LANZAJET

March 24, 2024

Department of Ecology
State of Washington

Submitted Electronically via https://aq.ecology.commentinput.com/?id=BsWVfdFPa

Re: Rulemaking-Clean Fuel Standard Rule Development

LanzaJet appreciates the opportunity to provide comments on the 2024 Clean Fuel Standard rulemaking. As an industry-leading producer of sustainable aviation fuel (SAF) pursuing a pipeline of SAF projects around the U.S. and the world, LanzaJet strongly supports the Washington Clean Fuels Standard program and applauds the Department of Ecology ("Ecology") for its efforts to streamline and improve the program and for prioritizing incentives supporting the production of low carbon intensity SAF. We comment here to offer insight into the questions Ecology has posed below as they relate to that goal:

- *How might Ecology align with other clean fuel programs to streamline regulatory requirements and compliance?*
- *How might this rulemaking affect Tribes or overburdened communities? What can Ecology do to mitigate any negative impacts?*
- *What provisions of a third-party verification program will be most impactful for ensuring data accuracy and quality?*
- *What areas of the current rule text are confusing or unclear? Are there sections that could be worded differently?*
- *What else would you like to share or highlight?*

LanzaJet congratulates the state of Washington for its leadership in addressing the climate impacts of the aviation sector—one of the most difficult to decarbonize. Washington joins other states in the region in making jet fuel an opt-in credit generator under the Clean Fuel Standard program, but also goes beyond that to establish a SAF tax credit under SB 5447 —the only state in North America to have both.

However, despite leadership from Washington and policy support from other states and the federal government, stronger market signals are still needed. SAF production remains far behind other renewable fuels like renewable diesel —at roughly 14 million and 2.4 billion gallons in the U.S. in 2023, respectively[1]--despite being similar molecules made from substantially similar technology. The slow uptake of SAF in the US can be attributed, in part, to state regulatory rules that keep the price gap between SAF and fossil jet fuel larger than the gap between renewable and fossil diesel, and therefore systematically incentivize the production of renewable diesel over SAF.[2] While SAF tax credits such as those in the federal Inflation Reduction Act or in Washington SB 5337 can help narrow the price gap between fossil jet and SAF, their relatively short life spans have not provided the long-term certainty needed for producers to pivot to SAF.

[1] *See* EPA RIN Generated Transactions, 2023; *available at* https://www.epa.gov/fuels-registration-reporting-and-compliance-help/rins-generated-transactions.

[2] Under the federal Renewable Fuels Standard (RFS) program as well state low carbon fuel standard programs, renewable fuel producers earn more direct incentives for producing renewable diesel than for producing SAF Furthermore, the inclusion of fossil diesel as an obligated fuel under the RFS, state low carbon fuel standards, and state cap-and-trade programs guarantee a market for renewable diesel while simultaneously raising the cost of fossil diesel, making the renewable alternative more attractive. Meanwhile, exemptions for jet fuel keep the price of fossil jet very low, making it much more difficult for SAF to compete. The result is that producers face a strong incentive to make RD rather than SAF. *See* Bay Area Air Quality Management District, Sustainable Aviation Fuel: Greenhouse Gas Reductions from Bay Area Commercial Aircraft (October 2020) *available at* https://www.baaqmd.gov/news-and-events/page-resources/2020-news/121120-saf-report. *See also* https://stillwaterassociates.com/saf-in-the-ira-era-how-do-the-incentives-stack-up/.

This highlights the importance of continuing to develop new supportive SAF polices, including via this rulemaking, as Ecology laid out in its February webinars.

One of Ecology's stated goals of this rulemaking is alignment with other regional clean fuel standard programs, such as California and Oregon. LanzaJet supports that effort insofar as it streamlines compliance and allows Washington to benefit from lessons learned in those jurisdictions. However, we also encourage Ecology not to shy away from opportunities to lead, rather than follow, where it may serve the broader goal of promoting a vibrant SAF industry in Washington.

Accordingly, we suggest that Ecology consider the following proposed actions to strengthen the signal for SAF in the under the Clean Fuel Standard:

1. Adopt provisions to help realize the additional air quality and climate benefits SAF can provide the state.
2. Align third party certification and verification rules with existing SAF regulatory programs.
3. Allow indirect accounting of low-CI electricity and RNG for SAF production, a regulatory approach that is already in place for electric vehicle charging.

Please see our detailed comments and rationale for each below.

1. Adopt provisions to help realize the additional air quality and climate benefits SAF can provide the state.

Ecology should add new mechanisms to the Clean Fuel Standard to quantify and credit the additional benefits of SAF that are not currently counted. Washington has already shown leadership in acknowledging these co-benefits: SB 5447 explicitly calls for new academic research to quantify the positive impacts of SAF use on regional air quality in Washington.[3] This work will join a growing literature showing the air quality and public health improvements SAF provides to overburdened communities living and working near airports.[4] Over time, these benefits will become more and more unique to SAF: as road transportation shifts to new, cleaner diesel and electric engines, alternative fuels provide fewer additional air quality gains. By contrast, the jet fuel pool—already significantly dirtier than the diesel pool[5]—will electrify much more slowly (if at all), making increased use of alternative fuels the critical lever for addressing air pollution in aviation.

Another key co-benefit of SAF adoption is the reduction of non-CO_2 climate impacts of aviation, which come from the formation of contrail cirrus clouds that trap additional heat in the atmosphere. The current best estimate from the most recent comprehensive study is that the climate impact from contrail cirrus is nearly twice the warming impact from CO_2.[6] A recent study found that a 50% SAF blend could reduce contrail cirrus climate impacts by over 20%--a significant win for the climate.[7] While continued scientific

---

[3] *See* Washington S.B. 5447 (2023-24); *available at* https://lawfilesext.leg.wa.gov/biennium/2023-24/Pdf/Bills/Senate%20Passed%20Legislature/5447-S.PL.pdf?q=20240322113251.

[4] *See* Airport Cooperative Research Program, Alternative Jet Fuels Emissions Quantification Methods Creation and Validation Report. August 2019. Page 10; *available at* http://www.trb.org/Publications/Blurbs/179509.aspx. (showing that a 50% SAF blend could reduce oxides of sulfur by nearly 40% and particulate matter by up to 65%). *See also* Tran, Brown and Olfert. Comparison of Particle Number Emissions from In-Flight Aircraft Fueled with Jet A1, JP-5 and an Alcohol-to-Jet Fuel Blend. *Energy Fuels* 34, 6, 7218–7222 (2020). https://doi.org/10.1021/acs.energyfuels.0c00260.

[5] *See* C.K Gilmore et al. Environmental Cost-Benefit Analysis of Ultra Low Sulfur Jet Fuel. The PARTNER Project 27 Final Report. Report No. PARTNER-COE-201-006 https://ascent.aero/partner-27/.

[6] D.S. Lee, et al. The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018. *Atmospheric Environment* 244, 117834 (2021). https://doi.org/10.1016/j.atmosenv.2020.117834.

[7] *See* European Union Aviation Safety Agency, Updated Analysis of the non-CO2 Climate Impacts of Aviation and the Potential Policy Measures Pursuant to EU Emissions Trading System Directive Article 30(4) (synthesizing research on SAF non-CO2 climate benefits and suggesting further consideration of SAF policy measures to mitigate aviation climate impacts); *available at* https://www.easa.europa.eu/sites/default/files/dfu/201119_report_com_ep_council_updated_analysis_non_co2_climate_impacts_aviation.pdf.

uncertainty around the magnitude of the non-CO2 climate impacts makes them difficult to precisely quantify, the direction of those impacts—less warming when SAF is used—is known and is compelling.

These additional benefits justify additional measures by Ecology to prioritize the production and use of SAF under the Clean Fuel Standard. Ecology should consider developing metrics to help quantify and credit those benefits. For example, Ecology should consider applying a credit multiplier for SAF on the basis of the most conservative estimates of non-CO_2 climate benefits of SAF and air quality benefits. (The European RED II program, currently provides a multiplier of 1.2x for SAF.) Alternatively, Ecology might develop a "CO_2 equivalent" metric to account for these benefits in terms of carbon intensity and incorporate them into the WA-GREET model, as has been suggested by the European Commission in its recent study on how to address the non-CO2 climate impacts of aviation.[8]

2. Align third party certification and verification rules with existing SAF regulatory programs.

Ecology should align third party verification requirements with those of existing federal and international SAF regulatory programs. Because SAF producers rely on stacked incentives to narrow the price gap with fossil jet fuel, they participate in a variety of regulatory programs at all levels of government, including state clean fuel standard programs, the federal Renewable Fuel Standard (RFS) program, tax credits under the Inflation Reduction Act, and the International Civil Aviation Organization's Carbon Offsetting Reduction Scheme for International Aviation (CORSIA). As such, SAF producers are already subject to multiple, separate, and overlapping sets of detailed regulations for tracking, verifying, and independently certifying the details of fuel and feedstock sustainability and lifecycle assessment. Given that state clean fuel standards cannot be stacked—as a given batch of fuel can only be consumed in one place--we strongly urge Ecology to prioritize alignment with the federal and international incentives that can be stacked by allowing existing certification schemes, such as EPA Quality Assurance Plans under the RFS program, International Sustainability and Carbon Certification (ISCC CORSIA), or the Roundtable on Sustainable Biofuels (RSB CORSIA) to meet Washington requirements. In doing so, Ecology will ensure the highest degree of quality and accuracy while imposing the least additional administrative burden on SAF producers.

3. Allow indirect accounting of low-CI electricity and RNG for SAF production, a regulatory approach that is already in place for electric vehicle charging.

LanzaJet supports policies to allow indirect accounting for low-CI electricity and RNG inputs to the production of low-CI SAF. In the recent proposed amendments to the California Low Carbon Fuels Standard (LCFS), CARB has proposed maintaining and even expanding flexible access to low CI- electricity for hydrogen production, while simultaneously limiting access for SAF production. However, we offer that CARB's arguments for providing additional flexibility to low-CI hydrogen when directly used as a transportation fuel apply equally to SAF. Both low-CI hydrogen and SAF are young technologies with nascent markets that displace hard-to-electrify end uses like powering aircraft.

Accordingly, we urge Ecology—as we have similarly urged CARB—to provide SAF producers access to low-CI electricity through the use of power purchase agreements (PPAs), as CARB has proposed for hydrogen producers.[9] We also urge Ecology to allow indirect accounting for low-CI electricity used to produce hydrogen that is then used in the production of SAF.

With the passage of SB 5447, the state legislature signalled strong support for allowing indirect accounting of biomethane for SAF and renewable diesel production by codifying it into law—a step LanzaJet applauds. In aligning the Clean Fuel Program rules to SB 5447, we encourage Ecology to maintain flexible access to low-CI biomethane as much as possible. While CARB has proposed limitations to the use of biomethane,

[8] *Id.*
[9] *See* CARB, Staff Report: Initial Statement of Reasons (ISOR). December 19, 2023. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/lcfs2024/isor.pdf. Page 34.

such as sunsetting avoided methane crediting and applying stricter rules on deliverability and geographic scope for book-and-claim use, such measures undermine access to CI-reductions from biomethane, and Ecology should avoid going in this direction.

4. Clarify specific pieces of rule text.

The SB 5447 tax credit applies to each gallon of SAF that achieves a 50% carbon intensity to conventional petroleum jet fuel, but the rule does not seem to state which value to use for the baseline carbon intensity for conventional petroleum jet fuel. We suggest adding that number (or, if the same for diesel, noting that) to the rule tables (WAC 173-424-900) to provide needed clarity.[10]

****

Thank you for the opportunity to comment on this Washington Clean Fuel Standard Rulemaking. Please do not hesitate to reach out if you have any questions.

Sincerely,

Alex Menotti
VP, Government Affairs, Policy, and Sustainability
LanzaJet
alex.menotti@lanzajet.com

Emily Carlton
SAF Policy Specialist
LanzaJet
emily.carlton@lanzajet.com

[10] *See* https://app.leg.wa.gov/WAC/default.aspx?cite=173-424-900&pdf=true.