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GrowthEnergy.org

October 19, 2022

Adam Saul  
Air Quality Program  
Washington Department of Ecology  
300 Desmond Drive SE  
Lacey, WA 98504  
Online Submission

RE: Comments on the revisions to Chapter 173-423 WAC and Chapter 173-400 WAC  
(Adoption of California's Vehicle Emission Standard)

Dear Mr. Saul:

Thank you for the opportunity to comment on the Department of Ecology's (Ecology) proposed rule revisions to adopt California's vehicle emission standard. 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; 103 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.

We appreciate Ecology's work to make Washington's transportation mix more sustainable. Reducing greenhouse gas emissions is a goal of our industry as well. Specifically, liquid fuels will continue to play an important role in the transportation sector for decades to come, even as alternative technologies flourish.<sup>1,2</sup> As such, it is imperative to consider the vital role that environmentally sustainable fuel options such as bioethanol will play in reducing greenhouse gas emissions and cutting consumer costs from the current and future Washington vehicle fleet.

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

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<sup>1</sup> <https://calepa.ca.gov/climate/carbon-neutrality-studies/>

<sup>2</sup> <https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf>

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>3</sup> 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 both California's Low Carbon Fuel Standard (LCFS) and Oregon's Clean Fuel Program (CFP), and biofuels are poised to do the same with Washington's new Clean Fuel Standard (CFS). In fact, biofuels like bioethanol have generated more than 75 percent of credits under both the California LCFS and Oregon CFP. Additionally, even with room to further improve GHG lifecycle modeling, the LCFS and CFP recognize the significant improvement in bioethanol's carbon intensity. For California, in 2011, the California Air Resources Board (CARB) reported the average carbon intensity (CI) for ethanol at 88 gCO<sub>2</sub>e/MJ. Through 2021, the average recorded CI for bioethanol has decreased to 59.02 gCO<sub>2</sub>e/MJ, a 33 percent reduction in carbon intensity (CI).<sup>4</sup> In 2016, Oregon's Department of Environmental Quality (DEQ) reported the average CI for bioethanol at 64.5 gCO<sub>2</sub>e/MJ. Through 2021, the average recorded CI for bioethanol has decreased to 53.98 gCO<sub>2</sub>e/MJ, a nearly 17 percent reduction in CI in just 5 years.<sup>5</sup> Additional CI reductions are anticipated as projects of diverse technological variety at ethanol biorefineries come on-line starting this year.

Bioethanol's additional 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 air toxics such as carbon monoxide, benzene, and other harmful particulates.<sup>6</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.

### **E15 and the Current Light-Duty Fleet**

We urge Ecology 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 Washington - 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.

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<sup>3</sup> Environmental Research Letters: [Carbon intensity of corn ethanol in the United States: state of the science \(iop.org\)](https://iop.org)

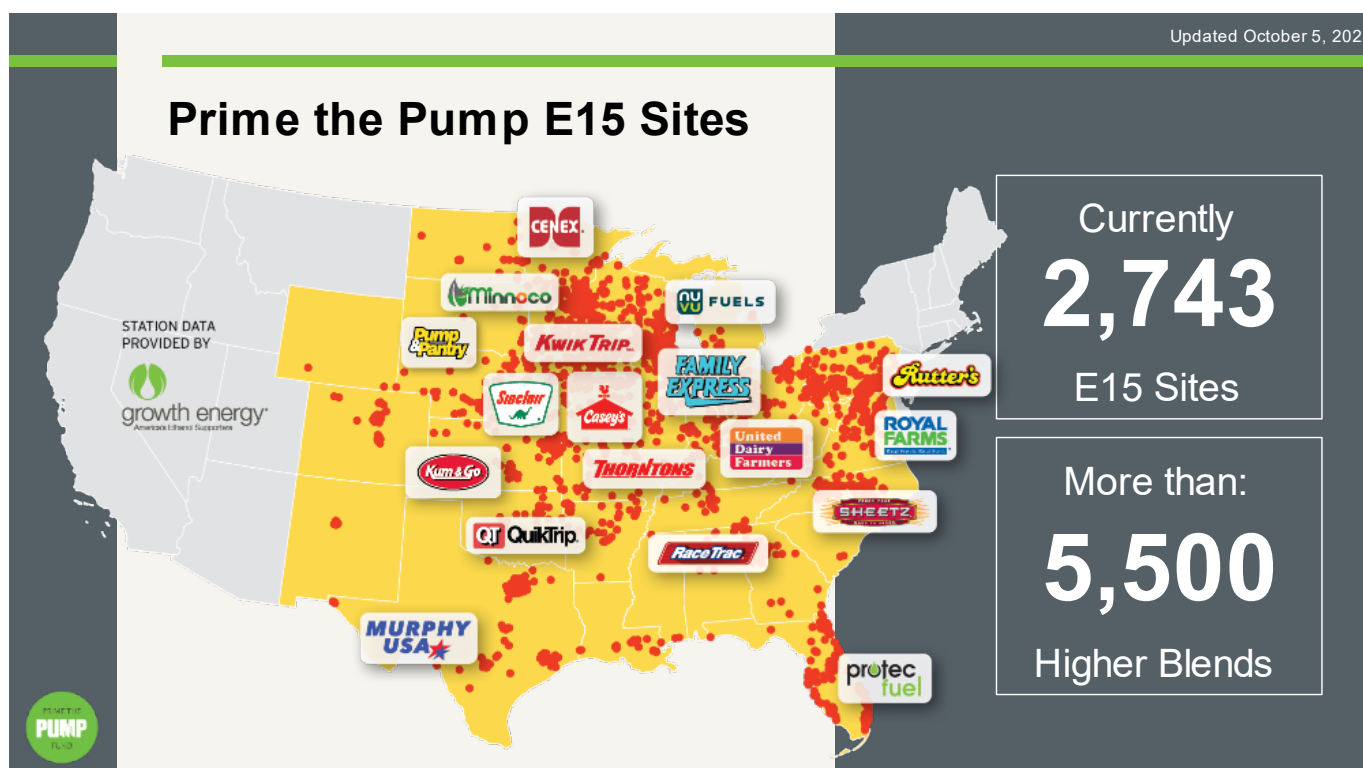
<sup>4</sup> CARB LCFS Data: <https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities>

<sup>5</sup> DEQ CFP Data: [Department of Environmental Quality : Quarterly Data Summaries : Oregon Clean Fuels Program : State of Oregon](https://deq.or.gov/quarterly-data-summaries)

<sup>6</sup> University of California-Riverside: [Comparison of Exhaust Emissions Between E10 CaRFG and Splash Blended E15 | California Air Resources Board](https://ucr.edu/research/comparison-of-exhaust-emissions-between-e10-ca-rfg-and-splash-blended-e15); University of Illinois at Chicago: <https://grains.org/wp-content/uploads/2018/11/Complete-Study-Summary.pdf>

A recent study by Air Improvement Resources found that using E15 across the nation would reduce greenhouse gas emissions by more than 17 million tons per year, the equivalent of taking nearly 4 million cars off the road. Specific to Washington, the study found that if Washington moved to E15 statewide, it could reduce GHG emissions by 334,000 tons per year, the equivalent of taking 73,000 cars off of Washington roadways.<sup>7</sup> In addition to GHG benefits, E15 has a proven track record of saving consumers money at the pump, with an average savings of 16 cents per gallon this past summer and the potential to save American drivers more than \$20 billion in annual fuel costs if adopted nationwide.<sup>8</sup>

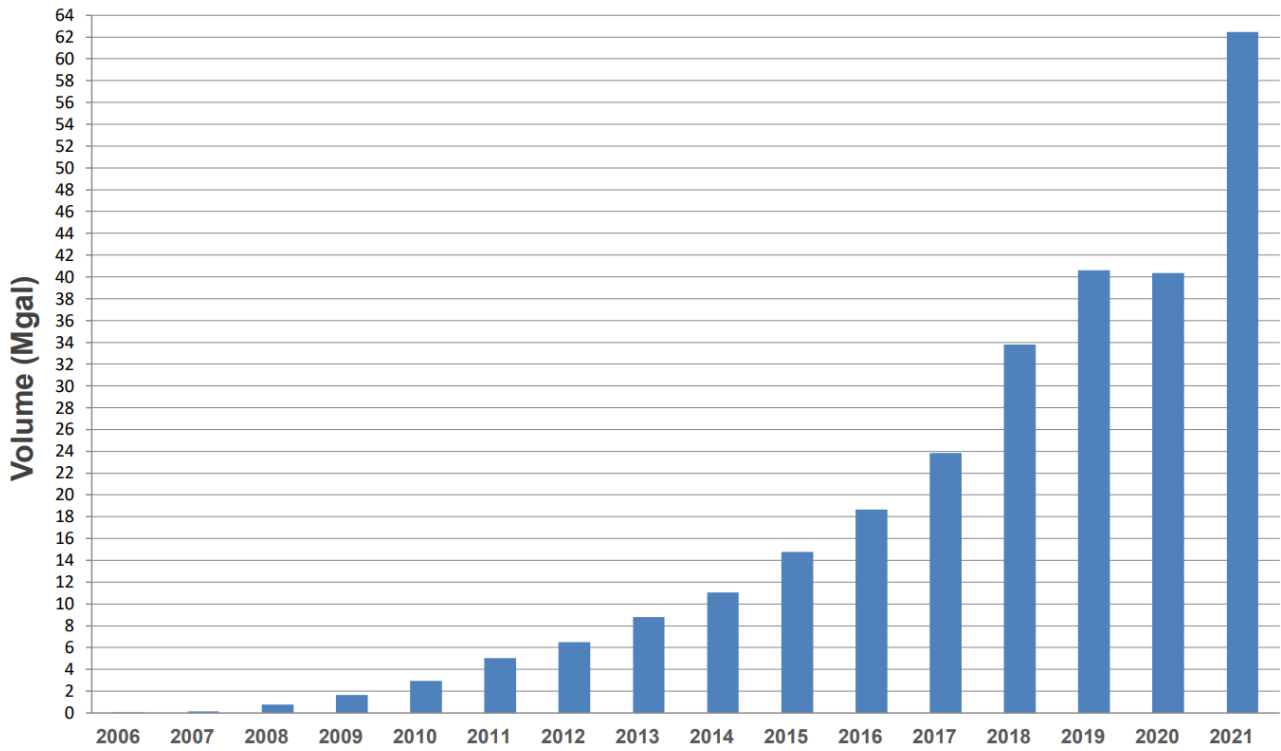
Updated October 5, 2022



<sup>7</sup> Air Improvement Resources: [National E15 Analysis Final \(airimprovement.com\)](https://www.airimprovement.com)

<sup>8</sup> ABF Economics: [ABF E15 Consumer Savings 101322 \(growthenergy.org\)](https://www.growthenergy.org)

### Annual E85 Volumes (Million Gallons)



*Last Updated 3/24/2022*

This chart shows annual E85 volumes in California and is based on reported Test Program Exemption data.

### **E85 and Flex-fuel Vehicles**

Additionally, the use of E85 will promote even greater reductions in GHG emissions and reductions of air toxics. In California, we have seen the significant growth of E85 used in flex-fuel vehicles (more than 62 million gallons sold at more than 300 locations across the state in 2021 alone). We would encourage Ecology to push for policies that continue to strongly encourage and incentivize the production and use of flex-fuel vehicles, as well as continued investment in infrastructure for expanded access to E85 in the state.

Beyond the use of higher bioethanol blends such as E15 and E85 in today's vehicle fleet, we would offer a few items as Ecology updates its clean cars regulation:



*Mobil Station, San Diego, CA 4/6/2022*

### **High Octane/Midlevel Bioethanol Blends**

As Ecology considers the future fleet, it is important to consider the benefits of using higher octane fuels such as bioethanol in conjunction with more efficient engines. Growth Energy has been an industry leader in advocacy in this area, first commenting to both CARB and EPA about the need for higher octane, midlevel bioethanol blends when the GHG standards for vehicles were being first developed in 2012. At that time, we submitted a proposal for a 100 Research Octane Number (RON), E30 (30 percent bioethanol) fuel blend for both vehicle certification and for consumer use. The science supporting the benefits of a high-octane fuel -- specifically a midlevel ethanol blend in the E20 to E30 range in conjunction with a high compression ratio engine -- is not new and has been well explored by several national laboratories including Oak Ridge National Laboratory, National Renewable Energy Laboratory, and Argonne National Laboratory as well as automobile manufacturers and other scientific institutions. Bioethanol has a very high-octane number relative to other gasoline hydrocarbons, has a lower carbon content than the gasoline components it generally replaces, and has many other benefits that assist in combustion to increase engine efficiency and reduce both tailpipe GHG and criteria pollutant emissions.

To briefly summarize, multiple studies have shown that a high RON, midlevel bioethanol blends (e.g., 96-RON E20 or 100-RON E30) when paired with various higher compression ratio engines, yield tailpipe CO<sub>2</sub> emissions reductions of at least 5 percent, which in most instances

were also coupled with efficiency gains. Some studies also showed significant volumetric miles per gallon savings associated with the higher efficiency engines and a high-octane fuel. One study that was submitted to EPA in response to their Draft Technical Assessment Report (TAR) by Air Improvement Resources, "Evaluation of Costs of EPA's 2022-2025 GHG Standards with High Octane Fuels and Optimized High Efficiency Engines," showed that the use of a 98 RON, E25 would reduce the cost of a MY 2025 vehicle by \$400 and a popular crossover SUV by as much as \$873. Not only are the benefits of midlevel bioethanol blends well understood by the scientific community, but the automobile industry has for years acknowledged the importance of affordable, high-octane fuels coupled with high-compression ratio engines as important to attaining regulatory compliance and improving vehicle performance in the most economical manner possible.

When you examine the data, there are clear benefits of moving to a high-octane, midlevel bioethanol blend, such as E30, including vehicle engine efficiency, lower tailpipe emissions, and increased use of renewable fuel. We believe that the use of midlevel bioethanol blends will continue to drive investment in more efficient vehicles, as well as lower carbon biofuels.

### **Bioethanol/Fuel Cell Technology**

Direct bioethanol 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 bioethanol in fuel cell technologies and innovations.<sup>9</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 vehicles. As Ecology considers its vehicle emission standard, we would consider ways to further develop this technology for consideration.

More broadly, we look forward to working with you as you work through the regulatory process to ensure the role of biofuels in making Washington's fuel mix more sustainable and help the state achieve its 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>9</sup> Lawrence Berkeley National Laboratory: <https://eta.lbl.gov/publications/ethanol-internal-reforming-solid>