The Importance of Aviation Biofuels: An Airline’s Perspective

Northwest Wood-Based Biofuels + Co-Products Conference

Dean DuVall, Managing Director
Station Operations Support, Regulatory Compliance & Fuel

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We fly to beautiful places ... and we want to keep them beautiful.
Aviation Industry’s Global Approach to Emission Reduction

2010
1.5% p/a fuel efficiency
Working towards carbon-neutral growth

2020
Carbon-neutral growth
Implementation of global sectoral approach

2050
-50% CO₂
Half the net aviation CO₂ of 2005

Source: IATA
Four Pillar Strategy for Airline Industry Emission Reduction

Invest in new TECHNOLOGY (including sustainable aviation biofuels)

Fly using more efficient OPERATIONS

Build and use efficient INFRASTRUCTURE

Use effective, global, MARKET-BASED MEASURES

Source: IATA
IATA CO₂ Emission Reduction Roadmap
(Renewable Fuels Required to Meet Goals)

1. improve fleet fuel efficient by 1.5% per year from now until 2020
2. cap net emissions from 2020 through carbon neutral growth
3. by 2050, net aviation carbon emissions will be half what they were in 2005.

- Known technology, operations and infrastructure measures
- Biofuels and additional new-generation technologies
- Economic measures
- Net emissions trajectory
- ‘No actions’ trajectory
Alaska Air Group Overview

Fuel Use (2013)
- ~440 Million gallon
- Fuel cost $1.4 Billion

Fleet
- 133 Boeing-737
- 51 Bombardier Q400

Flights per Day
- 867

- Destinations
  - 101 cities in 3 countries

- Passengers
  - 28.3 million (total enplanements in 2013)

- 3.5% of domestic seat capacity
Reducing Aircraft Emissions - Alaska Air Group’s Strategy

What we fly

How we fly

The fuel we use
Technology: What We Fly

Boeing 737-NG

Bombardier Q400

Coming in 2018: Boeing MAX
Technology: Winglets Improve Efficiency

- 800s equipped w/standard winglets fitted -700s, -900s
- Efficiency ↑ 3.0%
- fleet CO₂ emissions ↓ 79.5k tons
- 900 cars off the road

- Total fleet CO₂ emissions ↓ 136.5k tons / 28,500 cars off the road

- Retrofitting fleet w/split-scimitar winglets
- Efficiency ↑ 1.7%
- Total emissions ↓ 57k tons
- 11,900 cars off the road

2014

58,000 gal. / aircraft
Operational Improvements: How We Fly

- Single-engine taxi
- Reduced taxi times
- APU on demand for Hawaii flights
- En route navigation: most favorable
- Improved approaches: idle power
Operational Improvements: ‘Greener Skies Over Seattle’

- Eliminates noise for 750k people
- Saves airlines 2 million gallons of fuel annually
- Cuts pilot-air traffic controller workload in half
- Shows potential of FAA’s NextGen ATC system
Results: Alaska Air Group Emissions

Alaska Air Group has reduced the intensity of CO₂ emissions by over 31% since 2004.
The fuel we use

Alaska burns over 1 million gals. / day

Spent $1.4 billion on fuel in 2013

Our largest expense – 35%

3.2m tons of emissions / 676k cars

U.S. airlines burn 18 billion gals. / year

Cost: $50 billion

160m tons of emissions / 33.3m cars
Alaska Airlines’ Biofuel Strategy

Energy security
Supply integrity/reliability/diversity
Price competitive
Fuel Quality
Roundtable for Sustainable Biomaterials (RSB) certified or equivalent
- Do not induce other problems (water, land use changes, etc)
Decreased GHG emissions on a life-cycle (LCA) basis
Our Sustainable Aviation Fuel Journey
Our Sustainable Aviation Fuel Journey
Aviation Fuel Demand in the PNW

G Fuel Use
2014 Forecast -187 million gallons

Commercial Jet Fuel Consumption - 2010
Pacific Northwest - 743 million gallons

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Challenges

Challenges to commercial scale deployment of sustainable aviation biofuel

- Timeline and process for certification of various conversion pathways
- Diversity/Seasonality of feedstock
  - Biofuel quantities are limited
  - Cost premiums exist
  - Product quality assurance
  - Pipeline transport barriers
  - Co-mingled airport fuel storage systems
Questions?