

# CLEAN FUEL STANDARD PROGRAMS: THE BEST WAY TO LOWER CARBON EMISSIONS

Low Carbon Fuel Standard (LCFS) | Clean Fuel Standard (CFS) | Clean Transportation Standard (CTS)

## CLEAN FUEL STANDARD: *All low-carbon technologies win!*

A **Clean Fuel Standard (CFS) Program** is implemented in a state to stimulate additional economic revenue streams and develop clean jobs for the state constituents, while reducing the life cycle carbon intensity of transportation fuels. Supporting a diversified transportation fuel market, a CFS program functions by requiring reductions in the average carbon intensity (CI) of fuels over time. Fuels with carbon intensities lower than the standard that is set generate credits, while fuels with higher CI scores generate deficits and must purchase credits. Therefore, a CFS will reduce the state's carbon emissions by incentivizing the increased use of transportation fuels with lower carbon intensities.

There is no one solution to the transportation sector's pressing environmental issues. States should move quickly to deploy those technologies and solutions that are readily available, maximize cost-effective emission reductions, and provide a real pathway to carbon-neutral or carbon-negative emissions.



## CLEAN FUEL STANDARD PROGRAMS WORK!

### *The California LCFS Exceeds its Carbon Reduction Goals*

*Performance of CA LCFS Chart and Alternative Fuel Volumes and Credits Chart*

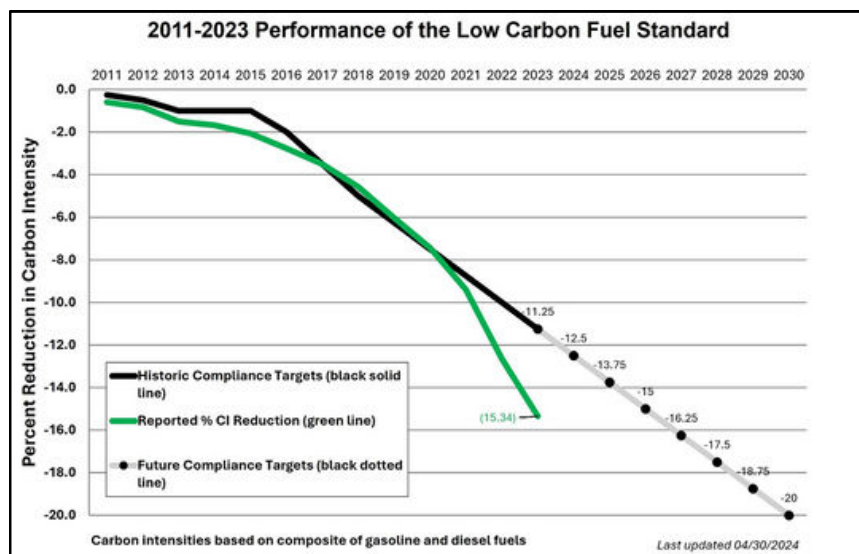
Source: [LCFS Data Dashboard](https://ww2.arb.ca.gov/resources/documents/lcfs-data-dashboard) | [California Air Resources Board](https://ww2.arb.ca.gov/resources/documents/lcfs-data-dashboard).  
<https://ww2.arb.ca.gov/resources/documents/lcfs-data-dashboard>

### Specific Benefits and Details of a CFS Include:

- Reduces greenhouse gas emissions while diversifying the transportation fuel supply and improving public health
- Provides economic opportunity and creates jobs associated with the production and delivery of new fuels such as biofuels (renewable natural gas (RNG))
- Technology and fuel-neutral, market-based policy that evaluates fuels and technologies based on their **life cycle** emissions
- Lowers the overall carbon content of transportation fuels by establishing an annual carbon intensity limit that increases in stringency over time
- Fuels with carbon intensities above the limit generate deficits, and those below generate offsetting credits
- Incentivizes the use of lower-carbon fuel alternatives because credits have economic value
- Uses an accepted standard of comparison of fuels' carbon intensities

*Typically, the Argonne National Laboratory's GREET Model tool is used to create clean fuel pathways, such as in the CA Air Resources Board LCFS Pathway Certified Carbon Intensity Chart*

- Reduces life cycle emissions, not just tailpipe emissions
- Is budget neutral since the credit/deficit program pays for itself
- Supports domestic fuel and energy independence



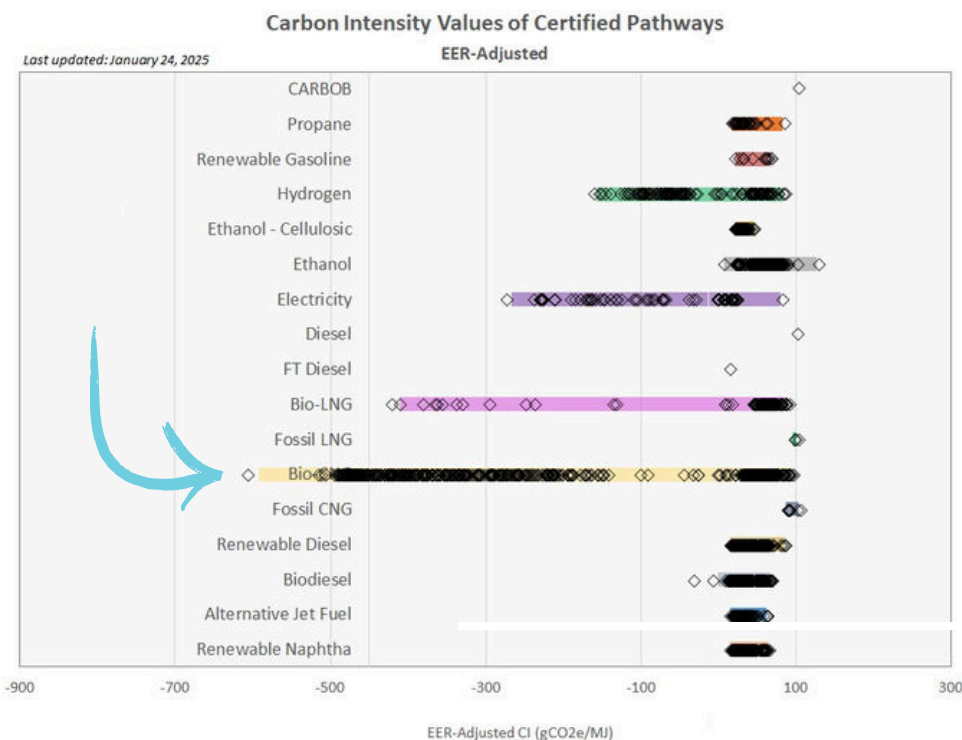
Investing in commercially available vehicles fueled by RNG is among the most cost-effective and immediate climate positive change policymakers can affect.

Learn more at [TransportProject.org](https://TransportProject.org)

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## OPPORTUNITY! Carbon Negative Potential with Bio-CNG, Bio-LNG, Electricity and Hydrogen



### RNG slashes Tailpipe Emissions

Engines fueled by RNG are 90% cleaner than their newest diesel counterparts: diesel particulate is reduced to zero with virtually zero NOx

### RNG is the Cleanest CFS Fuel Today

At **-212 gCO<sub>2</sub>e/MJ\***, Bio-CNG (RNG) has the Lowest Carbon Intensity of any transportation fuel or technology, including ZEVs

\*Most up-to-date Q3 2024 CARB LCFS data

### CA LCFS 2023 Renewable Fuels Average CI Score (gCO<sub>2</sub>e/MJ)

At -126.42, bio-CNG holds the lowest average carbon intensity of any clean fuel option on California's roadways today and is the only fuel with a negative carbon outcome.



Note: Baseline conventional diesel carbon intensity = 100.45. Data from CARB's LCFS Reporting Tool Quarterly Summaries

Source: LCFS Pathway Certified Carbon Intensities | California Air Resources Board  
<https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities>

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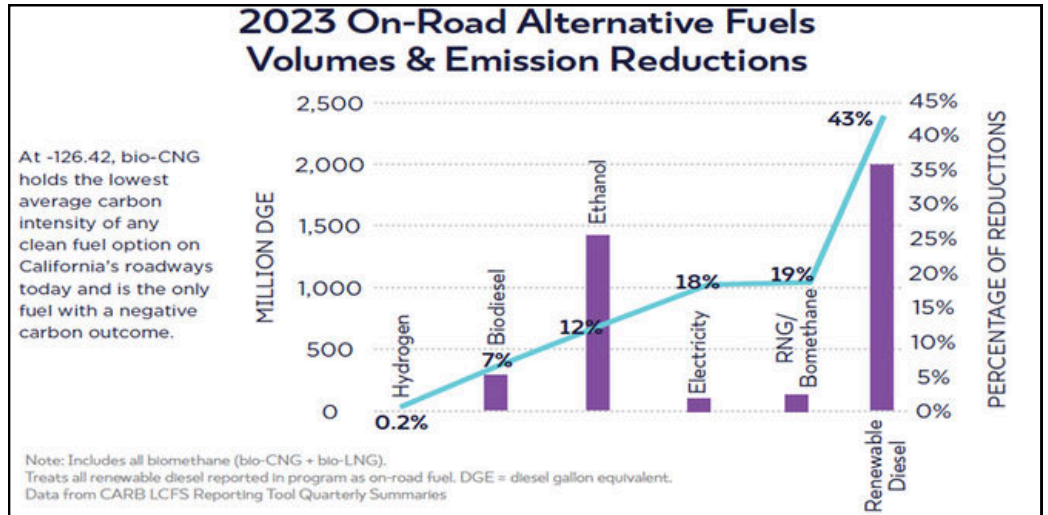
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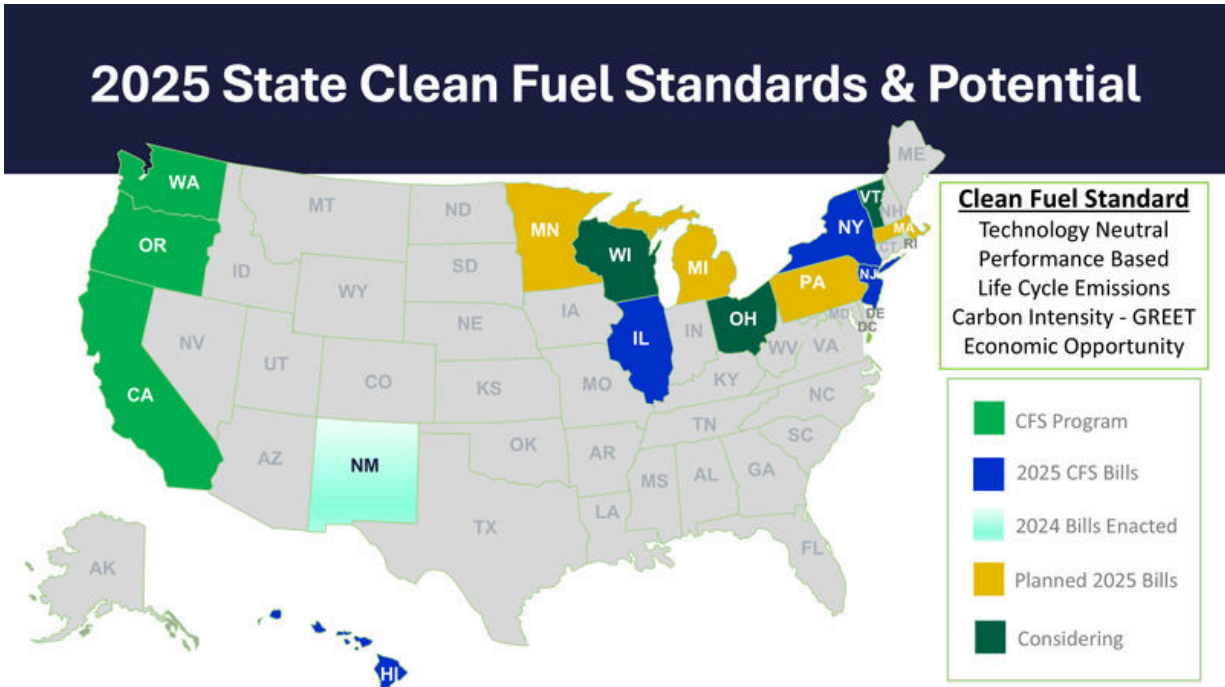
## REALITY! California's LCFS Shows What Works

### Outsized Impact

While RNG made up just **5.1%** of all on-road alternative fuels dispensed by volume, it generated **19.2%** of all CO<sub>2</sub>e reductions of on-road alternative fuels reported under the California LCFS in 2023.



## CFS PROGRAMS ARE GROWING! More States are Looking into CFS Programs Because of their Effectiveness



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## FREQUENTLY ASKED QUESTIONS

### What states have a Clean Fuel Standard Program?

California initiated its CFS Program in 2009, Oregon in 2019 and Washington in 2021. New Mexico's legislature passed its CFS bill in 2024. Approximately 10 states have introduced CFS bills or are preparing bills to be submitted in 2025. See map on page 3.

### What fuels are typically eligible to generate credits from a CFS Program?

All low carbon fuels would be eligible to generate credits and typically include renewable fuels such as renewable natural gas, biofuels, ethanol, hydrogen and electricity. See CARB CI Chart on page 2.

### How can a CFS program support agriculture in my state?

For many years, dairies have been operating on various-sized farms, but as it becomes harder to make a living on smaller farms, some are consolidating with other farms to be able to share costs and become more efficient. Another factor in these farms' survival is the ability to take the livestock-produced manure and turn it into renewable compressed natural gas (RCNG or Bio-CNG) that, when used in a vehicle for fuel, is eligible to generate credits that can be sold in the CA LCFS program. This added revenue stream not only keeps the dairies operating but solves their problem of disposing of the volumes of manure and controlling the methane emissions from that manure. They also are able to sell the residual fertilizer that is left after creating the RCNG to create a third revenue stream. Some suggest that this is causing mega-dairies to be created, but studies have shown this not to be true. See UC Davis study "Are Manure Subsidies Causing Farmers to Milk More Cows?" at: <https://asmith.ucdavis.edu/news/are-digesters>.

### Will the CFS raise the price of gasoline and diesel?

Such concerns have been raised about CFS programs, but those have not been substantiated. The assumed impact on the price of diesel and gasoline from a CFS program was not experienced when such programs were implemented in CA, OR, and WA. The tracking of market prices before and after CFS implementation shows little to no impact on the prices of gasoline and diesel. Further, detailed studies of California's LCFS show that the cost impacts were small. **Bates White Study showing no detectable correlation between LCFS prices and conventional fuel prices:** <https://www.bateswhite.com/newsroom-insight-Low-carbon-fuels-standards-Cain-2022.html>

### Does a CFS materially affect GHG reductions?

The California Air Resources Board (CARB) operates the California CFS and reported that, "In 2016, California reached its 2020 GHG emissions target four years early, and emissions continue to go down." The charts in this report provide more details. From inception through the end of 2023, California's program has reduced GHG emissions by more than 120 million metric tons. **California GHG Report Card showing LCFS is the second largest source of GHG reductions in the Transportation sector:** <https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/2021-State-Agency-Greenhouse-Gas-Reduction-Report-Card.a.pdf?emrc=56109b>



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