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Clerk of the Board
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

Submitted electronically via: <https://carb.commentinput.com/?id=6947kUZ3F>

RE: POET Comments on Proposed Amendments to On-Road Heavy-Duty Engine and Vehicle Omnibus and Low Carbon Fuel Standard and Proposed Permanent Adoption of the Emergency Vehicle Emissions Regulations

Dear CARB Members:

POET appreciates the opportunity to comment on the California Air Resources Board's ("CARB") proposed amendments to the On-Road Heavy-Duty Engine and Vehicle Omnibus and Low Carbon Fuel Standard Regulations, and CARB's proposed adoption of the Emergency Vehicle Emissions Regulations (the "Proposed Rules"). As the world's largest producer of bioethanol and a key stakeholder in California's transportation fuel supply, POET actively participates in CARB rulemakings related to fuel emissions programs, including the LCFS, Cap-and-Invest, ZEV Forward, and the Greenhouse Gas and Climate Risk Disclosure programs. POET has also participated actively in promoting the adoption of E15 in California and looks forward to the implementation of AB 30. POET believes a quick adoption of rules allowing for the sale of E15 in California will help meet the goals of the Proposed Rules in this rulemaking.

I. Overview

POET's vision is to create a world in sync with nature. As the world's largest producer of biofuel and a global leader in sustainable bioproducts, POET creates plant-based alternatives to fossil fuels that unleash the regenerative power of agriculture and cultivate opportunities for America's farm families. Founded in 1987 and headquartered in Sioux Falls, POET operates 35 bioprocessing facilities across nine states and employs more than 2,600 team members. With a suite of bioproducts including POET Distillers Grains, POET Distillers Corn Oil, POET Purified Alcohol, and POET Biogenic CO₂, POET nurtures an unceasing commitment to innovation and advances powerful, practical solutions to some of the world's most pressing challenges. Today, POET holds more than 140 patents worldwide and continues to break new ground in biotechnology, yielding ever cleaner and more efficient renewable energy. POET is also a leading champion for nationwide access to E15, a renewable fuel blend made with 15% bioethanol, and POET commends the passage of AB 30 in California allowing for the sale of E15.

Through technological innovation, investments in carbon capture and renewable energy, and programs to reduce on-farm emissions, POET is steadily lowering the CI of its fuel to meet the ambition of CARB’s LCFS as it continues to grow and evolve. We see the potential for bioethanol to become a net-zero carbon liquid fuel on a life-cycle basis, operating to further decarbonize on-road transportation and serving as a feedstock for the next-generation fuels that will power the aviation industry and other hard-to-electrify sectors of the economy. But POET cannot realize this vision without appropriate regulatory incentives, grounded in the best-available science, that recognize and reward further investments in the decarbonization of our fuel.

II. Low-CI Bioethanol Can Help Achieve the Goals Sought by the Proposed Rules

Principal among the goals of the Proposed Rules is to promote low-CI fuels in the state of California while also reducing criteria pollutants such as, for example, NO_x and PM. Low-CI bioethanol is primed to help achieve these goals, as it offers significant air quality and GHG emissions reduction benefits compared to petroleum-based gasoline. Even with California’s push towards more electric vehicle adoption, the 2022 Scoping Plan acknowledges that liquid petroleum fuel will remain in California’s transportation fuel mix for decades because legacy internal combustion vehicles will remain on the road for years.¹ As such, we urge CARB to look to bioethanol to help achieve the criteria pollutant reductions it seeks through the Proposed Rules. The first step in doing so is to provide guidance supporting the quick and efficient adoption of E15 in the state following the passing of AB 30.

Multiple studies show that blending bioethanol into the transportation fuel supply results in significantly lower lifecycle GHG emissions compared to petroleum-based gasoline. For example, studies show that emissions reductions attributable to bioethanol range from 41 to 46 percent compared to emissions associated with petroleum-based gasoline. According to the Department of Energy’s Argonne National Laboratory (“ANL”), typical corn ethanol provides a 44 percent GHG reduction compared to gasoline.² Similarly, researchers affiliated with Harvard University, MIT, and Tufts University conducted a meta-analysis showing that corn ethanol as of 2021 offers an average GHG reduction of 46 percent compared to gasoline.³

In addition to GHG benefits, a recent analysis from leading national experts found air quality and public health benefits associated with higher biofuel blends in gasoline, including reductions in PM, carbon monoxide (“CO”), and total hydrocarbons (“THC”).⁴ This study was the first large-scale analysis of data from light-duty vehicle emissions that examines real-world impacts of bioethanol-blended fuels on regulated air pollutant emissions. The study found that CO and THC

¹ California Air Resources Board, *2022 Scoping Plan for Achieving Carbon Neutrality*, at 190 https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf (Nov. 16, 2022).

² Lee, Uisung et al., *Retrospective Analysis of the U.S. Corn Ethanol Industry for 2005–2019: Implications for GHG Emission Reductions*, *Biofpr* Vol. 15 Issue 5, at 1328 (May 4, 2021) <https://doi.org/10.1002/bbb.2225>.

³ Scully, Melissa et al., *Carbon Intensity of Corn Ethanol in the United States: State of the Science*, *ENVIRONMENTAL RESEARCH LETTERS*, at 16 (March 10, 2021) <https://iopscience.iop.org/article/10.1088/1748-9326/abde08>; see Appendix B, Environmental Health & Engineering, *Comments on 2024 Proposed Low Carbon Fuel Standard Amendments*, at 10 (Feb. 20, 2024) [hereinafter “Appendix B”].

⁴ See Kazemiparkouhi, Fatemeh et al., *Comprehensive US Database and Model for Ethanol Blend Effects on Regulated Tailpipe Emissions*, *SCIENCE OF THE TOTAL ENVIRONMENT*, at 15 (March 2022), <https://www.sciencedirect.com/science/article/pii/S0048969721065049?via%3Dihub>; see Appendix B at 4-5.

emissions were significantly lower for higher bioethanol fuels for port fuel injected engines under cold-start conditions. The study found no statistically significant relationship between higher bioethanol blends and NOx emissions. With regard to PM, studies show that emissions decrease by 15 – 18% on average for each 10% increase in ethanol content under cold-start conditions.⁵ A 2022 University of California Riverside study funded in part by CARB assessing the impact of E15 on air pollutant emissions for model year vehicles 2016 to 2021 was consistent with these results, finding that replacing E10 with E15 reduced PM emissions by 18%, with cold-start emissions being reduced by 17%.⁶ Analyses by professors at Tufts University show that the associated health benefits may be most significant in disadvantaged communities in areas of high traffic density and congestion.⁷

The criteria pollutant and GHG reduction benefits associated with bioethanol are clear, as is the undeniable fact that internal combustion engine vehicles relying on liquid fuels will remain in California's transportation fuel mix for decades still. With the passage of AB 30, providing swift guidance to the state to implement E15 will help CARB achieve the criteria pollutant reductions sought by the Proposed Rules. Accordingly, POET urges CARB to look towards biofuel as a way to achieve its criteria-pollutant and GHG reduction goals and provide E15 guidance as quickly as possible.

III. Conclusion

POET appreciates the opportunity to comment on the Proposed Rules and looks forward to continued cooperation with CARB on the Low Carbon Fuel Standard and other programs in California. If you have any questions, please contact me at Paul.Townsend@POET.com or (605) 756-5612.

Sincerely,



Paul W. Townsend
Regulatory Counsel

⁵ *Comprehensive US Database and Model for Ethanol Blend Effects on Regulated Tailpipe Emissions* at 5, 11, 13; see Appendix B at 4-5.

⁶ Karavalakis, Georgios et al., *2022 Comparison of Exhaust Emissions Between E10 CaRFG and Splash Blended E15. Final Report*, prepared for Riverside, California Air Resources Board, Growth Energy Inc./Renewable Fuels Association, and USCAR., at 22-23, 36 (June 2022), https://ww2.arb.ca.gov/sites/default/files/2022-07/E15_Final_Report_7-14-22_0.pdf; see Appendix B at -5.

⁷ See Appendix C, Tufts University Department of Civil and Environmental Engineering, *Air Quality and Public Health Comments to RFS* (Feb. 3, 2022); see Appendix B at 8-9.