

Aviation Current Efforts & Initiatives to Address Air Quality



Federal Aviation
Administration

Presented to: Transportation Research Board
Multi-Modal Air Quality Workshop focused
on the Goods Movement Sector

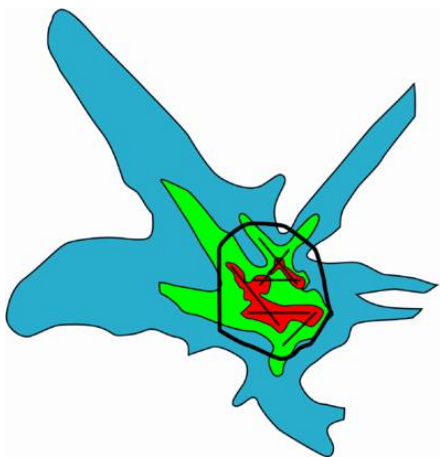
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Environment

Date: 22 January 2006



- ***The Challenges***
- **The Opportunities**
- **Concluding Observations**

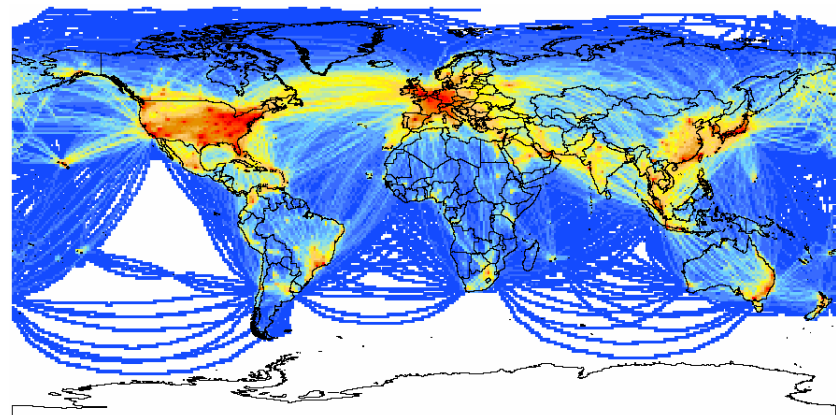
Aviation environmental issues



**Community
Noise Impacts**



Air Quality



Global climate



Water Quality

Aviation Emissions

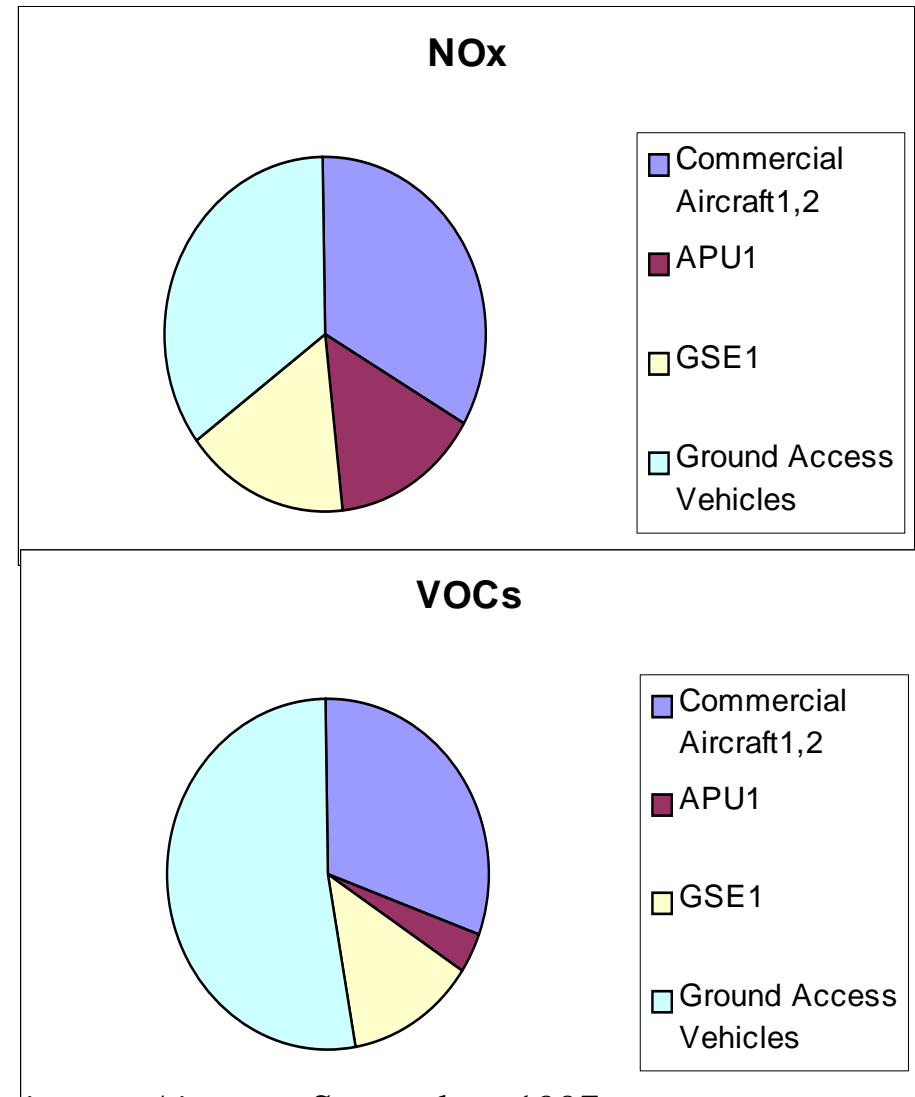
Sources

- Aircraft
- Ground support equipment (GSE)
- Ground traffic to/from airport and parking lots
- Airport vehicles
- Auxiliary power units (APU)
- Stationary sources
- Fuel storage and handling
- Maintenance facilities
- Construction equipment

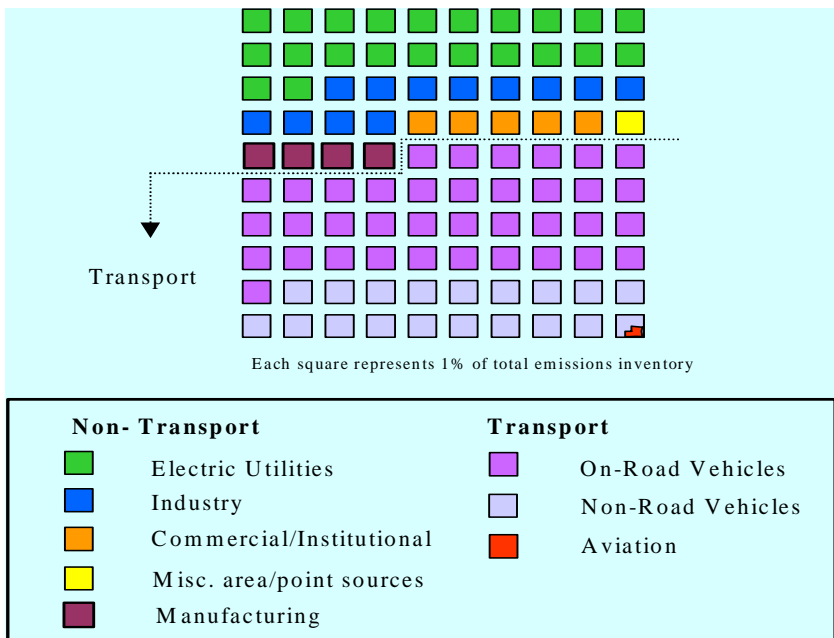
1-Includes domestic and foreign carriers

2-Excludes air taxi and general aviation aircraft

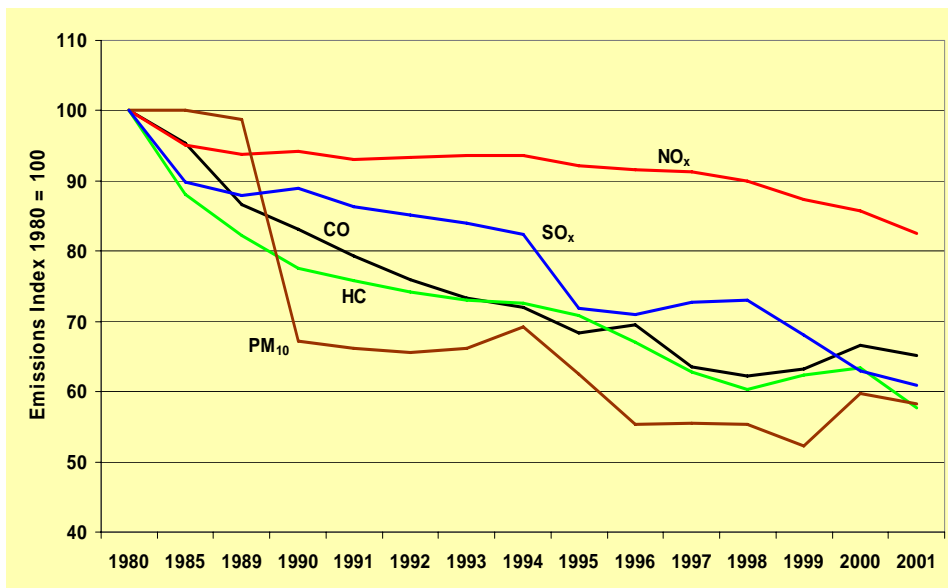
Source: *Analysis of Techniques to Reduce Air Emissions at Airports*, September, 1997



Local air quality impacts in context



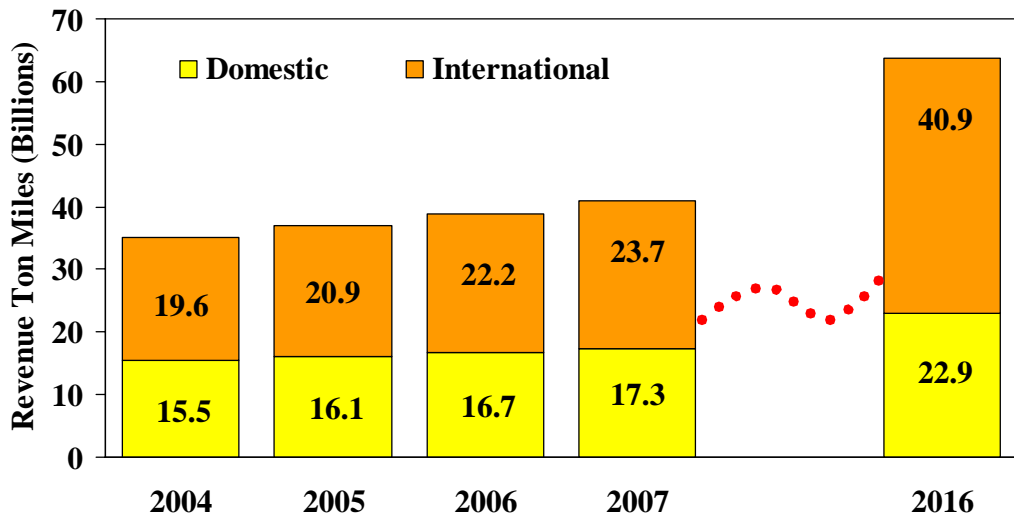
While all transportation makes up more than 55 percent of the total national NO_x inventory, aviation represents only about 0.4 percent.



Local air quality pollutants have declined steadily over the past several years. NO_x has been the most challenging pollutant to constrain

Why is there a problem?

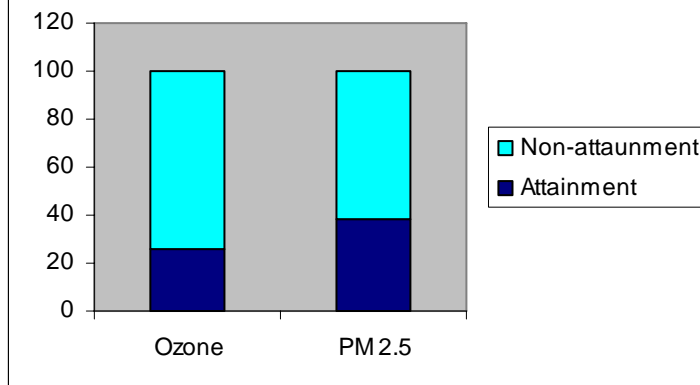
Forecasted Cargo Growth, FAA 2005 Forecast



Over 40% of value of U.S. freight transported by air

Demand growing in the face of capacity constraints

Data for 50 Largest U.S. Airports



- **The Issues**
- ***The Challenges & Opportunities***
- **Concluding Observations**



New concepts offer
promise for improvement

But also entail
challenges

- Given the long life-time of aircraft, coupled with the length of airframe and engine research cycles, the transition from fundamental research to fleet average performance will take 20 to 40 years.
- Safety considerations of aviation versus other transportation modes place additional constraints on mitigation strategies

Ground operations



Opportunities

- Airports and airlines are adopting low emissions technologies available for ground support equipment and airport access vehicles
- Optimized ground operations can reduce emissions

Challenges

- Limited capital for investing in new vehicles
- Capacity considerations place constraints on operational approaches



Collaborative approaches



*Download .pdf version of
the plan at www.jpdo.aero*

Environmental Protection that Allows Sustained Aviation Growth -- community noise and local air quality emissions from aviation that significantly impact human health and welfare reduced *in absolute terms*

Rising fuel costs

- Aircraft are dependent on liquid fossil fuels and potential modifications to fuel type and composition for environmental benefits are limited
- Fuel costs are a significant portion of operating costs for an airline; hence airlines have incentives to reduce fuel burn
- Industry wide fuel costs are still second to labor, but airlines are starting to report more for fuel than for labor.
- Pressure from fuel costs likely to increase and may provide an opportunity for effective policies to promote alternative fuel sources

- **The Challenges**
- **The Opportunities**
- ***Concluding Observations***

A way forward

- Industry's focus is on security and financial survival. Success dealing with environmental issues requires a partnership and shared commitment across the world. This is a critical time to plan for the future.
- International goal “limit or reduce impacts”. U.S. goal is net reductions in noise & emissions. Doing so requires major breakthroughs
- R&D offers best hope, but cannot yield benefits in short term – using “balanced approach” critical
- Need to consider alternative sources of energy (e.g. synthetic fuels). But, are radical changes (like hydrogen) feasible?