

# United States Senate

WASHINGTON, DC 20510

March 14, 2024

The Honorable Jennifer Granholm  
U.S. Department of Energy  
1000 Independence Avenue SW  
Washington, D.C. 20585

The Honorable Janet Yellen  
U.S. Department of the Treasury  
1500 Pennsylvania Avenue NW  
Washington, D.C. 20220

John Podesta  
Senior Advisor to the President for Clean Energy Innovation and Implementation  
The White House  
1600 Pennsylvania Ave NW  
Washington, DC 20500

Dear Secretary Granholm, Secretary Yellen, and Mr. Podesta,

We write to urge the Department of Energy (DOE) and the Department of the Treasury to adopt the strongest climate considerations possible in updating the GREET life cycle analysis model for use in the Sustainable Aviation Fuel (SAF) Tax Credit and in the SAF provision of the Clean Fuel Production Credit.<sup>1</sup> Because it will determine which fuels are eligible for the tax credit, the GREET model will have an outsized impact on the future of SAF production in the U.S. and our ability to meet national climate goals. Specifically, DOE and Treasury should:

- Ensure the model's Indirect Land Use Conversion (ILUC) emissions factors align with previous regulatory assessments for low carbon fuels;
- Accompany any soil organic carbon credits with a strong verification and enforcement regime; and
- Require producers transitioning to clean energy meet the requirements of additionality, temporal matching, and deliverability.

The SAF Tax Credit is based on the Sustainable Aviation Fuel Act, introduced by Senator Whitehouse and Representative Brownley during the 117<sup>th</sup> Congress. The intent of this bill—and specifically the requirement that qualified SAFs produce at most 50% of the life cycle greenhouse gas emissions of conventional jet fuel—was to incentivize the development and

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<sup>1</sup> The SAF Tax Credit was established in the Inflation Reduction Act. Qualifying fuels—those that decrease GHG emissions by 50%—are eligible for a \$1.25 tax credit per gallon, and an additional \$0.01 per gallon for each percentage point reduction beyond that threshold. (P.L. 117-169) (<https://afdc.energy.gov/laws/13160>).

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commercialization of next generation SAFs, particularly those derived from captured carbon molecules. Our recommendations here preserve this intent.

Commercial aviation is one of the fastest growing sources of greenhouse gas (GHG) emissions. Increased air travel demand, whether for passengers or freight, has steadily driven this sector's emissions higher each year. Despite advances in engine efficiency and aircraft design, the aviation sector was responsible for 2% of global CO<sub>2</sub> emissions from energy consumption in 2022.<sup>2</sup> Pollution from commercial aircraft is projected to triple by 2050.<sup>3</sup>

Aviation is also among the most challenging sectors to decarbonize. While innovations in alternative fuel aircraft—such as battery-powered electric or hydrogen fuel cell planes—have shown promise, these technologies are not yet commercially viable. Many in the industry have turned to SAF and synthesized e-fuels as a potential solution to reduce aviation emissions in the short term.

However, it is essential that only the cleanest SAF qualify for the highest tax credit. Some biofuels, such as corn-based ethanol, have been found to cause environmental harms. A 2022 University of Wisconsin study, for example, estimated that ethanol production spurred by the Renewable Fuel Standard (RFS) incentivized land use changes that made ethanol's carbon intensity as much as 24% higher than that of gasoline.<sup>4</sup> Moreover, converting cropland from food to fuel production has driven feed costs higher for farmers, threatening the bottom line for small farms and saddling working families with higher prices at the grocery store.<sup>5</sup>

At the end of 2023, the Treasury Department and Internal Revenue Service announced plans to use an updated GREET model as the life cycle analysis mechanism to determine eligibility for the SAF Tax Credit.<sup>6</sup> Because the model's emissions factors are foundational to its accuracy, we ask that any updates to GREET consider the following criteria to guarantee the most thorough carbon accounting for SAF:

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<sup>2</sup> International Energy Agency, *Aviation* (July 11, 2023) (online at: <https://www.iea.org/energy-system/transport/aviation>)

<sup>3</sup> Environmental and Energy Study Institute, *Issue Brief: The Growth in Greenhouse Gas Emissions from Commercial Aviation* (June 9, 2022) (online at: <https://www.eesi.org/papers/view/fact-sheet-the-growth-in-greenhouse-gas-emissions-from-commercial-aviation>)

<sup>4</sup> The study also found that the increase in ethanol production increased fertilizer consumption by up to 8%, and increased water pollution from runoff by up to 5%; Tyler J. Lark et al., *Environmental Outcomes of the U.S. Renewable Fuel Standard*, The Proceedings of the National Academy of Sciences (February 14, 2022) (online at: <https://www.pnas.org/doi/full/10.1073/pnas.2101084119>).

<sup>5</sup> The International Council on Clean Transportation, *The Impact of the U.S. Renewable Fuel Standard on Food and Feed Prices* (January, 2021) (online at: <https://theicct.org/wp-content/uploads/2021/06/RFS-and-feed-prices-jan2021.pdf>).

<sup>6</sup> Internal Revenue Service, *Treasury, IRS, Issue Guidance on Sustainable Aviation Fuel Credit* (December 15, 2023) (<https://www.irs.gov/newsroom/treasury-irs-issue-guidance-on-sustainable-aviation-fuel-credit>).

**Indirect Land Use Conversion (ILUC).** Depending on how GREET is configured, the model could cite estimates that are significantly lower than prevailing ILUC emissions factors.<sup>7</sup> DOE should align GREET’s ILUC assumptions with methodologies used by other domestic and international regulatory bodies,<sup>8</sup> which have been conducted transparently and with significant public scrutiny and stakeholder input as part of the implementation of fuel standards domestically and abroad.

**Soil Carbon Credits.** GREET allows biofuel producers to offset portions of their life cycle emissions by adopting sustainable agricultural practices that facilitate soil organic carbon sequestration. However, because soil carbon credits rely on expectations of future behavior, DOE and Treasury should require safeguards to ensure their efficacy. Any assumptions about soil carbon sequestration should be supported by the most current climate science and meet the following criteria:

- *Verifiable* – All soil carbon credits must be verified through consistent and rigorous measurement and reporting. Rather than relying on modeled shifts in soil carbon levels for entire regions, credits should be based on observed localized improvements compared to initial soil carbon baselines.
- *Additionality* – Soil carbon credits should only be granted when carbon sequestration from land management results from a change in initial soil carbon levels.
- *Permanence* – The current GREET model calculates soil carbon offsets over a 30-year timeframe. Treasury’s implementation of the SAF Tax Credit should include guardrails to ensure sustainable land management practices are maintained throughout this entire accounting period and to revoke the tax credit from those who fail to do so.

If Treasury lacks the capacity, expertise, or tools to guarantee a long-term measurement and verification regime, then soil carbon credits should be excluded from the GREET model used to implement the SAF Tax Credit.

**Renewable Energy Reporting.** Treasury should implement safeguards to ensure that producers claiming renewable energy inputs to reduce their direct emissions meet the requirements of additionality (*i.e.*, drawing from new sources of zero-carbon energy), temporal matching (*i.e.*, aligning energy consumption and production to the greatest extent possible), and deliverability (*i.e.*, only allowing producers to claim energy generation assets within their grid region). Producers must also prove that any renewable energy credits purchased to meet these demands are unique and not double counted.

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<sup>7</sup> The International Council on Clean Transportation, *Drawbacks of Adopting a “Similar” LCA Methodology for U.S. Sustainable Aviation Fuel (SAF)* (September 2023) (online at: <https://theicct.org/wp-content/uploads/2023/09/ID-16-Briefing-letter-v3.pdf>).

<sup>8</sup> For example, the International Civil Aviation Organization’s Carbon Offsetting and Reduction Scheme for International Aviation.

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Incorporating these criteria in DOE's and Treasury's implementation of the SAF Tax Credit will improve producers' ability to measure their life cycle GHG emissions and ensure the cleanest fuels receive the highest tax credit, as Congress intended. Thank you for undertaking this effort and working to decarbonize the aviation sector.

Sincerely,



Peter Welch  
United States Senator



Sheldon Whitehouse  
United States Senator



Martin Heinrich  
United States Senator



Jeffrey A. Merkley  
United States Senator