



## Written Testimony on Potential Impacts of Renewable Fuel for Ocean-Going Vessels Act

It is a privilege to be given the opportunity to provide technical feedback on this bill. ICCT is an independent, non-profit research organization that provides technical analysis to policymakers and regulators; our research is focused on reducing the climate and public health impacts of transportation.

ICCT's review of the **Renewable Fuel for Ocean-Going Vessels Act** suggests that it will have a negligible impact on reducing the air pollution and climate impacts of maritime fuels. We can draw upon the example of jet fuel in the Renewable Fuel Standard for some historical context. While jet fuel was included in the RFS in a similar provision in 2014, it did not materially affect sustainable aviation fuel production; even today, a decade later, SAF blending in the aviation sector remains below 1%.<sup>1</sup> This type of opt-in provision does not mandate the production of either renewable maritime or jet fuel, it only means that if a producer produces those fuels, they can opt into the RFS program and generate RIN credits.

### Weak value signal for sustainable maritime fuel producers

There are also some further reasons why renewable maritime fuels may fail to reach the market and may face an even steeper slope than sustainable aviation fuels. The jet fuel opt-in is a quite popular provision, as renewable diesel producers often produce some renewable jet kerosene fuel as a co-product of renewable diesel production; this provision helps them monetize that. Given compatibility issues, the likeliest renewable maritime

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<sup>1</sup> Extrapolating from the 92 million gallons of SAF consumed in 2024 based on California's Low-Carbon Fuel Standard data dashboard, available here: <https://www.energy.gov/eere/bioenergy/articles/federal-agencies-publish-saf-grand-challenge-progress-report-highlighting>

fuels produced in the near-future would be biomass-based diesel. In most cases, it is much more lucrative to sell that fuel into the road sector. There are a few reasons why: renewable diesel commands a higher market price, it qualifies for credits in West Coast low-carbon fuel standard markets, and it can be used to avoid compliance under West Coast cap & trade programs. By instead selling into the maritime market, a producer is losing out on these valuable incentives.

A recent analysis by Stillwater Associates illustrates the “value stack” of selling renewable diesel into the West Coast markets compared to sustainable aviation fuel, which sheds light on the potential market realities that face sustainable maritime fuel even with its inclusion in the RFS.<sup>2</sup> While the value of a RIN is sizeable for both maritime fuel and renewable diesel, there is more value attributable to renewable diesel blending: the value stack for California refiners includes roughly \$0.11 per gallon for avoided LCFS deficits, \$0.30 per gallon for avoided cap & trade compliance, and roughly \$0.43 per gallon in LCFS credits. Together this amounts to a disparity of roughly \$0.84 per gallon in foregone revenue, even greater than the disparity between SAF and renewable diesel.

### Potential second-order effects and risks associated with expanding the Renewable Fuel Standard

Including renewable maritime fuels in the RFS may also create some unintended, second-order effects. For example, the inclusion of a new sector may prompt EPA to propose higher volume targets in future RFS rulemakings. Our analysis of the Summer 2025 rulemaking<sup>3</sup> suggests that this may exacerbate underlying issues in the program that we have identified; the current proposal already raises advanced biofuel volumes in excess of domestic availability, while also reducing the compliance value of imported feedstocks. This has the contradictory effect of 1) further increasing the quantity of advanced biofuel needed to meet obligations, leading to even greater reliance on foreign imports, and 2) raising prices, all for little if any climate benefit. If the inclusion of maritime fuels is used as justification for further increases in RFS blending targets, we risk deeper trade imbalances, diversion from food markets, and price increases.

What’s more, this would result in little to no climate benefit. A large component of the lifecycle GHG emissions of crop-based biofuel pathways is induced land-use change (ILUC). ILUC occurs when the increased demand for an agricultural commodity results in direct or indirect cropland expansion to compensate for the shortfall in supply. The

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<sup>2</sup> <https://stillwaterassociates.com/tracking-the-stacks-comparing-incentive-values-for-rd-and-saf-in-west-coast-markets/?cn-reloaded=1>

<sup>3</sup> <https://theicct.org/icct-comments-on-rfs-program-aug25/>

conversion of land into cropland can generate significant greenhouse gas emissions, particularly if the land that is cleared is a major carbon sink, like rainforest. While by statute the RFS is required to account for these ILUC emissions, multiple analyses suggest that the ILUC emissions for some oilseed pathways could be even higher.

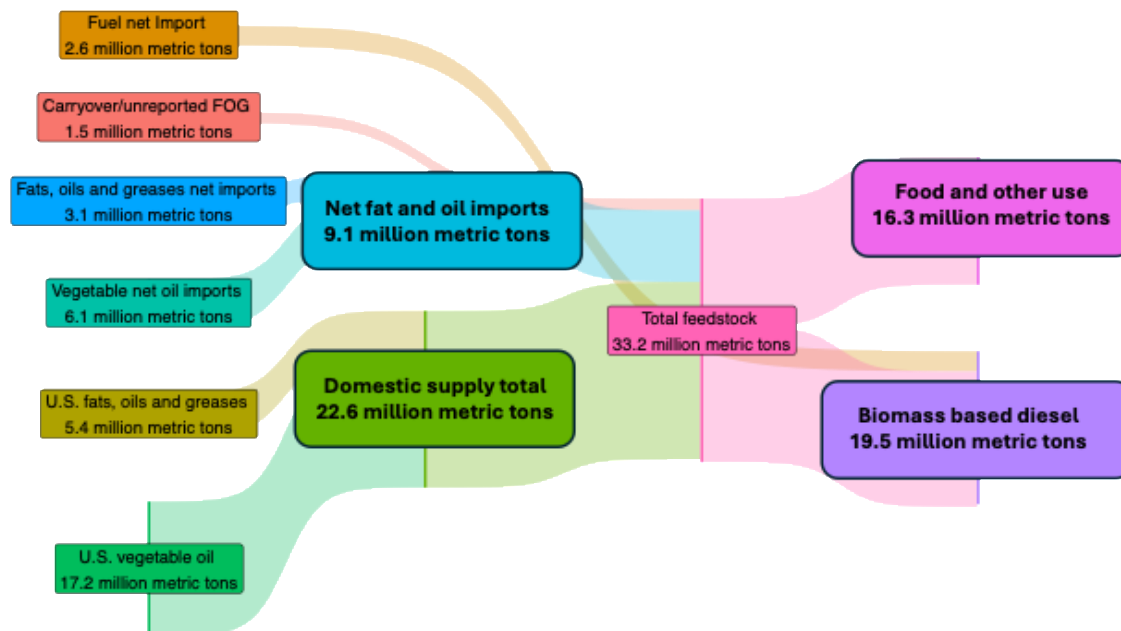
Two figures below illustrate the existing status of the RFS and the potential implications from the proposed increase in mandated volumes, based on the rulemaking analysis and additional data collected by ICCT.<sup>4</sup> The first figure illustrates the flows of US fats, oils and greases in 2024, showing the shares of these feedstocks going to biofuel vs. other sectors, as well as their domestic vs. imported origins. These flows already reflect a large shift since 2019 to support a 3 billion gallon increase in BBD consumption from 2019 to 2024. This significantly outpaced growth in domestic feedstock supply, increasing the overall U.S. trade deficit by the equivalent of 8.2 million metric tons of fats and oils when considering both feedstock and fuel imports. While domestic feedstock production increased by 1.9 million metric tons, a 9% percent increase, the feedstock required to meet domestic BBD consumption more than doubled to 19.5 million metric tons. Naturally, additional imports were required to fill this gap. Note that in 2024 domestic soybean crush was already operating at 95% of capacity.<sup>5</sup>

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<sup>4</sup> <https://theicct.org/icct-comments-on-rfs-program-aug25/>

<sup>5</sup> The USDA *Oil Crops Yearbook* (March, 2025) records 144,600 million pounds of soybeans crushed domestically compared to a capacity of 153,000 reported by the American Soybean Association: <https://soygrowers.com/news-releases/soybean-crush-expansion-2025-update/>.

**Figure 1. U.S. fats and oil supplies in 2024**



The subsequent chart illustrates the impact of EPA’s proposed 2027 RFS volumes on the market for fats, oils, and greases. This proposal further overshoots domestic availability by simultaneously raising the overall target for biomass-based diesel while simultaneously reducing the RINs generated by foreign feedstocks. Here we see that domestic vegetable oil consumption increases by roughly 2 million metric tons; however, net fat and oil imports are projected to increase substantially by another 7 million metric tons. Considering total global vegetable oil trade is 80 million metric tons,<sup>6</sup> this would increase the U.S. share of overall global imports from 8 to 14 percent. Changes of this magnitude are highly likely to impact food prices. There is consensus among the literature that biofuel demand increases global food prices and causes food price shocks.<sup>7</sup> As a back of the envelope illustration, extrapolating a finding from Persson (2014) that global vegetable oil prices will increase by 38% for each EJ/year of additional biodiesel demand,<sup>8</sup> we find that the 3 billion RIN increase in the BBD volume from the 2025 to the 2027 RVO would increase global

<sup>6</sup> USDA Foreign Agricultural Service (July, 2025) Oilseeds: World Markets and Trade.

<https://apps.fas.usda.gov/psdonline/circulars/oilseeds.pdf>

<sup>7</sup> Malins, C. (2023, July). How does biofuel demand affect food markets? *Cerology*.

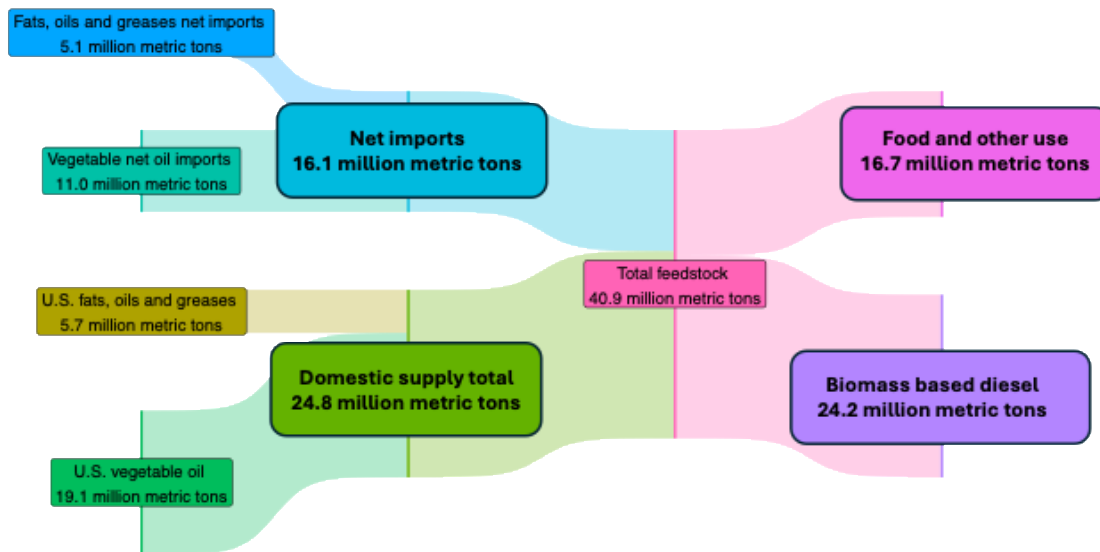
[https://www.cerology.com/wp-content/uploads/2024/09/Cerology\\_Biofuels-and-food-markets\\_July2023.pdf](https://www.cerology.com/wp-content/uploads/2024/09/Cerology_Biofuels-and-food-markets_July2023.pdf)

<sup>8</sup> Persson, M. (2014). The Impact of Biofuel Demand on Agricultural Commodity Prices: A Systematic Review.

*Advances in Bioenergy: The Sustainability Challenge*, 465–482. <https://doi.org/10.1002/9781118957844.ch30>

vegetable oil prices on the order of around 12%. While the exact impact of this sudden shock to global markets is hard to predict, it is clear that significant negative consequences are likely. Specifically, vegetable oil prices could spike domestically and global shortages may contribute to hunger among the world’s poor. Note that the estimate of domestic vegetable oil production in figure 3 assumes 100% use of industry-projected domestic soybean crushing capacity, suggesting total domestic vegetable oil production in 2027 is very unlikely to exceed the estimate of 19.1 million tons.<sup>9</sup>

**Figure 2. U.S. fats and oil supply and use in 2027 under the EPA RFS volume proposal**



Over the longer run, the projected loss in vegetable oil supply in global markets will likely be replaced by expansion of palm and soybean cultivation in areas at high risk for deforestation—with profound consequences for global greenhouse gas emissions. Despite projected increases, U.S. oilseed production has remained flat over the last 5 years, while Brazilian soybean and Indonesian palm oil production have increased by 35% and 13% respectively.<sup>2</sup> Thus, the proposed BBD RVOs for 2026 and 2027 are likely to increase U.S. dependence on foreign vegetable oil supply, potentially including Brazil’s. It is thus conceivable that further volume increases if using the maritime inclusion in the RFS as a justification could further exacerbate this trend and create further pressure on vegetable oil markets, with unintended trade, price and climate impacts.

<sup>9</sup>Gerlt, Scott. (April, 2025) Soybean crush expansion, 2025 update. <https://soygrowers.com/news-releases/soybean-crush-expansion-2025-update/>

## Separate policies are likely necessary to promote second-generation biofuels and other alternative fuels needed for long-term maritime decarbonization

The global maritime sector consumes nearly 100 million gallons of oil-equivalent annually; making a meaningful reduction in its emissions will require not only substantial volumes of alternative fuels but also for those fuels to be genuinely low-carbon. Shifting small quantities of biomass-based diesel from the road sector to the maritime sector or diverting virgin vegetable oil from existing uses is unlikely to generate substantial GHG reductions. Further, these efforts would not foster a technical stepping stone towards the feedstocks and conversion technologies necessary for long-term decarbonization.

While the RFS was designed at its outset to support a growing volume of ultralow-carbon, cellulosic biofuel made from energy crops, wastes and residues, these intended volumes have largely failed to reach the market. The causes of this shortfall are complex, but are attributable to a combination of technical barriers (particularly on feedstock pre-treatment), high costs, and investment uncertainty.<sup>10</sup> While there are a variety of possible alternative fuels that could be produced in greater volumes and provide much greater GHG savings than virgin vegetable oil-derived fuels, they are likely to be more expensive in the near-term.<sup>11</sup> In particular, fuels such as green ammonia and green methanol could offer substantial GHG savings relative to petroleum-based fuels and offer the long-term potential for cost reductions. Interviews and surveys of project planners and industry stakeholders in the SAF industry suggest that policies that mitigate investment risk and complement top-down mandates such as the RFS are critical to ensure the deployment of the more challenging, lowest-carbon fuel conversion pathways.<sup>12</sup>

One potential outside development which may influence the impact of this proposed revision to the RFS program is the implementation of the International Maritime Organization's (IMO) Net Zero Framework (NZF), which includes a global fuel standard. If the proposal is implemented, the average greenhouse gas intensity of maritime fuels would be required to decline over time, paired with a \$380 per ton CO<sub>2</sub>e compliance penalty for fuels that fall above the declining threshold, as illustrated below in Figure 3.<sup>13</sup> While this is in principle a strong penalty, the proposed IMO framework currently lacks safeguards on

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<sup>10</sup> Witcover, Julie (2021). What Happened (and Will Happen) with Biofuels? Review and Prospects for Non-Conventional Biofuels in California and the U.S.: Supply, Cost, and Potential GHG Reductions. <https://escholarship.org/uc/item/7624q040>

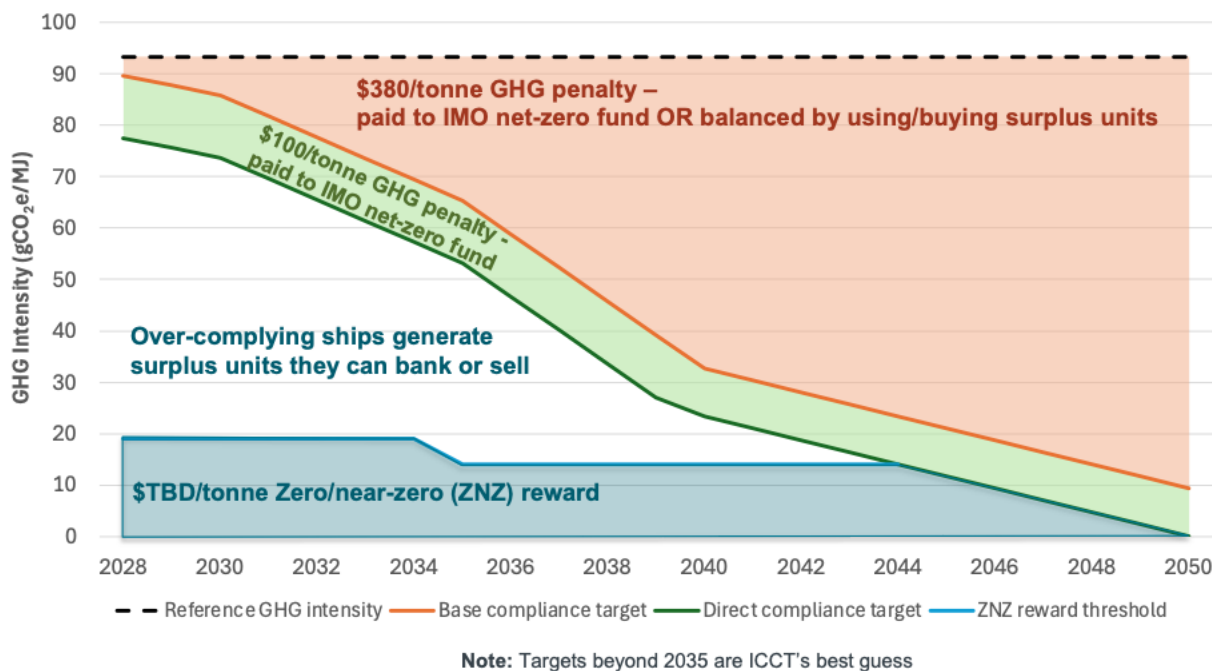
<sup>11</sup> <https://theicct.org/publication/the-potential-of-liquid-biofuels-in-reducing-ship-emissions/>

<sup>12</sup> <https://theicct.org/publication/saf-what-barriers-remain-for-these-technologies-to-scale-jul25/>

<sup>13</sup> <https://www.imo.org/en/mediacentre/pressbriefings/pages/imo-approves-netzero-regulations.aspx>

the GHG accounting and eligibility criteria of alternative fuels, potentially undermining its intended GHG savings.<sup>14</sup> This policy could provide an outside incentive for the use of alternative fuels in the maritime sector, which could be paired with the value provided by RINs from the proposed RFS revision.

**Figure 3. GHG Intensity Trajectory of the Proposed IMO Global Fuel Standard for Maritime**



Without safeguards against land-use change, any policy seeking to incentivize alternative maritime fuels is likely to further incentivize the use of food and feed—particularly virgin vegetable oils—in the transportation sector. Similar fuels policies all include these safeguards: the California Low-Carbon Fuel Standard (LCFS), the EU’s Renewable Energy Directive (RED III), ICAO’s system for crediting SAF’s under CORSIA, and even the RFS. If the IMO proposal is finalized without language to quantify or safeguard against ILUC, feedstocks such as Southeast Asian palm oil could qualify so long as they were grown on land that itself wasn’t directly deforested. Thus, these fuels would not only be significantly cheaper to produce than more challenging second-generation biofuels or green hydrogen-based fuel pathways, but would also have few meaningful guardrails on their use in the maritime sector. As in the road sector and the aviation sector, land-use change emissions could be significant enough to partially or fully offset the intended benefits of using alternative fuels.<sup>15</sup>

<sup>14</sup> <https://theicct.org/four-changes-would-make-the-imo-net-zero-framework-more-effective-apr25/>

<sup>15</sup> <https://theicct.org/publication/assessing-the-sustainability-implications-of-alternative-aviation-fuels/>

## Concluding Remarks

While the promotion of alternative fuels in the maritime sector is a laudable goal, doing so through the RFS opt-in provision will likely provide a minimal signal. If used as a justification for higher volume targets in future RFS, there is a risk that this could further increase demand for virgin vegetable oils beyond domestic availability, with unintended trade, climate and price effects.

The International Maritime Organization's proposed global fuel levy, however, could offer a powerful incentive to decarbonize maritime fuels, provided that it correctly accounts for ILUC emissions or includes some other form of meaningful safeguard. Absent a combination of safeguards to mitigate against land conversion in conjunction with de-risking measures to create market certainty, it is unlikely that either policy will create a sufficient signal to foster investment in, and the deployment of more challenging, second-generation fuels in the near-term.