Growth Energy™
Expanding America's Bioeconomy

March 4, 2026

Abbey Brown
Clean Fuel Standard Technical Lead
Department of Ecology
PO Box 47600
Olympia, WA 98504

Re: Informal Comments on Clean Fuel Standard Rulemaking

Ms. Brown,

We appreciate the opportunity to comment on the Department of Ecology's (Ecology) upcoming rulemaking to amend the state's Clean Fuel Program (CFP). Growth Energy is the world's largest association of biofuel producers, representing 97 U.S. plants that each year produce more than 9.5 billion gallons of renewable fuel; 128 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.

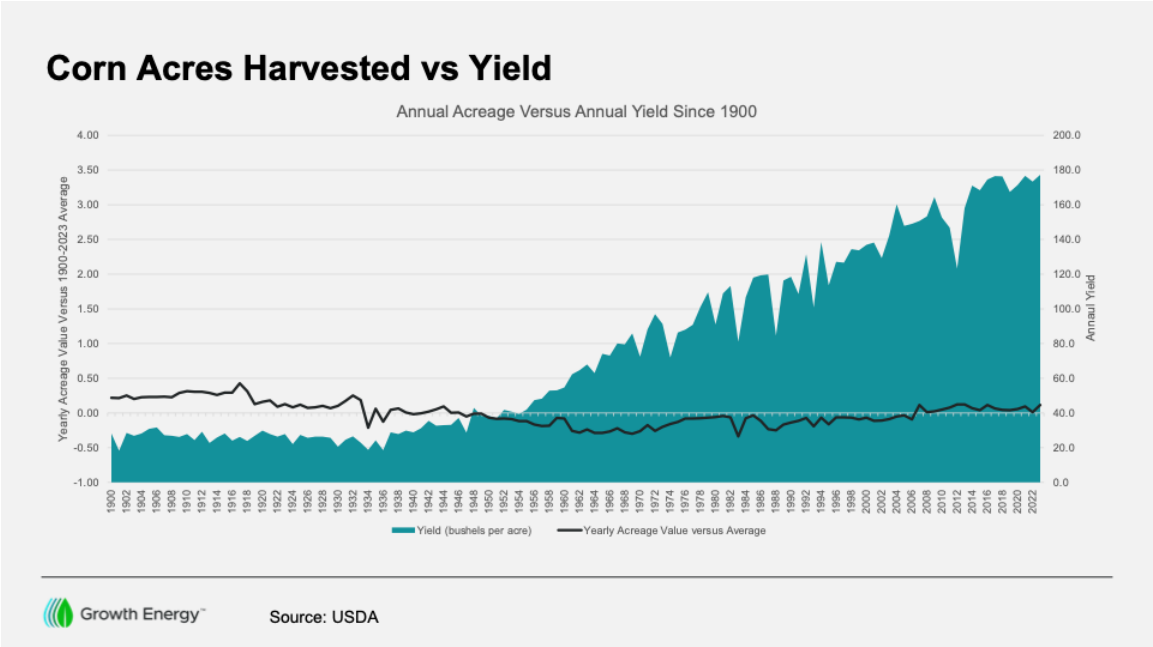
We applaud Ecology's efforts to reduce Washington's greenhouse gas (GHG) emissions in the transportation sector and believe the biofuels industry represents the greatest opportunity to lower GHG emissions immediately while new technologies are developed. Growth Energy's members produce bioethanol which, according to recent data from Environmental Health and Engineering, reduces GHG emissions by nearly 50 percent compared to gasoline and can provide even further GHG reductions with additional readily available technologies.[1] A study conducted in 2022 by the University of California – Riverside found that shifting from E10 to E15 (gasoline containing up to 15% ethanol) in light-duty vehicles reduces emissions including harmful particulates and air toxics such as carbon monoxide and benzene.[2]

Revising Land Use Change Penalty Based on Current Science

Currently, Washington's greenhouse gases, regulated emissions, and energy use in technologies (WA-GREET) model assigns an indirect land use change (ILUC) penalty of 19.8g CO2e/MJ for corn starch bioethanol. This number is largely based on outdated and flawed data. 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.[3]

[1] https://iopscience.iop.org/article/10.1088/1748-9326/abde08/pdf.
[2] https://ww2.arb.ca.gov/sites/default/files/2022-07/E15_Final_Report_7-14-22_0.pdf.
[3] https://iopscience.iop.org/article/10.1088/1748-9326/abde08/pdf.

Concerns over land use change factors are unfounded relative to corn starch bioethanol. In fact, the United States is planting corn on roughly the same number of acres as was planted in 1900.[4] At the same time, the per-acre yield has increased more than 600%.[5] As shown in the graph below, the number of acres harvested annually have consistently hewn to the average since 1900.



WA-GREET's ILUC value for bioethanol should reflect the latest science that better addresses innovation and increasing yields in agriculture. We recognize that Ecology is not considering changes to land use change factors or the Tier 2 WA-GREET model in this proposed rulemaking. However, as Ecology considers alignment with other states' clean fuel programs and interaction with federal clean fuels incentives, it is important to note that Oregon assigns an ILUC penalty of 7.6g CO2e/MJ. Additionally, the ILUC value assigned to cornstarch bioethanol in the Biden administration-written rules for the federal 45Z Clean Fuels Production Tax Credit was 5.75g CO2e/MJ.

Additionally, research conducted by the Energy Futures Initiative Foundation (EFIF) utilized the R&D GREET model's 8.4g CO2e/MJ value for corn starch ethanol in a report on the decarbonization potential of ethanol, and concluded that the 8.4g figure appropriate for "domestic and international land use change."[6]

We request Ecology consider revisiting WA-GREET's ILUC value for corn starch bioethanol, aligning with Oregon's ILUC value or with a similar value as determined by more recent and rigorous data. By

[4] https://www.nass.usda.gov/Publications/Todays_Reports/reports/croptr19.pdf, https://www.nass.usda.gov/Charts_and_Maps/Field_Crops/cornac.php.
[5] https://www.agry.purdue.edu/ext/corn/news/timeless/YieldTrends.html.
[6] https://efifoundation.org/wp-content/uploads/sites/3/2024/09/Ethanol_Roadmap.pdf.

recognizing the latest science and adjusting the ILUC penalty, Ecology can allow bioethanol to continue to further reduce GHG emissions within the state's legacy vehicle fleet.

Recognizing the Carbon-Reduction Values of Farm-Level Climate Smart Ag Practices

To maximize ethanol's GHG emission reduction potential, Ecology should recognize farm-level climate-smart agriculture practices. A wealth of data, including a recent study done by Argonne National Laboratory (ANL), shows the possibility of a 35 percent reduction in carbon intensity (CI) through adoption of current best on-farm practices such as cover crops, no till, low carbon fertilizer use, and other innovations.[7] Allowing appropriate credit will encourage bioethanol producers to innovate and reduce CI, while providing incentives for farmers to adopt effective conservation practices. In the federal Section 40B guidance for SAF production, the U.S. Department of Treasury acknowledged the role climate-smart agricultural practices play in reducing GHG emissions in the aviation industry.[8]

EFIF's research provides insight on how on-farm practices can help drive down the CI score.[9] With relatively minimal costs, a variety of these practices can make significant CI reductions. As shown in the table below, the use of cover crops can account for as much as a 45% reduction.

		CI Reduction Potential	Cost	Feasibility: Widespread Adoption	Feasibility: Readiness for Adoption
Corn Yield Improvement		.7%	< zero	High	Near Term
Climate Smart Ag Practices	No-Till Farming	6%	< zero	High	Near Term
	4R Nitrogen Management	4%	< zero	High	Near Term
	Enhanced Efficiency Fertilizers	4%	< zero	Medium	Near Term
	Cover Crops	45%	$24 to $64/tCO$_2$	Medium	Near Term
Use Low-Carbon Fertilizers	Blue Ammonia-Based Fertilizers	10%	$29 (with 45Q) to $100/tCO$_2$	Medium	Mid Term
	Green Ammonia-Based Fertilizers	10%	$0 (with 45Z) to $526/tCO$_2$	Medium	Mid Term
Use Renewable Diesel in Farm Machinery		<4%	$127 to 139/tCO$_2$	Medium	Near Term
Use Renewable Diesel for Corn Transport		<2%	$127 to 139/tCO$_2$	Medium	Near Term

The Full Decarbonization Potential of Bioethanol Beyond the Farm

Along with the number of options listed above to decarbonize the feedstocks used to produce bioethanol, EFIF studied the width and breadth of GHG reduction options bioethanol producers have at the plant. As the table below shows, a wide range of on-plant reductions are available, many of which are ready for adoption in the near term.

[7] https://www.anl.gov/article/argonnes-pivotal-research-discovers-practices-technologies-key-to-sustainable-farming
[8] https://home.treasury.gov/news/press-releases/jy2307
[9] https://efifoundation.org/wp-content/uploads/sites/3/2024/09/ethanol-roadmap_executive-summary.pdf

		CI Reduction Potential	Cost	Feasibility	
				Widespread Adoption	Readiness for Adoption
Ethanol Yield Improvement		6%	< zero	High	Near Term
Fermentation CCUS		57%	-$48 (with 45Q) to $37/ton CO_2	High	Near Term
Carbon-Free Electricity Use		6%	-$49 (PPAs) to $180/ton CO_2 (RECs)	High	Near Term
Decarbonize Thermal Energy Use	Fuel Switching to Hydrogen	37%	$124 (with 45V) to $412/ton CO_2	Medium	Long Term
	Fuel Switching to RNG	32-160%	$76 to $220/t$CO_2$	Medium	Mid Term
	Biomass CHP	37%	< zero	Medium	Mid Term
	Hydrogen CHP	37%	$71 (with 45V) to $376/t$CO_2$	Medium	Long Term
	RNG CHP	32-160%	$57 to 201/t$CO_2$	Medium	Mid Term
	CCUS - Thermal Energy Generation	37%	$21 (with 45Q) to 106/t$CO_2$	Medium	Mid Term
Renewable Diesel Use in Ethanol Delivery		<2%	$127 to 139/t$CO_2$	Medium	Near Term

Carbon capture utilization and storage (CCUS) technology is an important GHG reduction tool for bioethanol producers. According to EFIF's research, it can reduce the CI of bioethanol by as much as 57% on its own. In fact, EFIF estimates that the combination of CCUS, the use of low carbon process heat at the bioethanol plant, and the inclusion of cover crops on the farm can reduce the CI for cornstarch bioethanol by as much as 140g CO2e/MJ.

During the upcoming rulemaking, which will modify WA-GREET, we strongly encourage Ecology to consider and include the full breadth and scale of available decarbonization tools . With the inclusion CCUS alone, bioethanol pathways in the CFP will result in significant GHG reductions and establish Washington as a national leader in innovative GHG reduction strategies.

Expanding the Use of Low-CI Power Book-and-Claim Accounting

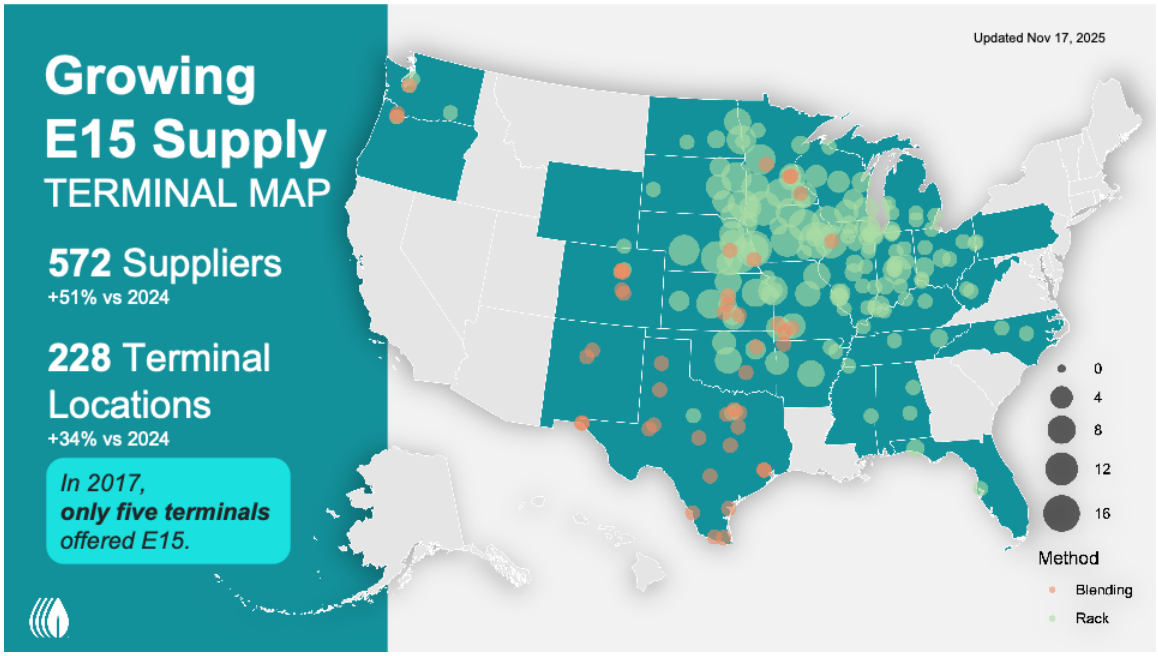
While Ecology currently allows low-CI power book-and-claim accounting for a variety of fuels, bioethanol producers are unable to utilize it. Allowing biofuels producers to contract and source low-CI power via power purchase agreements incentivizes the generation of cleaner electricity. This would position Washington as a national leader, encouraging the use of low-CI power in other states as the vast majority of biofuels used in Washington is produced out of state. But doing so would depend on allowing book and claim accounting. We encourage Ecology to expand the ability to utilize book-and-claim accounting for sourcing low-CI power to biofuels producers as well.

Access to Higher Ethanol Blends is Rising in Washington

In May 2024, the Washington Department of Agriculture released an interpretive statement stating the sale of E15 is allowable in the state "when compliant with federal law."[10] Since then, access to E15 in the state has grown. There are currently three cities with terminals, from which fuel retailers obtain fuel, posting a terminal price for E15: Pasco, Seattle, and Tacoma.

[10] https://cms.agr.wa.gov/WSDAKentico/Documents/AdminRegs/Rule%20Making/PP-24-0001-Interpretive-Statement-050624.pdf.

We continue to work with our fuel retail partners on expanding consumer access to E15. Ecology can expedite that expansion by recognizing the immediate impact higher ethanol blends have on GHG reductions in the CFP.



As Ecology continues the rulemaking process for the CFP, we are happy to make our team available to answer any technical, policy, or market related questions. Thank you in advance for your consideration.

Sincerely,

Chris Bliley
Senior Vice President of Regulatory Affairs
Growth Energy