

# Updates to GHG Regulations and Impacts to the Waste Industry

At the Federal level, GHG emission reporting has become part of the standard regulatory requirements; however, on the west coast, GHG programs continue to develop and evolve from reporting to reduction programs beyond federal requirements.

■ By Cassandra Drotman

Greenhouse gas (GHG) emissions have been a topic of much discussion in the U.S. since the early 2000s and are still considered new and developing in the regulatory world. From new rules and regulations at the state level, repeals and legal battles in the courts, to Federal reporting requirements, the GHG world is in a state of growth and uncertainty. The solid waste industry has been tracking, monitoring and reporting methane (CH<sub>4</sub>) emissions for decades. CH<sub>4</sub> is a potent GHG that is 25 times more effective than carbon dioxide (CO<sub>2</sub>) at trapping heat over a 100-year period. This article will provide regulatory updates on current and proposed GHG regulations and their impacts on the solid waste industry/landfill operator.

## At the Federal Level

The U.S. Environmental Protection Agency's (EPA's) Mandatory GHG Reporting Program (GHGRP) has been in place since 2009 and collecting GHG data from large GHG emissions sources, fuel and industrial gas suppliers, and CO<sub>2</sub> injection sites with emission greater than 25,000 metric tons of CO<sub>2</sub> equivalent (CO<sub>2</sub>e). The final federal regulation was signed on September 22, 2009 and was published in the Federal Register as 40 Code of Federal Regulations (CFR) Parts 86, 87, 89, et al., "Mandatory Reporting of Greenhouse Gas; Final

Rule," (Rule) on October 30, 2009. Under the Rule, Subpart HH was developed specifically for municipal solid waste landfills. It gives landfills the option of reporting based on modeled methane generation or recovered landfill gas (LFG) collection. Since the inception of the Rule, there have been many changes and updates by the EPA; however, since 2016 there have been no updates to Subpart HH.

In 2019, 1,135 municipal solid waste landfills reported to the GHGRP, reporting a total of 89 million metric tons of CO<sub>2</sub>e. The GHGRP requires emissions reporting; however, it does not have a compliance obligation that other state rules may carry for mandated GHG reductions.

The EPA's updated New Source Performance Standards (NSPS) for landfills, Subpart XXX, reduces the non-methane organic compounds (NMOC) threshold from 50 megagrams (Mg) to 34 Mg, which requires the installation of a LFG collection and control systems (GCCS) sooner than required under its predecessor regulation, Subpart WWW as well as requiring GCCS to operate longer. Although the new NSPS will decrease methane emissions, it does not specifically call out GHG emissions or require GHG reporting or reductions.

## At the State Level

Many states have released GHG rules and regulations, such as Massachusetts, which has one of the lowest GHG reporting thresholds of 5,000 MTCO<sub>2</sub>e, and New Mexico, which passed a GHG rule and subsequently repealed it. This article will focus on California, Oregon and Washington, which have, or are in the process of developing, new programs to potentially link with California's.

## California

The California Air Resource Board (CARB) has developed a wide range of GHG rules, which have been developed under the California Global Warming Solutions Act (AB32, 2006) as early action measures. The primary rules that have developed from the implementation of AB32 and impact the solid waste industry include:

1. Mandatory Reporting Program (MRP): Started in 2008, with the CARB Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (Reporting Regulation).
2. Cap and Trade (C&T) Program: Started in 2012, was developed with the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms (C&T Regulation).



Map of landfills who report to the EPA in the U.S.  
Image courtesy of the U.S. EPA website: [www.epa.gov](http://www.epa.gov).

3. Landfill Methane Rule (LMR): Became effective in 2010 to reduce methane from MSW landfills, considered one of the primary GHG pollution sources with a GCCS regulation that is more stringent than federal requirements.

4. Low Carbon Fuel Standard (LCFS) Program: Was developed in 2009 to reduce the carbon intensity (CI) of transportation fuel in California by 10 percent in 2020 from a 2010 baseline, and updated in 2016 to reduce CI of transportation fuel by at least 20 percent by 2030 through the use of the LCFS Regulation.

These four CARB regulations work to report, reduce and control emissions. Here is a summary of how they impact the solid waste industry.

### **#1: MRP**

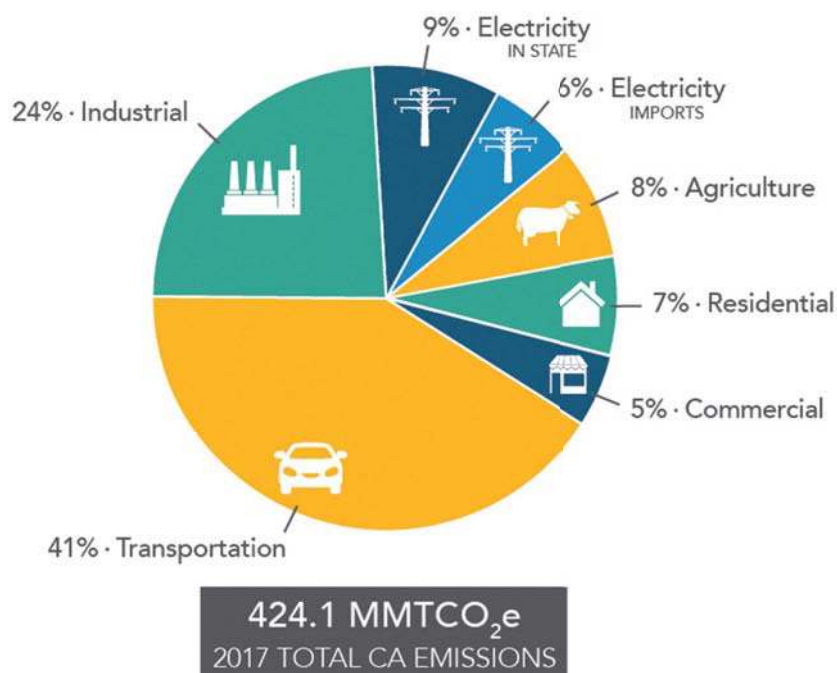
The updated Reporting Regulation was approved on March 29, 2019 and become effective on April 1, 2019, for 2019 data reported in 2020. The Reporting Regulation still has a reporting threshold of 10,000 MTCO<sub>2</sub>e and a verification threshold of 25,000 MTCO<sub>2</sub>e. The Reporting Regulation does not have a specific landfill subpart and exempts flares, unless used in the oil and gas industry; therefore, only solid waste facilities with landfill gas-to-energy (LFGTE) facilities are typically required to report. If LFG is sold to a third party via a pipeline, the landfill is exempt from reporting under the MRP; however, the third party is required to report the emissions associated with the combustion of LFG.

### **#2: C&T Program**

As LFG is a biogenic source, solid waste facilities that are required to report under the MRP are typically exempt from the C&T Program unless they opt-in or combust a mixed fuel stream of LFG/MSW and natural gas where the anthropogenic emissions are greater than 25,000 MTCO<sub>2</sub>e. For those facilities that meet this requirement, a new compliance period started for the 2018 emissions year that were reported in 2019. CARB's C&T Program is designed to link with similar trading programs in other states and regions, some of which are discussed below. The C&T Program tracks compliance for facilities with three-year compliance periods. The current period is for the 2018, 2019 and 2020 emission years.

### **#3: LMR**

The LMR Regulation is CARB's primary regulation for reducing methane from MSW landfills. The regulation primarily requires owners and operators of certain uncontrolled MSW landfills (e.g. waste-in-place is greater than or equal to 450,000 tons and a LFG heat input capacity greater than 3.0 million British thermal units [MMBtu]) to install a GCCS and requires existing and newly installed GCCS to operate in an optimal manner. At the time of its implementation, the LMR required smaller landfills to install a GCCS, which were not required to install a GCCS under the NSPS Subparts WWW or XXX. It also requires annual reporting for all landfills covered by the LMR and has more stringent surface emissions monitoring requirements than the federal NSPS. There have not been any updates to the LMR Regulation recently.



Breakdown of California's 2017 Emissions by Sector.  
Image courtesy of the California Air Resources Board website: <https://ww2.arb.ca.gov/our-work/programs/ghg-inventory-program>.



Technician monitoring a landfill for methane leaks to demonstrate LMR compliance.  
Image courtesy of SCS Engineers.

#### #4: LCFS

The LCFS Regulation was updated in January 2019 and provides a unique opportunity for landfills to develop LFG to compressed natural gas (LCNG) for transportation use in California. The LCFS is a key part of a comprehensive set of programs in California to cut GHG emissions and other smog-forming and toxic air pollutants by: improving vehicle technology, reducing petroleum-based fuel consumption, and increasing transportation mobility options. By decreasing the CI of California's transportation fuel pool and providing an increasing range of low-carbon and renewable alternatives, which reduce petroleum dependency and achieve air quality benefits, this creates a marketable opportunity for alternative fuels from landfills. Therefore, solid waste facilities in California can develop LCNG fueling facilities to fuel their own collection fleets or sell it to the public. Solid waste facilities outside of California can participate in the LCFS program by injecting pipeline quality biomethane directly into a pipeline, and use an equivalent quantity of CNG in California for transportation fueling. Both methods will generate LCFS credits to be used or sold for compliance purposes.

Recent updates to the LCFS Regulation include updating the CI benchmarks through 2030 in line with California's 2030 GHG emissions reduction target enacted through Senate Bill (SB) 32. As well as new verification requirement starting in 2020 for 2019 reporting for the following LCFS reporters shown in **Figure 1, page 33**.

The solid waste facilities that opt-in to the LCFS program would fall under the alternative fuel pathways applications and reports and be required to prepare quarterly fuel transaction reports of alternative fuels, which would also be required to be verified by a third-party verification body on an annual basis.

#### Oregon

The Oregon Department of Environmental Quality (ODEQ) is in the process of updating its GHG Program to be more in line with CARB's MRP. The proposed rules would:

- Modify the GHG Reporting Program (Division 215) to incorporate existing reporting and emissions accounting protocols into the rule, allowing ODEQ to assess state GHG emissions and track progress towards meeting the emission reduction goals provided by the Oregon Legislature.
- Streamline the reporting requirements of the GHG Reporting Program (Division 215) and the Clean Fuels Program (Division 253) to enable entities subject to both programs to report into a single online system.
- Propose a new Division 272 to require that some data submitted to DEQ for compliance with the GHG Reporting Program and the Clean Fuels Program be verified by independent third parties.
- Amend Division 12 to classify certain violations and establish or clarify enforcement criteria for violations of the GHG Reporting Requirements.

ODEQ has developed an advisory committee to review issues related to the proposed rule. The proposed rule requires a verification requirement similar to CARB's, which would start with a full verification by the 2022 calendar year for the 2021 emissions year. This coincides with the start of CARB MRP and C&T programs compliance period. The proposed rule would allow desktop verifications, opposed to a full-verification, which requires a site visit for the second and third years. ODEQ is expected to publish a public notice in December 2019, hold public hearings in January 2020, and adopt the proposed rules in March 2020.

**Figure 1:**  
LCFS reporter types requiring verification.  
Image courtesy of the California Air Resources Board website: [https://ww2.arb.ca.gov/sites/default/files/2019-09/isd\\_ppmb\\_118\\_application\\_for\\_accreditation\\_%20of\\_verification\\_bodies\\_0.pdf](https://ww2.arb.ca.gov/sites/default/files/2019-09/isd_ppmb_118_application_for_accreditation_%20of_verification_bodies_0.pdf).

Alternative Fuels	Yes	No
Alternative Fuel Pathway Applications and Reports	<input type="checkbox"/>	<input type="checkbox"/>
Quarterly Fuel Transactions Reports for Alternative Fuels	<input type="checkbox"/>	<input type="checkbox"/>
Petroleum-Based Fuels	Yes	No
Quarterly Fuel Transactions Reports for Petroleum-Based Fuels	<input type="checkbox"/>	<input type="checkbox"/>
Crude Oil Quarterly & Annual Volume Reports	<input type="checkbox"/>	<input type="checkbox"/>
Low-Complexity/Low-Energy-Use Refinery Reports	<input type="checkbox"/>	<input type="checkbox"/>
Project Reports (Excludes CCS)	Yes	No
Refinery Investment Project Reports	<input type="checkbox"/>	<input type="checkbox"/>
Innovative Crude Project Reports	<input type="checkbox"/>	<input type="checkbox"/>
Renewable Hydrogen Project Reports	<input type="checkbox"/>	<input type="checkbox"/>

Solid waste facilities will need to continue to report to ODEQ. There are no proposed changes to the applicability requirements, and any source required to obtain certain permits must report. Also, ODEQ requires the use of EPA emission quantification methodologies for Subparts C through UU and provides procedures for calculating and reporting emissions from biomass-derived fuels. There will be additional information requirements for solid waste facilities that generate electricity or have a cogeneration unit.

## Washington

Washington Department of Ecology (Ecology) has multiple GHG programs under their climate change program. They have two GHG emissions reporting programs:

1. **Facility GHG Reporting:** Facilities and liquid motor vehicle fuel suppliers that emit at least 10,000 MTCO<sub>2</sub>e. This includes 15 MSW landfills that report their GHG emissions to Ecology annually.
2. **State Agency GHG Reporting:** State agencies that emit more than 5,000 MTCO<sub>2</sub>e, universities or colleges that emit at least 10,000 MTCO<sub>2</sub>e and alternative fuel and vehicle extent practicable rule.

Ecology's GHG reporting program has been collecting GHG data since 2012. They have unique reporting deadlines of March 31 for facilities who report to both Ecology and the EPA and October 31 for facilities who only report to Ecology and transportation fuel suppliers. The majority of landfills initially fell under the initial reporting deadline, but may have dropped under the EPA's reporting requirement and will still be required to report to Ecology due to the lower threshold. Ecology also has a reporting fee due annually; in 2019 it was \$2,604 per facility.

For the State Agency GHG Reporting, the Agency Climate Leadership Act requires some state agencies to reduce their GHG emissions. Agencies must reduce carbon pollution below 2005 levels at the following levels: 15 percent by 2020, 36 percent by 2035, and 57.5 percent by 2050, or 70 percent below expected emissions that year. One additional recent change is that starting in 2019, the new reporting deadline is July 1.

Ecology's Clean Air Rule was developed as Washington's Cap and Trade Program and is currently suspended. In May 2018, Thurston County Superior County ruled that parts of the rule were invalid.

Washington filed an appeal with the Washington State Supreme Court on May 14, 2018.

In 2019, Ecology introduced the following new programs:

- **Clean Energy Transformation Act:** May 7, 2019 electric utilities to transition to carbon-neutral electricity by 2030 and to 100 percent carbon-free electricity by 2045.
- **Building Efficiency:** 2019 Legislature adopted new standards that will increase building efficiency and reduce emissions.
- **Transportation:** 2019 executive order requires that 50 percent of all new passenger vehicles purchased for state fleets are electric by 2020.

## Continuing Evolvment

At the Federal level, GHG emission reporting has become part of the standard regulatory requirements; however, on the west coast, GHG programs continue to develop and evolve from reporting to reduction programs beyond federal requirements. Solid waste facilities can be impacted by all of these reporting mechanisms directly as a landfill located in the state in question, opting in for C&T as part of the LCFS in California, or in limbo, as the courts work out the legality of Washington's Clean Air Act. More stringent federal GHG requirements are unlikely with the currently administration, however that could change with the 2020 election. In general, GHG rules and legislation keep developing and updating to account for and reduce GHG emissions. | **WA**

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