
SENATE COMMITTEE ON ENVIRONMENTAL QUALITY

Senator Allen, Chair

2021 - 2022 Regular

Bill No: SB 207
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Urgency: No
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Fiscal: Yes

SUBJECT: Photovoltaic Recycling Advisory Group

DIGEST: Requires the Secretary for the California Environmental Protection Agency to convene the Photovoltaic Advisory Group to review, and advise the Legislature on, policies pertaining to the recovery of photovoltaic panels (solar panels) and their components.

ANALYSIS:

Existing federal law:

- 1) Under the federal Resource Conservation and Recovery Act of 1976 (RCRA) and subsequent amendments to RCRA requires the United States Environmental Protection Agency (US EPA) to establish standards and regulations for the management and disposal of hazardous materials and wastes.
- 2) US EPA's universal waste regulations streamline hazardous waste management standards for federally designated "universal wastes," which include batteries, pesticides, mercury-containing equipment, and bulbs (lamps). The regulations govern the collection and management of these widely generated wastes and provide that states can modify the universal waste rule and add additional universal waste as governed by state hazardous waste laws.

Existing California law:

- 1) Under the Integrated Waste Management Act of 1989, requires each city and county in California to implement a plan to divert 50 percent of its waste stream (Public Resources Code (PRC) §41780, et seq.).
- 2) Under the Hazardous Waste Control Act (HWCA), provides for the registration, licensure, and permitting of hazardous waste generators, transporters, and storage, transfer and disposal facilities. HWCA requires the

Department of Toxic Substances control (DTSC) to implement and enforce the Act (Health & Safety Code (HSC) §25000 et seq.).

- 3) Defines “universal waste” to mean hazardous waste identified as universal waste in Section 66273.9 of Title 22 of the California Code of Regulations, or a hazardous waste designated as a universal waste pursuant to HWCA (HSC §25123.8).
- 4) Requires the Department of Resources Recycling and Recovery (CalRecycle) to coordinate with DTSC to develop and implement a public information program to provide uniform and consistent information on the proper disposal of hazardous substances found in and around homes, and to assist the efforts of counties required to provide household hazardous waste collection, recycling, and disposal programs (PRC §47050-47051).
- 5) Sets a target of requiring electric utilities to generate 60% of retail sales of electricity from renewable energy resources by December 31, 2030, to be implemented through the California Renewables Portfolio Standard Program (RPS) (Public Utilities Code §399.11 et seq.).

This bill:

- 1) Requires, on or before April 1, 2022, the Secretary for the Environmental Protection Agency (CalEPA) to convene the Photovoltaic Advisory Group (Advisory Group) to review, and advise the Legislature on, policies pertaining to the recovery of photovoltaic panels and their components.
- 2) Requires the Secretary of CalEPA to appoint the following members to the Advisory Group:
 - a) CalRecycle or their designee.
 - b) DTSC or their designee.
 - c) A photovoltaic panel or solar energy system manufacturer.
 - d) An organization that represents one or more photovoltaic panel manufacturers.
 - e) An electronic waste recycler or an organization that represents one or more electric waste recyclers.
 - f) A photovoltaic panel or solar energy system repair dealer or an organization that represents one or more photovoltaic panel or solar energy system repair dealers.
 - g) An environmental organization that specializes in waste reduction and recycling.
 - h) A representative of the solar industry.

- i) A standards organization that has a focus on photovoltaic or electrical engineering.
- 3) Requires, on or before April 1, 2025, the Advisory Group to submit policy recommendations to the Legislature aimed at ensuring that, to the extent possible, 100 % of photovoltaic panels in the state are reused or recycled in a safe and cost-effective manner in the state.
- 4) Sunsets the provisions of the bill on January 1, 2027.

Background

- 1) *Universal Wastes and its management.* Hazardous waste is a waste with properties that make it potentially dangerous or harmful to human health or the environment. To be considered a hazardous waste, it must appear on one of the four RCRA hazardous waste lists or exhibit one of the four characteristics of a hazardous waste – ignitability, corrosivity, reactivity, or toxicity. Under current law, it is illegal to dispose of hazardous waste in the garbage, down storm drains, or onto the ground.

Universal wastes, which are regulated by DTSC, are hazardous wastes that are widely produced by households and many different types of businesses. It comes primarily from consumer products containing mercury, lead, cadmium and other substances that are hazardous to human health and the environment. Examples of universal waste are batteries, fluorescent tubes, and many electronic devices. These items cannot be discarded in household trash or disposed of in landfills.

California's Universal Waste Rule allows individuals and businesses to transport, handle, and recycle universal wastes in a manner that differs from the requirements for most hazardous wastes. The aim of the alternative rule is to acknowledge the ubiquitous nature of universal waste and provide management rules that ensure that the product is managed safely and is not disposed of in the trash.

The hazardous waste regulations identify seven categories of hazardous wastes that can be managed as universal wastes. Any waste item that falls within one of these waste streams can be handled, transported, and recycled following the requirements set forth in the universal waste regulations.

The California Universal Waste categories are:

- Electronic devices: Includes any device that is a hazardous waste (with or without a Cathode Ray Tube (CRT)), including televisions, computer monitors, cell phones, VCRs, computer CPUs, and portable DVD players.
 - Batteries. Most household-type batteries, including rechargeable nickel-cadmium batteries, silver button batteries, mercury batteries, alkaline batteries, and other batteries that exhibit a characteristic of a hazardous waste.
 - Electronic lamps: Fluorescent tubes and bulbs, high intensity discharge lamps, sodium vapor lamps, and electronic lamps that contain mercury, as well as any other lamp that exhibits a characteristic of a hazardous waste (e.g., lead).
 - Mercury-containing equipment: Thermostats, mercury switches, mercury thermometers, pressure or vacuum gauges, dilators and weighted tubing, mercury rubber flooring, mercury gas flow regulators, dental amalgams, counterweights, dampers, and mercury added novelties such as jewelry, ornaments, and footwear.
 - CRTs: The glass picture tubes removed from devices such as televisions and computer monitors.
 - CRT glass: A cathode ray tube that has been accidently broken or processed for recycling.
 - Non-empty aerosol cans.
- 2) *Managing solar panels as universal waste.* In 2015, SB 489 (Monning, Chapter 419, Statutes of 2015) authorized DTSC to adopt regulations to designate photovoltaic modules (solar panels) that are identified as hazardous waste as universal waste and to subject those modules to universal waste management. Those regulations were recently adopted in September 2020 and are effective as of January 1 of this year.
- 3) *Life expectancy of a solar panel.* According to the Solar Energy Industries Association (SEIA), “[o]ver 95% of [solar panels] deployed in the U.S. have been installed since 2012, and such modules will stay in service for more than 25 years. Nonetheless some waste is generated when panels are damaged during production, shipment or installation, determined to be defective, by weather events, and for warranty-related claims.”
- 4) *Solar energy is ever-growing:* Under California law, the RPS requires 60% of all of California's energy to be generated from eligible renewable energy resources, including solar energy, by 2030; and 100% zero-carbon electricity by 2045 (note: “zero-carbon” sources include nuclear power, which is not renewable). According to a June 2016 report by the International Renewable

Energy Agency, “photovoltaic deployment has grown at unprecedented rates since the early 2000s. Global installation of [photovoltaic] capacity reached 222 gigawatts (GW) at the end of 2015 and is expected to rise further to 4,500 GW by 2050. Particularly high cumulative deployment rates are expected by that time in China (1,731 GW), India (600 GW), the United States (600 GW), Japan (350 GW), and Germany (110 GW).

The State Energy Resources Conservation and Development Commission (CEC) has the authority to prescribe, by regulation, energy efficiency standards, including efficiency standards for new residential and new nonresidential buildings. Under this authority, the CEC established regulations requiring residential buildings three stories and under built on and after January 1, 2020, to install solar panels. California leads the nation in the number of homes which have solar panels installed, totaling over 230,000.

Comments

- 1) *Purpose of Bill.* According to the author, “The use of solar energy to electrify the grid will have significant environmental benefits for years to come, as more and more solar panels are used to assist in meeting California’s energy goals. It has been proven that in less than ten years, California will be decommissioning more panels than installing them, in part due to the cumbersome requirements of recycling. The state needs to open the door for recycling businesses to conduct their work here and contribute to a future robust market of recovering green energy technologies. SB 207 is intended to highlight the importance of not just managing waste, but also the need for future organization. Many of our modern technologies, including energy generation technologies that can help buffer us in times of planned power outages, are reliant on materials that need to be carefully disposed of and managed. This trend will only increase, and California can address issues in their inception through the adoption of recommendations made by industry experts with SB 207.”
- 2) *Solar in California.* According to SEIA, as of 2020, a total of 29,218 megawatts (MW) of solar capacity has been installed (3,125 MW in 2019 alone) in California, making up 22% of all electricity in the state. In both 2019 and 2020, California ranked as the highest solar power generating state in the nation, producing enough solar capacity to power 7.8 million homes. In 2020, SEIA estimated that California will increase its solar capacity by over 17,000 MW over the next 5 years.

As we progress with growing this important source of energy for California, so will the volume of decommissioned PV panels. Because large amounts of

annual waste that are anticipated by the early 2030s, it is prudent to begin the discussion of how the waste from the spent photovoltaic modules will be handled and develop a system for the most environmentally sound reuse, recycling, and disposal at the end-of-life to prevent creating a waste problem from an energy solution.

The committee may wish to amend the bill to specify that the Advisory Group will review and advise the Legislation on policies on the recycling of photovoltaic panels and their components.

Related/Prior Legislation

SB 1152 (Skinner, 2020) would have required, commencing January 1, 2023, a manufacturer of a solar panel sold in California to include a label on the panel that provides disposal or recycling information of the solar panel at the end of its useful life. SB 1152 was not referred out of the Senate Rules Committee.

SB 489 (Monning, Chapter 419, Statutes of 2015) authorized DTSC to adopt regulations to designate photovoltaic modules that are identified as hazardous waste as universal waste and to subject those modules to universal waste management. Those regulations were recently adopted in September 2020.

SB 1020 (Monning, 2013) would have authorized DTSC to develop universal waste regulations for photovoltaic modules and would have required producers of photovoltaic panels, either individually or with other producers, to establish and operate a take-back program to provide for the collection, transportation, recovery, and recycling of end-of-life photovoltaic panels. SB 1020 was held in this committee at the request of the author.

SOURCE: Author

SUPPORT:

Rural County Representatives of California

OPPOSITION:

None received