



November 21, 2025

Chair Lauren Sanchez and Executive Officer Dr. Steven Cliff
California Air Resources Board
Comment Submitted Electronically

RE: Pearson Fuels Comments on Drive Forward – Policy Ideas that Leverage California’s Existing E85/FFV Policies to Affordably Achieve Critical Clean Air and Climate Goals

Dear Chair Sanchez and Executive Officer Cliff,

RTC Fuels, LLC, dba Pearson Fuels, appreciates the opportunity to provide comments on CARB’s Drive Forward Light-duty Vehicle Program. Pearson Fuels is the largest distributor of E85 in California with a network of over 450 retail E85 stations. Pearson Fuels’s stations are often located in disadvantaged communities where the affordability of E85 – typically priced \$1.50-\$2.50 per gallon cheaper than gas – is most valued by California citizens. Wherever possible, Pearson Fuels delivers even greater greenhouse gas (GHG) reductions by supplying E85 blended with renewable naphtha, a by-product of renewable diesel production. Paired with cellulosic ethanol, this E85 blend is fully renewable and is a low aromatic fuel with the resulting E85 delivering lifecycle GHG reductions approaching 80% compared to CARB unleaded gasoline.

Summary

As you are well aware, CARB currently faces unprecedented challenges meeting National Ambient Air Quality Standards (NAAQS) as well as its goal of achieving carbon neutrality by 2045. Recent actions by the federal government undercut multiple components of CARB’s comprehensive State Implementation Plan. At the same time, an unstable national economy coupled with recent and planned in-state refinery closures threaten transportation affordability. We appreciate CARB’s rapid response to these challenges and willingness to engage stakeholders like Pearson Fuels. In this Comment, we bring forward several innovative, affordable and quickly deployable strategies that will assist CARB in meeting NAAQS and GHG reduction goals while preserving affordability and leveraging California’s existing policy structure and progress achieved to date. We look forward to further engagement with CARB on the recommendations in this Comment.

Consistent with this background, this Comment summarizes the tremendous success of California policy in building the most successful E85 market in the country, highlights how transportation analysis commissioned by the Legislature has confirmed that bio-based fuels like E85 are essential for achieving carbon neutrality, identifies potential criteria pollutant reduction opportunities, and describes at a conceptual level several low-cost and no-cost voluntary programs that will help CARB achieve continued reductions of GHG and criteria pollutants despite the challenging policy environment.

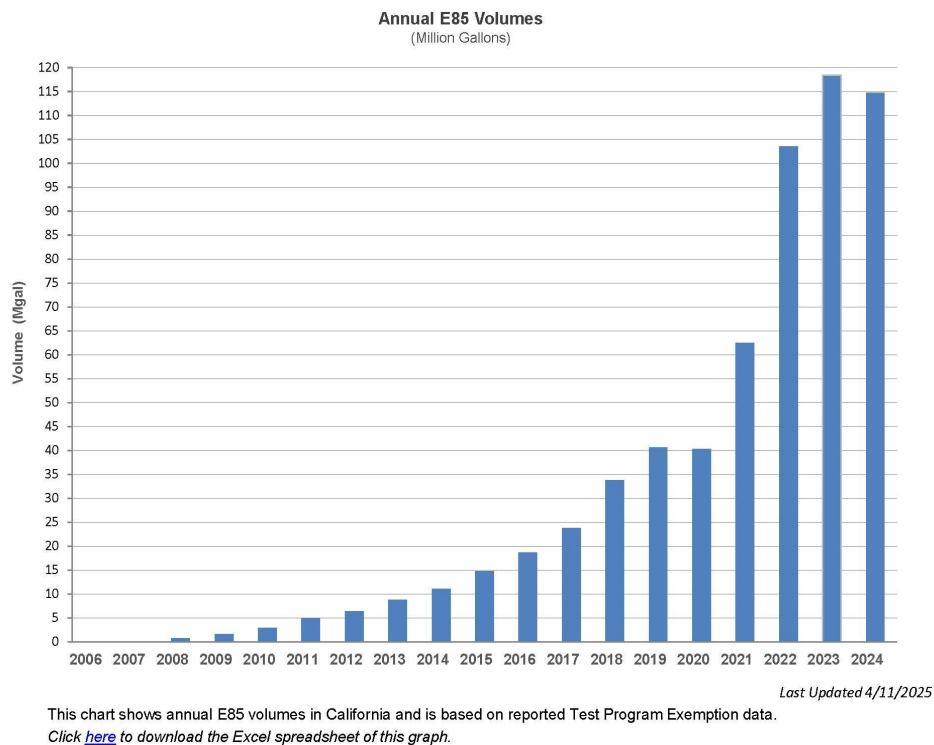


Opportunity to Build on Successful Policies:
The Current State of E85 and FFVs in California

In order to best leverage the flexibility of E85 within California's rapidly evolving policy matrix, an understanding of the key market drivers and the current status of the market is essential.

E85 is available at more than 600 retail gasoline stations across California and offers consumers substantial price savings compared to traditional gasoline. It is used in flex fuel vehicles (FFVs), which operate on E85, gasoline or any blend of the two. Historically, E85 in the Pearson Fuels station network has been priced significantly cheaper than California gasoline on an annual average basis. During severe gasoline price spikes in 2022 and 2023, stations distributing E85 in the network saw dramatic E85 volume increases as consumers chose affordable alternatives. In June 2022 when California gasoline prices reached a record high at \$6.29 per gallon, E85 users saved \$2.24 per gallon by filling with E85. In 2023, the maximum E85 spread offered a discount of \$2.05 per gallon.

Because of the increase in E85 availability and its price advantage, volumes have grown dramatically in the state over the past fifteen years.¹



It's important to recognize the growth in E85 volumes has occurred despite the fact that the number of FFVs in California has been slowly declining over the past three years.² The demand for E85 has

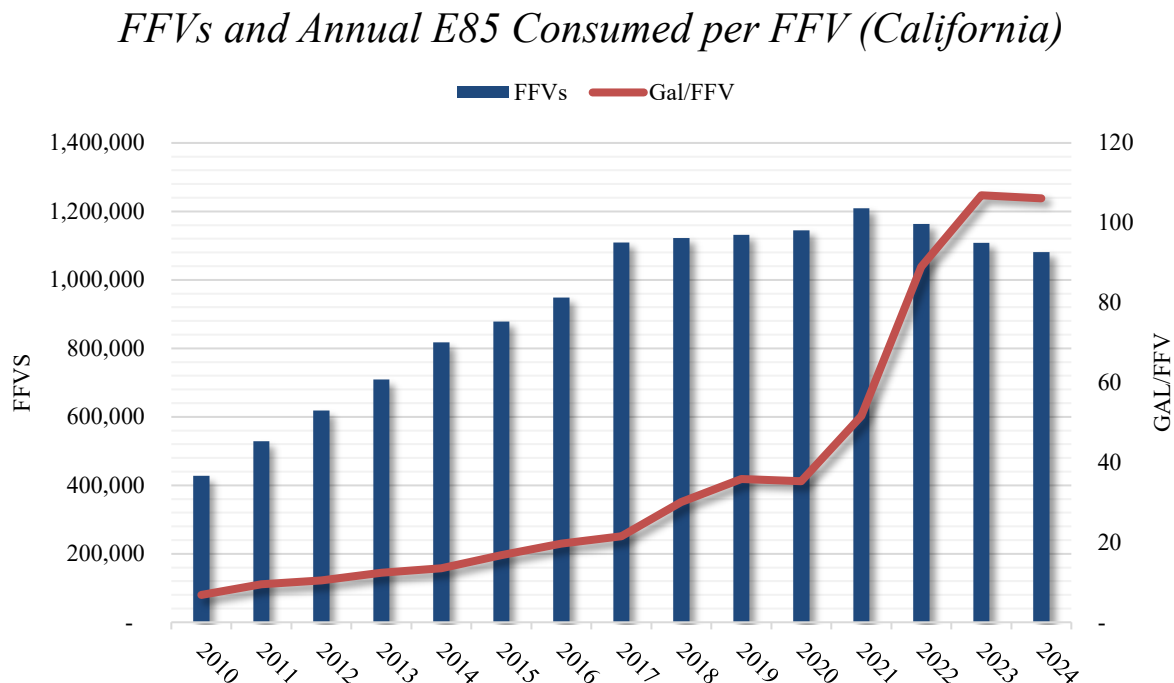
¹ CARB website, "Alternative Fuels: Annual E85 Volumes," at <https://ww2.arb.ca.gov/resources/documents/alternative-fuels-annual-e85-volumes>

² California Department of Motor Vehicles, Vehicle Fuel Type Count by Zip Code



increased for the two reasons mentioned previously: E85 station expansion has made E85 available in new areas; and drivers have selected E85 rather than gasoline due to the extremely favorable economics.

The number of FFVs on the road has declined primarily as a result of changes in federal auto standards. The two key federal policies that heavily influence the number of FFVs manufactured for the U.S. market are the National Highway and Transportation Safety Administration's Corporate Average Fuel Economy (CAFE) standards, and the U.S. Environment Protection Agency's (EPA) Greenhouse Gas Rule (GHG Tailpipe Rule).



During the period of 2012-2016, both the CAFE and GHG Tailpipe Rule provided very favorable crediting for FFVs. As a result, this five-year period was the peak of FFV manufacturing with some U.S. automakers producing as many as 50% of their models with FFV capabilities. Subsequently, both programs reduced crediting for FFVs with the GHG Tailpipe Rule being most severe in its reductions.

Due to the fact that the CAFE program is focused on petroleum reduction, it credits FFVs with the 85% reduction in petroleum usage that E85 provides relative to 100% gasoline. The CAFE program discounts this crediting by the "F factor" which is the calculated usage factor of E85 per FFV. In contrast, the GHG Tailpipe Rule is focused on GHG emission reductions.

EPA decided only to recognize tailpipe GHG reductions in its rule rather than to recognize lifecycle GHG emission reductions. In this regard, EPA took an approach contrary to the California Low Carbon Fuel Standard's (LCFS) approach to fuels, which analyzes lifecycle emissions and recognizes the significant reductions that both ethanol and renewable naphtha provide. As a result, the LCFS program has been one of the key drivers of the dramatic expansion of E85 usage in California over the past 15 years.



Specific to FFV manufacturing, the federal policy landscape has changed recently in that EPA has proposed to abolish the GHG Tailpipe Rule.³ While EPA's reasoning and policy approach in proposing to abolish the GHG Tailpipe Rule run directly counter to California policy goals, there is a potential silver lining for FFVs, in that automakers may again ramp up FFV manufacturing if CAFE crediting becomes the sole controlling program. However, even if this occurs it will be years before changes in automaker manufacturing plans are manifested into new FFVs available for sale.

Currently, new model year FFVs from General Motors indicate there is consumer appetite to purchase FFVs that offer the ability to use E85. The Chevrolet Trax FFV has been the third-best selling subcompact SUV in California during 2025.⁴

While there was skepticism expressed during one of CARB's Advanced Clean Cars II Amendments workshops regarding the ability of the auto industry to certify an FFV to near-zero NMOG+NOx standards (30mg/mile fleet average) using E85, GM has proven that it could meet this challenge. The Chevrolet Trax FFV engine's FTP certification category is LEV4 SULEV30,⁵ clearly demonstrating automakers can certify FFVs to the state's stringent standards and provide substantial emission reduction benefits.

Analysis Conducted on Behalf of the California Legislature
Confirms that All Internal Combustion Engines Must Transition to Biofuels

The State of California has taken a leadership role in climate policy dating back to 2006 and has developed a network of regulations and strategies to enable decarbonization. Consistent with this, Governor Jerry Brown signed Executive Order No. B-55-18 in 2018. The Executive Order established a new statewide goal to achieve carbon neutrality as soon as possible, and no later than 2045, and to achieve and maintain net negative emissions thereafter.

Further to that goal, the California Legislature approved the Budget Act of 2019 (AB 74) that funded two studies, administered by the California Environmental Protection Agency, to: 1) identify strategies to reduce emissions from transportation energy use, and 2) identify strategies to manage the decline in fossil fuel production and associated emissions in parallel with reductions in demand. The study to reduce emissions from transportation use was conducted by the University of California Institute of Transportation Studies (ITS) at four campuses, UC Davis, UC Berkeley, UC Irvine and UCLA.

The resulting ITS report developed in 2021 is entitled, "*Driving California's Transportation Emissions to Zero.*"⁶ While California leads the nation in electrifying transportation, the report recognized the reality that a significant number of internal combustion engines will remain on the road beyond 2035. As a

³ U.S. Environmental Protection Agency, Reconsideration of 2009 Endangerment Finding and Greenhouse Gas Vehicle Standards, 90 FR 362288 (August 1, 2025), available at <https://www.govinfo.gov/app/details/FR-2025-08-01/2025-14572>

⁴ California New Car Dealers Association Q3 Auto Outlook

⁵ California Air Resources Board, New Vehicle and Engine Certification Executive Order A-006-2477

⁶ Institute of Transportation Studies, "Driving California's Transportation Emissions to Zero," (April 2021), available at <https://escholarship.org/uc/item/3np3p2t0>

result, the report concluded that to achieve carbon neutrality it was necessary for California to make a complete transition by 2045 from petroleum-based gasoline to bio-based gasoline, including ethanol blends, as illustrated in the following graph. FFVs are the only existing vehicles that can utilize E85, which is the only type of bio-based, gasoline substitute that has been commercialized.

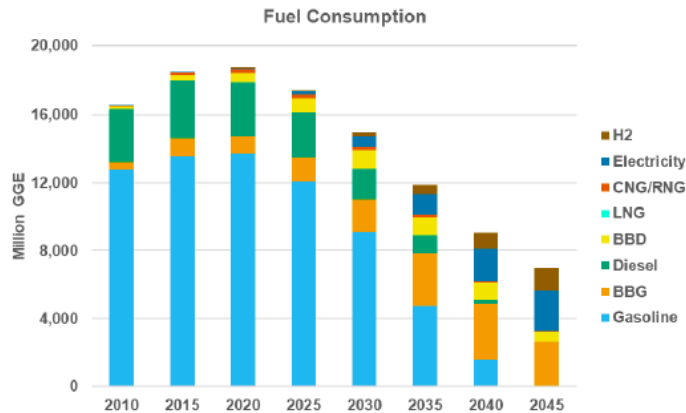


Figure EX-2. CO₂ emissions and fuel consumption projections in the LC1 scenario. The near-zero CO₂ emissions target is reached by 2045, with nearly all fossil fuels replaced by electricity, hydrogen, and biofuels at that date. (MMT, million metric tonnes; SAF, sustainable aviation fuel; H₂, hydrogen; CNG/RNG, compressed natural gas/renewable natural gas; LNG, liquefied natural gas; BBD, bio-based diesel, including biodiesel and renewable diesel; BBG, bio-based gasoline, including ethanol blends and drop-in gasoline replacement fuels)

Driving California's Transportation Emissions to Zero

This same question of how California can reach its now statutory goal of carbon neutrality by 2045 was analyzed again in the UC Davis Institute of Transportation Studies recent report entitled, “*Technology and Fuel Transition Scenarios to Low Greenhouse Gas Futures for Cars and Trucks in California to 2050*.”⁷ The report developed a feasible scenario regarding how California could meet its rigorous regulatory requirements – but again concluded that in order to do so, the state will need to fully replace petroleum-based gasoline and diesel with low-carbon biofuels by 2045.

Given the recent reversal of federal support for electrification and elimination of the federal EV tax credit, it is clear that while CARB must continue to invest in ZEV deployment, it must also develop policies to ensure the complete replacement of fossil-based gasoline.

As noted in our previous comments regarding the Advanced Clean Cars II workshop in June 2024,⁸ E85 made with ethanol and renewable naphtha is the only commercially-available, drop-in replacement for fossil gasoline. FFVs capable of using E85 or gasoline are therefore an essential tool CARB should leverage on its path to achieve carbon neutrality, reduce emissions and meet its climate targets.

⁷ Miller, M., Fulton, L., Yang, H., Zhao, J., & Burke, A. (2025). Technology and Fuel Transition Scenarios to Low Greenhouse Gas Futures for Cars and Trucks in California to 2050. *UC Davis: Energy Futures Research Center*. Retrieved from <https://escholarship.org/uc/item/40k5w5h9>

⁸ CARB public comments, retrieved from <https://ww2.arb.ca.gov/form/public-comments/submissions/15886>



Potential Emission Reduction Benefits

Ethanol has accounted for substantial and sustained greenhouse gas reductions in California's LCFS,⁹ and ethanol production plants have continued to help the state achieve its climate goals by reducing the carbon intensity of their fuel.¹⁰ This will only improve the upstream GHG performance of E85 used in FFVs.

In addition, consistent with the intent of CARB's Drive Forward Light-duty Vehicle Program, E85 used in FFVs can not only help reduce GHG emissions but has also demonstrated significant potential to reduce tailpipe criteria and toxic pollutants.

Pearson Fuels recently contracted UC Riverside CE-CERT to test a 2025 Chevrolet Trax FFV with three fuels: a Pearson Fuels retail E85 with 15% renewable naphtha instead of gasoline (RN-E85), CARB certification E85, and CARB certification E10. The Trax is equipped with a 1.2L, 3-cylinder, turbocharged, direct-injection engine. The vehicle was purchased new with break-in conducted over 11,000 miles of normal driving on public roads in California. Testing was conducted on the EPA's Federal Test Procedure to compare emissions with the three fuels.

Results with E85 and RN-E85 compared to E10 showed statistically significant reductions in NO_x, CO₂, particulate matter, and cumulative BTEX emissions. Emissions of CO and NMOG+NO_x trended lower with the E85 fuels. While energy-equivalent fuel economy was largely the same for the fuels, the tailpipe CO₂ with the RN-E85 was 3.5% lower than with E10.

We look forward to continue working with CARB, and with ethanol and auto industry partners, to maximize the criteria pollutant reductions from FFVs.

Recommendations

CARB has several tools it can use to help incentivize FFVs.

Develop an E85 specific EER: CARB currently applies an EER value of 1 to E85.¹¹ Recent work suggests credit quantification will soon need to be reformed and advocates for fractional displacement.¹² CARB could create an EER value for E85 in E85-optimized FFVs that is greater than 1, thereby incentivizing the production of FFVs and use of E85 to displace petroleum.

A California-specific F factor: California accounts for more E85 volume than any other state in the nation. In such, an EPA F-factor of 0.14¹³ very likely undercounts the amount of E85 used in California

⁹ CARB website, "LCFS Data Dashboard," at <https://ww2.arb.ca.gov/applications/lcfs-data-dashboard>

¹⁰ Rosenfeld, J., M. Kaffel, J. Lewandrowski, D. Pape, 2020. The California Low Carbon Fuel Standard: Incentivizing Greenhouse Gas Mitigation in the Ethanol Industry. USDA, Office of the Chief Economist. November 2020

¹¹ CARB Low Carbon Fuels Standard (LCFS) Guidance 20-04

¹² Murphy, C. W. (2022). Improving Credit Quantification Under the LCFS: The Case for a Fractional Displacement Approach. *UC Davis: Policy Institute for Energy, Environment, and the Economy*. Retrieved from <https://escholarship.org/uc/item/0px4m8hz>

¹³ Environmental Protection Agency, retrieved from <https://www.epa.gov/regulations-emissions-vehicles-and-engines/e85-flexible-fuel-vehicle-weighting-factor-f-factor>



FFVs since the average FFV in California used 35.3 gallons of E85 when EPA set its F-factor in 2020, and the average FFV consumed 106.1 gallons of E85 last year. A state-specific F-factor would also insulate FFV-producing automakers from the federal policy uncertainty that now exists. The correct regulation for utilizing this tool is likely a fractional form of ZEV crediting or a tailpipe emissions credit during certification.

Streamline and simplify E85 conversion kit approval: As stated earlier, even while CARB looks to incentivize ZEV deployment, it must also focus on gasoline substitutes in order to meet its climate goals. E85 conversion kits are the only plausible tool that allow the current on-road fleet to rapidly decarbonize. CARB should immediately authorize the sale and installation of any E85 conversion kit certified by the EPA as an EPA-Compliant Alternative Fuel Conversion System. These devices cost about \$500 per unit installed and are available for the large majority of light-duty vehicles. France has proven the viability of this approach, with over 250,000 retrofits installed.

Ease the burden of FFV certification: As FFVs will be an important component of California's fleet, CARB should make any effort to minimize the burden for FFV automakers, who must certify on both E10 and E85. Based on our discussions with automakers, the requirement of CARB certification is time-consuming and proceeds slowly. To the extent that CARB dedicates more staff time and works to expedite the process, it would likely increase the number of FFV units that are certified for and shipped to California.

We look forward to working with CARB as this program evolves.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeff Wilkerson", is written over a horizontal line.

Jeff Wilkerson
Government Policy and Regulatory Affairs Manager
Pearson Fuels