

*Aviation and the Environment:
The “New Normal”*

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Aviation & Environment in the “New Normal”

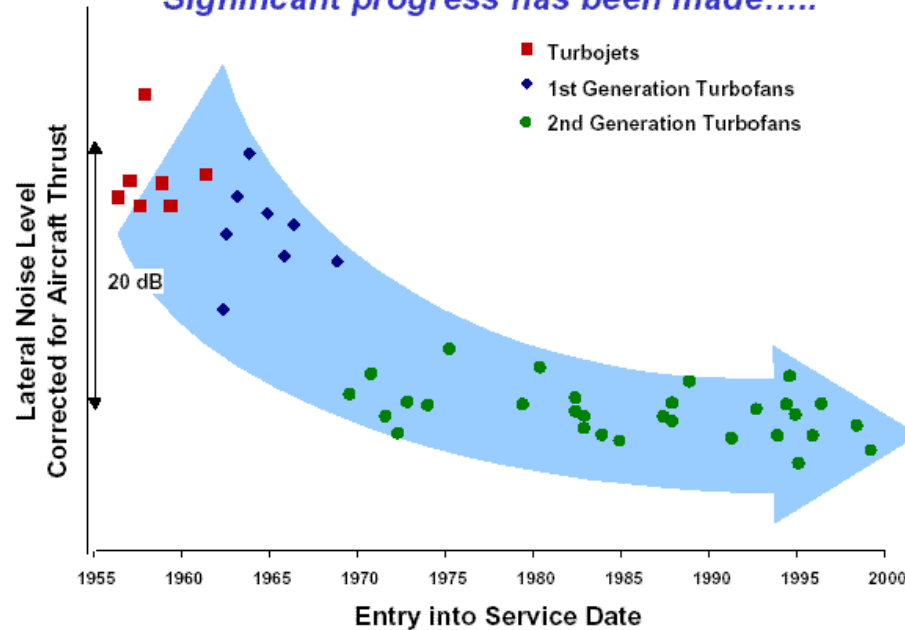
- Aviation & the Environment
- Life in the “New Normal”
- Some Thoughts on Moving Forward

Aviation Noise- Source Noise Reductions

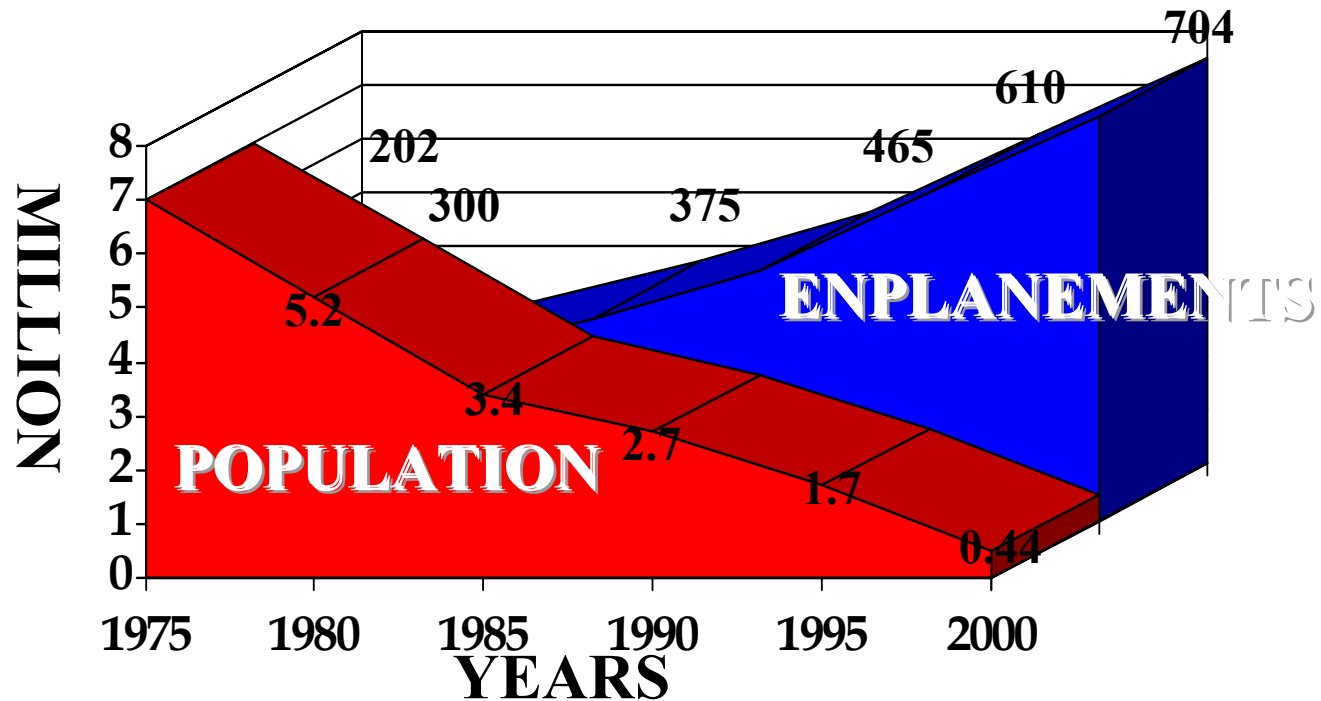


Progress in noise reduction

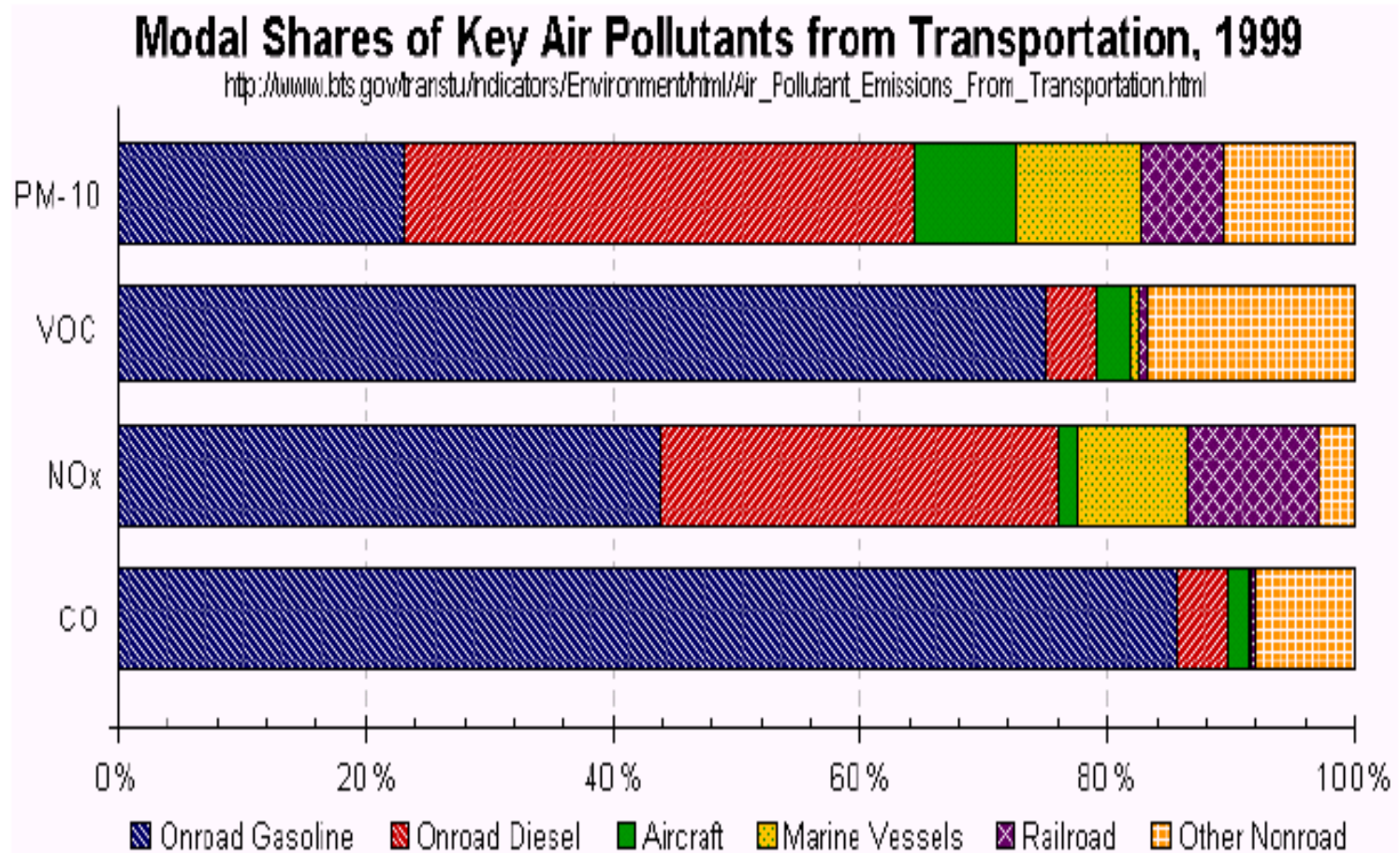
Significant progress has been made.....



Aviation Noise- Population Exposure is Down

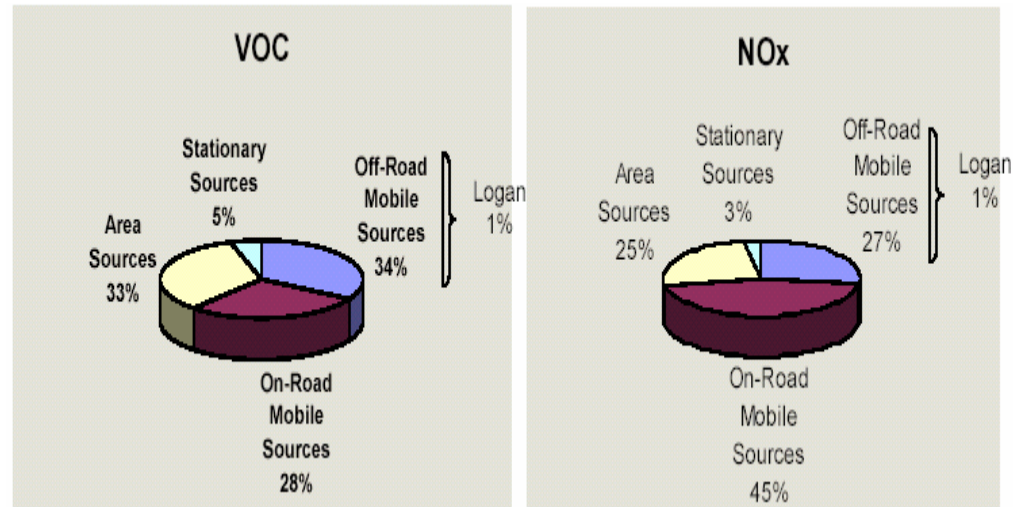


Aviation Emissions- Local Air Quality Issues



Aviation Emissions- Local Air Quality Issues

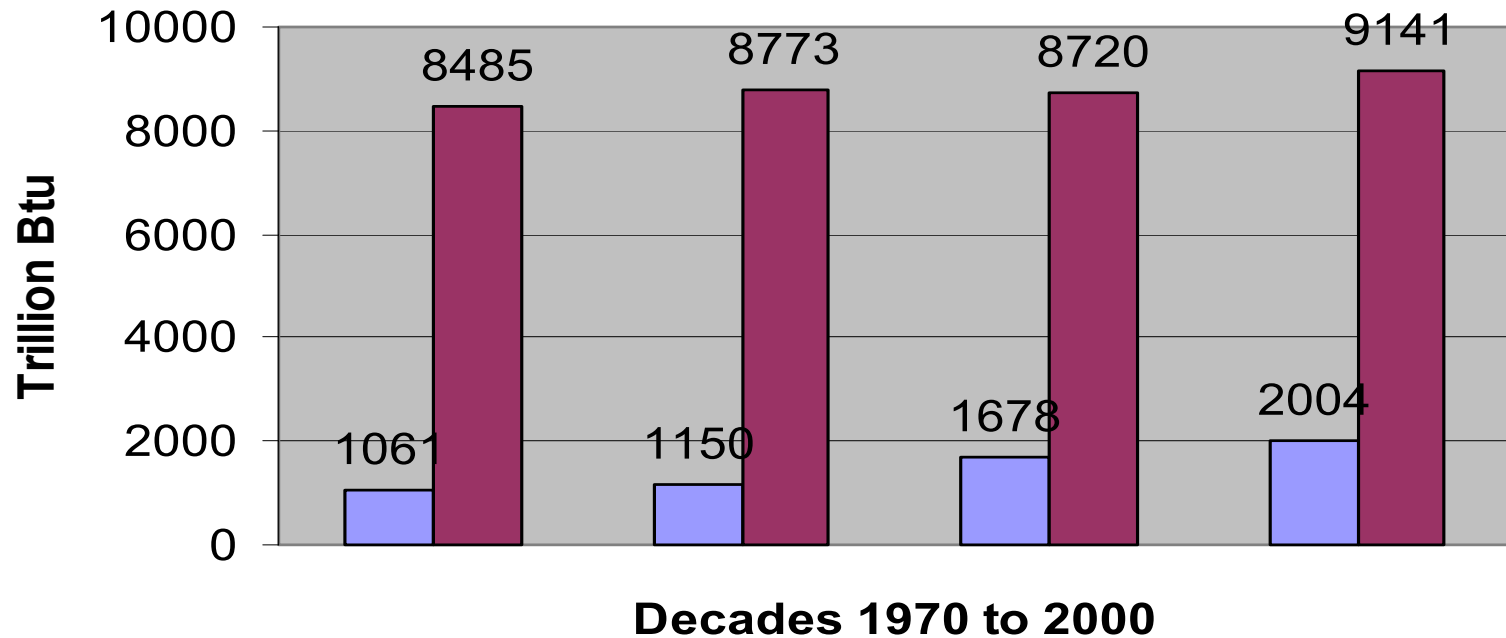
Airports and Regional Pollution



Massport Study of Boston Logan, 1996

Aviation Emissions- Greenhouse Gases

Energy Consumption by Mode

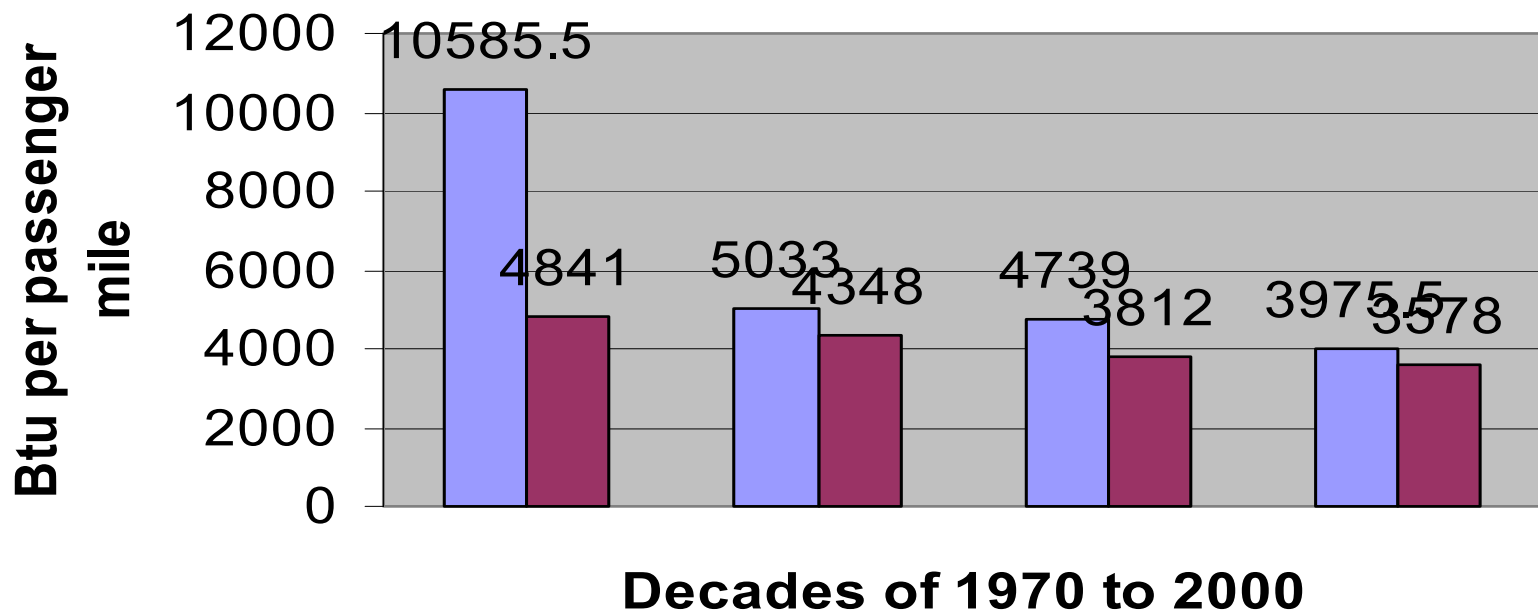


Source: BTS

■ Aircraft ■ Passenger Cars

Aviation Emissions- Greenhouse Gases

Energy Intensity by Transport Mode



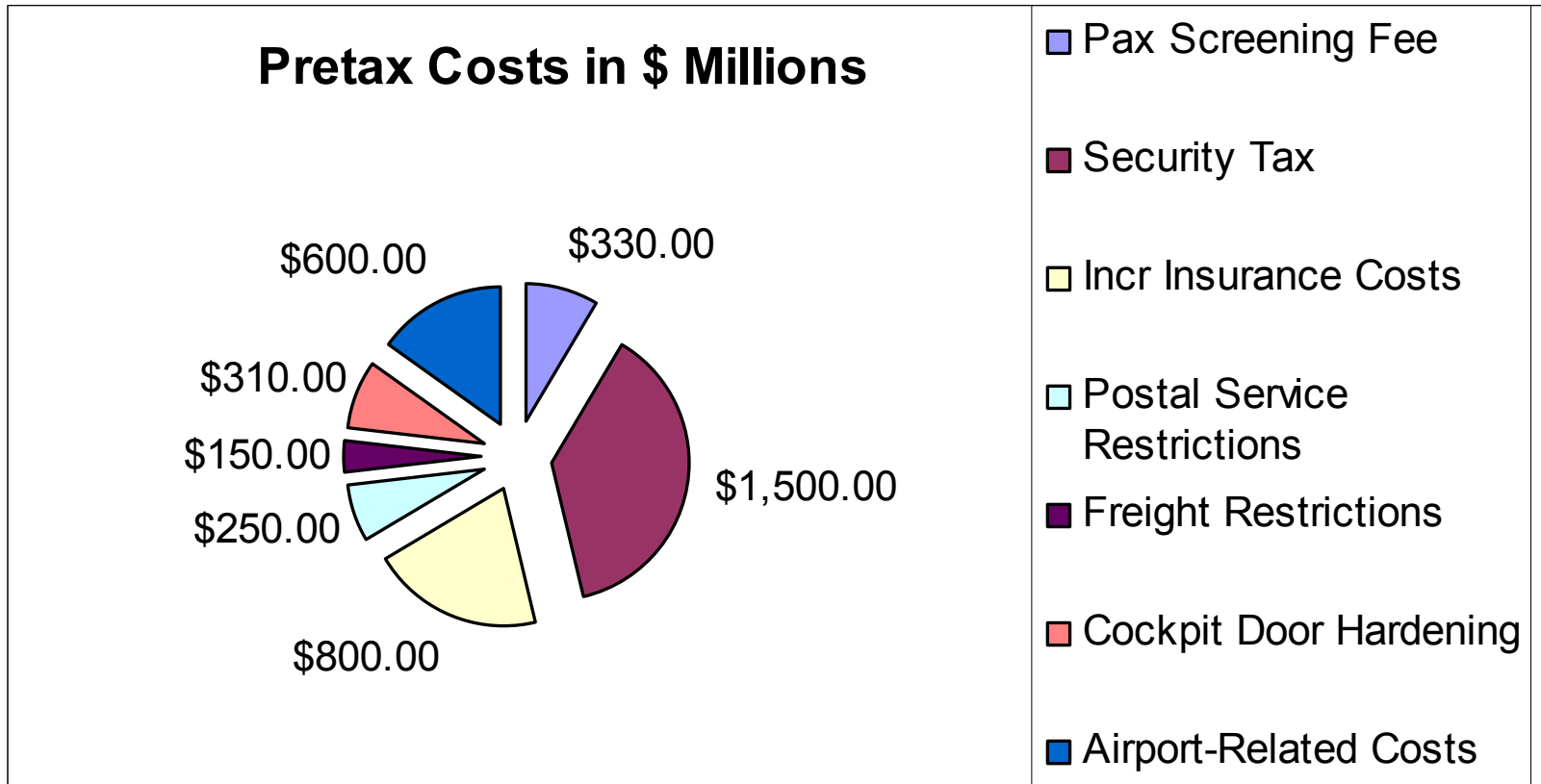
Source: BTS

Commercial Aircraft Passenger Car

Life in the “New Normal”

- Security Dominant Near-term Issue
- Industry Financial Stress
- Industry Operational & Fleet Changes
- Increased Uncertainty
- Aviation Environment Impacts Reduced

Estimated Incremental Security Costs Post 9/11



Source: ATA

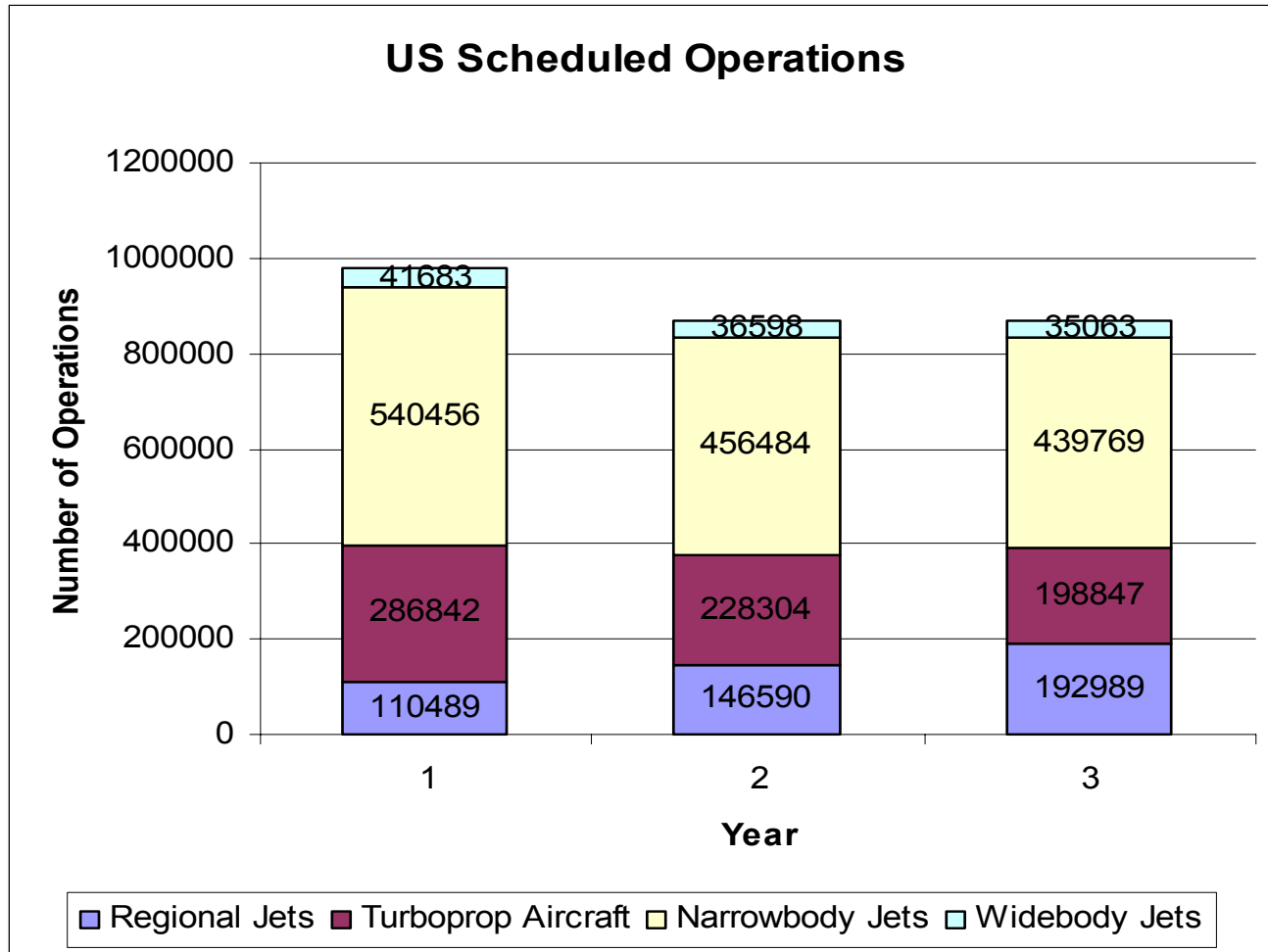
Financial Losses Severe and Continuing

- **Industry Losses**
 - **\$13 billion in 2001 (before \$5 billion taxpayer payment)**
 - **\$9.5 billion in 2002**
 - **Estimate \$7-13 billion in 2003**
- **Passenger yields down 10.8 % (1988)**
- **Passenger revenues down 19.5 %**
- **Spot fuel prices up 113 % (\$130/gallon) from a year ago**
- **6 Carriers have filed for Chapter 11 bankruptcy**

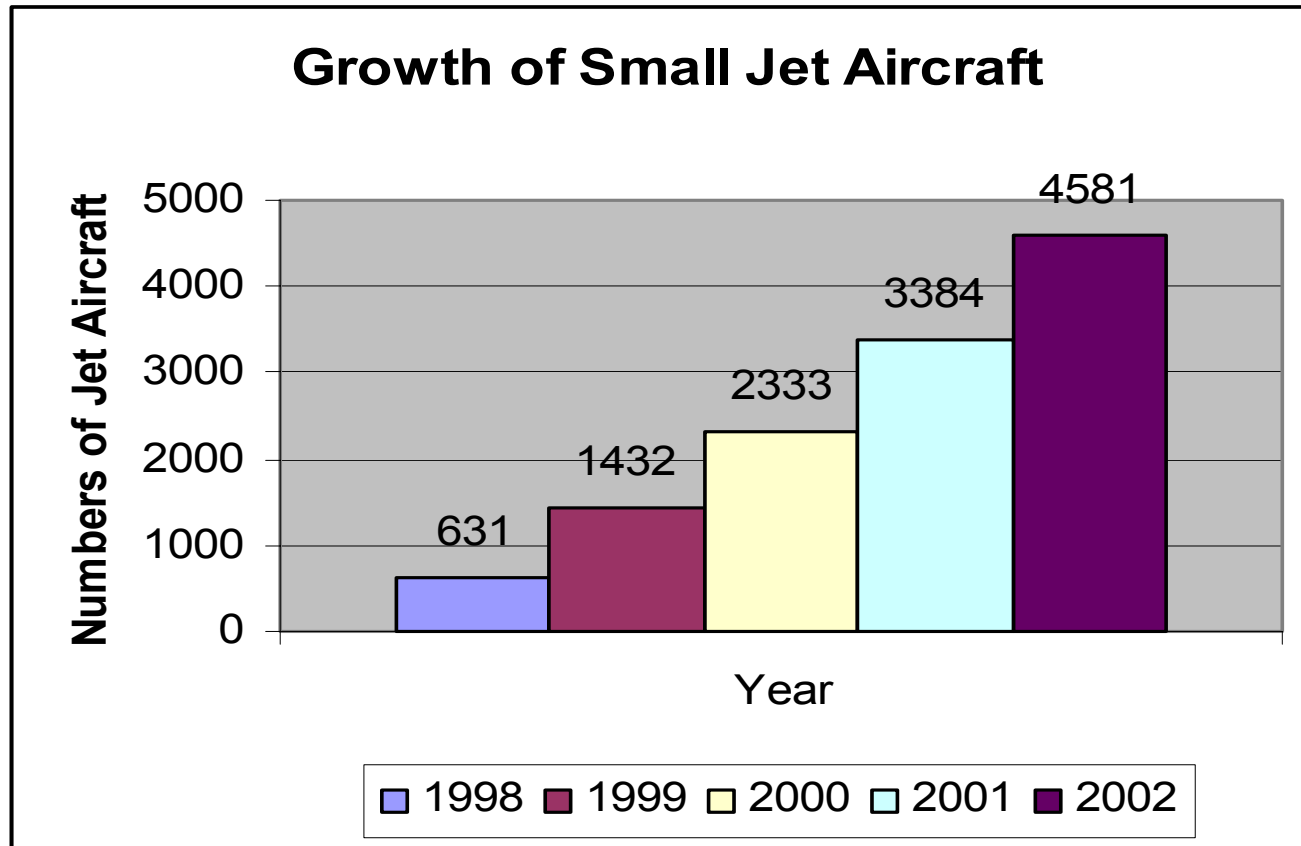
Airline Operations & Fleet Changes

- **Revenue Passenger Miles Down 8.3% (1998 Levels)**
- **Enplanements Down 10.5% (1995 Levels)**
- **Operations at FAA Contract Towers down 10.5% (1994 Levels)**

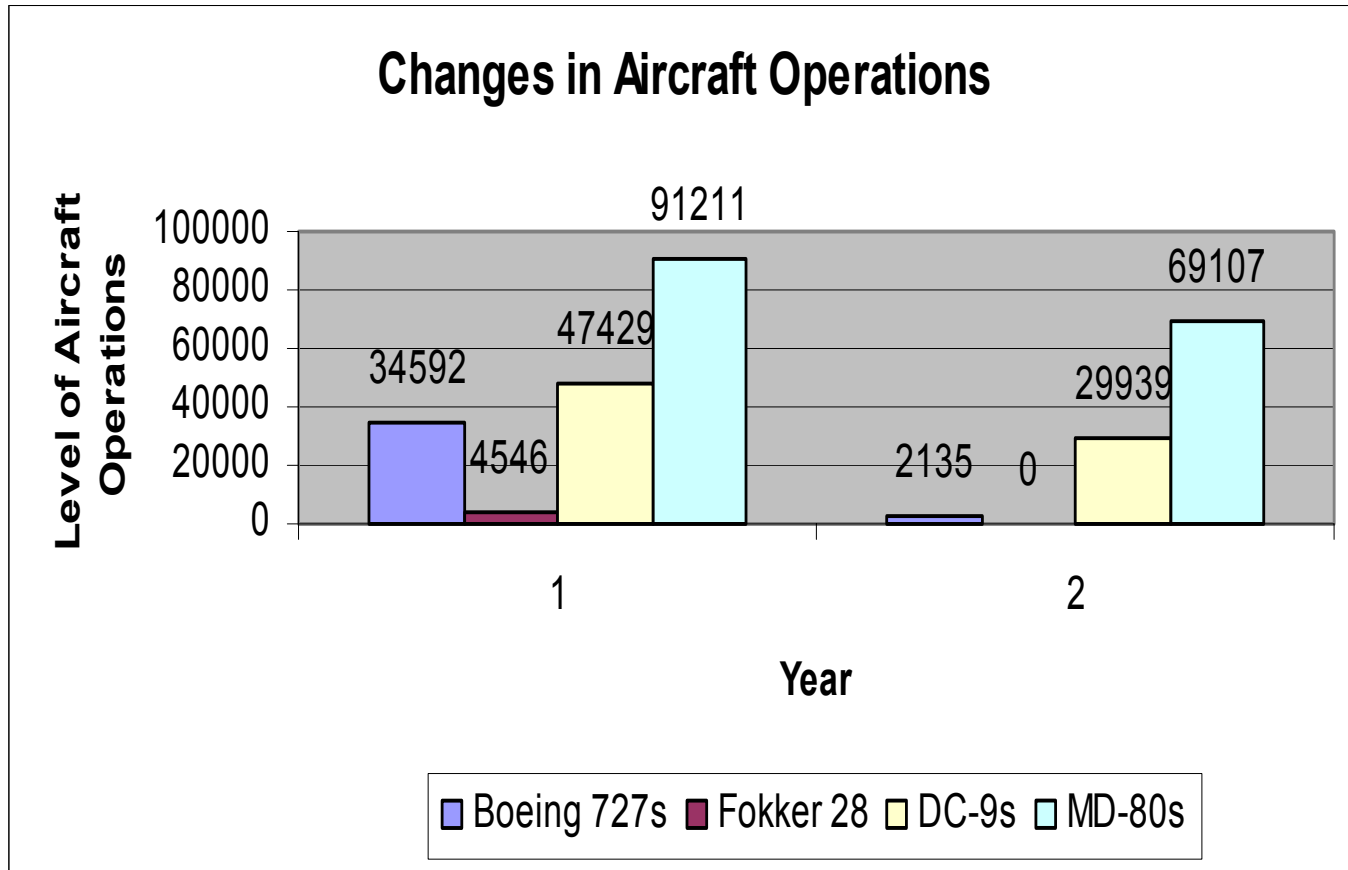
Airline Operations & Fleet Changes



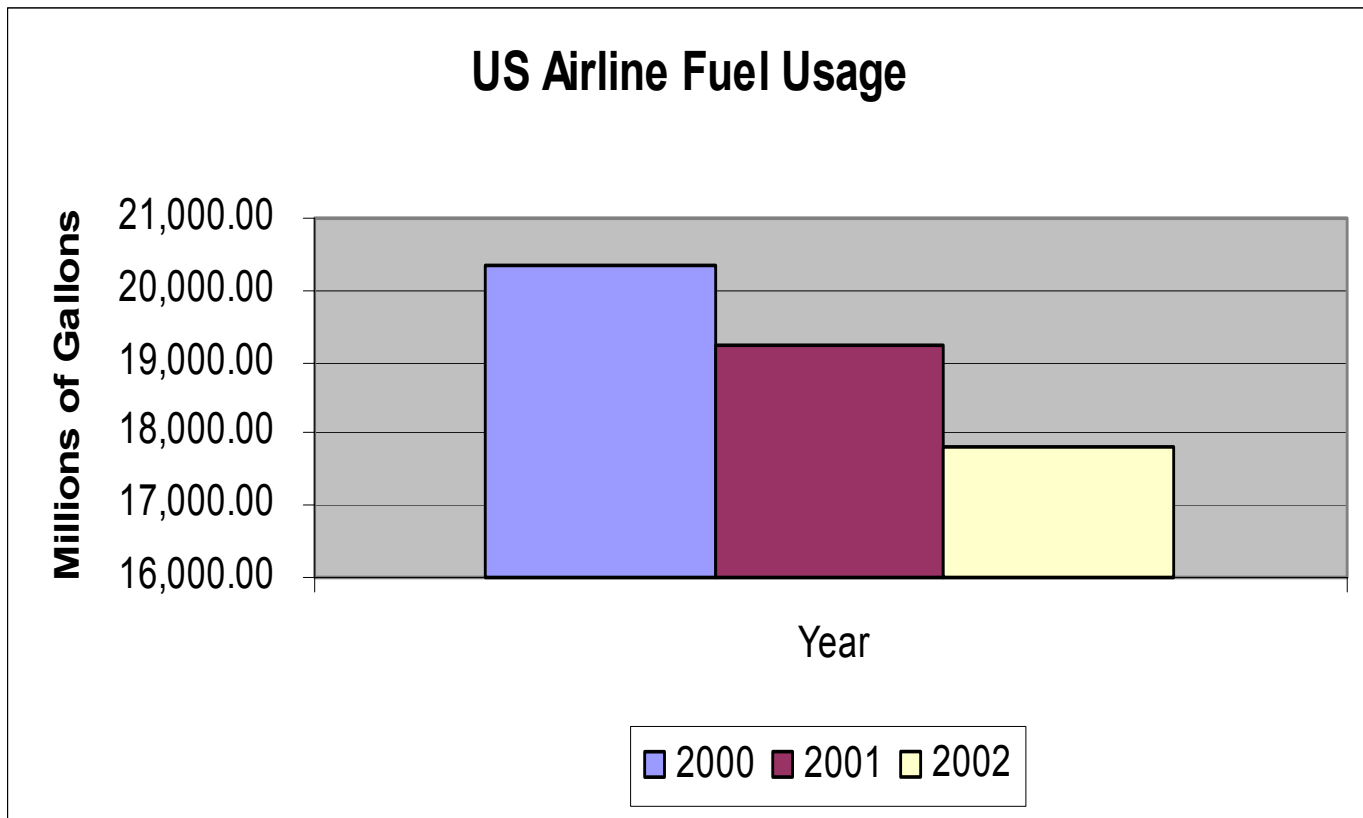
Airline Operations - Growth in Regional Jets



Environmental Impacts - Aircraft Noise is Down Significantly



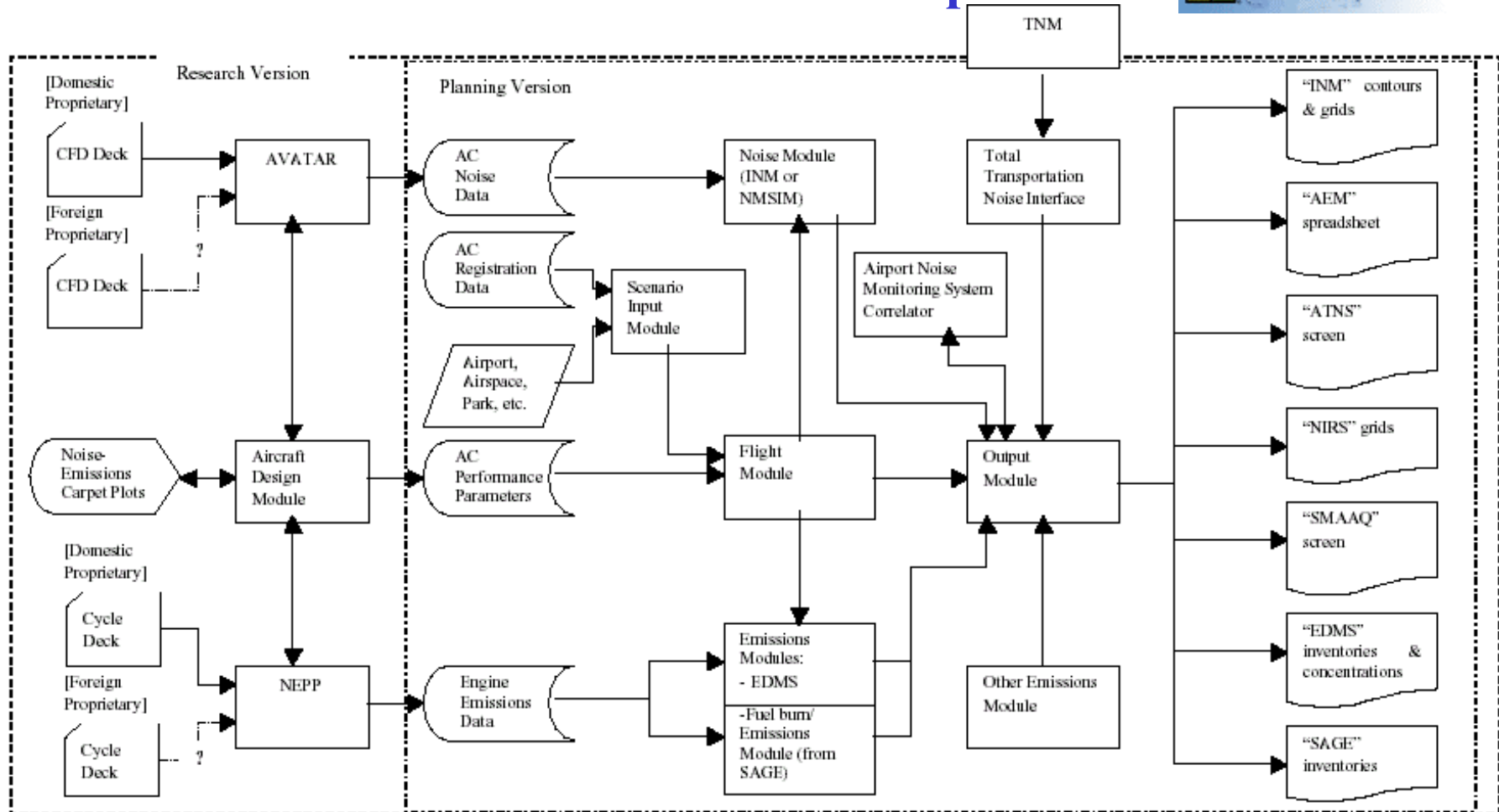
Environmental Impacts - Aircraft Emissions Are Down Significantly



Some Thoughts on the Way Forward

- ICAO Works
- Environmental Design Space

AEDT Concept



AVATAR = NASA's Advanced Vehicle Analysis Tool for Acoustics Research
 NEPP = NASA Engine Performance Program
 INM = FAA's Integrated Noise Model
 TNM = FHWA's Traffic Noise Model

NMSIM = USAF's (and NPS's) Noise Model Simulation
 EDMS = AEE's Emission and Dispersion Modeling System
 SAGE = AEE's System for Assessing Aviation's Global Emissions

AEM = AEE's Area Equivalent Method
 ATNS = FAA's Air Traffic Noise Screening Model
 NIRS = FAA's Noise Integrated Routing System

Some Thoughts on the Way Forward

- ICAO Works
- Environmental Design Space
- Sustainability is the Wrong Paradigm

The Way Forward – Some Concluding Observations

- Window of Opportunity
- Shared Commitment Required
- A Lesson From 1944