

**Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall)
Airport Noise Zone (ANZ) Update
Stakeholder Advisory Committee (SAC) Meeting #2**

Presented by:

The Maryland Department of Transportation (MDOT)

Maryland Aviation Administration (MAA)

August 4, 2020

6:00 PM – 9:00 PM

 **MARYLAND DEPARTMENT OF TRANSPORTATION**
MARYLAND AVIATION ADMINISTRATION

Welcome Remarks

- Welcome to the Stakeholder Advisory Committee (SAC) meeting
- MDOT MAA representatives and Consultant team introductions
- Chief Engineer Opening Remarks



Virtual Meeting Plan & Procedures

- Tonight's meeting will operate similar to an in-person meeting
- There are some different procedures for the virtual format
 - During the meeting, if you have a question:
 1. Please use the "Raised Hand" feature on the screen and/or
 2. Ask the question in the chat box
 - We will answer questions during the presentation
 - Additional questions will be answered at the conclusion of the presentation
- If you experience technical difficulties
 - Please let us know in the chat box
 - Log off, and log back in
 - We recommend having only one web browser open for the duration of the meeting, and to close all other programs on your computer if possible

SAC Meeting 1 Recap

- What an Airport Noise Zone is and why we do one
- Noise fundamentals
- SAC makeup, roles, and responsibilities
- Overview of BWI Marshall
- Overview of noise modeling process and input development
- What makes up a Noise Abatement Plan
- Project scope and schedule



Airport Noise Zone (ANZ) Study Update Elements


Airport Noise Zone (ANZ)	Noise Abatement Plan (NAP)
<p>Means to identify and control incompatible land development around BWI Marshall</p> <p>Comprised of the largest extent of the annual Day-Night Average (DNL/Ldn) composite contours for each study year (2020 base, 2025 and 2030 forecast)</p>	<p>Prescribes measures to monitor and reduce or eliminate impacted land use areas to the extent feasible, while maintaining efficient airport operations</p>

ANZ Update Scope and Process

- Form and engage with Stakeholder Advisory Committee (SAC)
- **Prepare base year, 5-year, 10-year forecast contours**
- **Compile composite Airport Noise Zone (ANZ)**
- **Conduct land use inventory**
- Update the Noise Abatement Plan
- Conduct public hearing/workshop
- Incorporate ANZ into Code of Maryland Regulations (COMAR)

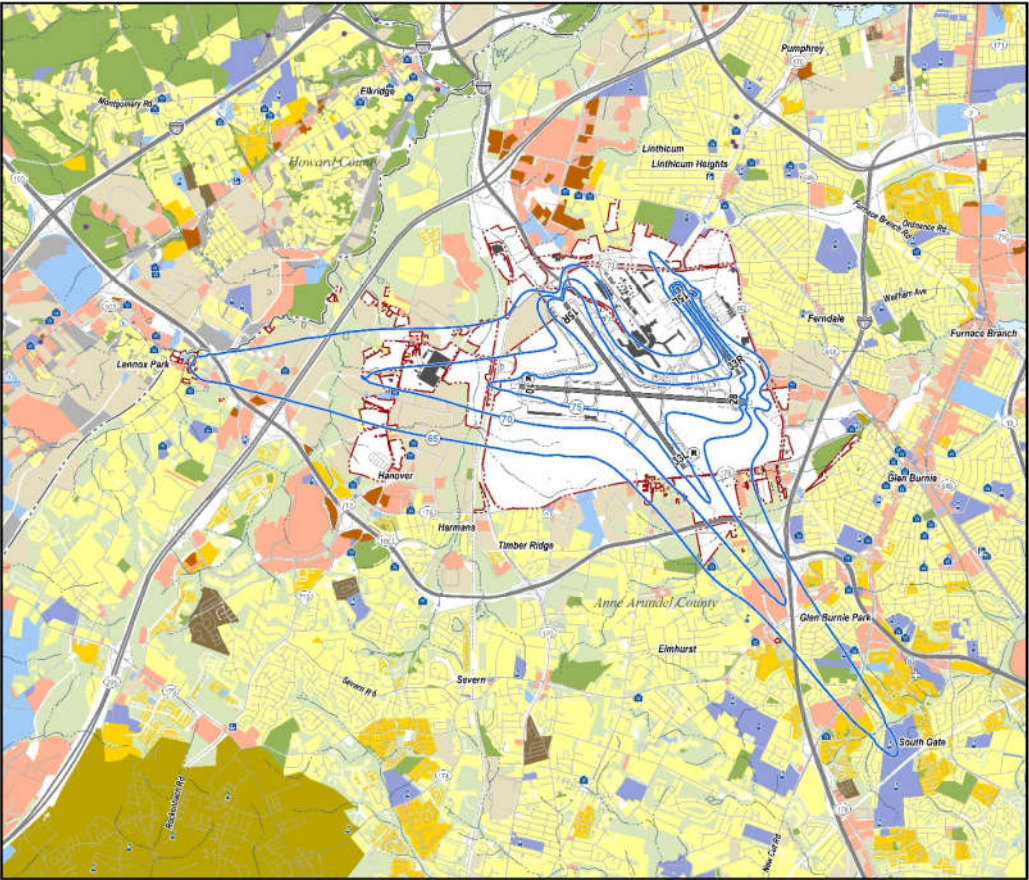
We are here





Noise Contours (2020, 2025, 2030) and Composite Draft 2020 ANZ

Draft Base Year (2020) Contours



Airport Noise Zone Update

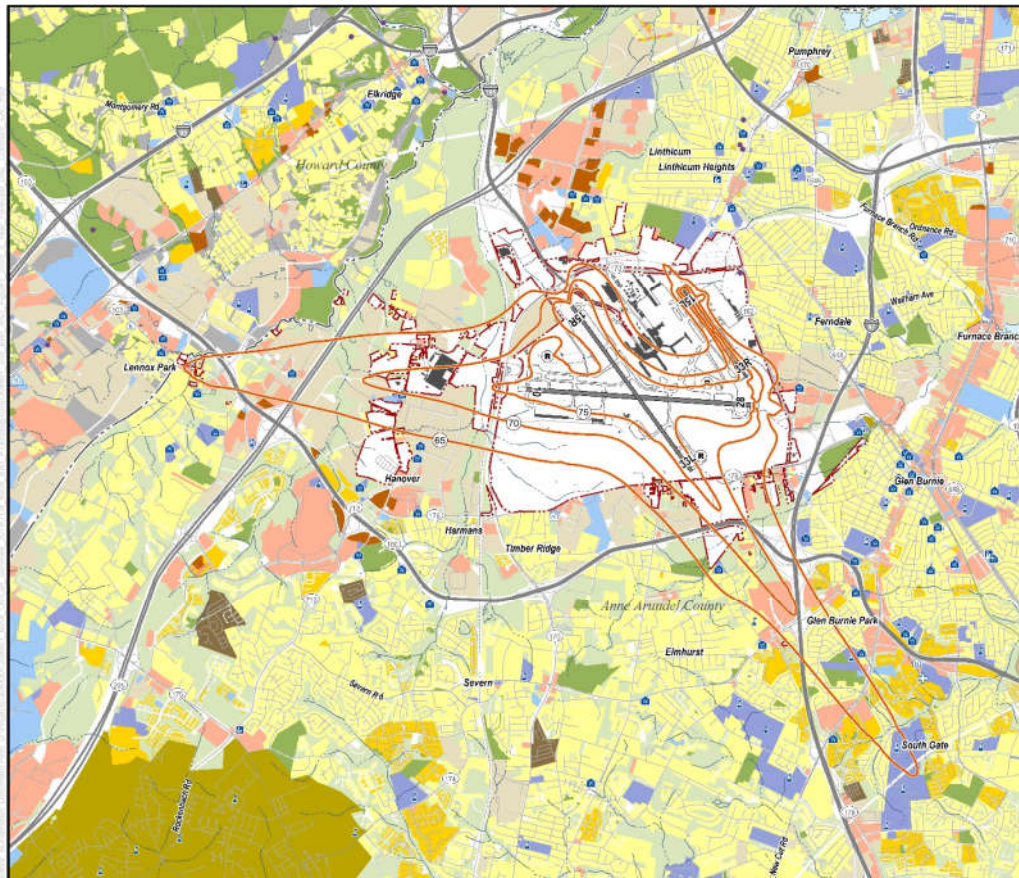
2020 Base Year DNL Contours

- 2020 Base Year DNL Contours
- MDOT MAA Property Boundary
- Runup Locations
- Helicopter Operation Area
- Runway
- Airport Buildings
- Airport Pavement Edge
- County Boundary
- Roads
- Railroad
- Stream / Creek
- Residential Use
- Multi-Family Residential Use
- Mobile Home
- Transient Lodging
- Mixed Use
- Public Use (Non-Compatible)
- Public Use (Compatible)
- Water
- Military Use
- Commercial Use
- Manufacturing / Production
- Vacant / Undeveloped
- Recreational / Open Space
- Golf
- Transportation / Utility
- School
- Places of Worship
- Nursing / Assisted Living
- Library
- Hospital / Health Care
- Historic Place (NRHP)

Data Sources: MDOT MAA; Anne Arundel County; Howard County; Baltimore County Government Open Data Portal; National Register of Historic Places (NRHP); Environmental Systems Research Institute (ESRI); AirNav.com; HMMH Inc.



Draft Five-year Forecast (2025) Contours



Airport Noise Zone Update

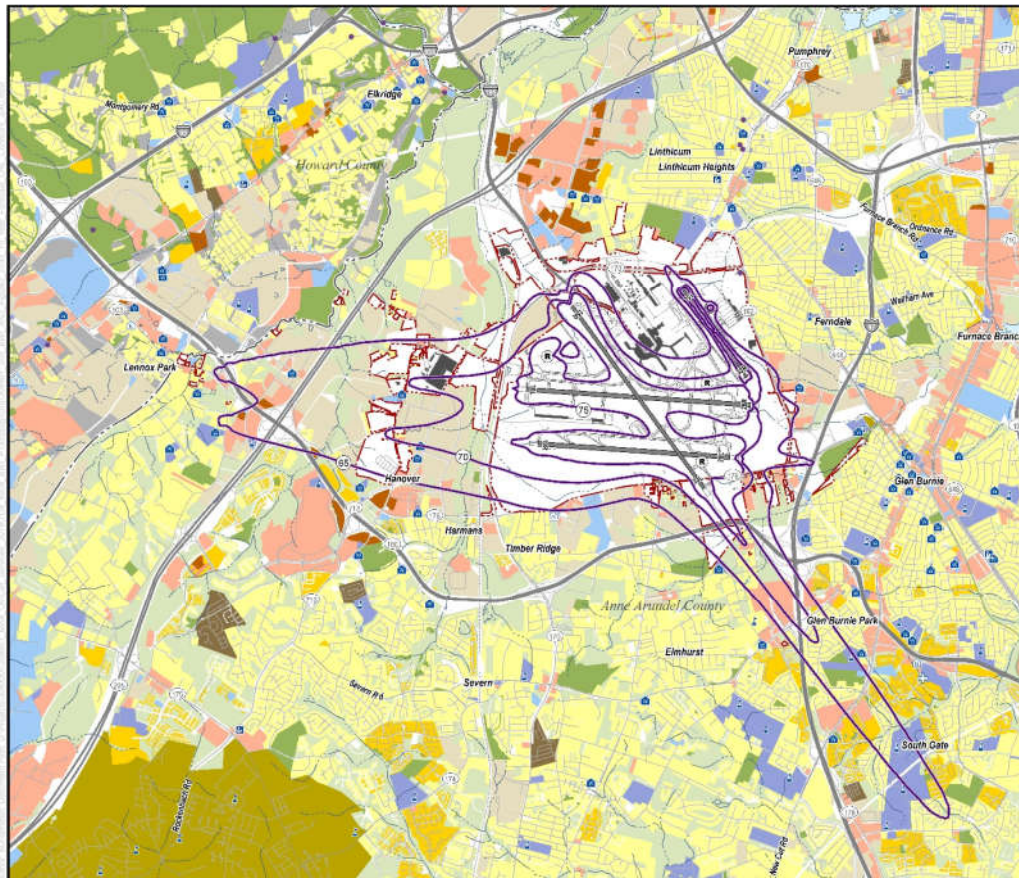
2025 5-Year Forecast DNL Contours

- 2025 5-Year Forecast DNL Contours
- MDOT MAA Property Boundary
- Runup Locations (Future) Helicopter Operation Area (Future)
- Runway (Future)
- Airport Buildings
- Airport Pavement Edge
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Draft Ten-year Forecast (2030) Contours



Airport Noise Zone Update

2030 10-Year Forecast DNL Contours

- 2030 10-Year Forecast DNL Contours
- MDOT MAA Property Boundary
- Runup Locations (Future) Helicopter Operation Area (Future)
- Runway (Future)
- Airport Buildings
- Airport Pavement Edge
- County Boundary
- Roads
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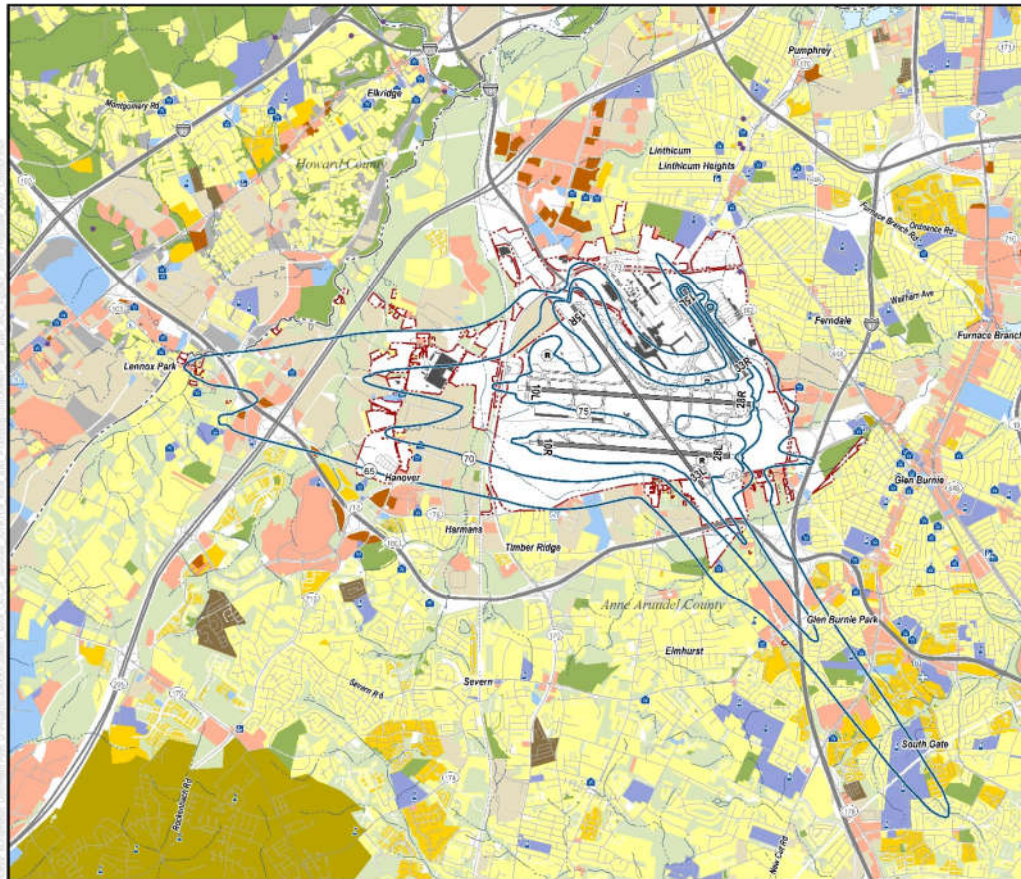
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Draft 2020 BWI Marshall ANZ

- 2020 BWI Marshall ANZ is a composite of the 65, 70, and 75 Day-Night Average (DNL/Ldn) noise contours for:
 - Base year 2020
 - Future years of 2025 and 2030
- Represents the largest extent of the annual DNL/Ldn contours for each of the three study years (2020, 2025, and 2030)
- Defined to provide the largest area of the existing or future noise exposure contours for compatible land use planning purposes

Draft 2020 ANZ Contours



Airport Noise Zone Update

Draft 2020 ANZ

- Proposed Draft 2020 ANZ
- MDOT MAA Property Boundary
- Runup Locations
- Helicopter Operation Area
- Runway
- Airport Buildings
- Airport Pavement Edge
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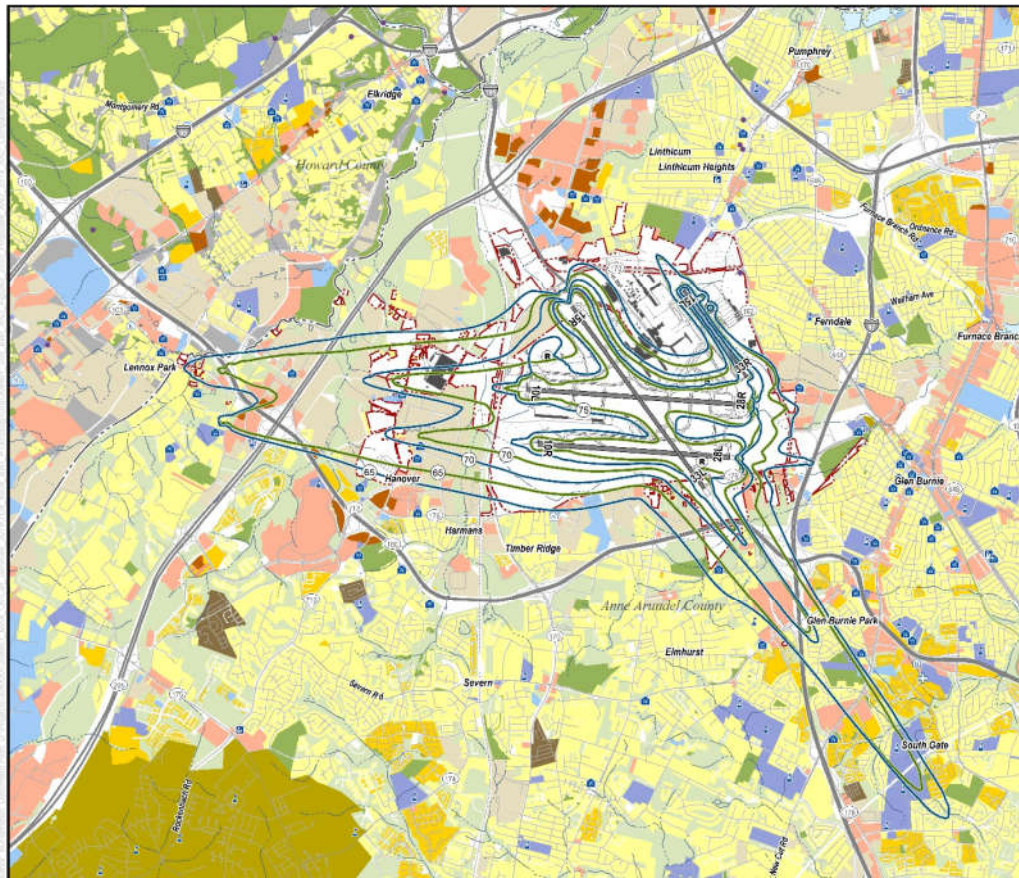
Land Use Analysis – Draft 2020 ANZ Contour

DNL/Ldn Contour Interval	Estimated Residential Population	Estimated Residential Housing Units	Area in Acres
65-70 dB	3,856	1,518	3,048
70-75 dB	113	44	1,404
> 75 dB	2	1	1,091
Total	3,971	1,563	5,543

Sources:

HMMH 2020
2010 US Census

Comparison of Draft 2020 ANZ to 2014 ANZ



Airport Noise Zone Update

Draft 2020 ANZ Compared to 2014 ANZ

- P10
- 2014 ANZ Contours
- MDOT MAA Property Boundary
- Runup Locations
- Helicopter Operation Area
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Land Use Analysis – Comparison of Draft 2020 ANZ to 2014 ANZ

ANZ	Estimated Residential Population (≥ 65 dB DNL/Ldn)	Estimated Residential Housing Units (≥ 65 dB DNL/Ldn)	Area in Acres (≥ 65 dB DNL/Ldn)
2014 ANZ	3,596	1,483	4,513
Draft 2020 ANZ	3,971	1,563	5,543
Difference	+375/+10%	+80/+5%	+1,030/+23%

Sources:

HMMH 2020

2010 US Census

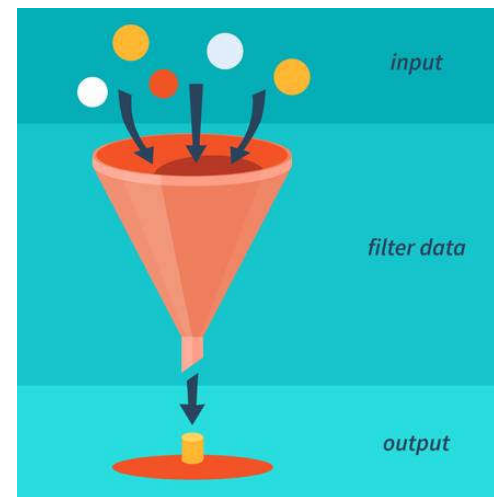
Baltimore/Washington International Thurgood Marshall Airport, Airport Noise Zone Update, December 2014. HMMH Report No. 305160.012



Noise Model Inputs

Noise Model Inputs

- Aviation Environmental Design Tool (AEDT) - noise modeling software
- AEDT requires noise model input data in three categories:
 1. Aircraft noise and performance data
 2. Airport physical inputs
 3. Aircraft operational inputs
 - Number of aircraft operations
 - Aircraft fleet mix
 - Day-night split of operations
 - Runway utilization
 - Flight track geometry and utilization



Physical Input Requirements

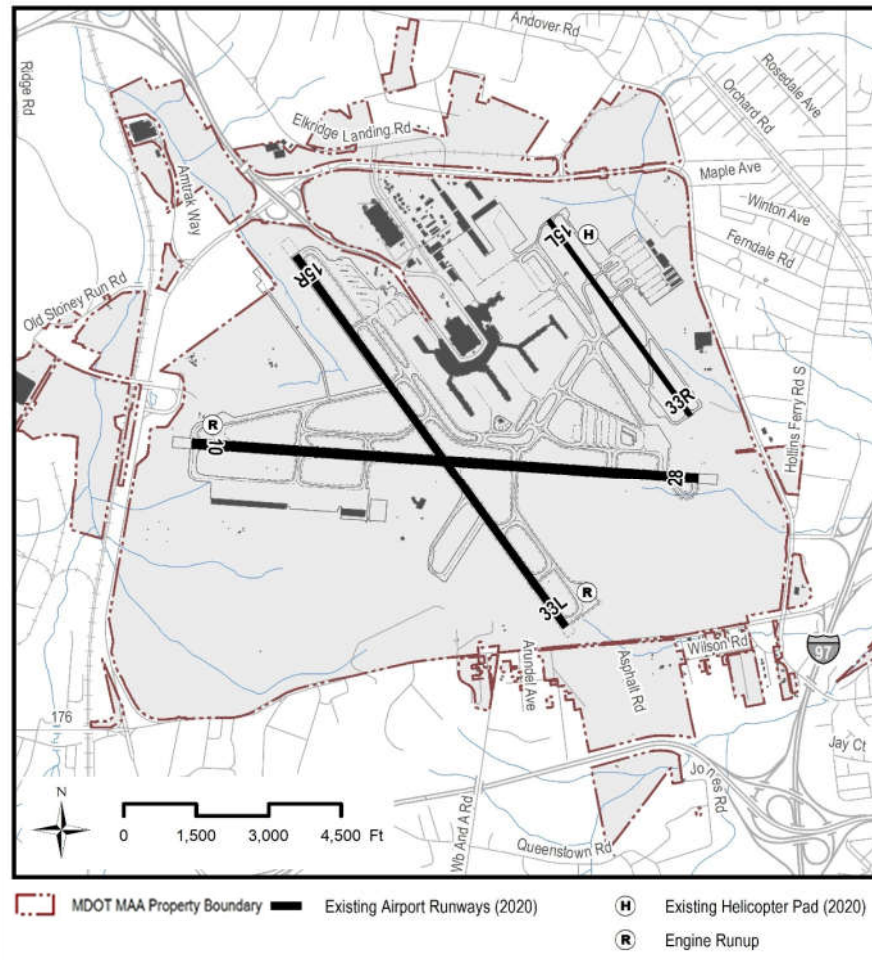
- Runway layout (including displaced landing or takeoff thresholds)
- Flight tracks
- Airport elevation
- Airport weather
 - Temperature
 - Relative humidity
- Related requirements:
 - runway use rates
 - flight track use rates



Noise Modeling Process

- Study years for this ANZ Update: 2020, 2025, 2030
- First step, analyzed existing radar data
- Base Year (2020)
 - Utilized a 12-month set of flight tracks from September 2018-September 2019 from MDOT MAA Airport Noise and Operations Monitoring System (ANOMS)
 - Determined base year AEDT inputs
 - Developed base year conditions and DNL/Ldn contours
- Forecast Years (2025 and 2030)
 - Determined 5 and 10-year forecast AEDT inputs
 - Use of existing MDOT MAA and FAA forecasts to determine future levels of operations and fleet mix
 - Anticipated changes to airport layout and associated flight track changes
 - Developed 5-year and 10-year forecast DNL/Ldn Contours

Base Year (2020) – Airport Layout



Base Year (2020) Operations

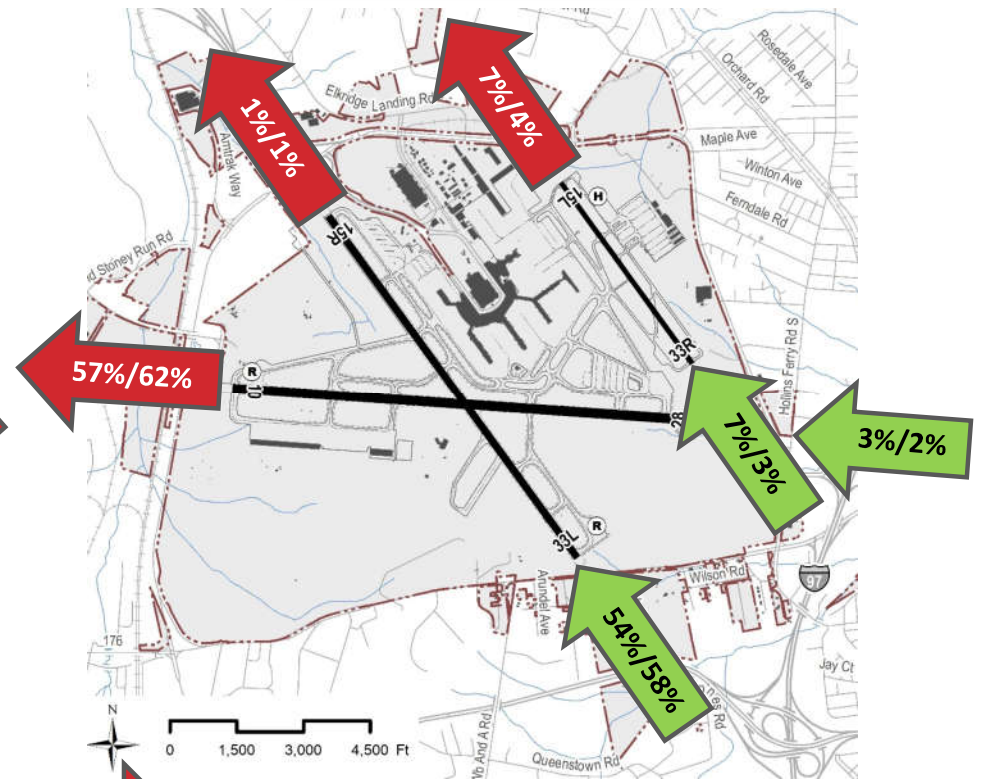
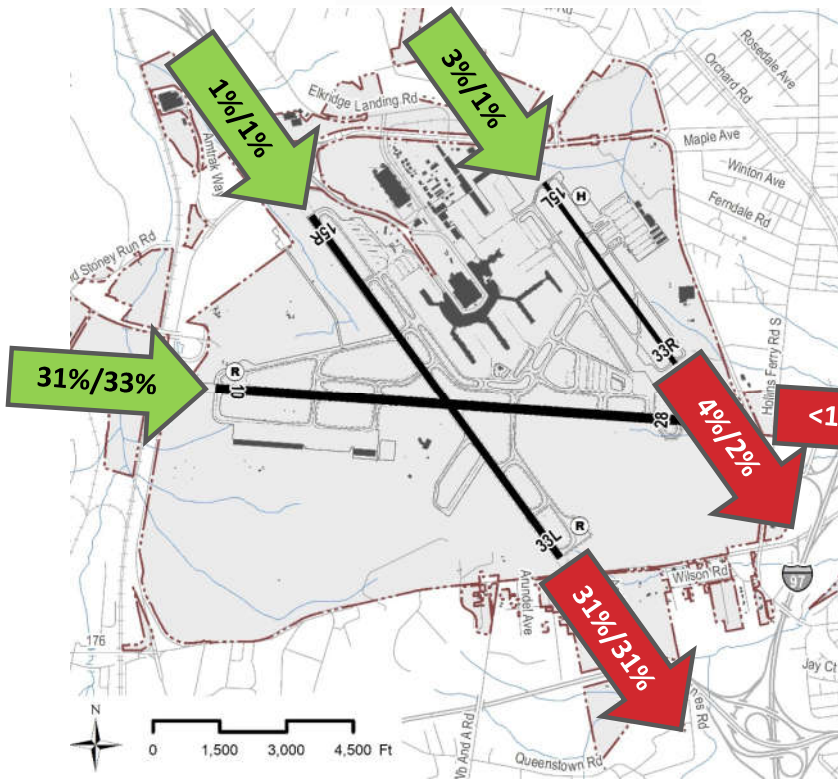
- Overall operations levels derived from 2019 edition of FAA Terminal Area Forecast (TAF)
 - FAA TAF is in terms of fiscal year (October – September) where ANZ update in terms of calendar year (January –December)
 - Operations from FAA TAF years 2020 and 2021 adjusted to reflect calendar year to establish base year (2020) ANZ operations levels
- Aircraft fleet-mix, runway use, and flight tracks derived from ANOMS
- Aircraft maintenance runups derived from MDOT MAA runup logs

Operations Category	Count of Operations	Percentage of Operations
Air Carrier (AC)	229,296	84%
Air Taxi (AT)	31,714	12%
General Aviation (GA)	12,266	4%
Military (ML)	1,166	0%
Total	274,442	100%
Average Annual Day (AAD)	751.9	

Overall Base Year (2020) – Runway Utilization

East Flow – 35%

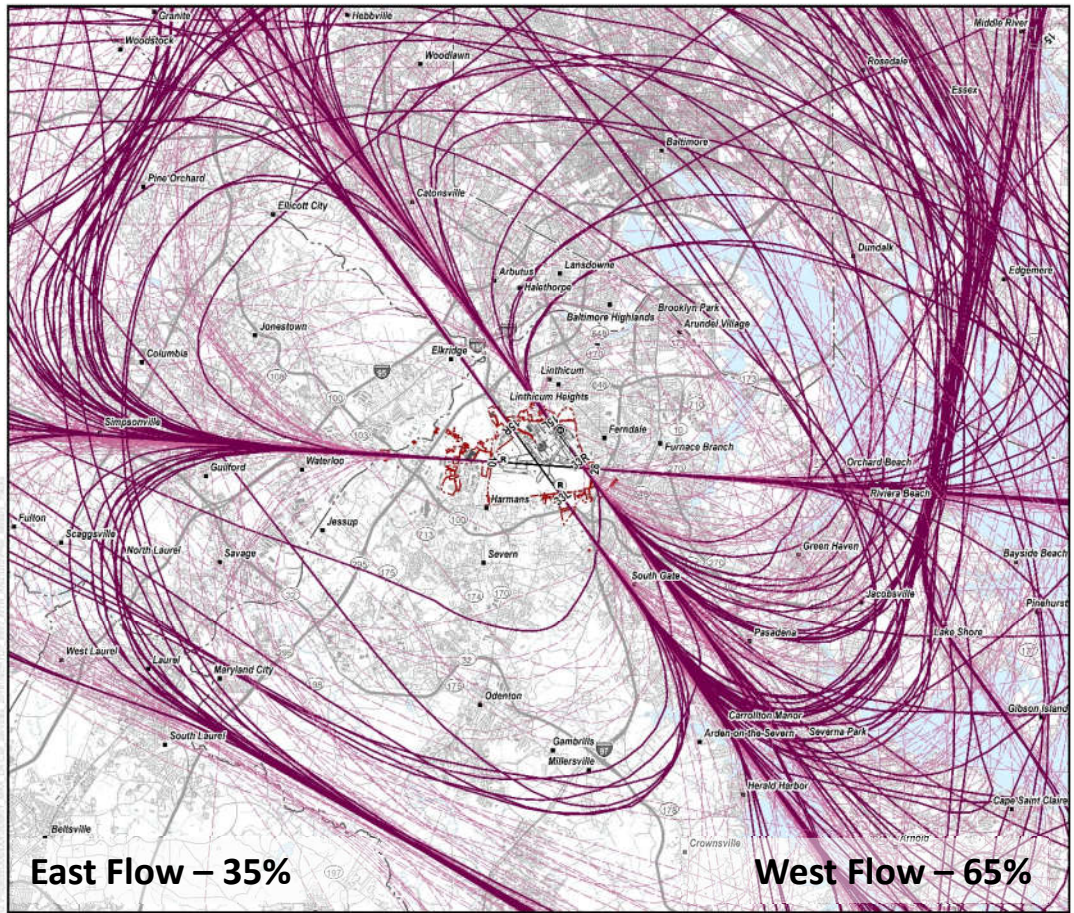
West Flow – 65%



Note: 100% of helicopter operations operate from Helipad (H1)



Base Year (2020) Flight Tracks – Fixed-Wing Arrivals



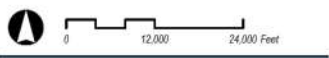
Airport Noise Zone Update

2020 Base Year Modeled Flight Tracks
Fixed-Wing Arrivals

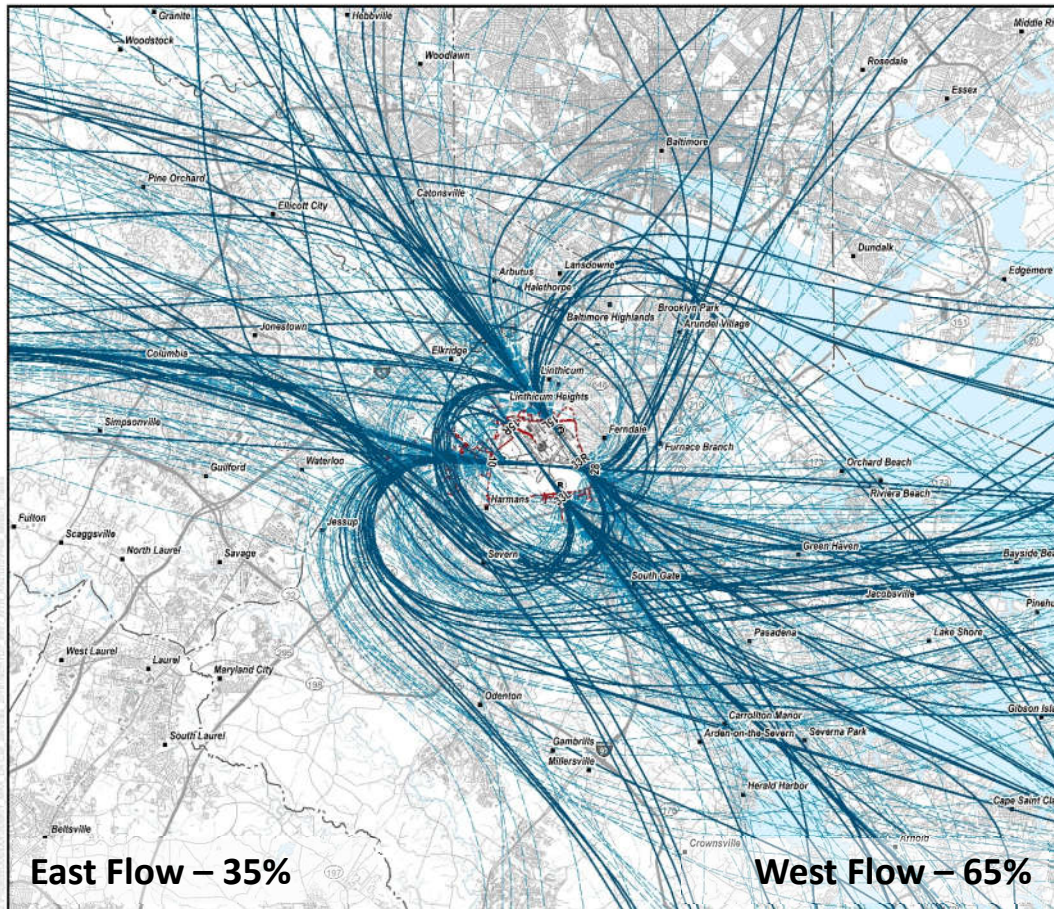
- Modeled Arrival Flight Track - Backbone
- Modeled Arrival Flight Track - Dispersed
- ▭ MDOT MAA Property Boundary
- ⊙ Helicopter Operation Area
- ⊙ Runup Locations
- ▬ Runway
- ▬ Airport Buildings
- ▭ County Boundary
- ▬ Roads
- ▬ Railroad
- ▬ Stream / Creek
- ▬ Water

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Data Sources: Baltimore County Government Open Data Portal; Environmental Systems Research Institute (ESRI); AirNav.com; HMMH Inc.



Base Year (2020) Flight Tracks – Fixed-Wing Departures



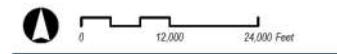
Airport Noise Zone Update

2020 Base Year Modeled Flight Tracks
Fixed-Wing Departures

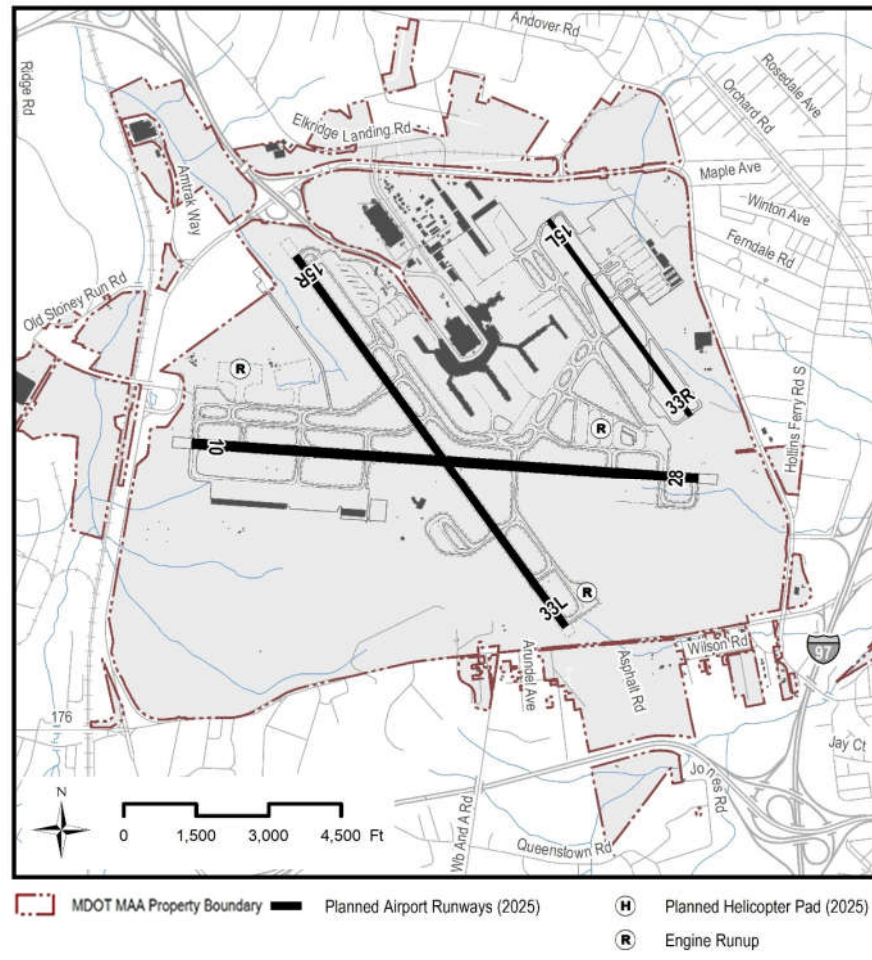
- Modeled Departure Flight Track - Backbone
- Modeled Departure Flight Track - Dispersed
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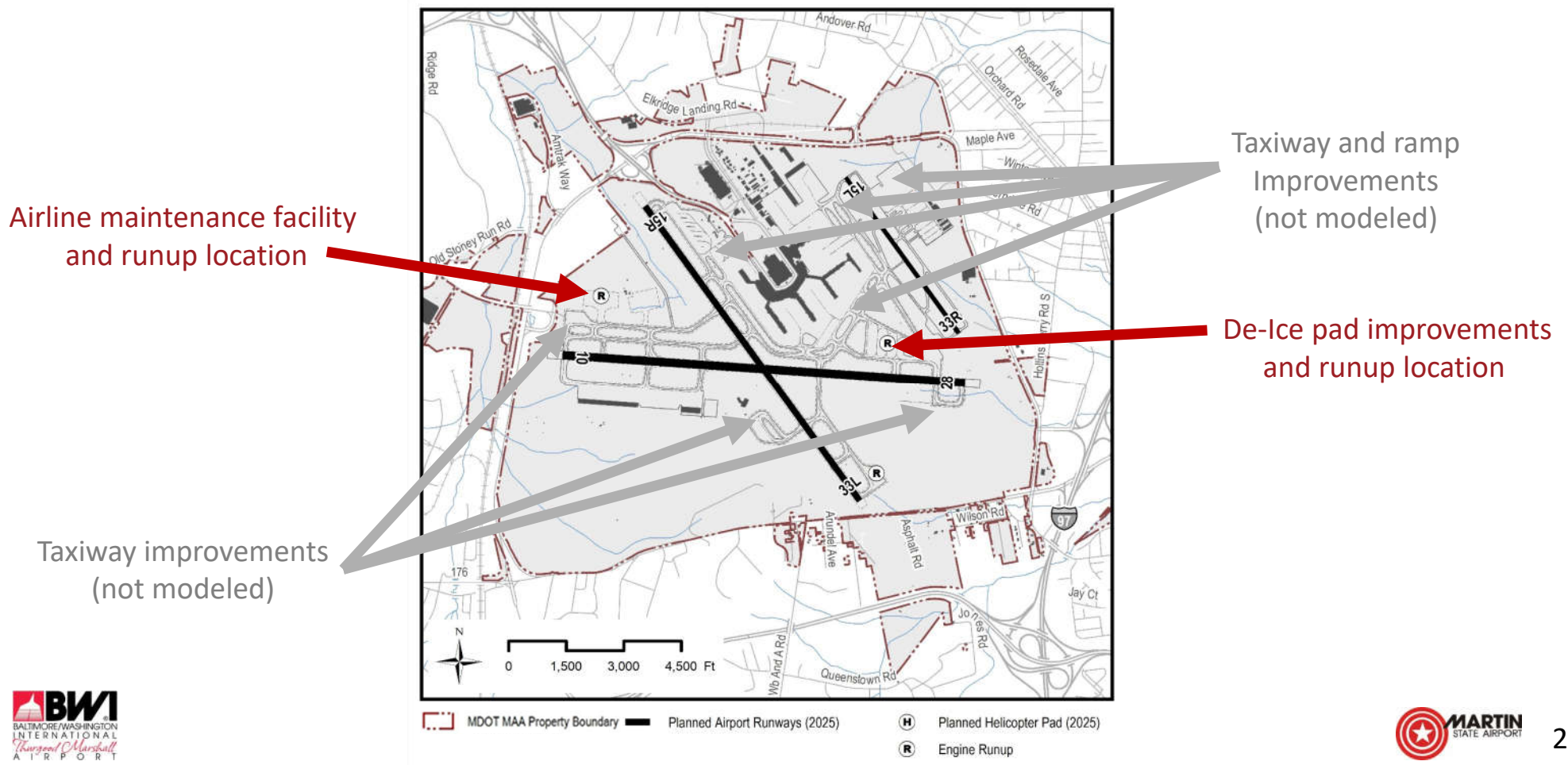
Data Sources: Baltimore County Government Open Data Portal; Environmental Systems Research Institute (ESRI); AirNav.com; HMMH Inc.



Five-year Forecast (2025) – Airport Layout



Five-year Forecast (2025) – Airport Layout



Five-year Forecast (2025) Operations

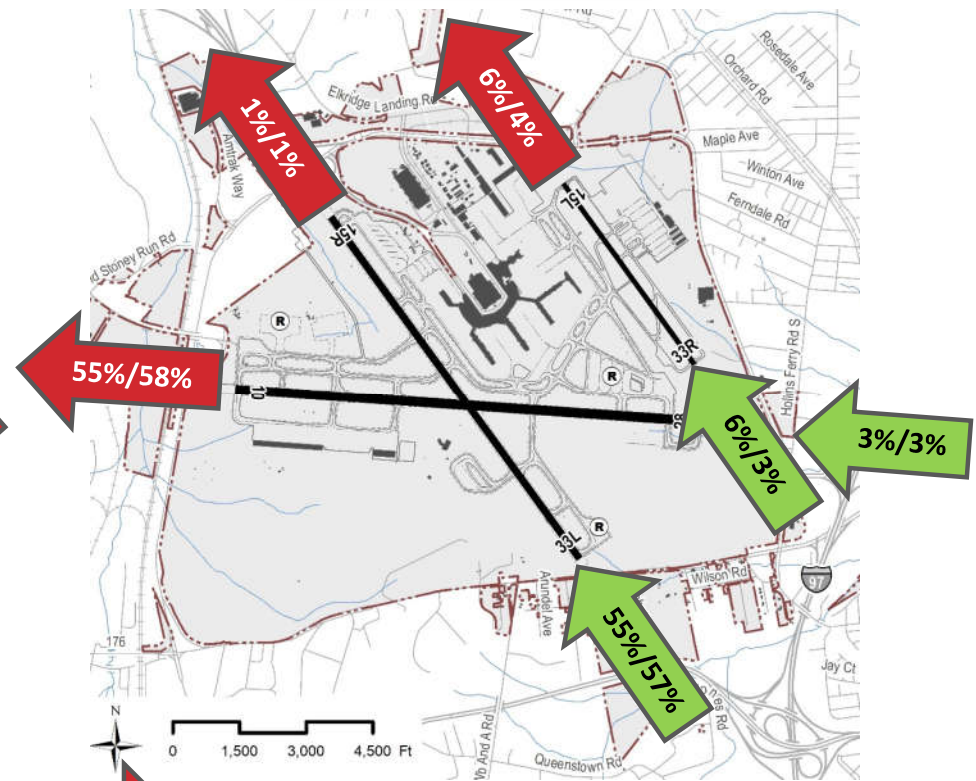
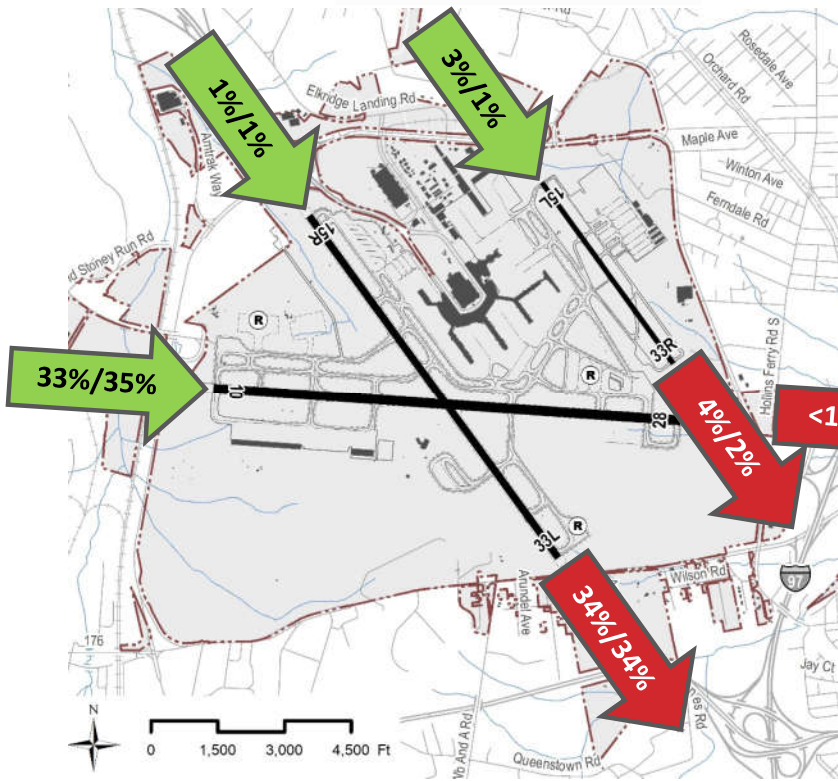
- Overall operations levels derived from FAA Terminal Area Forecast (TAF)
- Operations fleet-mix, runups, and runway use derived from existing MDOT MAA and FAA forecasts
 - *Updated Draft Environmental Assessment and Draft Section 4(f) Determination, ALP Phase I Improvements at BWI Marshall Airport, February 2020*
- Flight tracks are the same as base year (2020) operations

Operations Category	Count of Operations	Percentage of Operations	Percentage Change from 2020
Air Carrier (AC)	251,673	86%	+10%
Air Taxi (AT)	25,946	9%	-18%
General Aviation (GA)	12,361	4%	+1%
Military (ML)	1,166	0%	+/-0%
Total	291,145	100%	+6%
Average Annual Day (AAD)	797.7		

Overall Five-year Forecast (2025) – Runway Utilization

East Flow – 37%

West Flow – 63%



Arrivals
Day%/Night%

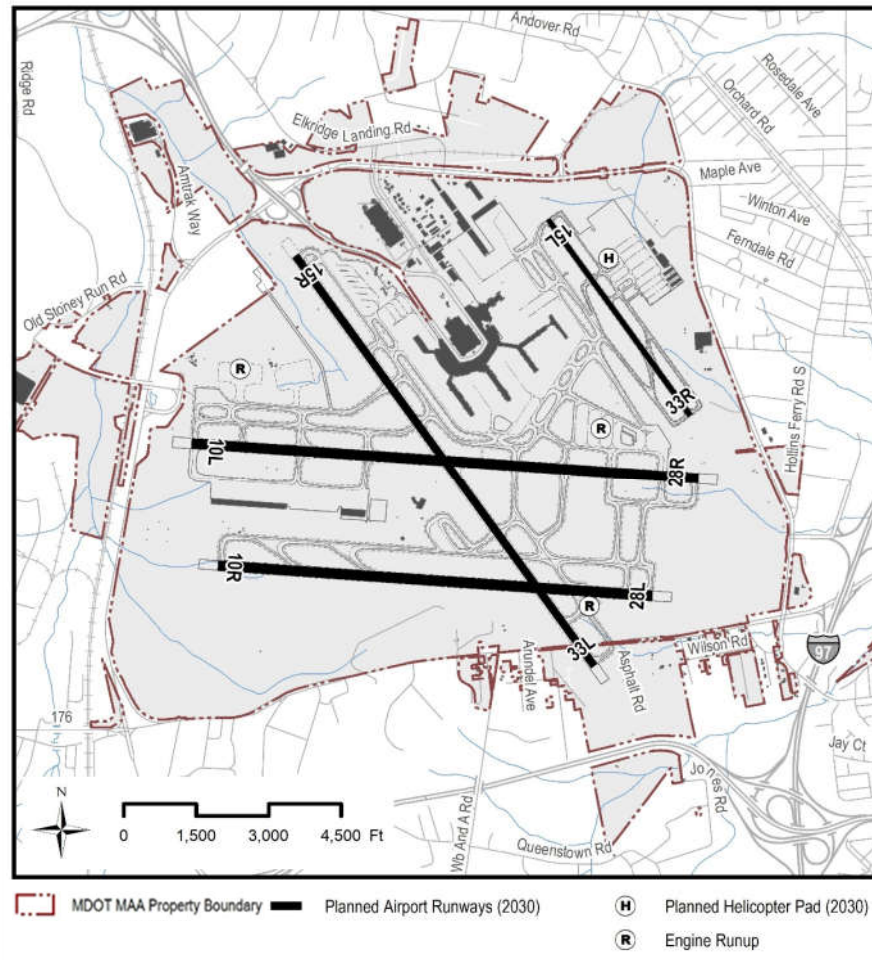
Departures
Day%/Night%



Note: 100% of helicopter operations operate from Helipad (H1)



Ten-year Forecast (2030) – Airport Layout



Ten-year Forecast (2030) – Airport Layout

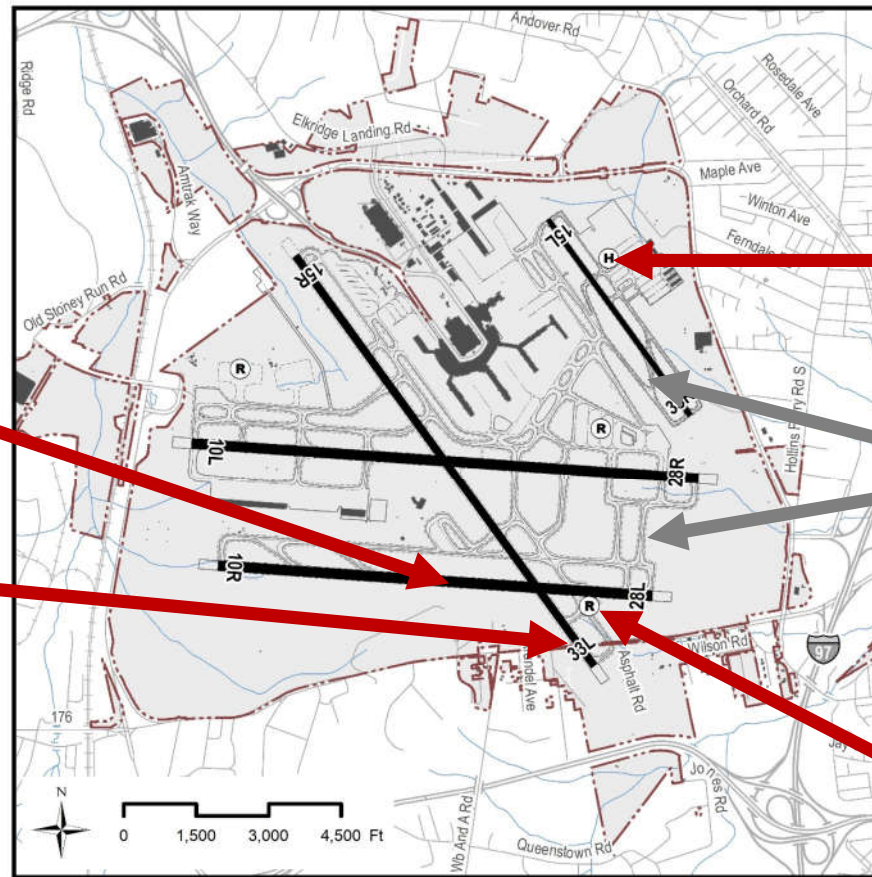
New parallel
Runway 10R/28L and
associated Taxiways

Extension of
Runway 15R/33L and
associated taxiway modifications

Relocated Helipad Location

Taxiway improvements
(not modeled)

Relocated Runup Location

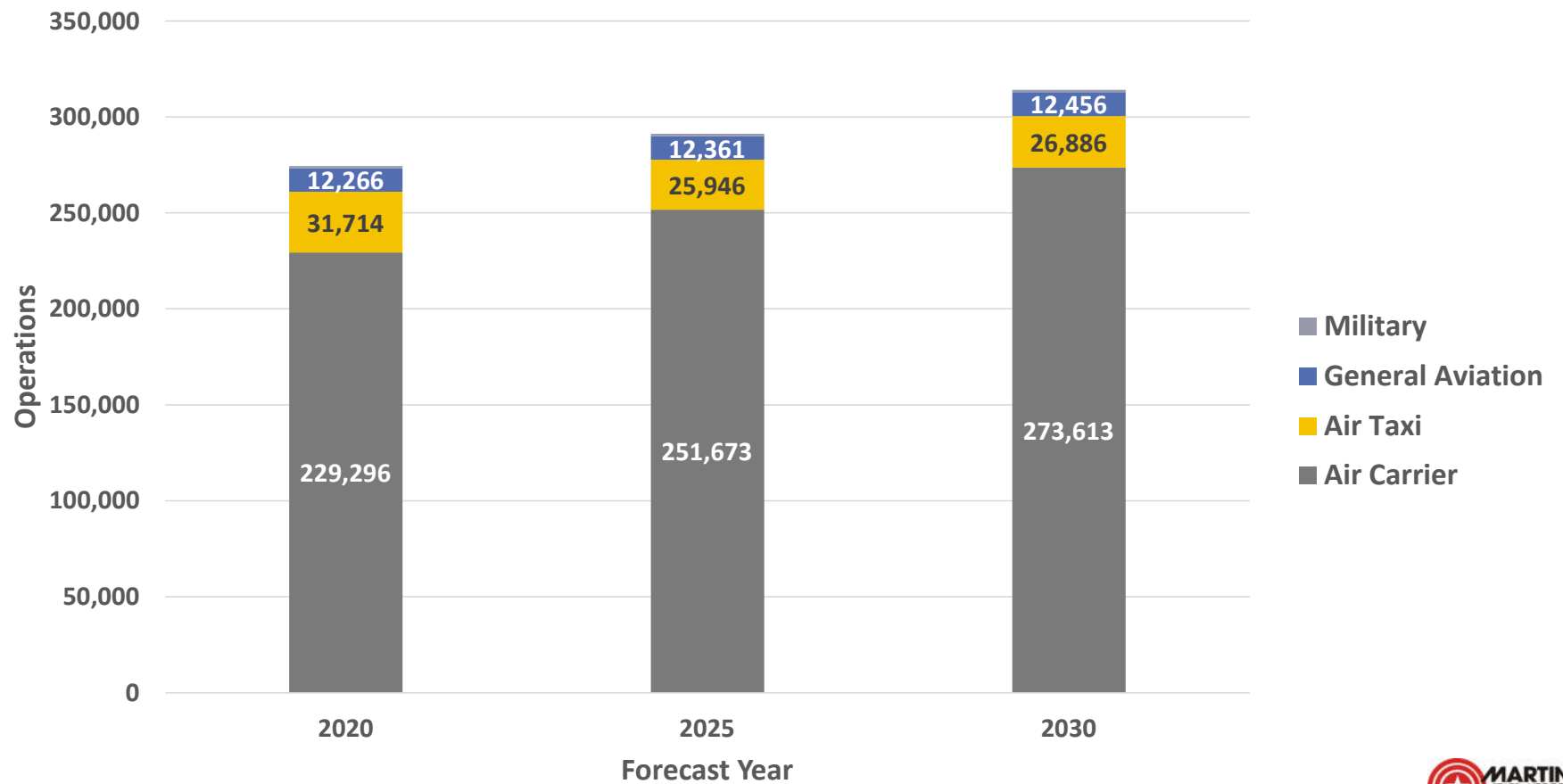


Ten-year Forecast (2030) Operations

- Overall operations levels derived from FAA Terminal Area Forecast (TAF)
- Operations fleet-mix and runups derived from existing MDOT MAA and FAA forecasts consistent with methodology for five-year (2025) forecast

Operations Category	Count of Operations	Percentage of Operations	Percentage Change from 2020
Air Carrier (AC)	273,613	87%	+19%
Air Taxi (AT)	26,886	9%	-15%
General Aviation (GA)	12,456	4%	+2%
Military (ML)	1,166	0%	+/-0%
Total	314,121	100%	+15%
Average Annual Day (AAD)	860.6		

Comparison of Forecast Operations



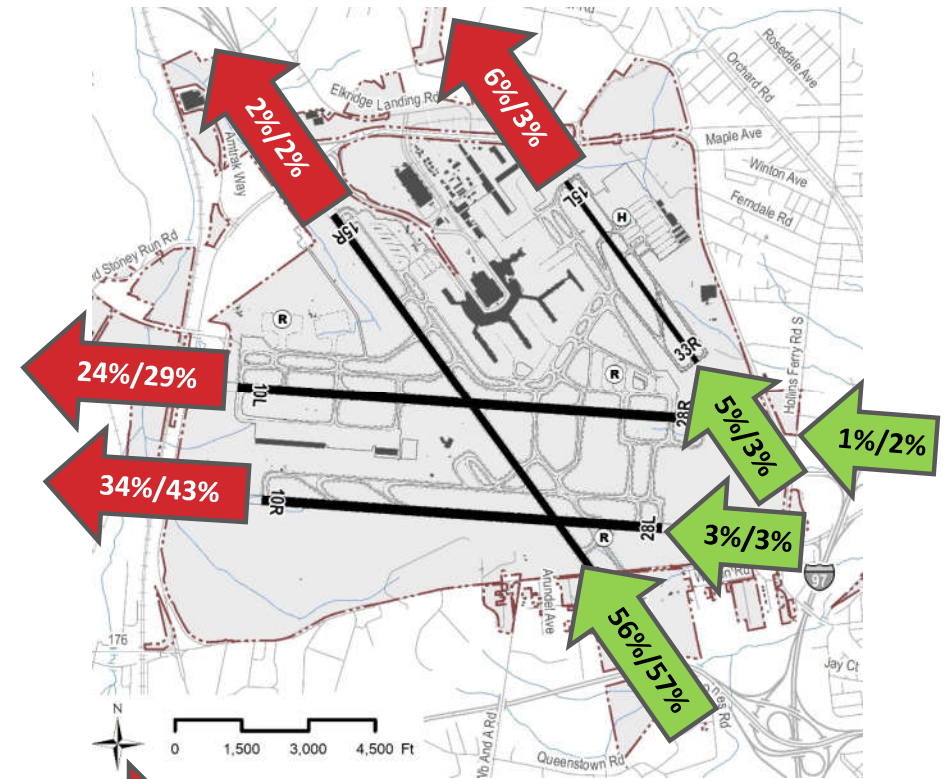
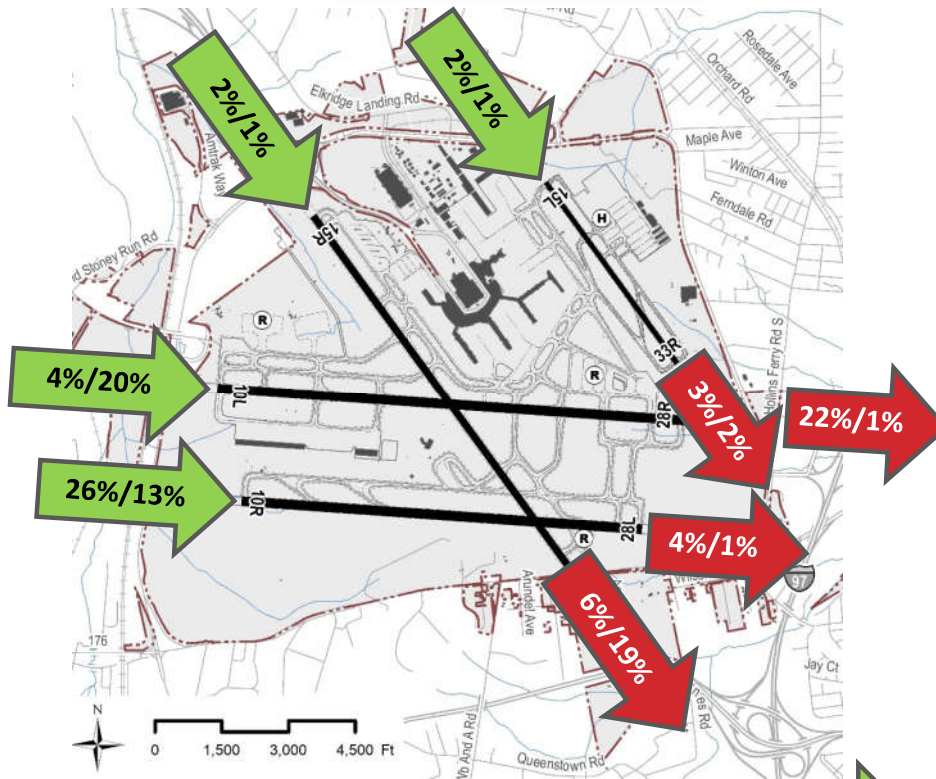
Ten-year Forecast (2030) Flight Track/Runway Use Assumptions

- Due to addition of the proposed parallel Runway 10R/28L, assumptions regarding flight tracks and runway utilization for the Ten-year forecast (2030) change relative to the five-year forecast (2025)
 - Distribution of operations from existing Runway 10/28 between existing Runway 10/28 (future 10L/28R) and proposed parallel Runway 10R/28L
 - Some daytime Air Carrier and Air Taxi departure operations associated with existing Runway 15R shift to utilize parallel Runways 10L and 10R
- Flight track utilization and location changes to reflect updated airfield layout, runway use assumptions, and minimize potential for anticipated aircraft traffic conflicts

Overall Ten-year Forecast (2030) – Runway Utilization

East Flow – 34%

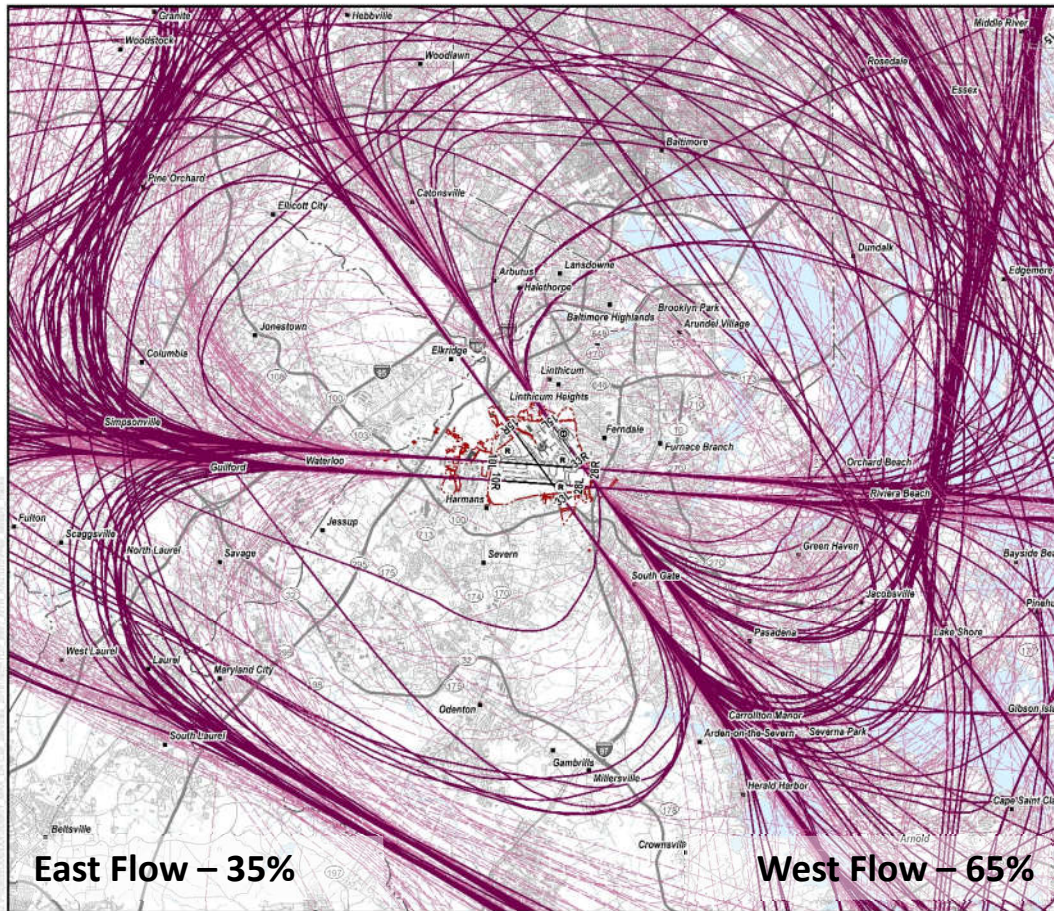
West Flow – 66%



Note: 100% of helicopter operations operate from Helipad (H1)



Ten-year (2030) Forecast Flight Tracks – Fixed-Wing Arrivals



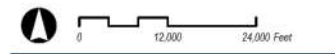
Airport Noise Zone Update

2030 10-Year Forecast Modeled Flight Tracks
Fixed-Wing Arrivals

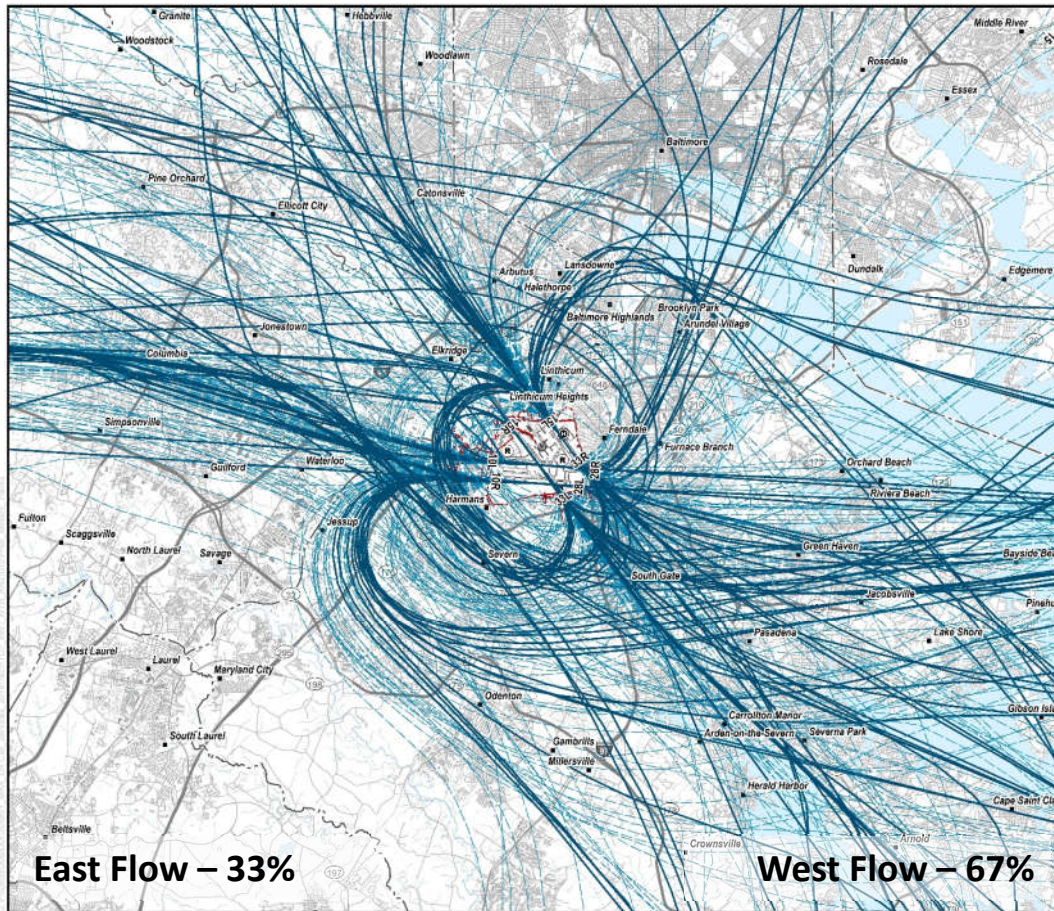
- Modeled Arrival Flight Track - Backbone
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- ▬ Railroad
- ▬ Stream / Creek
- ▭ Water

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Data Sources: Maryland Aviation Administration; Baltimore County Government
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Ten-year (2030) Forecast Flight Tracks – Fixed-Wing Departures



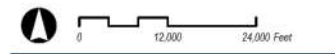
Airport Noise Zone Update

2030 10-Year Forecast Modeled Flight Tracks Fixed-Wing Departures

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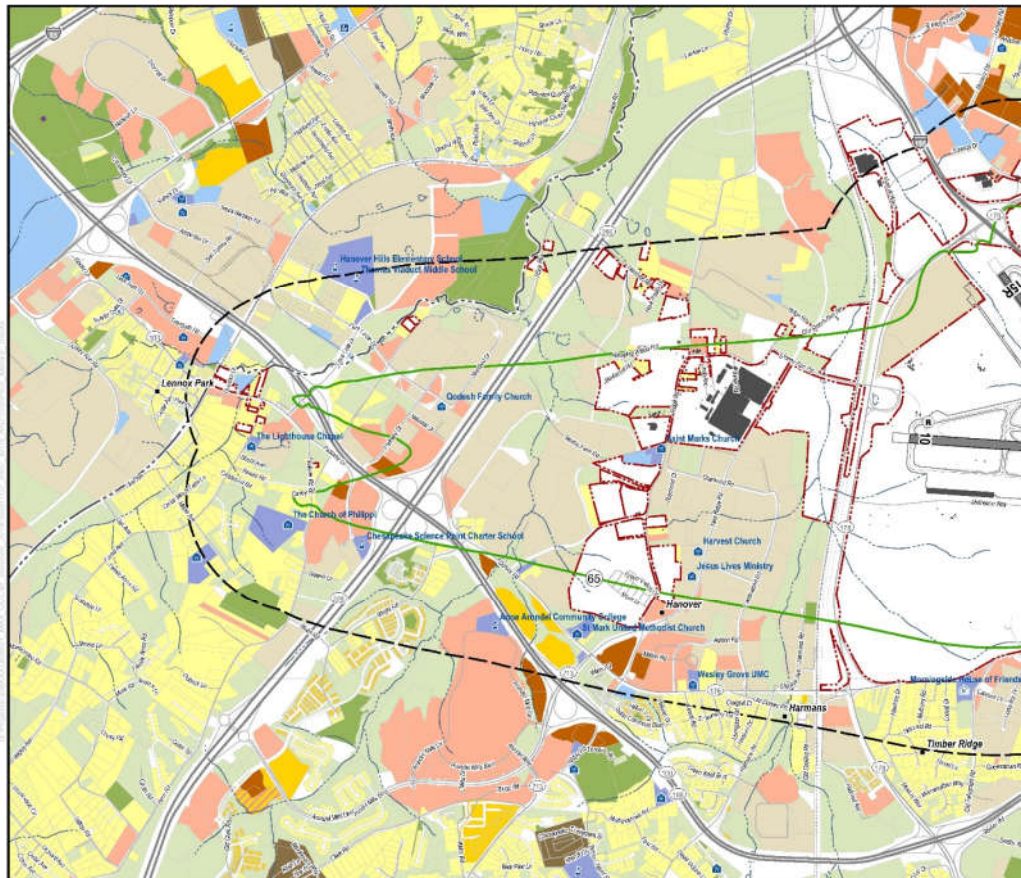


Airport Noise Zone Land Use Inventory

Land Use Inventory

- Key step in the ANZ process is to understand areas of existing and potential future incompatible land uses.
- Detailed existing land use databases were collected from Anne Arundel, Baltimore, and Howard Counties.
- Due to the frequency with which existing land uses change, (i.e. new development), MDOT MAA reviewed and updated generalized existing land uses, and requested an independent review by the SAC.
- Next steps are to refine the generalized land use database and identify the land uses within the 2020 ANZ.

Land Use Verification



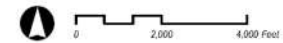
Airport Noise Zone Update

Existing Land Use

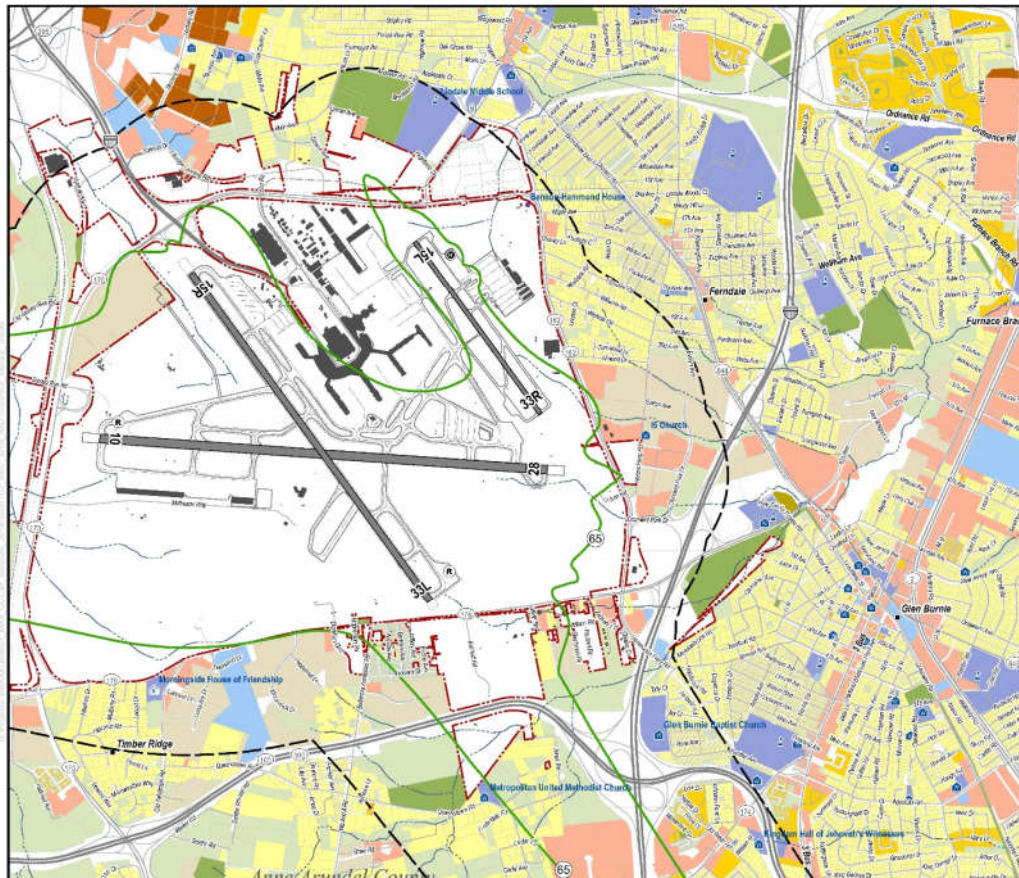
- 2014 ANZ Noise Contour (65 dB)
- 2014 ANZ Noise Contour Buffer (2,500 feet)
- MDOT MAA Property Boundary
- Ramp Locations
- Helicopter Operation Area
- Runway
- Airport Buildings
- Airport Pavement Edge
- Airport Pavement Shoulder
- County Boundary
- Roads
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Land Use Verification



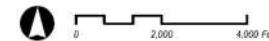
Airport Noise Zone Update

Existing Land Use

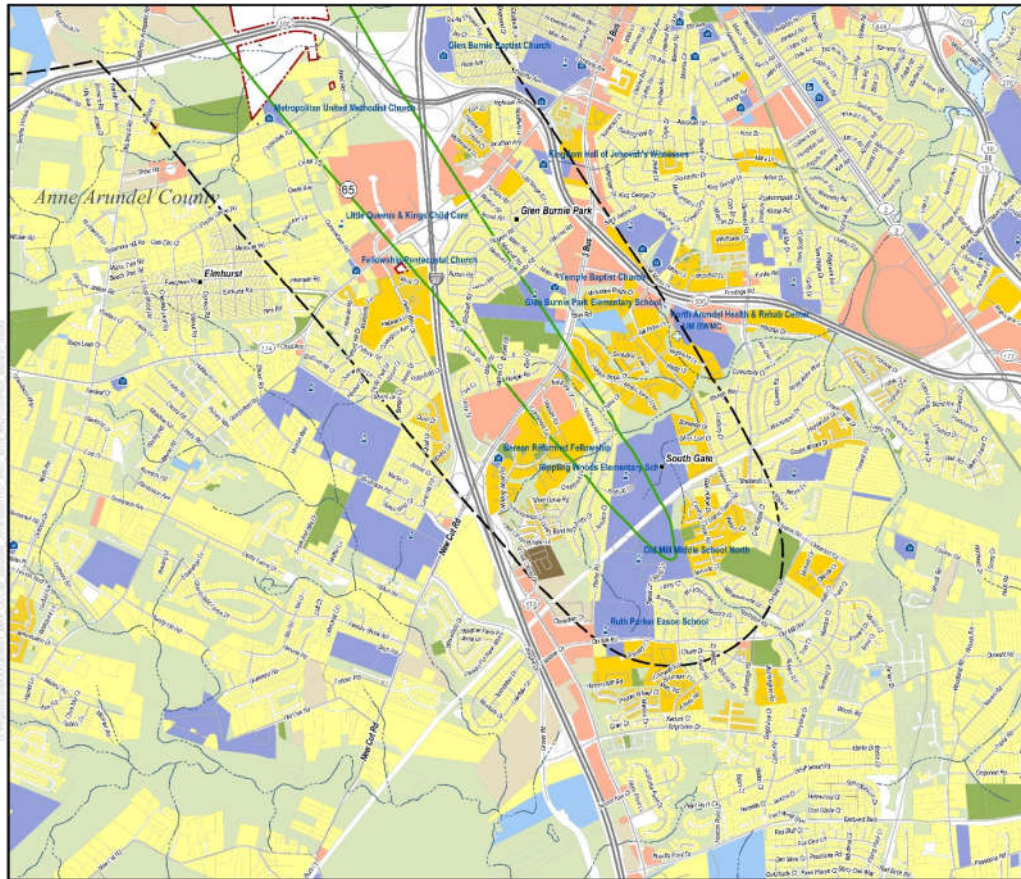
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Land Use Verification



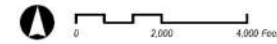
Airport Noise Zone Update

Existing Land Use

- 2014 ANZ Noise Contour (65 dB)
- 2014 ANZ Noise Contour Buffer (2,500 feet)
- MDT MAA Property Boundary
- Ramp Locations
- Helicopter Operation Area
- Runway
- Airport Buildings
- Airport Pavement Edge
- Airport Pavement Shoulder
- County Boundary
- Roads
- Railroad
- Stream / Creek
- Residential Use
- Multi-Family Residential Use
- Mobile Home
- Transient Lodging
- Mixed Use
- Public Use (Non-Compatible)
- Public Use (Compatible)
- Water
- Military Use
- Commercial Use
- Manufacturing / Production
- Vacant / Undeveloped
- Recreational / Open Space
- Golf
- Transportation / Utility
- School
- Place of Worship
- Nursing / Assisted Living
- Library
- Hospital / Health Care
- Historic Place (NRHP)

Data Sources: Maryland Aviation Administration; Baltimore County Government; Open Data Portal; Environmental Systems Research Institute (ESRI); AirNav.com; HMMH Inc.

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Proposed Project Schedule

Date	Item
October 2019	Project Start
January 23, 2020	Stakeholder Advisory Committee (SAC) Meeting #1 Introduction to COMAR, Overview of BWI Marshall, Role of the SAC, SAC process. Overview of Noise Modeling Process and AEDT Inputs
October 2019 - July 2020	Develop draft ANZ contours
August 4, 2020	<ul style="list-style-type: none"> • Stakeholder Advisory Committee (SAC) Meeting #2 • Presentation and discussion of noise model input development for BWI Marshall; Present model inputs, forecast, and present draft Ldn (DNL) Contours; Discuss detailed land use

Proposed Project Schedule

Date	Item
Q4, 2020	Stakeholder Advisory Committee (SAC) Meeting #3 <ul style="list-style-type: none">• Review Noise Abatement Plan (NAP)• Discuss and review draft ANZ document, public review and comment schedule; Public workshop, and ANZ finalization process in COMAR
Q1 2021	Draft ANZ Workshop and Public Hearing
Q1 2021	Incorporate ANZ into Code of Maryland Regulations (COMAR)

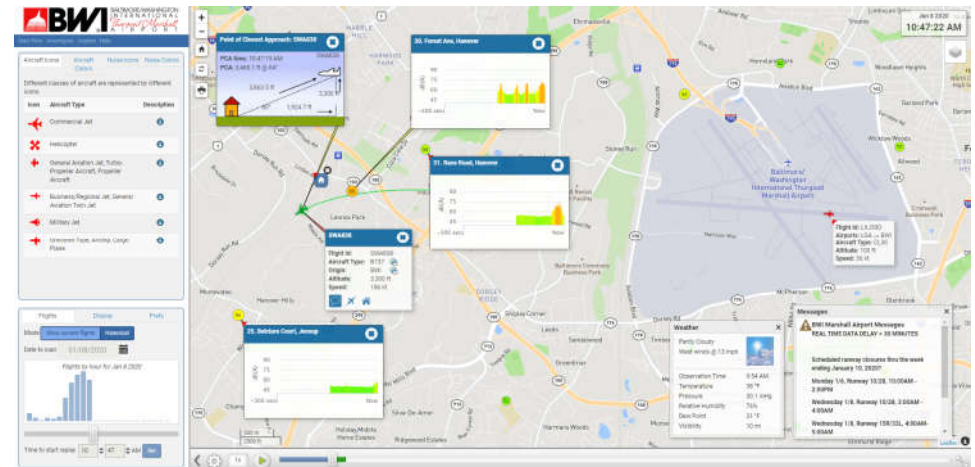
Project Contacts

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 - Bruce Rineer, Manager, Office of Environmental Services, Noise Section, BRineer@bwiairport.com
- HMMH Project Managers
 - Rhea Gundry, Principal Consultant, rgundry@hmmh.com
 - Tim Middleton, Senior Consultant, tmiddleton@hmmh.com

Additional Resources

- 2014 BWI Marshall ANZ
 - <https://www.maacommunityrelations.com/content/anznoiseupdate/bwianz.php>
- BWI Marshall Roundtable
 - <https://maacommunityrelations.com/content/anznoiseupdate/dcroundtable.php>
- Quarterly Noise Reports
 - <https://maacommunityrelations.com/content/anznoiseupdate/quarterlynoisereports.php>
- WebTrak
 - <https://webtrak.emsbk.com/bwi3>

WebTrak





Wrap Up

- SAC member questions, comments, and discussion
- Next SAC meeting (Q4 2020):
 - Review Noise Abatement Plan (NAP)
 - Discuss and review draft ANZ document
 - Public review and comment schedule
 - ANZ finalization process in COMAR

Thank you for attending!

