

# SENATE BILL REPORT

## E2SHB 1663

---

---

As of February 25, 2022

**Title:** An act relating to reducing methane emissions from landfills.

**Brief Description:** Reducing methane emissions from landfills.

**Sponsors:** House Committee on Appropriations (originally sponsored by Representatives Duerr, Fitzgibbon, Ryu, Berry, Leavitt, Ramel, Thai, Walen, Valdez, Goodman, Gregerson, Macri, Peterson, Slatter, Tharinger, Kloba, Pollet, Harris-Talley and Hackney).

**Brief History:** Passed House: 2/11/22, 57-40.

**Committee Activity:** Environment, Energy & Technology: 2/16/22, 2/23/22 [DPA-WM, DNP].

**Ways & Means:** 2/26/22.

### Brief Summary of Amended Bill

- Establishes certain requirements related to methane emissions from municipal solid waste landfills.
- Requires the owner or operator of a covered landfill to calculate the quantity of gas generated by the landfill.
- Requires the owner or operator of a covered landfill with gas generation equivalent to 3.0 million British thermal units per hour to install and operate a gas collection and control system unless certain exceptions apply.
- Establishes surface methane emissions standards for covered landfills with a gas capture system of 500 parts per million, as determined by instantaneous surface emissions monitoring, or an average methane concentration limit of 25 parts per million by volume as determined by integrated surface emissions monitoring.

---

*This analysis was prepared by non-partisan legislative staff for the use of legislative members in their deliberations. This analysis is not part of the legislation nor does it constitute a statement of legislative intent.*

---

## SENATE COMMITTEE ON ENVIRONMENT, ENERGY & TECHNOLOGY

**Majority Report:** Do pass as amended and be referred to Committee on Ways & Means.

Signed by Senators Carlyle, Chair; Lovelett, Vice Chair; Das, Lias, Lovick, Nguyen, Stanford and Wellman.

**Minority Report:** Do not pass.

Signed by Senators Short, Ranking Member; Brown, Fortunato, Schoesler and Sheldon.

**Staff:** Ashley Trunnell (786-7278)

---

## SENATE COMMITTEE ON WAYS & MEANS

**Staff:** Jed Herman (786-7346)

**Background:** Methane Emissions from Landfills. During decomposition, organic material in landfills emits gases including methane, carbon dioxide, and non-methane organic compounds. These gases can be captured, rather than emitted into the air, through landfill gas collection systems and landfill gas control devices. These systems collect the gas in a system of pressurized pipes that travel to a processing system to draw our methane to be destroyed or refined for other purposes.

Federal and State Clean Air Act. The federal Clean Air Act sets national air pollution limits and air quality standards. The U.S. Environmental Protection Agency (EPA) established and enforces the regulations. The Department of Ecology (Ecology) is authorized by the EPA to administer the requirements of the federal Clean Air Act.

Washington has also enacted a state Clean Air Act with limits and standards that meet or exceed the federal requirements. Ecology is the state agency responsible for monitoring compliance and enforcement with the requirements.

Local Air Pollution Control Authorities. Local Air Pollution Control Authorities are regional entities throughout the state that manage air quality, burn bans, and produce notifications and advisories in the event of poor air quality. Washington State has 12 Local Air Pollution Control Authorities, in addition to tribes who manage their own air quality with assistance from Ecology.

California Air Resources Board. The California Air Resources Board (CARB) promotes and protects public health, welfare, and ecological resources in California through the reduction of air pollutants. In 2010, CARB adopted rules to regulate methane emissions from municipal solid waste landfills. The rules apply to municipal solid waste landfills with 450,000 tons or more of waste in place.

Landfills with 450,000 or more tons of waste in place and a landfill gas heat input capacity of 3.0 million British thermal units (BTUs) per hour or more must install and operate a gas collection and control system. Landfill gas heat input capacity is a measure of the thermal energy produced by the landfill based on the gas generated by the decomposition of materials deposited in the landfill. Landfills without carbon adsorption systems must calculate their landfill gas heat input capacity. Surface methane emissions may not exceed 500 parts per million as determined by instantaneous monitoring and an average of 25 parts per million as determined by integrated monitoring.

Oregon Environmental Quality Commission. The Oregon Environmental Quality Commission (OEQC) is a five-member panel that serves as the Oregon Department of Environmental Quality's policy and rulemaking board. In 2021, the OEQC adopted rules to regulate methane emissions from landfills. The rules apply to municipal solid waste landfills with 200,000 tons or more of waste in place. Landfills that generate 664 tons or more per year of methane are required to install gas control and collection systems. Surface methane emissions may not exceed 500 parts per million as determined by instantaneous monitoring and an average of 25 parts per million as determined by integrated monitoring.

Climate Commitment Act. Under the Climate Commitment Act enacted in 2021, Ecology must implement a cap on greenhouse gas emissions from covered entities and a program (program) to track, verify, and enforce compliance through the use of compliance instruments, with the program commencing by January 1, 2023.

A person that owns or operates a landfill utilized by a county or city solid waste management program is a covered entity beginning January 1, 2031, and in all subsequent compliance periods, if the landfill reported emissions for any calendar year from 2027 through 2029 and the facility's emissions equal or exceed 25,000 metric tons of carbon dioxide-equivalent.

**Summary of Amended Bill:** Applicability. The provisions of the bill apply to all municipal solid waste landfills that received solid waste after January 1, 1992, except:

- landfills that receive only hazardous waste, or are currently regulated under the Comprehensive Environmental Response, Compensation, and Liability Act; and
- landfills that receive only inert waste or non-decomposable wastes.

Ecology must adopt rules to implement the provisions of the bill. The rules adopted by Ecology must be informed by landfill methane regulations adopted by CARB, OEQC, and the EPA.

Compliance Obligations. The owner or operator of an active municipal solid waste landfill having fewer than 450,000 tons of waste in place must submit an annual waste in place report to Ecology or the local air pollution control authority.

The owner or operator of either an active municipal solid waste landfill having greater than

or equal to 450,000 tons of waste in place or a closed municipal solid waste landfill having greater than or equal to 750,000 tons of waste in place must calculate the landfill gas heat input capacity and must submit a landfill gas heat input capacity report to Ecology or the local air pollution control authority.

If the calculated landfill gas heat input capacity is less than 3.0 million BTUs per hour recovered, the owner or operator must recalculate the landfill gas heat input capacity annually and submit an annual landfill gas heat input capacity report to Ecology or the local air pollution control authority until either:

- the calculated landfill gas heat input capacity is greater than or equal to 3.0 million BTUs per hour recovered; or
- the owner or operator submits a closure notification if the municipal solid waste landfill is active.

If the landfill gas heat input capacity is greater than or equal to 3.0 million BTUs per hour recovered, the owner or operator must either:

- comply with the requirements of the bill and rules established by Ecology; or
- demonstrate that after four consecutive quarterly monitoring periods there is no measured concentration of methane of 200 parts per million by volume or greater using instantaneous surface monitoring procedures.

Based on the monitoring results, the owner or operator must do one of the following:

- if there is any measured concentration of methane of 200 parts per million by volume or greater from the surface of an active, inactive, or closed municipal solid waste landfill, comply with the requirements of the bill;
- if there is no measured concentration of methane of 200 parts per million by volume or greater from the surface of an active municipal solid waste landfill, recalculate the landfill gas heat input capacity annually until the owner or operator submits a closure notification; or
- if there is no measured concentration of methane of 200 parts per million by volume or greater from the surface of a closed or inactive municipal solid waste landfill, the requirements of this bill no longer apply, provided that a waste in place report and all instantaneous surface monitoring records are submitted to and approved by Ecology or the local air pollution control authority.

Gas Collection and Control Systems. The owner or operator of any municipal solid waste landfill that has a calculated landfill gas heat input capacity greater than or equal to 3.0 million BTUs per hour recovered must install a gas collection and control system, unless the owner or operator demonstrates to the satisfaction of Ecology or the local air pollution control authority that after four consecutive quarterly monitoring periods there is no measured concentration of methane of 200 parts per million by volume or greater using instantaneous surface monitoring procedures.

The owner or operator of a municipal solid waste landfill may partner with a third party to

operate all or a portion of the gas collection and control system. The obligation to comply with the requirements of the bill, and the liability for civil penalties issued pursuant to the bill, remain the responsibility of the owner or operator of the municipal solid waste landfill.

The gas collection and control system must handle the expected gas generation flow rate from the entire area of the municipal solid waste landfill and must comply with the extraction rate established, requirements for systems that use a flare, and requires for treatment systems. The gas collection and control system must be designed and operated so that there is no landfill gas leak that exceeds 500 parts per million by volume, measured as methane, at any component under positive pressure.

If a gas collection and control system uses a flare, it must achieve a methane destruction efficiency of at least 99 percent by weight and must use either an enclosed flare or, if the system uses an open flare, the open flare must comply with the following requirements:

- the open flare must meet federal requirements ; and
- an open flare installed and operating prior to August 1, 2022, may operate until January 1, 2032, unless the owner or operator demonstrates to the satisfaction of Ecology or the local air pollution control authority that the landfill gas heat input capacity is less than 3.0 million BTUs per hour.

The owner or operator may temporarily operate an open flare during the repair or maintenance of the gas control system while awaiting the installation of an enclosed flare, or to address offsite gas migration issues. Any owner or operator seeking to temporarily operate an open flare must submit a written request to Ecology or the local air pollution control authority.

If the gas collection and control system does not use a flare, it must either route the collected gas to an energy recovery device or devices, or must route the collected gas to a treatment system that processes the collected gas for subsequent sale or use. If a gas collection and control system routes the collected gas to an energy recovery device, the device must achieve a methane destruction efficiency of at least 97 percent by weight. Lean-burn internal combustion engines which were installed and operating prior to January 1, 2022, must reduce the outlet methane concentration to less than 3000 parts per million volume, dry basis corrected to 15 percent oxygen. If a gas collection and control system routes the collected gas to a treatment system that processes the collected gas for subsequent sale or use, the treatment system must achieve a methane leak rate of 3 percent or less by weight.

The owner or operator of a municipal solid waste landfill must conduct a source test for any gas control device or devices subject to the requirements established. If a gas control device is currently in compliance with source testing requirements on the effective date of the bill, the owner or operator must conduct the source test no less frequently than once every five years. If a gas control device is currently not in compliance with source testing requirements, or if a subsequent source test shows the gas control device is out of

compliance, the owner or operator must conduct the source test no less frequently than once per year until two subsequent consecutive tests both show compliance. Upon two subsequent consecutive compliant tests, the owner or operator may return to conducting the source test no less frequently than once every five years.

Monitoring. The owner or operator of a municipal solid waste landfill with a gas collection and control system must conduct instantaneous or integrated surface monitoring of the landfill surface.

The owner or operator of a municipal solid waste landfill with a gas collection and control system must monitor the gas control system and each individual wellhead according to the requirements adopted by Ecology.

Methane Emissions Standards. Dependent upon whether the owner or operator conducts instantaneous monitoring or integrated monitoring, no location on a municipal solid waste landfill surface may exceed the following methane concentration limits:

- 500 parts per million by volume, other than non-repeatable, momentary readings, as determined by instantaneous surface emissions monitoring; and
- an average methane concentration limit of 25 parts per million by volume as determined by integrated surface emissions monitoring.

In the event of an exceedance, the owner or operator must record certain data regarding the exceedance, must take corrective actions, and must re-monitor the location or locations of any exceedance within ten days.

Record-Keeping and Reporting. The owner or operator of a municipal solid waste landfill must maintain records related to monitoring, testing, landfill operations, and the operation of the gas control device, gas collection system, and gas control system. Records must be provided by the owner or operator to Ecology or the local air pollution control authority within five business days of a request from Ecology or the local air pollution control authority.

The owner or operator of a municipal solid waste landfill must submit a closure notification to Ecology or the local air pollution control authority within 30 days of ceasing to accept waste.

Capping or Removal of the Gas Collection and Control System. Ecology or the local air pollution control authority must allow the capping or removal of the gas collection and control system at a closed municipal solid waste landfill, provided the following three requirements are met:

- the gas collection and control system was in operation for at least 15 years, unless the owner or operator demonstrates to the satisfaction of Ecology or the local air pollution control authority that due to declining methane rates, the municipal solid waste landfill will be unable to operate the gas collection and control system for a 15

- year period;
- surface methane concentration measurements do not exceed prescribed limits; and
- the owner or operator submits an equipment removal report to Ecology or the local air pollution control authority.

The owner or operator of a municipal solid waste landfill must submit a gas collection and control system equipment removal report to Ecology or the local air pollution control authority within 30 days of well capping or the removal or cessation of operation of the gas collection, treatment, or control system equipment.

Compliance Alternatives. The owner or operator of a municipal solid waste landfill may request in writing alternatives to the compliance measures, monitoring requirements, and test methods and procedures. Ecology must deny a request if it does not provide levels of enforceability or methane emissions control that are equivalent to those set forth in the bill or the rules adopted by Ecology.

Civil Penalties. Any person who violates the provisions of the bill or any rules that implement the bill may incur a civil penalty pursuant to the Clean Air Act.

Fees. Ecology and local air pollution control authorities may assess and collect fees necessary to recover the direct and indirect costs associated with the implementation of the requirements of the bill. The fees collected must be used only for reinvestment to implement the requirements of this bill.

Exemption from Coverage under Climate Commitment Act. Emissions from municipal solid waste landfills that are subject to, and in compliance with, the requirements of the bill are exempt from coverage under the Cap and Invest Program.

Methane Hot Spot Study. Ecology, in consultation with districts that monitor methane, must conduct a study to identify and measure emissions at methane hot spots in the state. Ecology must use the best available and cost-effective scientific and technical methods, which may include monitoring and mapping methane emissions using aircraft. Ecology may consult with federal and state agencies, independent scientific experts, and any other appropriate entities to gather or acquire the necessary information. Ecology must submit a report with the findings to the Legislature by January 1, 2025.

Definitions. A gas collection system means any system that employs various gas collection wells and connected piping, and mechanical blowers, fans, pumps, or compressors to create a pressure gradient and actively extract landfill gas.

A gas control system means any system that disposes of or treats collected landfill gas by one or more of the following means: combustion; gas treatment for subsequent sale; or sale for processing offsite, including for transportation fuel and injection into a natural gas pipeline.

A municipal solid waste landfill means a discrete area of land or an excavation that receives household waste and that is not a land application site, surface impoundment, injection well, or pile.

**EFFECT OF ENVIRONMENT, ENERGY & TECHNOLOGY COMMITTEE AMENDMENT(S):**

- Requires fines collected under this act to be used only for reinvestment to implement the requirements established under this act.
- Modifies the compliance requirements for lean-burn engines. Lean-burn engines installed and operating prior to January 1, 2022 must reduce the outlet methane concentration to less than 3000 parts per million volume, dry basis corrected to 15 percent oxygen.
- Allows Ecology to provide exceptions to the compliance date for landfills that require significant technological improvements to comply with the requirements of this act. Exemptions cannot exceed 24 months after Ecology adopts rules to implement the requirements of this bill.
- Requires Ecology, in consultation with districts that monitor methane, to conduct a study to identify and measure emissions at methane hot spots in the state.
- Requires Ecology to use the best available and cost-effective scientific and technical methods, which may include monitoring and mapping methane emissions using aircraft.
- Authorizes Ecology to consult with federal and state agencies, independent scientific experts, and any other appropriate entities to gather or acquire the necessary information.
- Requires Ecology to submit a report with the findings to the Legislature by January 1, 2025.

**Appropriation:** None.

**Fiscal Note:** Available.

**Creates Committee/Commission/Task Force that includes Legislative members:** No.

**Effective Date:** Ninety days after adjournment of session in which bill is passed.

**Staff Summary of Public Testimony on Engrossed Second Substitute House Bill (Environment, Energy & Technology):** *The committee recommended a different version of the bill than what was heard.* PRO: Methane is a powerful greenhouse gas that must be addressed to meet state emissions reduction requirements in statute. Landfills are one of the largest contributors of methane in the state. Though the best option would be to not have landfills or allow any organic waste to enter landfills, requiring gas capture and control systems is a good start. Preventing methane emissions from entering the atmosphere will



also improve public health.

However, the bill does not include funding for state agencies or municipalities to implement the requirements. The bill should also include the same standards as California for lean burn engines and implementation timelines.

CON: We have concerns over the significant unintended consequences for solid waste landfills covered under this bill. The bill needs to include funding assistance to implement the proposed requirements, otherwise the cost will be passed onto customers and rate payers. Additionally, the timeline to implement the bill and monitoring requirements should be consistent with requirements in other states and at the federal level. There is also concern that this will be a disincentive for landfill owners and operators to capture methane and turn it into electricity or natural gas and lead more landfills to flare methane.

OTHER: This bill may have unintended consequences by limiting incentives to produce natural gas and electricity from the methane captured from landfills. A better option would be to include natural gas and electricity produced from the methane captured from landfills as an offset under the Climate Commitment Act.

This bill also lacks funding support for municipalities to implement the requirements. In addition to assistance funds, the fees from penalties collected under this bill should be reinvested into reducing organic waste entering landfills and methane produced from landfills.

The bill should also include standards consistent with those in California for lean burn engines and a clearer timeline for the implementation of the requirements.

**Persons Testifying (Environment, Energy & Technology):** PRO: Representative Davina Duerr, Prime Sponsor; Stephen Gerritson; Philipp Schmidt-Pathmann, Institute for Energy and Resource Management - IeRM; Vicki Christophersen, Washington Refuse and Recycling Association; Carrie Sessions, Dept. of Ecology; Deepa Sivarajan, Climate Solutions; Dylan Sullivan, NRDC; Heather Trim, Zero Waste Washington; Martin Gibbins, League of Women Voters of Washington.

CON: Paul Jewell, Washington State Association of Counties.

OTHER: Pat McLaughlin, King County; Jody Snyder, Waste Connections; Steve Taylor, Cowlitz PUD; Todd Myers, Washington Policy Center; Dave Warren, Klickitat PUD.

**Persons Signed In To Testify But Not Testifying (Environment, Energy & Technology):** No one.