

CALIFORNIA IS INCREASINGLY IMPACTED BY THE GROWING CLIMATE CRISIS.

Mitigating methane emissions from organic waste is critical to immediately address climate change.

Fugitive methane is a powerful greenhouse gas (GHG). In the first 100 years after methane is released, it is 28 to 38 times more efficient and effective at trapping heat than carbon dioxide (CO₂).

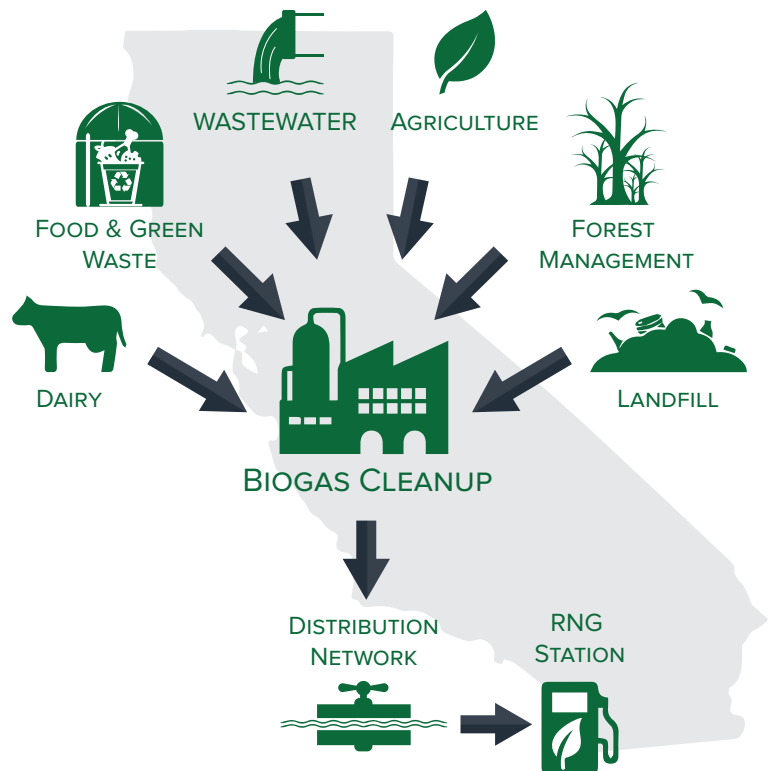


Nearly 50% of methane emissions in California come from organic waste decomposing in landfills and livestock manure. Methane is also emitted from wastewater treatment plants, food and green waste, dead trees, and agricultural waste—a major climate change challenge.

Fortunately, with sustainable management practices, fugitive methane from organic feedstocks can be captured and harnessed as a renewable fuel. This presents exciting opportunities to reduce the climate impact of the transportation sector.

All motor vehicle fuels have a "carbon intensity (CI)" value, which is the total amount of GHGs emitted from production, transportation, refining and consumption. Many forms of RNG have a CI value below zero, also referred to as "carbon negative." For example, when the fugitive methane from dairy manure is captured (i.e., preventing its escape into the atmosphere as a GHG) and used as a vehicle fuel, it actually cools the atmosphere.

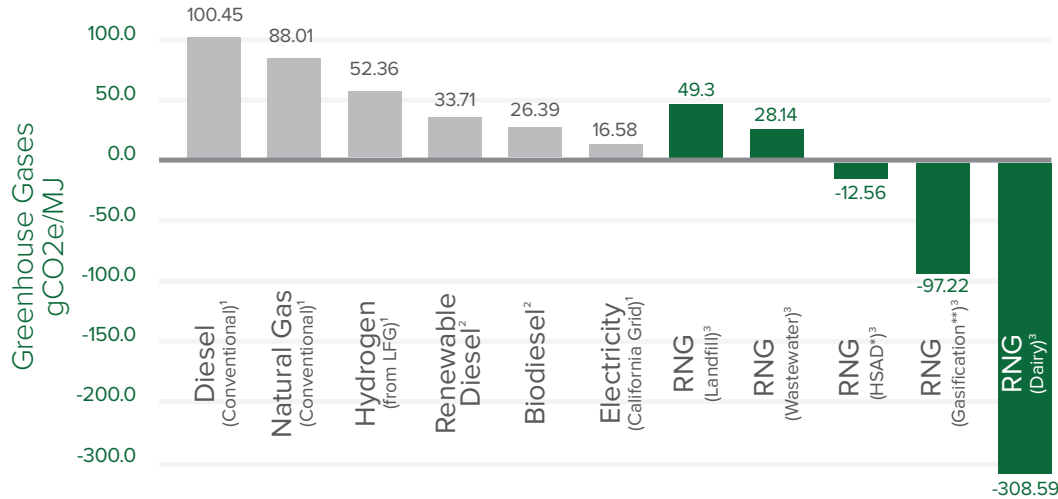
Harnessing methane emissions to produce RNG for transportation fuel enables California to reduce the impacts of man-made climate change.



To expedite adoption of RNG and other low carbon fuels, California created a statewide system—the Low Carbon Fuel Standard (LCFS) program.

The LCFS program provides financial credits for using fuel with low and negative carbon intensity—a measure of all carbon emissions from the entire lifecycle of a fuel from production to consumption.

CARBON INTENSITY OF KEY TRANSPORTATION FUELS



Source: California Air Resources Board Low Carbon Fuel Standard Program Q2 2020 Data (1: Lookup table CI values; 2: Average CI values for prior 12 months; 3: Average CI values of registered pathways as of June 2020); CI values EER adjusted for HD truck applications

*HSAD, or High Solid Anaerobic Digestion, converts organics (e.g., food and green waste) into RNG.
 **Gasification is a thermochemical process that converts organics (e.g., forest biomass) into RNG.

Based on Q2 2020 LCFS data:

- Nearly 90% of natural gas used for transportation in California came from renewable sources.
- The average energy weighted carbon intensity value of California’s compressed RNG portfolio during this period was -0.85 gCO2e/MJ —making it “carbon negative.”

Carbon negative transportation fuel helps alleviate the impacts of climate change.

More than \$1 billion is being invested in infrastructure in California to produce large volumes of carbon-negative RNG.

By January 2024, California-produced RNG will have an average energy weighted carbon intensity of -101.74 gCO2e/MJ.

One natural gas truck fueled by California RNG will completely offset the GHG emissions of two diesel trucks.

Source: An Assessment: California’s In-State RNG Supply For Transportation 2020-2024

