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GrowthEnergy.org

September 19, 2022

Dr. Cheryl Laskowski  
Branch Chief, Transportation Fuels  
California Air Resources Board  
P.O. Box 2815  
Sacramento, CA 95812  
Via electronic mail

RE: Comments in Response to the August 18, 2022 Low Carbon Fuel Standard Workshop

Dear Dr. Laskowski:

Thank you for the opportunity to comment on the second Low Carbon Fuel Standard (LCFS) workshop held on April 18<sup>th</sup>. Growth Energy is the world's largest association of biofuel producers, representing 89 U.S. plants that each year produce more than 8 billion gallons of renewable fuel; 105 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 noted previously and reiterate here, 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. Specifically in response to the discussion at the workshop, 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. Additionally, as was further discussed, the Board should recognize the benefits of low-carbon farm practices and how they can be driven by policies like the LCFS.

We provide more specific comments reiterating these important points below:

## 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 an average of 46 percent compared to gasoline and can provide even further GHG reductions with additional readily available technologies.<sup>1</sup> In the existing light duty fleet, higher bioethanol blends can be immediately deployed to achieve 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 2021, the average recorded CI for bioethanol has decreased to 59.02 g/MJ, a 33 percent reduction in CI.<sup>2</sup> Additional CI reductions are anticipated as projects of diverse technological variety at ethanol biorefineries come online starting this year.

## Potential: Operations



<sup>1</sup> Environmental Research Letters: [Carbon intensity of corn ethanol in the United States: state of the science \(iop.org\)](https://iop.org)

<sup>2</sup> CARB LCFS Data: <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.<sup>3</sup> 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 bioethanol 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 bioethanol. 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 2,700 locations in 31 states. In fact, this summer where available, we've seen E15 selling consistently for as much as nearly \$1 less per gallon than regular gasoline – that is meaningful consumer cost-savings.



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

We were very glad to see CARB post the final Tier I report for the multi-media evaluation of E15 as well as the positive emissions results for E15 from the recent testing done by the University of California-Riverside. 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

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<sup>3</sup> University of California Riverside: [Comparison of Exhaust Emissions Between E10 CaRFG and Splash Blended E15 | California Air Resources Board](#) and <https://fixourfuel.com/wp-content/uploads/2018/04/UC-Riverside-Study.pdf>; University of Illinois at Chicago: <https://grains.org/wp-content/uploads/2018/11/Complete-Study-Summary.pdf>

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 4/6/2022*

With respect to some of the other items under consideration for LCFS revisions, we offer comment:

### **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.<sup>4</sup> 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

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<sup>4</sup> Argonne National Laboratory: <https://www.anl.gov/article/argonnes-pivotal-research-discovers-practices-technologies-key-to-sustainable-farming>

their carbon intensity, while providing key incentives for farmers to adopt these effective conservation practices.

### **Carbon Capture and Sequestration**

New innovations at biorefineries throughout the U.S. allow pure, biogenic carbon dioxide (CO<sub>2</sub>) 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 CO<sub>2</sub>. 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 CALGREET 3.0 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 CALGREET 3.0 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.<sup>5</sup> 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

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<sup>5</sup> Lawrence Berkeley National Laboratory: <https://eta.lbl.gov/publications/ethanol-internal-reforming-solid>