Sustainable Aviation Fuel Updates and Recommendations

(Opportunities for Washington)

Sustainable Aviation Biofuels Work Group

December 2022 Final Report

Prepared for: The Washington State Governor and the Washington State Legislature

Prepared by: Washington State University Office of National Partnerships

WASHINGTON STATE UNIVERSITY

December 1, 2022

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DISCLAIMER

The Sustainable Aviation Biofuels Work group was convened by the Washington State University, Office of National Laboratory Partnerships (formerly the Office of Clean Technology) as directed by Section 607(18) of the Engrossed Substitute Senate Bill 5092, Operating Budget, effective May 18, 2021. The information and policy recommendations contained in this report are intended to reflect the statements, opinions, and decisions of the Work Group as a whole, and do not necessarily reflect the position of member organizations or the university.

The WSU Office of National Laboratory Partnerships manages the institutional coordination between WSU and federal agency national laboratories. WSU has its largest relationship with Pacific Northwest National Laboratory (PNNL). WSU/PNNL have three joint research institutes – the Bioproducts Institute, Advanced Grid Institute, and Nuclear Science and Technology Institute- which support over 50 faculty-level joint appointments, and over 40 PhD students.

Sustainable Aviation Biofuels Work Group Facilitation team:

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- Department of Commerce
- Department of Ecology
- Department of Transportation
- King County Solid Waste Division
- U.S. Department of Agriculture

Aircraft Manufacturer
- Boeing Commercial Airplanes

Airlines
- Alaska Airlines
- Southwest Airlines

Airports & Ports
- Port of Seattle - Seattle Tacoma International Airport
- Port of Longview

Environmental/NGOs
- Clean Energy Transition Institute
- Climate Solutions

Feedstock Suppliers (Potential)
- International Paper
- Weyerhaeuser
- King County Solid Waste Division

Fuel Producers/Suppliers
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- Gevo
- Chevron-Renewable Energy Group (REG)
- Neste
- Northwest Advanced Bio-Fuel
- Par Pacific
- SkyNRG America
- World Energy

National Laboratories
- Pacific Northwest National Laboratory/WSU Bioproducts Institute

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- Commercial Aviation Alternative Fuels Initiative (CAAFI)

Potential Feedstock Suppliers
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- Weyerhaeuser
- King County Solid Waste Division

Trade Organizations/Market Development
- Low Carbon Fuels Coalition
- Clean Fuels America Alliance
- Molecule

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Representatives
- Mary Dye, 9th District
- Joe Fitzgibbon, 34th District
- Vandana Slatter, 48th District

Senators
- Andy Billig, 3rd District, Work Group Chair
- Mark Schloesler, 9th District
- Jeff Wilson, 19th District

Several legislative staff members also attended the meeting

Observers*
- Amazon
- Propeller Aviation (Paine Field FBO)
- Sasol
- Sustainable Aviation Technologies & Energies (SATE) Innovation Cluster

*Observers attended the October 14, 2022 work group meeting, but have not previously participated or contributed to the group.

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Sustainable Aviation Biofuels Work Group, 2021-2022 Status

The Sustainable Aviation Biofuels Work Group seeks to further the development of sustainable aviation fuel as a productive industry in Washington. Through Engrossed Substitute Senate Bill 5092, the Legislature reestablished the Work Group and appointed the Washington State University Office of Clean Technology, now the Office of National Laboratory Partnerships, as the convening body. The Work Group is directed to provide a report, including any pertinent recommendations, to the governor and appropriate committees of the legislature by December 1, 2022.

This report builds on the Work Group's 2020 report, Sustainable Aviation Fuels-Opportunities for Washington,[1] previous statewide and regional partnerships,[2] which documents the need for, and challenges with, siting and funding sustainable aviation fuel production facilities. It also provides updates on national and international developments that support sustainable aviation fuel development and deployment. A separate statement prepared by Senator Mark Schoesler is provided in Appendix 1.

The facilitation team convened the Work Group to share information and updates, identify opportunities, and develop consensus recommendations. The Work Group met virtually in September 2021 and June 2022 and held a hybrid meeting in October 2022. During the October 2022 meeting, the Work Group discussed the outline and policy recommendations for this report.

[1] https://s3.wp.wsu.edu/uploads/sites/2180/2020/11/SABWG-Final-Report-November-2020-compressed.pdf

[2] Sustainable Aviation Fuels Northwest, www.climatesolutions.org/sites/default/files/uploads/safn_2011report.pdf; Northwest Advanced Renewables Alliance, nararenewables.org; and Aviation Biofuels Work Group, www.climatesolutions.org/sites/default/files/uploads/pdf/aviation_biofuels_work_group_2012_update_1.pdf
Potential Northwest Regional Feedstock and Production of Sustainable Aviation Fuel, https://www.portseattle.org/sites/default/files/2020-08/PofSeattleWSU2019updated_appendix.pdf

I. Executive Summary

The Sustainable Aviation Biofuels Work Group (SABWG) applauds the legislature for passing the Clean Fuels Program (CFP). This foundational legislation was a necessary first step in enabling a sustainable aviation fuel (SAF) industry to flourish in Washington. With the adoption of the Washington CFP, all U.S. West Coast states and British Columbia have clean fuels programs. There is an opportunity to align Washington's SAF and broader clean fuel policy with these jurisdictions which will help drive low carbon fuel deployment in the West. This is supported by the recent Statement of Cooperation signed by the governors of Washington, Oregon, California, and the Premier of British Columbia on October 6, 2022, recommitting the region to climate action.[3]

Washington is a global leader in the aerospace industry and has the opportunity to lead in aviation decarbonization efforts. Prominent Washington aviation-related businesses and large multi-national companies support SAF development in the state. To be a leader, stable long-term policy framework and incentives are necessary to attract and retain a robust SAF industry and to attract other companies at the leading edge of aviation decarbonization technologies.

On the national level, the U.S. government has taken bold steps in the past two years to promote clean energy programs and sustainable aviation fuel development and deployment. On September 9, 2021, the White House announced the *Sustainable Aviation Fuel (SAF) Grand Challenge*[4] to accelerate the development and deployment of a sufficient supply of sustainable aviation fuels (SAF) to meet 100% of the domestic aviation fuel demand by 2050 while achieving a minimum of a 50% reduction in life cycle greenhouse gas emissions compared to conventional fuel. The SAF Grand Challenge sets U.S. SAF production goals of 3 billion gallons per year by 2030 and 35 billion gallons per year by 2050. The U.S. Departments of Transportation, Energy and Agriculture released the *SAF Grand Challenge Roadmap: Flight Plan for Sustainable Aviation Fuel*[5] on September 23, 2022, which details action areas and work streams to achieve the Grand Challenge's aggressive SAF goals.

The Federal Aviation Administration (FAA) published the *United States Aviation Climate Action Plan*[6] on November 9, 2021, which describes a whole-of-government approach for achieving net-zero emissions in the aviation sector by 2050. The Action Plan details the emission reduction contributions of aircraft fleet renewal, integration of new technologies, improved operational efficiency and the use of SAF.

The Inflation Reduction Act[7] (IRA), passed on August 7, 2022, provides national policy to support the transition to clean energy. The IRA contains three specific SAF provisions and other clean energy credits that may indirectly support SAF production. Two of the IRA credits, the SAF Blenders Tax Credit (BTC) and the Clean Fuel Production Credit (CFPC) expire in 2024 and 2027, respectively. Because there are no existing SAF facilities in Washington and because it will take 5-7 years to produce SAF once a new project in announced, it is unlikely that Washington business will benefit from these credits. Existing biofuel production and blending facilities in Washington will be eligible for credits.

The IRA Section 40007 establishes competitive grant programs for eligible entities to carry out projects located in the United States that produce, transport, blend, or store sustainable aviation fuel ($244.5M), or develop, demonstrate, or apply low-emission aviation technologies ($46.5M). Washington companies are

[3] https://www.governor.wa.gov/news-media/west-coast-leaders-double-down-bold-actions-fight-climate-crisis
[4] FACT SHEET: Biden Administration Advances the Future of Sustainable Fuels in American Aviation - The White House
[5] https://www.energy.gov/sites/default/files/2022-09/beto-saf-gc-roadmap-report-sept-2022.pdf
[6] https://www.faa.gov/sites/faa.gov/files/2021-11/Aviation_Climate_Action_Plan.pdf
[7] Text - H.R.5376 - 117th Congress (2021-2022): Inflation Reduction Act of 2022 | Congress.gov | Library of Congress

well positioned to submit strong grant proposals for both SAF and low-emission technologies. Note that U.S. Department of Transportation, the granting agency, typically requires the grantee to provide matching funds up to 100%. The State, through the Clean Energy Fund or other funding mechanism, could provide necessary matching funds if a Washington company or consortium were awarded an IRA 40007 grant. It should be noted that permitting challenges will continue to be an obstacle to siting and construction of any new SAF production facilities and associated liquid fuel infrastructure, even if a Washington company or consortium were to be awarded grant funding.

Globally, the International Civil Aviation Organization (ICAO) 41st Assembly, in October 2022, adopted a long-term aspirational goal (LTAG) for net-zero aviation emissions by 2050. The accompanying *Report on the Feasibility of a Long-Term Aspirational Goal (LTAG) for International Civil Aviation CO2 Reductions*[8] documents that SAF will be the primary mechanism to achieve emission reductions by mid-century, even under the most aggressive scenario for integrating new technologies, such as electric, hybrid-electric and hydrogen powered aircraft, into the fleet. The World Bank Group's 2022 publication "The Role of Sustainable Aviation Fuel in Decarbonizing Air Transport, states that "a comprehensive public policy and regulatory framework should define production incentives needed to increase supply and lower costs, while incentivizing SAF usage. To be effective, high-level policy commitments must be accompanied by the development of financing schemes (including guarantees instruments), easement of environmental licensing, and promotion of exports to meet the growing demand for SAF."[9]

The European Parliament, on July 7, 2022, adopted a position in support of the ReFuelEU aviation rules[10] under *Fit for 55* -the EU's plan of reducing net greenhouse gas emissions by at least 55% by 2030. The proposed aviation rules will require 2% SAF use in 2025, increasing to 37% in 2040 and 85% in 2050. European Union policy, for the most part, excludes agricultural feedstocks and favors power-to-liquid (PtL) technologies. The final rules are still being negotiated, but some level of mandate is expected, including substantial penalties for non-compliance. Such mandates create a competitive environment for the limited volume of fuel available. The mandate will guarantee EU demand, especially for PtL fuels, and put pressure on SAF producers to sell into that market. This could create an export opportunity for Washington producers of PtL fuels. Without premium policy incentives, however, Washington, and other jurisdictions, may find it difficult to attract SAF supply for in-state use.

[8] https://www.icao.int/environmental-protection/LTAG/Documents/REPORT%20ON%20THE%20FEASIBILITY%20OF%20A%20LONG-TERM%20ASPIRATIONAL%20GOAL_en.pdf
[9] https://documents1.worldbank.org/curated/en/099845010172249006/pdf/P17486308a996a08b098a10d078d421c6a3.pdf
[10] EUR-Lex - 52021PC0561 - EN - EUR-Lex (europa.eu)

II. Washington Opportunities

Washington has set aggressive goals to reduce overall carbon emissions to 45% below 1990 levels by 2030, 70% by 2040 and 95% by 2050 and net zero GHG emission.[11] Meeting these goals will require adoption of new technologies throughout the energy sector. Some transportation sectors, such as cars and light duty trucks, may easily transition to electric or hydrogen power in the short- to mid-term. **Aviation is one of the most difficult sectors to decarbonize and will require energy-dense liquid fuels for decades to come, particularly for long-haul and cargo operations.**[12] Arguably, low-carbon SAFs are the only near- to mid-term option for reducing aviation carbon emissions.

Washington has the volume demand for SAF, and its integration into the jet fuel supply will help the state meets its carbon reduction goals. The Port of Seattle signaled additional market demand by setting a goal to power every flight fueled at the Seattle-Tacoma International Airport with at least a 10% blend of SAF by 2028.[13] The state also has a deep and robust liquid fuel manufacturing and distribution history. Some current capacity could be retrofitted or new capacity built to produce SAF. The legislature has the opportunity today to adopt strong SAF policy incentives to drive in-state SAF use and production.

Aviation and aerospace industries in the state recognize that integration of electric, hydro-electric, and hydrogen-powered aircraft into the statewide, national, and international fleets will be important for carbon reduction long-term. Such new technologies and their supporting infrastructure likely will not be available at scale until 2035 and beyond. Currently, battery technology limits electric aircraft to short distances with only a few passengers. Displacing conventional regional aircraft with electric aircraft will not significantly reduce aviation emissions. Although there are a larger number of regional flights in the state, they burn appreciably less fuel than single-aisle and wide-body aircraft and, therefore, have comparatively minimal contribution to the state's overall aviation carbon emissions.[14] In contrast to SAF, the transition to small aircraft with new energy sources, including electricity and hydrogen, will require substantial infrastructure investments for energy delivery and storage at airports.

In February 2022, to promote Washington businesses working on aviation decarbonization, the Department of Commerce provided grant funding to stand up the Sustainable Aviation Technologies and Energies (SATE) Cluster Innovation Accelerator Program. SATE's mission is to advance aviation's global fight against climate change by leading the research, development and deployment of sustainable aviation fuels, electrified aircraft, and hydrogen-powered aviation. SATE member companies recognize that sustainable liquid fuels, new propulsion technologies and improved operational efficiencies all are necessary to meet aviation's decarbonization goals.

Engagement with State Agencies

The Sustainable Aviation Biofuels Work Group has increased its engagement with state agencies working toward aviation decarbonization to ensure that we are all aligned on the direction and needs to support SAF development in the state. Below are statements from the Department of Transportation Aviation Division and the Department of Commerce Aviation Sector reiterating the importance of this work group.

[11] apps.leg.wa.gov/rcw/default.aspx?cite=70A.45.020

[12] Waypoint 2050: Balancing growth in connectivity with comprehensive global air transport response to the climate emergency, Air Transport Action Group, September 2020, https://aviationbenefits.org/downloads/waypoint-2050/

[13] https://www.portseattle.org/sites/default/files/2019-05/POS_SAF_1Pgr_181009.pdf

[14] Graver, B., Rutherford, D., Zheng S., CO2 Emissi ons from Commercial Aviation: 2013, 2018 and 2019, International Council on Clean Transportation, October 2020, https://theicct.org/sites/default/files/publications/CO2-commercial-aviation-oct2020.pdf

David Fleckenstein, Director, Aviation Division, Washington Department of Transportation stated:

"Washington State is working to address the aviation capacity needs to meet the projected demands for commercial air service. Within the Puget Sound Area, the demand is anticipated to double by year 2050 from the high volume of operations experienced in 2019 for air passenger service and air cargo operations. This equates to an increase of more than 50 million annual passengers. Doubling the volume of aircraft operations based on today's airplane technology is problematic given the corresponding impacts on the environment stemming from aircraft engine emissions. Large aircraft in production today for airline use will be dependent on hydrocarbon fuel for years to come. Hence, the state is faced with the dilemma of meeting the demand that supports economic growth while simultaneously trying to reduce transportation activities that contribute to greenhouse gas emissions.

The only viably recognized bridging strategy to significantly reduce aircraft emissions (while advancements in alternative propulsion systems continues) is through the use of sustainable aviation fuel. Hence, the efforts of the Sustainable Aviation Biofuels Work Group are integral to the efforts to increase aviation capacity in an environmentally responsible way. Surveys conducted by WSDOT regarding the need to address aviation capacity supports the use and integration of SAF. Through the survey findings, those that responded acknowledge the need to address aviation capacity needs but want the state to do so responsibly with the environment in mind.

To meet both the demand and address the environmental challenges through the use of SAF, Washington needs to produce and distribute enough SAF to offset the emissions associated with the increase in airline operations. At the national level, SAF production and distribution needs to be wide enough to support the airline hubs across the United States for the majority of arriving and departing aircraft to operate on SAF, thus maximizing the opportunity to reduce emissions."

Robin Toth, Department of Commerce, Aviation Sector Lead stated:

"The Department of Commerce is tasked with driving economic development for the state, and we support existing and new to Washington companies that are considering either a new location or expansion of an existing location. As the sector lead for the aviation and aerospace sector, I am involved in supporting these companies in their search for a location and in developing a slate of tax considerations/incentives that could bring their project to our state.

The issue of sustainable aviation fuel development is not just a Washington or U.S. concern. This is a global issue that is impacting the next generation of air travel and the development of new aircraft. During our visit to the Farnborough Air Show during summer 2022, we met with more than five global companies that are developing new SAF products and looking for a US location for their development project. They have followed up with onsite visits to learn more about the supporting infrastructure and policies that would be beneficial to a SAF production site in Washington.

The work of the Sustainable Aviation Biofuels Working Group places our state in an enviable global position. With the feedstock availability, the industrial aviation expertise and the efforts of the members of the SABWG, we are well positioned to win some or all of these projects. We rely on the subject matter experts of the working group to assist in the education of our clients, ensuring them that we have the knowledge, expertise and supporting infrastructure to help their projects be as successful as possible. Support to these companies is also provided through our partnership with WSDOT Aviation."

III. Federal Policy and Incentive Update

Sustainable Aviation Fuel (SAF) Grand Challenge

The U.S. government has taken bold steps to promote clean energy programs that support energy independence, enhance energy security, create jobs in agriculture, infrastructure, production, research and development, and support a just transition to a low carbon future. On September 9, 2021, the White House announced the *Sustainable Aviation Fuel Grand Challenge*[15] to accelerate the development and deployment of a sufficient supply of sustainable aviation fuels (SAF) to meet 100% of the domestic aviation fuel demand by 2050 while achieving a minimum of a 50% reduction in life cycle greenhouse gas emissions compared to conventional fuel. The SAF Grand Challenge sets U.S. domestic production goals of 3 billion gallons per year by 2030 and 35 billion gallons per year by 2050. The Grand Challenge is a memorandum of understanding between the Department of Transportation (DOT) Federal Aviation Administration (FAA), Department of Energy (DOE) and the Department of Agriculture (USDA) to work across the whole-of-government to accelerate SAF production and use. Environmental responsibility, equity and economic sensibility go hand in hand with this effort. Although led by the FAA, DOE and USDA, the Environmental Protection Agency (EPA), NASA and the Department of Defense (DOD) are key partners.

With input from industry and academia, the agencies developed the *SAF Grand Challenge Roadmap: Flight Plan for Sustainable Aviation Fuel*[16] which was released on September 23, 2022, at the Global Clean Energy Action Forum, Clean Energy Ministerials meeting in Pittsburgh, PA. It lays out six key action areas and associated workstreams necessary to meet the SAF Grand Challenge objectives of expanding the SAF supply and end use, reducing the cost of SAF and enhancing the sustainability of SAF. The action areas are described below and also shown graphically in Figure 1.

1. Feedstock Innovation
2. Conversion Technology and Innovation
3. Building Supply Chains
4. Policy and Valuation Analysis
5. Enabling End Use
6. Communication Progress and Building Support.
7. U.S. Aviation Climate Action Plan

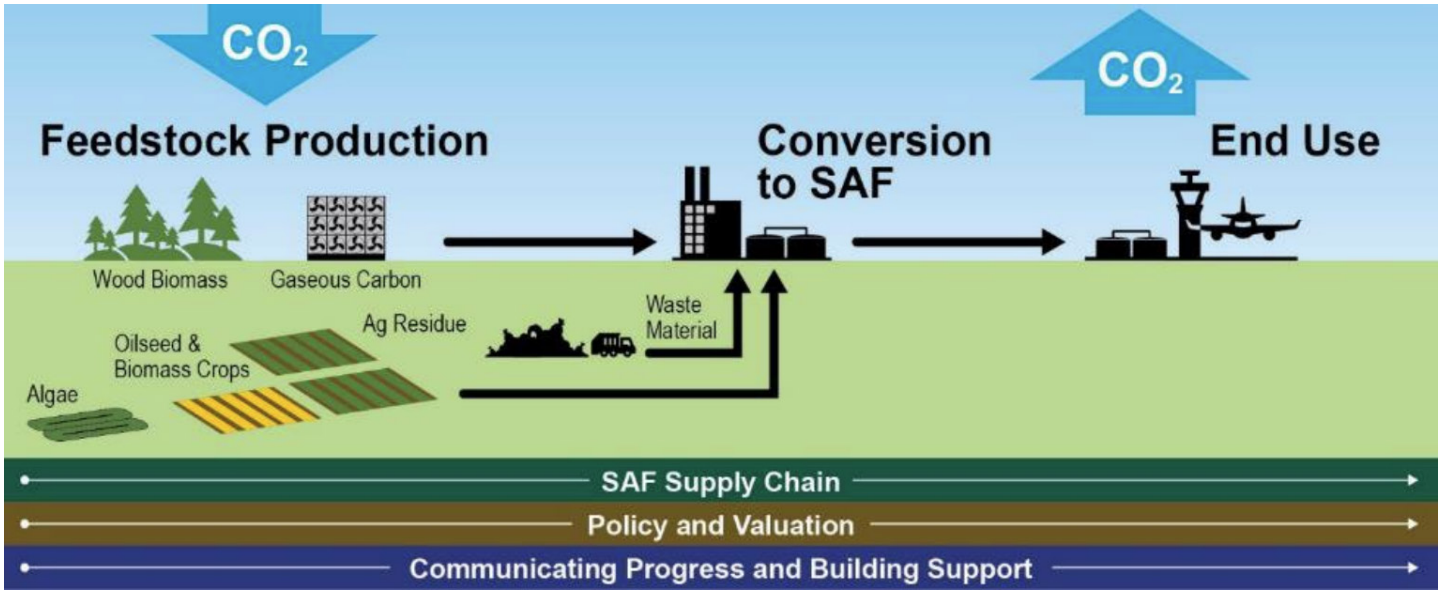

Figure 1. Graphic Representation of the SAF Grand Challenge Roadmap (excerpted from the SAF Grand Challenge Roadmap)

[15] FACT SHEET: Biden Administration Advances the Future of Sustainable Fuels in American Aviation - The White House

[16] https://www.energy.gov/sites/default/files/2022-09/beto-saf-gc-roadmap-report-sept-2022.pdf

PHOTO CREDIT: Cover photo of the SAF Grand Challenge Roadmap: Flight Plant for Sustainable Aviation Fuel

U.S. Aviation Climate Action Plan

The U.S. Climate Action Plan, published on November 9, 2021, sets ambitious goals for reducing aviation specific CO_2 emissions and offers "a suite of policy measures" that will drive change across the U.S. aviation industry including airlines, airports, aircraft, engine and component manufactures/suppliers, passengers, and energy companies.[17] The plan envisions that emission reductions will be achieved through replacement of older in-use aircraft with new more fuel-efficient aircraft, introduction of new technologies and propulsion systems, improvements in the National Airspace System that optimize routing, and production of sustainable aviation fuels. Figure 2 shows the estimated CO_2 emission reductions realized by deployment of each of these measures. The report also states: "Simply put, there is no realistic option that could replace liquid fuels in the commercial aircraft fleet in the coming decades. Even with significant investments in electrified aircraft propulsion technology and/or cryogenic hydrogen powered aircraft, it will take many years for technology to mature to the point of adoption, leaving the aviation industry dependent upon liquid hydrocarbon fuels for the foreseeable future. While there may be a role for hydrogen on shorter-range flights and more broadly in the years beyond 2050, we do not expect hydrogen-powered aircraft to make a significant contribution toward achieving net-zero aviation emissions by 2050."

Inflation Reduction Act

The Inflation Reduction Act[18] (HR 5376) provides national policy to support the transition to a clean energy economy. The IRA contains three key provisions that specifically support SAF production:

- Sustainable Aviation Fuel (SAF) Blenders Tax Credit (BTC)- Effective 2023-2024
  - Under section 40A of the U.S. tax code, extends the $1.00/gallon credit for each gallon of biodiesel or renewable diesel blended in the U.S. diesel pool without regard for life cycle greenhouse gas emissions.
  - Adds a SAF Blenders Tax Credit, under section 40B, of $1.25/gallon provided that the SAF has a life cycle greenhouse gas reduction of at least 50% compared to petroleum jet fuel.

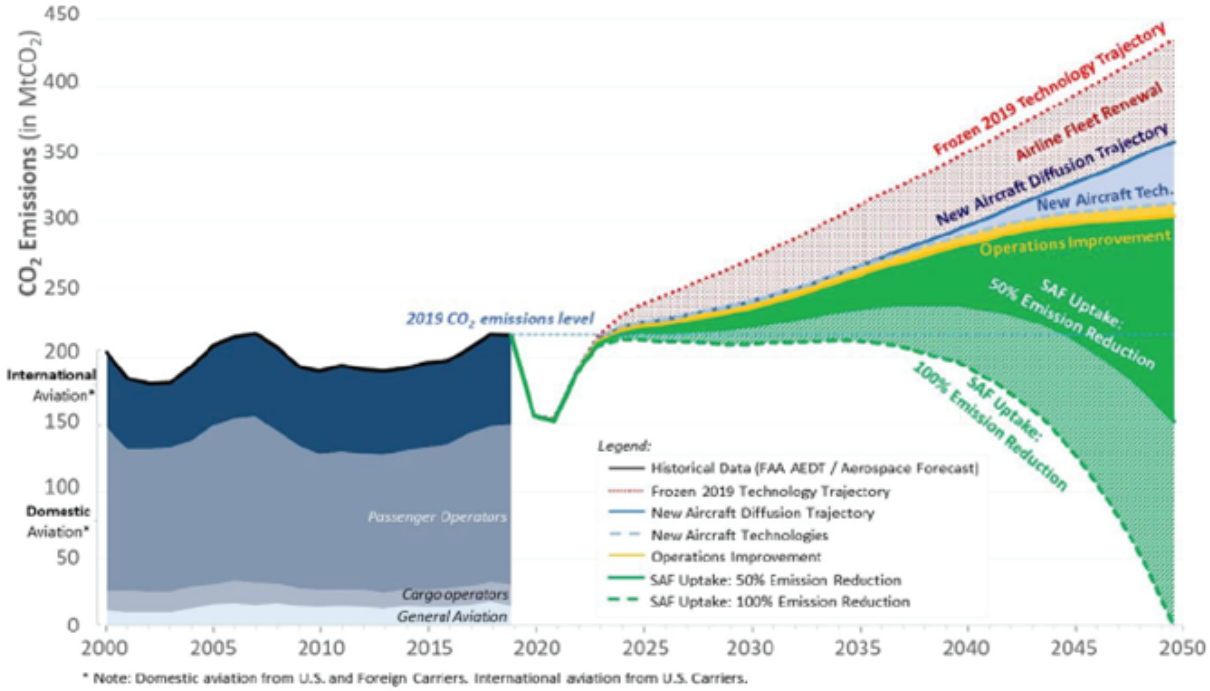

Figure 2. Analysis of Future Domestic and International Aviation CO2 Emissions (Note that this analysis was conducted by BlueSky, LLC leveraging FAA Aerospace Forecast and R&D efforts from the FAA Office of Environment & Energy (AEE) regarding CO2 emissions contributions from aircraft technology, operational improvements, and SAF.)

[17] 2021 United States Aviation Climate Action Plan (faa.gov)

[18] https://www.congress.gov/bill/117th-congress/house-bill/5376/text

The regulation incentivizes further carbon reduction by providing and additional $0.01/gallon credit for each percentage point above the 50% reduction up to a maximum of $1.75/gallon.

- Clean Fuel Production Credit (CFPC)- Effective 2025-2027
  - Technology neutral and provides a clean fuel production credit, under section 45Z, of up to $1.00/gallon for transportation fuel and up to $1.75/gallon for SAF. The adjustment for SAF is based on the emission reduction factors. The maximum credit requires that prevailing wage and apprenticeship requirements are met.
    - SAF and other transportation fuels now qualify under the CFPC if emissions are no greater than 50 kg CO2e/mmbtu.

- Alternative Fuel and Low-Emission Aviation Technology Program
  - Provides grants until 2026, for projects in the U.S. that produce, transport, blend, or store sustainable aviation fuel, or develop, demonstrate, or apply low-emission aviation technologies.
    - $244,530,000 million for projects relating to production, transportation, blending, or storage of SAF.
    - $46,530,000 million for projects relating to low-emissions aviation technologies.

  - While not specified in the IRA language, Department of Transportation grant funding typically requires the grantee to provide matching funds up to 100% of the grant award. If a Washington company received a grant under this program, the state could provide matching funds through the Clean Energy Fund or other funding mechanism.

Although the IRA provides some policy incentives for SAF production, a recent Barclays Equity Research report states that the "IRA falls short for SAF, but Federal gov't may still have some tricks up its sleeve. While the IRA, in our view, is a good start, it falls short in (i) leveling the playing field between SAF and renewable diesel; and (ii) lacks long-term SAF incentives since direct SAF benefits only extend through 2026 despite advanced SAF facilities requiring 5-7 years to standup…"[19] This analysis helps support the argument that additional federal and state incentives are necessary to support the transition from petroleum-based jet fuel to SAF.

[19] Barclays Sustainable & Thematic Investing: Sustainable Aviation Fuel (SAF), Gov't may have more tricks: SAF Event & Roadmap Highlights, Equity Research, 28 September 2022

IV. U.S. SAF Commercialization Efforts

Many companies have announced commercialization activities in the U.S. to support the SAF Grand Challenge goal of 3 billion gallons by 2030. Some producers are expanding existing facilities or have started construction on new facilities. Only one of the announced facilities, Northwest Advanced Bio-Fuels (NWABF), is in Washington. NWABF is a member of the SABWG and agrees that the policy recommendations, such as those in this report, and other incentives will be necessary to realize production in the state. Other producers include:

- Neste- existing SAF producer is partnering with Marathon Oil to add production in Martinez, CA
- World Energy is expanding its SAF production capacity in Paramount, CA
- Fulcrum Bioenergy is under construction in Sparks, Nevada
- Gevo had a 2022 groundbreaking for a new facility Lake Preston, South Dakota
- LanzaJet is under construction in Soperton, Georgia
- Red Rock Biofuels is under construction, but the project is on hold until 2023- Lakeview, Oregon
- Velosys Bayou Fuels project in design, Natchez, MI
- Other potential U.S. SAF producers include SkyNRG Americas and Alder Fuels. Both companies have indicated their intent to produce SAF in the U.S., but locations have not been announced.

V. International News and Developments

On October 4, 2021, International Air Transport Association (IATA) member airlines, representing 290 airlines globally, committed to net zero emissions by 2050. Based on availability and readiness level of new technologies, IATA predicts that emission reductions to 2050 will be met with 65% SAF, 13% New Technology, Electric & Hydrogen, 3% Infrastructure and Operational Efficiencies, 19% Offsets and Carbon Capture.[20]

The International Civil Aviation Organization (ICAO), at the 41st Assembly in October 2022, adopted a long-term aspiration goal to achieve net zero CO2 emissions by 2050 based on the technological assessment provided in the *Report on the Feasibility of a Long-Term Aspirational Goal (LTAG) for International Civil Aviation CO2 Reductions.*[21]

Sweden and Norway announced modest greenhouse gas reduction mandates for aviation fuel in 2020.[22] On July 7, 2022, the European Parliament, adopted a position in support of the ReFuelEU aviation rules[23] which would require 2% SAF use in 2025, increasing to 37% in 2040 and 85% in 2050. The final rules are still being negotiated, but some level of mandate is expected, including substantial penalties for non-compliance. Such mandates create a competitive environment for the limited volume of SAF available. The EU and Scandinavian mandates will guarantee demand and put pressure on SAF producers to sell into those markets. Without premium policy incentives, Washington, and other jurisdictions, may find it difficult to attract SAF supply for in-state use.

Unlike the U.S., European countries discourage bio-based feedstocks and favor power-to-liquid (PtL) technology as a means to produce low carbon aviation fuels. PtL fuels, if the technology can be developed and scaled, will be made using renewable electricity, carbon dioxide, renewable or green electrolytic hydrogen, and water. Carbon feedstocks will be derived from waste gases or direct air capture. These fuels are a promising alternative and allow for near-zero net greenhouse gas emissions. Any Washington SAF producer, using PtL technology, would have a tremendous export opportunity to the European market, as well as helping Washington meet its own in-state GHG reduction goals.

Other notable publications on the need for SAF to decarbonize aviation include:

- *Sustainability takes off in aviation industry: A blue-print for a shorter runway to net-zero emissions*[24] published by Accenture, a global professional services company, and the Aerospace Industry Association (AIA)
- *Clean Skies for Tomorrow-Sustainable Aviation Fuels- a Pathway to Net-Zero Emissions*,[25] World Economic Forum
- *The Role of Sustainable Aviation Fuel in Decarbonizing Air Transport*,[26] World Bank Group

[20] https://www.iata.org/en/programs/environment/flynetzero/
[21] https://www.icao.int/environmental-protection/Pages/LTAG.aspx
[22] https://uop.honeywell.com/en/industry-solutions/renewable-fuels/aviation-fuel-mandate-taking-effect-in-2021#:~:text=The%20Swedish%20government%20made%20sustainability%20news%20on%20September,and%20gradually%20increasing%20up%20to%2027%25%20in%202030.
[23] EUR-Lex - 52021PC0561 - EN - EUR-Lex (europa.eu)
[24] https://www.accenture.com/_acnmedia/PDF-176/Accenture-Sustainability-Takes-Off-Aviation-Industry.pdf#zoom=40
[25] https://www3.weforum.org/docs/WEF_Clean_Skies_Tomorrow_SAF_Analytics_2020.pdf
[26] https://documents1.worldbank.org/curated/en/099845010172249006/pdf/P17486308a996a08b098a10d078d421c6a3.pdf

VI. Developments in Other States

States across the country have implemented or are considering policy incentives for renewable fuels, which typically include renewable jet fuel production. The Washington Legislature may want to use to these examples inform to inform its SAF policy development.

A few examples include:

Arkansas: Arkansas Alternative Fuels Development Act (Title 15, Chapter 13) to provide capital and operation production incentives for renewable jet production facilities, production incentives for renewable jet fuel feedstock processing facilities, and distribution incentives for renewable jet fuel distribution facilities. Each provided incentive provided grant funding that was capped at a specified dollar amount

California: Sustainable aviation fuels are "opt-in" fuels under the California Low-Carbon Fuel Standard, which means that fuel producers are not obligated to make low carbon jet fuels, but they can receive credits, if they do. In 2022, the California legislature passed AB1322, The Aviation Greenhouse Gas Reduction Plan as an amendment to the California Global Warming Solutions Act of 2006[27]. The plan, which was vetoed by Governor Newsom, would have required the California Air Resources Board (CARB) to develop a plan to reduce aviation greenhouse gas emissions and help the state reach its goal of net-zero greenhouse gas emissions by 2045, including a sustainable fuels target for the aviation sector of at least 20 percent by 2030. It also directed CARB to include "…calculations of the incentive amounts that would be required to encourage airlines to voluntarily use cleaner fuels and selections of funding sources and implementation programs, including new programs developed for the plan, to provide viable incentives to encourage aircraft in the state to use cleaner fuels…" Governor Newsom's veto message stated that "there are existing opportunities for credit generation from sustainable aviation fuels production under the state's Low Carbon Fuel Standard.[28]"

Hawaii: Section 235-110.31 of the Hawaii code a renewable fuels production tax credit for a maximum of five consecutive years (so long as an entity's production is at least 2.5 billion BTUs of renewable fuels per calendar year) in the amount of 20 cents/76,000 BTU, up to a maximum of $3 million per taxable year (with the same annual cap also applying to the total amount allowed among all eligible taxpayers). [NOTE: PTC reinstated, with no expiry date, via SB 2478, which the Governor signed into law in late June 2022]

Kansas: K.S.A. section 74-8949b authorizes the Kansas Development Finance Authority to issue revenue bonds for the purpose of financing the construction or expansion of a biomass-to-energy plant.[29] A biomass-to-energy plant is defined in K.S.A. section 79-32,233 as an industrial process plant located in the state at which biomass is processed to produce annually liquid fuel in a quantity having BTU value equal to or greater than 500,000 gal. of cellulosic alcohol.[30]

Minnesota: Section 41A.16 of the Minnesota code provides an "advanced biofuel production incentive" for in-state facilities that source from Minnesota at least 80% of the biomass used to produce an advanced biofuel, begin production by June 30, 2025, and produce at least 1,500 million BTU of advanced

[27] Bill Text - AB-1322 California Global Warming Solutions Act of 2006: aviation greenhouse gas emissions reduction plan.
[28] https://www.gov.ca.gov/wp-content/uploads/2022/09/AB-1322-VETO.pdf?emrc=7598b6
[29] Available at http://www.kslegislature.org/li/b2019_20/statute/074_000_0000_chapter/074_089_0000_article/074_089_0049b_section/074_089_0049b_k/
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biofuel quarterly,[31] with "advanced biofuel" defined in 41A.15 as a renewable fuel with lifecycle GHG emissions at least 50% lower than baseline lifecycle GHG emissions.

The incentive is $2.1053 per million BTU for advanced biofuel production from cellulosic biomass, and $1.053 per million BTU for production from sugar, starch, oil, or animal fat, with an annual facility maximum and an annual aggregate payment cap. [32]

[31] Available at https://www.revisor.mn.gov/statutes/cite/41A.16

[32] See https://www.mda.state.mn.us/environment-sustainability/advanced-biofuel-production-incentive-program

VII. Recommendations

1. CODE REVISIONS- Definitions

Direct the Department of Commerce to adopt a single definition of "Sustainable Aviation Fuel" or "Alternative Jet Fuel" and revise the appropriate definitions and sections throughout the RCW. Existing rules provide several different definitions. Two examples are provided below.

- RCW 43.180.265 Definition-Aviation biofuels facilities and production-Bond Issuance-Financing Powers. "Aviation biofuels" means fuels for aviation from nonfossil biogenic feedstocks that meet the fuel quality technical standards of the American society for testing materials for aviation fuels and coproducts. (Note that of the American Society for Testing Materials changed its name to ASTM International.)

- WAC 173-424-100(8), Clean Fuel Program Definition- "Alternative jet fuel" means a fuel made from petroleum or nonpetroleum sources that can be blended and used with conventional petroleum jet fuels without the need to modify aircraft engines and existing fuel distribution infrastructure. To generate credits under this CFP, such fuel must have a lower carbon intensity than the applicable annual carbon intensity standard in Table 2 of WAC 173-424-900. Alternative jet fuel includes those jet fuels derived from co-processed feedstocks at a conventional petroleum refinery.

Current rules related to 'Aviation Biofuel" are limited to biogenic feedstocks. These definitions do not represent currently available and future feedstocks for SAF production. This definition excludes from existing credits, exemptions, and other incentives, certain feedstocks and conversion pathways, such as electro-fuels or power-to-liquid, that are zero- or low-carbon.

The work group recommends that the legislature adopt a definition from the existing definitions under the U.S. Inflation Reduction Act as the primary recommendation, or the International Civil Aviation Organization (ICAO), as a less attractive option, if the IRA definition is problematic. Both definitions are provided below. Any new definition should be feedstock and technology agnostic. An entity should be eligible for credits and other incentives if the fuel meets prescribed carbon intensity (CI) reductions. Note that some work group members are opposed to including any fossil-based fuels in the new definition, except as needed for blending with non-fossil fuels.

- **Inflation Reduction Act, Sustainable Aviation Fuel Definition from Section 40007**: Hydrocarbon fuels that meet the ASTM requirements for alternative jet fuels; are derived from biomass, waste streams, renewable energy, or gaseous carbon oxides; are not derived from palm fatty acid distillates. Sustainable aviation fuel must achieve at least a 50% reduction in life cycle emissions compared with petroleum-based jet fuel.

    - If the legislature chooses the IRA definition, it may want to consider a slight modification to the definition above by inserting the phrase, "including renewable and green electrolytic hydrogen," after the term renewable energy. This would recognize Washington's statutory definitions under SB 5910.

- ICAO allows both sustainable aviation fuels and lower carbon aviation fuels to be used as compliance mechanisms under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). Sustainable aviation fuels (SAF) are defined as renewable or waste-derived aviation fuels that meet sustainability criteria of CORSIA as defined under the Annex 16- Environmental Protection, Volume IV. Lower carbon aviation fuels (LCAF) are fossil-based aviation fuel that meets the CORSIA Sustainability Criteria referenced above, https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-Eligible-Fuels.aspx .

2. INCENTIVES

The Washington state legislature has many options to incentivize production of sustainable aviation fuels. The work group was able to come to broad agreement around a Washington State Production Tax Credit that would inventivize in-state production and in-state use of SAF. Some of the other suggested options have strong support from work group members but are modest and provide limited incentives. Options that are more attractive to sustainable aviation fuel project developers, airlines and capital markets have lower consensus among work group members. No consensus was reached on any material changes to the existing Washington Clean Fuels Program. The workgroup offers the recommendations below and provides the level of consensus for each.

Washington State tax incentives can reduce risks and increase likelihood for investment in all parts of the sustainable aviation fuel supply chain in the state. Appropriate state incentives should have parity with other low carbon energy and transportation fuel sectors and provide meaningful assistance for the development of the industry, with the expectation that the SAF industry will be self-sustaining after it is more established in the future. A tax incentive environment for in-state production that encourages capital investment in sustainable aviation fuel production facilities to be built in the state should:

- Encourage all sustainable aviation fuel production pathways that lower the carbon intensity of jet fuel consumed in the state.
- Not restrict benefits to specific feedstocks or technologies.
- Incorporate storage and blending infrastructure at major airports in the state.
- Meet prescribed carbon intensity reductions.
- Ensure SAF definitions are current and consistent across RCW.
- Extend and standardize expiration dates of material state programs to ensure investor confidence in the state's goals for SAF production and use in the state.

The Inflation Reduction Act includes a SAF blenders tax credit ([BTC], Section 40B) and a Clean Fuels Production Credit (Section 45Z), but they expire on December 31, 2024 and December 31, 2027, respectively. Because of the long project development and construction timeline for new SAF projects, it is unlikely that these credits will be realized by Washington SAF producers. Hence the strong suggestion to develop long-term policy support in Washington state for SAF that delivers significant GHG reductions.

The RCW contains numerous tax deferrals, reductions, and exemptions for various industries. Several of these provisions could be modified to provide similar tax advantages to attract a sustainable aviation fuel production facility to Washington. The SABWG recommends that the legislature, in consultation with the Department of Revenue and relevant state agencies, revise RCW sections related to property, sales and use, and business and occupation (B & O) taxes, with examples indicated below. Expiration dates of tax incentives should be extended to reflect the realistic timeframe for development, construction, commissioning, and operation of a new sustainable aviation fuel production facility in the state. **Proposed new language is in bold text.** Proposed new code sections provide the existing RCW title and section number followed by XXX, i.e., RCW 84.36.XXX.

Tax Modifications to the Revised Code of Washington (RCW)

I. <u>Property Taxes</u> (High Consensus)
<u>Add new RCW 84.36. XXX to create an exemption for sustainable aviation fuel production facilities. **This language is based on the exemption for anaerobic digesters (RCW 84.635). Highlighted text has been changed.**</u>

Property used for the operation of a **sustainable aviation fuel production facility**.

(1) For the purposes of this section, "s**ustainable aviation fuel production facility**" has the same meaning as provided in RCW XXX. T**his term will need to be defined in the RCW. Alternatively, the new definition of sustainable aviation fuel could be added to RCW 80.50.020 and the definition of "alternative energy resource" under the same section could be modified to include sustainable aviation fuel.**

(2) All buildings, machinery, equipment, and other personal property which are used primarily for the operation of a **sustainable aviation fuel production facility**, the land upon which this property is located, and land that is reasonably necessary in the operation of a sustainable aviation fuel production facility, are exempt from property taxation for the six assessment years following the date on which the facility or the addition to the existing facility becomes operational.

(3) Claims for exemptions authorized by this section must be filed with the county assessor on forms prescribed by the department of revenue and furnished by the assessor. Once filed, the exemption is valid for six assessment years following the date on which the facility or the addition to the existing facility becomes operational and may not be renewed. The assessor must verify and approve claims as the assessor determines to be justified and in accordance with this section. No claims may be filed after December 31, 2030.

(4) The department of revenue may promulgate such rules, pursuant to chapter 34.05 RCW, as necessary to properly administer this section.

II. B & O Taxes (Medium Consensus)
Add industry specific exemptions for sustainable aviation fuel similar to those provided to the reduced B&O tax rate for manufacturers of semiconductor materials (82.04.2404)

a) Current RCW 82.04.2404 (Manufactures-Processors for Hire-Semiconductor Material)

New RCW 82.04.XXXX Manufacturers—**Sustainable Aviation Fuel**. (*Expires **December 1, 2032***.)

(1) Upon every person engaging within this state in the business of producing **sustainable aviation** fuel as to such persons the amount of tax with respect to such business is, in the case of manufacturers, equal to the value of the product manufactured, or, in the case of processors for hire, equal to the gross income of the business, multiplied by the rate of 0.275 percent.

(2) For the purposes of this section "sustainable aviation fuel" has the definition provided in RCW XXX

(3) A person reporting under the tax rate provided in this section must file a complete annual tax performance report with the department under RCW 82.32.534.

(4) Any person who has claimed the preferential tax rate under this section must reimburse the department for fifty percent of the amount of the tax preference under this section, if the number of persons employed by the person claiming the tax preference is less than ninety percent of the person's three-year employment average for the three years immediately preceding the year in which the preferential tax rate is claimed.

(5) This section expires **December 1, 2032**.

b) Current RCW - Exemptions—Gases and chemicals used in production of Semiconductor Materials.

New RCW 82.08.XXX Exemptions—Gases and chemicals used in production of **sustainable aviation fuel**. (*Expires **December 1, 2032.***)

(1) The provisions of this chapter are limited to gases and chemicals used as inputs to the sustainable aviation fuel production including renewable natural gas and renewable hydrogen. This exemption does not apply with respect to the use gases or chemicals purchased to provide power for the operation, the production facility or processing equipment. (2) A person claiming the exemption under this section must file a complete annual tax performance report with the department under RCW 82.32

(3) No application is necessary for the tax exemption. The person is subject to all of the requirements of chapter 82.32 RCW.

(4) Any person who has claimed the exemption under this section must reimburse

the department for fifty percent of the amount of the tax preference under this section, if the number of persons employed by the person claiming the tax preference is less than ninety percent of the person's three-year employment average for the three years immediately preceding the year in which the exemption is claimed.

(5) This section expires **December 1, 2032**.

III. New-Investment Tax Credit (Medium Consensus)
Create an investment tax credit for sustainable aviation fuel production facilities. Credit includes an annual base investment tax credit of 15% of the expenditures made on the construction, repair, or renovation of a facility, with an apparent annual maximum of $XXX per project and an aggregate annual statewide cap of $XX.X million. This credit could be against property taxes and is similar to item (I) above. Investment credits could be structured to increase in value if facilities are located in 'energy communities,' which would help connect new sustainable aviation biofuel projects to economic development and clean energy transition in regions tied to fossil fuel industries. This could build upon the Inflation Reduction Act's definition of 'energy communities' and additional 10% increase in credit value for certain qualified projects located in these communities.

IV. Incentive Enhancements to Clean Fuel Program Credits (Low Consensus)
Some SAF producers, including those represented on the work group, have indicated that an attractive incentive to promote facilities that produce SAF instead of biodiesel or renewable diesel is the adoption of an incentive enhancement (or multiplier) for SAF compared to renewable diesel. An example could be a higher credit for SAF under the Clean Fuel Program (CFP) which would ensure that the CFP effectively incentives SAF and creates an opportunity to begin commercial scale adoption of SAF in the state.

This option has the lowest concensus and is not supported by several members of the work group. Opponents argue that the burden of CFP compliance is solely born by on-road transportation (this sector also bears a heavy compliance burden under the Climate Commitment Act, from which aviation is also exempt due to federal preemption). Aviation fuels generate credits, but not deficits, under the program, so they already carry an advantage in the market over fuels that must comply. Providing more credits via an amplifier may distort the market, with possible ramifications to the goals of the Clean Fuels Program: to reduce carbon emissions and air pollution from the transportation sector in Washington. There is also concern that a multiplier may favor existing facilities and reduce the incentive for developing new facilities. Supporters argue that enhanced incentives for SAF contribute to the CFP goals to reduce carbon emissions and air pollution and to are beneficial for the following reasons:

- A multiplier of (1.3) or higher will provide an incentive for the aviation industry to use SAF at a larger scale because the associated credit will be higher than the credit for renewable diesel and provide incentives for fuel producers to make SAF.

  - Rationale - The 2030 SAF Grand Challenge goal of 3 billion gallons by 2030 will mostly be met by SAF produced using the HEFA conversion pathway using fats, oils and greases as feedstocks. All the current production in the U.S., and much of the announced future volumes, will rely on this conversion technology. The HEFA process first makes renewable diesel that then needs additional refining and hydrogen to make sustainable aviation fuel. The additional step adds capitalequipment and production costs. In addition, some of the renewable diesel feedstock is lost in the upgrading process which results in additional revenue loss for the producer. Without a multiplier, producers will continue making renewable diesel because it is less expensive to produce, and they will make more money by selling renewable diesel into the mandated markets, including the Clean Fuels Program. A 1.3 multiplier for SAF is intended to equalize the value of the

SAF product to make it financially competitive in the market at basically the same value as a renewable diesel.

- The work group recognizes that SAF is not an obligated fuel under the Clean Fuels Program and that, due to the current understanding of federal preemption, the State cannot regulate carbon intensity reductions for SAF. Some perceive this as aviation getting a benefit without paying the cost of lower carbon fuels.

- The increased demand for SAF from a multiplier will provide the impetus for the SAF industry to invest in technological advancement and expansion in the state.

- Multipliers will not add additional cost to the Department of Ecology or to the Clean Fuels Program. Its inclusion, however, will necessitate additional rulemaking.

- The work group acknowledges that this approach would mean the overall Clean Fuels Program could have less total fuel replacement from low carbon fuels. However, given the electrification of on-road transportation, the declining fuel markets and the nascency of the SAF market, some work group members believe that in the short term this solution will stimulate SAF use effectively and accelerate the potential for in-state SAF production facilities to be built. It can also be a provisional measure with incentives declining over time as the volume of fuels used increases. To combat this potential effect, supporters of the multiplier recommend that it be stepped down over several years and based on milestones as Washington-state produced SAF volumes enter the market in significant quantities.

V. <u>Sales Tax Modification</u> (Medium Consensus)

a) *<u>RCW 82.42.020 Aircraft fuel tax imposed—Rate.</u>* There is levied upon every distributor of aircraft fuel, an excise tax at the rate of 18 cents on each gallon of aircraft fuel sold, delivered, or used in this state. There must be collected from every user of aircraft fuel either the use tax imposed by RCW 82.12.020 or the retail sales tax imposed by RCW 82.08.020. The taxes imposed by this chapter must be collected and paid to the state but once in respect to any aircraft fuel.

Modification -Users of aviation fuel are exempt from the use tax imposed by RCW 82.12.020 or the retail sales tax imposed by RCW 82.08.020 **if the full value of the tax obligation is applied to the direct purchase of sustainable aviation fuel that is used to fuel aircraft in the state of Washington. (*Expires June 30, 2032*.)**

b) <u>Extend Sales & Use Tax Exemptions to include sustainable aviation fuel. (High Consensus)</u>
RCW 82.12.962 extends the expiration date from January 1, 2020, to December 31, 2030, for the sales and use tax exemptions for alternative energy machinery and equipment. A purchaser, as well as the consumer, who have paid tax on machinery and equipment used to generate electricity or **produce sustainable aviation fuel** consistent with the purposes of the act is entitled to an exemption of state and local taxes, in the form of a remittance of:

- 50 percent if the procurement and contract was from an organization owned by women, minorities or veterans;

- 75 percent if workers on the project were compensated at prevailing wages determined by local collective bargaining; or

- 100 percent if the project is developed under a community workforce agreement or project labor agreement. Allowances are provided for good faith efforts to meet one of the above requirements, given certain conditions.

3. PERMITTING

The current SEPA permitting process continues to be of considerable concern to work group members and has been identified as a significant hurdle to attracting and building any kind of industrial facility in Washington. Transition to a clean energy economy will require streamlining of the permitting process. Work group members reiterate that the intent of streamlining is to expedite the permitting process, not to avoid compliance with environmental regulations.

There is heightened national recognition that federal, state, regional, and local permitting processes may delay construction of clean energy projects for several years, resulting in projects moving to more favorable jurisdictions and even to project collapse. Lack of surety around a project timeline may also result in loss of investment capital[33,34]. Washington experienced this when REG and Phillips 66 withdrew their permit application for the Green Apple Renewable, LLC project in Ferndale, WA and REG invested the money by expanding an existing facility in Louisiana.

- As required under the Clean Fuels Program, the Department of Ecology, in partnership with Commerce and an advisory board of diverse stakeholders, is conducting a study on how to improve environmental review and permitting processes for siting low-carbon energy facilities in Washington. The purpose of the study is to "provide increased clarity on areas in the state that may be suitable for siting projects that have a lower potential for negative environmental impacts, especially on highly impacted communities (as defined in RCW 19.405.020) and identify strategies for minimizing and mitigating negative environmental impacts where possible."
  - Ecology published the Low-Carbon Energy Project Siting Improvement-Interim Legislative Report[35] in December 2021.
  - The final report is due to the legislature on December 1, 2022 and will include recommendations for improving the permitting process, siting decisions and any future studies or actions.

Recommendation: The Low-Carbon Energy Project Siting Improvement-Final Legislative Report is due to the legislature on December 1, 2022, the same date as the Sustainable Aviation Biofuels Work Group (SABWG) report. Work group members agree with direction of the Interim Legislative Report published in December 2021 but were unable to review the final siting improvement recommendations before the writing of this report. The SABWG recommends that the legislature strongly consider and adopt, where appropriate, permitting reform recommendations and should also provide for any necessary funding mechanism to implement such revisions. Work group members may also provide supplemental suggestions after evaluating the siting improvement Advisory Board's recommendations.

4. ECONOMIC DEVELOPMENT

As part of its *Choose Washington* campaign, direct the Department of Commerce – including but not limited to the aerospace, clean technology, life sciences, energy policy, and other sectors – to promote Washington's assets for developing a robust sustainable aviation fuel industry in the state. This messaging should be included across all the Department's key sectors that intersect SAF including aerospace, agriculture, clean technology, and forest products. The plan should include targeted media, national and international trade shows, outreach, rural economic development, and workforce development.

5. PLAN FOR DECARBONIZING AVIATION IN THE LONG-TERM (Beyond 2030)

Under a fiscal note (or other funding mechanism), direct the Department of Commerce, in consultation with the Department of Ecology, to develop a comprehensive plan to decrease greenhouse gas contributions from aviation in Washington. The plan should be developed in conjunction with an Advisory Board of SAF industry experts and stakeholders. We envision this process will be similar to that used in developing the updated State Energy Strategy and it should ensure adequate staffing time commitment,

[33] https://netzeroamerica.princeton.edu/

[34] Barclays Gov't Many Have More Tricks; SAF Event & Roadmap Highlights, Equity Research Report, September 28, 2022,1124911.23-0.113.1

[35] https://apps.ecology.wa.gov/publications/documents/2106029.pdf

rigor and funding. At a minimum the plan should include:

a) Comprehensive review and update of all pertinent bioenergy sections of WAC and RCW to ensure that renewable fuels, including SAF, produced from non-biogenic feedstocks are eligible for the same incentives and credits as those produced from biogenic sources.
b) Strategies to reduce greenhouse gas emissions through the adoption and development of sustainable aviation fuels and technologies.
c) A technology and feedstock neutral incentive system for all renewable energy. Incentive should be based on reduction in carbon intensity.
d) Augmentations of existing incentives and the creation of new incentives necessary to attract the production and use of sustainable aviation fuel in the state to by 2030, increasing to a meaningful portion of the Washington jet fuel consumption by 2035, thereby enabling a reduction in aviation greenhouse gas emissions and supporting the achievement of the state's goal of net-zero greenhouse gas emissions by 2045.
e) Incentives for alternative fuel use, prioritized with consideration of the entire fuel lifecycle to achieve the greatest greenhouse gas emissions reductions and co-benefits, including reductions in criteria air pollutants, per dollar provided for incentives.
f) Identification of concrete ways to fast-track projects through the sitting process to build the necessary facilities needed to produce the fuels needed to decarbonize aviation and create meaningful jobs for Washington trades.
g) Actions that can be taken by the state to ensure that the state's policy incentives for SAF are sufficient to incentivize SAF production at least at a level comparable to policy incentives provided to renewable diesel and the state's electrification goals.
h) Address and create equitable economic development and environmental justice considerations and benefits. This should include ensuring that new or expanded SAF facilities do not increase local air and water pollution in overburdened communities, in ways that are aligned with responsibilities outlined in the HEAL Act.

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Appendix 1
STATEMENT OF SEN. MARK SCHOESLER

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I appreciate the opportunity to once again offer a separate statement highlighting where I think this work group's recommendations go astray. In 2020, I wrote separately to express my opposition to the recommendation to enact a low carbon fuel standard in Washington.[36] I believe experience is showing that the enactment of that program was a mistake.

Here at the end of 2022, going on two years since the Legislature passed the bill that has become the Clean Fuels Program, what is the outlook for fuels in Washington? Energy inflation is out of control as gas and diesel prices climb higher, with our state having some of the highest prices at the pump of any state in the nation.[37] On top of that, the Department of Ecology estimates that the new fuel standard will add almost 40 cents more to the price of a gallon of fuel over time.[38]

What about the emissions side of the ledger? Did Washington meet its 2020 emissions reduction target?[39] No one knows. The state does not have the data. According to Ecology, the forthcoming 2022 emissions report will only contain data through 2019, which means that we will not know whether Washington met the 2020 target until the next report is released in 2024.[40]

While people pay more for gas to reduce emissions, the state does not know if it is really reducing emissions. The Clean Fuels Program is not sound public policy, so I continue to be concerned that it remains the cornerstone of this work group's policy recommendations.

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On permitting reform, I agree that Washington needs a better approach. But I also anticipate that the recommendations provided in the forthcoming Low-Carbon Energy Project Siting Improvement Report will not go far enough and will only focus on an unnecessarily narrow set of project types.[41]

Washington keeps losing out on many promising projects because our state permitting system is too complex, time-consuming, and costly.[42] It has been deterring investment in our state, and coincidentally undermining the construction of new facilities that might help us meet the emissions reduction goals this group intends to achieve.

I look forward to working on meaningful permitting reform that will truly solve this problem.

Sincerely,

Sen. Mark Schoesler
9th Legislative District

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[37] AAA, Gas Prices, gasprices.aaa.com (last accessed Oct. 24, 2022).
[38] Washington Department of Ecology, Clean Fuel Standard Cost Benefit Analysis Report 42 (2022).
[39] RCW 70A.45.020(1)(a)(i) (setting a target of 90,500,000 metric tons). https://apps.leg.wa.gov/rcw/default.aspx?cite=70A.45.020
[40] See RCW 70A.45.020(2) (establishing a biennial emissions reporting requirement). https://apps.leg.wa.gov/rcw/default.aspx?cite=70A.45.020
[41] See RCW 43.21A.738. https://apps.leg.wa.gov/RCW/default.aspx?cite=43.21A.738
[42] Brent Lindquist, Phillips 66: Two years' delay of fuels plant a 'competitive disadvantage' Lynden Tribune, lyndentribune.com/news/Phillips-66-two-years-delay-of-fuels-plant-a-competitive-disadvantage/article_a955305e-42ad-11ea-ac09-3fa9a1542013.html (Jan. 29, 2020).