

July 17, 2026

Lauren Sanchez
Chair
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812
Via electronic submission

RE: June 22 Light Duty Drive Forward Workshop

Chair Sanchez:

We appreciate the opportunity to provide comments in response to the California Air Resources Board's (CARB) June 22 Light Duty Drive Forward workshop. Growth Energy is the leading voice in America's biofuels industry, representing 98 U.S. plants that each year produce more than 9.5 billion gallons of renewable fuel; 127 businesses associated with the production process; and tens of thousands of biofuel supporters around the country. Together, we work to bring better and more affordable choices at the pump to consumers, improve air quality, and protect the environment for future generations. We are committed to helping our country diversify its energy portfolio in order to grow more green energy jobs, decarbonize our nation's energy mix, sustain family farms, and drive down the costs of fuels for consumers.

With the consideration of a framework of rules for the pending Drive Forward program, the state of California once again has an opportunity to recognize the proven ability of higher blends of bioethanol to contribute to the reduction of greenhouse gases (GHGs) and criteria pollutants. According to the Transportation Energy Institute, bioethanol has led all biofuels to have been among the largest contributors to the success of California's GHG reductions through the Low Carbon Fuel Standard (LCFS).¹

Bioethanol's Emissions Reduction Value

We have noted in previous comments in response to proposed amendments of both the LCFS and the predecessor to Drive Forward that bioethanol is a primary solution for reducing carbon and air toxics emissions in the state's liquid fuel supply. Data from Environmental Health and Engineering shows that bioethanol reduces greenhouse gas emissions by an average of 46 percent compared to gasoline and can provide even further GHG reductions with the utilization of readily available technologies.² The board has previously recognized the contributions bioethanol can make to carbon reductions. In 2011, CARB reported the average carbon intensity (CI) for bioethanol at 88 gCO₂e/MJ. Through the end of 2022, the average recorded CI for bioethanol has decreased to 59.21 gCO₂e/MJ, a 33 percent reduction in CI.³

¹ https://www.transportationenergy.org/wp-content/uploads/2023/07/Decarbonizing-Combustion-Vehicles_FINAL.pdf

² <https://iopscience.iop.org/article/10.1088/1748-9326/abde08/pdf>

³ <https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities>

According to a 2024 study conducted by the Energy Futures Initiative Foundation, the average CI for bioethanol is now an even lower 53.6 gCO₂e/MJ.⁴

While not directly related to the Drive Forward, we nonetheless appreciate CARB's intention to bring forward a rule establishing E15's long-term availability for consumers by the end of 2026. Expanded use of higher bioethanol blends like E15 will allow the millions of internal combustion engine (ICE) vehicles remaining on the road for several decades to come to continue contributing to the state's GHG and emissions reduction goals. If E15 were to replace E10, the switch would be responsible for the GHG-reduction equivalent of removing more than 400,000 ICE vehicles from California's roads *without negatively impacting California drivers*.⁵

Drive Forward's Proposed Treatment of E15

We appreciate the consideration from CARB staff regarding the treatment of E15 and emissions compliance. As demonstrated in E15 Multimedia Evaluation Tier II report, evaporative emissions declined 22% on average during testing on a variety of vehicles during the Tier II testing for E15.⁶ In the same report, particulate matter emissions were shown to have a decrease as well:

"The PM mass showed strong, statistically significant fuel trends over the entire FTP cycle and each individual phase. For the cold-start and hot-running phases, PM mass emissions showed statistically significant reductions of 17% and 54%, respectively, for E15 compared to E10. Hot-start PM mass emissions were 43% lower for E15 compared to E10, at a marginally statistically significant level. The weighted PM mass emissions showed a statistically significant reduction of 18% for E15 compared to E10 across the fleet of 20 vehicles."

The testing, conducted by University of California – Riverside, also saw consistent "statistically significant" reductions of an array of emissions across, including carbon monoxide, total hydrocarbons, and nonmethane hydrocarbon emissions.

Additionally, bioethanol boosts octane in fuel without the harmful impacts of alternative octane-boosting fuel additives such as aromatics.⁷ Decreasing aromatics in fuel has direct impacts on tailpipe emissions, with higher-ethanol fuels resulting in lower emissions of black carbon (BC), particle number (PN), benzene, toluene, ethylbenzene, m/p-xylene and o-xylene (BTEX), and olefins.⁸

In relation to the June 22 Drive Forward workshop, we applaud the preliminary proposal to require an attestation from vehicle manufacturers that their vehicles "certified to emissions compliance with E10" that said vehicles are complying with "emissions standards when operating with E15" gasoline.

E85 and Flex-Fuel Vehicles

⁴ https://efifoundation.org/wp-content/uploads/sites/3/2024/09/Ethanol_Roadmap.pdf

⁵ <http://www.airimprovement.com/reports/national-e15-analysis-final.pdf>

⁶ https://ww2.arb.ca.gov/sites/default/files/2025-03/E15_MME_Tier_II_Report_July_2023.pdf

⁷ Kazemiparkouhi et al., *Comprehensive US database and model for ethanol blend effects on regulated tailpipe emissions*. 812 Science of The Total Environment 151426, (Mar. 2022).

⁸ MacIntosh, et al., *Response to Proposed Renewable Fuel Standard (RFS) Program Standards for 2023–2025*, Environmental Health & Engineering (Feb. 10, 2023).

Additionally, California's existing approval of E85 has resulted in significant growth of it being used in flex-fuel vehicles (FFVs): more than 118 million gallons have been sold at 375 locations across the state in 2023 alone⁹. Additionally, the current size of California's FFV fleet stands at more than 1.14 million vehicles.¹⁰ Despite the size of California's FFV fleet flattening, E85 usage continues to grow. There is a clear appetite and market for this environmentally beneficial fuel. The use of E85 will promote even greater reductions in GHG emissions and reductions of air toxics. We would continue to encourage CARB to implement policies that strongly incentivize and as necessary, require the production and use of flex-fuel vehicles, as well as continued investment in infrastructure for expanded access to E85 in the state. In doing so, the Board will be achieving multiple goals: improving air quality and GHG emissions, reducing the state's dependence on fossil fuels, and providing consumers with an affordable choice to power their vehicles.

We encourage CARB to consider the value of fuel blends such as E85 in reducing light-duty vehicle emissions and how it can complement the state's GHG and particulate matter emissions reductions policies.

High Octane/Midlevel Bioethanol Blends

As the Drive Forward proposal considers the future fleet, it is important to consider the benefits of using higher octane fuels such as bioethanol in conjunction with more efficient engines. Growth Energy has been an industry leader in advocacy in this area, first commenting to both CARB and EPA about the need for higher octane, midlevel bioethanol blends when the GHG standards for vehicles were being first developed in 2012. At that time, we submitted a proposal for a 100 Research Octane Number (RON), E30 (30 percent bioethanol) fuel blend for both vehicle certification and for consumer use. The science supporting the benefits of a high-octane fuel -- specifically a midlevel bioethanol blend in the E20 to E30 range in conjunction with a high compression ratio engine -- is not new and has been well explored by several national laboratories including Oak Ridge National Laboratory, National Laboratory of the Rockies, and Argonne National Laboratory as well as automobile manufacturers and other scientific institutions. Bioethanol has a very high-octane number relative to other gasoline hydrocarbons, has a lower carbon content than the gasoline components it generally replaces, and has many other benefits that assist in combustion to increase engine efficiency and reduce both tailpipe GHG and criteria pollutant emissions.

To briefly summarize, multiple studies have shown that a high RON, midlevel bioethanol blend (e.g., 96-RON E20 or 100-RON E30) when paired with various higher compression ratio engines yield tailpipe CO2 emissions reductions of at least 5 percent, which in most instances were also coupled with efficiency gains. Some studies also showed significant volumetric miles per gallon savings associated with the higher efficiency engines and a high-octane fuel. One study that was submitted to EPA in response to their Draft Technical Assessment Report (TAR) by Air Improvement Resources, "Evaluation of Costs of EPA's 2022-2025 GHG Standards with High Octane Fuels and Optimized High Efficiency Engines," showed that the use of a 98 RON, E25 would reduce the cost of a MY 2025 vehicle by \$400 and a popular crossover SUV by as much as \$873. Not only are the benefits of midlevel bioethanol blends well understood by the scientific community, but the automobile industry has for years acknowledged the importance of affordable, high-octane fuels coupled with high-compression ratio engines as important to attaining regulatory compliance and improving vehicle performance in the most economical manner possible.

⁹ https://ww2.arb.ca.gov/sites/default/files/2024-03/Annual_E85_Volumes_Chart_3-8-2024.pdf

¹⁰ <https://data.ca.gov/dataset/vehicle-fuel-type-count-by-zip-code>

When you examine the data, there are clear benefits of moving to a high-octane, midlevel bioethanol blend, such as E30, including vehicle engine efficiency, lower tailpipe emissions, and increased use of renewable fuel. We believe that the use of midlevel bioethanol blends will continue to drive investment in more efficient vehicles, as well as lower carbon biofuels.

Thank you for the opportunity to provide comments on the proposed Drive Forward's rulemaking. We urge CARB to recognize the role biofuels has played and can continue to play in making California's fuel mix more sustainable and help the state achieve its progressive climate goals through the expanded use of bioethanol.

Sincerely,

A handwritten signature in blue ink, appearing to read "Christopher P. Bliley". The signature is fluid and cursive, with a large, stylized "B" at the end.

Christopher P. Bliley
Senior Vice President of Regulatory Affairs
Growth Energy