments that add or expand CalRecycle's enforcement authority could result in higher costs. As noted in the Senate Environmental Quality Committee analysis, this bill does not have an enforcement mechanism to ensure that the end-of-life management plans for non-customer-owned solar panels are actually developed, that they align with the plans developed in CalRecycle's guidelines, or that they are implemented. While CalRecycle is authorized to develop guidelines for writing a plan, and this includes selective auditing by the department, it is unclear what entities CalRecycle would be auditing, what rubric CalRecycle would bring to inform the audit, or what the consequence would result if an audit found plans lacking. Without this enforcement mechanism, there is no way of ensuring that the provisions in the bill will be followed or that the policy goals of the measure will be achieved. As there is currently no requirement that the plans be implemented, the process for enforcing such a requirement is also not stipulated.

CalRecycle also notes that this bill would not establish a traditional EPR program, as its structure is open-ended and would allow manufactures to develop their own end-of-life plans. This issue is discussed in greater detail in the Senate Environmental Quality Committee analysis.