Alternative Fuels & Chemicals Coalition

Advocating for Public Policies to Promote the Development & Production of Alternative Fuels & Chemicals, with a Focus on Sustainable Aviation Fuels

AFCC's Objectives / The Benefits of Sustainable Aviation Fuels (SAF)

The **Alternative Fuels & Chemicals Coalition (AFCC)** will be monitoring the line items in upcoming FY2020 appropriation bills that have the potential to impact the development and production of sustainable aviation fuel (SAF). AFCC's objective is to ensure there is sufficient funding to:

- Support research and development,
- Stimulate innovations in the development and production of sustainable aviation fuels,
- Fund scale up and commercialization,
- Streamline regulatory requirements,
- Speed deployment, and
- Facilitate industry adoption of new technologies and fuels that offer significant improvements in operating costs and efficiency and reduce environmental impacts.

What is Sustainable Aviation Fuel (SAF)?

- SAF is a jet fuel made from renewable sources such as municipal solid waste (MSW), construction and demolition (C&D) debris, crop residues, storm debris, insect-infested and diseased trees, wood waste, used cooking oil, animal tallow, algae, oilseeds – and even industrial smokestack emissions.
- SAF can range in its renewable content and has been certified to the same safety standards and specification (ASTM D1655) as petroleum Jet-A. SAF typically is blended as a "raw" or "neat" aviation biofuel with Jet-A.

SAF Offers Multiple Economic Opportunities to Every State – and to Local Communities in Almost Every Congressional District

- **Communities in every state and the vast majority of Congressional districts have the opportunity to create jobs and stimulate economic development through the production of SAF.**
- This is because SAF can be produced from waste products that are readily available in all large and medium-size and many modest-size communities.
- These wastes often represent economic and environmental liabilities to these communities due to the logistics associated with their disposal.
- **By using these waste materials to produce SAF, communities can turn these liabilities into job creators and economic assets**.

Here are the Advantages of SAF Over Conventional Petroleum Jet Fuel

SAF:

- Reduces lifecycle greenhouse gas emissions by 50% to 80% compared with petroleum jet fuel.
- Has zero sulfur (less than 5 parts per billion) compared to ultra-low sulfur Jet-A which contains 15 parts per million of sulfur.

A Collaborative Government Affairs Effort
Organized by Kilpatrick Townsend & Stockton and American Diversified Energy Consulting Services
1200 G Street, NW, Suite 800, Washington, DC 20005
Telephone: +1 202-922-0144 Email: info@AltFuelChem.org Website: www.AltFuelChem.org

- Has no aromatics such as benzene, toluene, and naphthalene, which cause smog and make up as much as 24% of conventional jet fuel.
- Has very little particulate matter (soot).
- Reduces carbon monoxide and unburnt hydrocarbon emissions.
- Offers better thermal stability and combustion characteristics.

There are Significant Economic Benefits to the Use of SAF:

Tests conducted on military jets at Wright-Patterson Air Force Base in 2012 and the Naval Air Warfare Center Weapons Division at China Lake in 2013 found that:

- **Some drop-in renewable aviation fuels can add 13% to performance**, compared to fossil fuels.
- SAF lowers engine temperatures by 135 degrees, owing to the absence of impurities, aromatics, and particulate matter found in conventional fossil fuels.
- When these impurities burn, they cause high temperatures to radiate throughout the engine, causing an acceleration in metal fatigue.
- **Preliminary data from the Wright-Patterson tests show that engine parts could last up to 10 times longer with the use of SAF.**
- The Wright-Patterson tests also showed that drop-in SAF had, for the same volume, 7 percent less mass, which lowered the weight of the plane when fully fueled, and made it possible for the jets to fly faster, farther, or carry more payload.
- **Each of these benefits translates into significant savings in reduced maintenance and extended engine life, and increased revenues (and improved military preparedness) due to better performance and the ability to fly farther and carry more payload**.

Significant Challenges Currently Hamper the Production of SAF

- Several of the nation's largest airports and air carriers are ready to buy as much SAF as can be produced and are making large investments in an effort to bring additional quantities of SAF to market.
- There currently is very little production of SAF.
- The process involved in developing new technologies, testing new fuels, and getting new fuels approved is long, expensive, and arduous.
- Financing projects with first-of-a-kind technologies and advanced fuels is highly problematic; investors and lenders prefer projects that have proven track records.
- The capital expenditures required to build a fuel production facility and the operating expenses for a biorefinery producing SAF are much higher – as much as four to five times higher – than for refiners of petroleum-based fuels.
- Market prices do not reflect the significant benefits that SAF offers over its petroleum counterpart; a gallon of SAF and Jet A both sell for the same spot market price. Efforts to charge a premium for SAF have not been successful.
- The economics of these projects, therefore, often are not attractive and often have to rely on sales of byproducts (to which as much as 60% of a facility's output may need to be devoted) to make a project profitable.

Wise investments in agency programs through FY2020 appropriations will help to overcome these challenges.