LAX Community Noise Roundtable

NextGen Briefing

Los Angeles World Airports

Agenda

- What is NextGen?
- What are key capabilities of NextGen?
- What is JPDO?
- How is NextGen/JPDO addressing environmental issues?
- What are NextGen implications for Los Angeles?

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What is NextGen?

- **The Next Generation Air Transportation System (NGATS or NextGen) is a Congressionally mandated initiative to modernize the U.S. air transportation system in order to:**
  - **Increase capacity and reliability**
  - **Improve safety and security**
  - **Minimize the environmental impact of aviation**

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Key Capabilities of NextGen

- **These improvements to the air transportation system will be achieved by:**
  - **Space-based navigation and integrated surveillance**
  - **Digital communications**
  - **Layered adaptive security**
  - **Weather integrated decision-making**
  - **Advanced automation of Air Traffic Management**
  - **Net-centric information access for operations**

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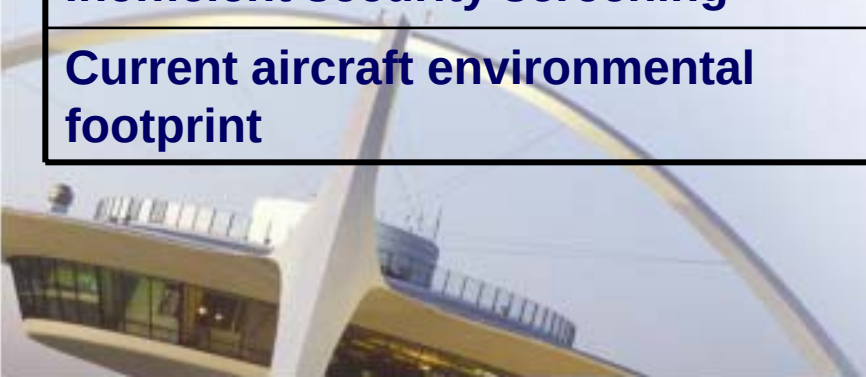
NextGen Transformation

From	To
Ground-based navigation and surveillance	Satellite-based navigation and surveillance
Voice radio control	Digital data exchange
Disconnected information systems	Net-centric information access
Human-centric air traffic control	Automation assisted air traffic management
Fragmented weather forecasting	Probabilistic weather decision tools
Visibility limited airfield parameters	Equivalent visual operations
Forensic safety system	Prognostic safety system
Inefficient security screening	Integrated security risk management
Current aircraft environmental footprint	Reduced aircraft environmental footprint



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NextGen: Gate to Gate

To view video go to http://www.faa.gov/about/initiatives/nextgen/nextGenVideos/

What does that mean in practice?

- **Before Takeoff:**
  - **Airport Surface Detection Equipment Model X (ASDE-X)**
  - **Surface Management**
- **After Takeoff:**
  - **Automatic Dependent Surveillance Broadcast (ADS-B)**
  - **Traffic Management Advisor (TMA)**
  - **EnRoute Automation Modernization (ERAM)**
- **Over the Ocean:**
  - **Advanced Technologies and Oceanic Procedures (ATOP)**
- **On Approach:**
  - **Optimized Profile Descent (OPD)/Continuous Descent Arrival (CDA)**

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Automatic Dependent Surveillance-Broadcast (ADS-B) Benefits

- Air-to-air surveillance capability
- Surveillance to remote or inhospitable areas that do not currently have coverage with radar
- Real-time traffic and aeronautical information in the cockpit
- Reduced separation and greater predictability in departure and arrival times
- Common separation standards for all classes of airspace
- Improved ability of airlines to manage traffic and aircraft fleets
- Improved ability of air traffic controllers to plan arrivals and departures far in advance
- Reduced cost to operate the National Airspace System

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Automatic Dependent Surveillance-Broadcast (ADS-B)

- **Automatic:** Periodically transmits information with no pilot or operator input required
- **Dependent:** Position and velocity vector are derived from the Global Positioning System (GPS) or a Flight Management System (FMS)
- **Surveillance:** A method of determining position of aircraft, vehicles, or other asset
- **Broadcast:** Transmitted information available to anyone with the appropriate receiving equipment

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Performance-based navigation, RNAV and RNP

- **What is performance-based navigation?**
  - **a framework for defining performance requirements in "navigation specifications"**
  - **Includes RNAV and RNP**
- **What is Area Navigation (RNAV)?**
  - **RNAV enables aircraft to fly on any desired flight path within the coverage of ground- or spaced-based navigation aids, i.e., 'point-to-point'**
- **What is Required Navigation Performance (RNP)?**
  - **RNAV with the addition of an onboard performance monitoring and alerting capability; this enhances the pilot's situation awareness and can enable reduced obstacle clearance or closer route spacing without intervention by air traffic control**

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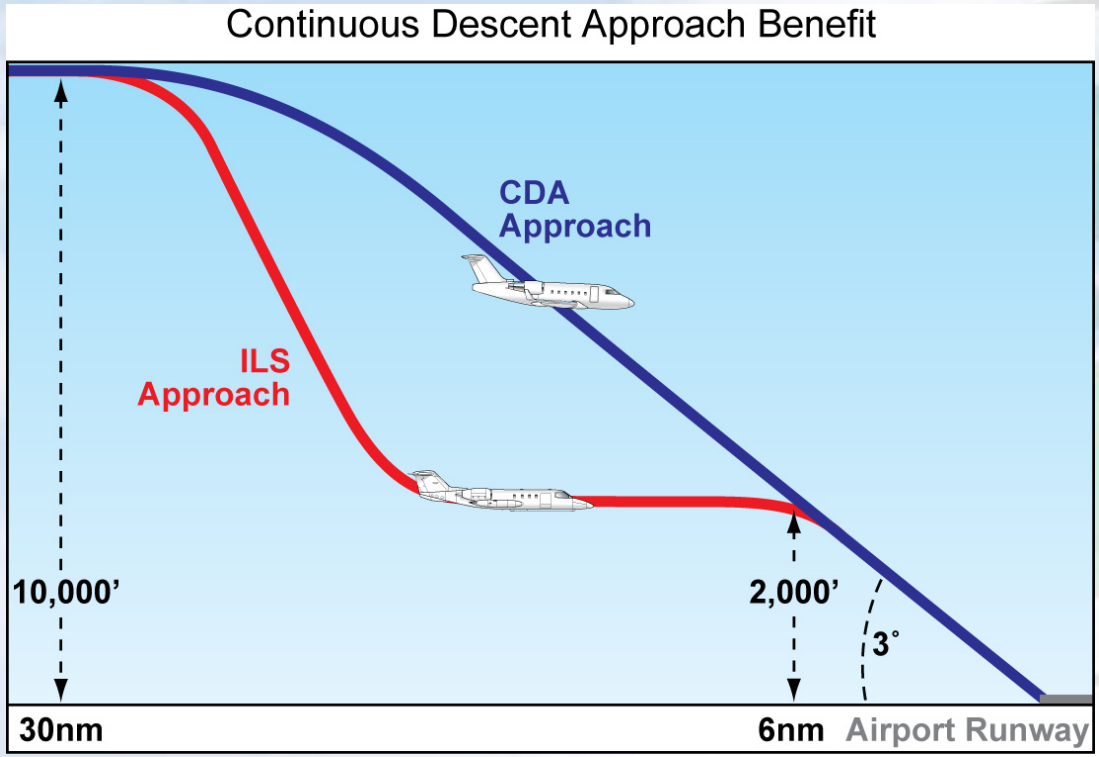
Optimized Profile Descent



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What is the JPDO and the Environment Working Group (EWG)?

- **The Joint Planning and Development Office:**
  - Enacted as a result of VISION 100 – Century of Aviation Reauthorization Act (P.L. 108-176)
  - Proposed a unique public/private partnership managed by the Joint Planning and Development Office (JPDO) to carry it out
  - JPDO includes: Departments of Transportation, Defense, Homeland Security and Commerce and the FAA, NASA and White House Office of Science and Technology Policy
- **The Environment Working Group**:
  - One of nine Working Groups that have been established within the JPDO to execute the NextGen Integrated Plan
  - Charged with achieving the NextGen Integrated Plan strategy to develop Environmental Protection that Allows Sustained Aviation Growth

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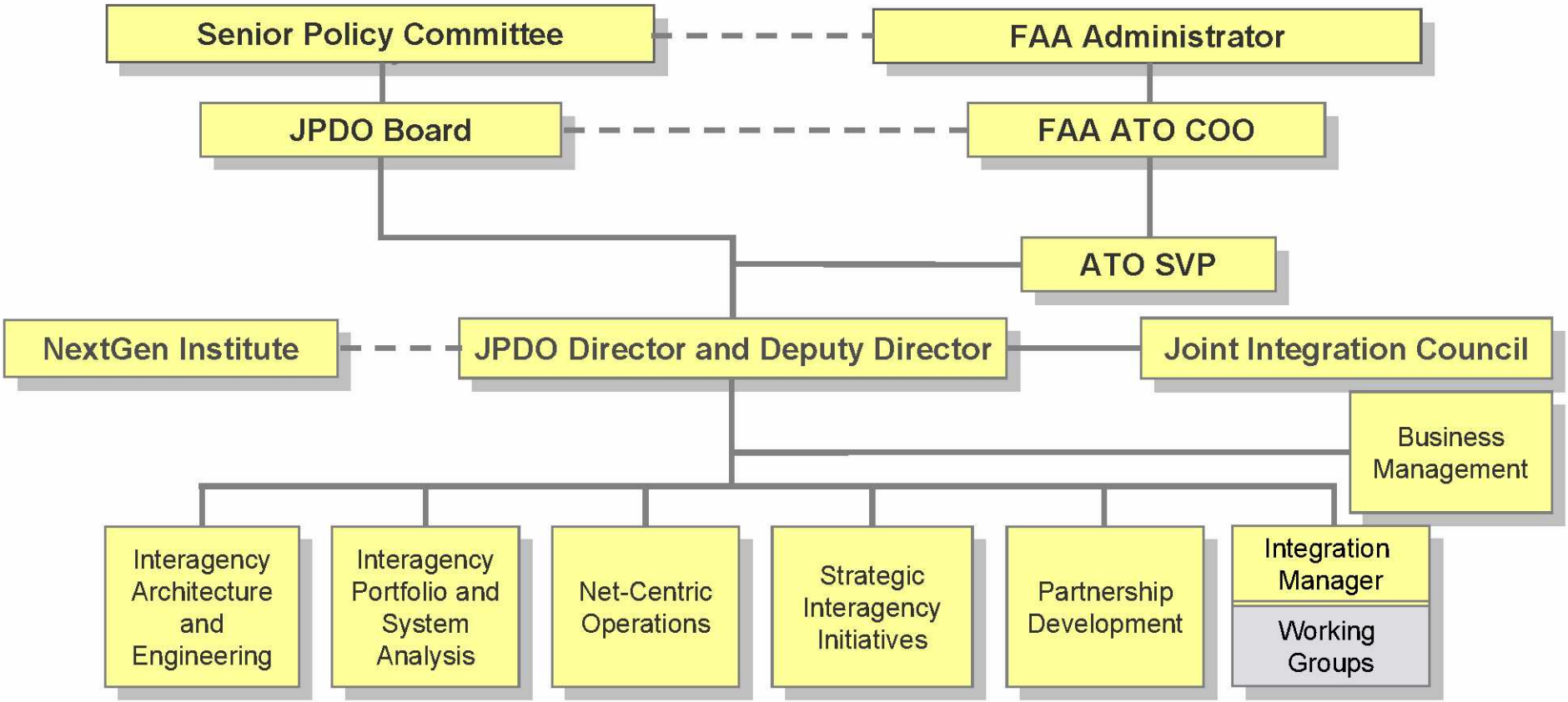
JPDO Organization



Governance

- Senior Policy Committee
- JPDO Board of Directors

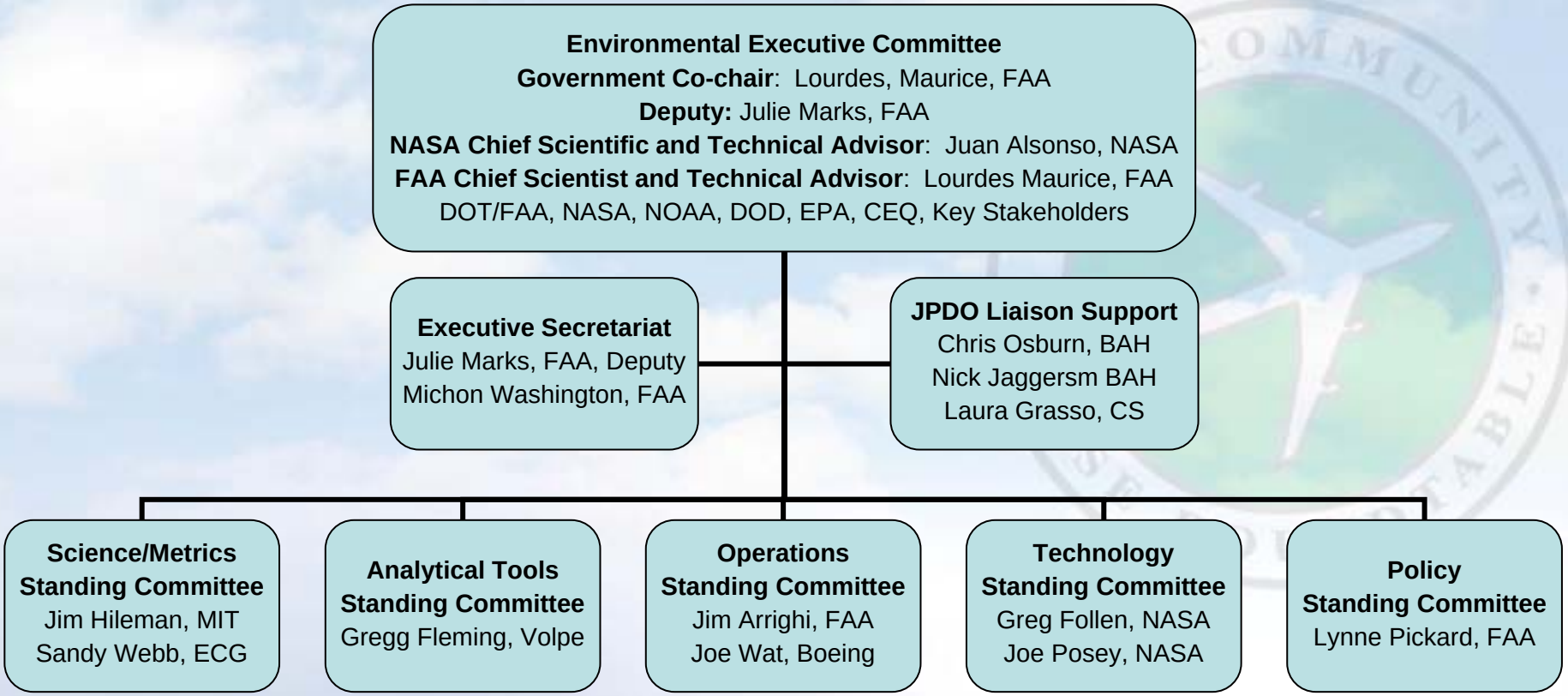
Industry Leadership

- NextGen Institute Management Council (IMC)

Interagency Coordination

- CIO Board
- Joint Architecture & Engineering Board

Environmental Work Group Organization



The EWG is staffed with members from government, academia, industry, and others responsible for researching, developing, implementing, and maintaining environmental protection strategies.

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What is NextGen's Environmental Vision?

NextGen Vision: ***Provide environmental protection that allows sustained aviation growth***

Factors:

- Provide for 2X to 3X increase in system
- Fundamental changes in the system
- Increased focus on environmental quality
- Vision to grow aviation while reducing significant environmental impacts

NEXT GENERATION AIR TRANSPORTATION SYSTEM
JOINT PLANNING & DEVELOPMENT OFFICE

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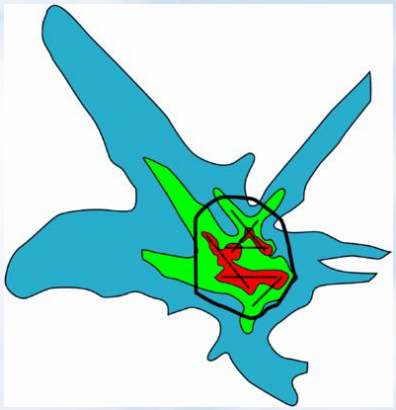
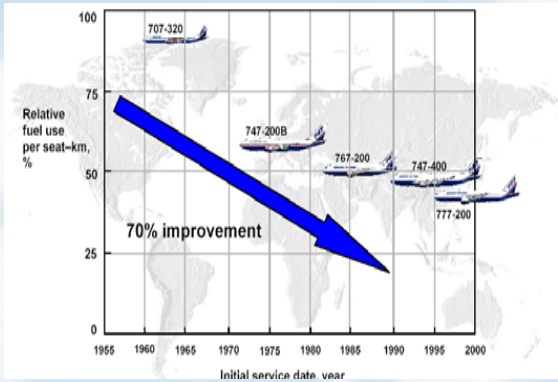
Aviation & The Environment - The Issues



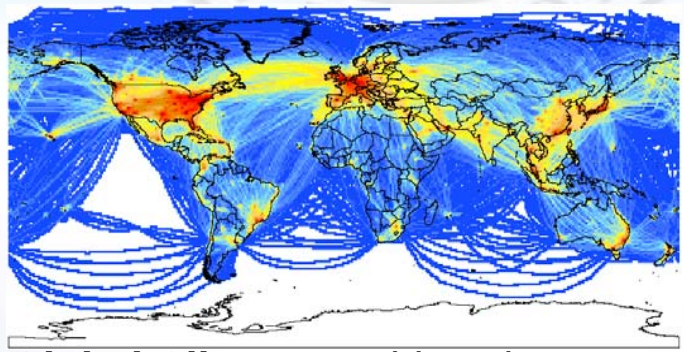
Noise: Reducing and mitigating significant noise around airports



Energy: Progress in fuel efficiency and alternative fuels

Air Quality: Limiting or reducing impact on local air quality

Water Quality: Reducing significant water quality impacts



Global Climate: Addressing aviation's effect on global climate

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Environmental Focus on NextGen

- **Quieter, cleaner, more energy efficient**
- **Bring new technologies, operational innovations, and other capabilities on line to reduce aviation environmental impacts.**

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JPDO Environmental Policy Roadmap

Initial Aviation Environmental Policy	2008
Initial NextGen Long-Term Environmental Goals and Targets	2008
Initial EMS Approach	2008
Refined NextGen Long-Term Environmental Targets	2011
Evolved EMS Approach	2011
Refined Aviation Environmental Policy	2012

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Initial Aviation Environmental Policy (2008)

- **NextGen policy:**
  - **provide high-level direction for addressing the aviation environmental impacts of primary concern for NextGen**
  - **Setting goals up front and refining them over time are key to achieving the capacity and environmental goals of NextGen.**

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Qualitative Goals: Noise, Air, Water, Climate, Energy

- **Absolute reduction of significant community noise & local air quality emissions impacts**
- **Reduce significant aviation impacts associated with water quality**
- **Limit or reduce the impact of aviation GHG emissions on the global climate**
- **Improve NAS energy efficiency, including aircraft and air traffic operations**
- **Support alt fuels development for aviation**

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NextGen Goals → Metrics → Targets

- **Qualitative Goal**
- **Metric**
- **Initial Targets: 3 timeframes**
  - **Near-term (2009-2015)**
  - **Medium-term (2015-2025)**
  - **Long-term (>2025)**

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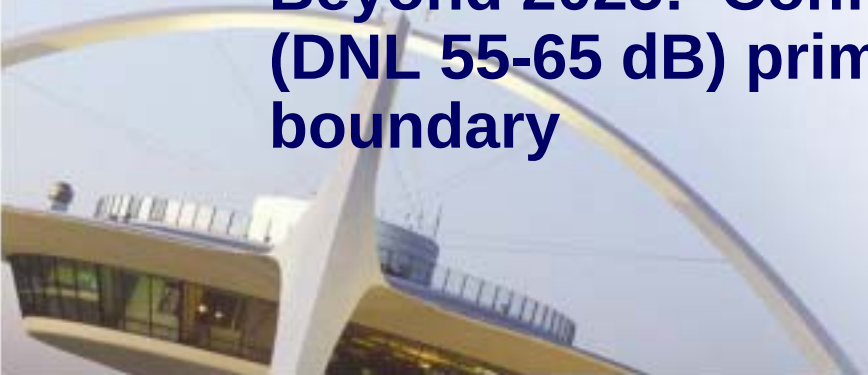
Noise

- **Goal: Reduce the significant impact of aviation on community noise in absolute terms**
- **Metric: Number of people exposed to aircraft noise around U.S. airports as measured by DNL**
- **Targets:**
  - **2009-2015: Reduce number of people exposed to significant noise 4 percent per year**
  - **2015-2025: by 2025, significant airport noise is within the airport boundary at the majority of U.S. airports**
  - **Beyond 2025: Confine moderate noise exposure (DNL 55-65 dB) primarily within the airport boundary**



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Air Quality

- **Goal: Reduce the significant impact of aviation on air quality in absolute terms**
- **Metric: Number of people exposed to increased health risk from aviation's contribution to air pollutants at U.S. airports**
- **Target Concept: No near-term increase in number of people exposed to increased health risk from incremental changes in air quality impacts of particulate matter, ozone, and HAPS due to aviation, compared to 2000. Mid and long-term % reductions that eventually reach zero risk.**

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Climate

- **Goal: Limit or reduce the impact of aviation GHG emissions on the global climate**
- **Metric: Teragrams (Tg) of CO2 per year**
- **Target Concept: Reduce aviation's carbon contribution by an annual % near-term, i.e., slow the growth. Get to carbon neutral growth by end of mid-term, and reduce aviation's carbon emissions long-term—all compared to year 2000.**

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Energy

- **Goal: Improve NAS energy efficiency , including aircraft and air traffic operations**
- **Metric: Fuel consumed*fuel volumetric energy content/payload*distance (Propose to add airport energy efficiency metric as one is developed.)**
- **Target Concept: Annual % improvements in NAS energy efficiency, compared to year 2000**

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Water Quality

- **Goal: Limit or reduce significant impacts associated with water quality**
- **Metric: ?**
- **Target Concept: Annual % improvements?**

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For additional information:

- www.jpdo.aero
- www.faa.gov/initiatives/jpdo

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