

The Alaska Airlines logo, featuring the brand name in a blue script font.

# *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

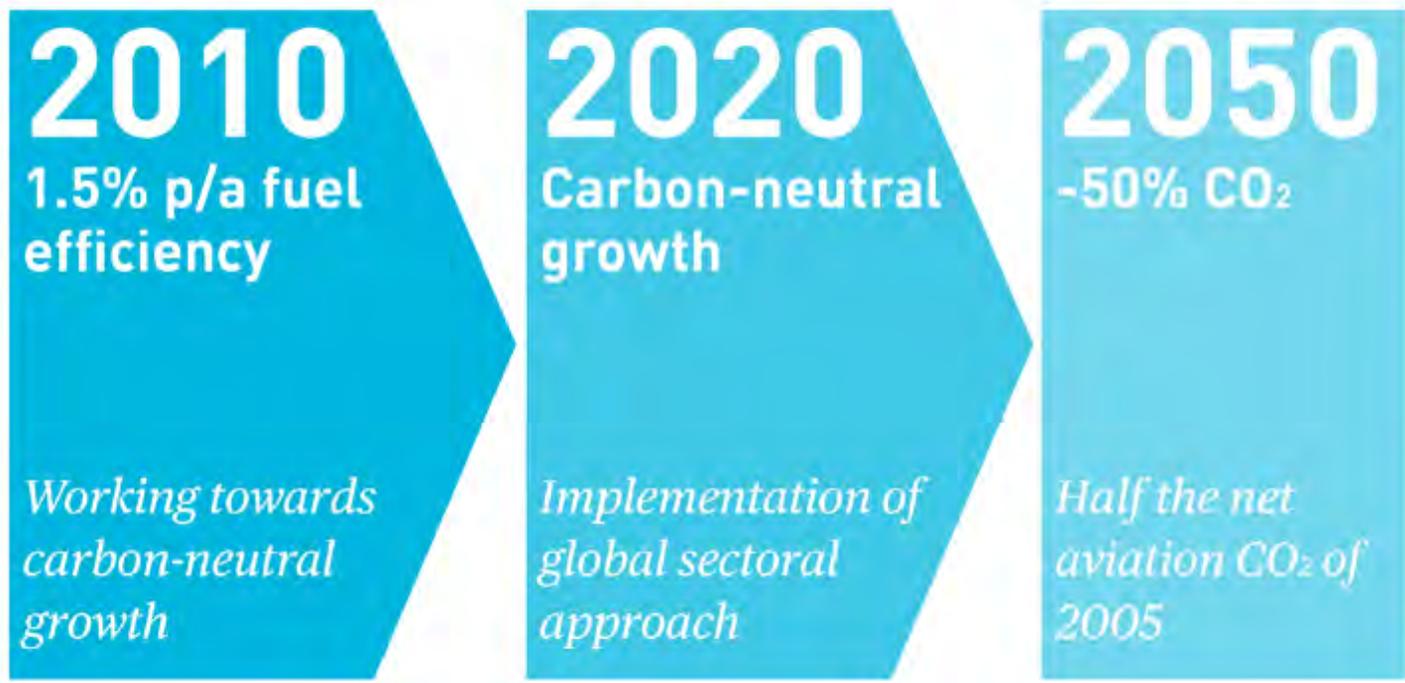
April 28, 2014



We fly to beautiful places ... and we want to keep them beautiful.

*Alaska Airlines* / *Horizon Air*

# *Aviation Industry's Global Approach to Emission Reduction*



# *Four Pillar Strategy for Airline Industry Emission Reduction*

*Invest in new*  
**TECHNOLOGY**

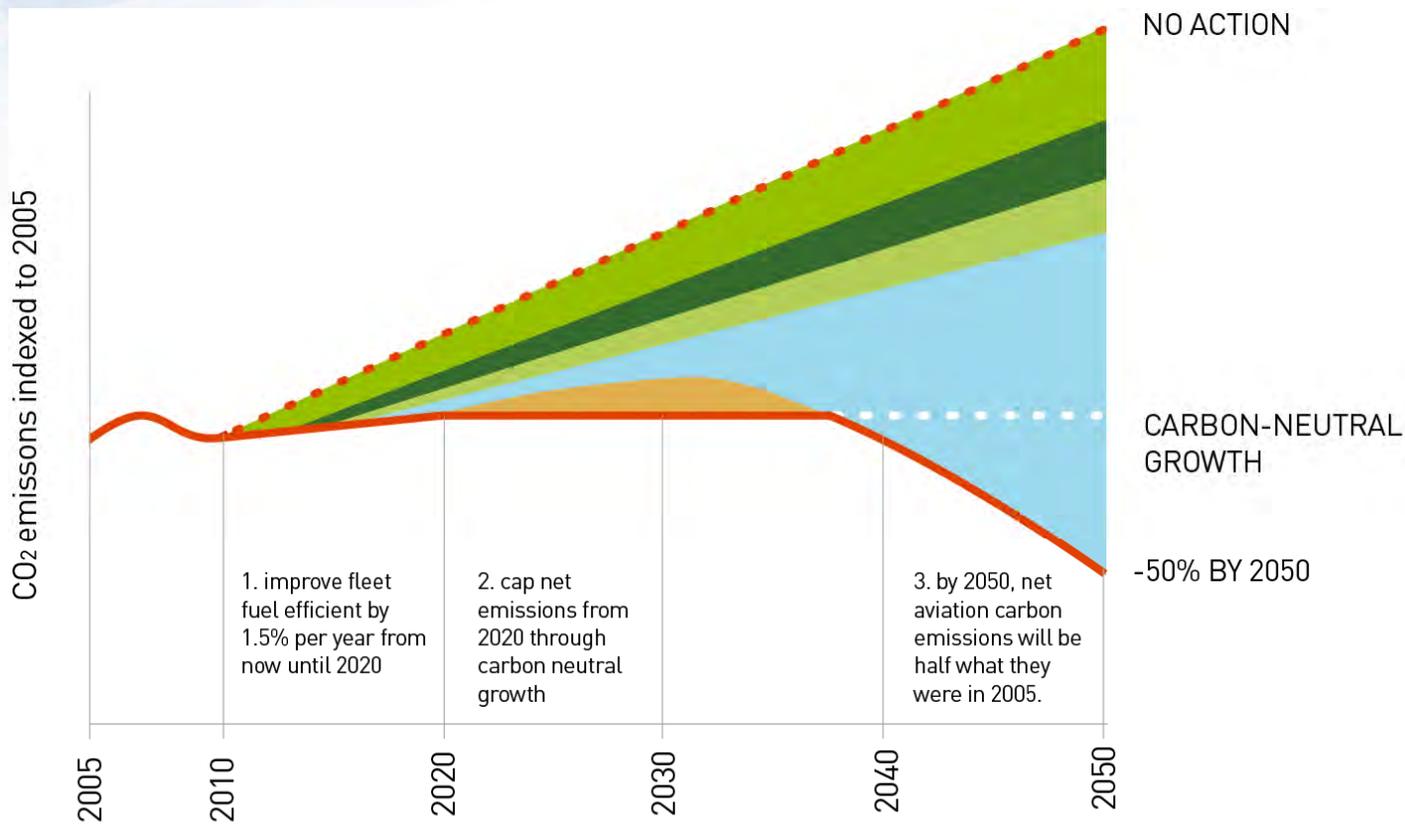
*(including sustainable aviation biofuels)*

*Fly using more efficient*  
**OPERATIONS**

*Build and use efficient*  
**INFRASTRUCTURE**

*Use effective, global,*  
**MARKET-BASED MEASURES**

# IATA CO<sub>2</sub> Emission Reduction Roadmap (Renewable Fuels Required to Meet Goals)



Known technology, operations and infrastructure measures

Economic measures

Biofuels and additional new-generation technologies

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



100,000 gal. / aircraft annually

100s equipped w/standard winglets  
fitted -700s, -900s

Efficiency ↑ 3.0%

Fleet CO<sub>2</sub> emissions ↓ 79.5k tons

10,000 cars off the road

Total fleet CO<sub>2</sub> emissions ↓ 136.5k tons / 28,500 cars off the road



58,000 gal. / aircraft

2014

Retrofitting fleet  
w/split-scimitar winglets

Efficiency ↑ 1.7%

Total emissions ↓ 57k tons

11,900 cars off the road

# *Operational Improvements: How We Fly*



Single-engine taxi

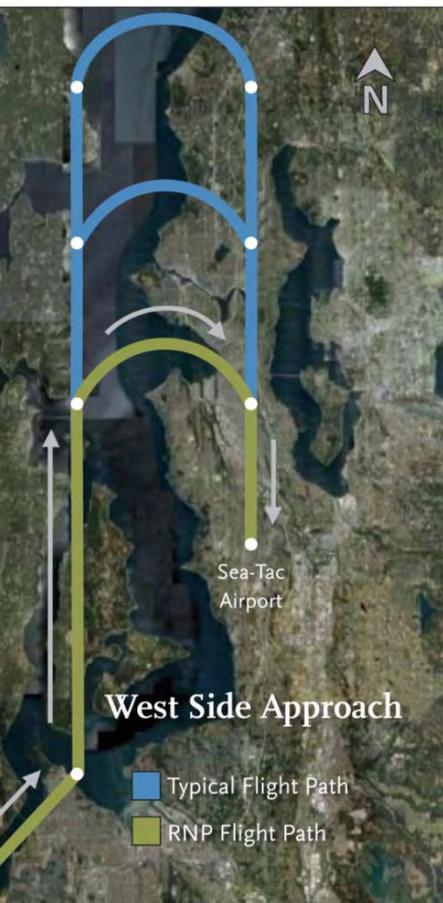
Reduced taxi times

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

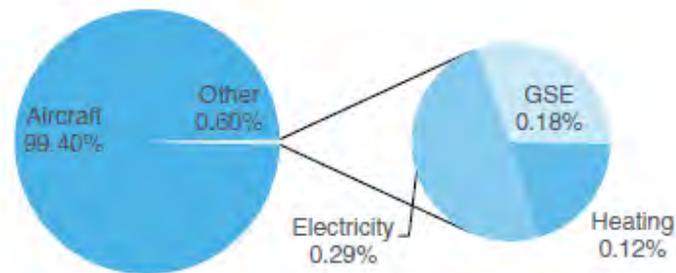
Saves airlines 2 million gallons of fuel annually

Cuts pilot-air traffic controller workload in half

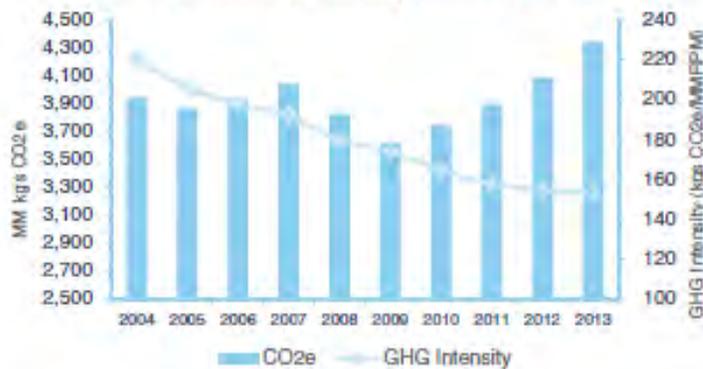
Shows potential of FAA's NextGen ATC system

# Results: Alaska Air Group Emissions

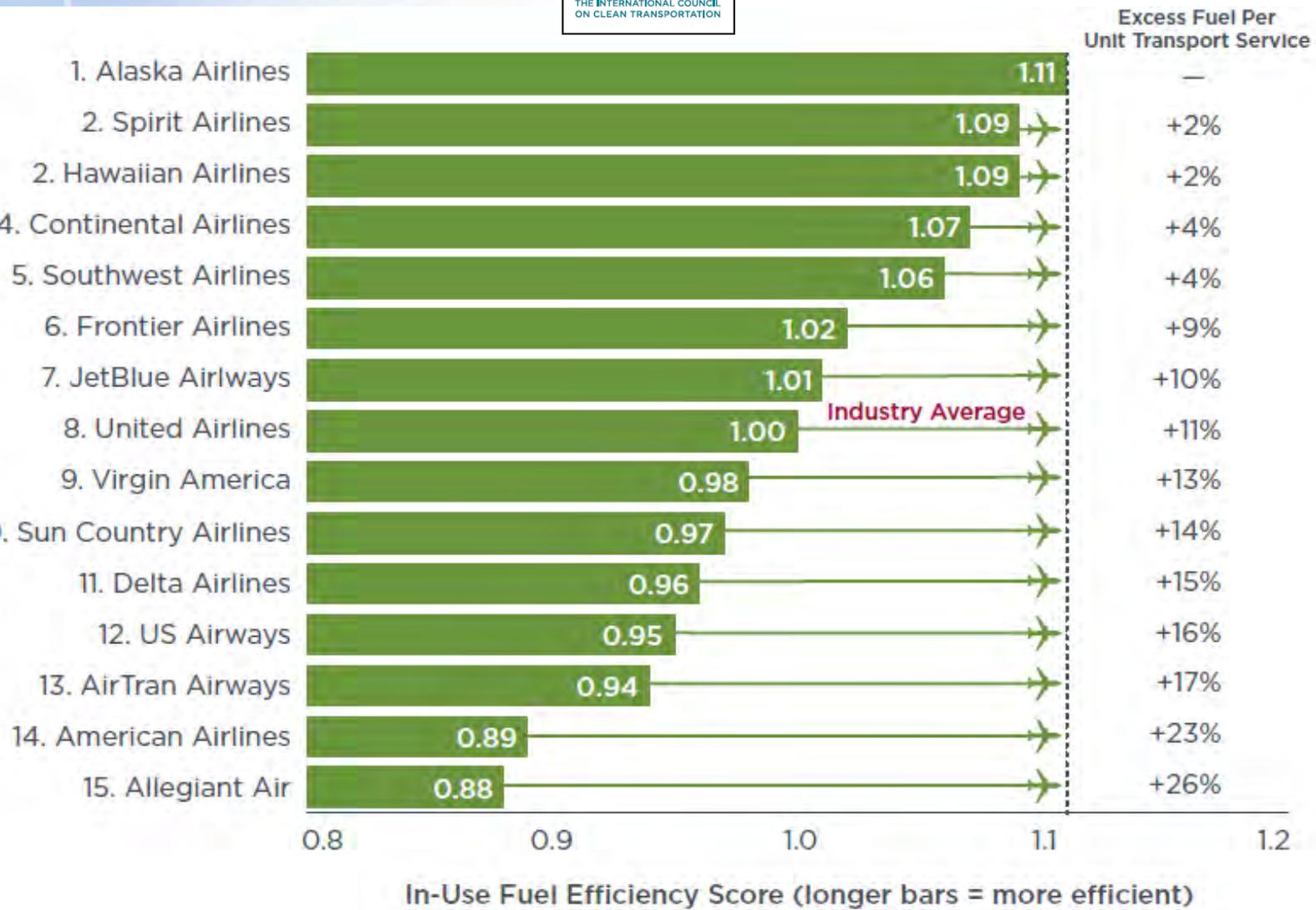
2013 Scope 1 and 2 Emissions



GHG Emissions & Intensity (Alaska Air Group)



Alaska Air Group has reduced the intensity of CO<sub>2</sub> 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

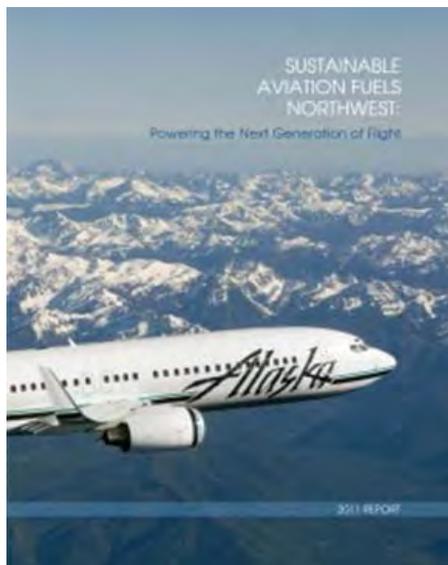
# *Our Sustainable Aviation Fuel Journey*

09



Sustainable Aviation Fuel  
Users Group

10



# *Our Sustainable Aviation Fuel Journey*

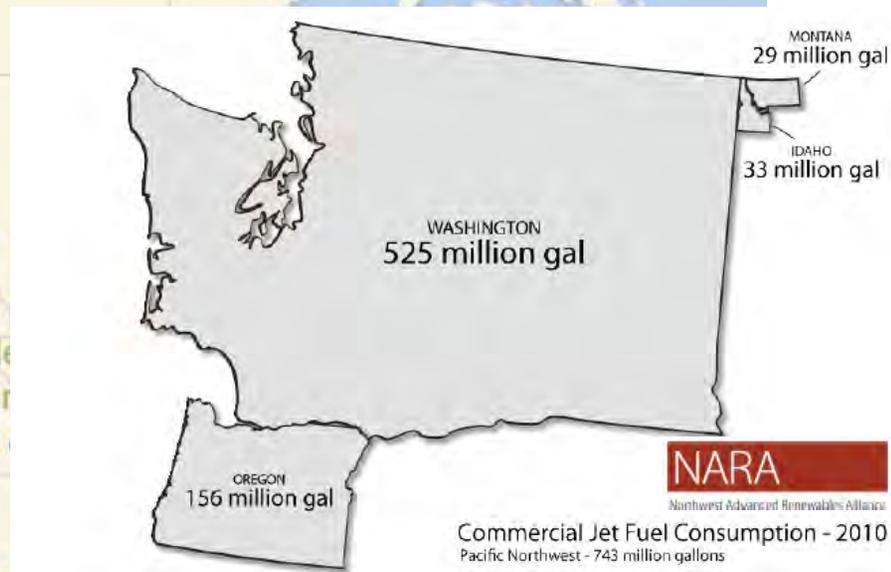


2014



# Aviation Fuel Demand in the PNW

Fuel Use  
2014 Forecast - 187 million  
gallons





## *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?**