California Natural Gas Vehicle Partnership

CARB Data Confirms — California's NGVs Are the ONLY Carbon-Negative Transportation Option

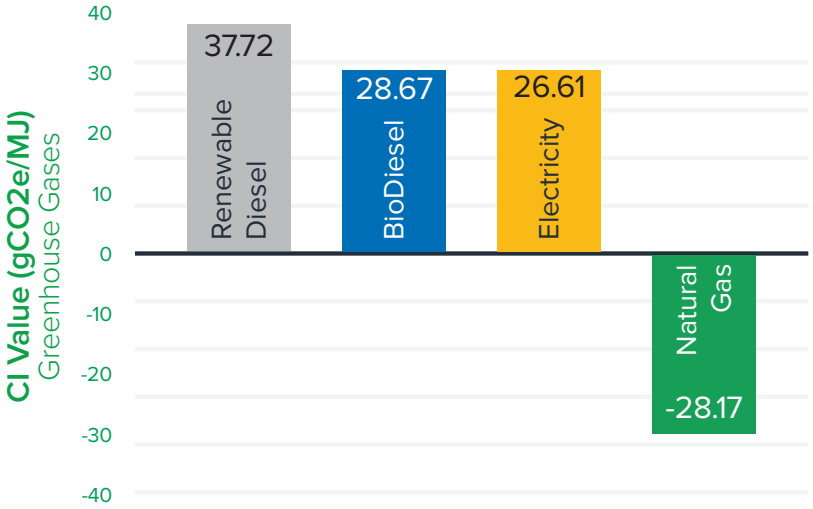
Using carbon-negative transportation fuel is the fastest way for California to reduce the impacts of climate change.

On January 30, 2022, the California Air Resources Board (CARB) released data for its Low Carbon Fuel Standard (LCFS) Program for Q1 to Q3 2021.

The data confirms that:

The average carbon intensity of all of the natural gas reported in the California LCFS is negative (-28.17 gCO2e/MJ).

Natural gas vehicles (NGVs) operating in California provide the greatest greenhouse gas (GHG) emission benefits compared to all other transportation fuels and should be a key component in the strategy to combat climate change.



Source: California Air Resources Board Low Carbon Fuel Standard Program Q3 2021 Data

What does it mean for fuel to be carbon negative?

A fuel's carbon intensity (CI) is determined by assessing its total carbon emissions from the entire lifecycle of a fuel from production to consumption — including feedstock types, raw materials, processing, transportation, and final use. A negative carbon intensity value means that the use of this fuel actually reduces global warming potential in the atmosphere.

When CARB's Q4 2021 LCFS data is published in April 2022, it is expected that the CI value of California's natural gas fuel supply will continue its trend of becoming even more carbon negative. Natural gas will have a negative CI for ALL OF 2021, the first time that this has happened for a calendar year FOR ANY TRANSPORTATION FUEL.

Why is natural gas fuel carbon negative?

The negative CI value for California's NGV fuel is a direct result of the significant increase of methane capture projects in the state (primarily from dairy operations), which is mitigating the atmospheric release of the highly potent GHG methane, and instead using it to displace diesel fuel. These methane capture projects are delivering carbon-negative fuel primarily in the form of compressed renewable natural gas (RNG), which CARB terms BioCNG. BioCNG represented approximately 89% of natural gas consumed in California's transportation sector and reported in the LCFS program for the first three quarters of 2021.

As dairy RNG supply increases, the energy weighted CI of BioCNG continues to drop further below zero:

- Q1-21: -16.74 gCO2e/MJ
- Q2-21: -35.87 gCO2e/MJ
- Q3-21: -62.7 gCO2e/MJ

Has CARB Confirmed the Benefits of Carbon-Negative Natural Gas?

In a January 26, 2022, letter to environmental justice advocates, CARB's Executive Officer Richard Corey wrote:

"Volumes of animal waste-derived biomethane reported as transportation fuel to the LCFS grew from less than 1.5 million therms, in 2018, to more than 20 million therms in 2020 (the latest full year for which reported volumes is available)."

"...the current LCFS crediting regime for biomethane derived from animal manure is delivering the significant benefits it was designed to achieve. Specifically, the current LCFS crediting incentive for manure methane capture for transportation fuel use appears to be spurring the development of new digester projects. CARB staff estimates that those projects will significantly reduce methane emissions associated with the animal agriculture sector in California and beyond. Since the 2018 LCFS amendments came into effect, the number of operational digesters capturing methane from animal manure lagoons in California has nearly quadrupled, from approximately 20, to approximately 77 today. CARB staff estimate that these new digesters, in addition to providing local odor and other air quality benefits, will reduce methane emissions by approximately 75% during the lifetimes of these projects. The current LCFS regulatory scheme in effect has supported replacement of diesel heavy duty vehicles with natural gas vehicles, which reduces GHG emissions and decreases criteria air pollutant emissions from transportation."

Learn more about the benefits of natural gas vehicles and renewable natural gas at www.cngvp.org