Nashville International Airport

BNA MASTER PLAN
NASHVILLE INTERNATIONAL AIRPORT

Noise Exposure Map (NEM) Update
Noise Study Advisory Committee Kick-off Meeting

October 18, 2018

Metropolitan Nashville Airport Authority™

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AECOM

Agenda

- Welcome and Introductions
- NSAC Roles and Responsibilities
- Part 150 Basics
- Aviation Demand Forecast
- Noise Compatibility Program Review
- Next Steps
- Project Schedule



Noise Study Advisory Committee

- Membership covers full range of “stakeholders”
- Committee members are responsible for
  - Reviewing materials in advance of meetings
  - Assisting in obtaining data of value such as a run-up survey
  - Providing feedback on technical work
  - Representing the interests of their organizations
  - Communicating progress with their constituents
  - Sharing their constituents’ concerns and feedback

Part 150

- *Voluntary* Federal Aviation Administration (FAA) process
  - 250+ airports have participated
- *Why do airports participate?* Primary reasons include:
  - Provides access to FAA funding of some approved measures
  - Well-established, understood, accepted, and comprehensive *process*
- Two primary elements
  - Noise Exposure Map (NEM)
  - Noise Compatibility Program (NCP)
  - Detailed FAA guidance at www.faa.gov/airports/environmental/airport_noise/
- Consultation required with
  - All local, state, and federal entities with control over land use within DNL 65+ dB
  - FAA regional officials, regular aeronautical users of the airport
  - All parties interested in review of and comment on the draft

MNAA submitted the first NEM in 1988 and three updates since in 1996, 2004, and 2012.

MNAA submitted an NCP in 1989 with a Land Use update in 1992.

Part 150 Noise Exposure Map

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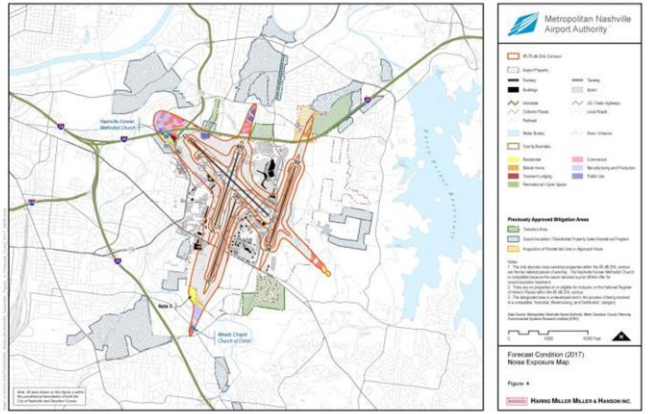
- NEM must include detailed description of
  - Airport layout, aircraft operations, and other inputs to noise model
  - Aircraft noise exposure in terms of Day-Night Average Sound Level (DNL)
  - Land uses within DNL 65+ decibel (dB) contours
  - Noise / land use compatibility statistics within DNL 65+ dB contours
- NEM must address two calendar years
  - Year of submission
  - Forecast year (at least five years from year of submission)
  - FAA reviews forecasts for consistency with Terminal Area Forecast (TAF)
- FAA "accepts" NEM as compliant with Part 150 standards

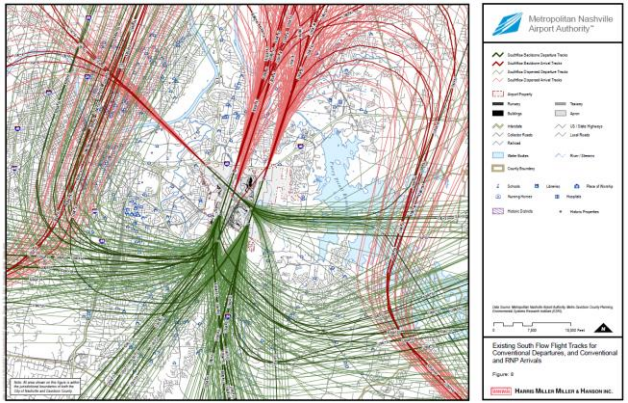
For this NEM:
Year of submission - 2019
Forecast year - 2024

Part 150 Noise Exposure Map

- DNL 65, 70 and 75 dB contours
- Within 65 dB DNL contour
  - Generalized land use categories
  - Noise sensitive sites
  - Identification of all non-compatible land uses
  - Jurisdiction(s) responsible for land use controls
- Modeled Flight tracks

  (typically on supplemental figures)





Part 150 Noise Exposure Map Process

We are here

Review Current NCP
- Operational measures
- Land Use Measures
- Program Measures

Noise Study Database
- Review Previous NEM and Studies
- GIS and land use data
- Flight track data
- Noise complaint data
- Operational forecasts
- Setup AEDT model

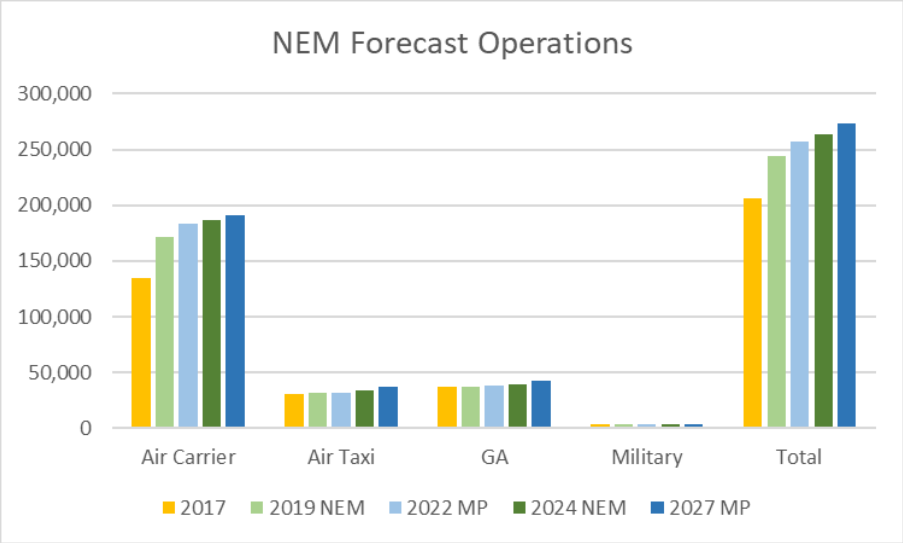
Develop NEMs
- Prepare aviation forecast
- Develop noise contours for existing and forecast conditions
- Noise impact evaluation for > DNL 65 dB
- Prepare maps in accordance with 14 CFR Part 150

NEM Report
- Document input data
- Document Land Use, Flight Tracks and DNL contours
- Provide population and housing counts
- Draft Report
- Final report submittal to FAA

Public Process
- Draft report available for review
- Workshops
- Response to comments received in Final report

NEM Forecast

- Aviation demand forecast developed from the Master Plan forecast



Annual Operations					
	Year	Air Carrier	Air Taxi	GA	Total
Baseline	2017	135,135	30,540	36,577	205,802
NEM	2019	172,033	31,127	37,006	243,716
Master Plan	2022	183,362	32,029	37,658	256,599
NEM	2024	186,579	33,783	39,431	263,343
Master Plan	2027	191,530	36,595	42,249	273,924

Notes: The Air Carrier category includes both passenger and cargo operations.
The totals include 3,550 military operations for each year.

Review of Existing Noise Compatibility Program

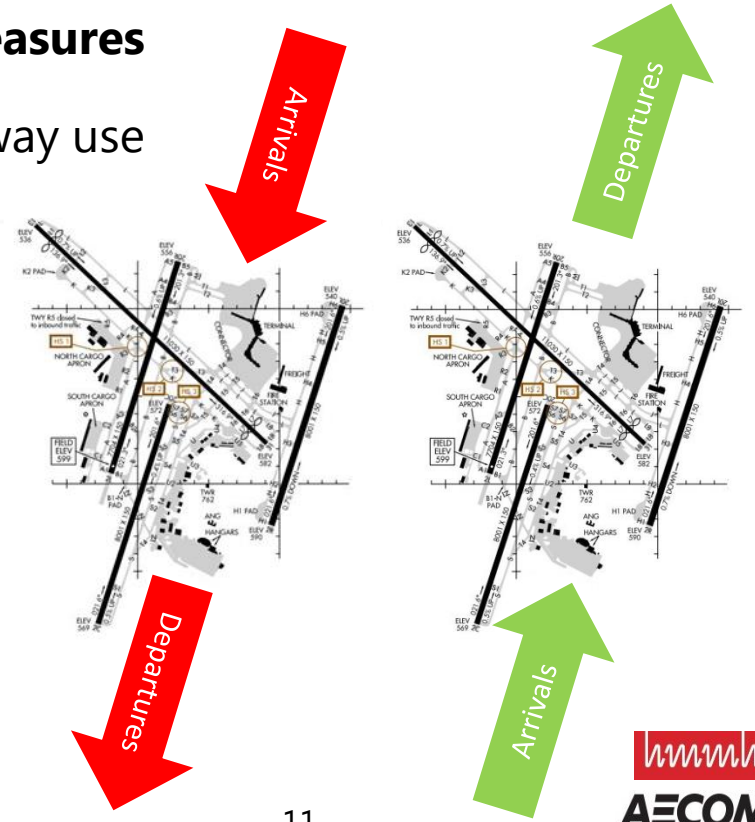
Existing Noise Compatibility Program

- 1989 Record of Approval from the FAA
- The NCP has dramatically reduced non-compatible land uses
- There are three types of measures in an NCP
  - Aircraft Operational / Noise Abatement Measures
  - Land Use Measures
  - Program Management Measures

NCP Noise Abatement Measures

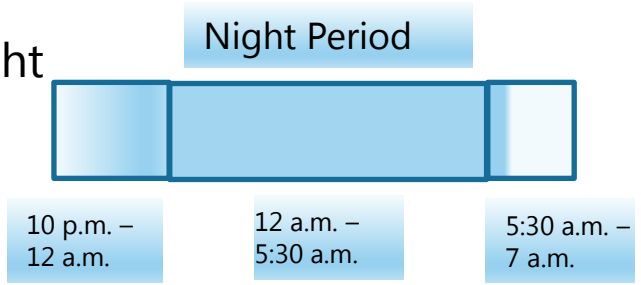
- **Aircraft Operational / Noise Abatement Measures**
- *Operational Strategy 1* – Balance daytime runway use
  - Expected (50% South flow / 50 % North flow) split
  - Actual (50.7% South flow / 49.3% North flow) split

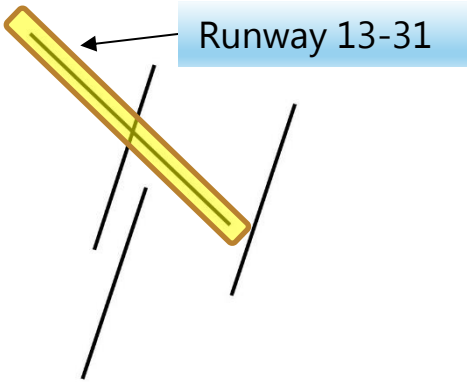
July 2017 – June 2018		
Runway	**Arrivals**	**Departures**
02C	10%	4%
02L	5%	8%
02R	9%	7%
31	1%	6%
North Flow	**24%**	**25%**
20C	3%	20%
20L	13%	1%
20R	8%	5%
13	0%	0%
South Flow	**25%**	**26%**



NCP Noise Abatement Measures - *continued*

- *Operational Strategy 2* – Use of Runway 13-31 at night whenever conditions will allow
  - Goal 96% during nighttime hours 10 p.m. – 7 a.m.
  - Increased airport activity since 1989 led MNAA and ATCT to agree to relax this measure during the beginning and end of the nighttime interval (10 p.m. – 12 a.m. and 5:30 a.m. – 7 a.m.)
  - Usage of Runway 13-31 over the full nighttime interval is minimal at 16% (down from 50% in 2009)
  - Usage of Runway 13-31 is 23% between 12 a.m. and 5:30 a.m.



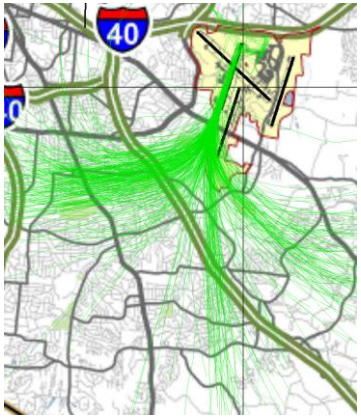


NCP Noise Abatement Measures - *continued*

- *Operational Strategy 3* – Nighttime (10 p.m. to 7 a.m.) flight procedures
  - Runway 13 departures turn to 090 degrees until 3,600 ft. (MSL)
    - Procedure has since been changed to 095 degrees
    - Not shown; departure numbers from Runway 13 are negligible
  - Runway 31 departures turn at 2 DME to 280 degrees until 3,600 ft. (MSL)
  - Runway 20R departures turn to 180 degrees until 3,600 ft. (MSL)
    - Procedure has since been changed to 260 degrees
  - These were recommended for the purpose of reducing highly developed residential areas from unnecessary aircraft noise



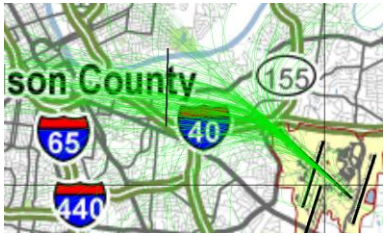
Runway 31 Nighttime Departures



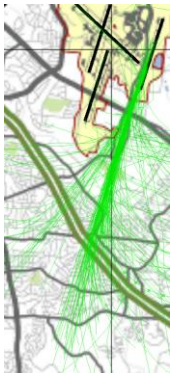
Runway 20R Nighttime Departures

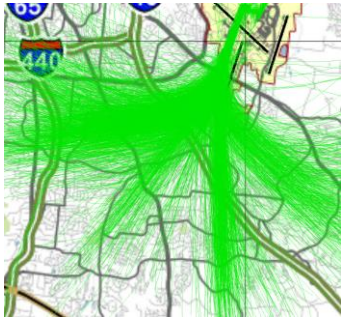
NCP Noise Abatement Measures - *continued*

- *Operational Strategy 4* – Daytime (7a.m. to 10p.m.) flight procedures
  - Runway 31 departures turn to 050 degrees or 280 degrees at 2 DME
  - Runway 20R eastbound departures turn to 140 or 180 degrees
    - Procedure has since been changed to turn right 220 or 260 degrees or turn left to 140 or 180 degrees
  - Runway 20L westbound departures turn to 220 degrees
    - Procedure has since been changed to maintain runway heading or turn right to 220 degrees
  - These were recommended for the purpose of reducing highly developed residential areas from unnecessary aircraft noise.



Runway 31 Daytime Departures

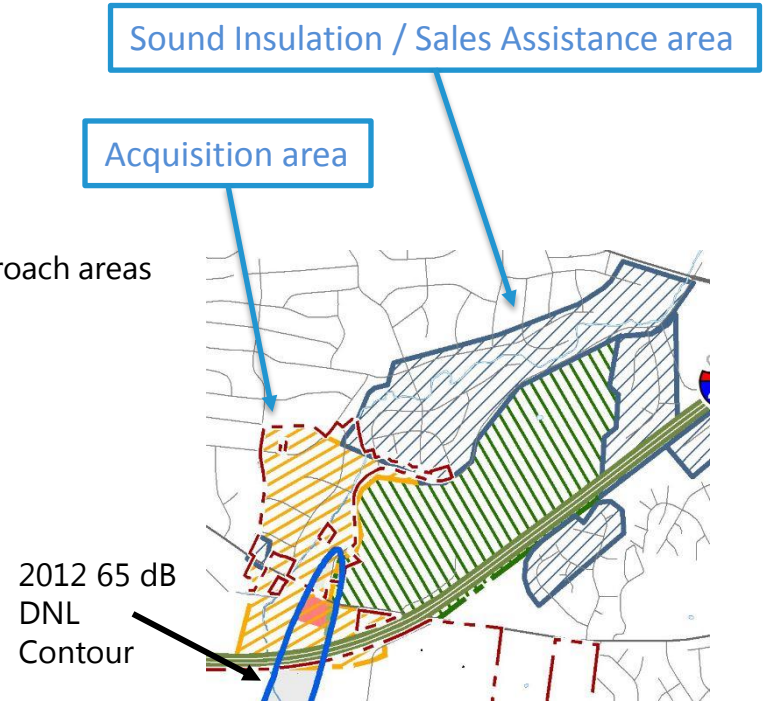

Runway 20L Daytime Departures



Runway 20R Daytime Departures

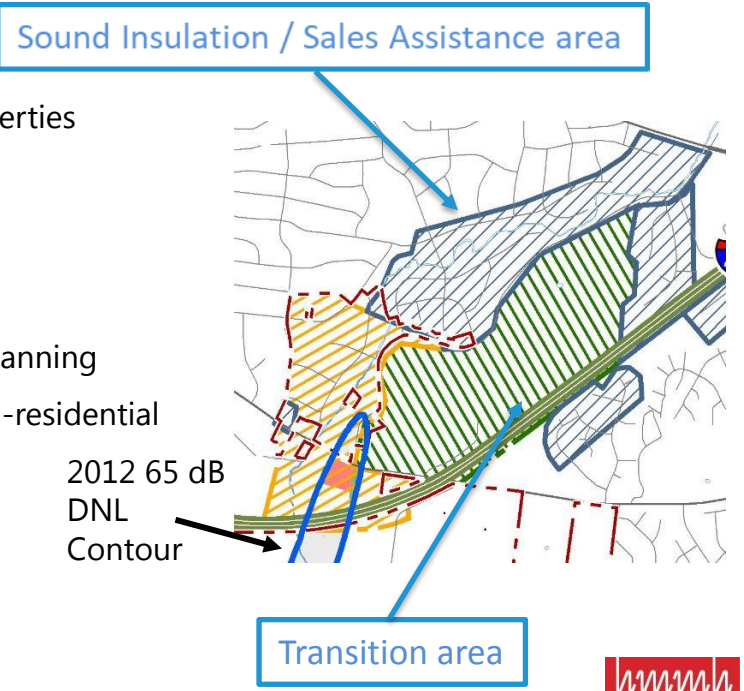
NCP Land Use Measures

- Corrective Action 1 – Land Acquisition
  - Designed to eliminate non-compatible land uses
  - Implemented and complete
    - MNAA acquired one residential area in the extended approach areas
- Corrective Action 2 – Sound Insulation
  - Designed to mitigate eligible properties
  - Implemented and complete
    - MNAA sound insulated eligible residential properties



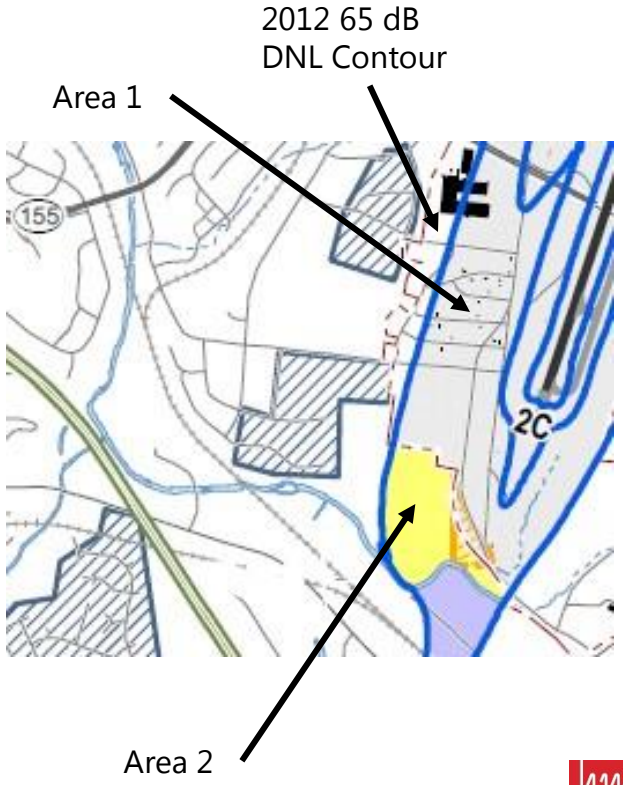
NCP Land Use Measures - *continued*

- Corrective Action 3 – Residential Sales Assistance Program
  - Implemented and complete
    - MNAA provided sales assistance to eligible residential properties
- Corrective Action 4 – Transition Area Zoning
  - Implemented and complete
    - MNAA worked with the Metropolitan Nashville-Davidson Planning Department (Metro Planning) to convert these areas to non-residential zoning



NCP Land Use Measures - *continued*

- Preventive Action 1 – Undeveloped Areas
  - Implemented and complete
    - MNAA works with the Metro Planning to discourage residential development in undeveloped areas within the DNL 65 dB contour.
    - *Area 1:* 19 parcels in this area have not been acquired
    - *Area 2:* This area has been rezoned to compatible use.



NCP Program Management Measures

- Management 1 – Install fan markers
  - Disapproved by the FAA
    - FAA stated ATC has determined due to various settings on aircraft these markers are generally ineffective
- Management 2 – Informal runway use program
  - Implemented and complete
    - MNAA worked with ATCT and implemented an informal runway use program



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Nashville Air Traffic Control Tower

ORDER BNA ATCT 7232.38N

Effective Date: August 1, 2014

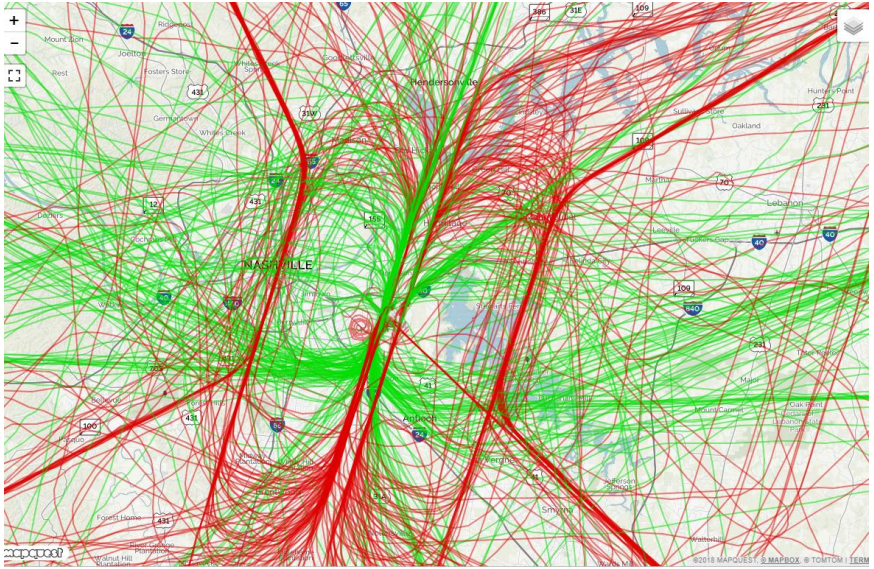
SUBJ: Informal Runway Use Program – Nashville International Airport

1. **Purpose of this Order.** This Order sets forth noise abatement procedures which are designed to meet the goals of the Metropolitan Nashville Airport Authority (MNAA) Noise Control Plan.
2. **Audience.** This Order applies to air traffic personnel at the Nashville Air Traffic Control Tower.
3. **Where Can I Find This Order?** This Order is available in the main office library and on the national repository.

NCP Program Management Measures - continued

- Management 3 – Flight Tracking System
  - Implemented and complete
    - MNAA acquired and continues to operate a flight track monitoring system
    - The InFLIGHT system provides FAA radar data on a daily basis
    - The InFLIGHT system allows MNAA staff to review runway use, operations, flight procedures and investigate noise complaints

InFLIGHT™



NCP Program Management Measures - continued

- Management 4 – Runway 2R Standard Instrument Departure Procedure (SID)
  - Disapproved by the FAA
    - The FAA objected to the proposed SIDs for noise abatement purposes. The SID as proposed would extend tracks well past required distances and may cause confusion or conflicts.
    - However, despite this objection, the FAA subsequently published the TITAN ONE SID that included the recommended noise abatement procedure for Runway 2R.
- Management 5 – Airport Noise Advisory Committee
  - Implemented and complete
    - MNAA established the committee to aid the airport with implementing the land use strategies.
    - The committee was disbanded when the land use strategies were complete.

Next Steps

- Complete development of noise study database
- Finalize noise model inputs
- Develop draft Day-Night Average Sound Level (DNL) noise contours
- Develop draft Noise Exposure Maps (NEM)
- Complete land use analysis
- Develop draft Noise Exposure Map (NEM) document

Thank You for Your Participation!

Next meeting – March 2019

Follow the Noise Exposure Map (NEM) Update on
https://www.flynashville.com/about/Pages/Noise-information.aspx

Comments or Questions
https://www.flynashville.com/contact/Pages/commentsandquestions.aspx

