



February 17, 2023

Internal Revenue Service  
CC:PA:LPD:PR (Notice 2023-06)  
Room 5203  
P.O. Box 7604  
Ben Franklin Station  
Washington, DC 20044

Submitted electronically via regulations.gov

**Re:** Notice 2022-57, Sustainable Aviation Fuel Credit; Registration; Certificates; Request for Public Comments

The Renewable Fuels Association (RFA) appreciates the opportunity to provide these comments to the Office of Associate Chief Counsel (Passthroughs & Special Industries) as well as the Department of the Treasury (Treasury Department) and the Internal Revenue Service (IRS) regarding the anticipated guidance for implementation of the credit for Sustainable Aviation Fuel (SAF) under section 40B of Public Law 117-169, 136 Stat. 2003 (August 16, 2022), commonly known as the Inflation Reduction Act of 2022 (IRA).

RFA is the leading trade association for America's ethanol industry. Its mission is to advance the development, production, and use of low-carbon fuel ethanol and co-products by strengthening America's renewable fuels industry and raising awareness about the benefits of renewable energy. Founded in 1981, RFA serves as the premier meeting ground for industry leaders and supporters. RFA's 300-plus members are working to help America become cleaner, safer, more energy secure, and economically vibrant.

Of particular relevance to the goals of the IRA, RFA's producer members have committed to bold carbon intensity reduction targets. These include ensuring that by 2030 ethanol reduces greenhouse gas (GHG) emissions by at least 70 percent, on average, when compared directly to gasoline and that by 2050, ethanol achieves net-zero lifecycle GHG emissions.<sup>1</sup> Our comments will focus on the interpretation of tax measures which will empower and accelerate the carbon reduction potential which is central to the spirit of the IRA. RFA's comments are informed by input from producer members' concerns about the interpretation of tax provisions within the IRA, as well as RFA's collaboration with related industry groups and coalitions.

## **I. General Ethanol Industry Priorities and Principles for IRA Provisions**

The IRA represents the most significant federal commitment to low-carbon biofuels since the Renewable Fuel Standard was expanded by Congress in 2007. The IRA recognizes the important role renewable fuels like ethanol can play in a lower-carbon future for this nation. Specifically, the legislation includes provisions that provide funding for clean fuel production,

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<sup>1</sup> RFA Net Zero Pledge President: Ethanol to Achieve Net Zero Emissions by 2050 or sooner, July 2021, <https://ethanolrfa.org/pledge>

higher biofuel blend infrastructure, enhanced opportunities for ethanol to play a greater role in sustainable aviation fuel, and carbon capture, utilization, and storage (CCUS).

However, the IRA's tax provisions will need to be interpreted correctly for the legislation to achieve its goals. In particular, lifecycle analysis (LCA) methods, flexibility for individual producers in the calculation of individual fuel pathways in order to encourage GHG reduction, and timely guidance on regulations for tax incentives to meet the timeframes of the IRA's programs for carbon capture, utilization, and storage (45Q) will be essential to the legislation's success.

The goal of net zero or better ethanol is within sight and CCUS will play a big part in getting there.<sup>2</sup> Given the timeframes of IRA measures, decisions impacting ethanol producers' eligibility for credits, the value of those credits, and certain definitions will have a significant impact on the IRA's impact on carbon emissions.

Finally, time is of the essence. Between the time it takes for design, planning, and permitting, sunsets, transitions, and extension discussions will come up fast. Ethanol producers need to begin investing in improvements immediately as approvals take time and technical skill and specialized labor for these projects may be in short supply. As business decisions are being made, the ethanol industry will need to be confident that credits will be based on reliable science and that credits will retain the value Congress intended in the law. This means clear rules for pathway LCA, reasonable reporting requirements and flexibility for prevailing wage and apprenticeship requirements, and provisions that ensure transferrable credits retain their value to transferees.

## **II. Guiding Principles on Ethanol's Role in the Future of Sustainable Aviation Fuel**

SAF production presents a major new market opportunity for ethanol producers, as the lifecycle carbon footprint of ethanol continues to shrink and the economics of ethanol-to-jet fuel processes continue to improve. The ethanol industry sees tremendous promise and potential in the emerging market for sustainable aviation fuels. The ethanol industry has the scale and capacity to deliver the volume of feedstock to meet SAF volume targets for the decades to come.

Section 40B of the IRA can be a bold starting point for the future of SAF policies. However, as initial mechanisms are formulated to encourage SAF production, rules which effectively pick one technology or feedstock over another or use incomplete or outdated science could serve as a barrier to entry and keep production volumes from reaching targets. Of paramount importance to the IRA is the inclusion of the Department of Energy (DOE) Argonne National Laboratory's Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (Argonne GREET) model for pathway LCA for SAF as an "other similar methodology." The Argonne GREET is the leading and most sophisticated model and corrects issues present in the International Civil Aviation Organization (ICAO) Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) LCA framework.

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<sup>2</sup> For more information on net-zero ethanol, see *Pathways to Net-Zero Ethanol: Scenarios for Ethanol Producers to Achieve Carbon Neutrality by 2050*, Isaac Emery, Ph.D., of Informed Sustainability Consulting LLC, February 14, 2022, <https://d35t1syewk4d42.cloudfront.net/file/2146/Pathways%20to%20Net%20Zero%20Ethanol%20Feb%202022.pdf>

Ethanol-to-jet production technology is advancing rapidly and the necessary certification and verification systems are already at work in other fuel programs. The ethanol industry looks forward to playing a central role in the carbon reductions achieved through the use of SAF. However, Treasury/IRS should be cognizant of the potential barriers to entry and disincentives for investment that faulty or incomplete LCA modeling can create. With the right policy signals and support – including technology-neutral LCA, particularly Argonne GREET, ethanol-to-jet technologies can quickly scale up to meet the future SAF needs of the aviation sector.

While our chief concerns with 40B credit generation relate to lifecycle modeling and certification measures, RFA urges Treasury to clarify several other details which will provide consistency and empower the credit to achieve its goals.

- Treasury should make the SAF portion of fuel blends exempt from taxation under section 4081. This is a concern because the definition of “kerosene” includes any liquid fuel covered by ASTM D1655, which would include the SAF portion of the qualified mixture. This is clearly inconsistent with the intent of 40B as it would erode the value of the credit and clarification is necessary to prevent this result. RFA asks that Treasury clarify that the SAF portion of a blend is not kerosene and not taxable.
- Treasury should employ consistent rules across fuel credits, including those under 40B as well as 45Z, regarding the use of book and claim accounting. Book and claim is a necessary and common practice that allows credits to encourage investment in sustainability technologies while allowing feedstock supply chains to function. Allowing book and claim for one credit and not another defeats the technology neutrality which is intended by 40B and encourages the most investment and adoption.
- Given the rapid innovation in the production of SAF, Treasury should make clear that future ASTM pathways will be eligible. 40B contains its own GHG and content eligibility criteria and future ASTM pathways that meet these requirements should be eligible for 40B credit generation.
- To prevent unnecessary delay, Treasury should allow SAF producers to register with IRS prior to receiving certification. Demonstrating compliance with emissions reduction criteria occurs near the time of initial production whereas registration under 40B(f) is a distinct process which can be completed earlier to clear any potential administrative bottlenecks.
- Treasury should adopt reasonable rules for the transfer of fuels into aircraft that appreciate logistical realities and encourage SAF use. While 40B requires that “the transfer of such mixture to the fuel tank of such aircraft occurs in the United States,” Treasury should consider fuel entered into a pipeline or airport storage to be transferred into an aircraft in the United States. Jet fuel is not exported by pipeline and the refueling of outbound international flights would also satisfy 40B requirements for transfer.

RFA appreciates Treasury’s attention to these and other important details throughout the IRA which can help or hinder the law’s impact on GHG emissions, the economy, and US energy independence.

### III. Answers to Questions from IRS

The following comments will be organized to align with questions in this Request for Information and will highlight how several provisions and questions of interpretation relate to our general priorities for SAF tax credit implementation.

***(1) Section 40B(e)(2) provides that “any similar methodology, which satisfies the 25 criteria under § 211(o)(1)(H) of the Clean Air Act (42 U.S.C. 7545(o)(1)(H)), as in effect on the date of enactment of this section” may be used to determine the reduction in lifecycle greenhouse gas emissions. What methods exist that could qualify as a “similar methodology”? Do the lifecycle emissions values that have been developed by the Environmental Protection Agency for the Renewable Fuel Standard qualify as a “similar methodology”? Does the Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) model developed by the Argonne National Laboratory qualify as a “similar methodology”?***

The Department of Treasury and IRS should use the Argonne GREET model for pathway LCA for SAF as well as non-aviation fuel. Although lawmakers opted to allow the use ICAO/CORSIA for LCA of SAF pathways, they also left the door open for the use of an “other similar methodology.” Argonne GREET clearly meets the intent of Congress with respect to “other similar methodology[ies]” that are as at least as robust as the SAF methodology used by ICAO for CORSIA. RFA believes the best choice for LCA of SAF pathways is the Argonne GREET model. Using Argonne GREET for SAF would ensure that the same, consistent methodology is used for both aviation and non-aviation fuels. Using two different models for the purposes of tax credit generation (i.e., one model for SAF, and a separate model for non-aviation fuels) could create administrative challenges for both industry and regulators, and it could also create perverse incentives or disincentives for the production of certain low-carbon fuels in the marketplace.

Argonne GREET is widely considered the most complete and sophisticated transportation fuel LCA modeling tool in the world, and it is particularly well suited to this application for several reasons. First, Argonne GREET does in fact include a robust, peer-reviewed methodology for estimating both direct and indirect land use change (LUC/ILUC) emissions potentially associated with certain low-carbon fuels. Next, Argonne GREET updates its data regularly (at least annually), keeping track of the impact of changes in production practices and technology. Finally, Argonne GREET offers the detail and transparency needed for pathways to be “scored” (i.e., assigned a carbon intensity value) quickly and thoroughly. This allows for individual pathway scoring instead of overbroad categories consisting of default values, which may not accurately represent the wide range of technologies and practices used in the industry.

Argonne GREET is considered the gold standard for estimating the GHG emissions from transportation fuels, including both direct and indirect emissions. Argonne GREET has been utilized extensively by federal, state, and international agencies. Most notably, the model has been used (with only minor adaptations) by the California Air Resources Board for the state’s Low Carbon Fuel Standard (CA-GREET) and by the Oregon Department of Environmental Quality for its Clean Fuels Program (OR-GREET). Further, U.S. EPA used the GREET model for key elements of the LCA conducted in 2009-2010 in conjunction with promulgation of the RFS2 regulations.

Contrary to some uninformed criticisms of the model, the Argonne GREET tool does indeed include a comprehensive module for estimating indirect land use change emissions. While ILUC remains a hypothetical concept, the most scientifically robust model-derived estimates of corn ethanol ILUC emissions are integrated into GREET. The Carbon Calculator for Land Use Change from Biofuels Production (CCLUB) is used to estimate ILUC emissions within the GREET/CCLUB/Global Trade Analysis Project (GTAP) modeling array. The use of CCLUB within this array has advantages over other approaches since CCLUB's LUC estimates are taken from the latest version of Purdue University's GTAP model and its emission factors are based on actual field measurements incorporated into the CENTURY/DAYCENT tools for measuring site-level carbon fluxes.

Based on these enhancements, the latest version of GREET/GTAP/CCLUB estimates that ILUC emissions from corn ethanol are approximately 5.4 grams of carbon dioxide equivalent per megajoule (g CO<sub>2</sub>e/MJ), while total emissions from LUC (including domestic LUC) are 7.4 g CO<sub>2</sub>e/MJ.

As researchers from Argonne explained in a 2021 study, "The LUC GHG emissions from large-scale corn production for corn ethanol have been simulated since 2008. Early studies showed extremely high LUC emissions...and recent studies show significantly lower LUC emissions. The downtrend in simulated LUC emissions is a result of better developed and calibrated economic models and better modeling of GHG emissions from LUC. Economic models such as [GTAP] are much improved in addressing land intensification (i.e., existing lands are managed to be more productive) versus land extensification (i.e., croplands extend into new areas of pasture and forest), crop yield increases over time, crop yield differentials in existing croplands and in newly cultivated croplands, double cropping in regions such as Asia, availability and restriction of certain land conversions (e.g., restriction of public forest land for conversion to croplands), price elasticities for crop yield responses, and food demand responses to price changes."<sup>3</sup> The paper included a timeline summarizing LUC emissions estimates that have appeared in the literature since 2008. The 10 most recent estimates result in an average of 12 gCO<sub>2</sub>/MJ, roughly 60% lower than EPA's 2010 estimate. This research from Argonne compiled estimates of LUC emissions from corn ethanol based on 15 models and assessments and showed that the emissions estimates have decreased over time and converged into a range.

Another important feature of GREET is the periodic updating of key input data. One of the problems with some LCA models is that they use outdated data and lack the mechanisms necessary to adjust for changing circumstances and improving technology. Keeping the data current is both an accountability measure and an incentive to deploy and maintain the best technology and practices.

Next, the GREET model also allows for low-carbon fuel producers to submit unique, differentiated data on the emissions related to feedstock production, rather than treating farm-level feedstock production in an overly generalized "one size fits all" manner. The model is publicly available and can be used by market participants to evaluate the potential emissions reductions reduction of different SAF production pathways and support decision making.

Importantly, the above discussed benefits of the Argonne GREET model are necessary to correct for certain inadequacies of the ICAO/CORSIA LCA methodologies. The science within

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<sup>3</sup> Lee, U., Kwon, H., Wu, M. and Wang, M. (2021). Retrospective Analysis of the U.S. Corn Ethanol Industry for 2005–2019: Implications for Greenhouse Gas Emission Reductions. *Biofuels, Bioprod. Bioref.* <https://doi.org/10.1002/bbb.2225>

the ICAO model is severely outdated and data is 10-15 years old. It fails to accurately account for on-farm carbon reduction activities as well as production and efficiency improvements in biofuel production. These changes are well-recognized in the Argonne GREET model and DOE has the best resources, expertise, and current ability to assess lifecycle emissions fairly and scientifically. The inclusion of “other similar methodology” suggests congressional intent to correct for potential issues with ICAO/CORSIA and achieve the technology-neutral, scientific, and up-to-date approach to LCA best exemplified by Argonne GREET.

Finally, RFA supports the option to use individual pathway analysis for purposes of determining carbon intensity, and in turn, credit values. Argonne GREET offers the granular approach that will enable reliable and thorough results without unnecessary delay. By specifying the use of GREET, Department of Treasury/IRS can streamline this process and give ethanol producers the confidence needed to make investments in carbon reduction. This is made all the more important by the relatively short timeframe of the SAF tax credit. DOE has made considerable investment in this tool which can play an important role in achieving the goals of the IRA.

***(6) What entities are capable of providing the certifications required by § 40B(d)(1)(D) (relating to a lifecycle greenhouse gas emissions reduction percentage of at least 50 percent) and (f)(2)(A) (concerning general requirements, supply chain traceability requirements, and information requirements established under CORSIA or a similar methodology under the Clean Air Act) with respect to SAF co-processed qualified mixtures?***

Regarding certification and verification of fuel production pathways, RFA points out that there are already a number of third-party organizations and systems in place. These existing systems could be used to inform the certification requirements for the SAF credit. Under state programs, such as California’s Low Carbon Fuel Standard (LCFS) and Oregon’s Clean Fuels Program, third-party schemes have been developed to provide certification, verification and quality assurance related to credit generation. For certain international low-carbon fuel programs, other certification bodies, such as the International Sustainability and Carbon Certification (ISCC) scheme have been used successfully. Furthermore, under the Renewable Fuel Standard (RFS), EPA has implemented a Quality Assurance Plan (QAP) to assure valid RIN generation for various low-carbon fuels. Under the QAP program, not only are there a number of approved third-party verification and certification providers, but there is a system for the addition of new providers. There is a similar process for adding new verifiers for California’s LCFS. RFA urges Treasury/IRS to learn from existing programs, or even leverage those programs where appropriate, to conduct certification, verification, and quality assurance for SAF tax credit generation.

In terms of the nature of the certification process, RFA supports the adoption of rules aimed at striking a balance between rigor, assurance, and practicality. Certification practices that are aimed at timeliness and efficiency will encourage the investment intended by the law. Thorough review is necessary for any certification process and RFA supports meaningful verification throughout SAF pathways. However, a balanced approach that provides a necessary level of assurance to regulators while also minimizing administrative burden for industry is necessary.

Finally, as certification focuses on LCA and carbon scoring data, it is worth noting that most third-party certifiers and verifiers in the low-carbon fuels area have a great deal of experience working within the framework of the Argonne GREET model. For example, the carbon intensity values used to generate credits under California’s LCFS are based on GREET, and the certification systems in place there are generally working well today. Bringing Argonne GREET-

based certification for SAF to scale for a federal program is entirely possible utilizing existing industry practices.

RFA looks forward to working with IRS, Treasury, and other agencies on the implementation of the IRA. We thank you again for the opportunity to provide comments. If you have any questions, or need any additional information, please feel free to contact Jared Mullendore at [jmullendore@ethanolrfa.org](mailto:jmullendore@ethanolrfa.org) or Edward Hubbard, Jr., Esq., at [ehubbard@ethanolrfa.org](mailto:ehubbard@ethanolrfa.org) or (202) 289-3835.

Sincerely,  
RENEWABLE FUELS ASSOCIATION

A handwritten signature in black ink that reads "Geoff Cooper". The signature is written in a cursive, flowing style.

Geoff Cooper  
President and CEO