Operational Measures to Reduce Aviation Emissions

New Zealand Initiatives

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The New Zealand Context
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Air Traffic Management: Airways Corporation of New Zealand & Vision 2015

www.airways.co.nz
Collaborative Flow Manager (CFM)

- Formerly known as Collaborative Arrivals Manager (CAM)

Map: NASA Earth Observatory
Savings from CFM

Monthly airborne delays down from 28,000 mins to 5,000 mins

Courtesy of Airways Corporation of New Zealand
PACIFIC BLUE IN-FLIGHT DELAYS

Minutes of Delay

Month

Jan-08, Feb-08, Mar-08, Apr-08, May-08, Jun-08, Jul-08, Aug-08, Sep-08, Oct-08, Nov-08, Dec-08, Jan-09, Feb-09, Mar-09, Apr-09, May-09, Jun-09, Jul-09, Aug-09, Sep-09, Oct-09, Nov-09, Dec-09, Jan-10, Feb-10

Courtesy of Airways Corporation of New Zealand & Pacific Blue
AUCKLAND INTERNATIONAL ARRIVALS MINS OF DELAY

Courtesy of Airways Corporation of New Zealand
Oceanic Control System

- 30/30 separation
- Flex-Tracks
- Dynamic Airborne Reroute Procedures (DARPs)
- User Preferred Routes (UPRs)
ASPIRE

• Air NZ demonstration flight 12 Sept 2008: Auckland to San Francisco
• Saved 3,500 kg fuel / >11,000 kg CO₂
Air New Zealand

- 4% fuel savings across fleet since 2004 (130,000 tonnes CO$_2$)
- Domestic 737-300 fleet saved 6%
Operating Techniques

- Continuous descents & tailored arrivals
- Delayed flap approaches
- Reverse idle thrust on longer runways
- Single engine taxi-in
- Flying aircraft slower
- Just-in-time fuelling
Boeing 767-300ER Blended Winglets

- Saving over 18,000 tonnes CO$_2$ a year

Boeing 777 Performance Improvement Package

- 1% fuel savings

Fleet Renewal

- B777-300
- A320 with *sharklets*
- B787-9
Christchurch International Airport

- 1st carbon-neutral airport in Southern Hemisphere (CarboNZero)
- Reducing emissions by:
  - Identifying and managing terminal building energy inefficiencies
  - Using groundwater cooling for air-conditioning
  - Paving runway with Coolpave system
  - Recycling asphalt during runway maintenance
  - Auditing and managing waste
Auckland International Airport

- Introducing low-emission vehicles
- Staff travel & car pooling programme
- International arrivals: 300 m² solar array, generating 49,500 kW.h per year
- Solar water heating, saving 15,000 kW.h per year
• Wellington RNAV STAR saved 1,170 tonnes CO$_2$ in first 9 months of 2009
• Queenstown RNP AR approaches saved Air New Zealand 46 diversions and 40 flight cancellations in first 12 months of B737-300 operations
Airspace and Air Navigation Plan

- Aiming for an accessible, integrated, safe, responsive, and sustainable system, with...
- High levels of efficiency, safety, security & environmental protection
Conclusions

And thanks to:

- Airways Corporation of New Zealand
- Air New Zealand
- Pacific Blue

- Christchurch International Airport Limited
- Auckland International Airport Limited

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