

Date of Hearing: April 13, 2026

ASSEMBLY COMMITTEE ON NATURAL RESOURCES

Isaac G. Bryan, Chair

AB 2334 (Bennett) – As Introduced February 19, 2026

SUBJECT: Solid waste: methane reduction: working group

SUMMARY: Requires the director of the Department of Resources Recycling and Recovery (CalRecycle) to establish a working group to study the need for and value of alternative methods of methane reduction, including potential carbon capture.

EXISTING LAW:

- 1) Establishes the Integrated Waste Management Act (IWMA), which generally governs the management of solid waste and recycling in the state, and is implemented by CalRecycle. (Public Resources Code (PRC) 40000 *et seq.*)
 - a) Defines “engineered municipal solid waste (EMSW) conversion” as the conversion of solid waste through a process that meets all of the following requirements:
 - i) The waste is beneficial and effective in that it replaces or supplements the use of fossil fuels;
 - ii) The waste, resulting ash, and any other products of the conversion do not meet the criteria or guidelines for the identification of a hazardous waste, as specified;
 - iii) The conversion is efficient and maximizes the net calorific value and burn rate of the waste;
 - iv) The waste contains less than 25% moisture and less than 25% noncombustible waste;
 - v) The waste is handled in compliance with the requirements for the handling of solid waste, as specified, and no more than a seven-day supply of the waste is stored at the facility at any one time;
 - vi) No more than 500 tons per day of waste is converted at the facility;
 - vii) The waste has an energy content equal to, or greater than, 5,000 BTU per pound; and,
 - viii) The waste is mechanically processed at a transfer or processing station to reduce the fraction of chlorinated plastics and materials.
 - b) Defines “recycle” or “recycling” as the process of collecting, sorting, cleansing, treating, and reconstituting materials that would otherwise become solid waste, and returning them to the economic mainstream in the form of raw material for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace. “Recycling” does not include transformation, as defined in Section 40201 or EMSW conversion. (PRC 40180)

- c) Defines “solid waste disposal,” “disposal,” or “dispose” as the final deposition of solid wastes onto land, into the atmosphere, or into waters of the state. For specified purposes, defines these terms to include the management of solid waste through landfill disposal, transformation, or EMSW conversion at a permitted solid waste facility. For specified purposes, further defines these terms to mean the final deposition of solid waste onto land. (PRC 40192)
 - d) Defines “transformation” as incineration, pyrolysis, distillation, or biological conversion other than composting. Specifies that “transformation” does not include composting, gasification, EMSW conversion, or biomass conversion. (PRC 40201)
 - e) Requires that CalRecycle and local jurisdictions promote waste management practices in the following order of priority:
 - i) Source reduction;
 - ii) Recycling and composting; and,
 - iii) Environmentally safe transformation and environmentally safe land disposal. (PRC 40051)
- 2) Pursuant to SB 54 (Allen), Chapter 75, Statutes of 2022, establishes the Plastic Pollution Prevention and Packaging Producer Responsibility Act (PRC 42040 *et seq.*), which:
- a) Requires, by January 1, 2024, producers of covered material to form and join a producer responsibility organization (PRO), subject to specified requirements and CalRecycle approval, to carry out the requirements of the Act. Prohibits a producer of covered material from selling, offering for sale, importing, or distributing covered materials in the state unless the producer is approved to participate in the PRO.
 - b) Requires that all covered material offered for sale, distributed, or imported into the state on and after January 1, 2032, is recyclable in the state or eligible to be labeled "compostable," as specified.
 - c) Requires that all plastic covered material offered for sale, distributed, or imported into the state to meet the following recycling rates:
 - i) Not less than 30% of covered material on and after January 1, 2028;
 - ii) Not less than 40% of covered material on and after January 1, 2030; and,
 - iii) Not less than 65% of covered material on and after January 1, 2032.
 - d) Prohibits producers of expanded polystyrene (EPS) food service ware from selling, offering for sale, distributing, or importing into the state EPS food service ware unless the producer demonstrates to CalRecycle that all EPS meets the following recycling rates:
 - i) Not less than 25% on and after January 1, 2025;
 - ii) Not less than 30% on and after January 1, 2028;
 - iii) Not less than 50% on and after January 1, 2030; and,
 - iv) Not less than 65% on and after January 1, 2032 and annually thereafter.
 - e) Requires, by January 1, 2032, the PRO to develop and implement a plan to achieve 25% reduction by weight and 25% reduction by plastic component for covered material sold,

offered for sale, or distributed in the state, as prescribed, including interim targets of 10% by January 1, 2027, and 20% by January 1, 2030.

- 3) Requires the Air Resources Board (ARB), pursuant to SB 1383 (Lara), Chapter 395, Statutes of 2016, to develop a comprehensive strategy to reduce the emissions of short-lived climate pollutants (SLCP) to achieve a 40% reduction in methane emissions, 40% reduction in hydrofluorocarbon gases, and 50% reduction in anthropogenic black carbon below 2013 levels by 2030. (Health and Safety Code (HSC) 39730-39730.5)
- 4) Requires the state to reduce the disposal of organic waste by 40% from the 2014 level by 2020 and 75% by 2025 to help achieve the state's methane reduction goal. (HSC 39730.6)

THIS BILL:

- 1) Requires the director of CalRecycle to establish a working group to study the need for and value of alternative methods of methane reduction in the event SB 54 and SB 1383 are implemented as planned.
- 2) Requires the working group to evaluate existing alternative waste disposal programs and their potential carbon capture components, including the Oslo, Norway program, and evaluate their applicability to the state.
- 3) Requires the working group to submit its findings and recommendations to the director on or before January 1, 2029.
- 4) Repeals the bill's provisions on January 1, 2030.

FISCAL EFFECT: Unknown

COMMENTS:

- 1) **Solid waste in California.** For more than three decades, CalRecycle has been tasked with reducing disposal of municipal solid waste and promoting recycling in California. Under IWMA, the state has established a statewide 75% source reduction, recycling, and composting goal by 2020. Over the years the Legislature has enacted various laws intended to increase the amount of waste that is diverted from landfills. According to CalRecycle's *State of Disposal and Recycling in for Calendar Year 2024*, 44.7 million tons of material was disposed into landfills and 32.4 million tons of material was recycled, resulting in a statewide recycling rate of 42%. According to the report, California generates over 6 pounds of trash per person every day.
- 2) **Organic waste recycling.** An estimated 35 million tons of waste are disposed of in California's landfills annually. More than half of the materials landfilled in the state are organics. CalRecycle's 2021 waste characterization study found that 34% of disposed waste is organic waste. SB 1383 requires ARB to approve and implement a comprehensive SLCP strategy to achieve, from 2013 levels, a 40% reduction in methane, a 40% reduction in hydrofluorocarbon gases, and a 50% reduction in anthropogenic black carbon, by 2030. In order to accomplish these goals, the law specifies that the methane emission reduction goals

include targets to reduce the landfill disposal of organic waste, including food, 50% by 2020 and 75% by 2025 from the 2014 level.

- 3) **SB 54.** SB 54 created sweeping new minimum recycling requirements for single-use plastic packaging and food service ware (covered material), source reduction requirements for plastic covered material, and prohibits the sale or distribution of expanded polystyrene unless it meets accelerated recycling rates. SB 54 requires producers to comply with the bill's requirements through an expanded producer responsibility program. Under SB 54, covered material must meet specified recycling and source reduction requirements by 2027, which ramp up until all covered material must achieve and maintain a 65% recycling rate and a 25% source reduction requirement by 2032. This law additionally requires producers, through the producer responsibility organization, to pay \$500 million per year for ten years (from 2027 to 2037) to be deposited into the California Plastic Pollution Mitigation Fund, which the bill established to fund various environmental and public health programs.
- 4) **Waste to energy.** Waste to energy (WTE) technologies are any waste treatment process that creates energy in the form of electricity or heat from solid waste. The most common type of WTE is incineration, which refers to the direct combustion of solid waste in the presence of oxygen between 750 and 1100°C to generate heat, electricity, or combined heat and power. Newer technologies include gasification, which refers to the partial oxidation of waste between 800 and 1200°C in the presence of a controlled amount of oxygen that produces synthetic gas for further combustion or conversion to chemical feedstock. Pyrolysis refers to the thermal degradation of waste between 300 and 1300°C in the absence (or near absence) of oxygen that produces liquid fuel for further combustion or conversion to chemical feedstock.

Incineration generates significant quantities of toxic air emissions as well as greenhouse gas (GHG) emissions. The United States Environmental Protection Agency estimated that in 2005 domestic incinerators emitted nearly 50,000 tons of nitrogen oxides, 4,600 tons of sulfur dioxide, 3,200 tons of hydrogen chloride, 780 tons of particulate matter, 15 tons of dioxins/furans, 5.5 tons of lead, 2.3 tons of mercury, and 0.2 tons of cadmium. According to the Intergovernmental Panel on Climate Change, incinerators generate approximately 0.7 to 1.2 metric tons of CO₂ for every metric ton of waste burned.

Both gasification and pyrolysis have gained attention in recent years as a form of “advanced recycling” (previously known as conversion technologies and also referred to as chemical recycling), which is a term widely used by the plastic and oil industries to describe technologies that convert plastic back into chemicals, fuel, or oil. When used to convert waste plastic, these technologies have significant environmental impacts, particularly on the surrounding communities, including toxic air emissions, greenhouse gas (GHG) emissions, and hazardous waste generation. According to a recent study by the National Renewable Energy Lab, pyrolysis and gasification require large amounts of energy and generate GHG emissions and pollutants.

In California, thermal technologies do not count as recycling for purposes of achieving the state's solid waste recycling targets. However, when used to convert organic waste, they may count as organics recycling if they meet certain standards. Known as the Article 2 process, in reference to the article in regulations that creates the standard, a technology may qualify as organic waste diversion for purposes of meeting the state's SLCP targets if the permanent life-cycle GHG emissions reductions are equal to or greater than the emissions

reductions from composting organic waste (California Code of Regulations 18983.2).

WTE is widely used as a waste management technology in other parts of the world, including the European Union (EU). Unlike California, which has historically had ample land and poor air quality, the EU has more limited land availability and fewer concerns about air quality. For example, Norway had 18 incinerators as of 2022. The seven largest burn more than 100,000 tons of waste every year. Additionally, cement plants in Norway are also able to use waste as a fuel source. Once these facilities are in operation, they create long-term demand for sufficient quantities of solid waste to continue operation. Norway and Sweden, which both rely heavily on WTE facilities to manage solid waste, accept waste from other countries for incineration. In contrast, California's last two incinerators ceased operations in 2022 and 2024, after the Legislature ended local jurisdictions' ability to claim recycling credit for incinerated solid waste.

- 5) **Carbon capture and sequestration.** Carbon Capture and Storage (CCS, also referred to as carbon capture and sequestration) is the process of capturing CO₂ that is formed during combustion or industrial processes and putting it into long-term storage so that it is not emitted into the atmosphere. Once the CO₂ is captured, it may be compressed and chilled (depending on the storage situation), and transported to an appropriate storage site, usually by pipelines and/or ships and occasionally by trains or other vehicles. To store the CO₂, it is injected into deep, underground geological formations, such as former oil and gas reservoirs, deep saline formations, and coal beds.

SB 905 (Caballero), Chapter 359, Statutes of 2022, requires ARB to establish a Carbon Capture, Removal, Utilization, and Storage Program to evaluate the efficacy, safety, and viability of carbon capture, utilization, or storage technologies and carbon dioxide removal (CDR) technologies and facilitate the capture and sequestration of CO₂ from those technologies, where appropriate. ARB is required, by January 1, 2025, to adopt regulations creating a unified state permitting application for approval of CCUS and CDR projects. The projects covered under SB 905 would include those that capture CO₂ from point sources or from the atmosphere and permanently store it in specialized geologic formations, typically half a mile or more underground. SB 905 prohibits the transfer of CO₂ via pipeline until the U.S. Department of Transportation's Pipelines and Hazardous Materials Safety Administration completes its rulemaking to update existing CO₂ pipeline safety requirements, making CCS or CDR projects that would require a pipeline to transfer CO₂ currently on hold in California.

Climate Change 2022: Mitigation of Climate Change, a report by the International Panel on Climate Change, states "[t]he deployment of CDR to counterbalance hard-to-abate residual emissions is unavoidable if net zero CO₂ or GHG emissions are to be achieved." ARB's AB 32 Scoping Plan, the state's roadmap for reducing GHGs and achieving carbon neutrality, acknowledges that to achieve carbon neutrality, mechanical CDR will need to be deployed. Mechanical CDR includes direct air capture (DAC), a chemical scrubbing process that captures CO₂ through absorption or adsorption separation processes and mineral carbonation, which involves rapid mineralization of CO₂ at the Earth's surface.

- 6) **European Union (EU) goals and projects.** The EU has adopted a goal to achieve at least 50 million tonnes of CO₂ injection capacity by 2030, pursuant to the Net-Zero Industry Act. Member states are tasked with submitting an annual report detailing ongoing CCS projects

within their territories and corresponding needs for increased injection and storage capacities.

One project, Northern Lights, is the world's first cross-border CO₂ transport and storage facility. Located in Norway, the project includes transportation and permanent storage of CO₂ in a reservoir located in the North Sea. Phase 1 includes capacity to transport, inject, and store up to 1.5 million tonnes CO₂ per year; phase 2 is projected to increase capacity to more than 5 million tonnes per year. The project is working with a cement production facility and a waste incinerator to capture CO₂ generated by the facilities. Additional CCS facilities are planned in Holland and Denmark in coming years.

- 7) **This bill.** This bill is intended to encourage the working group created by CalRecycle to review CCS projects around the world and consider their applicability to California. In particular, the author seems to be interested in the potential to increase WTE facilities in California for the purpose of deploying CCS to capture the CO₂ generated by the facilities.

CCS likely has a role in removing CO₂ generated by industrial facilities in California; however, the state does not have any active incinerators, nor does state waste policy encourage their use. Moreover, while CCS technologies may capture the CO₂ emitted by incinerators, they are not designed to capture the associated toxic air emissions. CCS projects should be focused on capturing CO₂ that is currently generated and unavoidable rather than creating new projects that generate CO₂ the purpose of deploying new CCS technologies.

8) **Author's statement:**

To ensure California is keeping up with emerging technologies in our efforts to address climate emissions, the experts at CalRecycle should be reviewing projects around the world to see if their work could help us reach our climate goals. In a recent visit to Oslo, I was able to see first hand the Northern Lights project and was curious if this type of technology could help us meet our climate goals. As landfills like Chiquita Canyon continue to burn unchecked, the status quo seems unsustainable and an examination of possible alternative options should be pursued.

- 9) **Suggested amendments.** In order to ensure that the efforts of the working group provide useful and actionable information for policymakers, *the committee may wish to amend the bill* to require the working group's evaluation to be consistent with the state's waste management hierarchy, pursuant to PRC 40051.

REGISTERED SUPPORT / OPPOSITION:

Support

None on file

Opposition

1000 Grandmothers for Future Generations
7th Generation Advisors
Active San Gabriel Valley
Biofuelwatch
California Communities Against Toxics
Californians Against Waste
Center for Environmental Health
Clean Water Action
Cleaneart4kids.org
Climate Action California
East Yard Communities for Environmental Justice
Ecology Center
Facts Families Advocating for Chemical and Toxics Safety
Global Alliance for Incinerator Alternatives (GAIA)
San Francisco Bay Physicians for Social Responsibility
Story of Stuff
Sunflower Alliance
The Last Plastic Straw
The Law Offices of Lori R. Mendez
Valley Improvement Projects (VIP)
West Berkeley Alliance for Clean Air and Safe Jobs
Zero Waste Ithaca
Zero Waste San Diego
Zero Waste USA

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