Alaska Airlines’ Aviation Biofuel Goal-

The Challenges of Turning Goals into Reality

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IATA CO₂ Emission Reduction Roadmap

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Global Aviation Emission Focus

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EPA Takes First Steps to Address GHG Emissions from Aircraft Engines

The EPA is proposing to fill gaps in existing U.S. regulations that are needed to address emissions from aircraft engines. This action is being taken to implement the commitments made by the United States in the 2015 Paris Agreement. The proposed rule identifies aircraft engines and includes a new requirement to implement a system of tradeable allowances for aircraft engine CO₂ emissions.

The rule will also facilitate the adoption and implementation of a global system of allowances for aircraft engines by encouraging international efforts to reduce aircraft emissions. This will help address the growing concern of rising aviation emissions and align U.S. regulations with the goals of the Paris Agreement.

The proposed rule is expected to take effect in 2023, with implementation beginning in 2026. The allowance system will be similar to the one used for other sectors, with allowances allocated to manufacturers based on engine size and emissions. The allowances can be traded among airlines, aircraft manufacturers, and other entities to reduce costs and facilitate compliance.

ICAO High-level Meeting on a Global Market-Based Measure (MBM) Scheme

The International Civil Aviation Organization (ICAO) is considering the implementation of a global market-based measure (MBM) scheme to help address aviation emissions. This scheme would allow airlines to purchase allowances to offset their emissions, encouraging them to invest in more fuel-efficient technologies and operations.

The MBM is intended to complement existing national and international efforts to reduce aircraft emissions. It is expected to be adopted by ICAO member states, with the aim of reducing aviation emissions in line with the goals of the Paris Agreement.

The MBM scheme would be designed to be compatible with existing national and regional systems, and to be part of a global regime that can incentivize the decarbonization of the aviation sector. This would help to reduce the sector's contribution to climate change and align it with the goals of the Paris Agreement.
Alaska Airlines-Reducing Aircraft Emissions

2020 Goal: Decrease fuel consumption and associated emissions for mainline operations by 20%, over 2012.
The Fuel We Use

2020 Goal: Use sustainable aviation biofuel at one or more of our airport locations by 2020.

Involvement in Biofuel Development

- SAFUG - 1st domestic carrier
- SAFN - founding member
- 75 biofuel flights in 2011
- Offtake agreement with HBE in 2013
- WA Aviation Biofuel Work Group
- FAA ASCENT
- Gevo and NARA flights in 2016
Alaska Airlines’ Biofuel Goal

2016 Biofuel Goals

• Reaffirm our commitment to the development of biofuel by operating demonstration flights for Gevo and NARA
• In partnership with the Port of Seattle and The Boeing Company, conduct an infrastructure feasibility study to bring commercial supplies of sustainable aviation fuel to the Port of Seattle
Why NARA?

- Alaska Airlines is officially “feedstock agnostic”
- SAFN identified four regional feedstocks that include woody biomass
- NARA project validates conversion of local feedstocks to aviation biofuel
- In addition to environmental benefits of biofuel, Alaska supports economic development and job growth in the Pacific Northwest, including siting of local biorefinery
Challenges

• Biofuel conformance to ASTM standards and timeline for approval
  o 2011 HEFA Approval
  o 2016 ATJ-SPK
  o Next?

• Fuel Availability- Demonstration scale to commercialization

• Cost

• Delivery Infrastructure
Petroleum Jet Procurement

- **RFP**
  - Each airline purchases fuel independently

- **Purchase Agreement**
  - Purchase of specified volumes for a defined airport

- **Pipeline Delivery to Fuel Farm**
  - All airline fuel comingled

- **Delivery to Aircraft**
Biofuel Procurement and Delivery

- Fuel producer must prove technology and obtain ASTM approval
- Propose refinery and secure funding—DOE grants, private investors, etc.
- Fuel offtake agreement by individual airlines
- Production
- Delivery to separate storage at airport fuel farm
- Blending remotely or at fuel farm
- Post blending certification to show conformance to fuel standard
- Delivery to wing via truck vs hydrant system
**Biofuel Costs**

$4-8 /gallon neat biofuel fuel compared to $1.50/gallon for petroleum

$0.2-0.6/ gallon transportation/delivery into wing

Cost differential for 1 million gallons= increase cost of $2,700,000-$7,100,000

Impact to Alaska Airlines of a $0.01 increase in fuel cost= approximately $5,000,000

When do costs make sense?
- Airport offset incremental fuel cost
- Airport helps with infrastructure cost
- Offset costs associated with GMBM and other costs of carbon
- Strategic position to manage costs
THANK YOU!

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