

Policies and incentives support sustainable aviation fuels

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Sustainable aviation fuels (SAF) are one of the few low-carbon technologies that can help decarbonize the aviation sector. Aviation is responsible for 11% of transportation greenhouse (GHG) emissions, making it the third largest contributor of transportation emissions. Transitioning to sustainable liquid fuels has been identified as the path with the greatest long-term opportunity to decarbonize the aviation sector.

SAF production is already in place and is expected to triple from 2023 levels to approximately 1.875 billion liters in 2024. Supply chains continue to mature and existing industrial infrastructure is being leveraged for SAF production. Investments in SAF have increased due to federal and state tax credits incentivizing production.

Although SAF production has increased significantly, the 2024 level will account for only 0.53% of aviation's fuel requirements and 6% of renewable fuel production. There remain hurdles to the scalability and widespread adoption of SAF. SAF currently is not a one-to-one replacement or as energy dense as conventional jet fuel, and limited production capacity contributes to higher costs.

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As the industry continues to make headway toward a low-carbon and sustainable aviation future, continued innovation, regulatory stability, public-private partnerships, and investments are needed to help overcome the challenges and barriers to reducing the aviation sector's GHG emissions.

What is sustainable aviation fuel?

SAF is an alternative fuel that can be produced from non-petroleum feedstocks such as used cooking oil, greases, fats, municipal solid waste, algae, agricultural and forestry waste and residues, wood mill waste, and dedicated energy crops. SAF is a "drop-in" fuel, meaning it can be blended with traditional fossil jet fuel at different levels depending on the feedstock and how it is produced.

Commitments, incentives, and programs driving aviation decarbonization

Several initiatives and commitments have placed the aviation sector at the forefront of decarbonization efforts. The Biden administration has set a goal of net-zero GHG emissions economy-wide by 2050. Additionally, through the Sustainable Aviation Fuel Grand Challenge launched in 2021, the US Department of Energy (DOE), the US Department of Transportation (DOT), and the US Department of Agriculture (USDA) continue to work toward reducing SAF cost, enhancing its sustainability, achieving a minimum of 50% reduction in lifecycle GHG emissions compared to conventional fuel, and expanding SAF production and use.

Together, the DOE, DOT, and USDA are accelerating the research, development, demonstration, and deployment of SAF needed to scale up production to 3 billion gallons per year by 2030 and 35 billion gallons per year by 2050.

In addition, members of the International Air Transport Association (IATA) committed to achieving net-zero carbon emissions by 2050. The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA, <https://bit.ly/3ThayfN>), a global market-based measure designed to offset international aviation emissions, encourages the use of SAF by allowing aircraft operators to reduce their offsetting requirement through the use of eligible fuels, which include CORSIA SAF.

Through the Inflation Reduction Act, SAF producers are eligible for a tax credit of \$1.25 per gallon of qualifying SAF that reduces GHG emissions by 50%, and an additional \$0.01 per gallon for each percent the reduction exceeds 50%, up to \$0.50 per gallon.

In addition, several states have implemented tax credit programs that are designed to stimulate the in-state production and consumption of SAF. For example, in Minnesota (<https://bit.ly/4eclFYV>), companies that produce or blend SAF sold between June 30, 2024, and July 1, 2030, can qualify for a tax credit of \$1.50 per gallon.

To qualify, the SAF must (1) be derived from biomass and not from palm fatty acid distillates, (2) reduce at least 50% lifecycle GHG emissions, (3) be produced in Minnesota or blended with aviation, gasoline, or jet fuel in Minnesota, and (4) be sold in Minnesota to a purchaser who certifies that the SAF is for use as fuel in an aircraft departing from an airport in Minnesota.

In addition to these tax incentives, several states have established low carbon fuel programs that issue credits in support of low carbon fuel production. For example, California established the Low Carbon Fuel Standard (LCFS, <https://bit.ly/3XdnHHF>) to decrease the carbon intensity of California's transportation fuel pool and encourage low carbon fuel production. Providers of transportation fuels must demonstrate that the mix of fuels they offer in California meet the LCFS carbon intensity standards or benchmarks for each annual compliance period, or purchase credits to meet the standards.

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Fuels and fuel blendstocks that have a carbon intensity higher than the benchmark generate deficits, while fuels and fuel blendstocks that have a carbon intensity below the benchmark generate credits.

Under California's LCFS program, SAF can generate credits, but the use of traditional jet fuel currently does not generate deficits. In August 2024, the California Air Resources Board released proposed amendments to the LCFS program that would eliminate the exemption for intrastate fossil jet fuel beginning in 2028.

If implemented, fossil-based jet fuel used in intrastate flights will generate deficits, likely encouraging clean transportation fuel projects and increased production and use of alternative fuels such as SAF. Other states may follow with the establishment of low carbon fuel programs and similar treatment of SAF.

Balancing SAF supply and demand

To support the continued development and demonstration of the SAF supply chain, the DOE recently sought feedback from stakeholders on building out the supply chain. DOE identified two overarching themes from the feedback received.

About the author



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First, long-term, stable policy is needed to provide regulatory certainty for the industry, promulgate incentives across the supply chain, and create market demand for SAF. Having consistent policies at both the federal and state level will help mitigate risks, encourage investment, and support continued innovation in the aviation industry.

Second, a functional platform for collaboration and engagement among a diverse set of supply chain participants will support the scalability and sustainability of SAF supply chains. This platform would enable stakeholders to collaborate on identifying common goals and addressing financing and investment risks as well as infrastructure constraints.

Demand is on the rise and continues to exceed available supply. Every barrel of SAF produced to date has been purchased and used, and this demand is fueled by the emissions reduction goals, policy initiatives, and incentives discussed above.

Takeaways

The adoption and integration of SAF will play an important role in mitigating the effects of climate change from the aviation sector. To narrow the gap between expected SAF production and demand, further investments, innovation, and maturation of the supply chain will need to occur. This can be supported by market participants entering into long-term SAF offtake agreements, leveraging government subsidies and incentives, developing SAF production facilities and infrastructure, and supporting more research, development, and demonstration of SAF.

In light of the qualification requirements for tax incentives, the benchmarks set forth under various low carbon fuels programs, and the increased scrutiny on carbon emissions, companies producing and blending SAF will want to ensure they have an accurate assessment and validation of the SAF's carbon intensity. Knowing the feedstock and process used to produce the SAF may also prove useful in the event the SAF or its carbon intensity is reviewed.

The regulatory landscape continues to evolve quickly, and companies operating in this space should closely monitor developments to ensure compliance with all applicable requirements.

Pamela Wu is a regular contributing columnist on energy and decarbonization issues for Reuters Legal News and Westlaw Today.