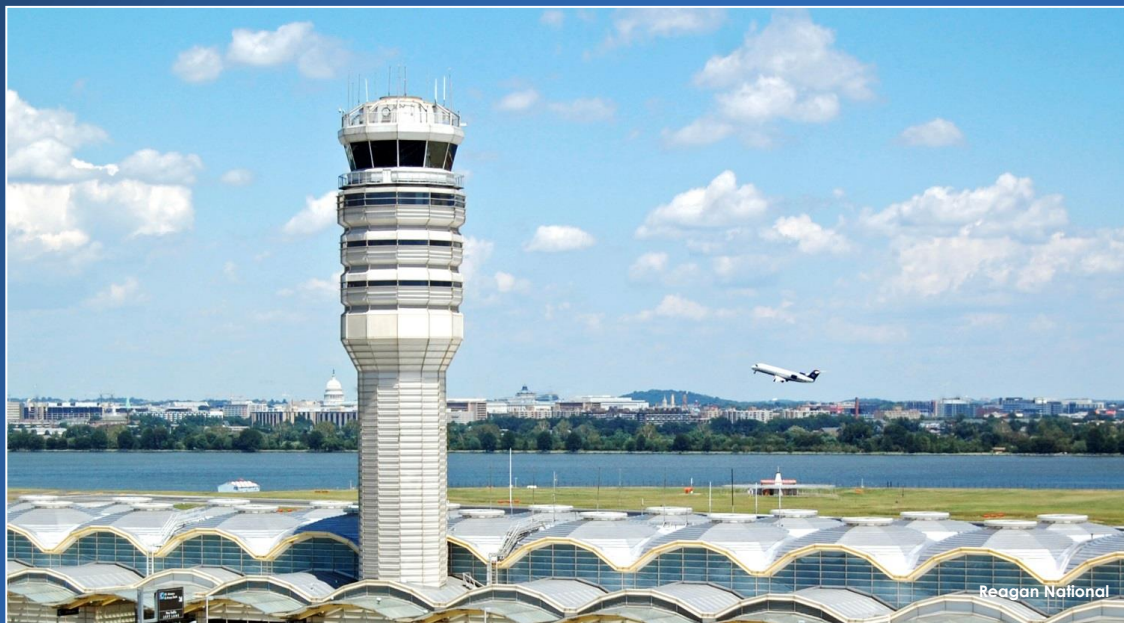


2016 Annual Aircraft Noise Report

Ronald Reagan Washington National Airport
Washington Dulles International Airport



flyreagan.com

mwaa.com

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Reagan National (DCA) Noise Monitor Program

The Airports Authority operates a network of noise monitors around Reagan National and Dulles International. The first noise monitors were installed around Reagan National in 1978 when the FAA operated the airport. At Reagan National, a key strategy for limiting aircraft noise exposure has been to maximize aircraft movements over water and minimize movements over densely populated communities. After consultation with the Metropolitan Washington Council of Governments, many of the noise monitors have been sited along the flight corridors near the Potomac and Anacostia Rivers to track historical noise trends. Under FAA regulations, noise monitor data may not be used for regulatory or enforcement purposes.

The Airports Authority continues to voluntarily upgrade and maintain the noise monitors around Reagan National without any external funding. The noise monitors provide aircraft and community noise levels near Reagan National as a public resource for general information only.

Federal law prohibits the use of noise monitor data to audit, investigate or enforce the DCA Nighttime Noise Rule, or any other rule or regulation.

Noise Monitors and Noise Event Detection Criteria:

Traditional Noise Event Detection Methodology: Prior to 2015, the Airports Authority's noise monitors detected a noise event when the noise level exceeded a noise threshold for a minimum duration. During noise data post-processing, only detected noise events were correlated against aircraft position data. The traditional methodology had technological challenges:

- Quieter aircraft commonly generated noise levels that did not satisfy the noise event threshold criteria.
- Aircraft noise events could easily be contaminated by community noise sources (traffic, sirens, lawn mowers, construction, community activities, nature – weather, animals).
- Lowering the noise event detection threshold did not account for increased background noise levels.

ANEEM - Aircraft Noise Event Extraction Methodology: As of 2015, the Airports Authority was the first U.S. airport system to upgrade its noise monitoring software using a new noise event detection methodology called ANEEM (Aircraft Noise Event Extraction Methodology), provided by Bruel & Kjaer EMS.

ANEEM does not solely rely on the noise monitor to detect a noise event. During noise data post-processing, ANEEM cross-references databases to identify aircraft in the vicinity of the noise monitor when the noise level rises above the background level. It identifies and correlates aircraft-dominated noise events by comparing aircraft position data with predicted noise levels for that aircraft, using FAA noise certification data. ANEEM provides a more accurate detection methodology for distinguishing aircraft noise from other noise sources experienced in neighboring communities.

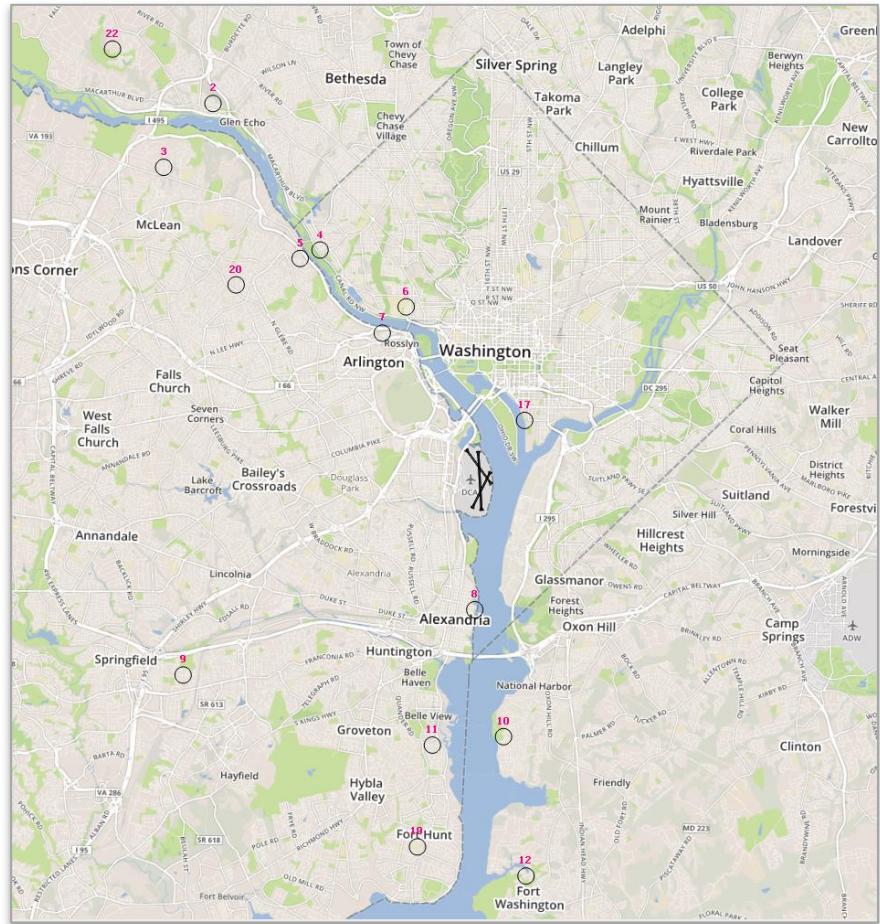
It is very important to clarify that the “total noise” experienced at a noise monitor is unaffected by the choice of a noise event detection methodology.

ANEEM only improves the accuracy of the noise source classification process. ANEEM noise event counts will be higher because ANEEM accounts for quieter aircraft and higher background noise levels. However, the “total noise” experienced at the noise monitor is consistent with legacy software.

Reagan National (DCA) Noise Monitor Locations

Reagan National has 15 noise monitors positioned along flight corridors (Figure 25).

Figure 25: Reagan National Noise Monitor Locations



NMT	NMT Name	Address	City	ST	Zip	Jurisdiction
2	Cabin John	6515 76th St	Cabin John	MD	20818	Montgomery
3	Langley Forest	6737 Sorrell St	McLean	VA	22101	Fairfax
4	Potomac Palisades	5334 Carolina Pl NW	Washington	DC	20016	DC
5	Chain Bridge	3536 36th Rd N	Arlington	VA	22207	Arlington
6	Georgetown	Georgetown Visitation School 1524 35th St NW	Washington	DC	20007	DC
7	Rosslyn	2220 N Rolfe St	Arlington	VA	22201	Arlington
8	Old Town	Founder's Park 499 N Union St	Alexandria	VA	22314	City of Alexandria
9	Springfield	6414 Meriwether Ln	Springfield	VA	22150	Fairfax
10	Fort Foote	FAA Communications Site Fort Foote Rd	Ft Washington	MD	20744	Pr. George's
11	Marlan Forest	1219 Warrington Pl	Alexandria	VA	22307	Fairfax
12	Tantallon	W Tantallon Dr	Ft Washington	MD	20744	Pr. George's
17	Southwest DC	Fort McNair Army Base 1400 4th St SW	Washington	DC	20024	DC
19	North Mt. Vernon	Carl Sandburg School 8428 Fort Hunt Rd	Alexandria	VA	22308	Fairfax
20	Dumbarton	3910 N Dumbarton St	Arlington	VA	22213	Arlington
22	Avenel	Avenel Equestrian Center 10010 Oaklyn Dr	Potomac	MD	20854	Montgomery

Reagan National (DCA) Noise Monitor Data

As noted on Page 19, the Airports Authority upgraded its noise monitoring software to include a new noise event detection process called Aircraft Noise Event Extraction Methodology (**ANEEM**). ANEEM classifies aircraft, community and mixed noise events based on available aircraft position and flight plan data.

Although ANEEM improves the noise source classification process, a noise event may occasionally be misclassified due to limited aircraft data.

The monthly noise event data provides the following noise classifications and metrics:



Noise Monitor #	Year	% Time Online	Total Leq	Aircraft						Community					Mixed					Background (non-event)
				DNL	Leq	# Events	Min Lmax	Modal Lmax	Max Lmax	Leq	# Events	Min Lmax	Modal Lmax	Max Lmax	Leq	# Events	Min Lmax	Modal Lmax	Max Lmax	Leq

Noise Classification Descriptions:

- **Aircraft:** Noise events correlated with aircraft position data.
- **Community:** Noise events without correlated aircraft position data.
- **Mixed:** Noise events attributed to correlated aircraft and community noise.
- **Background:** Environmental noise not associated with aircraft or community noise.

Noise Event Metric and Table Header Descriptions:

- **Aircraft DNL:** A cumulative exposure metric that logarithmically calculates the average Aircraft dB(A) level over a 24-hour period, with a 10 dB penalty artificially applied to aircraft noise events occurring during nighttime hours (22:00 - 06:59).
 - The 10 dB penalty is equivalent to replacing '1' nighttime aircraft noise event with '10' nighttime aircraft noise events.
- **dB(A):** A-weighted decibel scale that adjusts (weights) low frequency ranges to model the response perceived by the human ear.
- **Leq:** *For Each Noise Classification:* A cumulative exposure metric that logarithmically averages the varying sound energy over a defined period of time (month), and states it as a constant (equivalent) level for each noise classification type.
- **Lmax:** A single event noise metric that represents the maximum (peak) dB(A) level during a discrete noise event. Monthly peak levels are represented as:
 - **Min** (lowest peak), **Modal** (most common 'whole #' peak), **Max** (highest peak)
- **Total Leq:** *For All Noise Classifications:* A cumulative exposure metric that logarithmically averages the varying sound energy over a defined period of time (month), and states it as a constant (equivalent) level for all noise classifications.
- **# Events:** Number of noise events during the month for each noise classification type.
- **% Time Online:** Percent of the month that the noise monitor was operational.

For noise event comparisons at a noise monitor location, the 2016 report provides:

- ***Leq** for direct comparison of 'non-penalized' aircraft, community, mixed and background noise.
- ****Aircraft DNL Only** since the 10 dB penalty is only applied to aircraft noise events (22:00 – 06:59).