Cascadians for Clean Air and Water (CCAW!) (peter riggs)

Thank you for the opportunity to comment.

CCAW members are not familiar with any significant breakthroughs in SAF feedstock availability, conversion pathway efficiencies, or a narrowing of the cost differential with fossil jet fuel. Little has changed since 2020 when the Port of Seattle and WSU considered these quesitons. Three fundamental sustainability constraints are still in place:

- Almost all current Fats, Oils and Grease (FOG) feedstocks in the region are spoken for under long-term contracts.
- Today there is even more direct mobilization of soy and palm oil for 'renewable' diesel, creating a tension with acreage for food production.
- The mobilization of logging slash/forest residues for processing is both ecologically damaging and prohibitively expensive (3-5x higher to create a liquid biofuel).

Please sees our full comments below. Many thanks again for this opportunity.

Questions and Rationale– evaluating Sustainable Aviation Fuels in WA

Submitted by Cascadians for Clean Air and Water (CCAW!)

We thank the Department of Ecology for the opportunity to comment on its scoping project evaluating the environmental impacts of Sustainable Aviation Fuels, with the intention of creating a programmatic environmental impact statement (PEIS) that would generally cover future projects associated with SAF development.

We have grouped our questions according to the headings below. There is an *a priori* question that our group wants to pose because some of these issues have already been addressed in previous work conducted by the Port of Seattle and Washington State University. Thus our question – what has changed since 2020? Are there economic or technological 'breakthroughs' that create a more favorable picture for SAF? We don't see it – but we would be pleased if Ecology could articulate how the landscape looks different now. In our view, three fundamental sustainability constraints are still in place:

- Almost all current Fats, Oils and Grease (FOG) feedstocks in the region are spoken for under long-term contracts. The Port of Seattle / WSU study notes that an increase in hydroprocessing of esters and fatty acids would require importing feedstock from other regions. This is not a sustainable economic development strategy for the state.
- Today there is even more direct mobilization of soy and palm oil for 'renewable' diesel. Other pathways similarly reliant on crop-based feedstocks create a fundamental tension with acreage for food production.
- The mobilization of logging slash/forest residues for processing is both ecologically damaging and prohibitively expensive (3-5x higher to create a liquid biofuel). Relying on whole trees does not substantially improve efficiencies but would create intense conflicts with existing industries. Forest damage + short residency times for carbon embedded in liquid fuel processing would likely move Washington away from its climate action plan goals, with adverse impacts on both mitigation and adaptation.

Prices for all feedstock+conversion pathway combinations to produce SAF remain much higher than that of conventional jet fuel. Knowing that is the case, CCAW! would be more interested in a Scoping that focuses on a) truly next-generation technologies; b) the potentials of electrification pathways within the transport sector; and c) approaches to *reducing overall demand* for aviation fuels.

Outside of the HEFA market, which is based on a small volume of high-lipid wastes, the economics of other feedstocks look terrible – in two different ways. First, subsi-dizing solid and liquid energy fuel manufacture has constantly driven production toward competition with food and maintaining healthy forests – creating very bad 'externalities' in terms of foregone food production (or new acreage cleared in the tropics to accommodate that production) and intensive logging here at home. Second, there is often confusion about the differences between 'fuel sustainability', modeled in these types of exercise around CO_2e emission metrics; and *feedstock sustainability,* which requires a more serious consideration of economic drivers, transport costs, land-use tradeoffs, and product substitutions. To the extent that Ecology focuses on 'conventional' SAF pathways, that focus should be on the availability and sustainability of feedstocks that are not already being utilized in our region. In particular, Ecology should evaluate the 'highest and best use' of woody biomass for climate mitigation purposes – which we feel is unlikely to be in the form of a liquid fuel.

CCAW! hopes for a more general consideration across all state agencies of the relative costs and benefits associated with subsidizing biomass pellet production and liquid biofuel production. Big biomass is clearly a 'false solution' in the energy sector. We have reason to suspect that the focus on liquid biofuels, and on feedstocks with important alternative uses, may be a false solution in the transport sector. Most importantly, we believe that there are much more pressing and cost-effective approaches to mitigating climate change and reducing our emissions profiles in the state. We touch on all of these concerns in our questions.

Types of Feedstocks

- What are the specific feedstocks to be considered?
- What are the proposed categories of 'woody biomass' feedstocks to be considered? (eg., will slash, chips, dedicated harvests including whole trees, horticulture residues, etc., be separated out or lumped into one big category? How will Ecology define the use of forest-derived materials in 'after-market' categories (residues))?
- Will Ecology attempt to evaluate feedstocks from the "highest and best use" perspective for carbon sequestration, ecological integrity, and regional market sustainability?
- How much oilseed production capacity could be realized in the Northwest without impacting current agricultural production for other crops?
- Will Ecology also be evaluating the economic sustainability of investment in these feedstocks – cost of production, expectations of continued feedstock availability, no competition with existing agriculture?
- Will Ecology include a prohibition on the inclusion of dedicated harvests / whole trees from feedstock consideration?

Pathways to be Considered / Use of 'Transitional approaches'

CCAW! emphasizes that an appropriate Scope would focus primarily on next-generation technologies, electrification pathways, and demand reduction for aviation fuels generally.

- Is Ecology proposing to look at electrification pathways for SAF?
- Will Ecology focus on green hydrogen and ammonia as the most relevant feedstocks?
- Will Ecology rule out pathways involving crop-based biofuels?
- Current processes using woody biomass as a feedstock requires production of a syngas by heating biomass. PM 2.5, carbon monoxide, and other hydrocarbons are released in this process. Is Ecology taking appropriate consideration of the special requirements associated with using woody biomass as a feedstock and in producing a syngas?
- What will be the minimum 'improvement over baseline' of an SAF in terms of its emissions profile? Will Ecology determine that only those SAF feedstock+conver-sion pathways that reduce emissions by more than 50% (as compared to a fossil jet fuel baseline) will be considered a 'sustainable' fuel?
- Scoping must address likely impacts of gasification/pyrolysis byproducts, like fly ash, NOx, SO2 and tar.

We are concerned about the potential build out of liquid fuel infrastructure based on more familiar pathways. In the liquid fuel sector, we have already witnessed the 'lock-in' of a pathway first proposed as a 'transitional fuel': corn ethanol still has a federal mandate for tens of millions of gallons of blended use, despite increasing evidence of its serious harms – and now with increasingly dim prospects for next-generation 'cellulosic' fuels to compete.

Is the programmatic EIS intended to spur innovation, and in what ways?

Lifecycle Assessment

- What models does Ecology plan to use in its GHG / lifecycle emissions assess-ments? We are concerned about potential use of the 'GREET' model due to the model's documented failures in adequately evaluating land use changes.
- The emissions analysis of different feedstock + conversion pathways must include the full lifecycle of products and byproducts as well as the mitigation potential of alternative uses.
- Scoping must address/evaluate energy efficiencies in any industrial process to secure liquid fuel from woody biomass.
- Will Ecology be considering alternative uses in the case of trees and other woody biomass? Alternative climate pathways (such as restoration and regrowth) as a pathway toward lowered emissions?

- The Scope should look seriously at indirect land use change (ILUC) and 'leakage' from the uses of land for fuel feedstocks instead of for regrowing forest or cropland.
- Has Ecology reviewed the work of MIT's John Stermer on liquid biofuel sustainability and lifecycle assessment? (see En-Roads Climate Pathways project: Welcome | MIT Climate Pathways Project | MIT Sloan) This could be a very useful presentation since it allows the user to adjust different parameters in the model to account for different policy, feedstock, or conversion-pathway efficiency changes.

Community Consultation / Behavioral Change

- What plans and recommendations would Ecology make to inform the public regarding proposed biofuel production?
- What components of social impact assessment will be part of the programmatic Environmental Impact Statement?
- Is Ecology defining 'sustainability' in ways mindful of, and directed toward, local / rural economic development? We are particularly concerned about the promises made by industrial pellet producers in the state, regarding projects that have not demonstrated environmental or economic viability elsewhere in this country (see the cases of Drax and Enviva in the American South). What are the implications of this looming demand for wood pellets for SAF development in the state?
- Would Ecology ensure that the potential impacts of solid and liquid biomass fuel demand on water use, home heating with wood, and forest health be communicated to the communities in which these projects plan to locate?
- Sustainable Aviation Fuels still create emissions – perhaps marginally less than fossil fuels, but there is no escaping the fact that flying is an extremely carbon- and energy-intensive form of transport. Is Ecology also committed to seeking ways to reduce flying and thus in that way reduce the climate impact of the aviation sector?

Refinery Conversions for SAF

Some of the high-level concerns associated with the manufacture of SAF through Hydro-treated Vegetable Oil (HVO) processing (i.e. hydrocracking) that need to be evaluated in any Scoping process:

- Air emissions impacts: Air emissions from the manufacture of SAF will vary with the choice of feedstocks, and some feedstocks may result in significant emission increases that will need to be addressed. What are the emissions profiles associated with different feedstocks? How will emissions be impacted by ghis?
- Impact on Washington State transit and electrification policies. Scoping should consider the impact of increased biofuels supply to aviation on transit goals apart from aviation – both in terms of the direct impacts and cumulative impacts together with other planned

and possible refinery biofuels conversions. What is the relationship between the production of 'renewable diesel' and SAF? What are the efficiencies and inefficiencies?

- Transportation impacts of feedstock and fuel products, including prospects and likely impacts of feedstock or refined fuel spills, in both terrestrial and marine environments. Fuel spill risks in marine and terrestrial environments must be fully assessed to quantify the potential impacts of SAF products.
- Process safety risks. Producing biofuels on repurposed crude oil refining equipment requires increased hydrogen throughput, which in turn increases the risk of process upsets. These risks must be evaluated in the Scoping.
- Will Ecology assess fuel production risks, process risks and public health and safety issues at both points of fuel product manufacture as well as refining?
- How much hydrogen is required for making SAF from a feedstock like soy? Where does that hydrogen come from? Scoping must evaluate and accurately estimate the actual refinery GHG emissions from making SAF from HVO processes.
- Refinery site decommissioning and clean up, contrasted with the impacts of the extension of the life of stranded assets when converting fossil fuel infrastructure to biofuel infrastructure. The Scoping should consider the likelihood that making SAF will result in the delay of refineries being decommissioned entirely within a predictable timeframe. Will Ecology evaluate the impacts of decommissioning in the context of refinery conversions and the means to mitigate these impacts?
- Scoping must evaluate a suite of alternatives to mitigate the impacts of a pivot to aviation biofuels. What are more low carbon and climate friendly modes of transit besides aviation?
- Impacts on Electrification policies, directly from relying on liquid fuel system and cumulative with other policy mechanisms.
- Will Ecology ensure that a full analysis of the greenhouse gas emissions associated with the refining process for these fuels also be considered?

Thank you for the opportunity to comment. Contact information for those CCAW! members who contributed directly to the preparation of this document:

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