NextGen Environmental Management System

Goals and Targets Analysis Status Update

Presented to: REDAC E&E Subcommittee
By: Chris Dorbian, AEE-400
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Goals and Targets Background

• Aviation Environmental and Energy (E&E) Goals
  – U.S. Climate Action Plan, E&E Policy Statement
  – Noise, air quality, climate, and energy

• “Goals and Targets Analysis”
  – Forecasting progress against FAA performance goals using AEDT
  – “System Improvements” scenario considers improvements from operations, technology, and alternative fuels

<table>
<thead>
<tr>
<th>FAA Goal Category</th>
<th>FAA Performance Metric*</th>
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<tr>
<td>Climate</td>
<td>Carbon neutral growth, starting in 2020, relative to the 2005 emissions level</td>
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<td>Energy: Alternative Fuels</td>
<td>1 billion gallons of renewable jet fuel used by aviation by 2018</td>
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<td>Energy: Energy-Efficiency</td>
<td>Annual reduction of 2% (of year 2000 level and starting in 2010 – as expressed collectively in the FAA business plan and portfolio of goals)</td>
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<td>Noise</td>
<td>Less than 300,000 people exposed to “significant aircraft noise” by 2018</td>
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<td>Air Quality</td>
<td>50% reduction, starting in 2018, relative to 2005 level</td>
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* Goals are subject to revision based on Administrator’s strategic priorities
Current Status

Update Forecast
- Update growth rates from 2013 TAF-M
- Update retirement curves to CAEP10
- Update Growth & Replacement Fleet (consistent w/other CAEP analyses)

Create Baseline Scenario
- Synthesize forecast with base year COD (2010) to populate future baseline scenario
  - Future aviation activity out to 2025
  - No system improvements

AEDT
- Compress forecast into unique events (flights)
- Conduct single airport-level end-to-end testing in AEDT 2b pre-release
- Execute full NAS-level “production” run

Post-processing
- Apply “System Improvements” (technology, operations, alternative fuels)

Communicate Results
- Hand over results to air quality analysis
- Document

Here as of 8/6
Action Item #1: Historical Perspective

- **Action**: Provide historical perspective to future projections in Goals Analysis, as possible.

- For validating “Historical/Estimated”, exploring following data sources:
  - BTS (T2)
  - US Energy Information Administration
  - International Energy Agency
### Action Item #2: Multiple Scenarios

**Action:** Capture optimistic, realistic, and pessimistic cases within the goals analysis as opposed to a single scenario for the future

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<tr>
<th>Airframe and Engine Technology</th>
<th>Operations</th>
<th>Alternative Fuels</th>
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| • Latest estimates from EDS Assessment of CLEEN Technologies (PARTNER Project 36)  
• ASCENT NOI-10 Aircraft Performance Assessment Project  
• “Evolutionary” and “Aggressive” scenarios | • Current assumption (unimpeded, laterally-direct travel) = upper bound  
• Leverage existing NextGen system-wide modeling (NGIP)  
• Side task: enhanced modeling of NextGen OIs | • Current low-high estimates from market survey analysis  
• Alt Fuel Transportation Optimization Tool (AFTOT)  
• ASCENT NOI-01 – Supply Chain Analysis |
Future Analysis Improvements

• **Extend analysis timeframe**
  - 2040 at a minimum, ideally 2050 – examining TAF extension to 2050
  - Explore connection to APMT-E for AC retirements

• **Comparison to CAEP Trends Assessment (TAF-M int’l. vs. CAEP at a “route-group” level)**

• **Update base year to more recent COD (e.g., 2012)**

• **Expand improvement scenarios**
  - New aircraft configurations out to 2050 – leverage work of NASA
  - Mission specification changes (i.e., PARTNER Project 43 led by Stanford)

• **Operational Improvement changes:**
  - Automate derivation of efficiency factor
  - Radar-based modeling path → incorporate advanced operations research (e.g., Cruise Altitude/Speed Optimization)

• **Use ANG-5 SWAC outputs to inform delay growth**

• **General Aviation / military noise sensitivity**

• **Leverage alt fuels work**

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Relevant to 2015 Climate Action Plan