Agenda

• Study Purpose

• Background
  – Summary of last stakeholder meetings
  – Refresher on DNL, noise contours
  – AEDT model inputs

• Discussion
  – Updated aircraft noise contour map
  – Comparisons to existing noise overlay zones and EIS
  – Proposed overlay

• Next Steps
Study Purpose

• Update the Dulles Airport noise contour map to reflect future changes in the aviation environment including:

  - Long term FAA NextGen implementation
    - Flight paths
    - Runway use
    - Airfield capacity
  - FAA air traffic control procedures
    - Triple simultaneous operations
    - Restricted airspace
  - Airline operations
    - Fleet mix
  - Airfield development
    - Terminal
    - Cargo
Study Purpose (cont.)

• Provide local jurisdictions accurate information to guide effective land use decisions for today and in the future

• Provide local jurisdictions with a land use compatibility planning tool to inform
  - Envision Loudoun
  - Dulles Suburban Plan
Background - Technical Working Group

• Loudoun County
• Fairfax County
• Town Of Herndon
• Airlines- MWAC
• FAA
  – ADO
  – ATO
  – Region
  – Headquarters
• Dulles Airport
  – Airport Manager
  – Airport Operations
  – Government Affairs
  – Noise Office
  – Communication
  – Engineering and Planning
• Consultant Support
  (Ricondo & Assoc. and HMMH)
Background - IAD Noise Contours and Local Land Use Planning

• Long-range noise contours have been a resource and an aid toward the development of compatible land uses
• Noise contours help to inform local land use planning
• Aircraft noise, and its impact on regional communities, was and is a primary consideration for airport planning
• Noise contour maps are developed based on scenarios which are expected during or at full-build of the airport
Background - Stakeholder Meetings

- April 4, 2018 - Kick Off Meeting
- April 20, 2018 - Meeting #2 Link
- June 6, 2018 - Meeting #3 Link
- June 27 & 28, 2018 - Public Information Workshops #1 and #2
  - Public Information Workshop Presentation
  - Public Information Workshop Comments and Responses
- August 13, 2018 - Meeting #4 Link
- September 25, 2018 - Meeting #5 Link
Background - Airport Environmental Decision Tool (AEDT) Overview

• FAA-developed and adopted software tool for computation of noise contours

• Accurately computes noise contours based on many operational characteristics
Background - AEDT Overview

**INPUT**

- PHYSICAL
  - Runway layouts, airfield altitude, atmospheric conditions, flight tracks, etc.

- OPERATIONAL
  - Aircraft types, numbers of aircraft, proportions by runway and flight track, etc.

**OUTPUT**

- Noise Contours
- Detailed reports for specific locations

AEDT

Aircraft Noise & Performance Database

*Flight tracks are controlled by FAA*
Background - Day/Night Average Noise Level (DNL)

- A way to describe the noise dose for a 24-hour period
- Accounts for noise event “noisiness” (SEL)
- Accounts for number of noise events
- Provides an additional weighting factor of 10 dB for nighttime (10:00 pm to 6:59 am) operations
  - 1 nighttime noise event is equivalent to 10 daytime noise events
Background - What is a DNL Noise Contour?

• DNL – Day-Night Average Sound Level
  – Represents average noise for a 24-hour period
  – 10 dB weighting factor for nighttime (10:00 pm to 6:59 am) operations
  – 24-hour average noise level on the basis of annual aircraft operations

• Average Annual Day (AAD) – represents the 24-hour average of total annual operations

• DNL Contour – a line representing equal DNL
Background - What Affects Aircraft Noise Contour Shape and Size?

• Size
  – Aircraft equipment type (certified noise levels, number of engines, and size)
  – Number of aircraft operations
  – Nighttime operations

• Shape
  – Runway location
  – Runway use (how frequently is the runway used)*
  – Operation type (arrival, departure or both)*
  – Flight track locations and dispersion*

* FAA controlled
Discussion - Methodology for Contour Development

- Determine Airport’s Annual Service Volume (ASV)
- Define Average Annual Day operational level
  - Day and night time activity
- Identify Aircraft Fleet Mix
  - Passenger, Cargo, General Aviation, Military, other
  - Aircraft size
- Define Flight Tracks*
  - Arrival and departures by origin/destination
- Load data into AEDT model
- Generate 60 – 75 DNL contours

* FAA controlled
Discussion - Methodology for Contour Development (cont.)

• Approximately 1M operations

• Fleet Mix
  – 82% Passenger (narrow & wide body)
  – 7% Corporate charter
  – 5% Passenger (regional)
  – 5% General Aviation
  – 1% Cargo/Freighter
  – <1% Military

• 88% Day / 12% Night Operations

• FAA Defined Airfield Flow
  – 55% / 45% (north / south)
Average Annual Day Operations – 5 Runway Airfield

- Large Jet 73.9%
- Turbine Propeller 6.9%
- Super Heavy Jet 0.8%
- Heavy Jet 11.8%
- Small Jet 6.6%
Discussion - New Noise Contour Map

Discussion - New Noise Contour
DNL 60 and DNL 65

Source: Google Earth (aerial basemap); HMMH, December 2018 (draft composite contours).
Discussion - New Noise Contour vs. Loudoun County Noise Overlay Zones

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial basemap); Loudoun County, Virginia, 2017 (Loudoun airport impact overlay districts); HMMH, December 2018 (draft composite contours).
Discussion - New Noise Contours vs. Fairfax County Noise Overlay Zones

DNL 60+ Area

DNL 65+ Area

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial basemap); Fairfax County, Virginia, 2017 (Fairfax airport impact overlay districts); HMMH, December 2018 (draft composite contours).
Discussion - Land Use Compatibility

• Protect for Today’s Airport use and for Tomorrow

• The Airports Authority will be recommending that Loudoun County and Fairfax County protect their existing Airport Impact Overlay Districts (DNL 60 and DNL 65) and the new Noise contours.
Discussion - Land Use Compatibility

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial basemap); Loudoun County, Virginia, 2017 (Loudoun airport impact overlay districts); Fairfax County, Virginia, 2017 (Fairfax airport impact overlay districts); URS, November 2005 (EIS 2025 contours); HMMH, December 2018 (draft composite contours).
Discussion - Silver District West & Dulles Suburban Center/Westfields J

Source: Google Earth (aerial basemap); Loudoun County, Virginia, 2017 (Loudoun airport impact overlay districts); Fairfax County, Virginia, 2017 (Fairfax airport impact overlay districts); HMMH, December 2018 (draft composite contours).
Dulles Suburban Center/Westfields J

DNL 65+ Area

Legend
- DNL 65 – Draft Composite
- DNL 65 - Loudoun/Fairfax Co. Noise Overlay Zone
- Land Unit J – Fairfax Co.

Source: Google Earth (aerial basemap); Loudoun County, Virginia, 2017 (Loudoun airport impact overlay districts); Fairfax County, Virginia, 2017 (Fairfax airport impact overlay districts); HMMH, December 2018 (draft composite contours).
Silver District West

Source: Google Earth (aerial basemap); Loudoun County, Virginia, 2017 (Loudoun airport impact overlay districts); Fairfax County, Virginia, 2017 (Fairfax airport impact overlay districts); HMMH, December 2018 (draft composite contours).
Discussion - Silver District West & Dulles Suburban Center/Westfields J

DNL 60+ Area

Source: Google Earth (aerial basemap); Loudoun County, Virginia, 2017 (Loudoun airport impact overlay districts); Fairfax County, Virginia, 2017 (Fairfax airport impact overlay districts); HMMH, December 2018 (draft composite contours).
Silver District West

DNL 60+ Area

Legend
- DNL 60 – Draft Composite
- DNL 60 - Loudoun/Fairfax Co. Noise Overlay Zone
- Silver District West – Loudoun Co.

Source: Google Earth (aerial basemap); Loudoun County, Virginia, 2017 (Loudoun airport impact overlay districts); Fairfax County, Virginia, 2017 (Fairfax airport impact overlay districts); HMMH, December 2018 (draft composite contours).
Dulles Suburban Center/Westfields J

DNL 60+ Area

Legend
- DNL 60 – Draft Composite
- DNL 60 - Loudoun/Fairfax Co. Noise Overlay Zone
- Land Unit J – Fairfax Co.

Source: Google Earth (aerial basemap); Loudoun County, Virginia, 2017 (Loudoun airport impact overlay districts); Fairfax County, Virginia, 2017 (Fairfax airport impact overlay districts); HMMH, December 2018 (draft composite contours).
Recommendations

• Adopt DNL 60 & 65 overlay based on the following:
  - New noise contour (2018/2019 Study)
  - Existing airport impact overlay district
• Noise contours should promote land use compatibility for current and long term development
Process and Next Steps (as of January 7, 2019)

**Inventory**
- Evaluate current and future plans (MWAA and FAA)
- Assess existing operation conditions

**Forecast**
- Determine full-build scenario(s)
- Determine maximum potential operations
- Determine potential aircraft runway use and flight tracks

**Noise Modeling**
- Develop baseline noise model
- Calculate potential aircraft noise levels for full-build scenario(s)
- Determine appropriate composite of potential scenarios, if appropriate

**Conclusions**
- Recommend potential aircraft noise contours for land use planning

- In Process
- Completed
- Upcoming
Next Steps

• Schedule public workshop (timing based on feedback)
• Jan. 9 – Fairfax County Westfields Unit J Task Force
• Jan. 11 – Loudoun County Planning staff presentation
• Hold public workshop & consider workshop feedback
• Feb 28 – March (TBD) – Finalize recommended overlay district for land use planning