

# Portable Noise Measurement Report

Penzance Way, Hanover, MD 21076

Maryland Aviation Administration  
April 2026



# Introduction

## PURPOSE

The purpose of the *Portable Noise Measurement Report* is to summarize aircraft and community noise levels at a specific location upon request of a homeowner. The program is offered by the Maryland Department of Transportation Maryland Aviation Administration (MAA), with technical support and report preparation provided by Harris Miller Miller & Hanson Inc. (HMMH) and Airport Design Consultants, Inc. (ADCI).

## NOISE DATA

It should be noted that the noise data provided in this report represents noise and operating levels only during the period of the measurements. Noise levels associated with aircraft overflights can vary with the number of operations, wind and weather patterns, temperatures, pilot procedures and Air Traffic Control instruction, and other variables.

## MONITORING TIME AND LOCATION

This report presents the measured aircraft and community noise levels from March 24, 2026 to April 7, 2026, at Penzance Way, Hanover, MD 21076. The monitoring location is approximately 3.6 statute miles from the center of Baltimore/Washington International Thurgood Marshall (BWI Marshall) Airport. **Figure 1** shows the location of the measurement site (marked as BW359) relative to BWI Marshall.

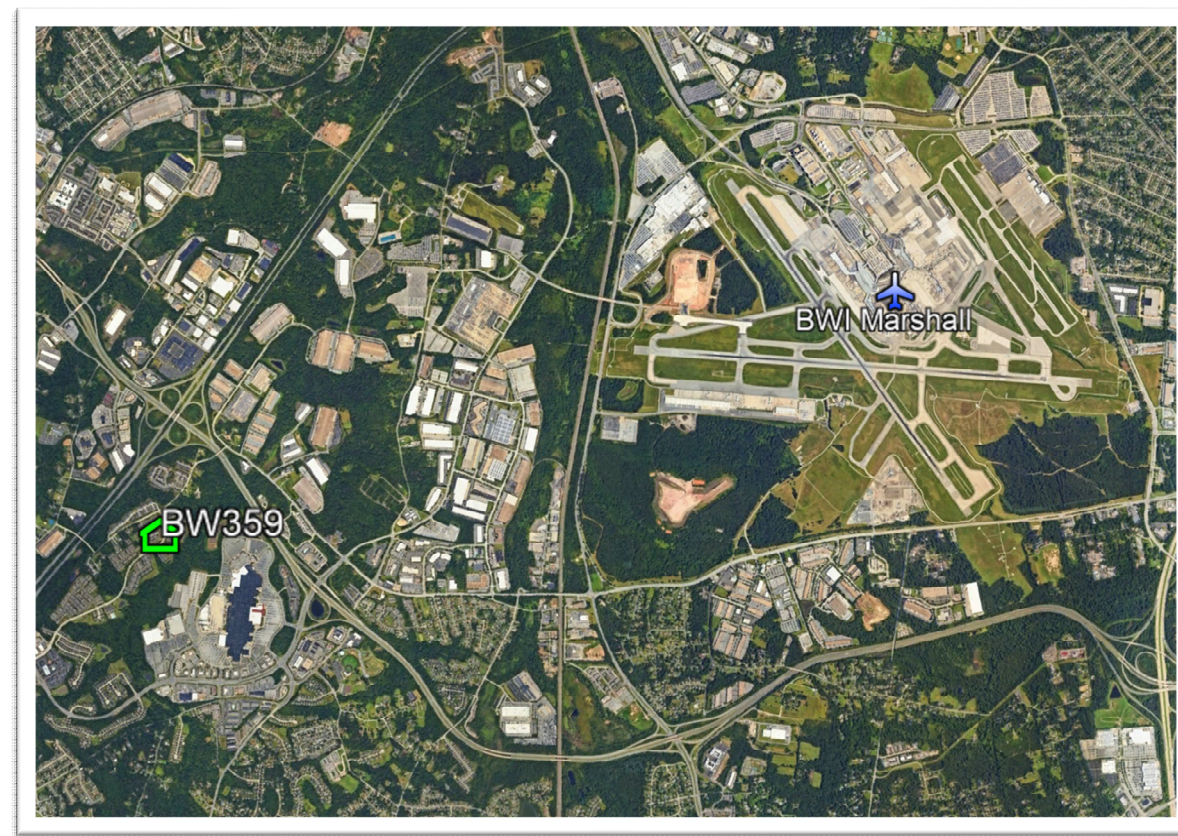


Figure 1. Noise Monitoring Location in Relation to BWI Marshall

# Site BW359 Summary

## ? WHEN WAS NOISE MEASURED

Tuesday, March 24, 2026 to  
Tuesday, April 7, 2026



|                    |              |    |              |    |    |    |    |
|--------------------|--------------|----|--------------|----|----|----|----|
| MARCH / APRIL 2026 | S            | M  | T            | W  | T  | F  | S  |
|                    | 22           | 23 | 24           | 25 | 26 | 27 | 28 |
|                    |              |    | measurements |    |    |    |    |
|                    | 29           | 30 | 31           | 1  | 2  | 3  | 4  |
|                    | measurements |    |              |    |    |    |    |
|                    | 5            | 6  | 7            | 8  | 9  | 10 | 11 |
|                    | measurements |    |              |    |    |    |    |

## ✈ HOW MANY AIRCRAFT NOISE EVENTS OCCURRED AND WHAT WERE THEY



### TOP 3 MOST FREQUENT AIRCRAFT DURING THE MEASUREMENT PERIOD

| Rank | Aircraft type                                                                                        | Operation type and Runway |
|------|------------------------------------------------------------------------------------------------------|---------------------------|
| 1    | Boeing 737-700  | Departure, 15R            |
| 2    | Boeing 737-800  | Departure, 15R            |
| 3    | Boeing 737-700  | Departure, 28             |

## 🔍 CONCLUSION

During the 15-day measurement period, the Day Night Average Noise Level (DNL) from aircraft noise events was 43 decibels (dB), while the DNL from community noise was 54 dB.

FAA's threshold for land use compatibility is an aircraft-only DNL of 65 dB based on annual average daily aircraft operations.

| Aircraft DNL | Community DNL | Total DNL | FAA Threshold |
|--------------|---------------|-----------|---------------|
| 43 dB        | 54 dB         | 54 dB     | 65 dB         |



# Aircraft Operations

## FLIGHTS DURING MEASUREMENT PERIOD

Operations at BWI Marshall fluctuate on a daily basis. During the measurement period, there were 9,536 flights in and out of BWI Marshall (4,779 arrivals, 4,757 departures), in addition to overflights to other airports.

## FIXED-WING OPERATIONS

The number of flights per day ranged from 609 to 672. Flights in the vicinity of this site are primarily departures from BWI Marshall Runways 28 and 15R. 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 only used by certain aircraft. As aircraft cannot arrive and depart from the same runway, BWI Marshall generally operates in two configurations: west flow (primarily departures from Runway 28 and arrivals to Runway 33L) and east flow (primarily 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 BWI Marshall Runway 33L and departures from Runway 28. During east flow, aircraft operations primarily consist of departures from BWI Marshall Runway 15R and arrivals to Runway 10. Arrivals to BWI Marshall were generally 700 to 2,600 feet above ground level at their point of closest approach to the measurement site. Departures from BWI Marshall were generally 1,600 to 7,700 feet above ground level at their point of closest approach to the measurement site. During the measurement period, the west flow runway use was 78% (**Figure 2**), and the east flow runway use was 22% (**Figure 3**).

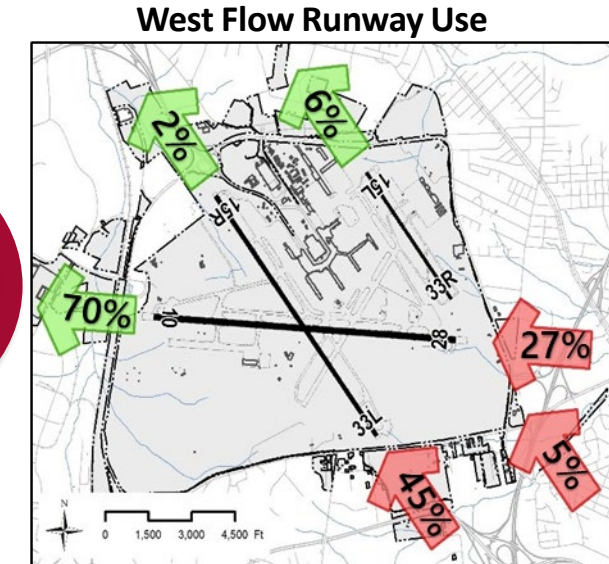
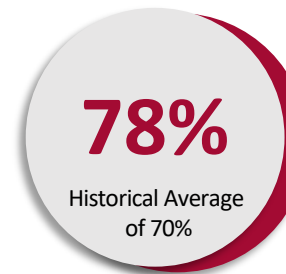


Figure 2. West Flow Runway Use During Measurement Period

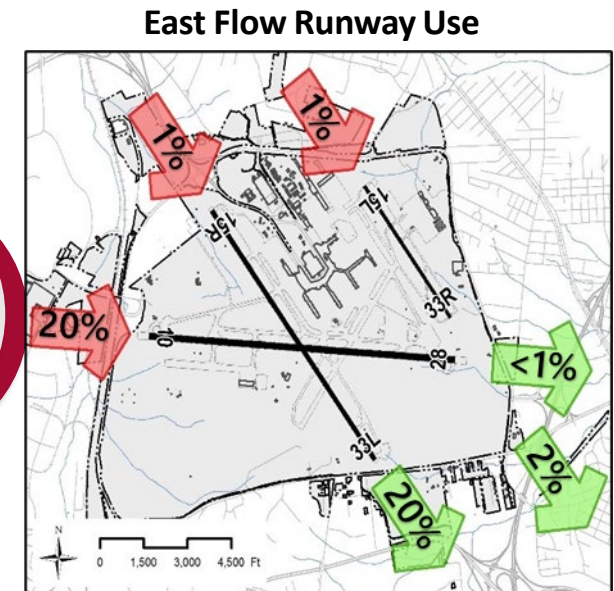
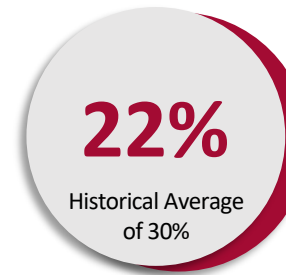


Figure 3. East Flow Runway Use During Measurement Period

# Methodology and Location

## MEASUREMENT LOCATION AND SETUP

Aircraft noise levels were measured from March 24, 2026 to April 7, 2026, at Penzance Way, Hanover, MD 21076.

The noise monitor is a Type I sound level meter and was regularly calibrated. Additionally, the system was checked every two to four days during the measurements to ensure proper operation. During setup, a baseline threshold was established for the noise monitor. Once the sound level exceeded the baseline threshold for 5 seconds, a noise event was recorded. For each noise event, the sound level meter recorded date, time, duration, and noise levels.

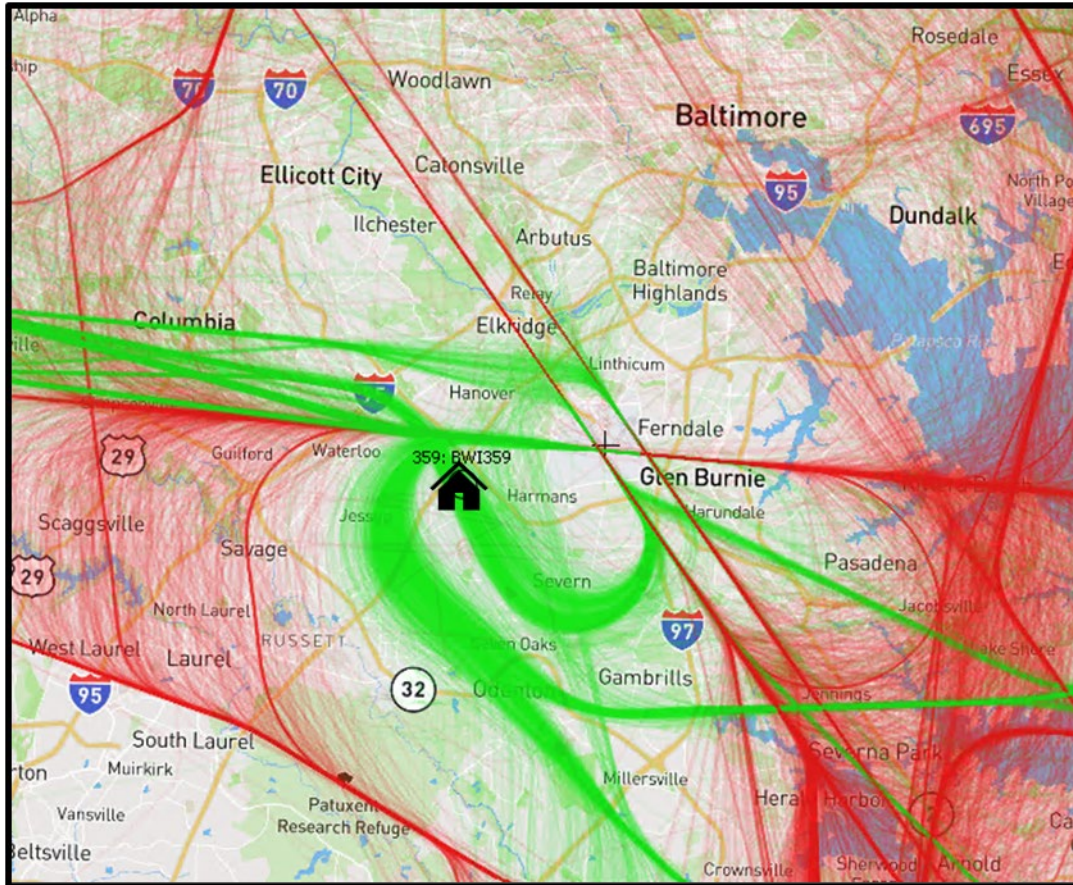
The noise monitor was placed in the backyard of the residence. Notable noise sources at this site included aircraft overflights to and from BWI Marshall as well as overflights to and from other airports, and other typical suburban sounds such as local vehicle traffic.

## DATA COLLECTION

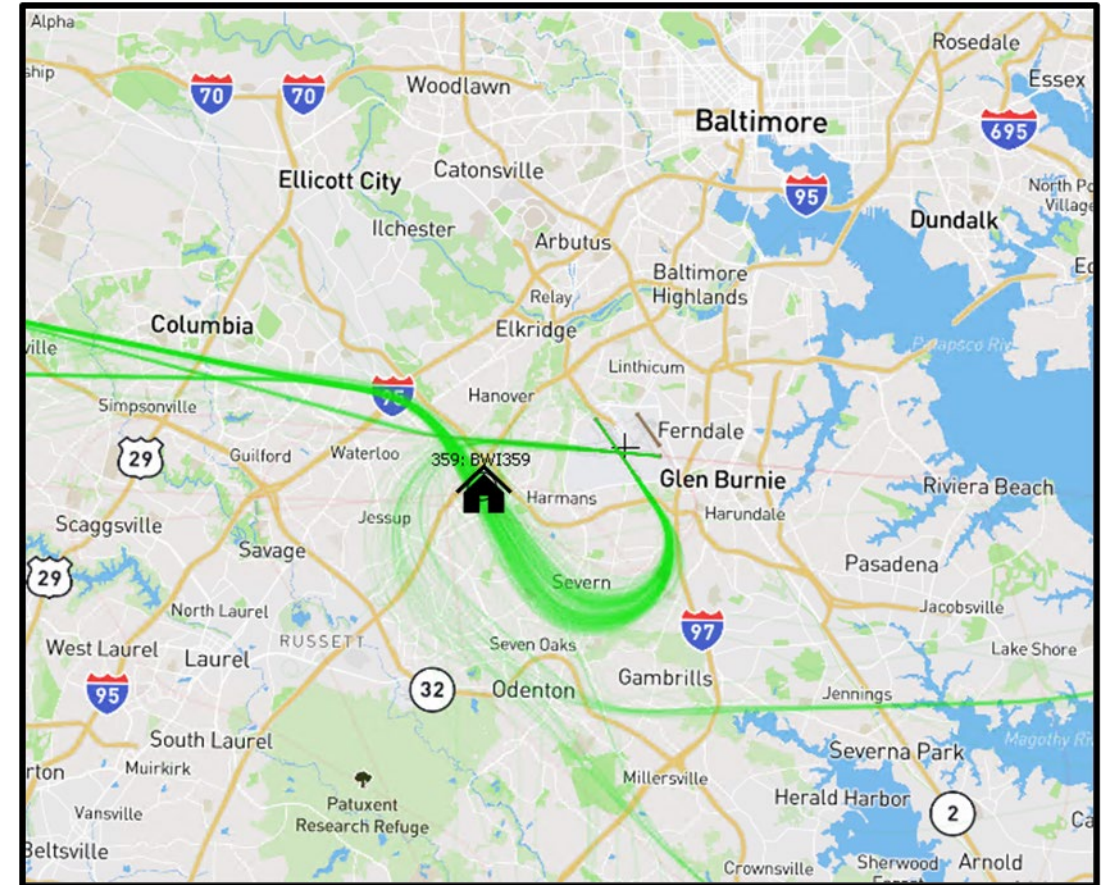
Once the temporary noise monitoring period was complete, the noise event data was collected from MAA's Noise and Operating Monitoring System (NOMS) to analyze the times of noise events at the site to its database of aircraft radar flight paths. The NOMS conservatively attributes any noise event to an aircraft if the aircraft is within 8,000 feet of the measurement site at an altitude no greater than 10,000 feet. Noise events which occurred while aircraft were passing within the vicinity were associated with an actual aircraft flight and therefore assigned as aircraft noise events. Noise events that did not correlate with an aircraft overflight were assigned as community noise events. Using this methodology, some noise events that are correlated with aircraft overflights may include other community noise, which may or may not exceed the noise level from the aircraft overflight. **Figure 4** on the next page displays all arrivals and departures to and from BWI Marshall during the measurement period. **Figure 5** displays all arrivals and departures to and from BWI Marshall that were correlated with aircraft noise events.



# Arrivals and Departures



**Figure 4. All BWI Marshall Arrivals and Departures During the Measurement Period**  
Note: Green = Departures, Red = Arrivals



**Figure 5. BWI Marshall Arrivals and Departures Correlated to Aircraft Noise Events During the Measurement Period**  
Note: Green = Departures, Red = Arrivals

# Measured Noise Levels

## NOISE METRICS

There are several key metrics that are used to describe aircraft and community noise on a single-event and cumulative basis. The appendix titled “How Do We Describe Aircraft Noise” provides a more detailed overview of the metrics which are discussed in this section. Single-event metrics such as Maximum A-Weighted Sound Level (Lmax) are indicators of the intrusiveness, loudness, or noisiness of individual noise events while cumulative metrics like Day-Night Average Sound Level (DNL) are generally used to measure long-term noise and are indicators of community annoyance and land use compatibility.

**Figure 6** presents the range of maximum single-event sound levels for 362 aircraft overflights at the measurement site for the complete measurement period. For a particular noise event, such as an aircraft overflight, the loudest level at any instant during the event is the Lmax. For typical conversational speech at approximately 3 feet, speech is interrupted by noise levels at or above 65 dB. Any noise events shown in this figure with a maximum level at or above 65 dB would interrupt typical conversations outdoors (briefly for quieter events and longer for louder events). **Figure 7** shows common environmental A-weighted noise levels for typical outdoor sounds.

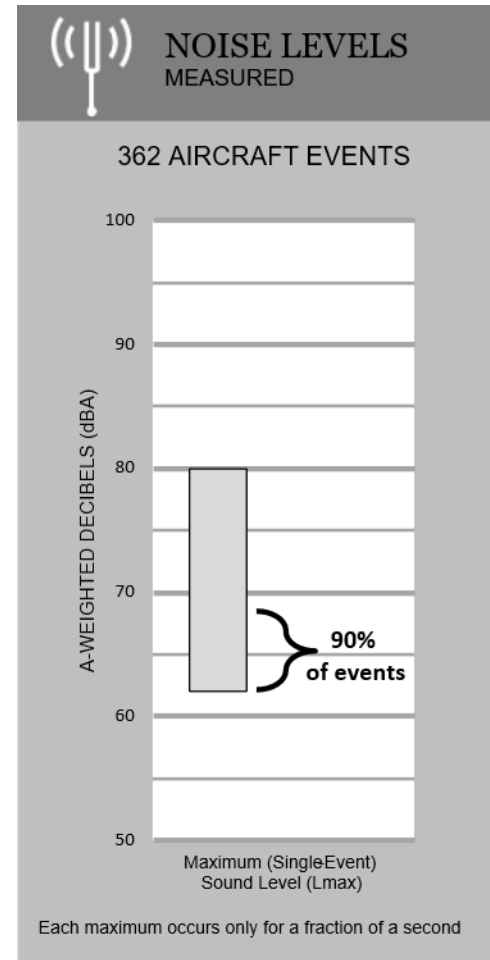


Figure 6. Maximum Single Event Aircraft Noise Levels

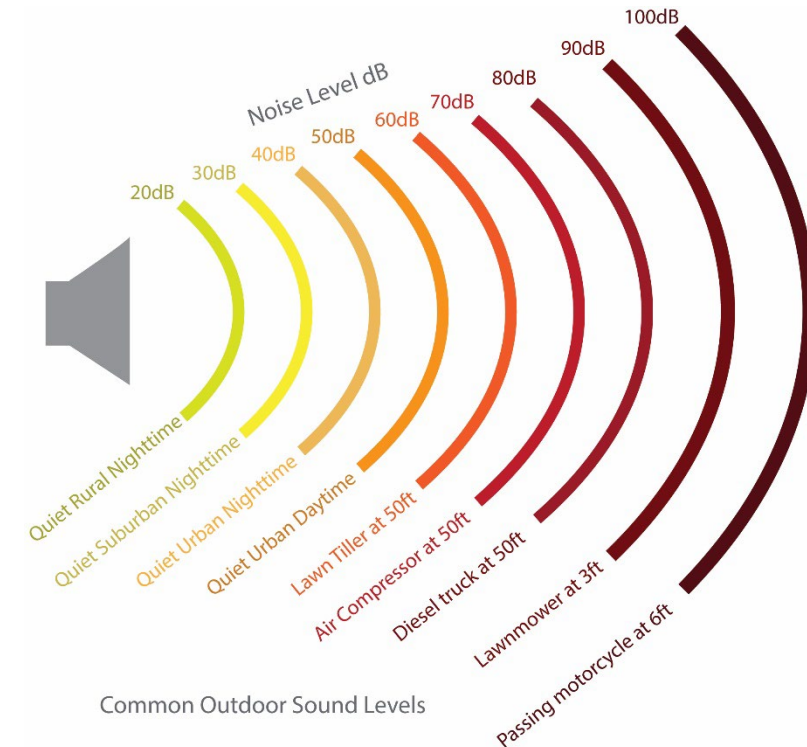


Figure 7. Common Environmental Noise Levels

# Loudest Aircraft Events

**Table 1** shows the top 15 loudest aircraft events that occurred during the measurement period including details about the date and time the event occurred, aircraft type, operation type, runway, and slant range (the line-of-sight distance between the receptor and the aircraft). Note that these events only represent the noisiest aircraft events at the measurement site, and the majority of aircraft overflights at the measurement site were less noisy than those shown in **Table 1**.

*Note: In some cases, community events may occur simultaneously with aircraft overflights, causing aircraft overflights to have higher recorded sound levels.*

**Table 1. Top Fifteen Loudest Aircraft Events During the Measurement Period**

| Rank | Flight Time     | Airline          | Aircraft Type                  | Operation Type | Runway | Altitude (ft. AGL) | Slant Range (ft.) | Maximum Sound Level (dBA) |
|------|-----------------|------------------|--------------------------------|----------------|--------|--------------------|-------------------|---------------------------|
| 1    | 4/1/2026 8:59   | Southwest        | Boeing 737-800                 | Departure      | 28     | 2,119              | 2,277             | 80                        |
| 2    | 4/1/2026 13:12  | Southwest        | Boeing 737-800                 | Departure      | 33L    | 2,923              | 3,025             | 75                        |
| 3    | 3/27/2026 10:50 | BERMUDA AIR      | Embraer 190                    | Departure      | 28     | 1,619              | 2,753             | 75                        |
| 4    | 3/31/2026 22:53 | ATLAS AIR        | Boeing Dremflifter 747-400 LCF | Departure      | 28     | 1,650              | 3,264             | 75                        |
| 5    | 3/26/2026 18:47 | ELITE AIR        | Bombardier Challenger 350      | Departure      | 28     | 4,241              | 8,136             | 75                        |
| 6    | 3/28/2026 13:03 | Southwest        | Boeing 737-800 Max             | Departure      | 28     | 2,919              | 7,703             | 74                        |
| 7    | 3/25/2026 17:44 | Southwest        | Boeing 737-800                 | Departure      | 15R    | 5,683              | 5,938             | 72                        |
| 8    | 3/25/2026 14:48 | DELTA            | Airbus A321                    | Departure      | 15R    | 4,215              | 4,619             | 72                        |
| 9    | 4/4/2026 13:52  | Southwest        | Boeing 737-800                 | Departure      | 15R    | 5,642              | 5,932             | 72                        |
| 10   | 4/3/2026 20:04  | Republic Airways | Embraer ERJ 175                | Departure      | 28     | 3,054              | 3,087             | 72                        |
| 11   | 4/7/2026 12:31  | Southwest        | Boeing 737-800                 | Departure      | 33L    | 3,576              | 5,253             | 72                        |
| 12   | 4/4/2026 14:51  | Southwest        | Boeing 737-700                 | Departure      | 15R    | 5,707              | 5,974             | 71                        |
| 13   | 4/4/2026 15:03  | DELTA            | Boeing 717-200                 | Departure      | 15R    | 4,259              | 4,646             | 70                        |
| 14   | 4/3/2026 14:09  | N/A              | Boeing 737-800                 | Departure      | 28     | 1,696              | 3,346             | 70                        |
| 15   | 4/7/2026 11:53  | Southwest        | Boeing 737-800                 | Departure      | 33L    | 3,020              | 4,875             | 70                        |

# Conclusion

## DAY-NIGHT AVERAGE SOUND LEVEL

**Figure 8** on the following page presents the cumulative DNL at the measurement site for the 15 complete days of the measurement period for community, aircraft, and total noise exposure. **Figure 9** on the following page presents the daily DNL at the site for aircraft noise exposure. DNL sums the noise from every noise event over the day. The formula for DNL gives an extra 10 decibel weighting to nighttime noise events to account for the intrusive nature of these events. The aircraft DNL ranged from 38 to 48 dB during the measurement period. The total aircraft DNL for the measurement period was 43 dB. The DNL for all recorded community noise events (wildlife, landscaping, weather, etc.) during the measurement period was 54 dB. The total DNL at the measurement site, which includes both aircraft and community noise events, was 54 dB.

## AIRCRAFT OPERATIONS

Aircraft noise levels at this site are higher when BWI Marshall operates in east flow. During the measurement period, BWI Marshall operated in east flow 22% of the time and in west flow 78% of the time, which is a higher usage of west flow than the annual average of 70% west flow operations and 30% east flow operations.

## MONITORING RESULTS

The results of the portable noise monitoring are for informational purposes only and capture the aircraft noise environment for a snapshot in time. The conditions during a monitoring period can vary greatly due to wind and weather (atmospheric conditions), the runway(s) in use at the time for arrivals and departures, and the number and type of operations occurring during the monitoring period. From the data collected, aircraft noise levels in terms of the DNL were calculated and resulted in a 15-day average of 43 dB.

## GUIDELINES AND REGULATIONS

In Appendix A of 14 CFR Part 150, the Federal Aviation Administration provides guidelines for the compatibility of land uses with various annual DNL values. Code of Maryland Regulations (COMAR) 11.03.03.03 establishes limits for cumulative noise exposure for certain land uses around BWI Marshall. These guidelines consider residential land use to be noncompatible when the DNL is 75 dB or greater. For noise levels between 65 dB and 75 dB DNL, residential land use is considered noncompatible, but where the community determines that this land use must be allowed, measures to achieve greater than typical outdoor to indoor noise level reduction should be incorporated into building codes. The guidelines designate all land uses, including residential, as compatible for DNL values below 65 dB.



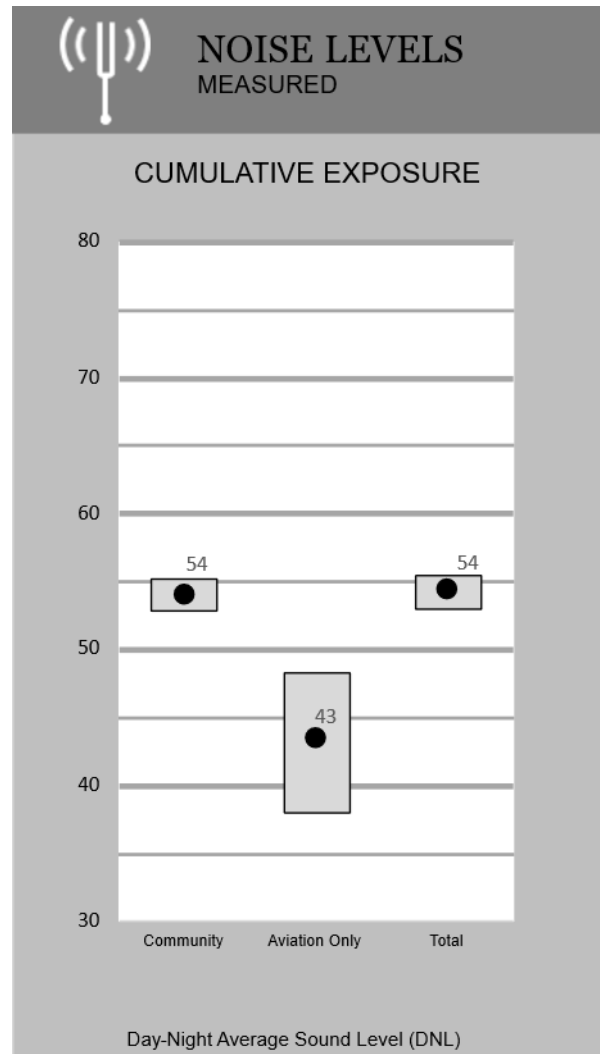


Figure 8. Cumulative Noise Exposure from Aircraft and Community Sources

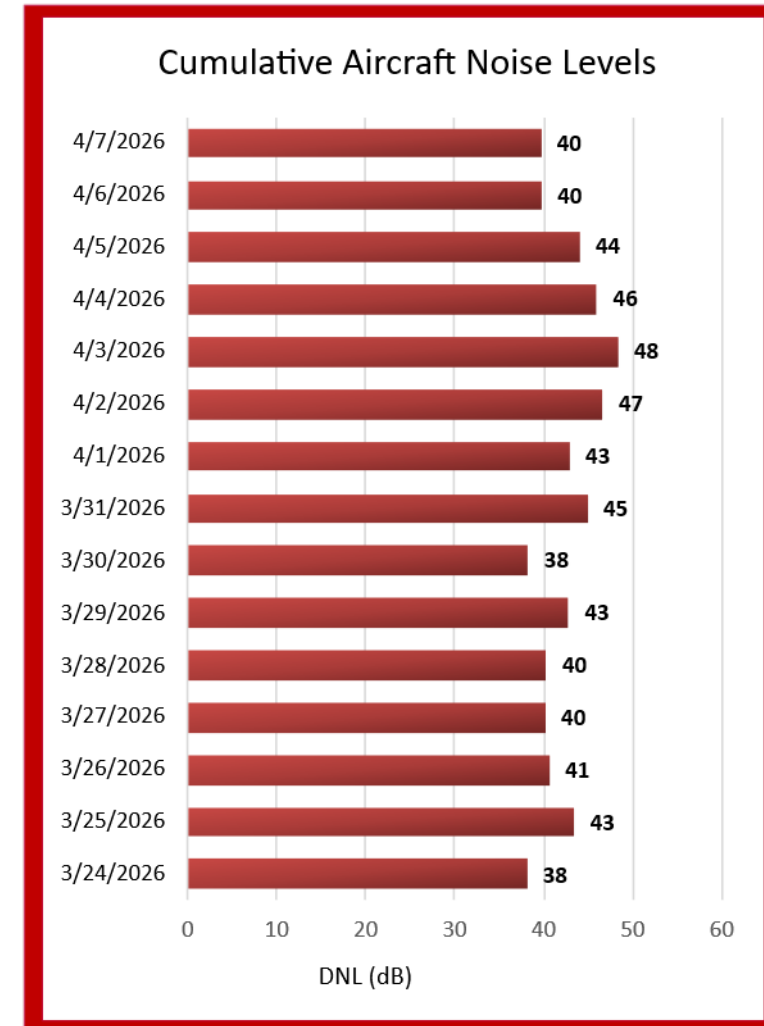


Figure 9. Measured Daily Aircraft Noise Levels

# More Information

## ADDITIONAL RESOURCES

Website: [www.bwiairport.com](http://www.bwiairport.com)

Twitter: @BWI\_Airport

## MAA'S NOISE PROGRAM

Information about Maryland Department of Transportation Maryland Aviation Administration's (MAA's) Noise Program activities can be found at [marylandaviation.com](http://marylandaviation.com). Frequent topics of interest include:

### NOISE COMPLAINTS

MAA provides multiple methods to submit aircraft noise complaints, including an on-line form or 24-hour noise complaint and information hotline at 410-859-7021. MAA reviews noise complaints daily, and logs, reviews, and analyzes all noise complaints on a regular basis.

<https://marylandaviation.com/environmental/airport-noise/noise-complaints/>

### QUARTERLY NOISE REPORTS

Each quarter, MAA prepares and publishes a quarterly noise report. The report provides information on operational trends (including the number of jet and cargo operations, and the number of nighttime operations), runway use, flight corridors/flight density maps, noise complaints received, outreach efforts, permanent noise monitoring data and MAA's noise assistance programs.

### ENEWS EXPRESS

Stay up-to-date on planned runway closures, as well as other important aviation topics, by subscribing to the BWI Marshall eNews Express at <https://marylandaviation.com/environmental/airport-noise/enews-express-signup/>.

### AIRPORT NOISE ZONE

The BWI Noise Abatement Plan and Airport Noise Zone, first established in 1976, includes a wide variety of strategies that are intended to reduce noise impacts for communities around the Airport while maintaining efficient airport operations. Noise abatement at BWI includes operational procedures such as aircraft arrival and departure procedures and a preferential runway use system intended to direct aircraft operations over less populated areas, where and when possible. Other elements of the Noise Abatement Plan include land use restrictions and programs such as land acquisition and soundproofing.

