growth energy™
America's Ethanol Supporters

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September 28, 2023

Liane M. Randolph
Chair
California Air Resources Board
PO Box 2815
Sacramento, CA 95812
Via electronic mail

RE: Comments in Response to the September 28, 2023 CARB Meeting on Changes to the Low Carbon Fuel Standard

Dear Chair Randolph:

Thank you for the opportunity to provide written comments on today's meeting regarding potential changes to the Low Carbon Fuel Standard (LCFS). Growth Energy is the world's largest association of biofuel producers, representing 93 U.S. plants that each year produce 9 billion gallons of renewable fuel; 115 businesses associated with the production process; and tens of thousands of biofuel supporters around the country. Together, we are working to bring better and more affordable choices at the fuel pump to consumers, improve air quality, and protect the environment for future generations. We remain committed to helping our country diversify our 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 transportation fuels for consumers.

Growth Energy has previously submitted extensive comments demonstrating the vital role low carbon biofuels and higher biofuel blends can play in meeting California's ambitious climate goals. As we have previously noted, biofuels have been among the largest contributors to the success of the LCFS program to date and are poised to continue to do so with appropriate updates to the program.[1]

As we continue to reiterate, we strongly support and encourage the Board to update emission factors and lifecycle modeling to reflect the latest science, data, and information to appropriately capture the latest innovation in the biofuels industry. The Board should also recognize the benefits of low carbon farm practices and how they can be driven by policies like the LCFS.

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

In lieu of such clarity for E15, we appreciate CARB's recent adjustment of its California Transportation Supply (CATS) modeling to account for the use of carbon capture, utilization, and storage (CCUS) technologies for ethanol production. By accounting for CCUS, the pathway carbon intensity (CI) for E85—approved for use in California—was updated such that it reduces the assumed CI score for ethanol from 66 gCO2e/MJ to 35 gCO2e/MJ.[2] We appreciate CARB's recognition of the ethanol industry's efforts to further reduce carbon emissions via CCUS, a process which is incentivized by the Inflation Reduction Act of 2022. This is a welcome update to CATS, and a recognition of the positive impact on California's emissions reduction goals, which can be even further realized with the approval and use of E15 in California's energy mix.

While the subject of today's meeting is primarily to discuss the broader potential changes to the LCFS, including accelerating the reduction in California's carbon intensity, it is difficult to provide complete comments on these changes without further clarity on the consideration and timeline for E15 approval in California. Understanding the large potential for E15 use statewide—in which a switch from E10 to E15 would reduce GHG emissions by 1.8 million tons, the equivalent of removing 411,100 vehicles from California roads[3]—and its impact on the LCFS program is important when the bioethanol industry considers comments on changes to the LCFS. We look forward to our continued work with the Multi-Media Working Group and the progress to be made on E15's status in California.

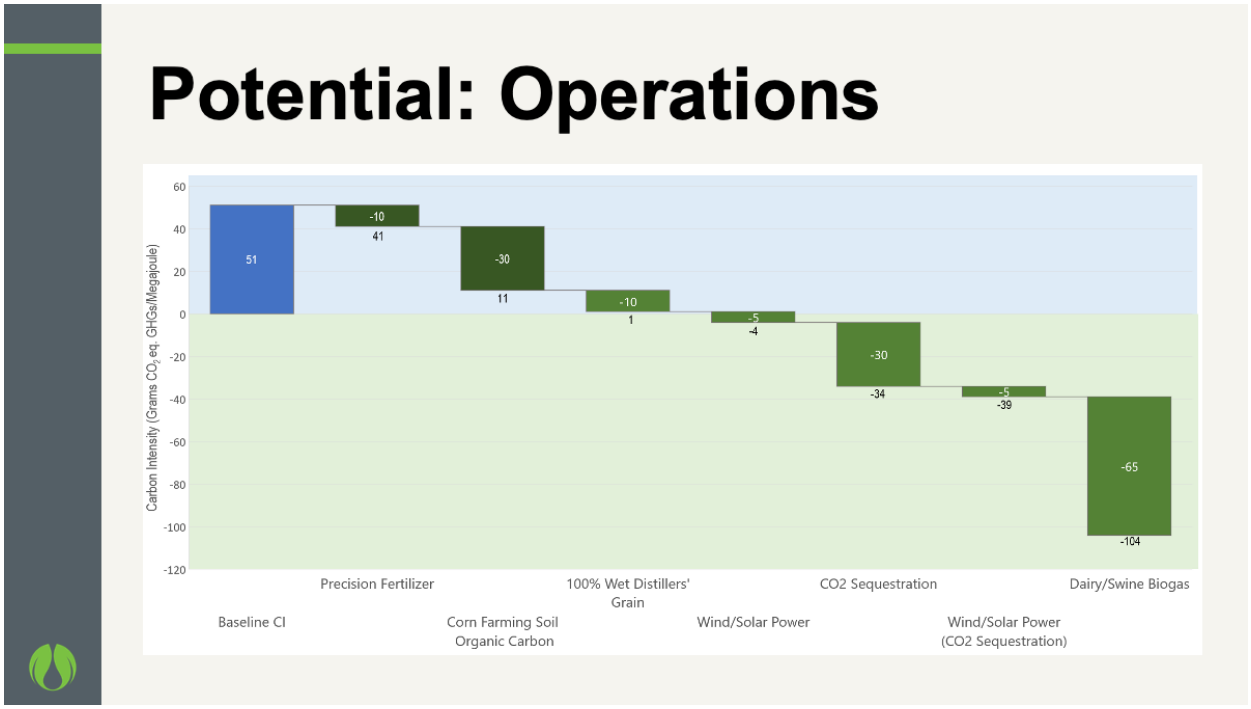
Below are more specific comments on important points:

## Bioethanol's Environmental Benefits

As we have continued to advocate, a primary solution for cleaning up the liquid fuel supply is the promotion of additional use of bioethanol, from starch and cellulosic sources. According to recent data from Environmental Health and Engineering, today's bioethanol reduces greenhouse gas emissions (GHG) by nearly 50 percent compared to gasoline and can provide even further GHG reductions with additional readily available technologies.[4] In the existing light duty fleet, higher bioethanol blends can be immediately deployed to achieve immediate GHG reductions, reduce harmful air toxics, and reduce consumer costs at the pump.

Already, we've seen biofuels provide the foundation for the LCFS. In fact, biofuels like bioethanol have generated more than 75 percent of LCFS credits. As recently as 2020, bioethanol was the largest LCFS volume and second-largest credit generator. Additionally, even with room to further improve GHG lifecycle modeling, the LCFS recognizes the significant improvement in bioethanol's carbon intensity. In 2011, CARB reported the average carbon intensity (CI) for ethanol at 88 g/MJ. Through the end of 2022, the average recorded CI for bioethanol has decreased to 59.21 g/MJ, a 33 percent reduction in CI.[5] Additional CI reductions are anticipated as projects of diverse technological variety at ethanol biorefineries come on-line starting this year.

[2] https://ww2.arb.ca.gov/sites/default/files/2023-08/CATS%20Technical_1.pdf
[3] http://www.airimprovement.com/reports/national-e15-analysis-final.pdf
[4] https://iopscience.iop.org/article/10.1088/1748-9326/abde08/pdf
[5] https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities




Bioethanol's other environmental benefits are also noteworthy. As has been researched by the University of California, Riverside and the University of Illinois at Chicago, the use of more bioethanol and bioethanol-blended fuel reduces harmful particulates and air toxics such as carbon monoxide, and benzene.[6] To fully realize these and other important air quality benefits, there needs to be a clear policy with a firm future for the role and growth of cleaner-burning, affordable ethanol fuels.

## Use of Higher Bioethanol Blends

As we have noted previously, we continue to urge CARB to further develop clear policies that recognize the realities of today's fuel market and examine how homegrown biofuels can immediately contribute to achieving GHG reductions. Today, nearly all gasoline in California - and across the U.S. - is blended with 10 percent ethanol. E15, a blend consisting of 15 percent bioethanol, has been approved for use by the U.S. Environmental Protection Agency (EPA) in all passenger vehicles model year 2001 and newer, more than 96 percent of the vehicles on the road today, and is now for sale at more than 3200 locations in 31 states. In fact, this summer, E15 was sold at 15 cents less per gallon where available. In Iowa, Wisconsin, and Ohio, E15 delivered savings of up to 40 cents per gallon compared to E10 while the maximum savings in Illinois and Pennsylvania were 48 and 60 cents respectively– that is meaningful consumer cost-savings.[7]

[6] University of California Riverside: Comparison of Exhaust Emissions Between E10 CaRFG and Splash Blended E15 and https://fixourfuel.com/wp-content/uploads/2018/04/UC-Riverside-Study.pdf
[7] https://growthenergy.org/2023/09/19/summer-savings-with-e15/


*Sheetz, Grandview Heights, OH June 26, 2022*

We appreciate MMWG's continued work on the multi-media evaluation of E15. We continue to encourage the state to expedite its approval of E15 for California consumers and to help drive further immediate GHG emission reductions.

Additionally, the LCFS is helping to drive growth in the use of E85 in flex-fuel vehicles. The use of E85 will promote even greater reductions in GHG emissions and reductions of air toxics.

We would also encourage CARB and other state agencies to push for policies that strongly encourage and incentivize the use of higher bioethanol blends such as E15 and E85, the production and use of flex-fuel vehicles, as well as continued investment in infrastructure for the expanded use of E85.


*Mobil Station, San Diego, CA 4/6/20222*

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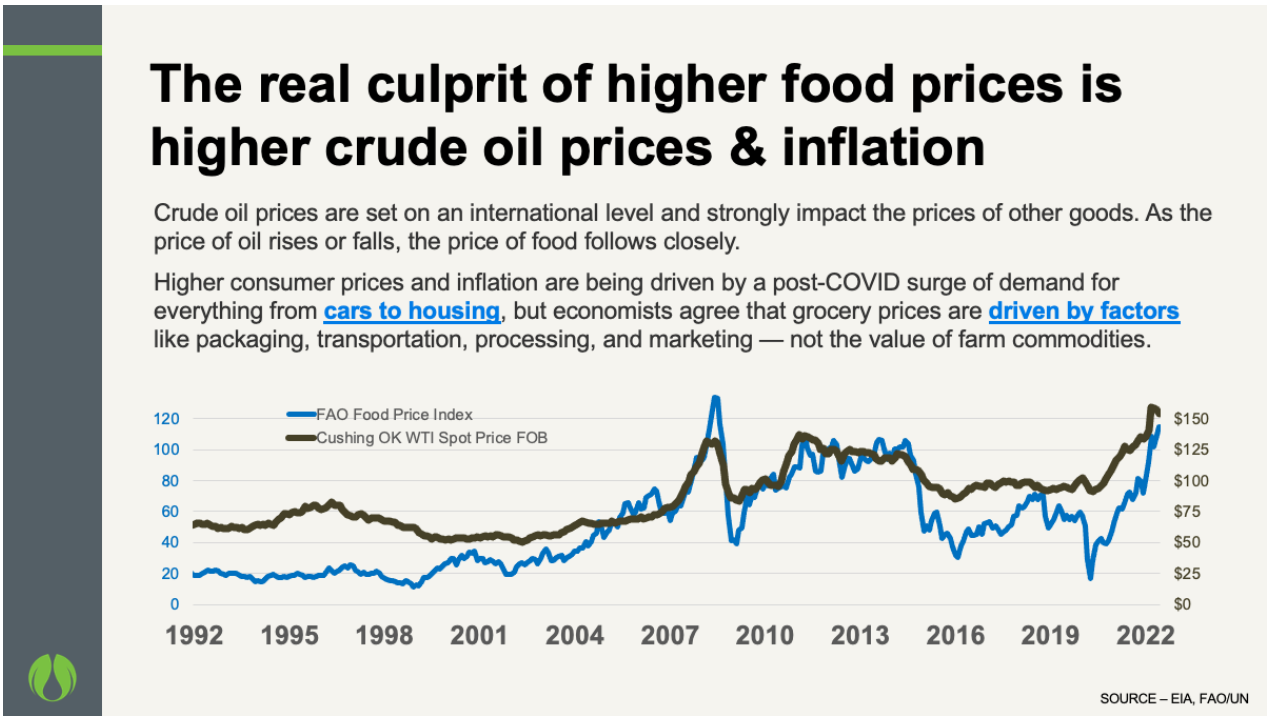
## Biofuels, Land Use, Corn Oil, and Food Supply

We also believe CARB's concerns about the use of crop-based biofuels and their impact on land use are misplaced and unfounded. These fears have been largely based on outdated and flawed data. While CARB currently has an indirect land use change value (ILUC) of 19.8 gCO2e/MJ, a review of the more recent science over the last 5 years indicates a decreasing trend in land use values with the newer data indicating values closer to 4 gCO2e/MJ.[8] The ILUC value should reflect the latest science that better addresses innovation and increasing yields in agriculture.

Related, we also believe that recent concerns about biofuel production on food cost and supply are unfounded. Our industry produces both food and fuel. Specifically, production of bioethanol results in a wide variety of co-products, perhaps the most significant of which is high-quality animal feed that contributes directly to the production of chicken, beef, pork, and other nutritious food. Specifically, one bushel of corn produces 2.8 gallons of bioethanol as well as 17-18 pounds of distillers dried grains (DDGS), a nutrient-rich animal feed. Our industry produces nearly 40 million tons of animal feed per year. That feed is supplied to food producers here in the U.S. and around the world. Additionally, the renewable $CO_2$ from bioethanol production is also critical for meat processing, beverage carbonation, and water treatment.

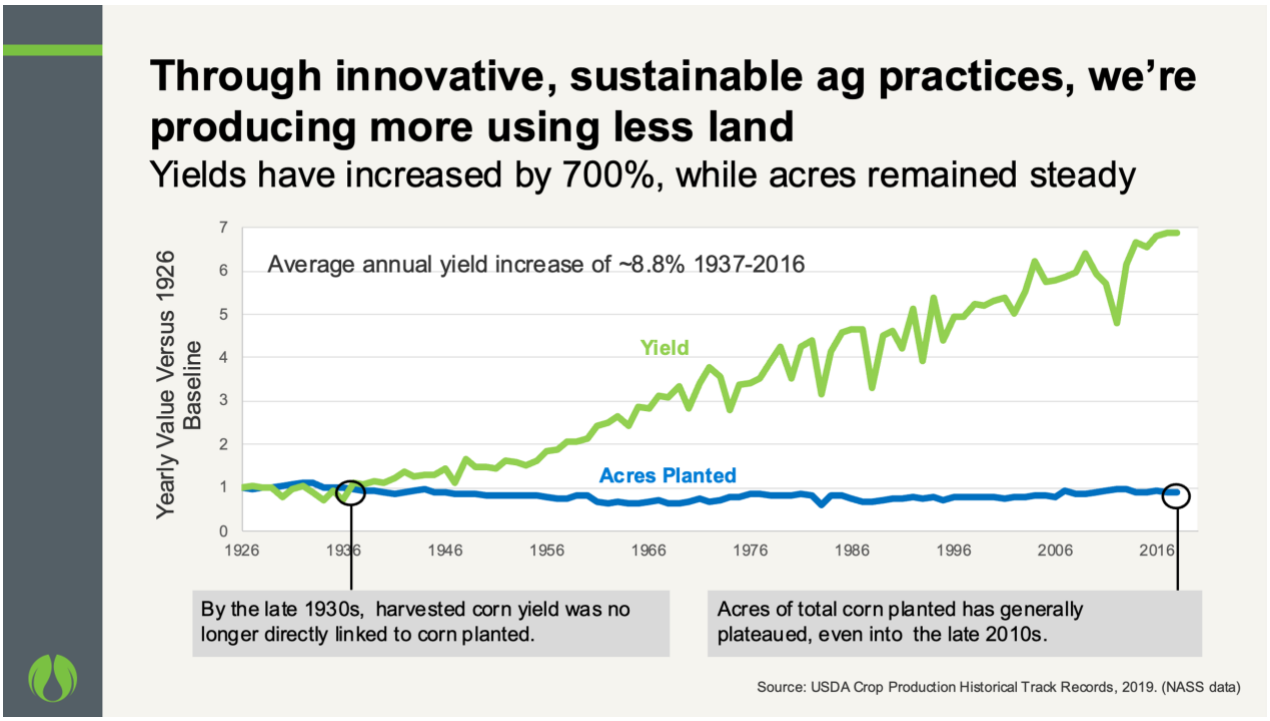
Data from the United Nation's Food and Agriculture Organization (FAO) as well as from the U.S. Energy Administration (EIA) also show in the graph below that the price of food is closely correlated with the cost of crude oil rather than the cost of corn.




[8] Environmental Research Letters: Carbon intensity of corn ethanol in the United States: state of the science (iop.org)

Related, we have particular concern about the potential for a cap on lipid-based biofuels. Corn oil is an important coproduct of the bioethanol production process that is then used to make other low carbon intensity, renewable fuels used for LCFS compliance. It makes little sense why it would be potentially capped for use.

Finally, as discussed previously relative to land use, farming practices like crop intensification and cover cropping have significantly improved the yield of all crops, further negating the impact of biofuel production on food crops. As the United States Department of Agriculture (USDA) and numerous others have noted, yields have (and continue to) climbed more than 700 percent while acreage has remained unchanged for the last century.




## Crediting for Field-based Farm Practices

Growth Energy strongly supports the appropriate crediting of on-the-farm field practices in the LCFS. The U.S. EPA estimates that five percent of national GHG emissions is from crop cultivation and energy. There has been a wealth of data including a recent study done by Argonne National Laboratory that show the possibility of a 35 percent reduction in carbon intensity through adoption of current best on-farm practices such as cover crops, strip tillage, reduced fertilizer use, and other innovations.[9] With the LCFS' verification requirements, capturing these on the farm benefits for biofuel pathways is now more realistic and scalable. Allowing appropriate credit will help bioethanol producers continue to further innovate and lower their carbon intensity, while providing key incentives for farmers to adopt these effective conservation practices.

[9] Argonne National Laboratory: https://www.anl.gov/article/argonnes-pivotal-research-discovers-practices-technologies-key-to-sustainable-farming

## Carbon Capture and Sequestration

New innovations at biorefineries throughout the U.S. allow pure, biogenic carbon dioxide (CO2) to be captured at a massive scale, and multiple projects are already underway that repurpose, reuse, or provide a permanent storage solution for the majority of that CO2. We support and encourage CARB's continued allowance for credit generation from carbon capture, utilization, and storage (CCUS).

## Correcting Electricity Usage in Wet and Dry Distiller Grain (DDGS) Pathways

The proposed CALGREET 4.0 model currently distinguishes between wet and dry DDGS pathways for thermal energy but does not do so with regard to electricity use. Electricity use between wet and dry DDGS production is quite different. We recommend that CARB further distinguish electricity use as it does with thermal energy in its proposed CALGREET 4.0 model.

## Ethanol/Fuel Cell Technology

Direct Ethanol Fuel Cells for the use in motor vehicle transportation have been in development by Nissan for some time. As recently as January of 2020, Nissan and Lawrence Berkeley National Laboratory have published research on the use of 100 percent ethanol in fuel cell technologies and innovations.[10] This technology not only meets zero emission vehicle requirements, but further eliminates particulates from tailpipe emissions. Using bioethanol in conjunction with a fuel cell would require less infrastructure change and investment and would help the state meet its ambitious goals for climate and vehicle. We would strongly encourage CARB to consider ways to further develop this technology for consideration.

More broadly, we look forward to working with CARB as you work through the regulatory process on revisions to the LCFS program and ensure the role of biofuels in making California's fuel mix more sustainable and help the state achieve its progressive climate goals through the expanded use of bioethanol.

Thank you in advance for your consideration.

Sincerely,

Chris Bliley
Senior Vice President of Regulatory Affairs
Growth Energy

[10] Lawrence Berkeley National Laboratory: https://eta.lbl.gov/publications/ethanol-internal-reforming-solid