



August 31, 2022

Abbey Brown
Rachel Assink
Clean Fuels Program
Washington State Department of Ecology

Dear Ms. Assink and Ms. Brown:

On behalf of SkyNRG Americas, thank you for the opportunity to provide comments and participate in the Department of Ecology Clean Fuels Program Rulemaking. SkyNRG Americas supports efforts to incorporate Sustainable Aviation Fuel (SAF) – also known as alternative jet fuel – into the aviation industry as a strategy to reduce carbon emissions and improve air quality in Washington.

The Aerospace industry plays a significant role in Washington and is one of the most difficult to decarbonize industries in the State. It is a \$70 billion industry and supports more than 250,000 jobs.¹ According to Ecology's 2018 inventory, aviation emissions comprise 10% of Washington's total greenhouse gas emissions, a more significant percentage than in other jurisdictions that have implemented clean fuels policy such as Oregon and California. This percentage is set to increase over time due to the anticipated growth of the aviation sector as a whole, combined with measures to reduce emissions from other transportation sectors that can more readily be electrified and rapidly transition to lower emission technologies such as EVs. The significance of the aviation industry in Washington adds to SkyNRG Americas' conviction that the Department of Ecology should include specific policies directly related to stimulating alternative jet fuel production in the Clean Fuels Program Rule as aviation is on track to be the single largest source of emissions in the transportation sector by 2050².

As stated in our previous comments, alternative jet fuel will not become commercially viable in Washington without state government support and targeted, effective policy incentives. Including alternative jet fuel as an opt-in fuel in the initial Clean Fuels Program is an important step, and successful implementation is critical to incentivizing production and use in Washington. To this end, ensuring flexibility in the program to enable the development and scale of new production pathways will be key as new feedstocks and technologies become commercially viable both now and in the future.

SkyNRG Americas commends Ecology for setting the carbon intensity standard applicable to alternative jet fuel at the same level as diesel and diesel substitutes. Since it costs more to produce alternative jet fuel than an equivalent amount of renewable diesel using similar production processes, setting the baseline appropriately will ensure producers are not substantially disincentivized in producing alternative jet fuel.

While alternative pathways for reducing on-road transportation sourced emissions such as electrification are becoming increasingly available, it is essential for Ecology to recognize that there are few viable options for reducing aviation emissions beyond more widespread penetration of SAF.

¹ [Washington's aerospace industry - A century of know-how, innovation and leadership. \(choosewashingtonstate.com\)](https://www.choosewashingtonstate.com)

² <https://www.eesi.org/papers/view/fact-sheet-the-growth-in-greenhouse-gas-emissions-from-commercial-aviation>

Aviation is one of the most challenging transportation sectors to convert to alternative fuel technologies (such as electric battery or hydrogen fuel cells) in the next two to three decades; as such, incentivizes for SAF – a “drop in” fuel that can be used in existing aviation technologies - will bear both near-term and continued benefits well into the future.

For these reasons, we recommend that Ecology consider and adopt the following in the final Clean Fuel Program rulemaking:

- (1) Remove any barriers preventing biomethane from qualifying as a feedstock for producing renewable diesel (RD) and alternative jet fuel. Specifically, we ask that Ecology recognize “book-and-claim” opportunities for RD and alternative jet fuel similar to the treatment of biomethane as a feedstock for hydrogen production.
- (2) Allow Tier 2 fuel applications for RD and alternative jet fuel as soon as the Clean Fuels Program is implemented.
- (3) Adopt a credit multiplier awarding additional credits for alternative jet fuel delivered to the Washington market.

Additional details on these concepts are provided below.

(1) Facilitate the use of biomethane as a feedstock for renewable diesel and alternative jet fuel production

Alternative jet fuel has the potential to significantly reduce emissions from aviation, by 80% or more, especially when considering the untapped potential of Washington state sources of biomethane (renewable natural gas). SkyNRG Americas and its production technology partners can convert methane to RD and alternative jet fuel, thus realizing multiple benefits:

1. Increased use of biomethane will incentivize the capture and re-purposes of one of the most potent greenhouse gases—methane. Currently biomethane resources are largely untapped in the US.³ Unlike food or feed crops that raise the specter of a ‘food vs fuel’ competition, biomethane is a waste-based feedstock with zero downsides and significant scaling potential
2. Washington State in particular has significant sources of untapped biomethane from agricultural and animal waste streams. This provides environmental opportunities to work with local stakeholders to capture the economic and climate benefits of biomethane within Washington, thus further enabling the state’s efforts to achieve its climate objectives by reducing fugitive methane emissions and re-utilizing biomethane for beneficial purposes.
3. Biomethane can offer low carbon intensity (CI) scores which translate into very low CI or even carbon negative alternative jet fuel. This is unique to biomethane as a feedstock for the production of transportation fuels due to negative CI scores of biomethane from dairy and livestock manure under currently used CI models.

The aforementioned benefits of biomethane are dependent on a logical regulatory framework. The U.S. biomethane industry has evolved with existing regulatory programs that reasonably recognize that most renewable fuel producers cannot co-locate with sources of biomethane sources. To accommodate this challenge, existing regulatory programs allow for “book-and-claim” of biomethane, meaning that

³ Based on internal analysis of data from ICF compiled for US DOE’s Billion Ton Report, EPA’s LMOP database, USDA’s livestock inventory, AgStar Project Database, Bioenergy Knowledge Discovery Framework--In 2020, US RNG capacity was ~59 trillion BTU/year. By 2040 US RNG potential capacity could reach 6,545 trillion BTU/year.

MMBtus of biomethane injected into a pipeline at one location can be counted as withdrawn at another (as long as there is a traceable interconnected pipeline system between the two points).

SkyNRG Americas believes that the use of biomethane via book-and-claim as a feedstock to produce alternative jet fuel is one of the most sustainable and scalable solutions to help meet Washington's goals to decarbonize the aviation sector. Utilizing biomethane on a book and claim basis and by combining the technologies of our partners, SkyNRG Americas plans to reform methane into syngas (carbon monoxide and hydrogen), convert that syngas into ethanol, and utilize the Alcohol to Jet technology created by Pacific Northwest National Laboratory⁴ to produce alternative jet fuel and renewable diesel.

Currently the Clean Fuels Program proposes to recognize book-and-claim accounting for biomethane as an eligible feedstock to produce transportation fuels such as CNG, LNG, L-CNG as well as a feedstock for hydrogen production. We believe that adding book-and-claim options for biomethane as a feedstock for RD and alternative jet fuel production, similar to the treatment of biomethane as a feedstock for hydrogen production, is a feasible approach as outlined below:

*WAC 173-424-610 (9)(g)(iii)(C)(II) For biomethane injected into a natural gas common carrier pipeline, RTCs from a recognized renewable thermal tracking system are required to be retired and used instead of an attestation and the specific volume of biomethane claimed as being used in the fuel production process must have been injected into the pipeline in the current or prior quarter as the fuel is being produced. Biomethane can only be claimed in this manner in a fuel pathway application as the feedstock for CNG, LNG, L-CNG or **[for renewable diesel, alternative jet fuel or]** hydrogen production, and cannot be claimed as an energy source for another fuel production process.*

We believe that the existing verification methodologies for book-and-claim opportunities (for hydrogen production and CNG/LNG) will translate closely to biomethane applied via book-and-claim as a feedstock for the production of alternative jet fuel and renewable diesel.

(2) Allowing Tier 2 fuel applications as soon as the Clean Fuels Program is implemented

To ensure that the Clean Fuels Program effectively incentivizes alternative jet fuel in the aviation sector and creates an opportunity to begin commercial scale adoption of alternative jet fuel in the state in a timely manner, we recommend that Ecology begin allowing Tier 2 fuel applications as soon as the Clean Fuels Program is implemented. Producers should not first have to apply through another jurisdiction (such as California), which could delay implementation of a Washington Clean Fuel Program pathway for 12-to-18 months and subjugate the deployment of low carbon alternative fuels in Washington to the availability/resources of another state. Making alternative jet fuels and RD eligible to apply for a Tier 2 pathway from Day 1 of the program will support and enable in-state alternative jet fuel production to begin development earlier, which could then accelerate the Clean Fuels Program towards meeting the in-state production requirement of at least 60 million gallons.

⁴ <https://www.pnnl.gov/aviation-biofuels>

(3) Multiplier for alternative jet fuel credits

We recommend that the rule include a multiplier for alternative jet fuel credits. Such a policy would be consistent with the European Union's renewable energy directive.⁵

We believe that multipliers will be beneficial for the following reasons:

- A multiplier of 1.3 or higher will provide an incentive for the aviation industry to use alternative jet fuel as the associated credit return will be greater
- The increased demand for alternative jet fuel will provide the impetus for the SAF industry to invest in technological advancement and expansion in the state that focus on this hard to decarbonize sector
- Multipliers will not add additional cost to the Department of Ecology or to the clean fuels program

We acknowledge that this approach would mean the overall program could have less fuel replacement. However, given the nascency of the SAF market and the potential for a very low carbon alternative jet fuel from biomethane, we believe that in the short term this solution will stimulate fuel use effectively and accelerate the potential for in state production facilities to be built out. It can also be a provisional measure with incentives declining over time as the volume of fuels used increases. To combat this potential effect, we recommend that the multiplier for alternative jet fuel be stepped down beginning in 2030 and declining over several years. We would welcome the opportunity to engage with Ecology staff further on this subject.

Thank you again for the opportunity to offer comments on the Clean Fuels Program. We look forward to working with the Department of Ecology to make the clean fuels program a success.

Sincerely,



John Plaza
President & CEO
SkyNRG Americas, Inc

⁵ [An assessment of the policy options for driving sustainable aviation fuels in the European Union \(theicct.org\)](https://theicct.org)