Reducing aircraft emissions

What we fly

How we fly

The fuel we use
We fly to beautiful places ... and we want to keep them beautiful.
What we fly

Boeing 737-NG

Bombardier Q400

Coming in 2018: Boeing MAX
Alaska among the most efficient

Fuel consumption (gallons / seat)

<table>
<thead>
<tr>
<th>Seats:</th>
<th>737-900ER</th>
<th>737-900</th>
<th>A321</th>
<th>737-800</th>
<th>A320</th>
<th>757-200</th>
<th>737-700</th>
<th>737-400</th>
<th>A319</th>
<th>737-300</th>
<th>MD-80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel gallons per seat</td>
<td>15.0</td>
<td>15.5</td>
<td>16.1</td>
<td>16.1</td>
<td>16.6</td>
<td>17.8</td>
<td>17.9</td>
<td>18.6</td>
<td>18.8</td>
<td>20.1</td>
<td>22.2</td>
</tr>
</tbody>
</table>

- 1,500-mile stage-length
- Nominal fuel burn
- Pax / bag weight = 220 lbs.
Horizon among the most efficient

Fuel consumption (gallons / seat)

- Better

High performance: 400-mile stage-length
Nominal fuel burn

- Q400: 5.8
- CRJ-900: 6.2
- E190: 6.7
- CRJ-700: 7.1
- Q200: 7.2
- CRJ-200: 7.3
- E170: 7.7
- B1900: 10.6

Vacant seats: 76

Fuel gallons per seat
Winglets improve efficiency

- **2008**
  - 737-800s equipped w/standard winglets
  - Retrofitted -700s, -900s
  - Efficiency ↑ 3.0%
  - Total fleet CO₂ emissions ↓ 79.5k tons
  - 16,600 cars off the road

- **2014**
  - Retrofitting fleet w/split-scimitar winglets
  - Efficiency ↑ 1.7%
  - Total emissions ↓ 57k tons
  - 11,900 cars off the road

**Total fleet CO₂ emissions ↓ 136.5k tons / 28,500 cars off the road**
## Green Skies | How airlines compare on fuel efficiency

<table>
<thead>
<tr>
<th>Improvement Since 2000</th>
<th>Seat Miles per Gallon of Fuel in 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>33% Alaska</td>
<td>75.9</td>
</tr>
<tr>
<td>-8% JetBlue</td>
<td>71.7</td>
</tr>
<tr>
<td>25% Continental</td>
<td>69.6</td>
</tr>
<tr>
<td>16% Southwest</td>
<td>68.6</td>
</tr>
<tr>
<td>19% US Airways</td>
<td>66.4</td>
</tr>
<tr>
<td>53% AirTran</td>
<td>64.1</td>
</tr>
<tr>
<td>12% United</td>
<td>62.1</td>
</tr>
<tr>
<td>14% American</td>
<td>60.5</td>
</tr>
<tr>
<td>20% Delta</td>
<td>60.4</td>
</tr>
</tbody>
</table>

**Chevy Suburban:** 18 mpg  
**Toyota Prius:** 50 mpg

Note: Mileage for autos is based on full vehicle, not seats. Mileage for airlines is per seat.

Source: WSJ calculation of Department of Transportation data

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**The Wall Street Journal**  
August 2010
How we fly

- Single-engine taxi
- Taxi times in general
- APU on demand for Hawaii flights
- En route navigation: most favorable
- Approaches: idle power
‘Greener Skies’

- 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
The fuel we use

Alaska burns about 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
The fuel we use

75 flights powered by 20% biofuel blend

SEA-DCA on 737s
SEA-PDX on Q400s

Fuel cost: $17 / gal.

Showed industry:
If you build it, we will buy it.
Biofuel challenges

- Scaling up to a sustainable supply
- Pricing biofuel competitively
- Drop-in distribution
Questions