

# NextGen



**Victoria Cox**  
**ATO VP, Operations Planning**

7th USA/Europe ATM R&D Seminar

July 2, 2007



**Federal Aviation  
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# APPLE iPhone

## *Integrated services*



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# US AVIATION'S ECONOMIC IMPACT

*2005 US Aviation sector activity*



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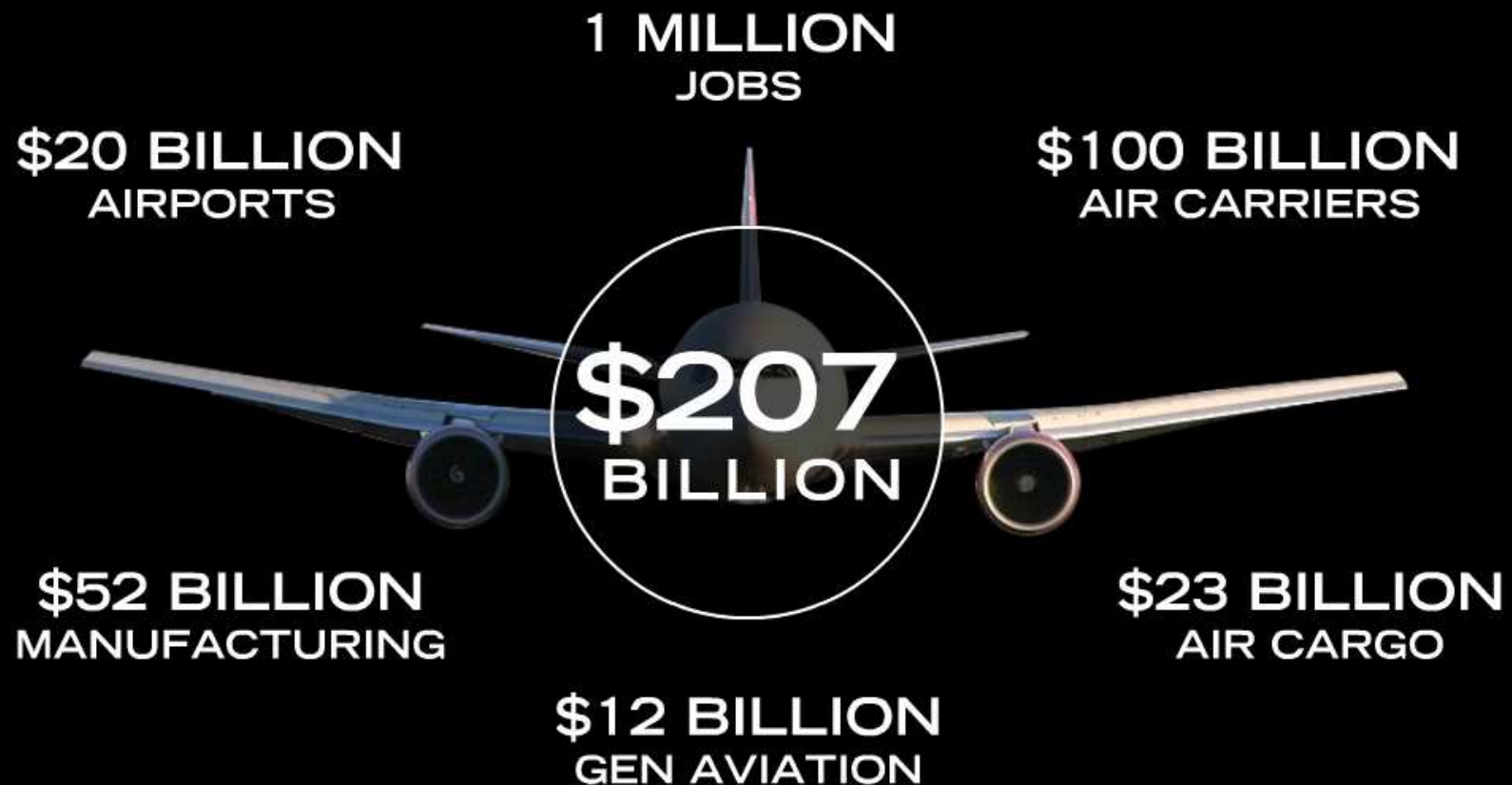


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# US AVIATION'S ECONOMIC IMPACT

*2005 US Aviation sector activity*



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Total 2005 US economic activity

Total 2005 US economic activity

**\$690  
BILLION**

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# US AVIATION'S ECONOMIC IMPACT

*Total 2005 US economic activity*



**\$206 BILLION**  
TRAVEL AND  
TOURISM



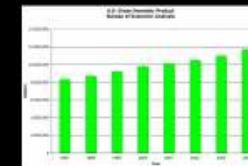
**HIGH VALUE  
CARGO  
(89x TRUCKING)**



**\$44 BILLION**  
EXPORTS



**\$690  
BILLION**



**5.5%**  
OF U.S. GDP



**10 MILLION  
JOBS**



**\$343 BILLION**  
EARNINGS

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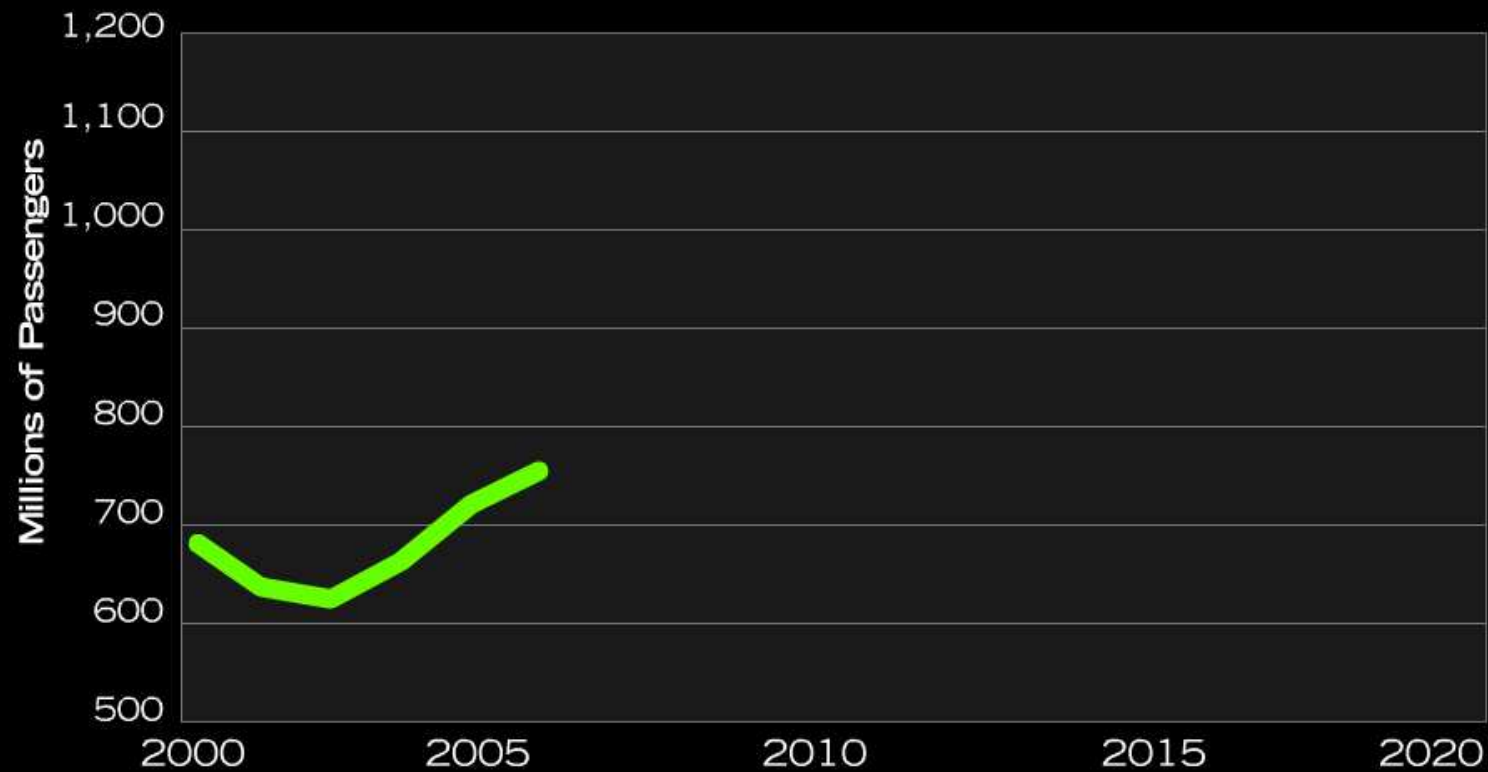
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# PASSENGER DEMAND WILL GROW

## Projected Passenger Growth on US Flag Carriers



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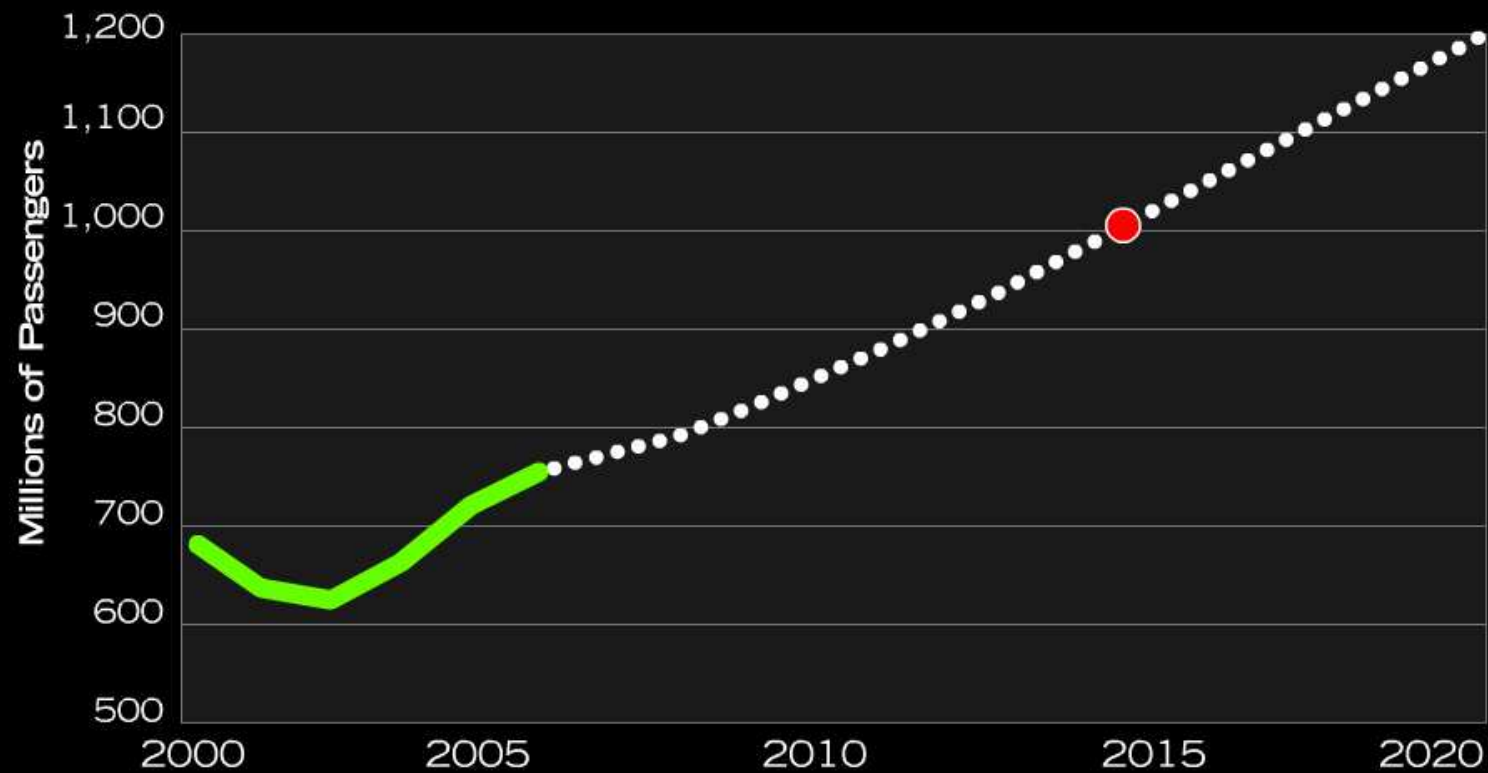
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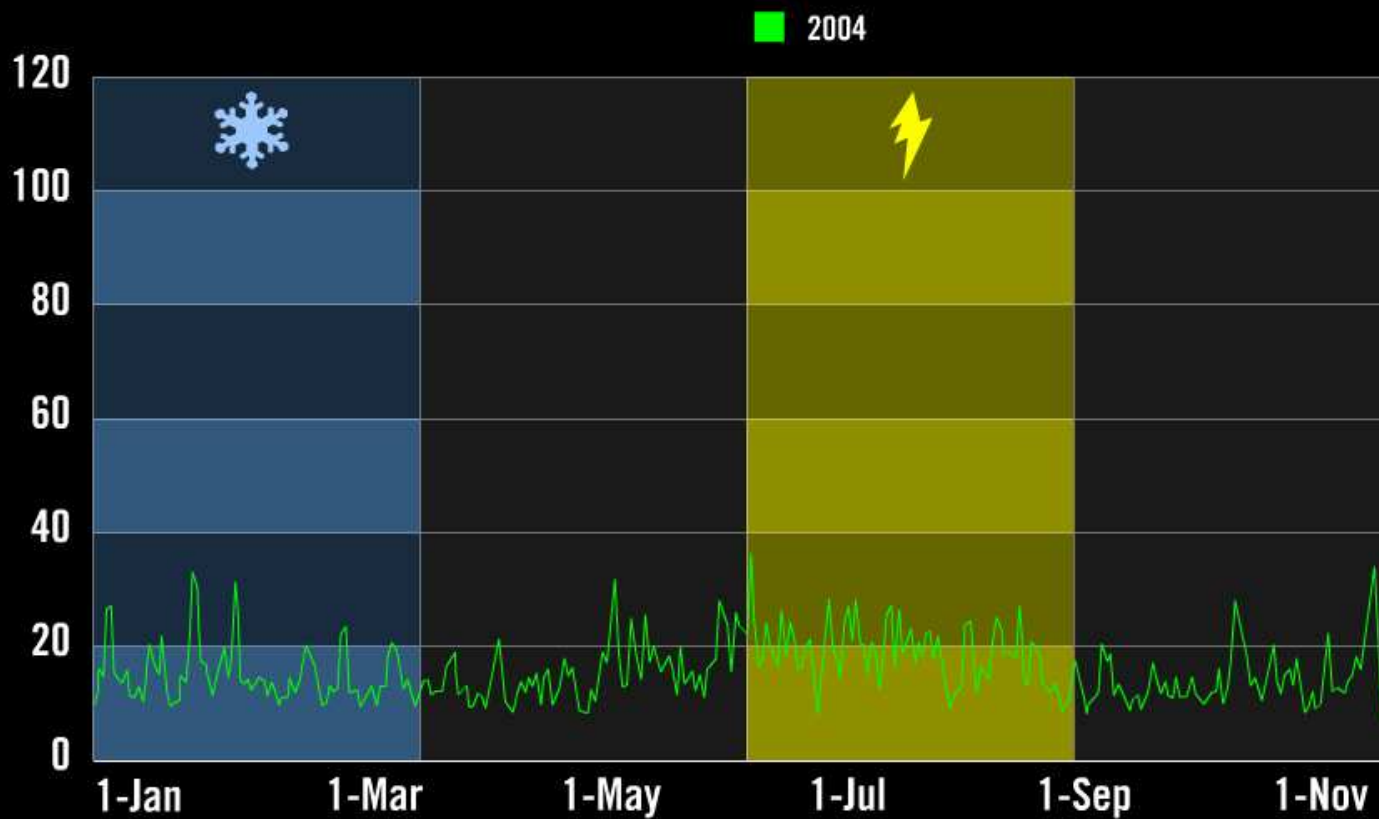


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# DELAYS WILL INCREASE

*Average Delay per Flight (Minutes)*



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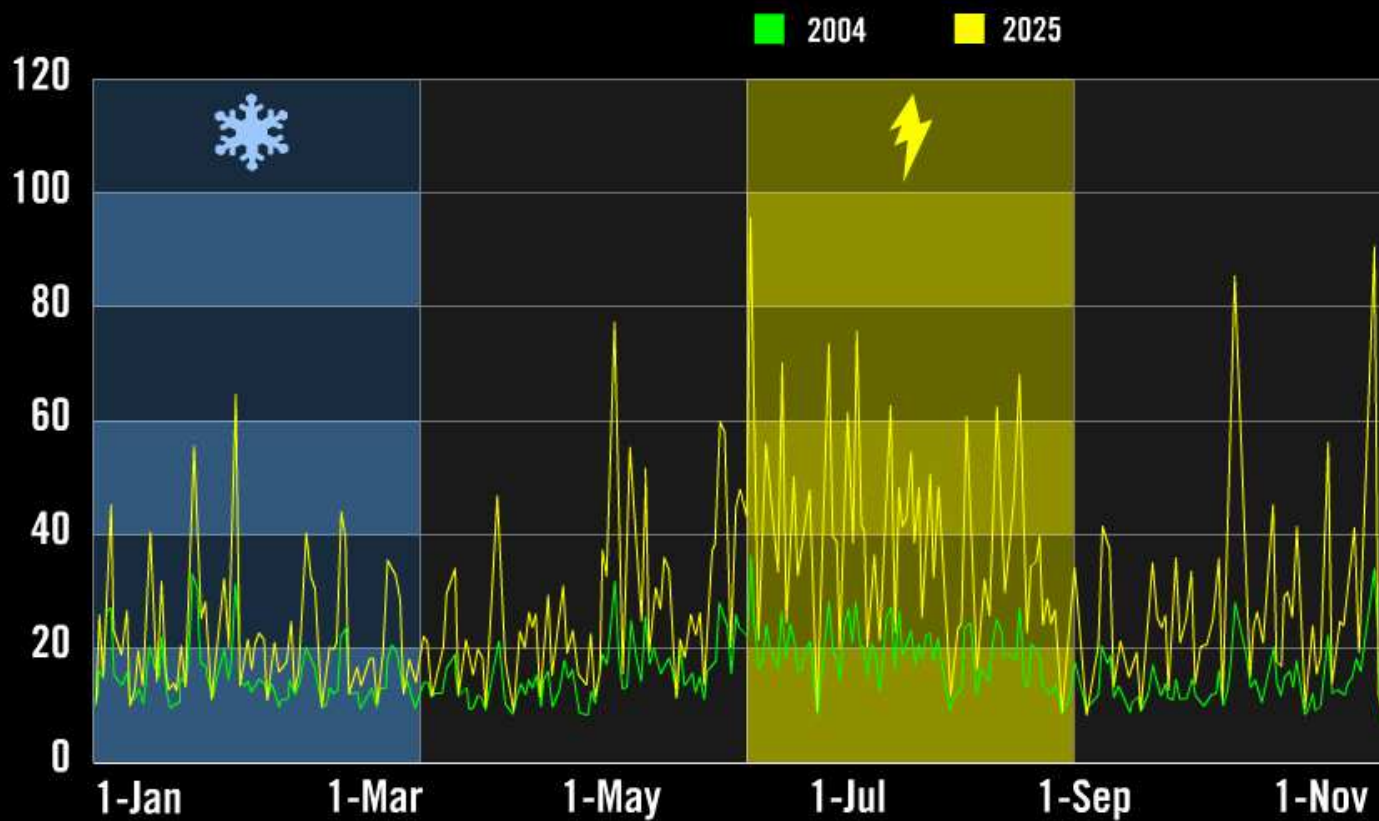
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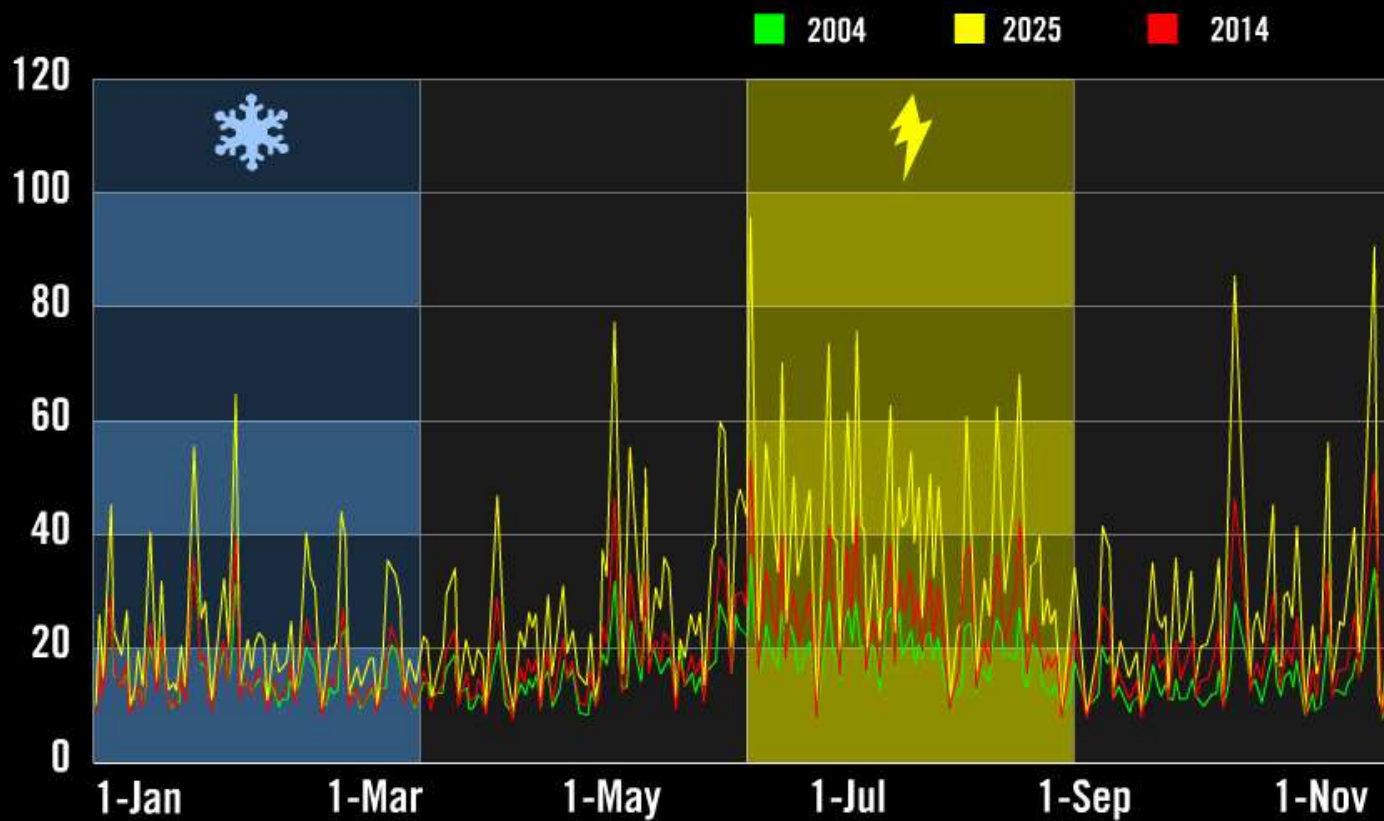
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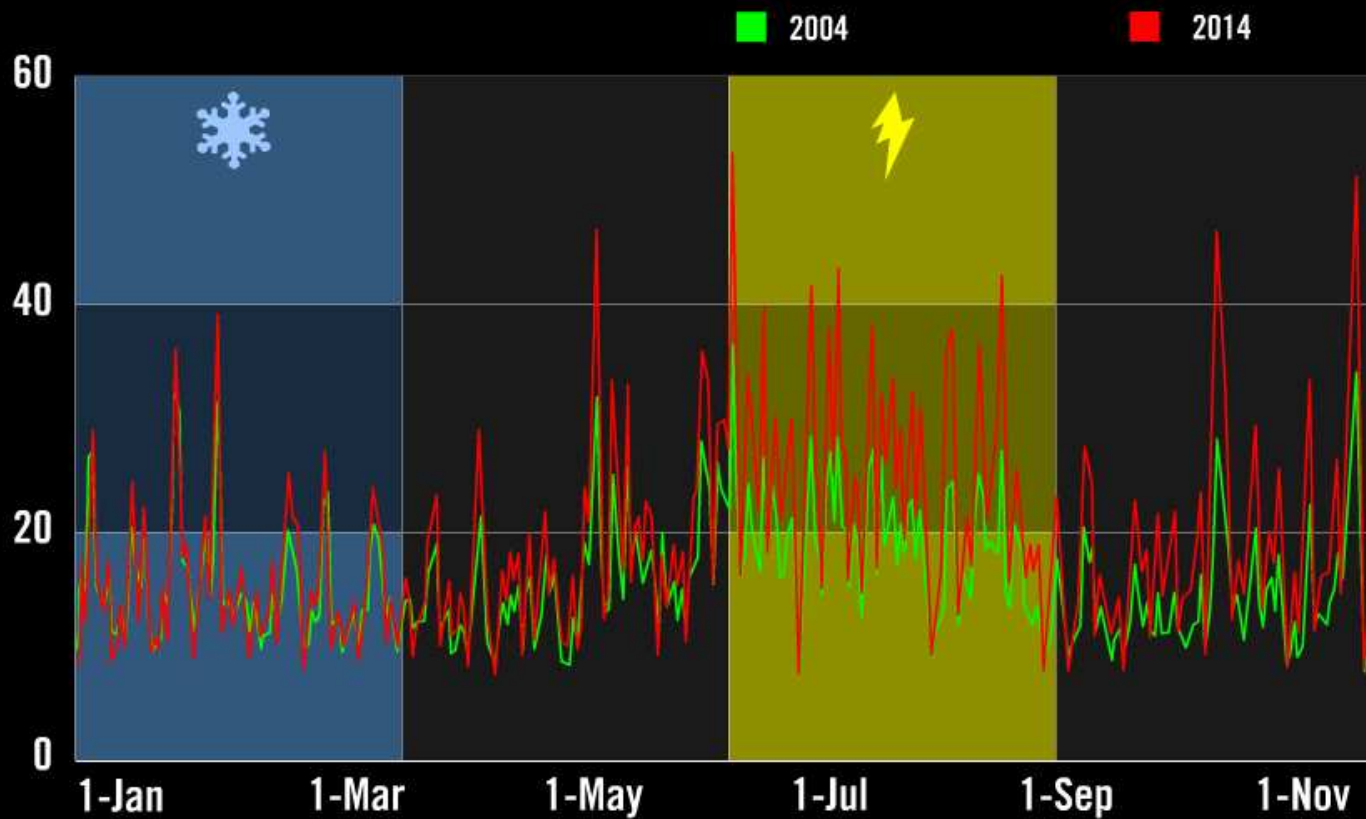


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# DELAYS WILL INCREASE

*Average Delay per Flight (Minutes)*



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# NEXTGEN FROM HERE TO THERE

## CURRENT PROGRAMS

### 2007

ERAM  
TFM-M  
RNAV/RNP  
Initial ADS-B  
Initial SWIM  
STARS/CARTS  
Airspace Management  
Program

## MID-TERM DELIVERABLES

### 2012-18

ERAM Enhancements  
*Automated Problem Resolution*

Concept Demonstrations  
*Trajectory-Based Ops/High Density*

Infrastructure for Traj-Based Ops  
*Robust Flow of Information*

Terminal Enhancements  
*Merging and Spacing Tools*

RNAV/RNP Expansion  
*Airspace Redesign      Precise Navigation*

Data Communications  
*Flight Intent Downlink*

ADS-B  
*Aircraft Separation*

SWIM/Net-Enabled Weather  
*Net-Centric Information Sharing*

## NEXTGEN

### 2025

Initiate Trajectory-Based Operations

Increase Arrivals/Departures at High Density Airports

Increase Flexibility in the Terminal Environment

Improve Collaborative ATM

Reduce Weather Impact

Increase Safety, Security, and Environmental Performance

Transform Facilities

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## NEXTGEN VISION

**To achieve the NextGen vision...  
we have a process.**

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# NEXTGEN DELIVERY



**JPDO**

Concept Operation  
for the  
Next Generation  
Air Transportation System

**FAA  
Enterprise  
Architecture**

*Three  
Roadmaps:*

*Executive  
Functional  
Technical*

**FAA  
NextGen  
Portfolio**

*Activities  
Cost  
Milestones*



Operational  
Evolution  
Partnership

From the National Plan to the FAA NextGen Portfolio

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NEXTGEN\_DELIVERY.swf

# OPERATIONAL EVOLUTION PARTNERSHIP

## *Features of the new OEP*

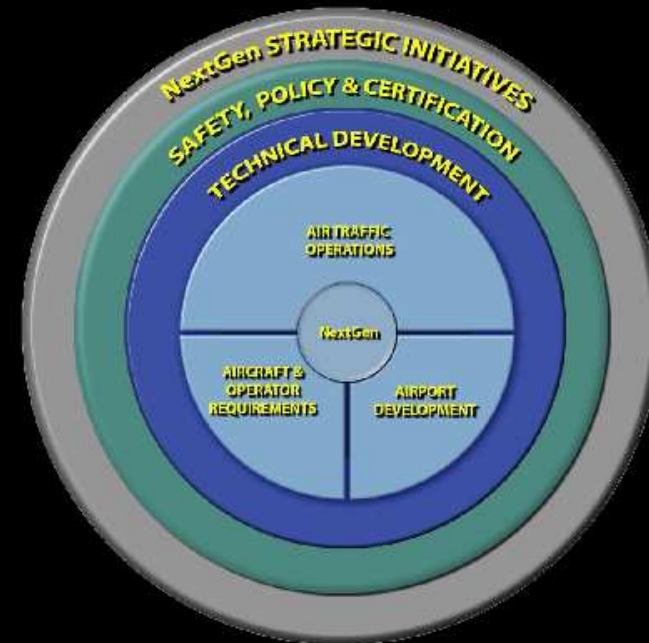
- OEP Associates
- Portfolio focus
  - Coordinate improvements across solution sets
  - OEP provides the big picture
- Program integration
- Safety, policy, and certification
- Research and development
- Long-term performance analysis planning
- Expansion beyond the 35 OEP airports



# THE NEW OEP

## *Seven NextGen solution sets*

- Initiate Trajectory Based Operations
- Increase Arrival/Departures at high-density airports
- Increase flexibility in the Terminal environment
- Reduce weather impact
- Improve collaborative ATM
- Increase safety, security, and improve environment
- Transform facilities

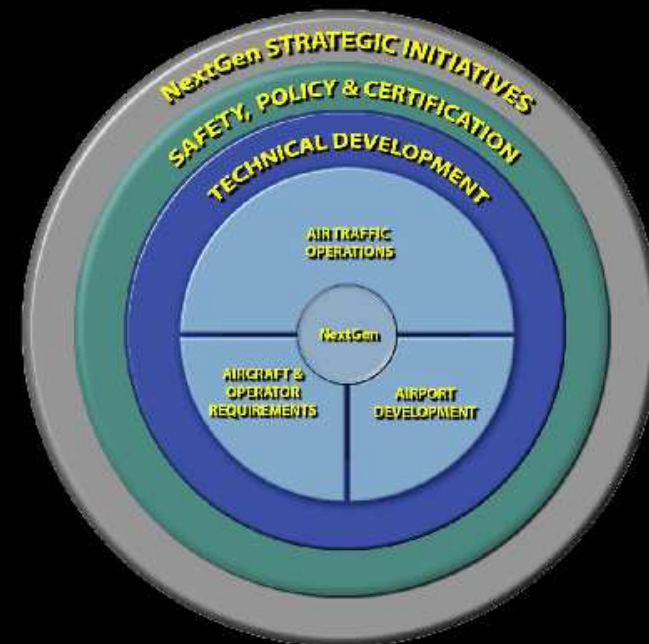




# OPERATIONAL EVOLUTION PARTNERSHIP

## *Features of the new OEP*

- **Focus on aircraft and operators**
  - Aircraft as a part of the NAS
  - Avionics
- **International inter-operability**
- **OEP Review Board**
  - Initiative approval
  - Integration planning
  - Budget formulation
  - Developing portfolios



# NEXTGEN R&D EFFORTS

## Overall NextGen Investment

- \$4.6 billion over the next 5 years
- R&D: \$670 million
- Environment and energy research
  - FY08: \$18.5 million
  - FY09: \$59.6 million (222% increase)



## NEW SERVICES

*Mid-term NextGen Benefits (2012-2018)*

### Performance-Based Navigation (RNAV, RNP)

- RNAV:
  - Atlanta:
    - 10 more departures/hr.
    - 40,000 tons CO<sub>2</sub> reduced/yr.
  - Dallas/Ft. Worth:
    - 11-20 more departures/hr.
    - 10,000 tons CO<sub>2</sub> reduced/yr.
- RNP:
  - Alaska Airlines has made 980 saves





# NEW SERVICES

*Mid-term NextGen Benefits (2012-2018)*

## Continuous Descent Arrivals (CDA)

- Average time savings:
  - 2 minutes and 32 seconds
- Estimated fuel savings:
  - Over 900 pounds of CO<sub>2</sub> per aircraft
  - \$350 million for commercial aviation
- Research initiatives:
  - Integration of the full range of environmental procedures
  - Develop decision support tools for high density/high tempo operations



# NEW SERVICES

*Mid-term NextGen Benefits (2012-2018)*

## NextGen Network Enabled Weather (NNEW)

- Improves forecasting accuracy
- Research:
  - Measure the impact of weather on NextGen concepts
  - Improve weather sensors on the aircraft





# NEXTGEN R&D EFFORTS

## Human Factors

- What are the roles and responsibilities of pilots, controllers, and dispatchers in the NextGen system?
- What services need to be provided at airports served by virtual towers?





# NEXTGEN R&D EFFORTS

## Wake Vortex

- Long-term goal: dynamic, pairwise-based separation
- Early steps - Closely spaced runways
  - Reduced diagonal separation on approaches
  - Wind-based reduced separations
- Joint FAA-EUROCONTROL efforts:
  - Crosswind reduced separations on single runway departures
  - Wakenet USA and Wakenet Europe



# OVERALL NEXTGEN BENEFITS

## Curb-to-Curb Transformation

- Further enhance the safety of the system
- Triple current amount of system capacity
- Ensure security and protect the environment





# NextGen



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