

Baltimore/Washington Thurgood Marshall International Airport

Annual Operations and Noise Report Calendar Year 2024



This report provides a review of the aviation noise program and annual operations at Baltimore/Washington Thurgood Marshall International Airport (BWI Marshall) for the calendar year 2024. Included in this report is information on aircraft operations, cumulative noise exposure, noise levels at permanent noise monitors, complaints received about aircraft noise, and observance rates for noise abatement procedures.

Contact Information:

Office of Environmental Compliance and Sustainability – Noise Program
P.O. Box 8766
BWI Airport, MD, 21240-0766

Noise Complaints:

BWI Noise Hotline: 410-859-7021
Email: maanoiseabatement@bwiairport.com
Online: <https://marylandaviation.com/noise>

Highlights and Overview

The Maryland Aviation Administration (MAA) fosters the vitality of aviation statewide and promotes safe and efficient operations, economic viability, and environmental stewardship. Responsible for the operation of Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall) and Martin State Airport (MTN), MAA provides friendly, convenient facilities and customer services and develops enhanced domestic and international passenger and cargo opportunities through inter-modalism and state-of-the-art technology.

The Noise Section of the Office of Environmental Compliance and Sustainability is committed to monitoring aircraft operations and airport related noise levels in the communities surrounding BWI Marshall and Martin State Airports, and is dedicated to helping stakeholders understand the facts, science, and regulations associated with airport noise in a transparent, clear, and accessible way to those we serve.

2024 Annual Snapshot

Operations (Overall)	In 2024, BWI Marshall handled 239,738 operations (averaging 656.8 daily operations). Approximately 86% of operations are flown by scheduled passenger carriers, and 4% by dedicated cargo operators.
Operations (Time of Day)	Overall, 84% of all BWI Marshall operations occurred during daytime hours (7:00 a.m. – 10:00 p.m.).
Operational Flow	BWI Marshall operated in west flow 62% and east flow 38%.
Noise Monitoring	Each of MAA’s 24 permanent noise monitors operated as expected. There were 12 portable noise monitoring requests completed in 2024.
Noise Complaints	MAA received 147,814 noise complaints from 412 individuals (390 households) in 2024. 83% of all complaints from 2024 (122,422) originated from 10 complainants. The majority of noise complaints originate from beyond the 50 DNL noise contour.
Noise Abatement Procedures	There was 98% compliance with MAA’s voluntary Noise Abatement Departure procedures and 85% compliance with MAA’s voluntary Noise Abatement Arrival procedures.

Table of Contents

Introduction	4
Aircraft Operations.....	5
Top 10 Most Frequently Flown Aircraft	6
Airline Operations by Aircraft Type.....	7
Cargo Operations by Aircraft Type	10
Time of Day Distribution	11
Average Daily Arrival Operations by Hour	11
Average Daily Departure Operations by Hour.....	11
Percent Operations by Day and Night	12
East/West Flow and Runway Use.....	13
East/West Flow by Month	14
Runway Use Percentage	14
Noise Monitoring Results.....	17
Permanent Noise Monitors - Aircraft, Community and Total DNL.....	17
Annual Noise Contours	20
Noise Complaints.....	30
2024 Annual Complaints.....	30
Top Ten Complainants in 2024.....	30
Noise Complaints by Contact Method	31
Noise Complaints by County	31
Noise Complaints by City	32
Noise Complaints and Complainants by Legislative District.....	34
Correlation of Noise Complaints with Operations.....	35
Correlation of Noise Complaints with Type of Operations.....	35
Correlation of Noise Complaints with Operation by Type, Flow and Runway.....	36
Noise Abatement Operational Procedures	38
Noise Abatement Departure Procedure Summary.....	38
Aircraft Noise Abatement Arrival Procedures.....	38
Noise Abatement Arrival Procedures	39
Noise Abatement Departure Procedures.....	39
Aircraft Noise Abatement Procedure Compliance.....	40

Introduction

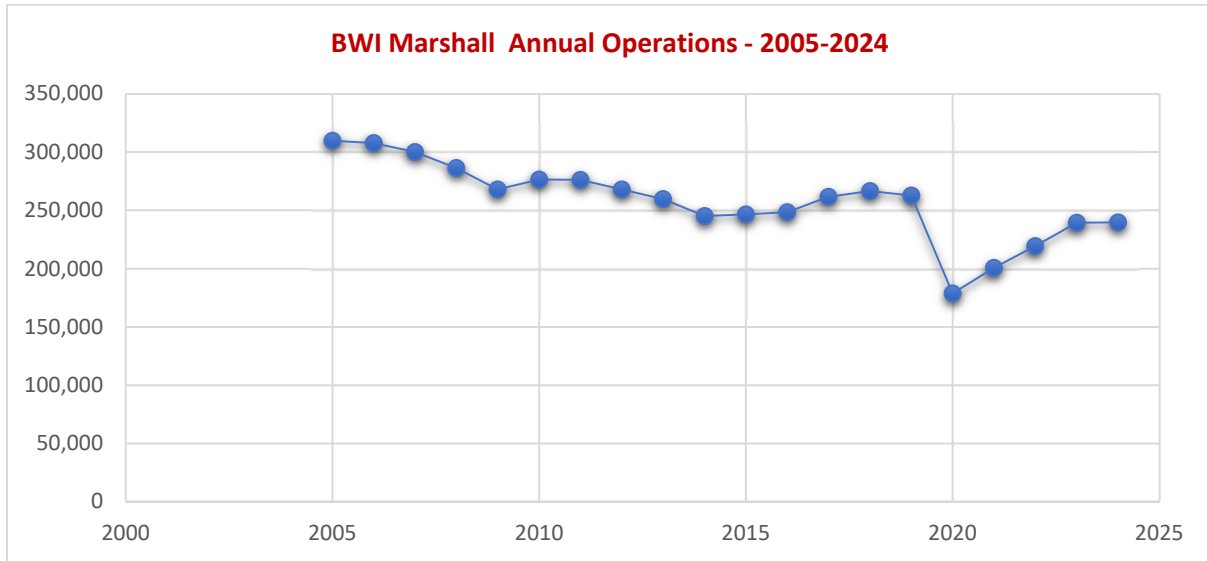
BWI Marshall is owned and operated by the Maryland Aviation Administration (MAA) on behalf of the State of Maryland. MAA fosters the vitality of aviation statewide and promotes safe and efficient operations, economic viability and environmental stewardship. MAA provides friendly, convenient facilities and customer services, and develops enhanced domestic and international passenger and cargo opportunities through inter-modalism and state-of-the-art technology.

MAA is responsible for the operation and maintenance of BWI Marshall facilities, including runways and taxiways. MAA is required to ensure that all facilities meet Federal Aviation Administration (FAA) regulations. Commercial pilots fly prescribed routes to and from BWI Marshall as instructed by air traffic controllers. The FAA is responsible for managing BWI Marshall's airspace and for ensuring the safe and expeditious flow of traffic. Flight path procedures are dictated by the FAA, taking into account considerations of operational, safety, and air traffic control procedures. The ultimate authority of the aircraft rests with the pilot.

MAA prepared this report to document important operational information in 2024. This information supplements and expands upon the information provided in MAA Quarterly Noise Reports. Throughout the report, noise is measured using the Day Night Average Sound Level (DNL), which is an aggregate measure of aviation noise over a 24-hour period, with 10 decibels (dB) added to nighttime noise events to account for increased human sensitivity at night. DNL is the FAA's required noise metric for the assessment of aircraft noise and was adopted through 14 Code of Federal Regulations Part 150 as required to meet the provisions of the Aviation Safety and Noise Abatement Act of 1979. The threshold used for potential eligibility for FAA funded mitigation programs administered by MAA is 65 DNL.

Aircraft Operations

In 2024, the MAA Airport Noise and Operations Monitoring System (ANOMS) reported 239,738 operations at BWI Marshall, averaging more than 656 operations per day. Approximately 86% of operations are flown by scheduled passenger carriers, and another 4% by dedicated cargo operators. The balance of operations at BWI Marshall consist of general aviation operations, including corporate operations, medical support operations, and others.



The primary focus of this report is air carrier passenger and air cargo operations conducted at BWI Marshall. The following tables provide information about the most frequently used aircraft during 2024, the total number of operations by operator and by aircraft type flown and time of day of operations during 2024, for both airlines and cargo operators.

Top 10 Most Frequently Flown Aircraft

Aircraft	Operators	Operations	% of Total
Boeing 737-700 series	Air Transport International, Avelo Airlines, Copa Airlines, Delta Air Lines, Southwest Airlines, United Airlines	65,325	27%
Boeing 737-800 series	Alaska Airlines, Allegiant Air, American Airlines, Atlas Air, Avelo Airlines, Copa Airlines, Delta Air Lines, Southwest Airlines, Sun Country Airlines, Swift Air, United Airlines, UPS	52,472	22%
Boeing 737 MAX 8 series	Alaska Airlines, American Airlines, Copa Airlines, Icelandair, JetBlue Airways, Southwest Airlines, United Airlines	44,305	18%
Airbus A320neo	Frontier Airlines, Play Airlines, Spirit Airlines	8,559	4%
Airbus A320 series	Air Canada, Allegiant Air, American Airlines, Delta Air Lines, Frontier Airlines, JetBlue Airways, Spirit Airlines, United Airlines	8,136	3%
Boeing 767-300 series	ABX Air, Air Transport International, Amerijet International, Atlas Air, Delta Air Lines, FedEx, United Airlines, UPS	5,265	2%
Boeing 757-200	Air Transport International, Amerijet International, Delta Air Lines, FedEx, UPS	5,096	2%
Airbus A321 series	American Airlines, Delta Air Lines, Frontier Airlines, JetBlue Airways, Spirit Airlines	4,682	2%
Boeing 737-900 series	Alaska Airlines, Delta Air Lines, United Airlines	4,314	2%
Airbus A321neo	American Airlines, Delta Air Lines, Frontier Airlines, Play Airlines, Spirit Airlines	3,213	1%
All Others		38,371	16%

Airline Operations by Aircraft Type

Airline		Aircraft		Operations	% of Total
AAL	American Airlines	A21N	Airbus A321neo	32	0.0%
		A319	Airbus A319 series	521	0.3%
		A320	Airbus A320 series	355	0.2%
		A321	Airbus A321 series	1,267	0.6%
		B38M	Boeing 737 MAX 8 series	581	0.3%
		B738	Boeing 737-800 series	4,772	2.3%
		B772	Boeing 777-200 series	4	0.0%
		E135	Embraer 135 ER	1	0.0%
AAY	Allegiant Air	A319	Airbus A319 series	36	0.0%
		A320	Airbus A320 series	361	0.2%
		B738	Boeing 737-800 series	1	0.0%
ACA	Air Canada	A320	Airbus A320 series	6	0.0%
ASA	Alaska Airlines	B38M	Boeing 737 MAX 8 series	2	0.0%
		B39M	Boeing 737 MAX 9 series	460	0.2%
		B738	Boeing 737-800 series	50	0.0%
		B739	Boeing 737-900 series	656	0.3%
ASH	Mesa Airlines	E75L	Embraer 175	478	0.2%
AWI	Air Wisconsin	CRJ2	Bombardier CRJ-200LR	2	0.0%
BAW	British Airways	B772	Boeing 777-200 series	186	0.1%
		B77W	Boeing 777-300ER	4	0.0%
		B788	Boeing 787-8 Dreamliner	350	0.2%
		B789	Boeing 787-900 series	64	0.0%
		B78X	Boeing 787-10 Dreamliner	30	0.0%
BMA	BermudAir	E75L	Embraer 175	204	0.1%
CFG	Condor	A339	Airbus A330-900	98	0.0%
CMP	Copa Airlines	B38M	Boeing 737 MAX 8 series	4	0.0%
		B39M	Boeing 737 MAX 9 series	198	0.1%
		B737	Boeing 737-700 series	18	0.0%
		B738	Boeing 737-800 series	199	0.1%
DAL	Delta Air Lines	A21N	Airbus A321neo	8	0.0%
		A319	Airbus A319 series	335	0.2%
		A320	Airbus A320 series	626	0.3%
		A321	Airbus A321 series	1,390	0.7%
		A332	Airbus A330-200	2	0.0%
		A333	Airbus A333-300	2	0.0%
		A359	Airbus A350-900	4	0.0%
		B712	Boeing 717 series	1,146	0.6%
		B737	Boeing 737-700 series	1	0.0%
		B738	Boeing 737-800 series	44	0.0%
		B739	Boeing 737-900 series	2,066	1.0%
		B752	Boeing 757-200	4,840	2.3%
		B763	Boeing 767-300 series	14	0.0%

Airline		Aircraft		Operations	% of Total
		B764	Boeing 767-400ER	4	0.0%
		BCS1	Airbus A220-100	26	0.0%
		BCS3	Airbus A220-300	120	0.1%
EDV	Endeavor Air	CRJ9	Bombardier CRJ900	999	0.5%
ENY	Envoy Air	E170	Embraer 170/175	1,071	0.5%
ETD	Etihad Airways	B789	Boeing 787-900 series	4	0.0%
FDY	Southern Airways Express	C208	Cessna 208-G Caravan	9	0.0%
FFT	Frontier Airlines	A20N	Airbus A320neo	3,561	1.7%
		A21N	Airbus A321neo	1,196	0.6%
		A320	Airbus A320 series	324	0.2%
		A321	Airbus A321 series	734	0.4%
FPY	Play Airlines	32N	Airbus A320neo	72	0.0%
		32Q	Airbus A321neo	50	0.0%
		A20N	Airbus A320neo	314	0.2%
		A21N	Airbus A321neo	197	0.1%
ICE	Icelandair	B38M	Boeing 737 MAX 8 series	468	0.2%
		B39M	Boeing 737 MAX 9 series	183	0.1%
JBU	JetBlue Airways	A320	Airbus A320 series	14	0.0%
		A321	Airbus A321 series	4	0.0%
		BCS3	Airbus A220-300	3	0.0%
		E190	Embraer 190	438	0.2%
JZA	Jazz Aviation	CRJ9	Bombardier CRJ900	179	0.1%
		E75S	Embraer 175	2	0.0%
NKS	Spirit Airlines	A20N	Airbus A320neo	4,612	2.2%
		A21N	Airbus A321neo	1,730	0.8%
		A319	Airbus A319 series	1,123	0.5%
		A320	Airbus A320 series	5,111	2.5%
		A321	Airbus A321 series	1,287	0.6%
PDT	Piedmont Airlines	E145	Embraer 145 ER	5	0.0%
QTR	Qatar Airways	B77W	Boeing 777-300ER	3	0.0%
RPA	Republic Airlines	E170	Embraer 170/175	444	0.2%
		E75L	Embraer 175	16	0.0%
		E75S	Embraer 175	1,444	0.7%
SCX	Sun Country Airlines	B738	Boeing 737-800 series	366	0.2%
SKW	SkyWest Airlines	CRJ9	Bombardier CRJ900	18	0.0%
		E75L	Embraer 175	6	0.0%
		E75S	Embraer 175	2	0.0%
SVA	Saudi Arabian Airlines	B77W	Boeing 777-300ER	2	0.0%
SWA	Southwest Airlines	B38M	Boeing 737 MAX 8 series	41,768	20.2%
		B737	Boeing 737-700 series	64,784	31.3%
		B738	Boeing 737-800 series	44,055	21.3%
UAL	United Airlines	A319	Airbus A319 series	278	0.1%
		A320	Airbus A320 series	1,339	0.1%

Airline		Aircraft		Operations	% of Total
		B38M	Boeing 737 MAX 8 series	1,481	0.6%
		B39M	Boeing 737 MAX 9 series	990	0.7%
		B737	Boeing 737-700 series	424	0.5%
		B738	Boeing 737-800 series	1,157	0.2%
		B739	Boeing 737-900 series	1,592	0.6%
		B753	Boeing 757-300	6	0.8%
		B763	Boeing 767-300 series	5	0.0%
		B772	Boeing 777-200 series	14	0.0%
		B77W	Boeing 777-300ER	4	0.0%
		B788	Boeing 787-8 Dreamliner	6	0.0%
		B78X	Boeing 787-10 Dreamliner	4	0.0%
UCA	United Express	E45X	Embraer 145XR	2	0.0%
VTE	Contour Airlines	CRJ2	Bombardier CRJ-200LR	396	0.2%
		E135	Embraer 135 ER	686	0.3%
		E145	Embraer 145 ER	162	0.1%
VXP	Avelo Airlines	B737	Boeing 737-700 series	97	0.0%
		B738	Boeing 737-800 series	222	0.1%
Total				207,048	100.0%

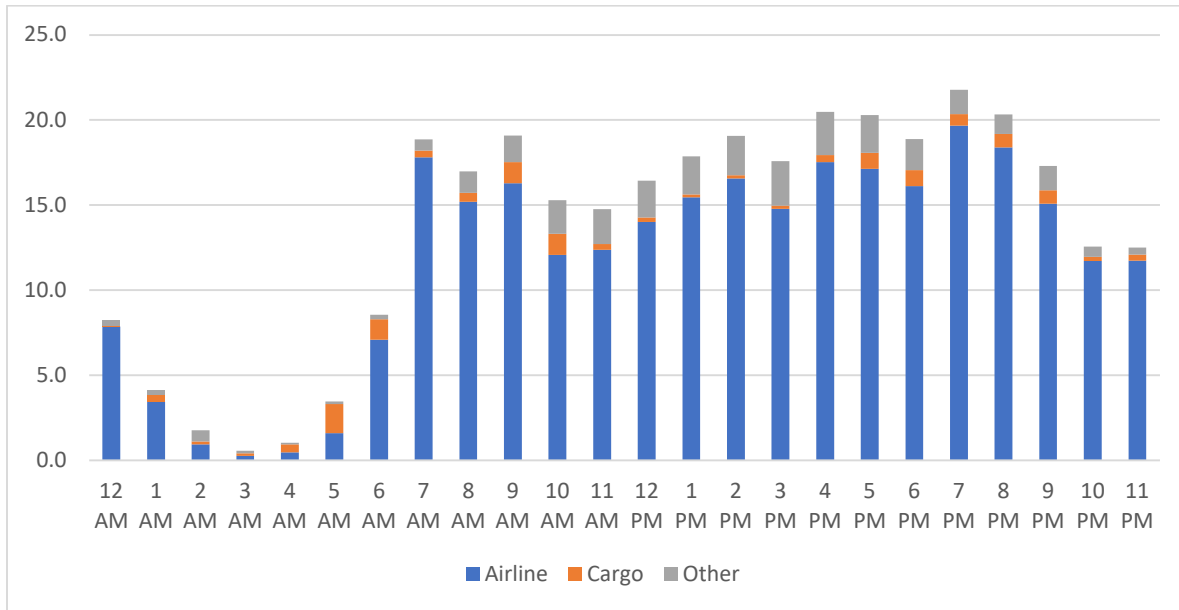
Cargo Operations by Aircraft Type

Airline		Aircraft		Operations	% of Total
ABX	ABX Air	B762	Boeing 767-200 series	246	2.4%
		B763	Boeing 767-300 series	310	3.1%
AJT	Amerijet International	B752	Boeing 757-200	12	0.1%
		B763	Boeing 767-300 series	2	0.0%
ATN	Air Transport International	B737	Boeing 737-700 series	1	0.0%
		B752	Boeing 757-200	208	2.1%
		B762	Boeing 767-200 series	154	1.5%
		B763	Boeing 767-300 series	2,591	25.7%
CJT	Cargojet Inc.	B763	Boeing 767-300 series	2	0.0%
CKS	Kalitta Air	B744	Boeing 747-400 series	2	0.0%
FDX	FedEx	A306	Airbus A300-600 series	452	4.5%
		B752	Boeing 757-200	2	0.0%
		B763	Boeing 767-300 series	1,083	10.7%
GTI	Atlas Air	B738	Boeing 737-800 series	1,519	15.1%
		B744	Boeing 747-400 series	207	2.1%
		B763	Boeing 767-300 series	1,043	10.3%
MTN	Mountain Air Cargo	C208	Cessna 208-G Caravan	832	8.3%
SWQ	Swift Air	B733	Boeing 737-300 series	8	0.1%
		B734	Boeing 737-400 series	16	0.2%
		B738	Boeing 737-800 series	86	0.9%
UPS	UPS	A306	Airbus A300-600 series	452	4.5%
		B738	Boeing 737-800 series	1	0.0%
		B744	Boeing 747-400 series	6	0.1%
		B748	Boeing 747-8	10	0.1%
		B752	Boeing 757-200	34	0.3%
		B763	Boeing 767-300 series	215	2.1%
		MD11	McDonnell Douglas MD-11	564	5.6%
USC	AirNet II	LJ35	Learjet 35A	20	0.2%
WIG	Wiggins Airways	C208	Cessna 208-G Caravan	5	0.0%
Total				10,083	100.0%

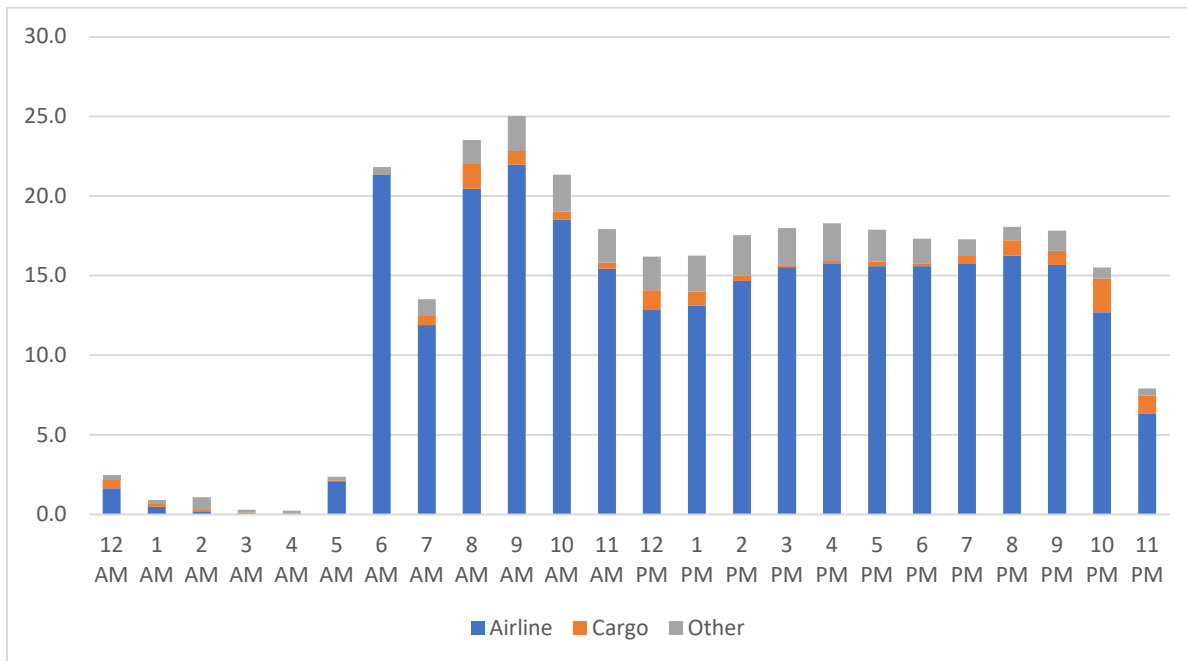
Time of Day Distribution

BWI Marshall operates 24 hours per day 365 days per year. Overall, approximately 84% of all BWI Marshall operations occurred during daytime hours, with 16% occurring at night. The following graphics present the average daily number of arrival and departure operations that occur by hour of day, where acoustic day is 7:00 a.m. to 9:59 p.m. and acoustic night is 10:00 p.m. to 6:59 a.m.

Average Daily Arrival Operations by Hour



Average Daily Departure Operations by Hour



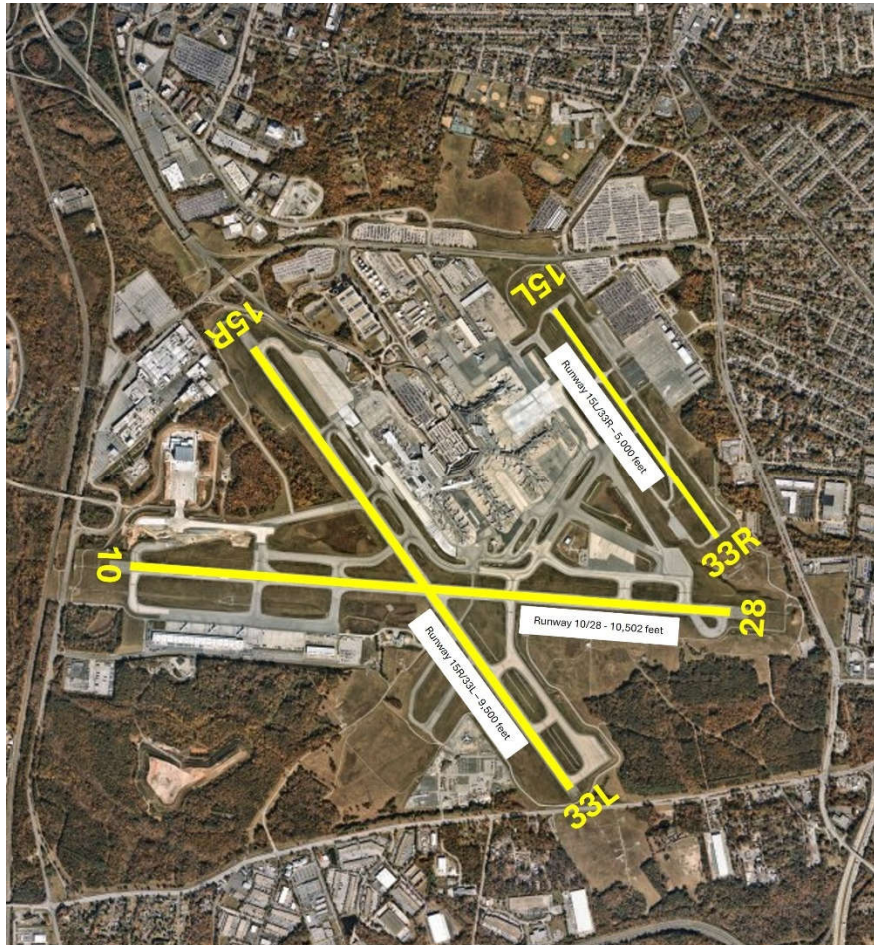
Percent Operations by Day and Night

Category	Arrivals			Departures		
	Day	Night	Total	Day	Night	Total
Airline	84%	16%	100%	84%	16%	100%
Cargo	66%	34%	100%	69%	31%	100%
Other (general aviation, corporate)	90%	10%	100%	89%	11%	100%

Acoustic day - 7:00 a.m. to 9:59 p.m.; Acoustic night - 10:00 p.m. to 6:59 a.m.

East/West Flow and Runway Use

BWI Marshall has three runways, designated as Runway 10/28, Runway 15R/33L, and Runway 15L/33R. Runway 10/28 is 10,502 feet in length, while Runway 15R/33L is 9,500 feet in length. Runway 15L/33R is 5,000 feet in length and is limited to use by certain aircraft.



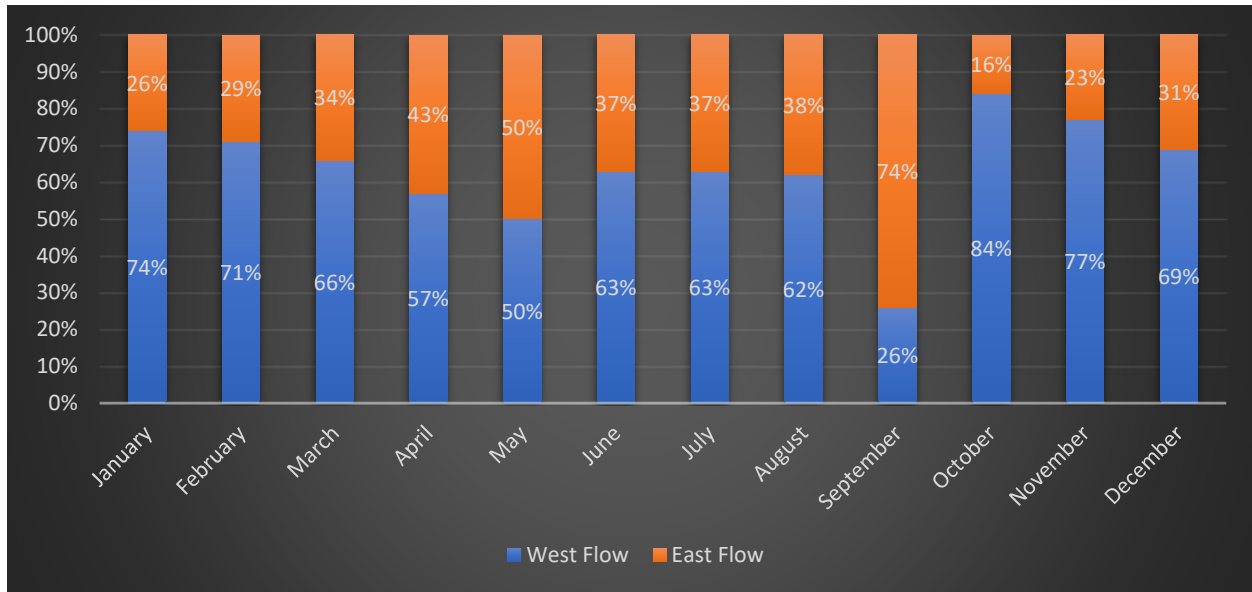
Prevailing wind speed, direction and weather factors primarily determine the direction of air traffic flow. Aircraft usually take off and land into the wind to meet safety and operational requirements. As aircraft cannot arrive and depart from the same runway under normal operations, BWI Marshall generally operates in two configurations:

- **West flow** primarily consists of departures from Runway 28 and arrivals to Runway 33L.
- **East flow** primarily consists of departures from Runway 15R and arrivals to Runway 10.

On an annual basis, west flow is used approximately 70% of the time, while east flow is used approximately 30% of the time. During west flow, aircraft operations primarily consist of arrivals to Runway 33L and departures from Runway 28. West flow has been MAA's preferred operating configuration for noise abatement purposes and is more frequently used during calm weather conditions. During east flow, aircraft operations primarily consist of departures from Runway 15R and arrivals to Runway 10. In 2024, BWI Marshall operated in West flow 62% of the time and East flow the remaining 38%.

The following table provides information about East and West flow for each month in 2024.

East/West Flow by Month

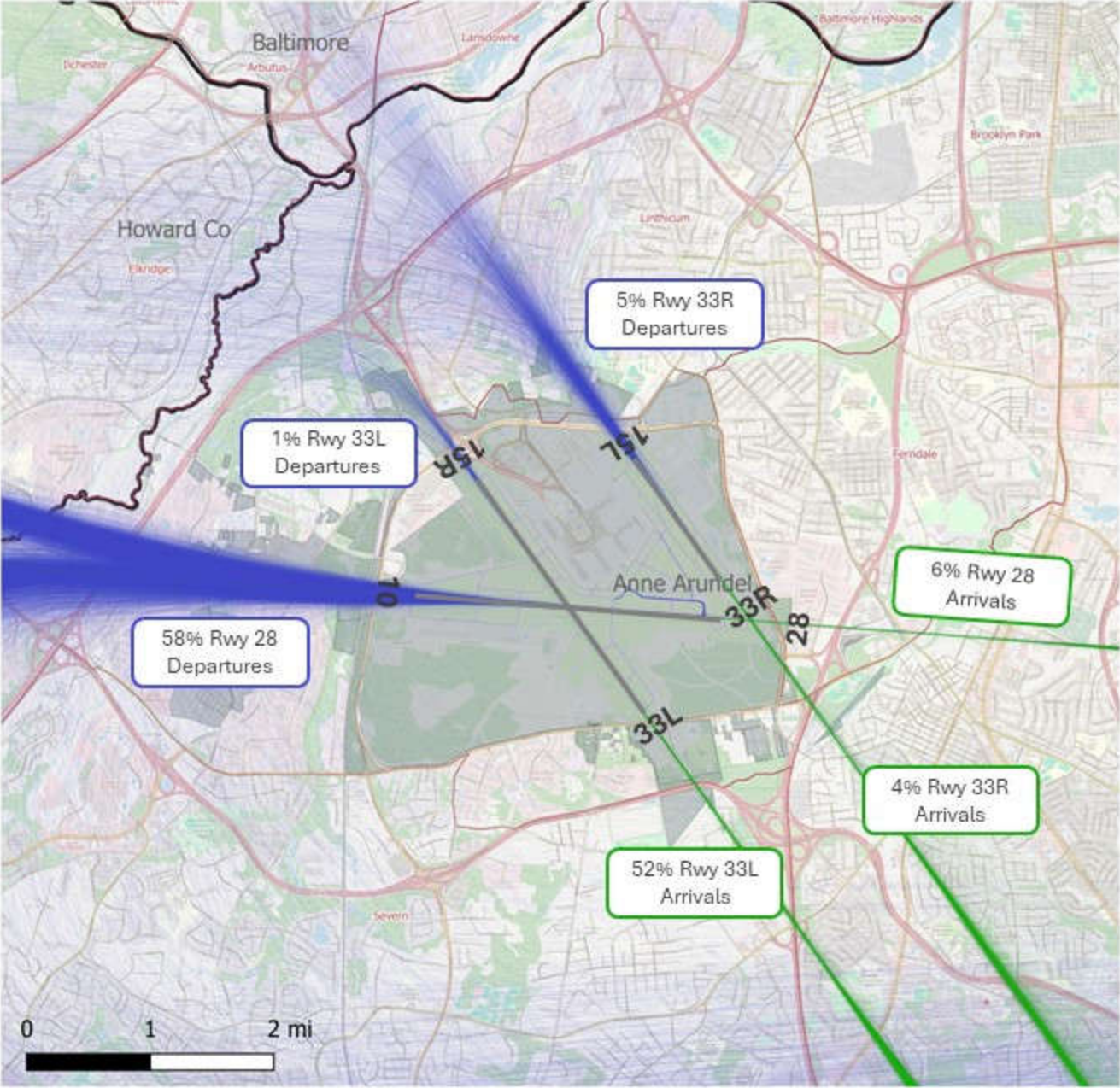


The percentage each runway is used for arrivals and departures is shown in the following table.

Runway Use Percentage

Runway	Arrival	Departure
10	35%	0%
28	6%	58%
15L	2%	3%
15R	1%	34%
33L	52%	1%
33R	4%	5%
Total	100%	100%

2024 West Flow Runway Use



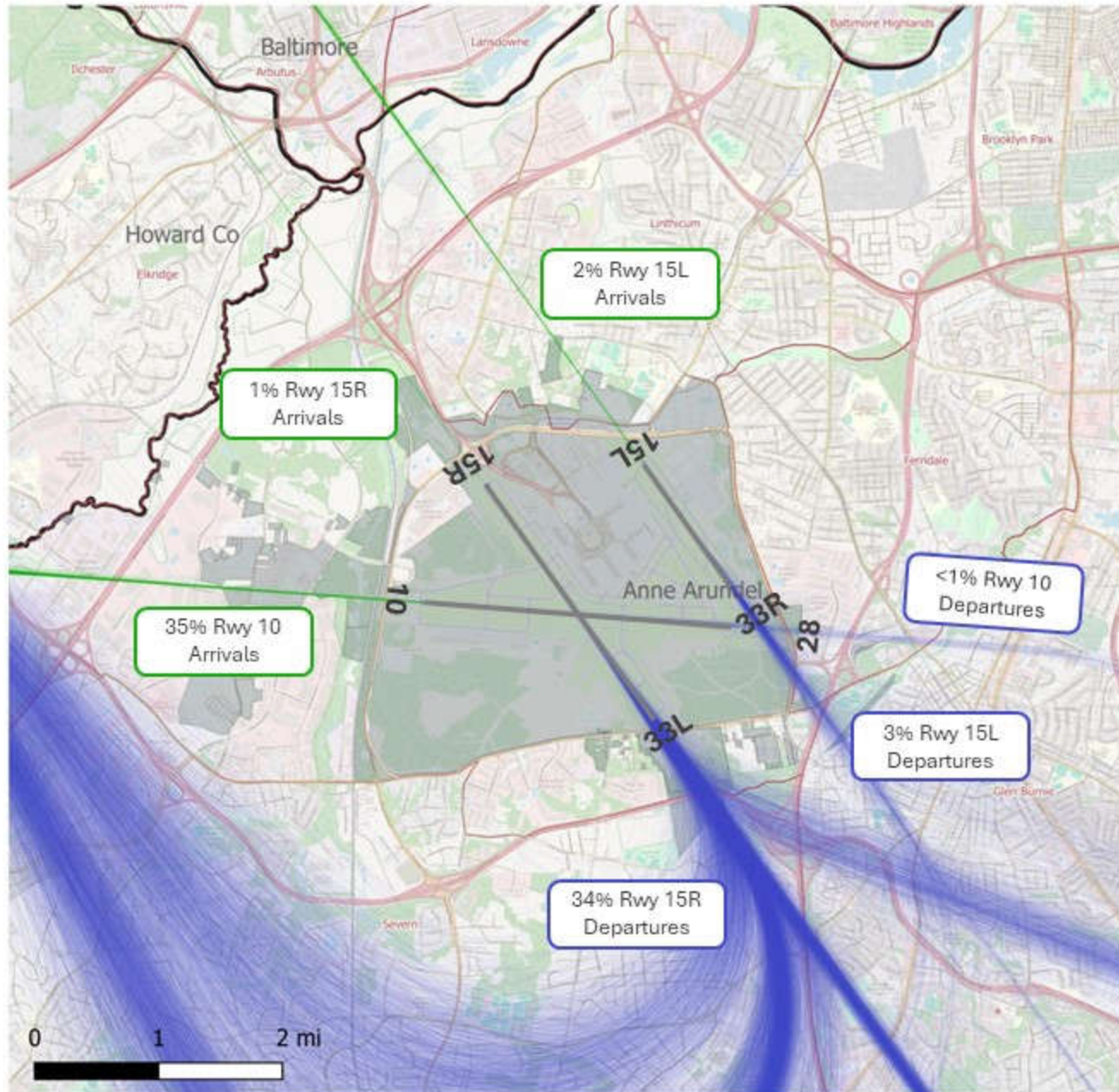
Runway 28 is the primary departure runway during West flow operations.

Runway 33L is the primary arrival runway during West flow operations.



S:\OFFICE OF ENVIRONMENTAL SERVICES\NOISE
2525\Projects\2024_West_Flow_Tracks. Prepared on February 01, 2025

2024 East Flow Runway Use



Runway 15R is the primary departure runway during East flow operations.

Runway 10 is the primary arrival runway during East flow operations.



S:\OFFICE OF ENVIRONMENTAL SERVICES\NOISE
2525\Projects\2024_East_Flow_Tracks. Prepared on February 01, 2025

Noise Monitoring Results

MAA has 24 permanent Noise Monitoring Terminals (NMTs) located within the communities surrounding BWI Marshall. Permanent noise monitors are used to investigate noise complaints as well as to track long-term changes in noise exposure.

Near real time data for each of the permanent noise monitors is available via WebTrak. WebTrak provides an interactive portal for the viewing of aircraft overflights in the vicinity of BWI Marshall, as well as the opportunity to file noise complaints and view information about MAA’s permanent noise monitors. WebTrak includes an aircraft’s type, altitude, origin and destination airports, and flight identification. To access WebTrak, visit: <https://marylandaviation.com/environmental/environmental-compliance-sustainability/on-line-noise-and-flight-tracking/>.

MAA monitors the equipment in real time. During 2024, each of the permanent noise monitors performed as expected and there was no loss of data.

Permanent Noise Monitors - Aircraft, Community and Total DNL

NMT	Description	Aircraft DNL				Annual Aircraft DNL	Annual Community DNL	Annual Total DNL
		1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr			
1	St. Augustine Church	43.9	43.1	44.7	43.6	43.9	58.4	58.5
5	Hebron-Harman Elementary	50.7	53.4	50.3	47.1	51.1	58.1	58.8
6	Delmont United Methodist	51.8	55.6	53.3	51.9	53.6	56.2	57.8
7	Wicklow Woods	54.7	54.0	52.1	54.8	54	59.6	60.6
8	Richard H. Lee Elementary	46.7	49.3	49.7	47.9	48.6	59.9	60.2
9	MD National Guard Armory	58.1	56.8	56.4	56.9	57.1	62.5	63.6
10	Margate Pumping Station	50.6	49.1	48.6	49.2	49.4	60.6	60.8
11	Jones Road, Queenstown	68.0	69.5	68.9	68.7	68.8	62.8	69.8
12	Rippling Woods Elementary	61.7	62.0	61.0	62.7	61.9	59.5	63.9
13	Woodside Elementary	45.7	49.7	51.6	48.3	49.3	58.9	59.3
14	Runway 15R Approach	57.8	58.1	63.0	59.7	60.2	66.0	67.0
17	Timber Ridge Road	44.4	42.3	39.9	36.6	41.9	58.4	58.5
18	Runway 15L Approach	55.6	56.5	56.0	57.5	56.5	62.5	63.4
21	Glen Burnie Park Elementary	60.1	61.0	60.7	61.4	60.8	60.8	63.8
22	Lark Brown Road, Columbia	54.6	55.9	56.1	55.9	55.7	59.5	61.0
23	Quarterfield Elementary	55.4	58.5	59.9	58.0	58.3	59.0	61.2
24	Elmhurst, Severn	56.1	56.7	49.1	46.6	54.1	58.4	59.6
25	Belclare Court, Jessup	52.3	53.0	52.3	54.0	53.0	58.7	59.7
26	Benfield Elementary	55.8	56.6	55.4	57.4	56.4	57.2	59.8
27	Severn Elementary	55.0	55.7	48.4	42.5	53.2	60.7	61.3
28	Maryland School for the Deaf	54.1	54.5	48.2	44.4	52.0	59.0	59.8
29	MVA VEIP	48.2	50.7	51.8	52.0	50.9	57.8	58.6
30	Forest Ave, Hanover	63.0	64.2	64.0	63.9	63.8	63.8	66.8
31	Race Road, Hanover	62.4	62.9	61.2	62.0	62.2	60.0	64.2

In addition to the MAA’s 24 permanent noise monitors, the MAA provides homeowners the opportunity to request a temporary noise monitor at their residence. Upon written agreement, and provided the residence meets the technical requirements, the MAA will set up a temporary noise monitor for a period of two weeks and compile a detailed technical report upon conclusion. The final report provides aircraft and community noise levels, the percentage of East/West flow operations, and general information about noise measurements and airport operations.

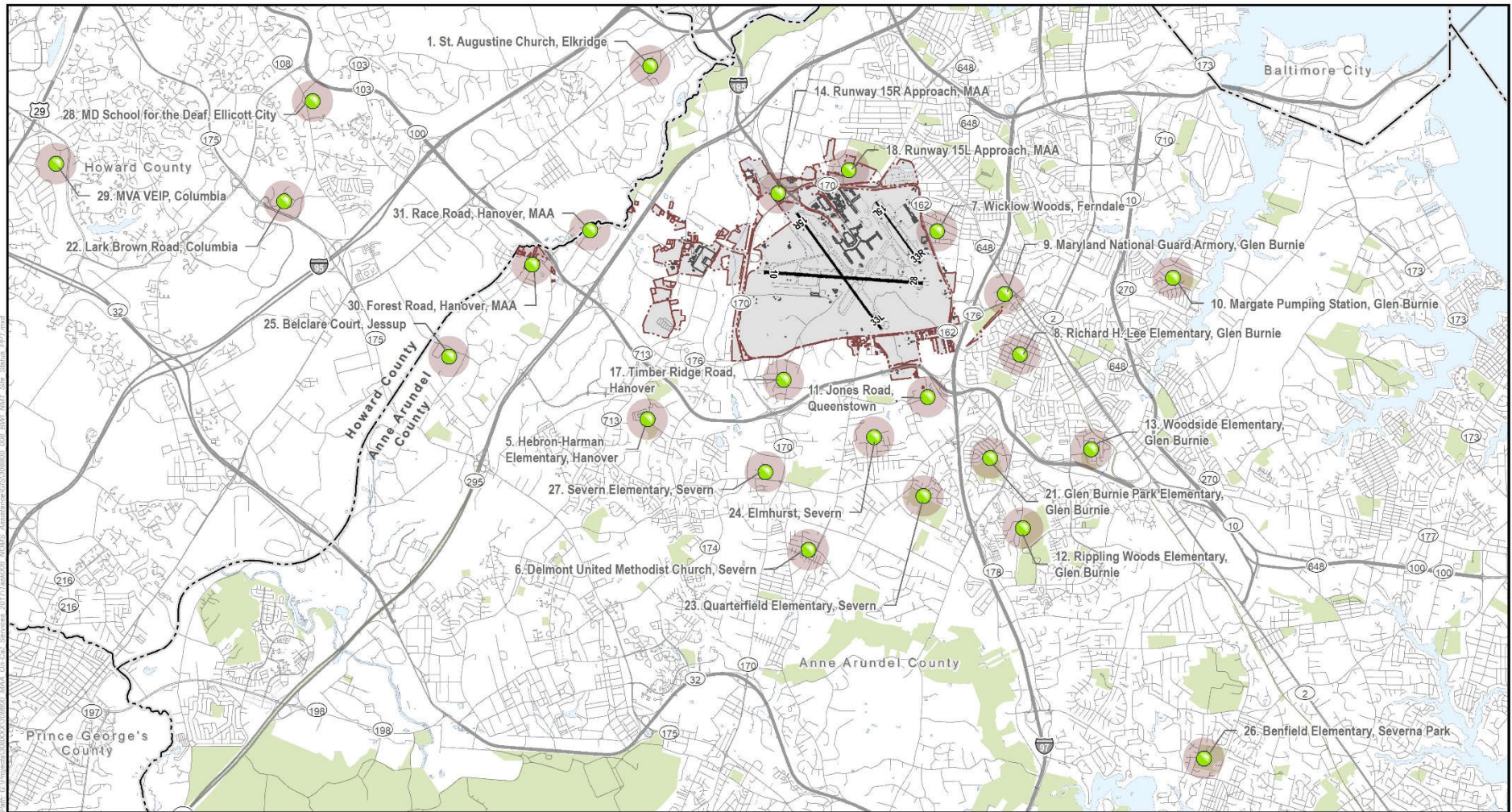
Additional information on the portable noise monitoring program is available at <https://marylandaviation.com/environmental/environmental-compliance-sustainability/residential-portable-noise-monitoring/>.

There were twelve completed portable noise monitoring requests during 2024, as shown below.

Portable Noise Monitors - Aircraft, Community and Total DNL

Location	Time Period	Aircraft DNL	Community DNL	Total DNL
Woodcrest Drive, Ellicott City, MD 21043	12/20/23 – 1/3/24	56 dB	52 dB	58 dB
Baywood Road, Pasadena, MD 21122	3/14/24 – 3/28/24	41 dB	55 dB	55 dB
Branch Beech, Columbia, MD 21044	4/2/24 – 4/16/24	49 dB	54 dB	55 dB
Meadowbrook Rd, Glen Burnie, MD 21051	4/21/24 – 5/5/2024	57 dB	60 dB	62 dB
Fox Den Lane, Millersville, MD 21108	6/25/24 – 7/8/24	57 dB	55 dB	59 dB
Rustling Oaks Drive, Millersville, MD 21108	7/13/24 – 7/28/24	56 dB	59 dB	61 dB
Sibley Way, Severn, MD 21144	8/15/24 – 8/29/24	48 dB	54 dB	55 dB
Myers Drive, Glen Burnie, MD 20161	9/5/24 – 9/19/24	61 dB	58 dB	63 dB
Daniels Purchase Way, Millersville, MD 21108	10/10/24 -10/24/24	51 dB	61 dB	62 dB
Forest Ave, Hanover, MD 21076	10/29/24 – 11/14/24	59 dB	57 dB	61 dB
Wesley Road, Glen Burnie, MD 21061	11/2/24 – 11/17/24	59 dB	61 dB	63 dB
Galan Road, Catonsville, MD 21228	12/9/24 – 12/27/24	40 dB	49 dB	50 dB

Location of BWI Marshall Permanent Noise Monitors

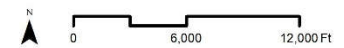


● NMT Location (Active)

- ▭ BWI Airport Property
- ▭ County Boundary
- ▭ Roads

BWI Marshall Permanent Noise Monitor Locations

Revised on 10/8/2019



Annual Noise Contours

MAA prepared an annual noise contour for calendar year 2024 operations, using the Day Night Average Sound Level (DNL) metric. The 2024 annual noise contour has been prepared for informational purposes only and cannot be used to determine potential eligibility for sound insulation or voluntary acquisition programs. Noise contours are prepared using FAA's Aviation Environmental Design Tool (AEDT), which accounts for the number of operations, aircraft type, noise characteristics of each aircraft, runways and flight tracks, and weather and terrain information.

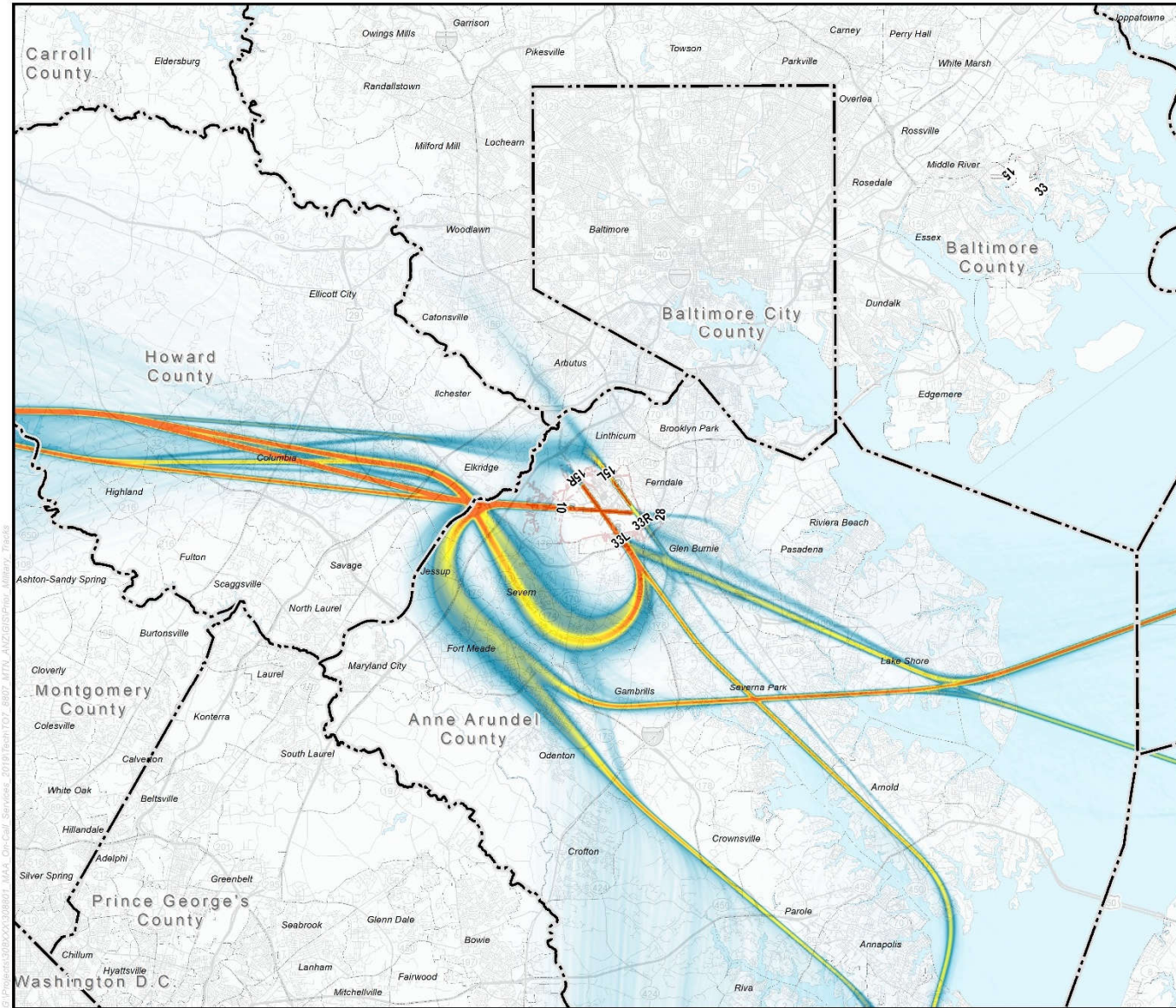
Notably, in 2014 the FAA began to roll out a number of performance-based navigation (PBN) procedures for aircraft arriving and departing BWI Marshall, otherwise known as NextGen. These procedures use satellite technology to provide more precise positional information to the pilot and air traffic controllers, increasing the margin of safety and efficient use of the airspace. The implementation of these procedures led to a considerable increase in noise complaints and community input. As a result, the MAA, at the request of the FAA, formed the DC Metroplex BWI Community Roundtable, comprised of community and aviation industry members. More information about the Roundtable can be found at <https://marylandaviation.com/environmental/airport-noise/dc-metroplex-bwi-community-roundtable/>.

The FAA developed a series of revised departure procedures, and the MAA and the Roundtable proposed updated arrival and approach procedures to the FAA for aircraft arriving at BWI Marshall. In November of 2019, the Roundtable reviewed a noise and technical analysis of the proposed arrival and approach procedure changes and favorably voted to submit the proposed procedure changes to the FAA. Those procedures were successfully submitted to the FAA. On July 11th, 2024, FAA published new PBN departure procedures out of BWI Marshall, and on September 5, 2024, FAA published new PBN arrival procedures into BWI Marshall.

The first four figures on the following pages present flight tracks before and after the revisions to PBN procedures. Noise modeling for the 2024 annual noise contour included all sets of tracks, as all were in use during part of 2024.

Noise contours are prepared accounting for an average annual day compared to the historic 2019 Noise Exposure Map (NEM). The 2019 NEM was prepared as part of MAA's voluntary participation in the 14 CFR Part 150 program and is used to define eligibility and obtain Federal grant funding for the voluntary acquisition and sound insulation program. MAA will embark on a Part 150 update in 2025 pending receipt of a federal grant. Noise contours prepared for this Annual Report include:

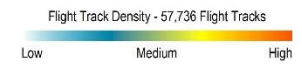
- 2024 Annual Noise Contour compared to the 2019 Noise Exposure Map (65+ DNL)
- 2024 Annual Noise Contour compared to the 2019 Noise Exposure Map (55+ DNL)
- 2024 Annual Noise Contour compared to the 2024 West Flow Average Day (55+ DNL)
- 2024 Annual Noise Contour compared to the 2024 East Flow Average Day - 55+ DNL
- Number of Operations above 70 dB Maximum Sound Level (Lmax)



Flight Track Density - Departures
 July 11, 2024 - December 31, 2024

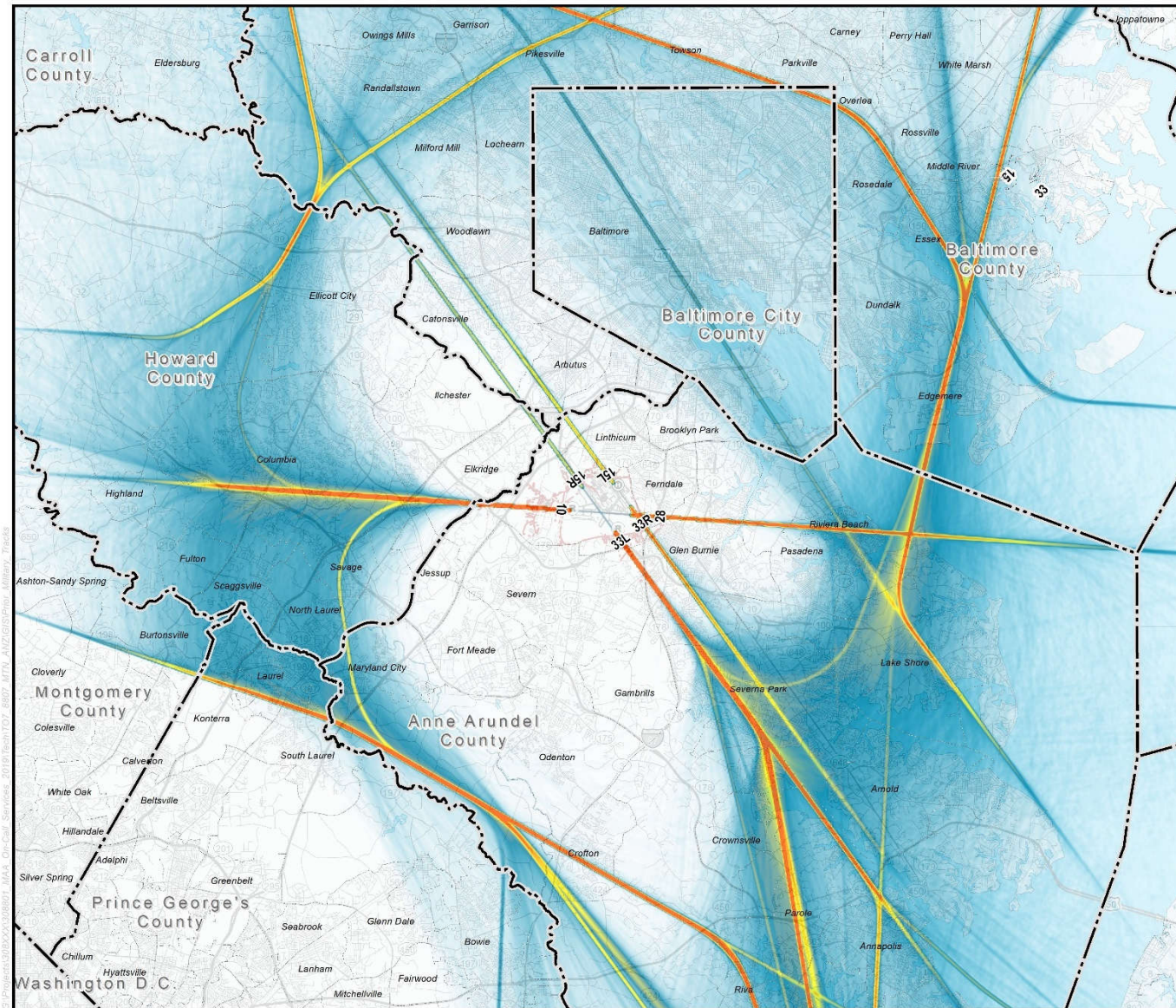
Legend

- MDOT MAA Property Boundary
- Helicopter Operation Area
- Runup Locations
- Runway
- Airport Buildings
- County Boundary
- Roads
- Railroad
- Stream / Creek
- Water



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





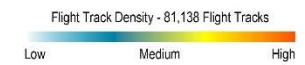
© Prince Georges County MAA, On-Call Services, 2019/Jan/07 8:02 AM, ANZ/05/05/2019, 10:44:48



Flight Track Density - Arrivals
January 1, 2024 - September 4, 2024

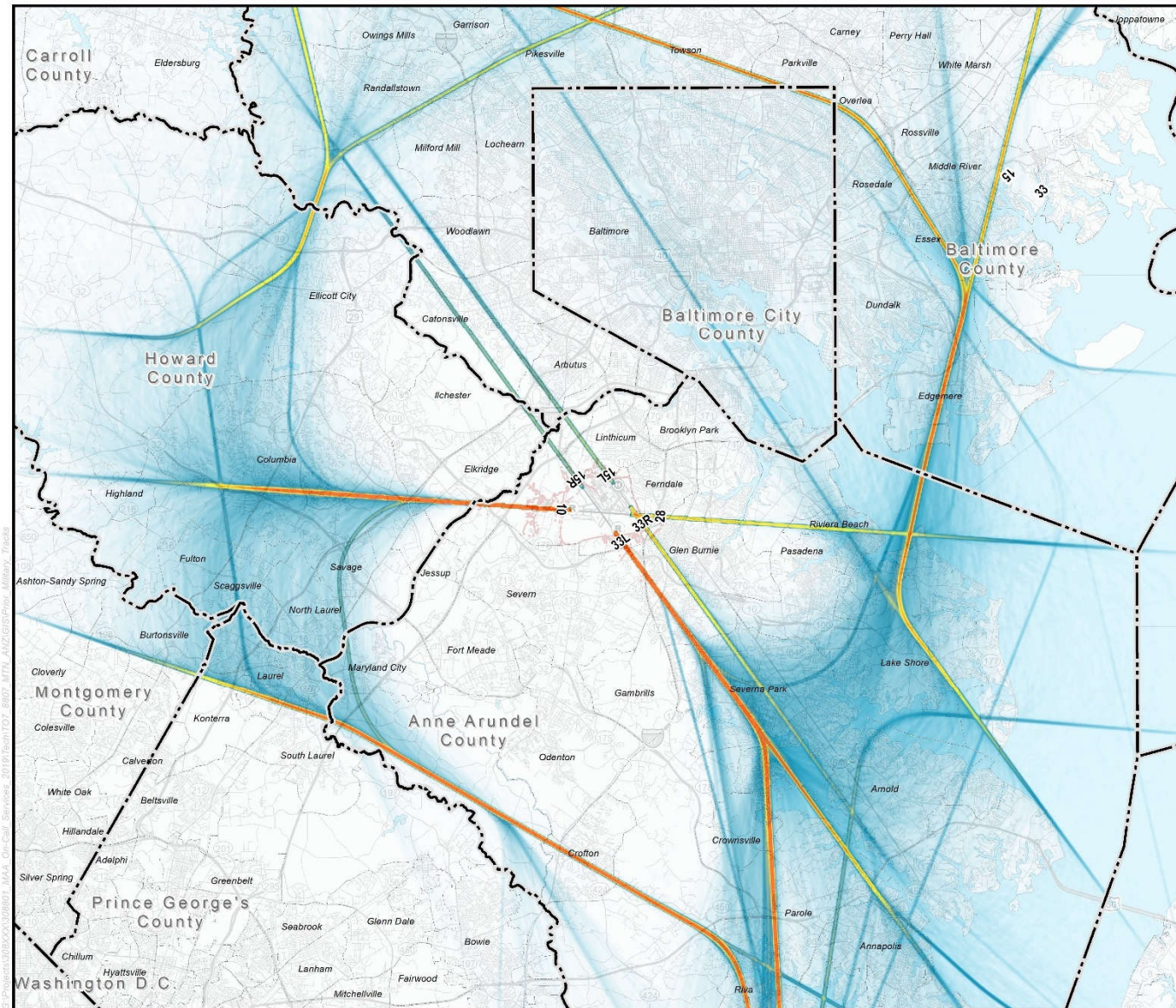
Legend

- MDOT MAA Property Boundary
- Helicopter Operation Area
- Runup Locations
- Runway
- Airport Buildings
- County Boundary
- Roads
- Railroad
- Stream / Creek
- Water



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





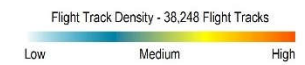
© Prince Georges County MAA, OnCall Services, 2019, Esri, 2024, MDOT, ANZ, 2024, MAA, 2024



Flight Track Density - Arrivals
September 5, 2024 - December 31, 2024

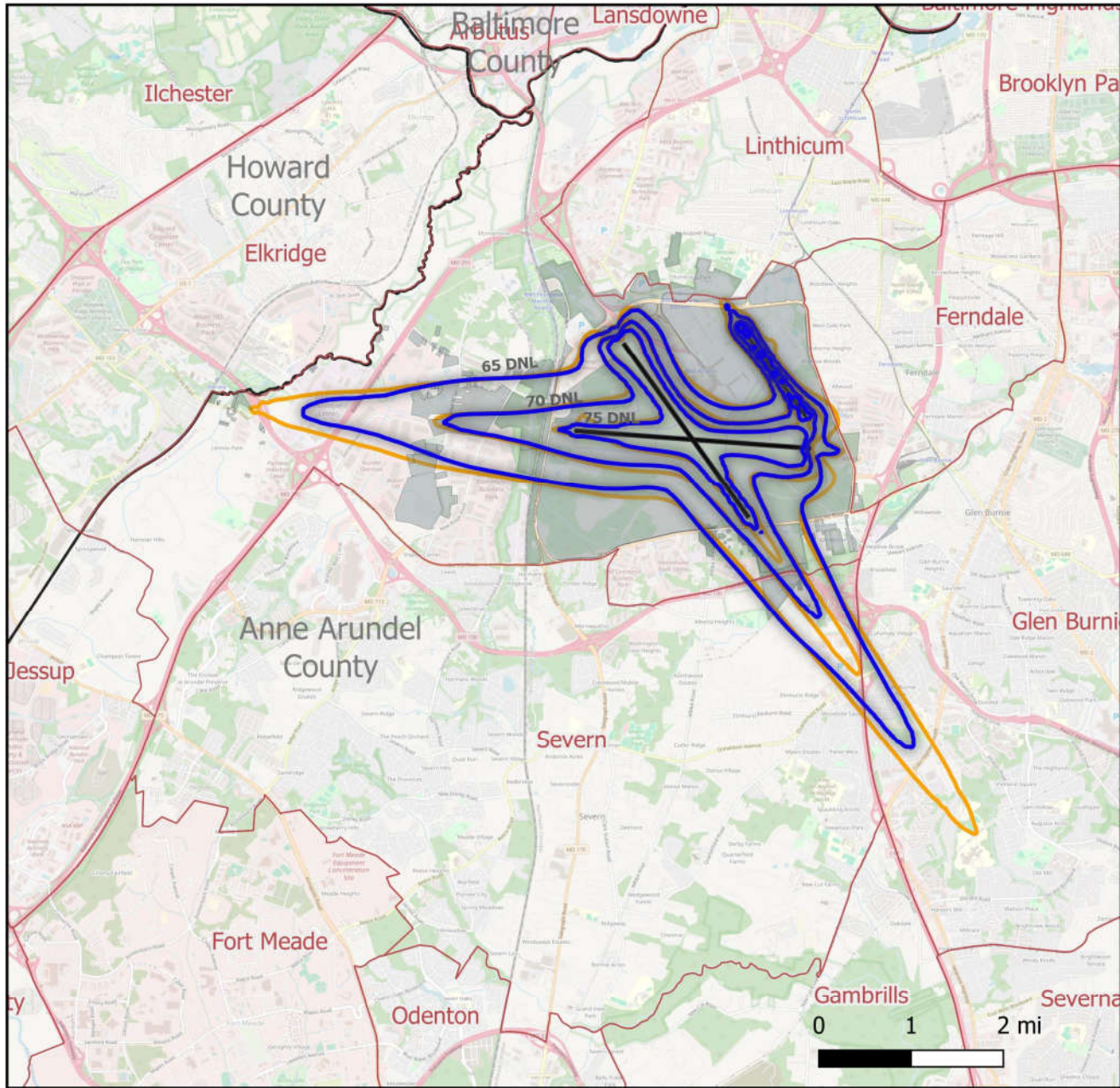
Legend

- MDOT MAA Property Boundary
- Helicopter Operation Area
- Runup Locations
- Runway
- Airport Buildings
- County Boundary
- Municipal Boundary
- Roads
- Railroad
- Stream / Creek
- Water



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





2024 Annual Noise Contour compared to 2019 Noise Exposure Map

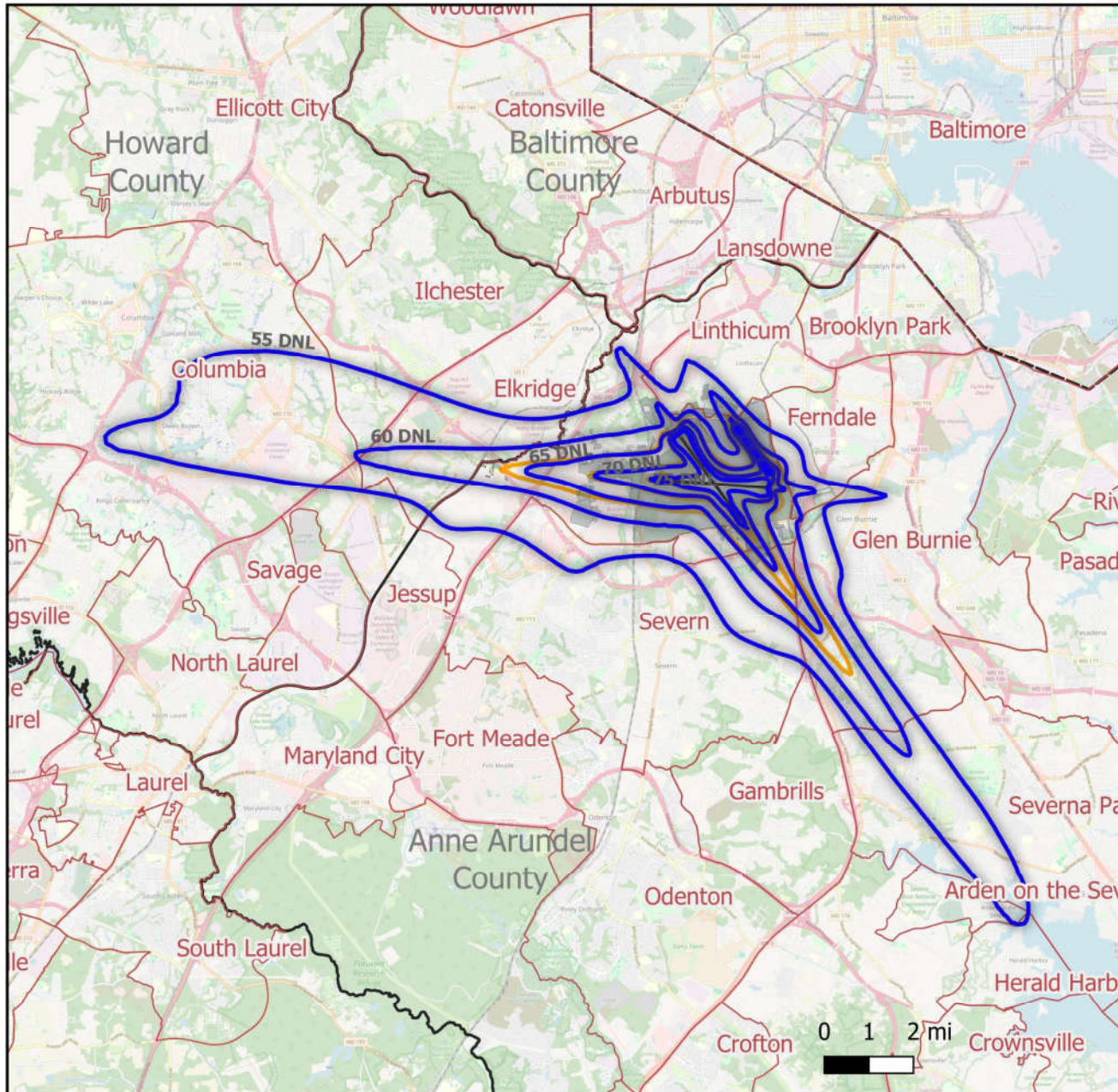
Legend

- ▭ 2024 Annual Noise Contour
- ▭ 2019 Noise Exposure Map
- MAA Property
- Census Designated Place
- County



S:\OFFICE OF ENVIRONMENTAL SERVICES\WISSE
2\GIS\Projects\2024_Annual_Noise_Contour_65Plus
Prepared on February 4, 2025

2024 Annual Noise Contour compared to 2019 Noise Exposure Map



Legend






- ▭ 2024 Annual Noise Contour
- ▭ 2019 Noise Exposure Map
- MAA Property
- Census Designated Place
- County

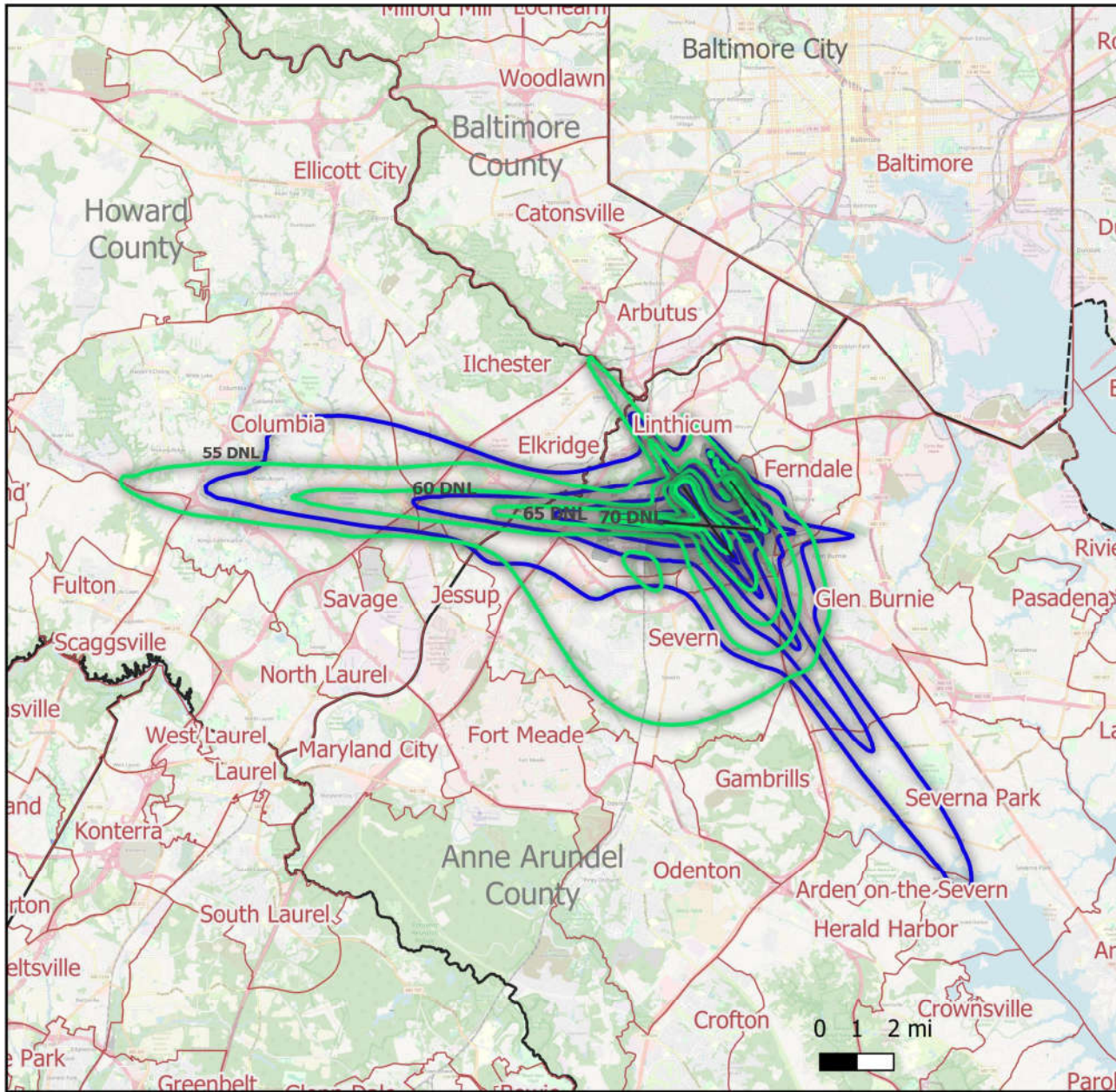


S:\OFFICE OF ENVIRONMENTAL SERVICES\WOISE
2\GIS\Projects\2024_Annual_Noise_Contour-55Plus
Prepared on February 4, 2025

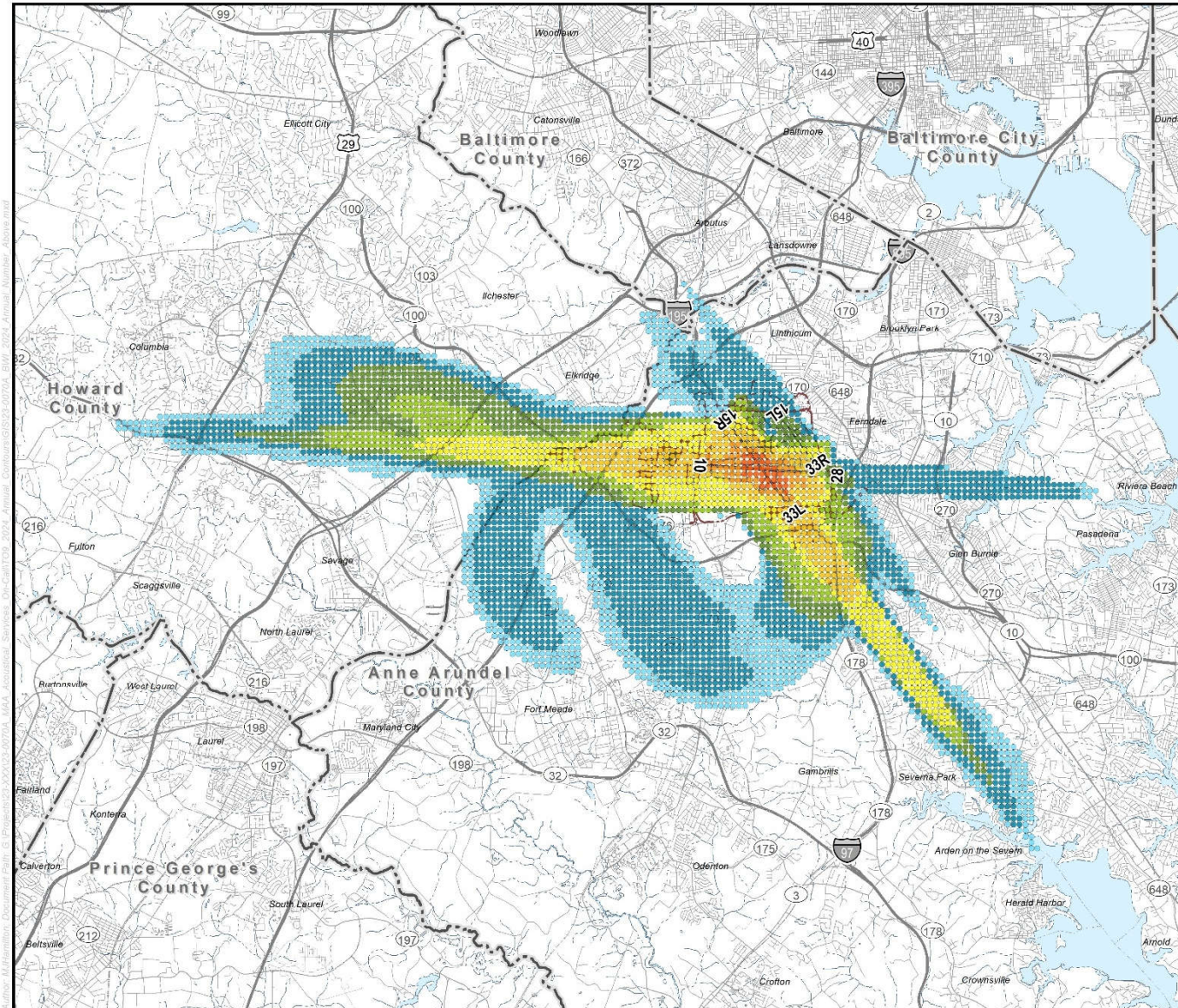
2024 Annual Noise Contour compared to 2024 East Flow Average Day - 55 DNL+

Legend

-  2024 Annual Noise Contour
-  2024 East Flow Average Day
-  MAA Property
-  Census Designated Place
-  County



S:\OFFICE OF ENVIRONMENTAL SERVICES\OISE
 2\GIS\Projects\2024_Annual_Noise_Contour_East_Flow
 Prepared on February 4, 2025



Source: 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.



Number of Operations Above 70 dB Lmax

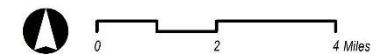
Number of Operations Above 70 dB Lmax

- 5.0 - 10.0
- 10.1 - 25.0
- 25.1 - 50.0
- 50.1 - 100.0
- 100.1 - 200.0
- 200.1 - 300.0
- 300.1 - 400.0
- >400

- ▭ MDOT MAA Property Boundary
- ▬ Runway
- ▬ Airport Buildings
- ▬ Airport Pavement Edge
- ▭ County Boundary
- ▭ Municipal Boundary
- ▬ Roads
- ▬ Railroad
- ▬ Stream / Creek

Date 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



Noise Complaints

MAA provides multiple methods for the public to submit aircraft noise complaints, including an on-line form and a 24-hour noise complaint and information hotline. The MAA accepts and logs complaints from many sources including third-party apps, however, the MAA does *not* control any third-party noise complaint apps. MAA is committed to answering questions and helping residents understand aircraft operations. All noise complaints are logged and reviewed daily. MAA's Noise Complaint Guidelines can be accessed here: <https://marylandaviation.com/environmental/airport-noise/noise-complaints/>.

MAA received 147,814 noise complaints from 412 individuals (390 households) in 2024. 83% of all complaints for 2024 came from 10 complainants. Complaints include those submitted for BWI Marshall, Martin State and other events that may not be correlated with local operations.

2024 Annual Complaints

Total Noise Complaints	Total Unique Complainants	Total Distinct Households
147,814	412	390

Top Ten Complainants in 2024

Complainant	2024 Complaints	%
Complainant 1	46,409	31.4%
Complainant 2	20,385	13.8%
Complainant 3	17,001	11.5%
Complainant 4	14,634	9.9%
Complainant 5	7,743	5.2%
Complainant 6	6,193	4.2%
Complainant 7	3,313	2.2%
Complainant 8	2,184	1.5%
Complainant 9	2,149	1.5%
Complainant 10	2,131	1.4%
Total	122,142	82.6%

MAA accepts noise complaints via multiple methods, including the Noise Hotline, a dedicated email address, electronically via webform, interactively via WebTrak, Airnoise.io, and via other direct communication. The majority of noise complaints (80%) originate from Airnoise.io, representing complaints from 96 individuals. In 2024, approximately 53 individuals used more than one method to submit a noise complaint.

Noise Complaints by Contact Method

Noise Complaint Method	Noise Complaints	Percent	Noise Complainants	Percent
Email	838	0.6%	35	7.4%
Airnoise.io	117,773	79.7%	96	20.2%
Noise Hotline (Phone)	339	0.2%	67	14.1%
Web Form	24,417	16.5%	234	49.3%
WebTrak	4,447	3.0%	36	7.6%
Other	7	0%	7	1.5%
Total	147,814	100%	475*	100%

* Number is higher accounting for complainants using more than one contact method.

The noise complainant and complaint distribution by noise contour levels is shown below.

Noise Complaints by Noise Level

Contour	Complainant	% of Total	Complaints	% of Total
< 50 DNL	187	45.4%	79,530	54%
50-55 DNL	144	35.0%	43,316	29%
55-60 DNL	69	16.7%	23,775	16%
60 - 65 DNL	9	2.2%	1,190	1%
65 - 70 DNL	0	0.0%	0	0%
70 - 75 DNL	3	0.7%	3	0%
Total	412	100%	147,814	100%

MAA reports the geographic distribution of noise complaints, including by county and by city, as reported by the complainant.

Noise Complaints by County

County	Complaints	Percent	Complainants	Percent
Anne Arundel County	55,019	37%	201	49%
Baltimore County	914	1%	35	8%
Baltimore City	5	0%	4	1%
Howard County	90,853	61%	115	28%
Montgomery County	99	0%	6	1%
Prince George's County	36	0%	5	1%
Other	888	1%	46	11%
Total	147,814	100%	412	100%

Noise Complaints by City

City	Complaints	Complainants	Households
Annapolis	945	13	13
Arden-on-the-Severn	1	1	1
Arnold	2,695	3	3
Baltimore	6	5	5
Beltsville	1	1	1
Bethesda	1	1	1
Brookeville	90	1	1
California	1	1	1
Catonsville	524	32	31
Chestnut Hill Cove	1	1	1
Clarksville	233	5	5
Columbia	8,687	60	56
Crofton	643	3	3
Crownsville	976	11	9
Damascus	1	1	1
Darnestown	2	2	2
Dayton	18,306	5	4
Edgewater	86	2	2
Eldersburg	5	2	2
Elkridge	8,265	21	19
Ellicott City	54,495	19	18
Ferndale	1	1	1
Gambrills	1	1	1
Gibson Island	18	1	1
Glen Burnie	1,307	26	26
Glenelg	32	1	1
Halethorpe	1	1	1
Hanover	1,233	16	16
Highland	1	1	1
Ilchester	65	1	1
Jessup	132	3	2
Laurel	208	6	6
Linthicum	81	7	7
Linthicum Heights	5	2	2
Middle River	1	1	1
Millersville	89	12	12
Mount Airy	1	1	1
Odenton	1	1	1
Odenton Heights	1	1	1
Olney	1	1	1
Pasadena	16	9	8
Reisterstown	367	1	1
Riva	1	1	1

City	Complaints	Complainants	Households
Savage	7	3	3
Scaggsville	4	1	1
Severn	40,272	86	78
Severna Park	7,374	23	23
Silver Spring	5	1	1
Still Pond	1	1	1
Sykesville	2	1	1
Washington	1	1	1
West Laurel	1	1	1
Woodbine	9	2	2
Other/Unknown	611	7	6
Total	147,814	412	390

MAA also collects the geographic distribution of noise complaints by legislative district. In 2024, District 31 accounted for the highest number of noise complainants (114 individuals), while the highest number of noise complaints originated from District 9.

Noise Complaints and Complainants by Legislative District

District	Population	Noise Complaints	% Total	Noise Complainants	% Total
District 5	133,491	8	<0.1%	4	1.0%
District 7	129,596	1	<0.1%	1	0.2%
District 9	130,281	55,533	37.5%	29	7.0%
District 10	126,173	490	0.3%	22	5.3%
District 12	131,907	15,491	10.5%	49	11.9%
District 13	131,054	20,041	13.6%	55	13.4%
District 14	127,947	96	0.1%	3	0.7%
District 15	130,414	3	<0.1%	3	0.7%
District 16	132,983	1	<0.1%	1	0.2%
District 21	133,497	25	<0.1%	4	1.0%
District 23	135,983	1	<0.1%	1	0.2%
District 30	126,540	834	0.6%	10	2.4%
District 31	130,883	4,587	3.1%	114	27.8%
District 32	135,064	38,822	26.2%	58	14.2%
District 33	131,878	10,756	7.3%	33	8.0%
District 36	134,994	1	<0.1%	1	0.2%
District 40	126,162	3	<0.1%	2	0.5%
District 44	132,982	402	0.3%	12	2.9%
District 46	126,149	2	<0.1%	2	0.5%
<i>Other</i>	<i>N/A*</i>	717	0.5%	8	1.9%
Total	2,487,978	147,814	100.0%	412	100.0%

Approximately 8 individuals submitted 717 complaints from other districts or outside of Maryland. Population within those districts is not included in the overall total.

Population data: Maryland 2022 Legislative Districts with 2020 Total Adjusted Population

Noise complaints are automatically correlated with operations in the ANOMS system. If the date and time of a noise complaint does not match with a known operation in ANOMS, the noise complaint is not correlated. Overall, in 2024, 119,740 noise complaints were correlated with an aircraft operation out of a total of 147,814 complaints, or approximately 81%.

Correlation of Noise Complaints with Operations

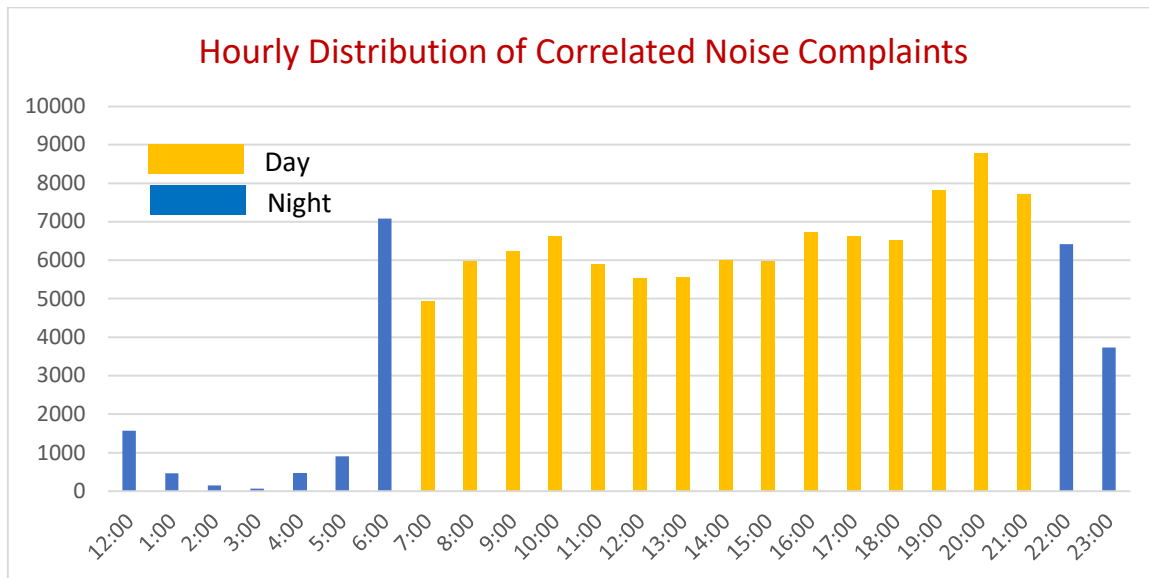
Total Noise Complaints	Correlated with Operation	%
147,814	119,740	81%

Noise complaints can be correlated with the operation type, including arrivals, departures and touch and go operations from BWI Marshall and Martin State, and flights not associated with operations at BWI Marshall or Martin State. Overall, for BWI Marshall noise complaints, the majority were associated with departure operations (56%).

Correlation of Noise Complaints with Type of Operations

Operation Type	Correlated Noise Complaints	%
Arrival	34,808	30%
Departure	65,885	56%
Overflight	16,857	14%
Touch and Go	205	<1%
Total	117,755	100%

A majority (82%) of noise complaints that correlated with aircraft operations occurred during daytime (7:00 a.m. to 10:00 p.m.) hours. The remaining 18% of noise complaints correlated with operations occurring between 10:00 p.m. and 7:00 a.m. The hourly distribution of noise complaints is shown in the following chart.

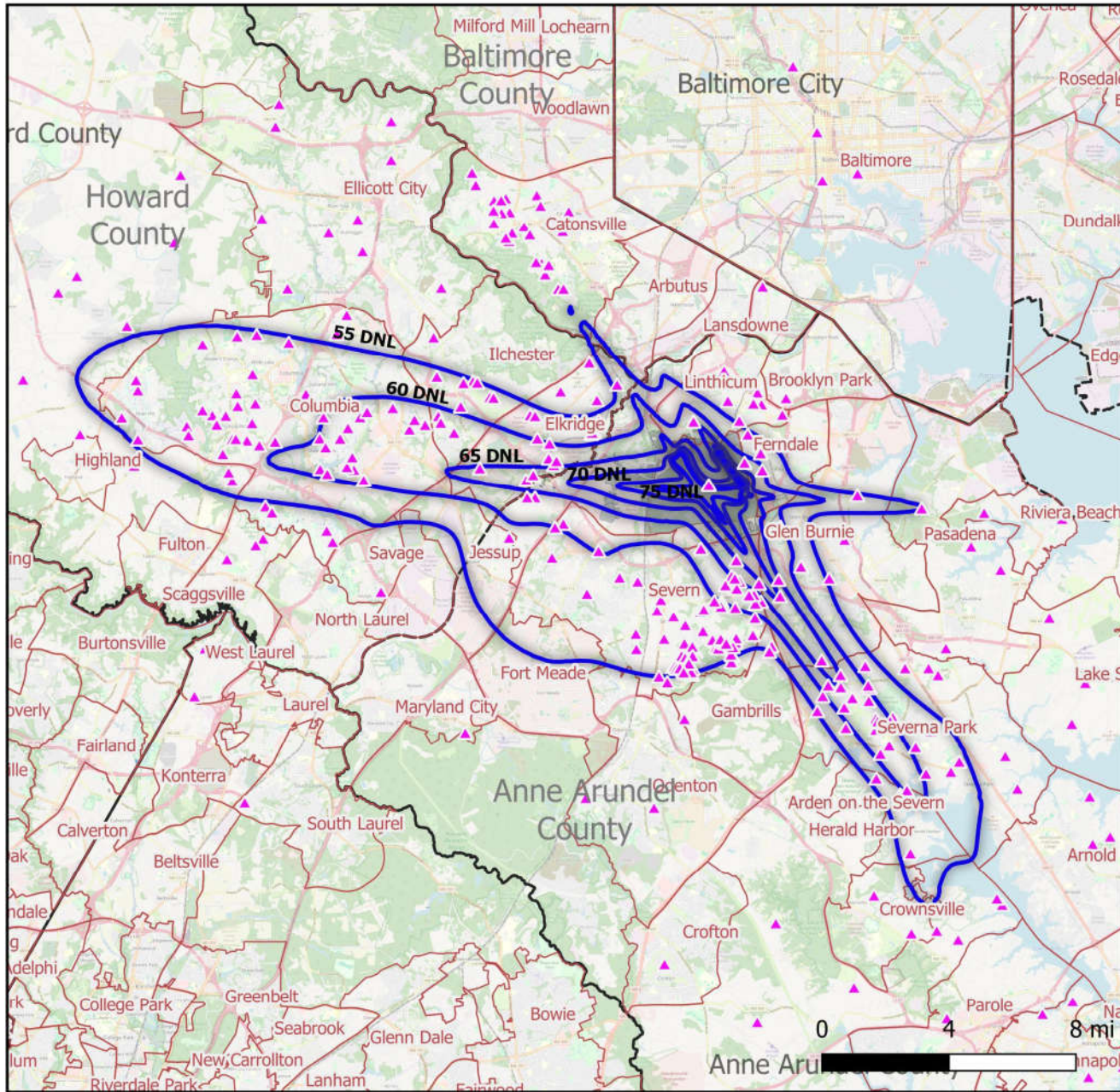


Noise complaints correlated with specific operations from different runways at BWI Marshall are shown in the following table. The majority of noise complaints are associated with departures from Runway 15R (40%), followed by arrivals to Runway 10 (23%) and departures from Runway 28 (22%).

Correlation of Noise Complaints with Operation by Type, Flow and Runway

Operation Type	Runway	Operational Flow	Noise Complaints	% of Total by Operation Type	% of Overall Total
Arrival	Runway 10	East Flow	22,982	66%	24%
Arrival	Runway 15L	East Flow	472	1%	0%
Arrival	Runway 15R	East Flow	1,480	4%	1%
Arrival	Runway 28	West Flow	375	1%	0%
Arrival	Runway 33L	West Flow	8,950	26%	9%
Arrival	Runway 33R	West Flow	329	1%	0%
Arrival	Helicopter	N/A	60	0%	0%
<i>Total - Arrivals</i>			<i>34,648</i>	<i>1</i>	
Departure	Runway 10	East Flow	173	0%	0%
Departure	Runway 15L	East Flow	518	1%	1%
Departure	Runway 15R	East Flow	40,586	62%	41%
Departure	Runway 28	West Flow	21,685	33%	22%
Departure	Runway 33L	West Flow	1,361	2%	1%
Departure	Runway 33R	West Flow	1,129	2%	1%
Departure	Helicopter	N/A	114	0%	0%
<i>Total - Departures</i>			<i>65,566</i>	<i>100%</i>	
Total			100,214		100%

2024 Noise Complaint Locations



Legend

- ▲ 2024 Noise Complaint Locations
- 2024 Annual Noise Contour
- MAA Property
- Census Designated Place
- County



S:\OFFICE OF ENVIRONMENTAL SERVICES\WISSE
 2\GIS\Projects\2024_Noise_complaints_v2.qgr
 Prepared on February 4, 2025

Noise Abatement Operational Procedures

Noise abatement at BWI Marshall includes a wide variety of strategies that are intended to reduce noise impacts for communities around the Airport. Operational procedures such as arrival and departure flight procedures and a preferential runway use system are voluntary in nature and are intended to direct aircraft operations over less populated areas, where and when possible. The FAA Air Traffic Control Tower (ATCT) at BWI Marshall and Potomac Consolidated Terminal Radar Approach Control (TRACON) have primary responsibility for implementation of flight procedures and the preferential runway use system. Although encouraged to do so, aircraft may not follow noise abatement procedures if deemed necessary by air traffic control or flight crews to maintain operational safety.

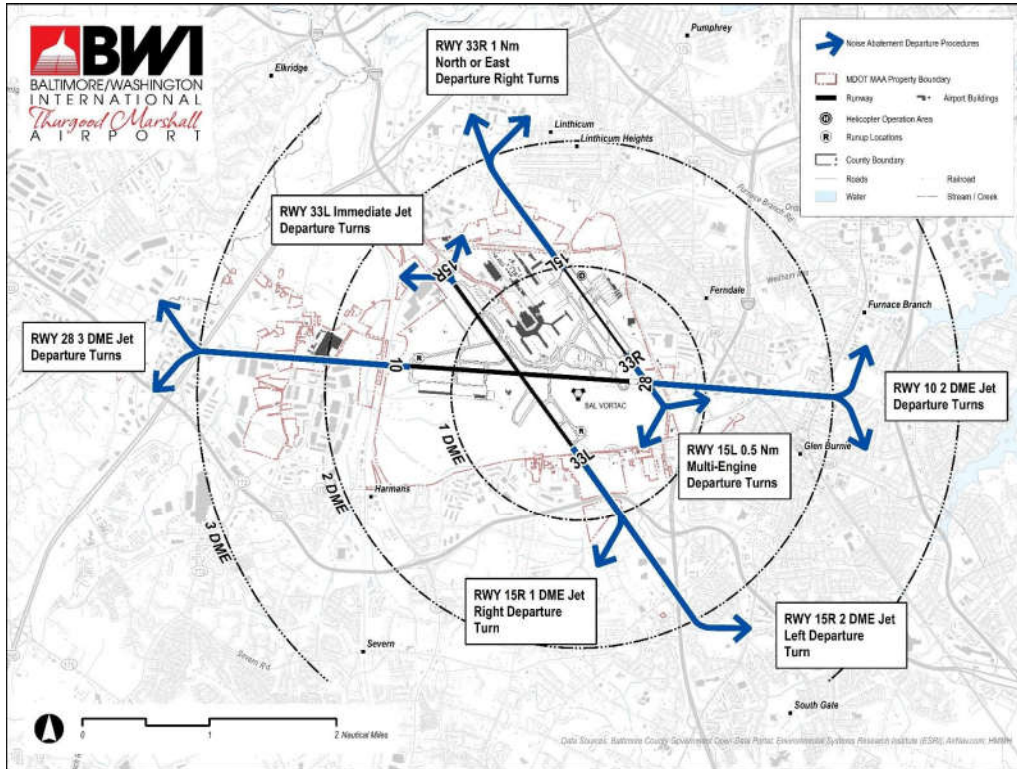
Noise Abatement Departure Procedure Summary

Runway	Aircraft	Turns	Distance & Notes
15R	Jet	Right	2 Distance Measuring Equipment (DME) or 1.7 nautical mile (NM) from Rwy End
15R	Jet	Left	1 DME or 0.7 NM from Rwy End
28	Jet	All	3 DME or 1.7 NM from Rwy End
10	Jet	All	2 DME or 1.6 NM from Rwy End
33L	Jet	All	Immediate Turns (Visual Flight Rules (VFR) - Not below 300' Above Ground Level (AGL), Instrument Flight Rules (IFR) Not below 400' AGL)
33R	All	N/E	Runway heading to 1 NM from departure end
15L	Multi-engine		Runway heading to 0.5 NM from departure end

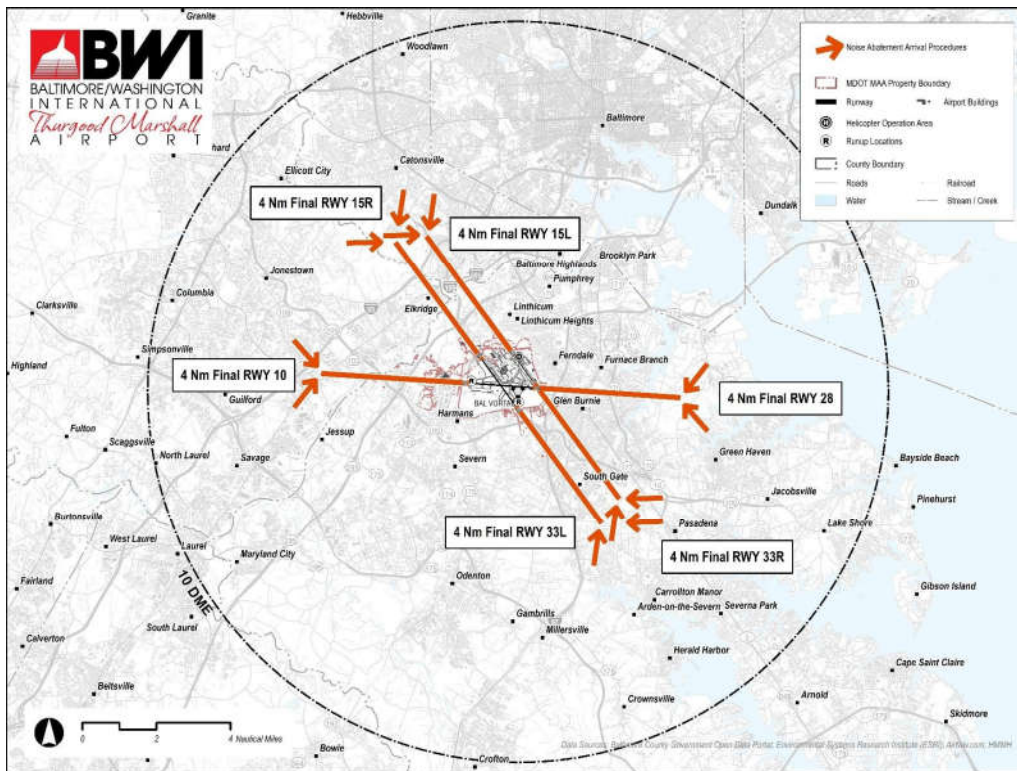
Aircraft Noise Abatement Arrival Procedures

Unless instructed otherwise by air traffic control or deviation is necessary to maintain operational safety or comply with published arrival flight procedures, aircraft are to follow the noise abatement arrival procedures detailed below
a) Jet aircraft conducting visual approaches will turn onto final approach a minimum of four (4) Nm from the approach end of the runway.
b) All jet aircraft conducting visual approaches are expected to maintain 3,000 feet or above until 10 DME from the BWI VORTAC and, to the maximum extent possible, should remain at or above the Instrument Landing System (ILS) or Visual Approach Slope Indicator (VASI) for the landing runway, consistent with safe flight procedures.

Noise Abatement Departure Procedures



Noise Abatement Arrival Procedures



Aircraft Noise Abatement Procedure Compliance

Airline		Violations	Operations	% Compliant	% Noncompliant
AAL	American Airlines	124	5,265	98%	2%
AAY	Allegiant Air	9	284	97%	3%
ASA	Alaska Airlines	20	822	98%	2%
ASH	Mesa Airlines	12	353	97%	3%
AWI	Air Wisconsin	0	2	100%	0%
ACA	Air Canada	1	6	83%	17%
BAW	British Airways	99	627	84%	16%
BMA	BurmudAir	21	200	90%	11%
CFG	Condor	19	96	80%	20%
CMP	Copa Airlines	4	350	99%	1%
DAL	Delta Air Lines	257	7,208	96%	4%
EDV	Endeavor Air	176	990	82%	18%
ENY	Envoy Air	25	746	97%	3%
ETD	Etihad Airways	0	3	100%	0%
FFT	Frontier Airlines	115	4,256	97%	3%
ICE	Icelandair	99	641	85%	15%
JBU	JetBlue Airways	94	456	79%	21%
JZA	Jazz Aviation	15	116	87%	13%
NKS	Spirit Airlines	370	10,476	96%	4%
FPY	Play Airlines	94	609	85%	15%
RPA	Republic Airlines	349	1,870	81%	19%
SKW	SkyWest Airlines	2	22	91%	9%
SWA	Southwest Airlines	7,494	113,691	93%	7%
UAL	United Airlines	119	4,942	98%	2%
SCX	Sun Country Airlines	15	254	94%	6%
VTE	Contour Airlines	31	853	96%	4%
VXP	Avelo Airlines	35	285	88%	12%
ABX	ABX Air	34	431	92%	8%
AJT	Amerijet International	1	10	90%	10%
ATN	Air Transport International	86	2,052	96%	4%
CJT	Cargojet Inc.	0	2	100%	0%
CKS	Kalitta Air	0	2	100%	0%
FDX	FedEx	60	1,102	95%	5%
GTI	Atlas Air	85	1,994	96%	4%
JLG	Jet Logistics	0	8	100%	0%
MTN	Mountain Air Cargo	21	43	51%	49%
SWQ	Swift Air	3	73	96%	4%
WIG	Wiggins Airlines	1	2	50%	50%
UPS	UPS	117	1,005	88%	12%
Total		10,008	162,156	94%	6%