PEARSONFUELS

January 15, 2024

Joshua Cunningham
Branch Chief, Advanced Clean Cars
California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: **Pearson Fuels Comments on Amendments to Advanced Clean Cars II**

Dear Mr. Cunningham,

RTC Fuels, LLC, dba Pearson Fuels ("Pearson Fuels"), appreciates the opportunity to provide comments on potential amendments to Advanced Clean Cars II. Pearson Fuels is the largest distributor of E85 in California, supplying more than 350 fueling locations across the state. More than 150 additional Pearson Fuels sites are planned to open in the next 24-36 months. Pearson Fuels is providing an innovative, low-carbon E85 by replacing the gasoline component of E85 with renewable naphtha. Paired with cellulosic ethanol, this E85 is fully renewable and low aromatic with greenhouse gas reductions approaching 80% compared to CARB unleaded gasoline.

Summary

Pearson Fuels has unique insight into the E85 marketplace in California. As such, these comments will focus on the "Use of Ethanol" input request from the California Air Resources Board's ("CARB") November 15 workshop. We believe there are cost effective avenues CARB can explore to leverage E85 as a low-carbon gasoline alternative to help meet both its emissions and petroleum reduction goals.

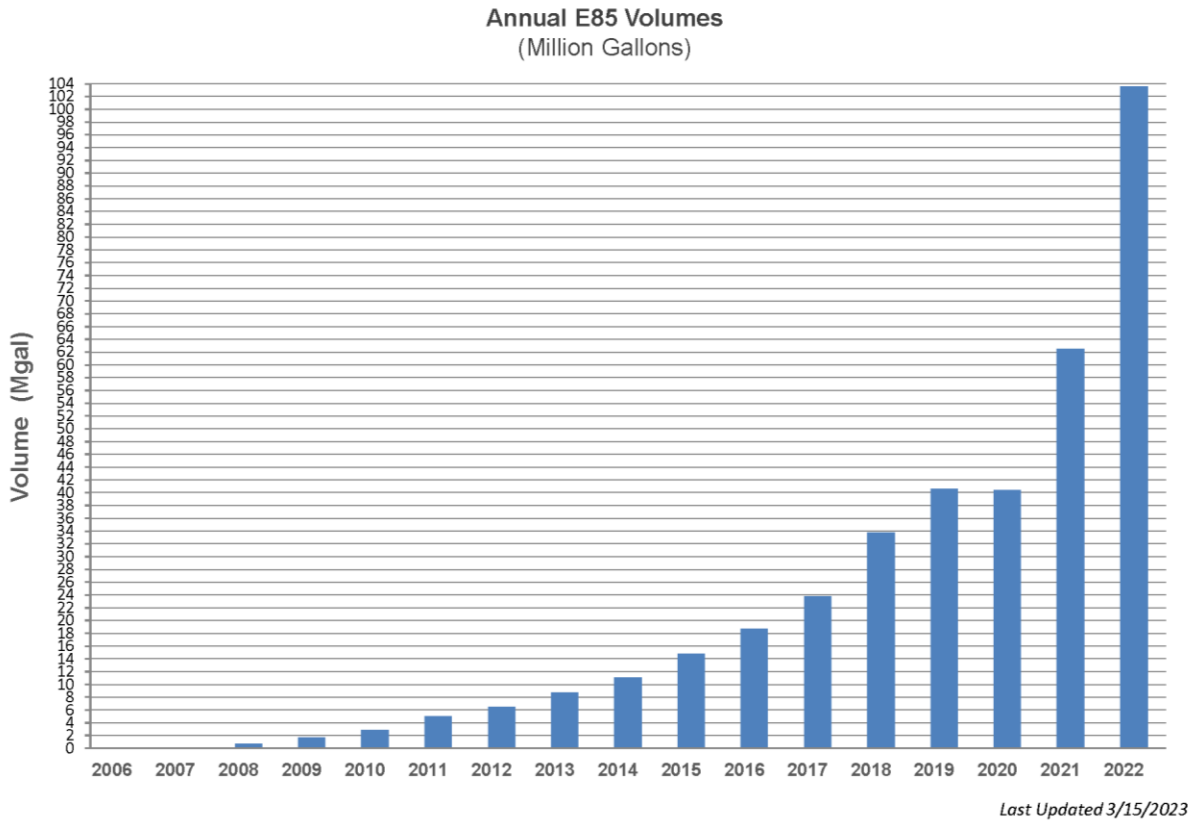
Projected Availability of E85

We expect that E85 use reached a new high in 2023 – the 16th such record in the previous 17 years. In 2022, Californians used 103.5 million gallons of E85,[1] an increase of 66% from 2021. The resilient growth of E85 has slowed only once – in 2020 – with a slight dip of 0.6%, while gasoline use dropped dramatically. In every other year, the state logged double-digit, year-over-year jumps. We believe 2023 was another year of double-digit growth; final E85 annual volumes for 2023 are expected in February.

As mentioned previously, Pearson Fuels distributes E85 to more than 350 retail locations. We estimate total E85 availability to currently be approximately 400 sites in California, higher than the 354 stations identified by the Department of Energy's Alternative Fueling Station Locator.[2] Therefore, we estimate California will have at least 550 E85 fueling stations by Jan. 1, 2027. We

[1] CARB website, "Alternative Fuels: Annual E85 Volumes," at https://ww2.arb.ca.gov/resources/documents/alternative-fuels-annual-e85-volumes
[2] Alternative Fuels Data Center, Alternative Fueling Station Locator at https://afdc.energy.gov/stations/#/analyze?region=US-CA&fuel=E85

are unsure at what station count market saturation will occur, but we know investing in geographically challenging areas will be unwise given the current lack of policy support for flex fuel vehicle ("FFV") manufacturing. We urge CARB to send necessary policy signals supportive of E85 and FFV manufacturing as soon as possible in order to drive continued infrastructure investments, station expansion and vehicle acquisition.



Propensity of FFV Drivers to Fuel with E85

FFVs utilize proven technologies to improve efficiency, save consumers and automakers money, reduce GHG emissions, improve U.S. energy security, strengthen the U.S. farm economy, and build a bridge to future fuels and technologies.

It is crucial to understand the rapid growth in E85 usage has occurred while the state's population of FFVs remained constant. FFVs can use E85, gasoline, or any blend of the two.

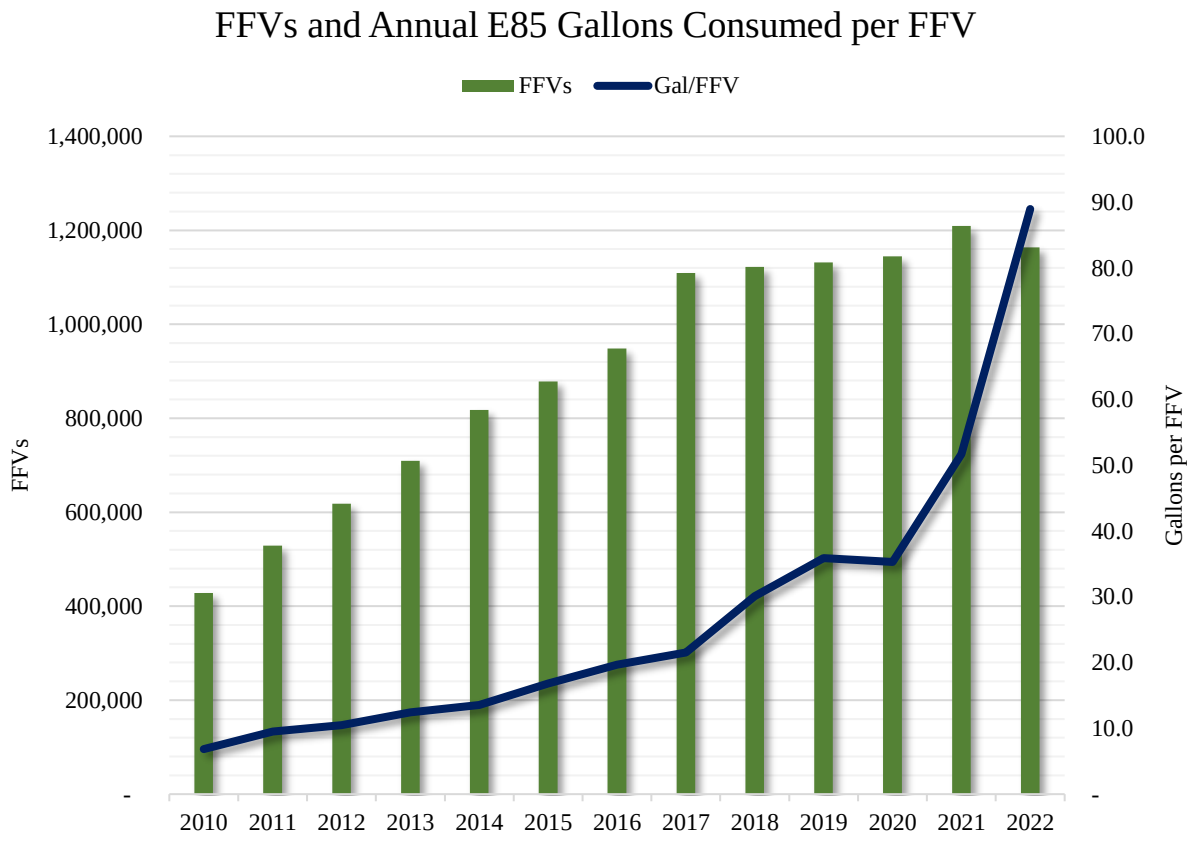
From 2017 to 2022, the number of FFVs in California increased 5.0%, according to state data,[3] while the annual volume of E85 grew 334.0%. A past criticism of FFVs was that FFVs "most commonly fill up with conventional gasoline."[4] However, data comparing FFVs to total E85 volumes indicates utilization rates have improved markedly: average E85 gallons per FFV more than quadrupled from 21.5 gallons in 2017 to 89.0 in 2022. We believe that dramatic increase in

[3] California Energy Commission (2023). California Energy Commission Zero Emission Vehicle and Infrastructure Statistics. Data last updated Dec. 31, 2022. Retrieved Dec. 26, 2023 from http://www.energy.ca.gov/zevstats

[4] Melton, N., Axsen, J. & Sperling, D. Moving beyond alternative fuel hype to decarbonize transportation. *Nat Energy* **1**, 16013 (2016). https://doi.org/10.1038/nenergy.2016.13

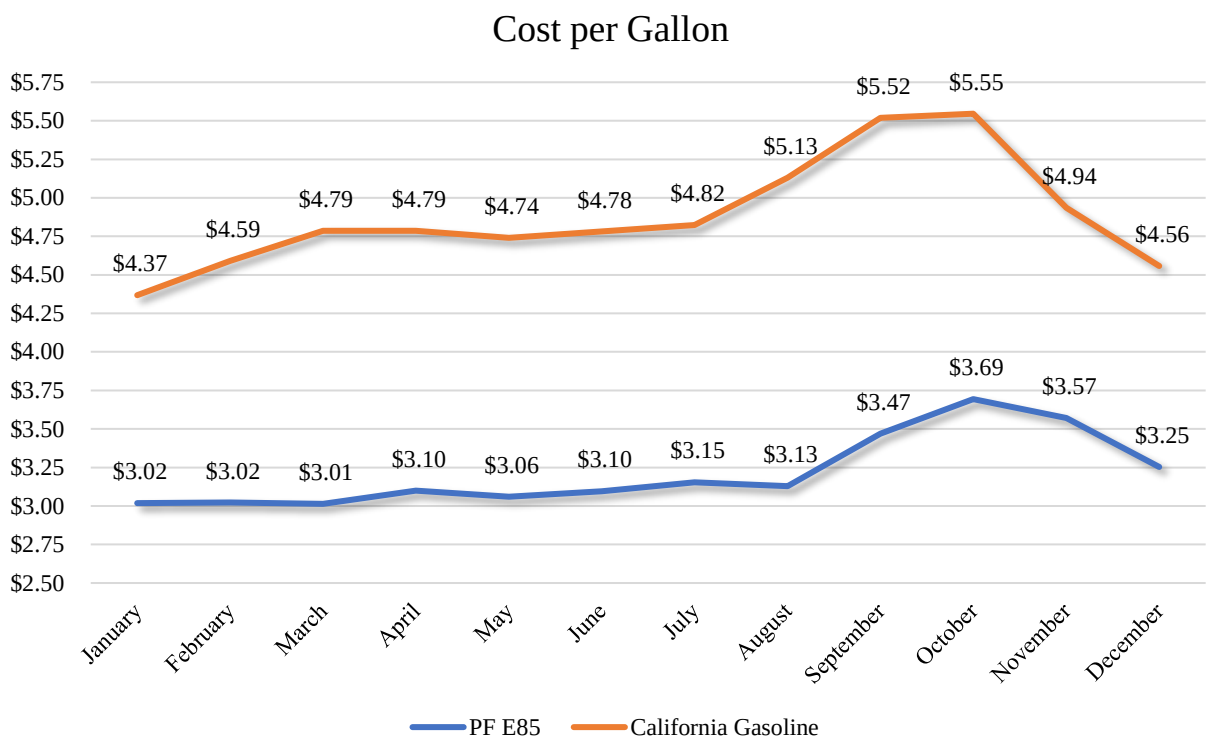
E85 use is due to product access via the increase in E85 retail station sites and the significant pricing discounts of E85 relative to CARB gasoline. Importantly, it shows drivers are making a conscious choice to use E85 – particularly when gasoline prices spike. These drivers are therefore providing a pressure relief valve on gasoline demand by switching their behaviors.

Even though E85 volumes surged from 2021 to 2022, as mentioned previously, FFVs decreased by 3.7%, according to CEC data. This was the first year-over-year drop in the state's FFV population with data dating back to 2010. Absent specific federal or state policy changes to motivate automakers to manufacture FFVs, we expect the FFV population will further shrink as automakers reduce model offerings. This will remove a key tool in the state's push to reduce carbon emissions, scale down petroleum usage and offer consumers affordable fuel.



Historically, E85 in the Pearson Fuels station network, on average, has always been priced cheaper than California gasoline.[5] In 2023, that spread ranged from $2.05 a gallon to $1.30 per gallon better than gasoline. In 2022, the maximum advantage grew even wider to $2.32 a gallon below gasoline in October.

[5] U.S. Energy Information Administration, California All Grades All Formulations Retail Gasoline Prices



Equity Impacts

The price spread between E85 and gasoline will likely become more substantial as Low Carbon Fuel Standard ("LCFS") targets intensify, as highlighted in *Fuel Portfolio Scenario Modeling (FPSM) of 2030 and 2035 Low Carbon Fuel Standard Targets in California* from the University of California: "As targets exceed 30% and continue to climb, the per-gallon price impacts on retail gasoline would be expected to rise as well. Given the expectation that the transition to EVs will generally occur most rapidly among higher-income drivers, this implies that lower-income drivers may be disproportionately exposed to the retail fuel price increases caused by the LCFS."[6]

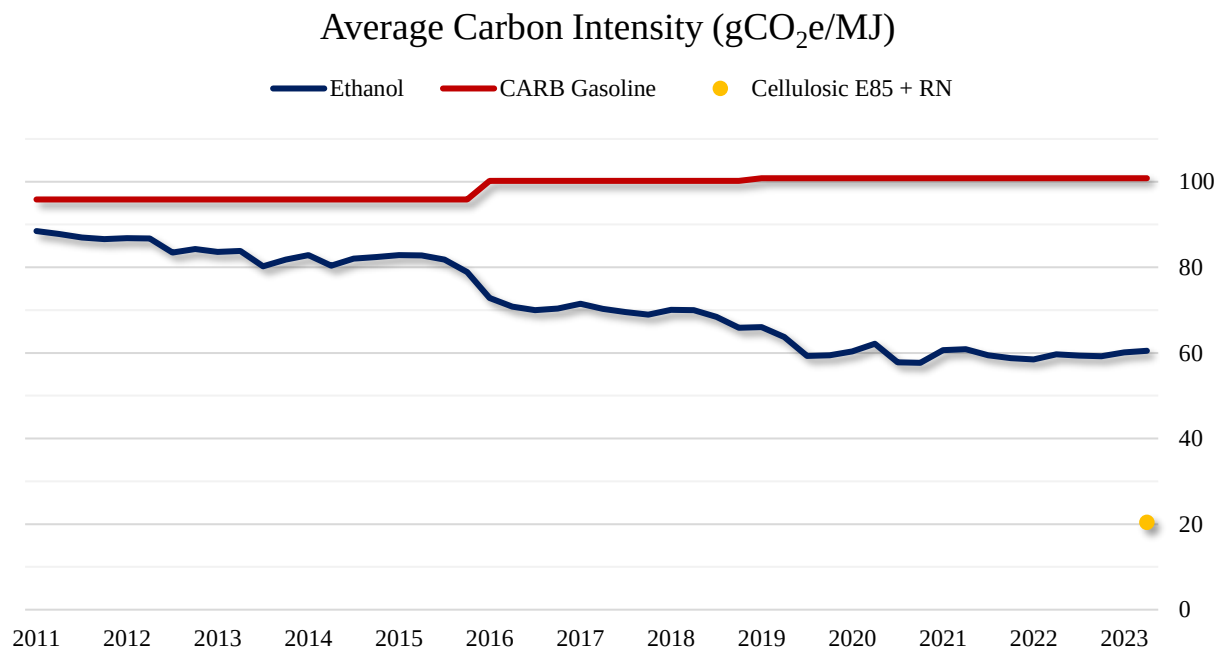
FFVs allow consumers to choose the more economical fuel – likely E85 – that is also lower in carbon. As indicated previously, if consumers can use E85 when economically practical, they will.

Greenhouse Gas Impacts

Pearson Fuels is replacing the gasoline component of its E85 with renewable naphtha, thereby creating a fully renewable liquid gallon with carbon intensity ("CI") reductions up to 80%

[6] Ro, J., Murphy, C. W, & Wang, Q. (2023). Fuel Portfolio Scenario Modeling (FPSM) of 2030 and 2035 Low Carbon Fuel Standard Targets in California. *UC Office of the President: University of California Institute of Transportation Studies*. http://dx.doi.org/10.7922/G2S46Q8C retrieved from https://escholarship.org/uc/item/6f2284rg

compared to CARB unleaded gasoline.[7] E85 with ethanol using carbon capture and sequestration could further reduce ethanol's CI by 20-25 gCO_2e/MJ.[8]



California has a desperate need for a fully renewable gasoline alternative. The state's goal is to reduce oil usage 94% by 2045. By 2040, the state will need 2 billion gallons of liquid gasoline alternatives – "even under the most ambitious (zero emission vehicle) deployment scenarios."[9] Critically, much of the volume will need to be low CI to meet LCFS targets.

This long-term forecast highlights the need for immediate market signals in order to ensure future vehicles sold in California are capable of using all-renewable, low-CI liquid fuel. Automakers have moved away from FFV production in recent years due precisely to uncertain federal policy incentives. While E85 is a perfect example of how the LCFS has decarbonized on-road transportation, uncertainty will hinder future infrastructure investments. This would lead to less E85 available in the marketplace, pushing drivers to use gasoline as their only option.

[7] LCFS Pathway Certified Carbon Intensities, retrieved from https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities

[8] 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

[9] Brown, A. L; Sperling, D.; Austin, B.; DeShazo, JR; Fulton, L.; Lipman, T., et al. (2021). Driving California's Transportation Emissions to Zero. *UC Office of the President: University of California Institute of Transportation Studies*. http://dx.doi.org/10.7922/G2MC8X9X Retrieved from https://escholarship.org/uc/item/3np3p2t0

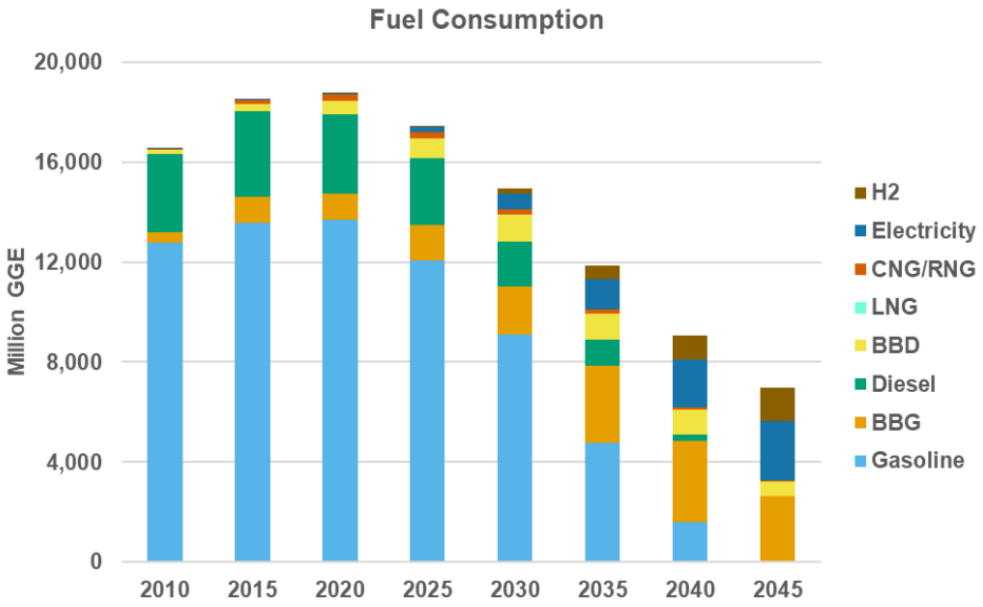


Figure EX-2. CO_2 emissions and fuel consumption projections in the LC1 scenario. The near-zero CO_2 emissions target is reached by 2045, with nearly all fossil fuels replaced by electricity, hydrogen, and biofuels at that date. (MMT, million metric tonnes; SAF, sustainable aviation fuel; H2, hydrogen; 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)

Figure 1 Driving California's Transportation Emissions to Zero[10]

Recommendations

We urge CARB to work with other state agencies, automakers and federal government agencies that administer the Corporate Average Fuel Economy ("CAFE") and Greenhouse Gas ("GHG") programs to maximize E85's potential to decarbonize the state's vehicle fleet both now and in the future by:

- Incentivizing manufacturers that sell FFVs in California prior to the effective date of any future, potential CARB-imposed requirement.
- Incentivizing manufacturers that optimize FFVs for E85 rather than gasoline.
- Prioritizing deployment of technology that allows current, gasoline-dedicated ICEs to operate on E85 to realize immediate GHG benefits and lower fuel costs.
- Exploring a dedicated E85-fueled LDV that can achieve higher efficiency than an FFV and reap substantial benefits under CAFE standards, as well as provide significant reductions in GHG emissions.
- Rewarding an optimized E85 powertrain in the medium-duty space, as demonstrated previously in California.[11] There remains a considerable challenge in Class 2a-3 zero

[10] *Fueling the Drive to Zero: What a Decade of Clean Fuels Policy Can Tell Us About the Decade to Come,* presented by Colin Murphy, UC Davis Policy Institute. Retrieved from https://lowcarbonfuelstandard.sf.ucdavis.edu/publications/presentations-webinars

[11] Perfetto, Anthony, Sam Geckler, Cummins, Inc. 2019. Ultra-Low Carbon Powertrain Optimized for Medium-Duty E85 Cargo Vans. California Energy Commission. Publication Number: 600-2019022

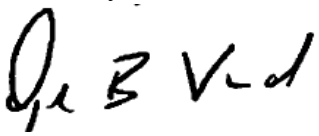
emission vehicles. Many vehicles in this space are centrally refueled or operate in defined areas and represent an ideal application of dedicated, optimized E85 engines.

- Exploring other regulatory structures with automakers to identify opportunities to better align and harmonize California and federal CAFE and GHG programs in the automotive sector.
- Working with the National Highway Traffic Safety Administration and the Environmental Protection Agency to align program structures.

Conclusion

We appreciate CARB undertaking this rulemaking and recognizing the potential expanded role of E85 in reducing GHG emissions, and in helping to transition California away from fossil fuels. We are available for further input and discussions on this important topic.

Sincerely,



Doug Vind
Managing Member
Pearson Fuels