Aviation Law Section – State Bar of Texas

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Innovation Update: Sustainable Aviation Fuel and Advanced Air Mobility

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Introduction & Overview

- **What are we talking about?**
  - Sustainable Aviation Fuel – "SAF"
  - Advanced Air Mobility – "AAM"
- **Quick discussions on:**
  - What is it?
  - Where have we been and where are we going?
  - Current key regulatory issues / status

SAF

- **What is it and where are we . . .**

From: https://www.energy.gov/eere/bioenergy/sustainable-aviation-fuels

"Sustainable Aviation Fuel: Safe, Reliable, Low Carbon

"SAF is a biofuel used to power aircraft that has similar properties to conventional jet fuel but with a smaller carbon footprint. Depending on the feedstock and technologies used to produce it, SAF can reduce life cycle GHG emissions dramatically compared to conventional jet fuel. Some emerging SAF pathways even have a net-negative GHG footprint.

"SAFs lower carbon intensity makes it an important solution for reducing aviation GHGs, which make up 9%–12% of U.S. transportation GHG emissions, according to the U.S. Environmental Protection Agency."

SAF

- **What is it and where are we . . .**

From: https://afdc.energy.gov/fuels/sustainable-aviation-fuel

U.S. Department of Energy - Energy Efficiency and Renewable Energy
Alternative Fuels Data Center

Sustainable Aviation Fuel

Sustainable aviation fuel (SAF) is an alternative fuel made from non-petroleum feedstocks that reduces emissions from air transportation. SAF can be blended at different levels with limits between 10% and 50%, depending on the feedstock and how the fuel is produced. According to the International Civil Aviation Organization (https://www.icao.int/environmental-protection/pages/SAF.aspx) (ICAO), over 360,000 commercial flights have used SAF at 46 different airports largely concentrated in the United States and Europe.

SAF

✈ What is it and where are we . . .

From: https://nbaa.org/aircraft-operations/environmental-sustainability/sustainable-aviation-fuel-saf/

"What is Sustainable Aviation Fuel?

"Sustainable Aviation Fuel (SAF) is a low-carbon synthetic jet fuel that can be used safely in any turbine-powered aircraft. Derived from sustainable feedstocks – including cellulosic biomass, wastes and residues, waste steel mill gasses and captured CO_2 – SAF potentially can reduce lifecycle greenhouse gas (GHG) by up to 80% compared to conventional jet fuel and is considered pivotal to achieving the aviation industry's goal of a 50% net reduction in CO_2 emissions in 2050.

"While the availability of SAF at FBOs around the country continues to grow, additional supply at a competitive price is critical to achieving industry sustainability goals, with a goal of reaching a production capacity of 3 billion gallons by 2030."

SAF

- **What is it and where are we . . .**

From: https://www.visionfactory.org/post/pros-and-cons-of-sustainable-aviation-fuel

martinrochevisionf · May 22 · 2 min read

Pros and cons of sustainable aviation fuel

Updated: 5 days ago

Publication date: 22.05.2024

Sustainable aviation fuel (**SAF**) has been getting a lot of attention recently as the **aviation industry** looks for ways to reduce its **carbon footprint**. SAF is a type of biofuel made from sustainable feedstocks like **waste oils, agricultural residues**, and **algae**. It's seen as a promising alternative to traditional **jet fuel**, which is derived from fossil fuels and contributes to **greenhouse gas emissions**.

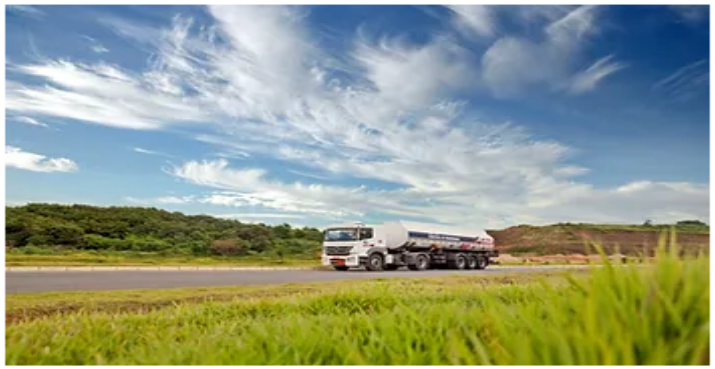
SAF

✈ What is it and where are we . . .

From: https://www.visionfactory.org/post/pros-and-cons-of-sustainable-aviation-fuel

Pros

A benefit of SAF is its **compatibility** with existing aircraft and infrastructure. **SAF can be blended** with traditional jet fuel and used in existing aircraft **without the need for any modifications**. This makes it a relatively easy and cost-effective way for airlines to **reduce** their **carbon footprint** and transition to more sustainable practices.



As opposed to conventional jet fuel, SAF can **cut carbon emissions** by up to 80%. This is dependent on the industrial process, supply chain to the airport, and sustainable feedstock.

SAF

- **What is it and where are we . . .**

From: https://www.visionfactory.org/post/pros-and-cons-of-sustainable-aviation-fuel

Cons

However, there are also some drawbacks to consider when it comes to SAF. One of the **main concerns** is the cost. SAF is currently more **expensive to produce** than traditional jet fuel, which can make it a less attractive option for airlines looking to cut costs. **The supply** of SAF **is also limited**, which can make it difficult for airlines to access a sufficient amount to meet their needs.

Another issue is the debate over the sustainability of the feedstocks used to produce SAF. While SAF is made from **renewable sources**, some critics argue that the production of these feedstocks can have negative environmental impacts, such as **deforestation** and competition with food crops. This raises questions about the true sustainability of SAF and whether it is truly a viable solution for **reducing carbon emissions** in the **long term**.

SAF

- **What is it and where are we . . .**

From: https://www.visionfactory.org/post/pros-and-cons-of-sustainable-aviation-fuel

Conclusion

In conclusion, while sustainable aviation fuel offers **many benefits** in terms of reducing carbon emissions and **improving the environmental impact** of the aviation industry, there are also **some challenges to consider**. The **high cost** of production, **limited supply**, and concerns about the **sustainability of feedstocks** all need to be addressed in order for SAF to become a truly sustainable alternative to traditional jet fuel. Nevertheless, **SAF has the potential** to play a **key role** in helping the aviation industry transition to a **more sustainable future**.

SAF

- **What is it and where are we . . .**

From: https://www.4air.aero/policywatch

4AIR PolicyWatch

Stay ahead of emerging legislation that may affect your operations or impact your clients and their reporting.

4AIR

Title	Effective Date	Last & Next Update	Summary – What is it?	Applicability – Who Does it Impact?	Status	Link
Securities & Exchange Commission (SEC) Environmental Footprint Reporting	The first disclosures will be due in 2026 for Fiscal Year 2025 reporting (depending on entity size).	Last Update: The rule was adopted by the SEC on March 6, 2024. By April 4, 2024, the rule was stayed in federal court and by the SEC administratively. Next Update: The stay will remain in place until the completion of litigation filed in the federal courts that	The Securities & Exchange Commission (SEC) passed a rule mandating that public companies report elements of their environmental footprint, including Scope 1 and 2 emissions, if material. Additionally, some companies will have to disclose the financial impacts of severe weather, carbon offsets, and other climate factors.	The rule applies to all public companies, including non-US firms with shares traded in the US. Within the realm of aviation, this would directly affect corporate flight departments and managed aircraft that serve as direct assets for large public companies. Indirectly, it may also impact any aviation company serving a customer that opts into supply chain reporting requirements.	ENACTED; STAYED	Final rule: The Enhancement and Standardization of Climate-Related Disclosures for Investors AGENCY: Securities and Exchange Commission

SAF

- **What is it and where are we . . . . . *Note: Not without controversy***

From: https://www.wri.org/insights/us-sustainable-aviation-fuel-emissions-impacts

WORLD RESOURCES INSTITUTE

Under New Guidance, 'Sustainable' Aviation Fuel in the US Could Be Anything But

May 9, 2024 By **Dan Lashof** and **Audrey Denvir** Cover Image by: Wicki58/iStock

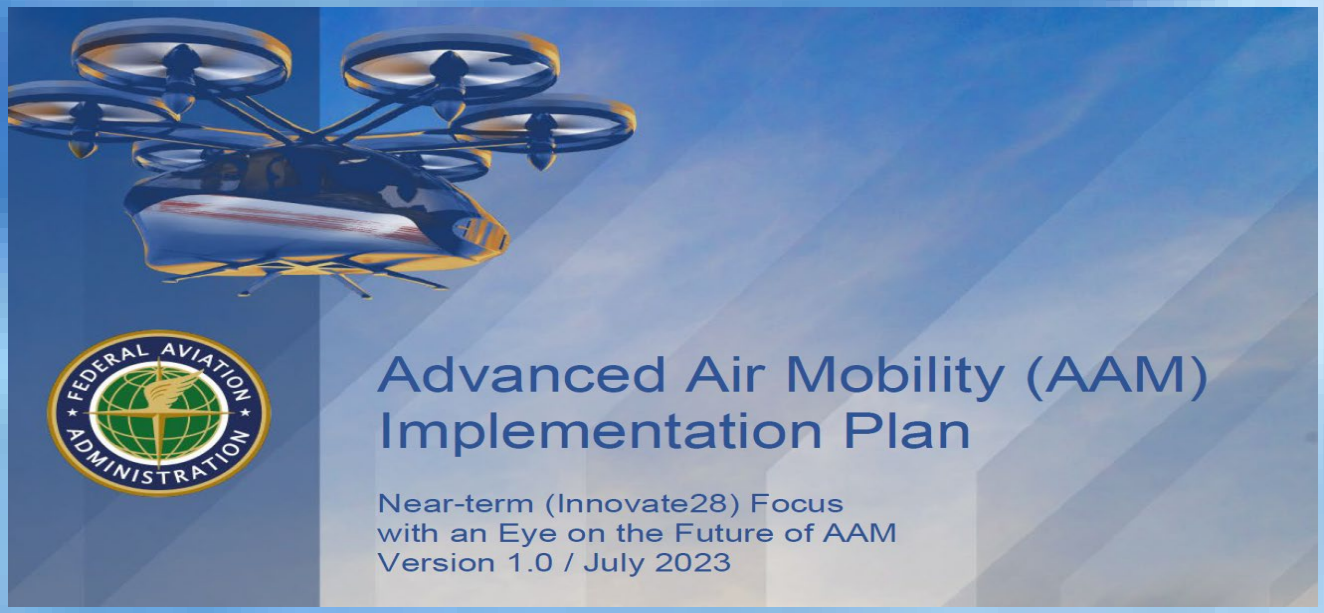
SAF

- **What are the near-term statutory / regulatory issues?**
- Three Questions:
  - Who are the Federal agencies that have taken a particular leadership role in this area?
  - What is the general status on SAF uptake? Are there alternatives?
  - What is the forecast for different aviation sectors, SAF, and other propulsion methods?

AAM

- **What is it and where are we . . .**

From: https://www.faa.gov/air-taxis/implementation-plan



AAM

- **What is it and where are we . . .**

From: https://www.faa.gov/air-taxis/implementation-plan

1.1 AAM Definition

As defined in the AAM Coordination and Leadership Act (P.L. 117-203, 136 Stat. 2227), October 17, 2022, "AAM is a transportation system that moves people and property by air between two points in the United States (U.S.) using aircraft with advanced technologies, including electric aircraft, or electric vertical takeoff and landing (eVTOL) aircraft, in both controlled and uncontrolled airspace." For purposes of this Implementation Plan, however, the scope of AAM is limited to those engaging in passenger-carrying or cargo operations with a pilot on board.

AAM

- **What is it and where are we . . .**

From: https://www.gao.gov/products/gao-24-106451

GAO U.S. GOVERNMENT ACCOUNTABILITY OFFICE

441 G St. N.W.
Washington, DC 20548

March 14, 2024

AAM

- **What is it and where are we . . .**

From: https://www.gao.gov/products/gao-24-106451

Advanced Air Mobility: Legal Authorities and Issues to Consider for Operations

Advanced Air Mobility (AAM) is an emerging concept of air transportation that will leverage new types of aircraft and an array of innovative technologies, such as electrified propulsion systems. According to proponents, AAM could be transformational, in part, because it offers the potential to expeditiously move people and goods while operating more quietly, with reduced aircraft emissions, and at lower costs than traditional aircraft. In addition, industry leaders anticipate that these aircraft will eventually be capable of autonomous flight.

AAM

✈ What is it and where are we . . .

From: https://www.gao.gov/products/gao-24-106451

What GAO Found

Advanced Air Mobility (AAM) is an emerging concept of air transportation that will leverage new types of aircraft and innovative technologies, such as electrified propulsion systems, to move people and goods, while operating more quietly than traditional aircraft and with reduced aircraft emissions. In 2022, GAO reported that stakeholders said the federal government—including the Federal Aviation Administration (FAA) within the Department of Transportation (DOT)—and industry will need to address a variety of issues before AAM operations can be widely implemented, including bringing AAM aircraft into commercial use.

DOT identified a variety of legal authorities that are relevant to the future regulation of civilian AAM operations, and FAA—which is responsible for ensuring the safety and efficiency of the U.S. aerospace system—has taken actions using these authorities. These actions include publishing proposed rules, developing interim guidance, and reviewing existing policies. For example:

- *Aircraft certification.* FAA prescribes rules for aircraft certification and safety. FAA is in the process of certifying initial AAM aircraft designs using existing certification processes and rules.
- *Pilot and mechanic training.* FAA determines the knowledge, experience, and training requirements for pilots and mechanics. In a June 2023 notice of proposed rulemaking, FAA proposed temporary pilot training standards that would apply to initial groups of AAM pilots. FAA said that it would develop rules on AAM mechanic certification at a later time, if needed.
- *Airspace management.* FAA prescribes aircraft operational requirements, such as minimum flight altitudes. FAA's 2023 AAM Implementation Plan says that near-term AAM operations can be managed with existing air traffic control tools, procedures, and protocols.
- *Vertiport construction and noise management.* FAA issued interim guidance on vertiport design standards and is considering the impact of AAM operations as the agency reviews its noise policy.

AAM

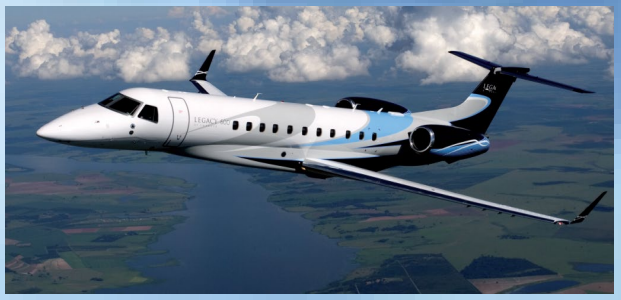
- **What is it and where are we . . .**

From: https://www.gao.gov/products/gao-24-106451

Officials from DOT and selected tribal, state, and local government officials generally agreed that FAA has exclusive legal authority over three of these topic areas–(1) certification and safety of AAM aircraft, (2) pilot and mechanic training, and (3) airspace management. Tribal, state, and local governments have certain legal authorities related to vertiport construction and noise management. For example, tribal, state, and local governments have the authority to develop and enforce zoning regulations, which would determine where vertiports could be built and could influence how communities experience noise from AAM aircraft.

AAM

- **What are the near-term statutory / regulatory issues?**
- Two Questions:
  - What is the status of aircraft certification?
  - What is the status of “operator” certification?



"Aviation in itself is not inherently dangerous. But to an even greater degree than the sea, it is terribly unforgiving of any carelessness, incapacity or neglect."

—Captain A.G. Lamplugh,
British Aviation Insurance Group,
London, circa 1930

Questions?