

## Transportation Recommendations to Climate Emergency Mobilization Work Group for Frederick County and City

- a. **Recommendation: Require renewable/low carbon intensity fuels availability and use at the Frederick Municipal Airport as soon as supplies become available and affordable**
- b. **Expected GHG Impact:** Signature Flight Support, the fixed base operator (FBO) for Frederick Municipal Airport claims its Signature Renew SAF, certified for use in all jet aircraft, is an economical way to reduce aircraft carbon emissions by more than 25%.<sup>1</sup> Signature has a company-wide global sustainability initiative that includes being the first FBO worldwide to offer a permanent supply of Sustainable Aviation Fuel (SAF), Jet A, to business aviation. However, Jet A SAF is currently being offered only at San Francisco Int'l Airport (SFO) and London-Luton Airport (LTN) and due to the extremely limited supplies, is not likely to be available for a number of years at other airports that are in locations that do not offer incentives. As fuel producer, Neste, explains "As more states, such as Washington, New Mexico, and New York, progress and adopt clean fuel standards, Neste will be ready to move quickly and supply renewable diesel and sustainable aviation fuel into these markets."<sup>2</sup> The GHG impact also depends on the amount of petroleum fuel replaced. For example, by replacing a part of the fossil jet fuel with Neste's SAF on its flights departing from Helsinki Airport, Finnair will reduce its greenhouse gas emissions by 900 tons of CO<sub>2</sub> equivalent.<sup>3</sup> Avfuel Corp reports that each truckload of SAF that they deliver to Monterey Jet Center will provide a 22 metric ton reduction in carbon emissions over the lifecycle compared to petroleum-based jet fuel—the equivalent of making five passenger vehicles zero emissions for one year.<sup>4</sup>
- c. **Recommended Timeline for Action:** We recommend that the city proceed as quickly as possible to work with Signature to determine what actions would be needed to facilitate obtaining SAF at Frederick Municipal Airport.<sup>5</sup> Additionally, the city should work with owners of reciprocating engine aircraft to help them transition to renewable fuel options.
- d. **Rationale:**
  - d1 **Findings are based on research and data:** For research related to specific statements, see footnotes.

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<sup>1</sup> Signature Flight Support, "Signature Renew is Leading Business Aviation to Sustainability"  
<https://www.signatureflight.com/about/sustainability-commitment>

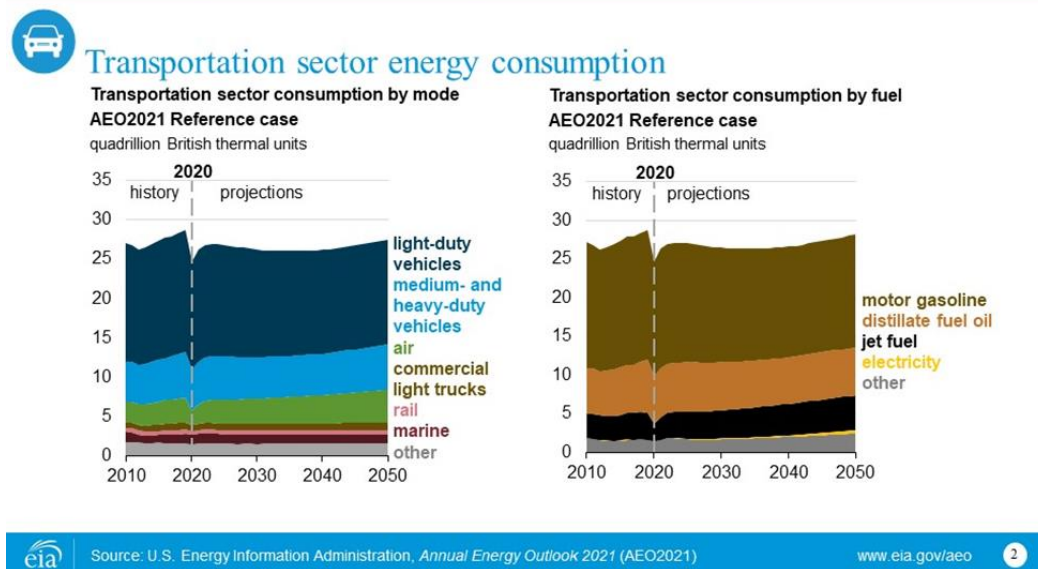
<sup>2</sup> National Academies of Sciences, Engineering, and Medicine 2016. Tracking Alternative Jet Fuel. Washington, DC: The National Academies Press. <https://doi.org/10.17226/23696>. <https://www.nap.edu/catalog/23696/tracking-alternative-jet-fuel> and Neste, "Neste, NuStar expand renewable fuel hub in Northern California." <https://www.neste.com/releases-and-news/renewable-solutions/neste-nustar-expand-renewable-fuel-hub-northern-california>

<sup>3</sup> Neste, "Neste and Finnair present Sustainable Aviation Fuel based solution to reduce business travel emissions" <https://www.neste.com/releases-and-news/aviation/neste-and-finnair-present-sustainable-aviation-fuel-based-solution-reduce-business-travel-emissions> and Neste, "Neste's role in sustainable aviation." <https://www.neste.com/products/all-products/neste-my-sustainable-aviation-fuel#3eeced00>

<sup>4</sup> Avfuel Corp/Biomass Magazine, "Avfuel now supplying Neste MY SAF at Monterey Jet Center." <http://www.biomassmagazine.com/articles/17841/avfuel-now-supplying-neste-my-saf-at-monterey-jet-center>

<sup>5</sup> National Academies of Sciences, Engineering, and Medicine 2016. Tracking Alternative Jet Fuel. Washington, DC: The National Academies Press. <https://doi.org/10.17226/23696>. <https://www.nap.edu/catalog/23696/tracking-alternative-jet-fuel>

**d2 Equity considerations:** This graphic<sup>6</sup> from the US Department of Energy's Energy Information Administration clearly shows that even in 2050, we will be using liquid aviation fuel. That fuel should be as low polluting, low carbon and affordable as possible.



<https://www.eia.gov/outlooks/aeo/> Transportation [PDF](#) [PPT](#)

A regional Climate and Transportation Initiative proposal defines “aviation gasoline” as “A complex mixture of relatively volatile hydrocarbons, with or without small quantities of additives, blended to form a fuel suitable for use in aviation reciprocating engines and meeting ASTM Specification D910 or Military Specification MIL-G-5572.” Due to limited production of SAF for jetfuel, D910 fuel might be looked at as an important fuel to be replaced by renewable fuel in the near-term, not only for the carbon mitigation, but because it is a leaded fuel (for which there exist alternatives). The possibility of using E85 in these engines was suggested in conversations with a number of stakeholders and has been studied and considered by the aviation industry.<sup>7</sup> Environmental justice benefits would accrue not only to the people working at the airfield and traveling in these planes, but to communities located near the airfield to prevent lead poisoning.

**d3 Co-Benefits** Cleaner, less-polluting options will be available to those who fly in and out of the municipal airport. If the leaded fuel is replaced, air quality improvement will benefit residents and businesses in the area, as well.

**d4 Experience of other cities and counties:** California’s state-wide Low Carbon Fuel Standard has provided incentives for cities and counties throughout the state to transition to more renewable

<sup>6</sup>U.S. Department of Energy Energy Information Agency, “Transportation sector energy consumption” <https://www.eia.gov/outlooks/aeo/> Transportation PDF [https://www.eia.gov/outlooks/aeo/pdf/05\\_AEO2021\\_Transportation.pdf](https://www.eia.gov/outlooks/aeo/pdf/05_AEO2021_Transportation.pdf) PPT [https://www.eia.gov/outlooks/aeo/ppt/05\\_AEO2021\\_Transportation.pptx](https://www.eia.gov/outlooks/aeo/ppt/05_AEO2021_Transportation.pptx)

<sup>7</sup> Miller, John, “Replacing Leaded Aviation Gasoline with Renewable Ethanol,” Energy Central. June 11, 2013. <https://energycentral.com/c/ec/replacing-leaded-aviation-gasoline-renewable-ethanol>

fuel options for aviation. Avfuel Corp reports that each truckload of SAF that they deliver to Monterey Jet Center will provide a 22 metric ton reduction in carbon emissions over the lifecycle compared to petroleum-based jet fuel—the equivalent of making five passenger vehicles zero emissions for one year. As noted above, Avfuel considers SAF to be the most effective way to reduce a flight’s carbon footprint; and, in the future, SAF could deliver up to 80 percent less greenhouse gas emissions versus traditional jet fuel if used in its neat form.<sup>8</sup>

Clay Lacy Aviation offers SAF at the company’s two FBOs at Van Nuys Airport and John Wayne Orange County Airport. They have also transitioned to renewable diesel for ground support vehicles.<sup>9</sup>

Signature’s Jet A SAF is currently being offered only at San Francisco Int’l Airport (SFO) and London-Luton Airport (LTN).

**d4 Interface with the Livable Frederick Plan and Frederick City Master Plan:** The Recommendation is consistent with the objectives of both Plans.

**d5 Cost-benefit- analysis:** Use of SAF will likely cost more.

Because California and other states have enacted low carbon fuel standards or clean fuel standards or policies, fuel producers of limited quantities of SAF are selling into those markets due to the advantage of their incentives. Until more production facilities are built and unless Maryland also adopts incentive programs for renewable fuels, SAF sources will be limited.<sup>10</sup> Without financial incentives, there is a premium price for SAF.

Ethanol blends, similar to E85, to replace aviation gasoline do not have the same production limitations and could be priced lower than Avgas. For current comparisons, see these resources: [AirNav.com](http://AirNav.com) and [E85prices.com](http://E85prices.com)

**e. Finance:**

Transitions to renewable aviation fuels should be part of city and county sustainability programs with funding from budgets appropriated for that purpose. Other expenses for the fuel will be born by the users of the fuel.

**f. Recommended actions:**

**a. Legislative Action at State Level Would Be Helpful**

As noted above, priority for limited supplies of SAF is given to states that have low carbon fuel standards or clean fuel standards. As a member of the Transportation and Climate Initiative, Maryland is considering proposals related to a cap-and-invest strategy for on-road

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<sup>8</sup> Avfuel Corp/Biomass Magazine, “Avfuel now supplying Neste MY SAF at Monterey Jet Center.” <http://www.biomassmagazine.com/articles/17841/avfuel-now-supplying-neste-my-saf-at-monterey-jet-center>

<sup>9</sup> Clay Lacy Aviation/Globe Newswire, “Clay Lacy Teams with World Fuel Services and World Energy to Offer Sustainable Aviation Fuel (SAF) at Van Nuys and Orange County FBOs, Transitions Ground Support Vehicles to Renewable Diesel.” <https://www.globenewswire.com/news-release/2021/03/23/2197863/0/en/Clay-Lacy-Teams-with-World-Fuel-Services-and-World-Energy-to-Offer-Sustainable-Aviation-Fuel-SAF-at-Van-Nuys-and-Orange-County-FBOs-Transitions-Ground-Support-Vehicles-to-Renewable.html>

<sup>10</sup> Neste, “Neste, NuStar expand renewable fuel hub in Northern California.” <https://www.neste.com/releases-and-news/renewable-solutions/neste-nustar-expand-renewable-fuel-hub-northern-california>

transportation fuels, but it does not include aviation fuels.<sup>11</sup> California and Oregon have low carbon fuel standards and Washington state is in the process of implementing a clean fuel policy. Other states such as New Mexico, New York and Minnesota are considering clean fuels policies.

**b. No Legislation is needed at the city or county level.**

**c. Administrative Action: Obtain Sustainable Aviation Fuel for Sale at Frederick Municipal Airport**

The City airport managers and other City staff should:

- 1) Meet with the FOB and local fuel suppliers to learn from their experiences complying with the referenced requirements for use of renewable fuels.
- 2) Meet with airport users, managers and suppliers to develop a plan to bring SAF, including unleaded aviation gasoline substitute to Frederick Municipal Airport.
- 3) Obtain SAF for the airport.

Write-up drafted by Joanne Ivancic

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<sup>11</sup> Advanced Biofuels USA, "Press Release: Advanced Biofuels USA Files Comments on Transportation and Climate Initiative: Calls for Extension of Program to Aviation, Trains, Marine/Maritime, Agriculture, Rocket Launches and Natural Gas." <https://advancedbiofuelsusa.info/press-release-advanced-biofuels-usa-files-comments-on-transportation-and-climate-initiative-calls-for-extension-of-program-to-aviation-trains-marine-maritime-agriculture-rocket-launches-and-nat/> and Transportation and Climate Initiative, "TRANSPORTATION AND CLIMATE INITIATIVE PROGRAM DRAFT Model Rule." <https://www.transportationandclimate.org/sites/default/files/TCI-P-Draft-Model-Rule-March-2021.pdf>