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5 Key Messages From the Sustainable Aviation Fuel Workshop

2024 SUSTAINABLE AVIATION ENERGY CONFERENCE

The energy transition brings unprecedented complexity and opportunity to the aviation ecosystem. At the 2024 Sustainable Aviation Energy Conference, more than 100 aviation leaders gathered in Dallas, Texas, to discuss collaboration and research needed to clear the path to widespread adoption of sustainable aviation technologies.

During open workshops, participants from state and federal agencies, airports, aircraft and engine manufacturers, liquid fuel producers, and other stakeholder groups brainstormed the biggest barriers and opportunities for realizing a sustainable aviation ecosystem.

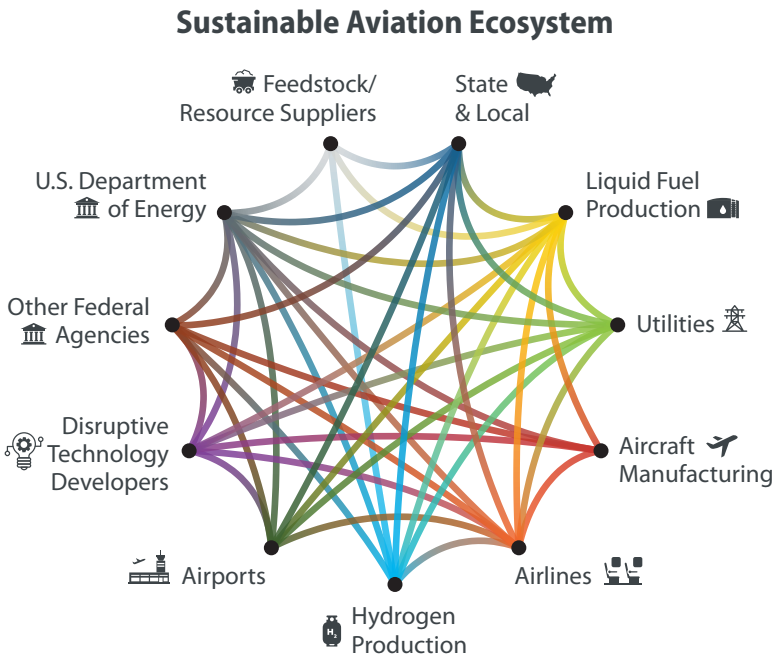
Below are five key messages and discussion points that emerged during a workshop on sustainable aviation fuel (SAF), including e-fuels.

1. Larger Market Pull Is Needed To Motivate Significant SAF Adoption

Without long-term funding to help mature the SAF industry, airlines and financiers are assuming early market risk.

Key discussion points:

- There is a lack of certainty on SAF market pull, so capital investments are not being made quickly.
- Current clean energy incentives and tax credits are not durable, can change across administrations, and in some cases do not allocate money to SAF specifically.
- SAF processes can take 20–30 years to scale, requiring stable funding and incentives.
- Early SAF adopters may not be able to compete on a level playing field with airlines still using the cheaper Jet A fuel.



Strategic collaboration and knowledge-sharing will be essential for meeting aviation's decarbonization goals. *Figure by Elizabeth Stone, NREL*

- Airlines margins are thin—and fuel prices are a major cost of their operations—so they are risk averse.
- Many companies want to invest in SAF technology, but they need confidence that markets will develop for positive returns on their investments.

2. Multiple Mechanisms Can Help Stimulate Robust Market Pull for SAF

A variety of measures might spur demand and provide long-term economic certainty, though such measures may require assistance from regulators and policymakers.

Key discussion points:

- The federal government, with its huge demand for jet fuel, could purchase SAF to establish confidence in the product and create market pull for the industry.
- Current tax credits are short-term measures, but they might be extended.
- Mandates or obligations could foster a more level playing field for airlines because they would apply equally to all participants.
- A "billion-dollar grant program" could be used as a cost-sharing mechanism, helping expedite financing for new SAF projects.
- Policies surrounding bioenergy feedstocks might incentivize farmers and growers.
- A "book-and-claim" system might enable customers to access clean energy credits even at airports without early SAF supplies.
- Industry can lobby for strategic investments that target key barriers.

3. Companies Continue To Grapple With the Financial Risk of New SAF Facilities

The industry has limited ability to absorb growth and shoulder the risk of high capital costs for building demonstration plants and associated supply chains.

Key discussion points:

- Startup SAF companies understand how to de-risk SAF production technologies, but they require money to do it meticulously.
- Government agencies might push for more SAF demonstrations, culminating in working projects pushed into the market to provide confidence to financiers.
- Companies can purchase insurance mechanisms to dampen the risk of emerging technologies.

Sponsored by DFW International Airport and hosted by NREL, the 2024 Sustainable Aviation Energy Conference brought federal agencies and industry leaders to the whiteboard to find focused collaboration areas that can accelerate existing federal, state, and industry programs. *Photo by Chris Bousselot, Dallas Fort Worth International Airport*

- Policies, including capital cost-sharing, could reduce the amount of debt companies shoulder when investing in still-emerging technologies.

4. Technologies Are Available To Lower SAF Carbon Intensity

SAF may not compete with Jet A in cost, but it can beat it in terms of carbon intensity.

Key discussion points:

- In the current U.S. market, SAF cannot compete with fossil fuels on a direct cost basis, but producers should aim to make SAF as cheap as possible.
- Future costs placed on carbon could incentivize fuels with the lowest carbon intensity.
- Researchers should develop technologies with a goal of very low-carbon-intensity feedstocks and SAF.
- Power-to-liquid (or "e-fuel") technologies can help significantly reduce net carbon emissions for SAF production, but sufficient low- to zero-carbon-intensity electricity must be available.

5. SAF Supply Chains Must Be Systematically Cultivated

Complex SAF supply chains—for feedstock transportation and delivery; agricultural equipment and supplies; refinery building materials; permitting; SAF transportation, blending, and storage; and other steps—take time to scale, and today's investments may not be adequate to bring them to fruition.

Key discussion points:

- The SAF industry must determine the best methods of delivering SAF to airports, considering fuel line sizing and trucking routes.
- More biomass harvesting and processing equipment needs to be built to handle potential explosive growth of the bioenergy feedstock industry.
- Policies might incentivize feedstocks, as feedstock production is among the priciest parts of making SAF.
- Consider whether the U.S. Department of Agriculture has a role to play, including making incentives for producing more ethanol, such as tax credits or paying more for the product.

- Feedstocks costs increase each time a feedstock is handled, so more investments are needed to ensure supply chains are stable.

Other Key Messages

- More airlines should attend future sustainable aviation energy conferences.
- Legislation can help provide long-term certainty.

Learn More

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