Title 14 Code of Federal Regulation Part 150 Noise Exposure Map Update

Noise Technical Advisory Committee Meeting #1

June 17, 2025

BOCA RATON AIRPORT

Meeting Agenda

- Study Team
- Noise Technical Advisory Committee Role
- Boca Raton Airport Authority Board Role
- Title 14 Code of Federal Regulation (CFR) Part 150 Overview
- Noise Exposure Map (NEM) Update Process Overview
- Introduction to Noise Metrics
- Aircraft Activity Baseline and Forecast
- Operational Analysis
- Noise Model Flight Track Development
- Land Use and Zoning
- Next Steps

Study Team

- Boca Raton Airport Authority (BRAA): Robert Pratt – Project Manager
- Ricondo & Associates, Inc.
  - John Williams – Project Manager
  - Jeff Covert – Part 150 Process Manager
  - Dharma Thapa – Noise Modeling Lead
  - Kate Doughty – GIS Lead

Noise Technical Advisory Committee Role

Noise Technical Advisory Committee - Representation

- NTAC members include:
  - Airport sponsor (BRAA)
  - Public land use planning agency(ies) within anticipated noise exposure area
  - Aeronautical users
  - Airport tenants (i.e., fixed based operators, etc.)
  - Aviation trade associations (i.e., Aircraft Owners and Pilots Association, etc.)
  - FAA Officials – ex officio status (i.e., FAA Airports District Office, FAA Airport Traffic Control Tower)
- Anticipated Meeting Frequency: 3 Afternoon TAC Meetings

Noise Technical Advisory Committee - Role

- Advisors to the NEM Update process on:
  - Flight operations
  - Forecast
  - Land use
- Submit views, data, and comments on forecasts, input data, and results
- BRAA maintains final decision making

Boca Raton Airport Authority Board - Role

- The Boca Raton Airport Authority Board (the Board) is an independent governing body established by the Florida Legislature in 1982 to oversee the operations, development, and strategic direction of the Airport
- The Board will provide oversight and input throughout development of the NEMs
- The Board will also accept and authorize BRAA staff to submit the NEMs for FAA review and acceptance

Title 14 Code of Federal Regulations (CFR) Part 150 Overview

Title 14 CFR Part 150 Overview

- ***Purpose:***
  - Establishes the ***procedures, standards and methodology*** for airport sponsors to ***voluntarily*** **prepare, submit and review** airport **noise exposure maps (NEMs)** and **noise compatibly programs (NCPs).**
  - Provides information to the public regarding existing and future noise exposure and noncompatible land uses around the airport
  - Provides a means to identify measures to reduce and/or prevent new noncompatible land uses
  - Describes FAA review process related to NEM acceptance and NCP approval
- ***Objective*****:** inform surrounding communities of noise exposure and, if necessary, evaluate and identify methods to maintain and/or improve compatibility around the airport

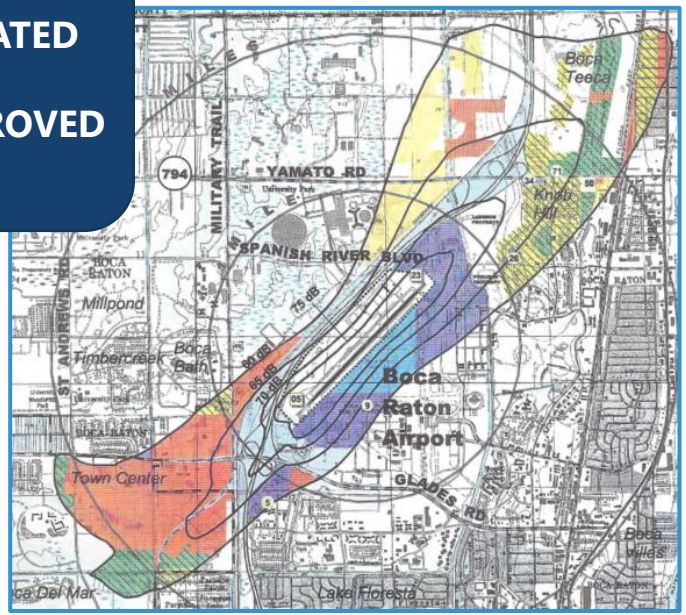
Title 14 CFR Part 150 Overview – Boca Raton Airport History

FEBRUARY 1991
NEM ACCEPTED

AUGUST 1991
NCP APPROVED

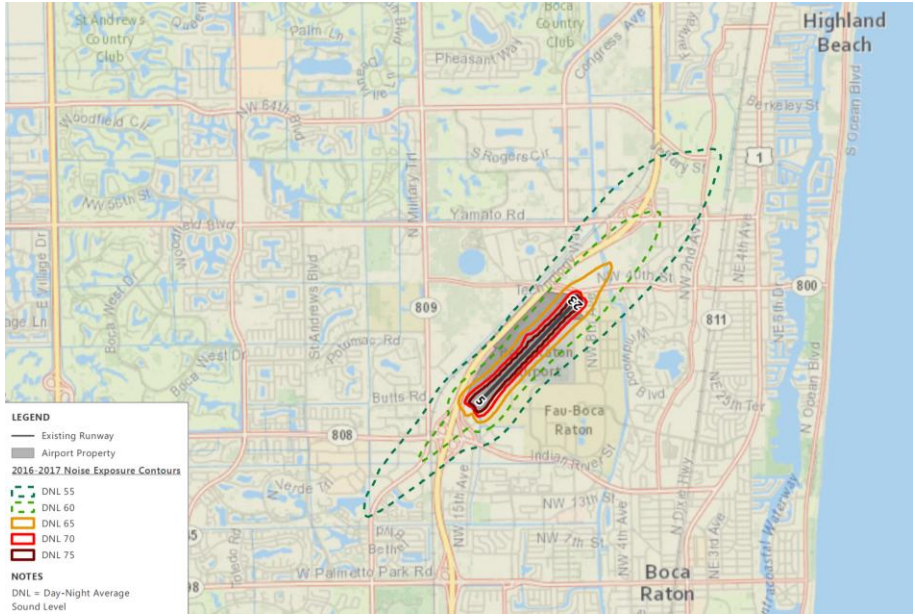
DECEMBER 2001
UPDATED NEM ACCEPTED

JUNE 2002
UPDATED NCP APPROVED



Title 14 CFR Part 150 Overview – Boca Raton Airport History

- Updated noise contours for BCT were prepared in 2017
  - The DNL 65 noise contour largely remained within airport property
  - No noncompatible land uses were identified
  - A formal NEM Update was not submitted to FAA
- Since 2017, the operational environment at BCT has changed which warrants an NEM Update
  - Operations level
  - Aircraft types
  - Operation types (e.g., itinerant vs. local operations)
- BRAA is not updating the NCP as part of this study



SOURCES: National Geographic, Esri, De Lorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp., October 2017 (base map); Aviation Environmental Design Tool, October 2017 (AEDT Tracks); Ricondo & Associates, Inc., October 2017.

BRAA is pursuing a NEM Update to identify if there are any changes in land use compatibility

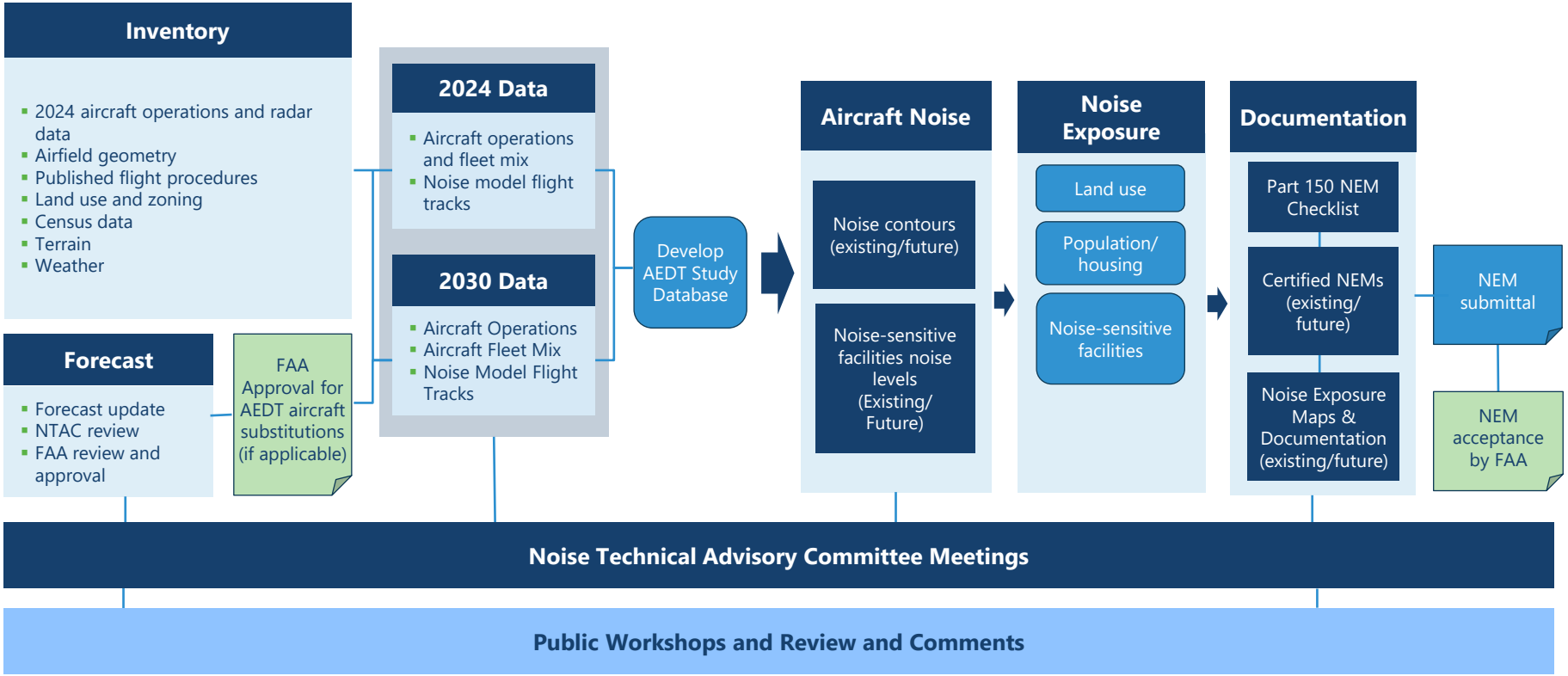
NEM Update Process Overview

NEM Update Process – Roles and Responsibilities

Federal Aviation Administration (FAA)	Boca Raton Airport Authority (BRAA)	Local Government	Noise Technical Advisory Committee (NTAC) [1]	Public[2]
• Review and accept scope • Approve any aircraft substitution and customization to aircraft noise model input • Approve forecast • Review and accept the NEM	• Sponsor the NEM Update • Certify accuracy of the NEM • Consult with stakeholders • Coordinate with general public • Submit NEM to FAA for review	• Provide input on existing and future land use and zoning	• Provide input and insight on technical aspects of aviation, airport operations, and land use	• Review/comment on NEM and forecast

NOTES:
1 NTAC members may include the FAA Airports District Office, Airport Traffic Control Tower, local jurisdictions, airport users, and community representatives.
2 Public stakeholders may include those with aviation interests, citizen representatives from local communities, and other interested parties..

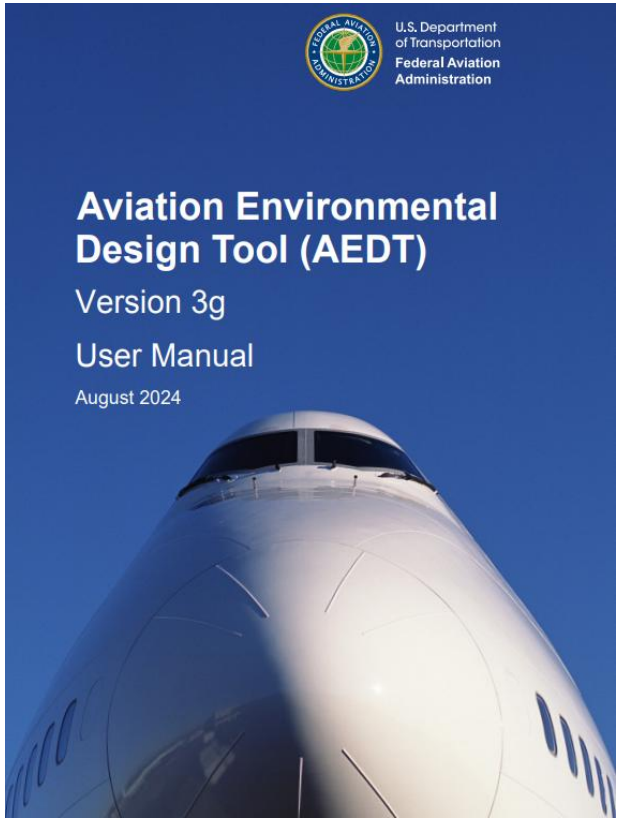
NEM Update Process



NEM Update Process – Noise Calculation

- Aviation Environmental Design Tool (AEDT)
- Aircraft noise modeling allows:
  - Calculation of aircraft noise exposure at any location
  - Illustration of annual average aircraft noise exposure
  - Forecast of future aircraft noise exposure
  - Evaluation of changes in noise impacts due to:
    - changes in runway configuration or use
    - changes in numbers of operations
    - changes in aircraft fleet mix
    - changes in operational procedures

AEDT is used to generate aircraft noise contours to assess land use compatibility



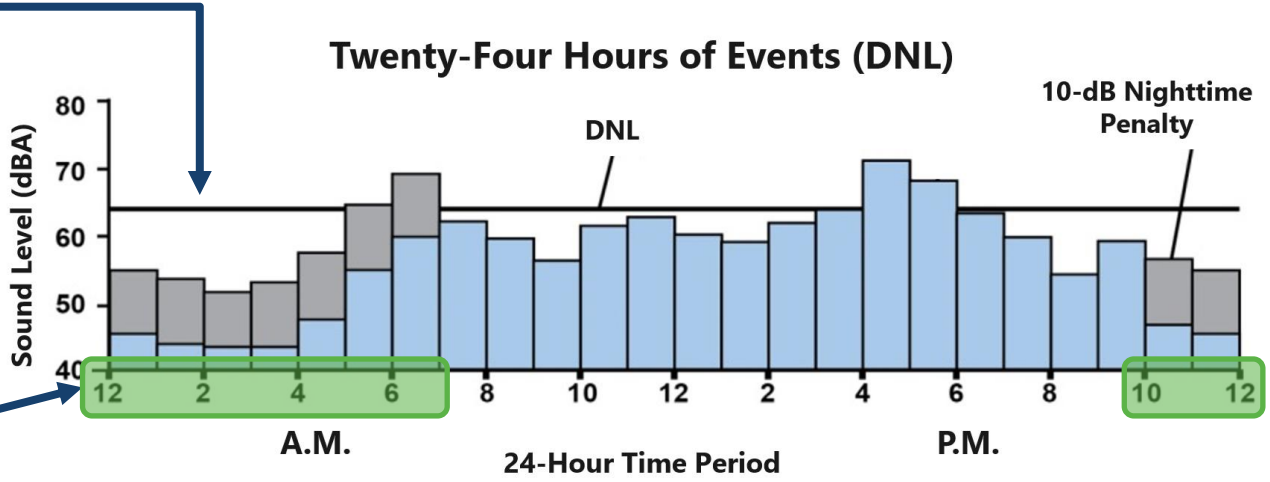
Introduction to Noise Metrics

Day-Night Average Sound Level (DNL) Noise Metric

- FAA requires use of the annual Day-Night Average Sound Level (DNL) noise metric
- DNL is calculated based on an "annual average day" (AAD) derived from aircraft operations data for an entire calendar year

DNL is a 24-hour time weighted energy average noise level based on A-weighted decibels (dBA)

Noise events occurring during the nighttime hours (10:00 p.m. to 7:00 a.m.) are weighted with a 10-decibel weighting to represent increased sensitivity during those hours



Aircraft Activity Baseline and Forecast

Forecast Approach

- As directed by FAA, 2024 will be used to represent existing conditions
- Forecast for 2030 will be “re-based” using growth rates established for the Master Plan Update (MPU) forecast
  - Forecasts of socioeconomic variables remain similar to those used for the MPU forecast
  - MPU forecast growth rates for user categories (i.e., air taxi & general aviation) and itinerant and local operations remain reasonable
  - Incorporate recent increase in flight training activity (i.e., local operations) to inform forecasts
- Temporary Flight Restrictions (TFR) effects are temporary and not expected to impact yearly operations and day/night noise levels for the Future Conditions (2030) NEM

Summary of Findings

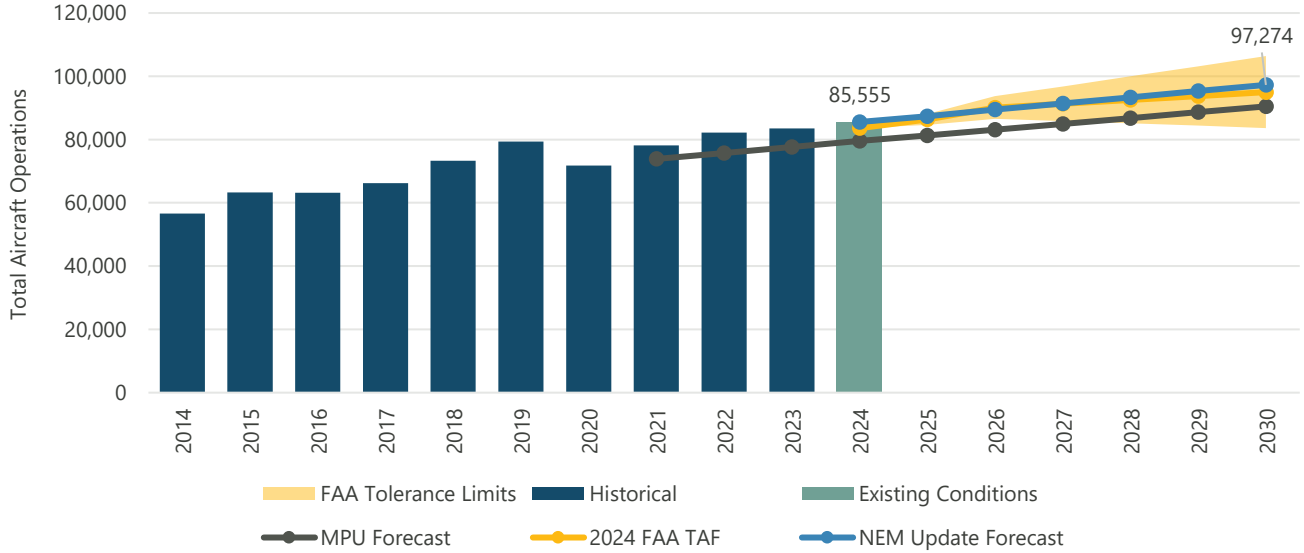
- Master Plan Update (MPU) forecast developed in 2020 and approved by the FAA
- Updated forecast based on actual operations (2024) and estimated 2030 operations using MPU forecast growth rates

	ITINERANT OPERATIONS				LOCAL OPERATIONS			
Year	AIR TAXI	GENERAL AVIATION	MILITARY	TOTAL	GENERAL AVIATION	MILITARY	TOTAL	TOTAL AIRPORT
Existing Conditions - 2024	16,088	42,870	151	59,109	26,171	275	26,446	85,555
Future Conditions - 2030	19,177	47,311	151	66,639	30,360	275	30,635	97,274
Compound Annual Growth Rate	3.0%	1.7%	0.0%	2.0%	2.5%	0.0%	2.5%	2.2%

NOTES: FYTD – Fiscal Year-to-Date. Fiscal year-to-date data from October 2024 to February 2025.
SOURCE: Federal Aviation Administration, *Operations Network*, April 2025; Ricondo & Associates, Inc., April 2025.

Airport Operations Forecast

- Total airport operations are forecast to increase from 85,555 (2024) to 97,274 (2030), a CAGR of 2.2 percent



NOTES: FAA TAF tolerance represents +-10 percent in five years. MPU – Master Plan Update. Operations were originally forecast on a fiscal year basis (October 1 through September 30) for the MPU forecast and are presented on a calendar year basis in the table. The FAA TAF is forecast on a fiscal year basis (October 1 through September 30) and is presented as published.

SOURCE: Federal Aviation Administration, *Operations Network*, April 2025, *Terminal Area Forecast*, January 2025; Ricondo & Associates, Inc., April 2025.

Preliminary Operational Analysis

Average Daily Operations Mode by Time of Day – 2024

	ARRIVALS			DEPARTURES			TOUCH AND GO[3]			AAD
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	TOTAL
Jet	42.3	2.9	45.1	43.3	1.8	45.1	0.5	0.1	0.5	90.8
Turboprop	4.7	0.3	5.0	4.8	0.3	5.0	0.3	0.2	0.5	10.6
Prop	27.6	2.2	29.8	28.0	1.7	29.8	33.7	1.5	35.1	94.6
Helicopter	0.9	0.1	1.0	1.0	0.1	1.0	0.1	0.0	0.1	2.2
Total	**75.5**	**5.5**	**81.0**	**77.1**	**3.9**	**81.0**	**34.5**	**1.7**	**36.2**	**198.1**

NOTES:
Columns and rows may not add to totals due to rounding.
1 DAY = 7:00 A.M. TO 10:00 P.M.
2 NIGHT = 10:00 P.M. TO 7:00 A.M.
3 One Touch-and-Go traffic includes one landing and take off (LTO)
AAD = Average Annual Day Operations
SOURCES: Boca Raton Airport Authority, Aircraft Noise Monitoring System (ANOMS), Aircraft Radar and Flight Header Data for CY2024; BCT Airport Traffic Control Tower Operations Log, Federal Aviation Administration, Air Traffic Activity Data System data and Traffic Flow Management System Counts (TFMSC), http://aspm.faa.gov/ (date accessed January 14, 2025). Ricondo & Associates, Inc., January 2025.

Existing (2024) Average Annual Day Arrivals, Departures and Touch-and-Go by Day and Night – Percentage

	ARRIVALS			DEPARTURES			TOUCH-AND-GO		
AIRCRAFT CATEGORY	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL	DAY[1]	NIGHT[2]	TOTAL
Jet	52.2%	3.6%	55.8%	53.5%	2.3%	55.8%	1.3%	0.2%	1.5%
Turboprop	5.8%	0.4%	6.2%	5.9%	0.3%	6.2%	0.8%	0.5%	1.2%
Prop	34.1%	2.7%	36.8%	34.6%	2.2%	36.8%	92.9%	4.1%	97.0%
Helicopter	1.2%	0.1%	1.3%	1.2%	0.1%	1.3%	0.3%	0.0%	0.3%
Total	**93.2%**	**6.8%**	**100.0%**	**95.2%**	**4.8%**	**100.0%**	**95.3%**	**4.7%**	**100.0%**

NOTES:

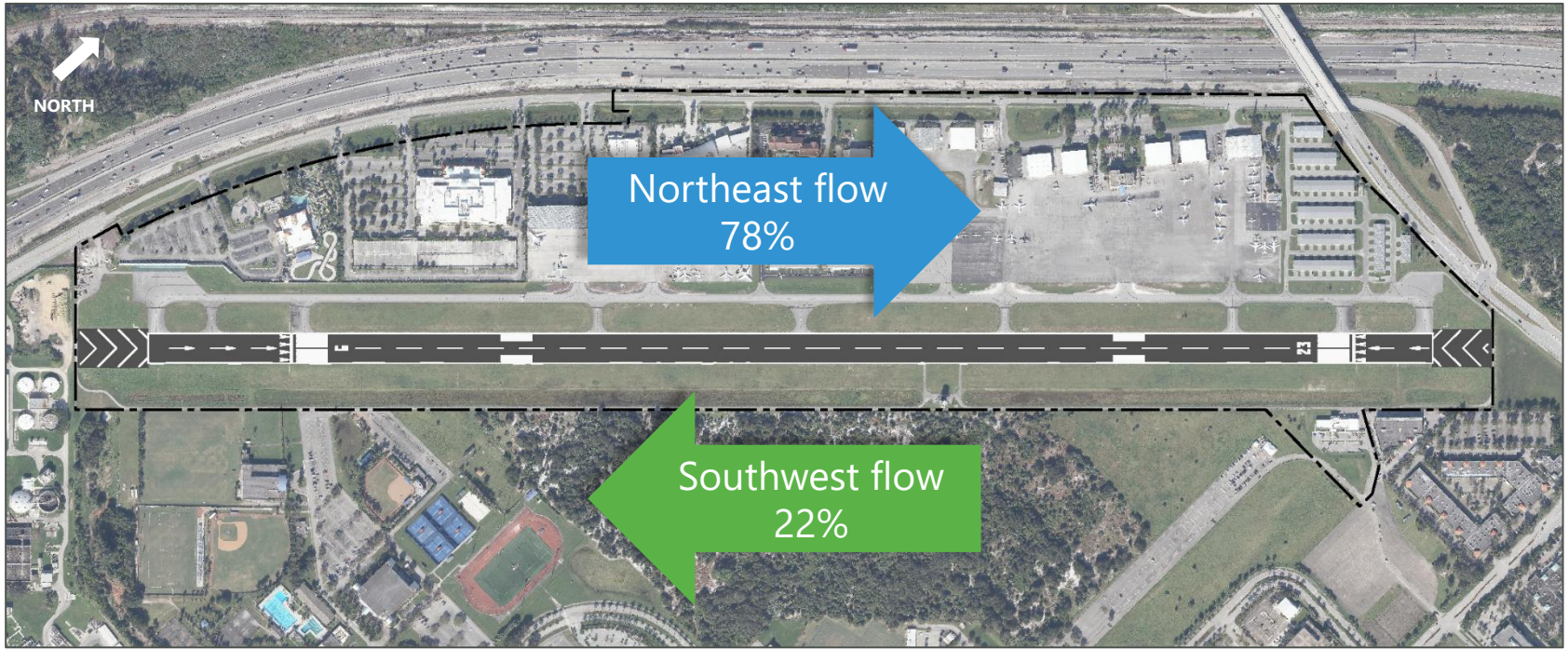
Columns and rows may not add to totals due to rounding.

1 DAY = 7:00 A.M. TO 10:00 P.M.

2 NIGHT = 10:00 P.M. TO 7:00 A.M.

SOURCES: Boca Raton Airport Authority, Aircraft Noise Monitoring System, Aircraft Radar and Flight Header Data for CY2024; BCT Airport Traffic Control Tower Operations Log, Federal Aviation Administration, Air Traffic Activity Data System data and Traffic Flow Management System Counts (TFMSC), http://aspm.faa.gov/ (date accessed January 14, 2025). Ricondo & Associates, Inc., January 2025.

Runway Use – Daytime & Nighttime Operations



NOTES:

DAY = 7:00 A.M. TO 10:00 P.M. NIGHT = 10:00 P.M. TO 7:00 A.M.

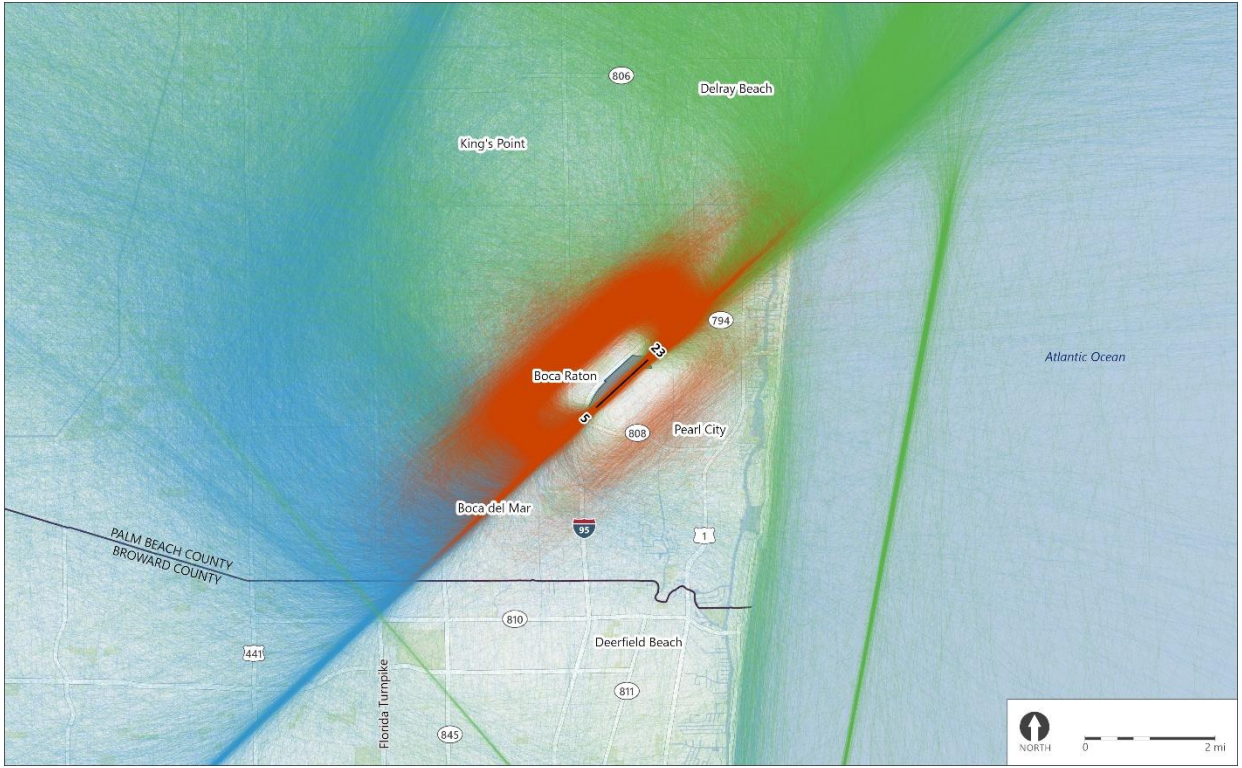
SOURCE: Ricondo & Associates, Inc., January 2025; Boca Raton Airport Authority, Aircraft Noise Monitoring System, Aircraft Radar and Flight Header Data, date from January 1, 2024 to December 31, 2024.

Noise Model Flight Track Development

All Arrival, Departure, and Touch-and-Go 2024 Radar Flight Tracks

LEGEND

- Arrival
- Departure
- Touch-and-Go

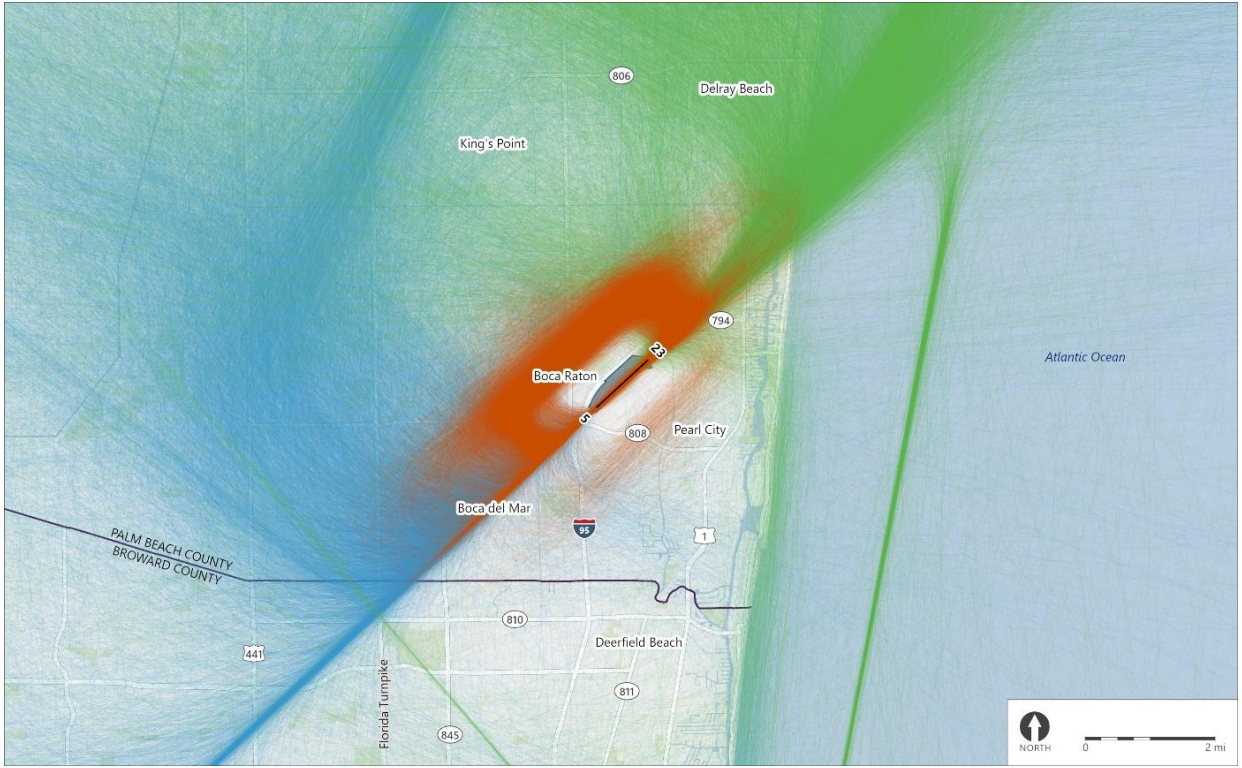


SOURCES: US Census Bureau, 2024 (county boundary, roads); University of Florida GeoPlan Center, 2021 (parks); USGS, 2022 (water); Boca Raton Airport Authority, 2024 (Airport property, runway); BCT Airport Noise Monitoring System (ANOMS) data, EnviroSuite, 2024 (radar flight tracks).

Runway 5 Arrival, Departure, and Touch-and-Go 2024 Radar Flight Tracks

LEGEND

- Arrival
- Departure
- Touch-and-Go

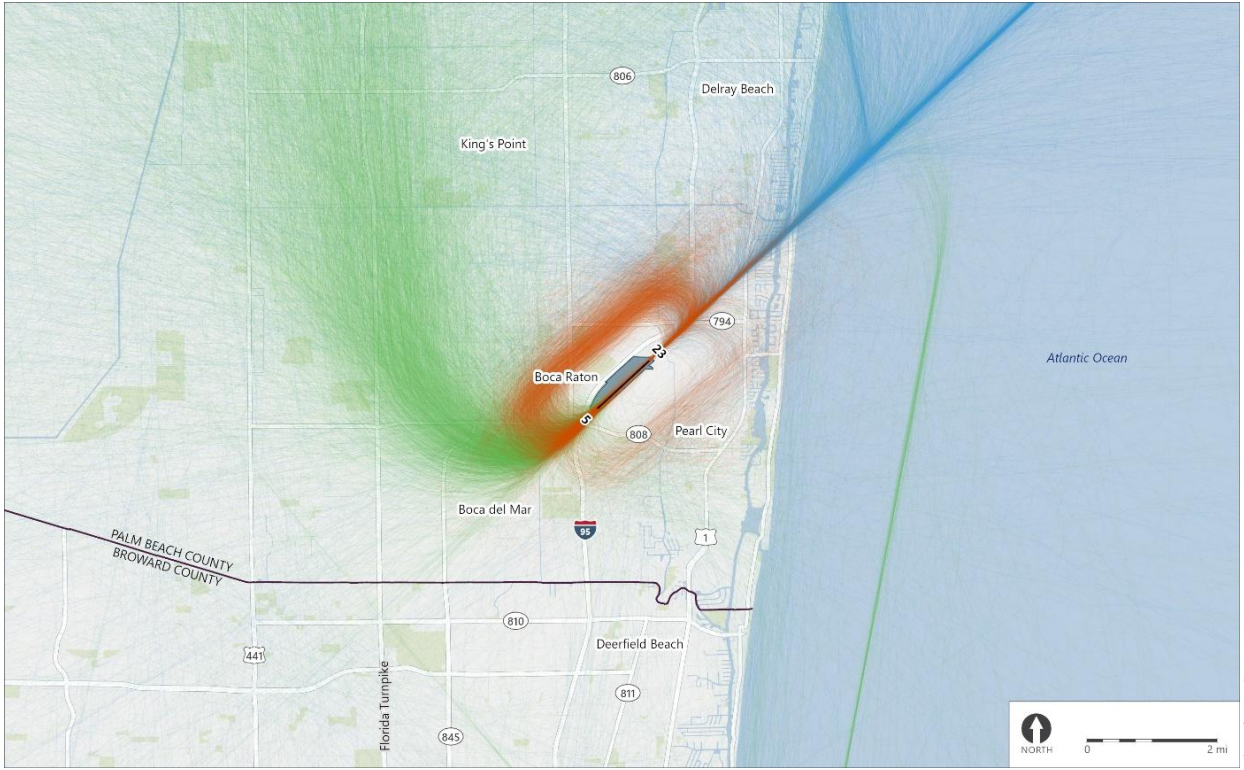


SOURCES: US Census Bureau, 2024 (county boundary, roads); University of Florida GeoPlan Center, 2021 (parks); USGS, 2022 (water); Boca Raton Airport Authority, 2017 (Airport property, runway); EnviroSuite, 2024 (radar flight tracks).

Runway 23 Arrival, Departure, and Touch-and-Go 2024 Radar Flight Tracks

LEGEND

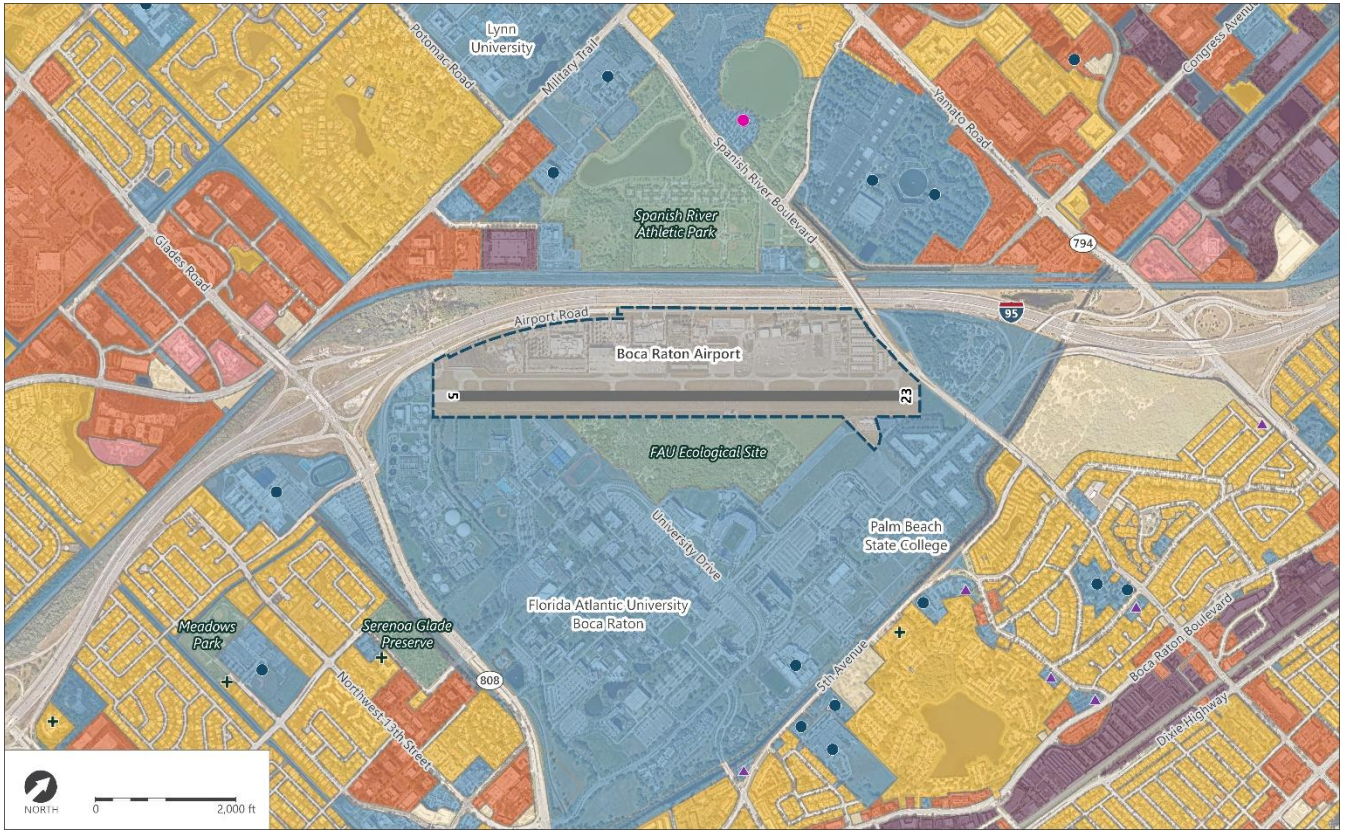
- Arrival
- Departure
- Touch-and-Go



SOURCES: US Census Bureau, 2024 (county boundary, roads); University of Florida GeoPlan Center, 2021 (parks); USGS, 2022 (water); Boca Raton Airport Authority, 2017 (Airport property, runway); EnviroSuite, 2024 (radar flight tracks).

Land Use and Zoning

Draft Existing Land Use



SOURCES: Nearmap, December 2024 (aerial photography – for visual reference only, may not be to scale); Boca Raton Airport Authority, 2017 (Airport property, runway); Florida Department of Environmental Protection, 2025 (land use); Florida Geographic Data Library, 2024 (libraries); Florida Geographic Data Library, 2023 (schools); Florida Geographic Data Library, 2022 (houses of worship); Florida Geographic Data Library, 2018 (group care facilities); Ricondo & Associates, Inc., 2025 (lodging).

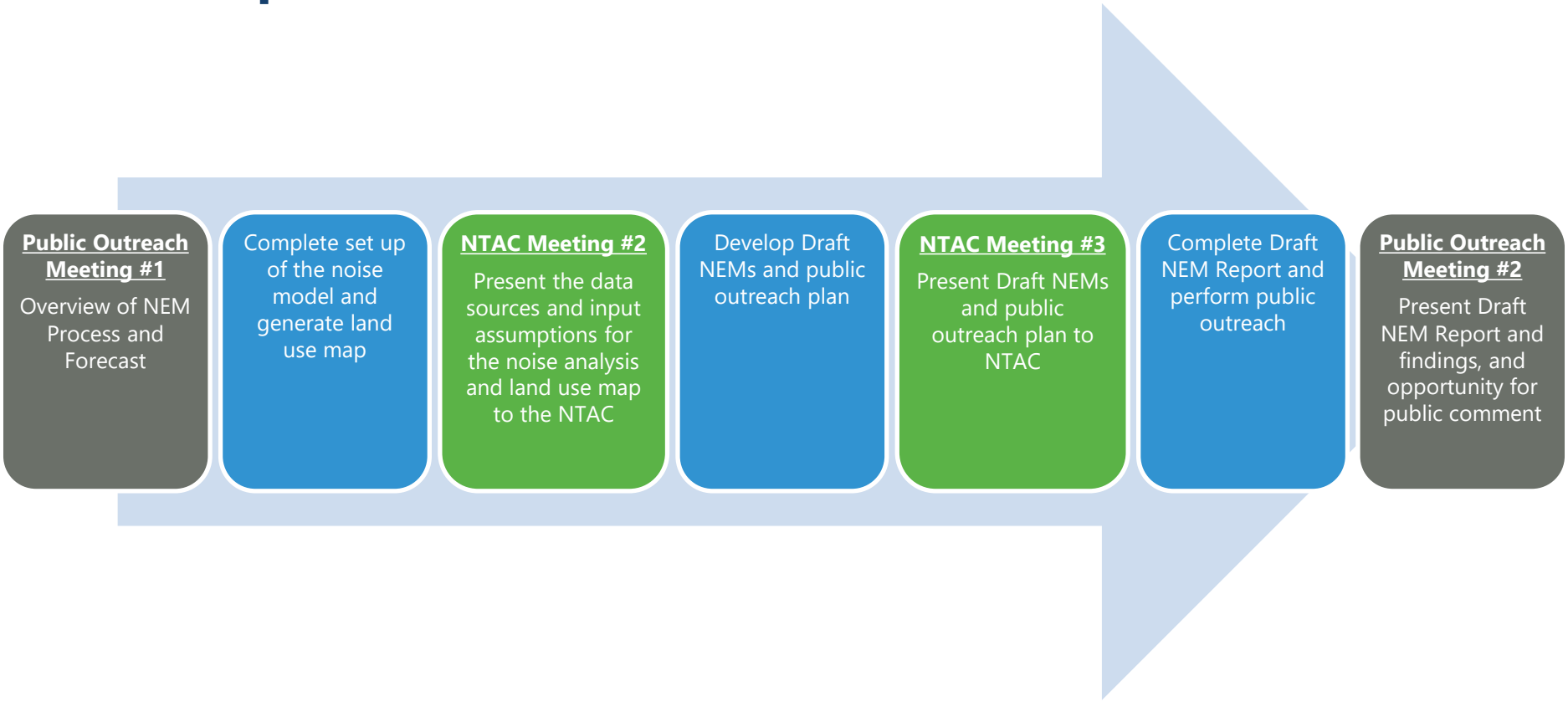
Existing Zoning

- The City of Boca Raton (the City) holds land use regulatory authority in areas directly surrounding BCT
- The City has established three airport noise zones to ensure compatibility with the Airport:
  - Zone A (within the 75 DNL contour)
  - Zone B (70–75 DNL)
  - Zone C (65–70 DNL)
- The Authority has adopted the DNL 60 contour as the boundary for determining land use compatibility, as outlined in the FAA's Record of Approval for the 1990 BCT Part 150 Study (dated August 19, 1991)

SOURCE: City of Boca Raton, Code of Ordinances, Chapter 3, *Article III, Compatible Land Uses and Noise Zones*. April 28, 2025.

Next Steps

Next Steps


Public Outreach Meeting #1
Overview of NEM Process and Forecast
Complete set up of the noise model and generate land use map
NTAC Meeting #2
Present the data sources and input assumptions for the noise analysis and land use map to the NTAC
Develop Draft NEMs and public outreach plan
NTAC Meeting #3
Present Draft NEMs and public outreach plan to NTAC
Complete Draft NEM Report and perform public outreach
Public Outreach Meeting #2
Present Draft NEM Report and findings, and opportunity for public comment

Supplemental

Airport Operations Forecast by Category

	ITINERANT OPERATIONS				LOCAL OPERATIONS				SHARE OF OPERATIONS	
YEAR	AIR TAXI	GENERAL AVIATION	MILITARY	TOTAL	GENERAL AVIATION	MILITARY	TOTAL	TOTAL AIRPORT	ITINERANT	LOCAL
2019	11,705	40,033	51	51,789	29,039	102	29,141	80,930	64%	36%
2020	10,866	33,723	22	44,611	25,148	114	25,262	69,873	64%	36%
2021	13,673	40,566	31	54,270	27,406	124	27,530	81,800	66%	34%
2022	15,006	42,189	39	57,234	24,276	116	24,392	81,626	70%	30%
2023	16,324	42,668	85	59,077	22,418	116	22,534	81,611	72%	28%
2024	16,088	42,870	151	59,109	26,171	275	26,446	85,555	69%	31%
2025	16,556	43,612	151	60,319	26,795	275	27,070	87,389	69%	31%
2026	17,091	44,411	151	61,653	27,508	275	27,783	89,436	69%	31%
2027	17,599	45,119	151	62,869	28,221	275	28,496	91,365	69%	31%
2028	18,107	45,827	151	64,085	28,934	275	29,209	93,294	69%	31%
2029	18,655	46,615	151	65,421	29,647	275	29,922	95,343	69%	31%
2030	19,177	47,311	151	66,639	30,360	275	30,635	97,274	69%	31%
CAGR										
2019 - 2024	6.6%	1.4%	24.2%	2.7%	-2.1%	21.9%	-1.9%	1.1%		
2024 - 2030	3.0%	1.7%	0.0%	2.0%	2.5%	0.0%	2.5%	2.2%		

NOTES: Historical data from 2019 to 2024 and forecast from 2024 to 2030. CAGR – Compound Annual Growth Rate.

SOURCE: Federal Aviation Administration, *Operations Network*, April 2025, *Terminal Area Forecast*, January 2025; Ricondo & Associates, Inc., April 2025.