Title 14 of the Code of Federal Regulations Part 150 Noise Exposure Map Report

Martha's Vineyard Airport

HMMH Report No. 03-13880
December, 2023

Prepared for:

Martha's Vineyard Airport
71 Airport Road
West Tisbury, MA 02575

In association with:

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Executive Summary

Martha's Vineyard Airport (MVY) is located in the towns of Edgartown and West Tisbury, Massachusetts and is operated by the Martha's Vineyard Airport Commission (MVAC). MVY accommodates a broad range of aircraft activity from general aviation to military, on-demand charters, and scheduled commercial airline service. The airport experiences one of the strong seasonal peaks in air traffic with nearly 50 percent of all annual air operations during a three-month period (June, July, and August) due to the island being a premier seasonal tourist destination.[1] The airport serves as one of the two primary modes of transportation to and from the island, the other being the Steamship Authority ferry.

The MVAC has conducted a Title 14 of the Code of Federal Regulations Part 150 Study (14 CFR Part 150, or Part 150; herein referred to as "the Study" or "Part 150 Study") at MVY to quantify noise exposure from aircraft operations and assess compatibility of land uses around the airport. This Part 150 Study assesses noise exposure resulting from an existing baseline level of activity (2023) and a future forecast level of activity anticipated to occur in 2028. The Study is part of the broader effort to address noise levels created by aircraft operations and covers a study area that includes MVY and surrounding communities.

A Part 150 Study includes two principal elements:

- The Noise Exposure Maps (NEMs) and their associated report describe the airport layout and operation, aircraft-related noise exposure, land uses in the airport environs, and the resulting noise/land use compatibility situation. Part 150 requires that NEM documentation address aircraft operations during two time periods:
  - the year of submission (2023) and
  - a forecast year that is at least five years following the year of submission (2028).
- The Noise Compatibility Program (NCP) is a description of the actions the airport proprietor proposes to undertake to minimize existing and future noise and land use incompatibilities. This Study includes an assessment of the current noise abatement program at MVY known as "Fly Friendly" but will not include an NCP. As shown on the NEMs, there are no noncompatible land uses at MVY, therefore the MVAC has not developed an NCP at this time for MVY.

History of Noise Abatement at MVY

In 2003, MVY established a noise abatement program[2] with voluntary measures to reduce the effect of aircraft noise on surrounding communities. The MVAC has chosen to participate in the Part 150 program as a continuation of its efforts to manage noise created by aircraft operations at MVY.

[1] Martha's Vineyard Airport – Capital Improvement Plan. Final Environmental Impact Report/Environmental Assessment. May 2021. https://mvyairport.com/wp-content/uploads/2022/05/MVY-FEIREA-2021-05-28-FULL-DOC-fig-rev.pdf

[2] Martha's Vineyard MVY Noise Mitigation Program Final Report April 2003 (Edwards and Kelcey). The program was somewhat dormant until 2016-17 when it was published on the MVY website as the Fly Friendly program.

The airport adopted a voluntary noise abatement program (the Fly Friendly program described on the airport's website[3]) which encourages pilots to be respectful when flying to and from MVY. The Federal Aviation Administration (FAA) prohibits mandated restrictions of flight paths, hours of operation, and unduly prohibition of open access to airports with exceptions for airports that had restrictions in place prior to a 1990s congressional act. Therefore, the noise abatement program at MVY can only be voluntary.

Noise Exposure Map

The fundamental product of an NEM study are noise contours for existing and forecast conditions (2023 and 2028), presented over base maps depicting the airport layout, local land-use control jurisdictions, major land-use categories, discrete noise-sensitive "receptors," and other information required by Part 150.

Figure ES-1 presents the NEM figure for existing conditions (2023) and **Figure ES-2** presents the NEM figure for the five-year forecast conditions (2028).[4] **Table ES-1-1** shows that there are no noncompatible land uses, zero population and no noise-sensitive sites are located within the 2023 and 2028 day-night average sound level (DNL) 65 decibel (dB) contour interval.

The noise contours for this Study were prepared using the Aviation Environmental Design Tool Version 3e (AEDT 3e). AEDT is an FAA-approved, industry-accepted tool for determining the cumulative effect of aircraft noise exposure around airports. The airport-specific information required by AEDT includes both physical and operational data. The physical data includes airfield geometry (i.e., runway locations and utilization), the elevation of the airfield, weather, and terrain data. Operational data includes the number and types of aircraft operating at the airport and the three-dimensional flight trajectories of aircraft arriving to and departing from the airport.

Stakeholder Engagement

A key element of this Part 150 Study is broad stakeholder engagement. The process employed by the MVAC provides opportunities for all interested parties to both follow the study's progress and be directly involved when key decisions are taken. Specific engagement strategies of the Study include:

- Establishing a Technical Advisory Committee (TAC) in January of 2023, which has held three meetings as of the date of this report, at which the Study Team presented briefings.
- Consulting with agencies with jurisdiction and responsibility within the DNL 65 dB contour.
- Affording opportunities for public review and comment during the NEM development.
- Making project-specific materials available on MVY's Part 150 website: https://mvyairport.com/mvypart150-faa-noise-study/.
- Hosting two Public Information Workshops to present the Part 150 Study process and the NEMs.
- Publishing an informational newsletter to describe the study and its purpose.

[3] https://mvyairport.com/noise-abatement-fly-friendly/

[4] Larger-scale versions of these figures are the Official Noise Exposure Maps, Figure 6-1 and Figure 6-2.

Table ES-1-1. Population within 2023 and 2028 DNL 65 Contour[5]

Source: 2020 US Census Block Data, HMMH, 2023

Year	Residence Type	Population within Contour Interval (DNL)			
		65-70	70-75	>75	Total
2023	Single Family	0	0	0	0
	Multi-Family	0	0	0	0
	Mobile Home	0	0	0	0
	Total	0	0	0	0
2028	Single Family	0	0	0	0
	Multi-Family	0	0	0	0
	Mobile Home	0	0	0	0
	Total	0	0	0	0

[5] Analysis based on 2020 US Census Block Data.

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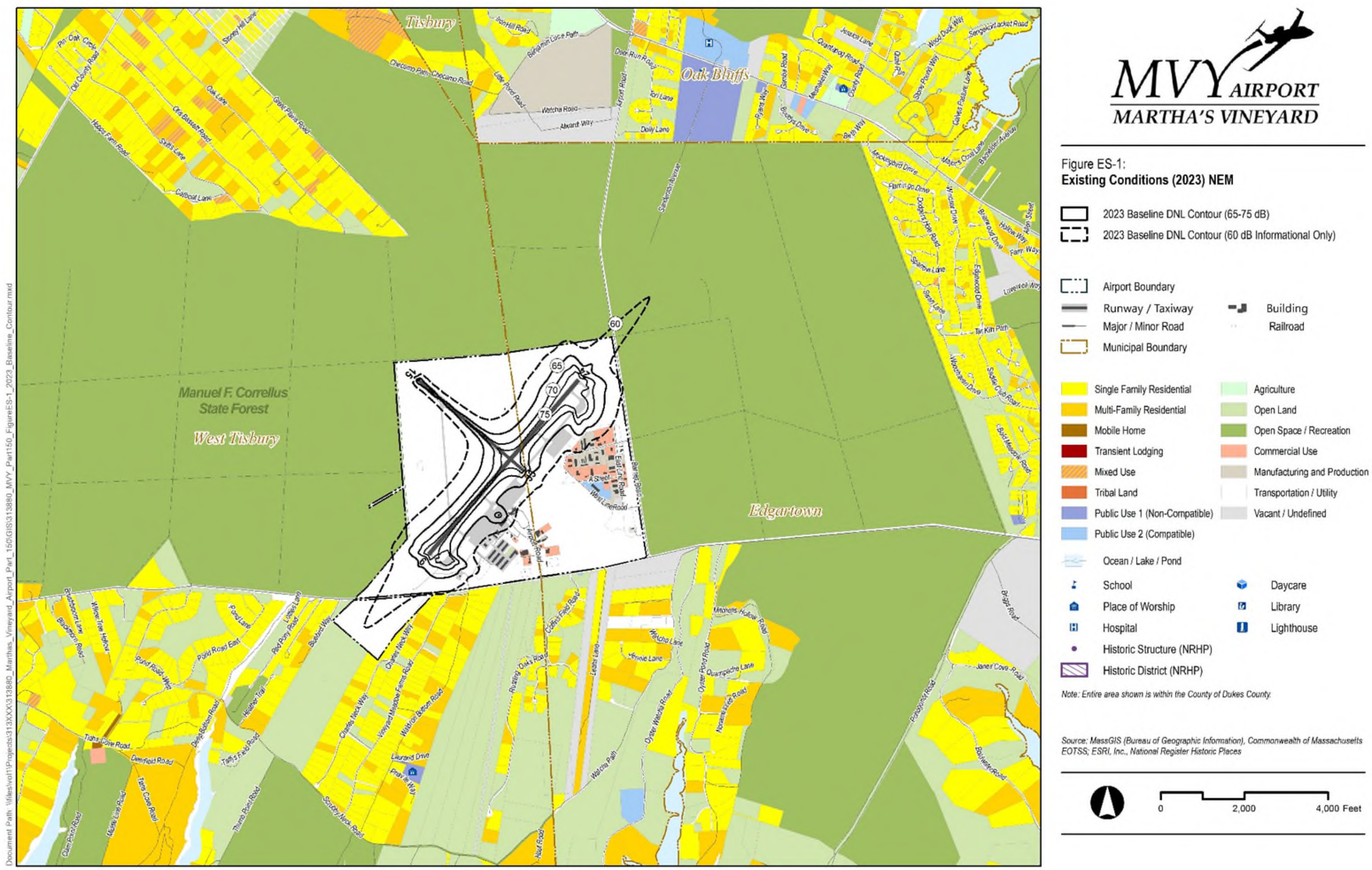

Figure ES-1. Existing Conditions (2023) Noise Exposure Map

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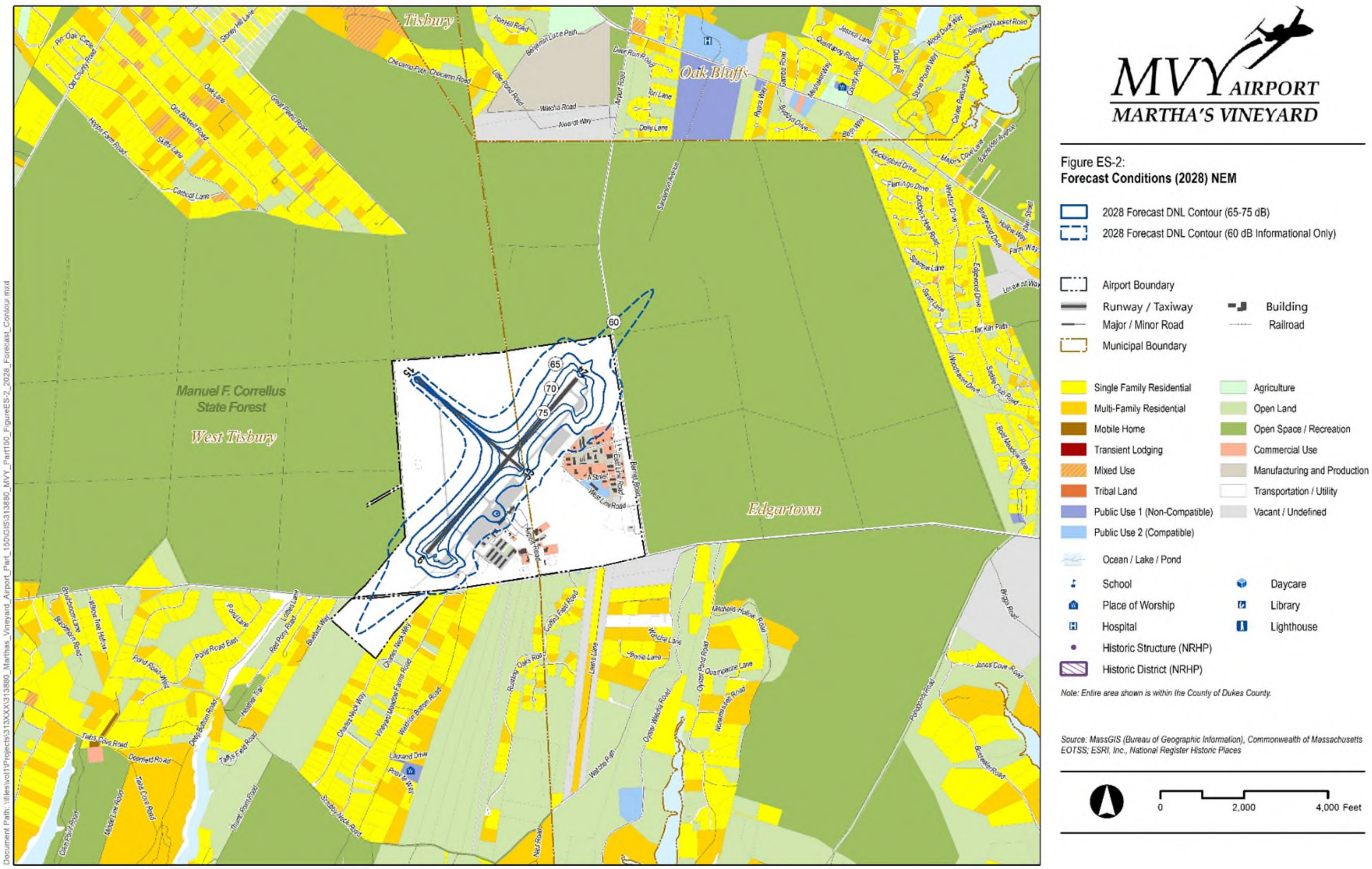

Figure ES-2. Forecast Conditions (2028) Noise Exposure Map

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Sponsor's Certification

The MVAC has completed a comprehensive study in accordance with Title 14 of the Code of Federal Regulations (CFR) Part 150 Noise Exposure Map Report for Martha's Vineyard Airport.

This is to certify the following:

1. The 2023 and 2028 Noise Exposure Maps for Martha's Vineyard Airport, and the associated documentation the Martha's Vineyard Airport Commission submitted in this volume to the Federal Aviation Administration under Title 14 CFR Part 150, Subpart B, Section 150.21, are true and complete as of December 5, 2023, under penalty of 18 U.S.C. 1001.
2. The "2023 Existing Condition Noise Exposure Map" (Figure 6-1 from Chapter 6) reasonably represents conditions for calendar year 2023.
3. The "2028 Five-Year Forecast Condition Noise Exposure Map" (Figure 6-2 from Chapter 6) reasonably represents forecast conditions for calendar year 2028.
4. Pursuant to Title 14 CFR Part 150, Subpart B, Section 150.21(b), all interested parties have been afforded adequate opportunity to submit their views, data, and comments concerning the correctness and adequacy of the noise exposure maps, and of the descriptions of forecast aircraft operations.

The operations at Martha's Vineyard Airport are hereby certified to currently be consistent with the fleet mix, forecast operational levels, and flight procedures depicted for 2023 within this document. Further information regarding development of the fleet mix, forecast, and procedures can be found in Chapter 5, "Development of Noise Exposure Contours," Appendix C, "- Forecast," and Appendix D, "- Model Inputs."

Signed:	
By:	Geoffrey Freeman
Title:	Airport Director, Martha's Vineyard Airport
Date:	12/11/2023
Airport Name:	Martha's Vineyard Airport
Airport Operator:	Martha's Vineyard Airport Commission
Airport Sponsor:	County of Dukes County
Address:	71 Airport Road West Tisbury, MA 02575

FAA Checklist

The FAA produced Advisory Circular 150/5020, "Airport Noise and Land Use Compatibility Planning," that includes a checklist for FAA's use in reviewing NEM submissions. As presented in **Table ES-1-2**, the FAA prefers that the NEM documentation include a copy of the checklist with applicable page numbers, references, notes, and comments to assist in the document's review.

Table ES-1-2. Part 150 Noise Exposure Maps Checklist

Source: FAA/APP, Washington, DC, March 1989; revised June 2005; reviewed for currency 12/2007

PROGRAM REQUIREMENT	Y/N/NA	SUPPORTING PAGES/REVIEW COMMENTS
I. Submitting And Identifying The NEM:		
A. Submission is properly identified:		
1. 14 C.F.R. Part 150 NEM?	Yes	
2. NEM and NCP together?	N/A	Noise Exposure Map only
3. Revision to NEMs FAA previously determined to be in compliance with Part 150?	N/A	
B. Airport and Airport Operator's name are identified?	Yes	Sponsor Certification, page xiii and Section 1.3.1, page 1-5
C. NCP is transmitted by airport operator's dated cover letter, describing it as a Part 150 submittal and requesting appropriate FAA determination?	N/A	
II. Consultation: [150.21(b), A150.105(a)]		
A. Is there a narrative description of the consultation accomplished, including opportunities for public review and comment during map development?	Yes	Chapter 7, page 7-1, Appendix F – Public Outreach/Technical Advisory Committee
B. Identification of consulted parties:		
1. Are the consulted parties identified?	Yes	Section 1.3.2, Section 7.2, Appendix F – Public Outreach/Technical Advisory Committee
2. Do they include all those required by 150.21(b) and A150.105(a)?	Yes	Section 1.3.2, Section 7.2, Appendix F – Public Outreach/Technical Advisory Committee
3. Agencies in 2., above, correspond to those indicated on the NEM?	Yes	Agencies identified on the NEM participated as part of the Technical Advisory Committee (TAC), Section 7.2
C. Does the documentation include the airport operator's certification, and evidence to support it, that interested persons have been afforded adequate opportunity to submit their views, data, and comments during map development and in accordance with 150.21(b)?	Yes	Certification language is provided on page xiii. Information on the consultation process is provided in Chapter 7 and Appendix F – Public Outreach/Technical Advisory Committee

PROGRAM REQUIREMENT	Y/N/NA	SUPPORTING PAGES/REVIEW COMMENTS
D. Does the document indicate whether written comments were received during consultation and, if there were comments, that they are on file with the FAA regional airports division manager?	Yes	All written comments received are included in Appendix F – Public Outreach/Technical Advisory Committee
III. General Requirements: [150.21]		
A. Are there two maps, each clearly labeled on the face with year (existing condition year and one that is at least 5 years into the future)?	Yes	2023 Existing Conditions Noise Exposure Map (Figure 6-1, page 6-3), 2028 Forecast Conditions Noise Exposure Map (Figure 6-2, page 6-5)
B. Map currency:		
1. Does the year on the face of the existing condition map graphic match the year on the airport operator's NEM submittal letter?	Yes	See cover letter and Figures 6-1 and 6-2. The official submittal to the FAA will be made under a cover letter that meets Part 150 requirements.
2. Is the forecast year map based on reasonable forecasts and other planning assumptions and is it for at least the fifth calendar year after the year of submission?	Yes	See cover letter and certification language on page xiii. 2028 Forecast Conditions Noise Exposure Map (Figure 6-2, page 6-5) and Appendix C.1
3. If the answer to 1 and 2 above is no, the airport operator must verify in writing that data in the documentation are representative of existing condition and at least 5 years' forecast conditions as of the date of submission?	N/A	
C. If the NEM and NCP are submitted together:	N/A	Noise Exposure Map only
1. Has the airport operator indicated whether the forecast year map is based on either forecast conditions without the program or forecast conditions if the program is implemented?	N/A	
2. If the forecast year map is based on program implementation:	N/A	
a. Are the specific program measures that are reflected on the map identified?	N/A	
b. Does the documentation specifically describe how these measures affect land use compatibilities depicted on the map?	N/A	

PROGRAM REQUIREMENT	Y/N/NA	SUPPORTING PAGES/REVIEW COMMENTS
3. If the forecast year NEM does not model program implementation, the airport operator must either submit a revised forecast NEM showing program implementation conditions [B150.3(b), 150.35(f)] or the sponsor must demonstrate the adopted forecast year NEM with approved NCP measures would not change by plus/minus 1.5 DNL? (150.21(d))	N/A	
IV. Map Scale, Graphics, And Data Requirements: [A150.101, A150.103, A150.105, 150.21(a)]		
A. Are the maps of sufficient scale to be clear and readable (they must not be less than 1" to 2,000'), and is the scale indicated on the maps? (*Note (1) if the submittal uses separate graphics to depict flight tracks and/or noise monitoring sites, these must be of the same scale, because they are part of the documentation required for NEMs*.) (*Note (2) supplemental graphics that are not required by the regulation do not need to be at the 1" to 2,000' scale*)	Yes	The "2023 Existing Conditions Noise Exposure Map" (Figure 6-1) and "2028 Forecast Conditions Noise Exposure Map" (Figure 6-2) are presented at 1" to 1,000'. Unbound flight track figures at the full study area extent are provided at the scale of 1" to 2,000' as an attachment to the electronic version, as permitted by FAA.
B. Is the quality of the graphics such that required information is clear and readable? (Refer to C. through G., below, for specific graphic depictions that must be clear and readable)	Yes	The "2023 Existing Conditions Noise Exposure Map" (Figure 6-1) and "2028 Forecast Conditions Noise Exposure Map" (Figure 6-2) are presented at 1" to 1,000'. Unbound flight track figures at the full study area extent are provided at the scale of 1" to 2,000' as an attachment to the electronic version, as permitted by FAA.
C. Depiction of the airport and its environs:		
1. Is the following graphically depicted to scale on both the existing condition and forecast year maps?		
a. Airport boundaries	Yes	2023 Existing Conditions Noise Exposure Map (Figure 6-1, page 6-3), 2028 Forecast Conditions Noise Exposure Map (Figure 6-2, page 6-5)
b. Runway configurations with runway end numbers	Yes	2023 Existing Conditions Noise Exposure Map (Figure 6-1, page 6-3), 2028 Forecast Conditions Noise Exposure Map (Figure 6-2, page 6-5)
2. Does the depiction of the off-airport data include?		
a. A land use base map depicting streets and other identifiable geographic features	Yes	Land uses on the NEMs, streets and other features are shown over the entire mapped area. Land use coverage is shown in Figure 3-1. 2023 Existing Conditions Noise Exposure Map (Figure 6-1, page 6-3), 2028 Forecast Conditions Noise Exposure Map (Figure 6-2, page 6-5)
b. The area within the DNL 65 dB (or beyond, at local discretion)	Yes	2023 Existing Conditions Noise Exposure Map (Figure 6-1, page 6-3), 2028 Forecast Conditions Noise Exposure Map (Figure 6-2, page 6-5)

PROGRAM REQUIREMENT	Y/N/NA	SUPPORTING PAGES/REVIEW COMMENTS
c. Clear delineation of geographic boundaries and the names of all jurisdictions with planning and land use control authority within the DNL 65 dB (or beyond, at local discretion)	Yes	As noted directly on the map portion of the NEM figures (which extends in both cases well beyond 65 dB DNL contour), the mapped area is within the jurisdictional boundaries of Edgartown and West Tisbury. 2023 Existing Conditions Noise Exposure Map (Figure 6-1, page 6-3), 2028 Forecast Conditions Noise Exposure Map (Figure 6-2, page 6-5)
D. 1. Continuous contours for at least the DNL 65, 70, and 75 dB?	Yes	2023 Existing Conditions Noise Exposure Map (Figure 6-1, page 6-3), 2028 Forecast Conditions Noise Exposure Map (Figure 6-2, page 6-5)
2. Has the local land use jurisdiction(s) adopted a lower local standard and if so, has the sponsor depicted this on the NEMs?	No	
3. Based on current airport and operational data for the existing condition year NEM, and forecast data representative of the selected year for the forecast NEM?	Yes	2023 Existing Conditions Noise Exposure Map (Figure 6-1, page 6-3), 2028 Forecast Conditions Noise Exposure Map (Figure 6-2, page 6-5), Section 5.2.3, page 5-5
E. Flight tracks for the existing condition and forecast year timeframes (these may be on supplemental graphics which must use the same land use base map and scale as the existing condition and forecast year NEM), whichare numbered to correspond to accompanying narrative?	Yes	Section 5.2.6, page 5-12, and see Figure 5-3 and Figure 5-4. Unbound flight track figures at the full study area extent are provided at the scale of 1" to 2,000' as an attachment to the electronic version, as permitted by FAA. Appendix D contains detailed track and track use data.
F. Locations of any noise monitoring sites (these may be on supplemental graphics which must use the same land use base map and scale as the official NEMs)	Yes	Chapter 4 and Figure 4-1, page 4-3
G. Noncompatible land use identification:		
1. Are noncompatible land uses within at least the DNL 65 dB noise contour depicted on the map graphics?	Yes	No noncompatible land use is located within the DNL 65 dB contour. 2023 Existing Conditions Noise Exposure Map (Figure 6-1, page 6-3), 2028 Forecast Conditions Noise Exposure Map (Figure 6-2, page 6-5)
2. Are noise sensitive public buildings and historic properties identified? (Note: If none are within the depicted NEM noise contours, this should be stated in the accompanying narrative text.)	Yes	No noncompatible noise sensitive sites are located within the DNL 65 dB contour. 2023 Existing Conditions Noise Exposure Map (Figure 6-1, page 6-3), 2028 Forecast Conditions Noise Exposure Map (Figure 6-2, page 6-5)
3. Are the noncompatible uses and noise sensitive public buildings readily identifiable and explained on the map legend?	Yes	2023 Existing Conditions Noise Exposure Map (Figure 6-1, page 6-3), 2028 Forecast Conditions Noise Exposure Map (Figure 6-2, page 6-5)
4. Are compatible land uses, which would normally be considered noncompatible, explained in the accompanying narrative?	N/A	There is no noncompatible land use within the DNL 65 dB contour that would normally be considered noncompatible.
V. Narrative Support Of Map Data: [150.21(a), A150.1, A150.101, A150.103]		

PROGRAM REQUIREMENT	Y/N/NA	SUPPORTING PAGES/REVIEW COMMENTS
A. 1. Are the technical data and data sources on which the NEMs are based adequately described in the narrative?	Yes	See Chapter 5, page 5-1, and Appendix C and D
2. Are the underlying technical data and planning assumptions reasonable?	Yes	The Technical Advisory Committee (including FAA) carefully vetted all assumptions. Chapter 5, page 5-1, and Appendix C and D
B. Calculation of Noise Contours:		
1. Is the methodology indicated?	Yes	As discussed in Chapter 5, the DNL contours contained in these NEMs were prepared using the most recent release of the FAA's AEDT available at the time the NEMs were prepared, i.e., Version 3e.
a. Is it FAA approved?	Yes	
b. Was the same model used for both maps? (Note: The same model also must be used for NCP submittals associated with NEM determinations already issued by FAA where the NCP is submitted later, unless the airport sponsor submits a combined NEM/NCP submittal as a replacement, in which case the model used must be the most recent version at the time the update was started.)	Yes	
c. Has AEE approval been obtained for use of a model other than those that have previous blanket FAA approval?	N/A	
2. Correct use of noise models:		
a. Does the documentation indicate, or is there evidence, the airport operator (or its consultant) has adjusted or calibrated FAA-approved noise models or substituted one aircraft type for another that was not included on the FAA's pre-approved list of aircraft substitutions?	Yes	FAA approved one aircraft substitute, as documented in Appendix D.3
b. If so, does this have written approval from AEE, and is that written approval included in the submitted document?	Yes	
3. If noise monitoring was used, does the narrative indicate that Part 150 guidelines were followed?	Yes	Noise monitoring was conducted for this study; however, monitoring noise levels were not used to adjust or calibrate the model. The measured levels are compared with annual average modeled DNL values (Section 6.3 on page 6-9)

PROGRAM REQUIREMENT	Y/N/NA	SUPPORTING PAGES/REVIEW COMMENTS
4. For noise contours below DNL 65 dB, does the supporting documentation include an explanation of local reasons? (Note: A narrative explanation, including evidence the local jurisdiction(s) have adopted a noise level less than DNL 65 dB as sensitive for the local community(ies), and including a table or other depiction of the differences from the Federal table, is highly desirable but not specifically required by the rule. However, if the airport sponsor submits NCP measures within the locally significant noise contour, an explanation must be included if it wants the FAA to consider the measure(s) for approval for purposes of eligibility for Federal aid.)	Yes	The DNL 60 dB contour is included on the Noise Exposure Map for each year; It is clearly marked for informational purposes only. Appendix E contains supplemental information and maps that display DNL 55 contours; this is to provide a comparison with the airport's previously published 2014 DNL contours.
C. Noncompatible Land Use Information:		
1. Does the narrative (or map graphics) give estimates of the number of people residing in each of the contours (DNL 65, 70 and 75, at a minimum) for both the existing condition and forecast year maps?	Yes	There are zero dwelling units and no people within the DNL 65 dB contour, as shown on page 6-2, Table 6-1: Residential Units within 2023 and 2028 DNL 65 Contours
2. Does the documentation indicate whether the airport operator used Table 1 of Part 150?	Yes	Section 3.1, page 3-1
a. If a local variation to table 1 was used:		
(1) Does the narrative clearly indicate which adjustments were made and the local reasons for doing so?	N/A	Not applicable; no local variation was used.
(2) Does the narrative include the airport operator's complete substitution for table 1?	N/A	Not applicable; no local variation was used.
3. Does the narrative include information on self-generated or ambient noise where compatible or noncompatible land use identifications consider non-airport and non-aircraft noise sources?	N/A	There is no noncompatible land use within the DNL 65 dB contour.
4. Where normally noncompatible land uses are not depicted as such on the NEMs, does the narrative satisfactorily explain why, with reference to the specific geographic areas?	N/A	Not applicable
5. Does the narrative describe how forecast aircraft operations, forecast airport layout changes, and forecast land use changes will affect land use compatibility in the future?	Yes	Section 5.2.3, page 5-5, and Appendix C

PROGRAM REQUIREMENT	Y/N/NA	SUPPORTING PAGES/REVIEW COMMENTS
A. Has the operator certified in writing that interested persons have been afforded adequate opportunity to submit views, data, and comments concerning the correctness and adequacy of the draft maps and forecasts?	Yes	Sponsor Certification, page xiii
B. Has the operator certified in writing that each map and description of consultation and opportunity for public comment are true and complete under penalty of 18 U.S.C. § 1001?	Yes	Sponsor Certification, page xiii

Glossary

Acronym	Full Definition	First Reference or Definition in Document
AAD	Average Annual Day	Section 5.2.3.2
ADO	[Federal Aviation Administration] Airports Division Office	Section 1.3.3
AEDT	Aviation Environmental Design Tool	Executive Summary, Section 4.1
Azimuth	The azimuth of a runway refers to the magnetic compass direction of the runway. Runways are identified by numbers which indicate the nearest 10-degree increment of the runway centerline. For example, where the magnetic azimuth is 193 degrees, the runway designation would be 19.	Section 5.2.1
MVAC	Martha’s Vineyard Airport Commission	Executive Summary, Chapter **Error!**
CFR	Code of Federal Regulations	Executive Summary, Chapter **Error!**
dB	Decibel	Executive Summary, Section 1.4
dBA	A-Weighted Decibel	Appendix A.3
DNL	Day-Night Average Sound Level	Executive Summary, Section 1.4.2
FAA	Federal Aviation Administration	Executive Summary, Chapter **Error!**
FBO	Fixed Base Operator	Section 2.2.2
ILS	Instrument Landing System	Section 2.2.1
MVY	Martha’s Vineyard Airport	Executive Summary, Chapter **Error!**
MSL	Mean Sea Level	Section 5.2.1
NCP	(Part 150) Noise Compatibility Program	Executive Summary, Chapter **Error!**
NEM	(Part 150) Noise Exposure Map	Executive Summary, Chapter **Error!**
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure	Section 3.1
Noise	Sound that is unwelcome because of its undesirable effects on persons (e.g., speech interference, sleep disturbance) or on entire communities (annoyance).	Section 1.4
NRHP	National Register of Historic Places	Section 3.2.2
PAPI	Precision Approach Path Indicator	Section 2.2.1
Part 150	14 CFR (FAR) Part 150, “Airport Noise Compatibility Planning”	Executive Summary, Chapter **Error!**
SLUCM	Standard Land Use Coding Manual	Section 3.1
Sound	A physical phenomenon consisting of minute vibrations (waveforms) that travel through a medium such as air or water.	Section 1.4
TAC	Technical Advisory Committee	Executive Summary, Section 1.3
TAF	[FAA] Terminal Area Forecast	Section 5.2.3.1
Threshold (for a runway)	The FAA defines "threshold" as "the beginning of the part of the runway usable for landing." Some runways have "displaced" landing thresholds and are marked to show where the pavement available for landing begins. Displaced thresholds raise the glide path of aircraft on approach. They are most often implemented to address obstruction issues, and sometimes for noise abatement purposes.	Section 5.2.1

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Appendices

Figures

Tables

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1 Introduction

Martha's Vineyard Airport Commission (MVAC) is undertaking a Noise Compatibility Planning Study in accordance with Title 14 of the Code of Federal Regulation Part 150 (14 CFR Part 150, or Part 150) for the Martha's Vineyard Airport (MVY). The purpose of this Noise Compatibility Planning Study (herein referred to as "this Study" or "Part 150 Study") is to develop an accurate Noise Exposure Map (NEM) that reflects current and future airport operations within the timeframe evaluated in this Study; to communicate noise exposure levels and land use compatibility associated with MVY aircraft operations to the surrounding communities; and to review the implementation and effectiveness of existing noise abatement measures at MVY. This document presents the NEM with noise contours and related documentation for existing conditions and five-year forecast conditions. The NEM prepared under this Study will be subject to Federal Aviation Administration (FAA) acceptance.

Part 150 describes a formal process for airport operators to address airport noise in terms of land use compatibility. The regulation establishes thresholds for aircraft noise exposure for specific land use categories. Part 150 studies are voluntary and allow airports to apply for federal funds to implement FAA-approved measures recommended as part of a Noise Compatibility Program (NCP) to reduce or eliminate noncompatible land use. As shown on the NEMs, there are no noncompatible land uses at MVY, therefore the MVAC has not developed an NCP at this time for MVY.

MVAC, as the operator of MVY, has opted to participate in this Study to document the aircraft noise exposure in the vicinity of MVY. The Study is part of a broader effort to address noise levels created by aircraft operations, with the Study Area encompassing MVY and surrounding communities.

1.1 How to Use This Document

This document, and the Part 150 Study it represents, were undertaken in accordance with requirements found in 14 CFR Part 150. A checklist is provided on **page xiv** that enumerates specific FAA requirements and the associated location of the supporting text in the document and the appendices.

This document is organized as follows:

- **Chapter** Error! Reference source not found. introduces MVY, the Part 150 Study process, and the project stakeholders.
- **Chapter 2** gives background information regarding the airport context and the history of noise abatement at MVY.
- **Chapter 3** describes land use compatibility and specific land uses in the MVY Part 150 Study area.
- **Chapter 4** provides the approach to and results of the Noise Measurement Program.
- **Chapter 5** describes the development of the Noise Exposure Maps, including the methodology behind the noise model and noise modeling inputs.
- **Chapter 6** presents the official 2023 and 2028 Noise Exposure Maps.
- **Chapter 7** describes stakeholder engagement efforts undertaken during the Part 150 process.

1.2 Part 150 Process

The FAA's emphasis on the relationship between aircraft noise and land use compatibility planning started with the passage of the Aviation Safety and Noise Abatement Act of 1979. This act gives the FAA the authority to issue regulations on noise compatibility planning and provides a means for federal funding for projects to improve the noise environment around an airport.

Part 150 regulations set forth standards for airport operators to use when documenting noise exposure around airports and for establishing programs to minimize noise-related land use incompatibilities. Participation in this program by an airport is voluntary. A Part 150 Study can include two principal elements:

1. Noise Exposure Map
2. Noise Compatibility Program

Acceptance of a Noise Exposure Map by the FAA is a pre-requisite to their approval of measures proposed in a Noise Compatibility Program. As shown on the NEMs, there are no noncompatible land uses at MVY, therefore the MVAC will not pursue a NCP at this time for MVY. **Figure 1-1** provides an overview of the FAA Part 150 process for this study.

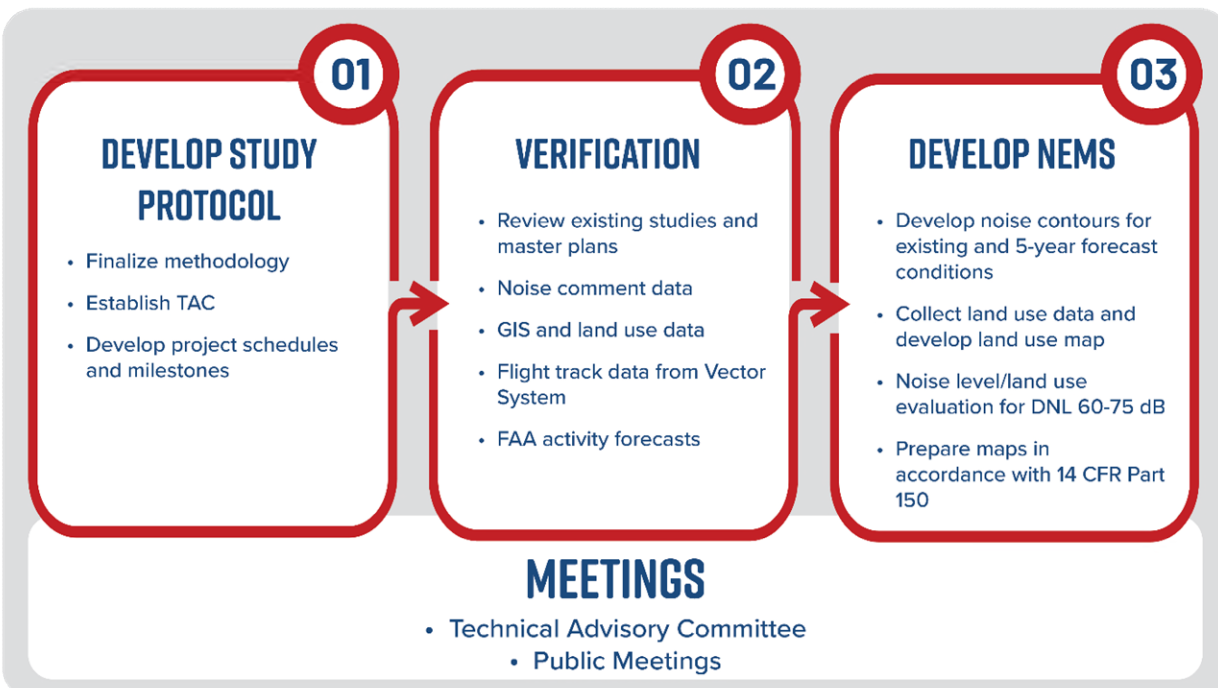

Figure 1-1. Part 150 Process

Source: HMMH 2023

1.2.1 Noise Exposure Map

The Noise Exposure Map (NEM) document describes the airport layout and operation, aircraft-related noise exposure, land uses in the airport environs, and the resulting noise and land-use compatibility situation. Part 150 requires that NEM documentation address aircraft operations during two time periods:

1. A baseline year (the "existing conditions")
2. A forecast year that is at least five years following the year of submission (the "forecast conditions")

The year of submission for this study is 2023. Chapter 6 presents an existing conditions NEM for 2023 and a five-year forecast conditions NEM for 2028.

1.2.2 Noise Compatibility Program

A Noise Compatibility Program (NCP) is a description of the actions the airport proprietor proposes to undertake to minimize existing and future noise and land use incompatibilities.

As discussed in Section 1, MVAC has only prepared the NEM maps and report at this time. As shown on the NEMs, there are no noncompatible land uses documented at MVY, therefore the MVAC has not developed an NCP. However, this report does include a review of the existing voluntary noise abatement measures in Appendix G.

1.3 Roles and Responsibilities

Several groups are involved in the preparation of MVY's Part 150 Study. Primary groups included: The MVAC, its staff and consultant team; a MVY Part 150 Study Technical Advisory Committee (TAC) chartered to advise the MVAC throughout the process; the FAA, and members of the general public. For more information, see **Figure 1-2** and **Chapter 7**.

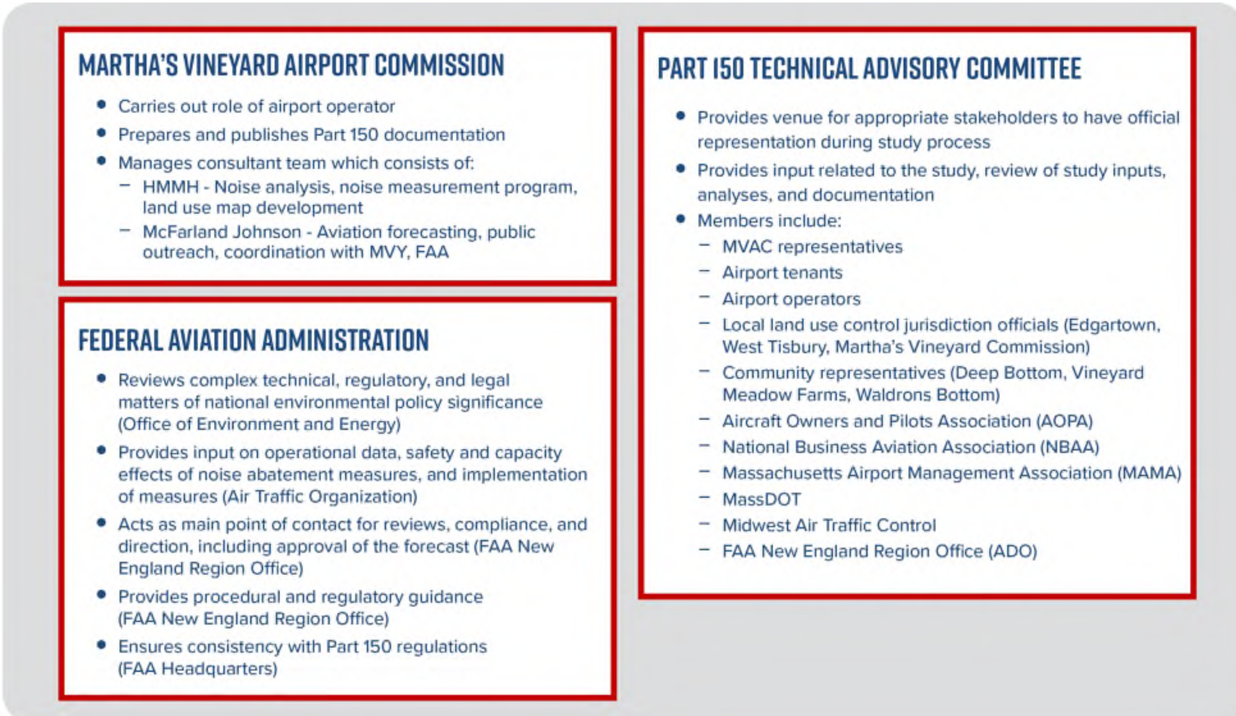

Figure 1-2. Roles and Responsibilities in the Part 150 Process

Source: HMMH, 2023

1.3.1 Martha's Vineyard Airport Commission

As the airport operator, MVAC is responsible for preparing the NEM and managing the consultant team. MVAC has retained a Study Team of consultants led by McFarland-Johnson, Inc. (MJ) to assist with the technical tasks required to fulfill Part 150 analysis and documentation requirements., Harris Miller Miller & Hanson Inc. (HMMH), acting as a subconsultant to MJ, worked in close consultation with MVAC to conduct the NEM analysis, land use analysis, develop the Noise Exposure Map documentation, and assist with stakeholder engagement.

1.3.2 Advisory Committees

The MVAC formed and convened a Technical Advisory Committee (TAC) to assist with the Part 150 Study and to engage key technical stakeholders and the public. The TAC was comprised of local planning jurisdictions, FAA, MassDOT, aeronautical users of the Airport, and other interested persons. The TAC served several important functions, such as:

- Representing a broad range of stakeholder groups,
- Receiving information about the Study and sharing it with their constituencies, and
- Reviewing information and providing timely input to the Study.

The TAC was convened to offer opinions, advice and guidance to the Part 150 Study process. However, MVAC has the sole discretion to accept or reject advisory committee recommendations in accordance with Part 150 regulations. For further details see **Chapter 7** and **Appendix F**.

1.3.3 Federal Aviation Administration

FAA responsibility includes:

- approval of the operational forecast,
- approval of any non-standard noise modeling requests,
- review of the Part 150 submission to determine whether the technical work, consultation, and documentation comply with Part 150 requirements, and
- acceptance of the NEM.

In addition, the FAA is responsible for reviewing the details of the technical documentation.

FAA involvement includes participation by staff from at least three parts of the agency:

- The Office of Environment and Energy
- The Air Traffic Organization
- The Office of Airports

The **Office of Environment and Energy (at FAA headquarters - AEE)** reviews complex technical, regulatory, and legal matters of national environmental policy significance. AEE approves any nonstandard modeling requests.

The **Air Traffic Organization (ATO)** includes the Air Traffic Controllers and support staff. Midwest Air Traffic Control provided input on operational data.

Two groups in the **Office of Airports** are involved: (1) the New England Regional Airports Division Office (ADO) is the main point of contact for reviews, compliance, and direction as the Part 150 study progresses, including the approval of the aviation forecast, and is responsible for determining if the documentation satisfies all Part 150 requirements, and (2) Headquarters ensures consistency with Part 150 regulations and reviews of national importance.

Prior to acceptance of the NEM, the FAA conducts a Lines-of-Business review, which includes Air Traffic, Flight Standards, Legal, Special Programs, Planning & Requirements, Flight Procedures and Regional Review.

1.4 Noise Terminology

Information presented in this NEM report relies upon a reader’s understanding of the following:

- Characteristics of noise (unwanted sound)
- Noise effects on persons and communities
- Metrics or descriptors that are commonly used to quantify noise.

The properties, measurement, and presentation of noise involve specialized terminology that can be difficult to understand. Where possible, the Part 150 Study uses graphics and everyday comparisons to communicate noise-related quantities and effects in reasonably simple terms. **Figure 1-3** shows common environmental A-weighted sound levels in decibels (dB).

Sound is a physical phenomenon consisting of minute vibrations (waveforms) that travel through a medium such as air or water.

Noise is sound that is unwelcome because of its undesirable effects on people (e.g., speech interference, sleep disturbance) or on entire communities (annoyance).

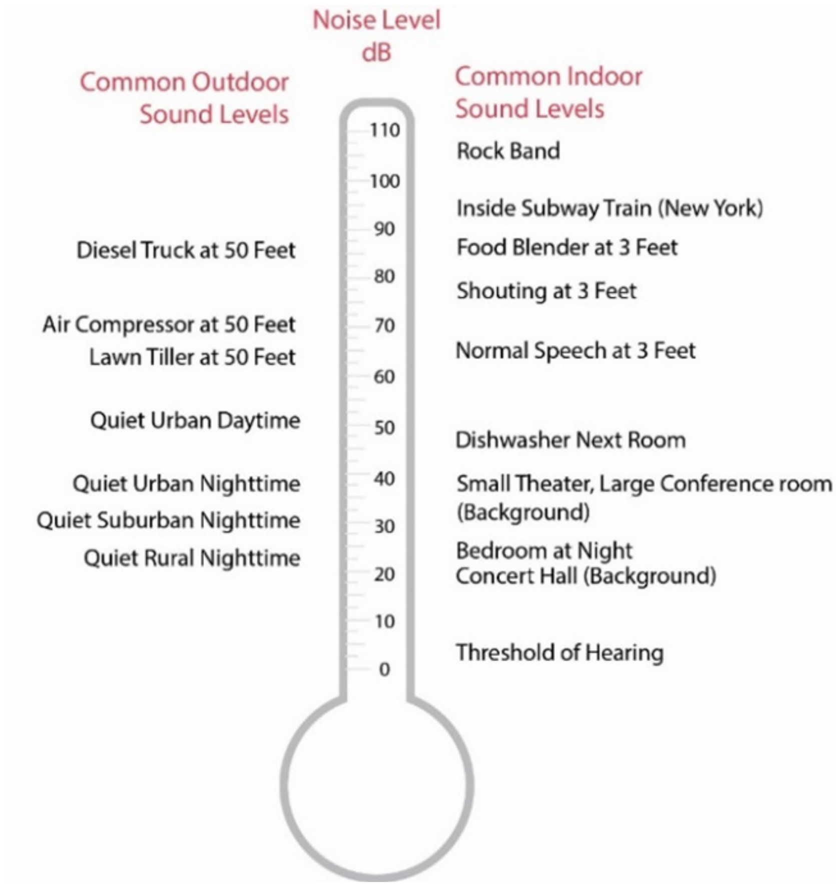

Figure 1-3. Common Environmental Sound Levels, in dBA

Source: HMMH, 2016

1.4.1 Noise Metrics

Noise metrics may be thought of as measures of noise “dose”. There are two main types, which describe:

1. Single noise events (single-event noise metrics), and
2. Total noise experienced over longer time periods (cumulative noise metrics).

Single-event metrics are indicators of the intrusiveness, loudness, or noisiness of individual aircraft noises. Cumulative metrics (used to measure long-term noise) are indicators of community annoyance. Unless otherwise noted, all noise metrics presented in Part 150 documentation are reported in terms of the A-weighted decibel or dB.

1.4.2 Day Night Average Sound Level (DNL)

Annoyance is greater when an intrusive sound occurs at night. As is implied in its name, the Day-Night Average Sound Level (DNL)[6] represents the noise energy present during a daily period. Part 150 requires the use of aircraft operations data representing an annual period, to smooth out fluctuations occurring in day-to-day operations. The DNL reported in Part 150 documentation is the average annual DNL.

DNL represents noise as it occurs over a 24-hour period, with the assumption that noise events occurring at night (10 p.m. to 7 a.m.) are 10 dB louder than actual. This 10 dB weighting is applied to account for greater sensitivity to nighttime noise, and the fact that events at night are often perceived to be more intrusive than daytime (see **Figure 1-4**).

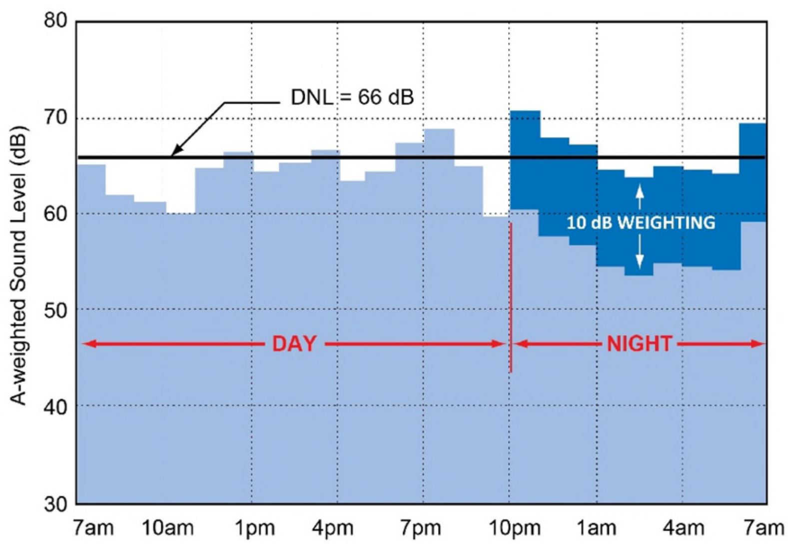

Figure 1-4. Example of a Day-Night Average Sound Level Calculation

Source: HMMH, 2016

An alternative way of describing this adjustment is that each event occurring during the nighttime period is calculated as if it were equivalent to 10 daytime events.

For more information regarding noise and noise metrics, please see **Appendix A**.

[6] For the regulatory definition of DNL see 14CFR Part 150 §150.7 Definitions. http://www.ecfr.gov/cgi-bin/text-idx?SID=f8e6df268e3dad2edb848f61b9a0fb51&mc=true&node=pt14.3.150&rgn=div5

2 Airport Background

Martha's Vineyard Airport (MVY) was built in 1942 to accommodate the training of naval aviators prior to their deployment to the Pacific during World War II.[7] It is currently owned by the County of Dukes County and operated by MVAC. MVY plays a vital role in regional aviation interests. As of 2019, the airport supports 1,401 jobs, contributing $51 million in annual payroll and $140.5 million in annual sales activity.[8]

The FAA defines MVY as a Commercial Service – Primary Nonhub Airport in the National Plan of Integrated Airport Systems (NPIAS) (2023-2027)[9]. The NPIAS defines Primary Airports as public airports receiving scheduled air carrier service with 10,000 or more enplaned passengers per year. The NPIAS goes further to define nonhub primary airports as commercial service airports that account for less than 0.05 percent of all commercial passenger enplanements but have more than 10,000 annual enplanements. [10] These airports are also used by general aviation aircraft. **Figure 2-1** shows the NPIAS classification of airports in Massachusetts, including MVY; other nearby airports with the same classification include Nantucket Memorial Airport (ACK) and Cape Cod Gateway Airport (HYA).

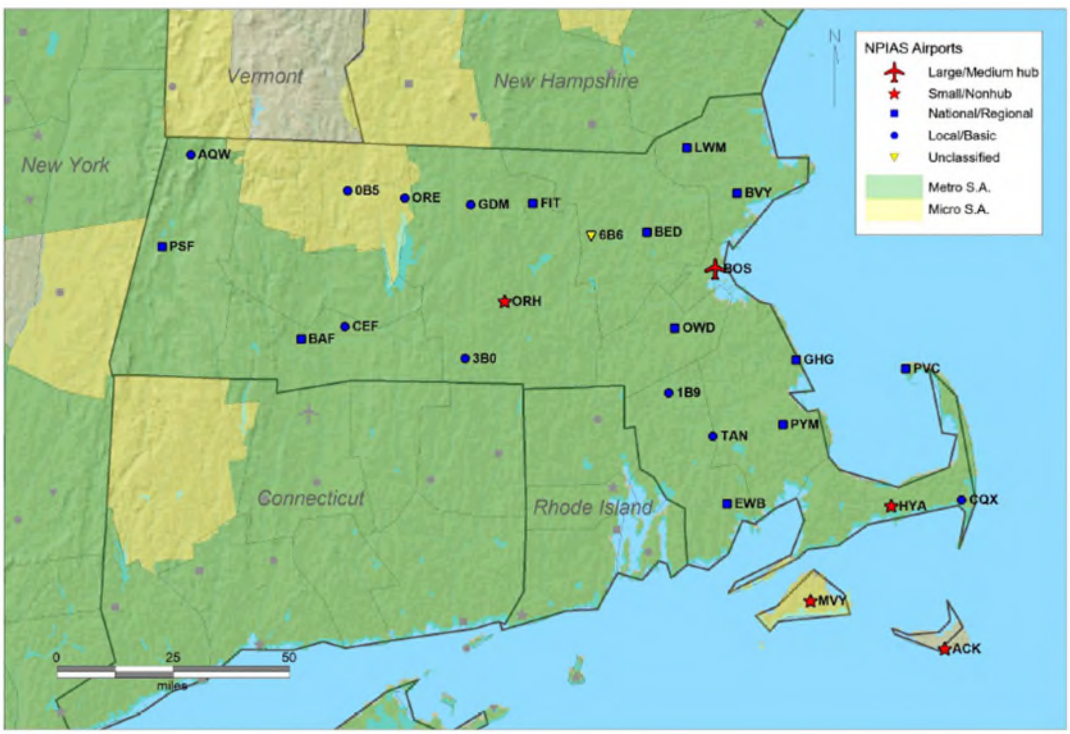

Figure 2-1. Massachusetts Airport Classifications

Source: FAA NPIAS 2023-2027, Appendix B

[7] Defense Environmental Restoration Program. Conclusions and Recommendations for the Former Martha's Vineyard Naval Auxiliary Air Station. October 1994. https://web.archive.org/web/20040308090407/http://naelibrary.nae.usace.army.mil/dp198/ned94073.pdf

[8] MassDOT, 2019, Massachusetts Statewide Airport Economic Impact Study Update: https://www.mass.gov/doc/aeronautics-economic-impact-study-2019/download

[9] 2023-2027 NPIAS, https://www.faa.gov/airports/planning_capacity/npias/current/

[10] Title 49 /https://www.gpo.gov/fdsys/pkg/USCODE-2011-title49/pdf/USCODE-2011-title49-subtitleVII-partB-chap471-subchapI-sec47102.pdf

2.1 Airport Location

MVY is situated in the towns of Edgartown and West Tisbury, Massachusetts, on the island of Martha's Vineyard. The airport is centrally located on the island, approximately 4 miles south of Vineyard Haven, 5 miles southwest of Oak Bluffs, and 5 miles west of Edgartown center.

The airport acts as one of two primary forms of transportation to the island, which is a premier seasonal tourist destination. As such, the airport functions as an important economic asset to the area and surrounding communities.

MVY is one of three airports on the island. Katama Airpark and Trade Wind Airport, both small GA airports with grass runways, are also located on the island. **Figure 2-2** shows MVY in the center of the island, with the smaller airports depicted with red circles to the northeast and southeast. MVY covers 688 acres and is framed by Manuel F. Correllus State Forest to the north, east, and west, and Edgartown – West Tisbury Road to the south.

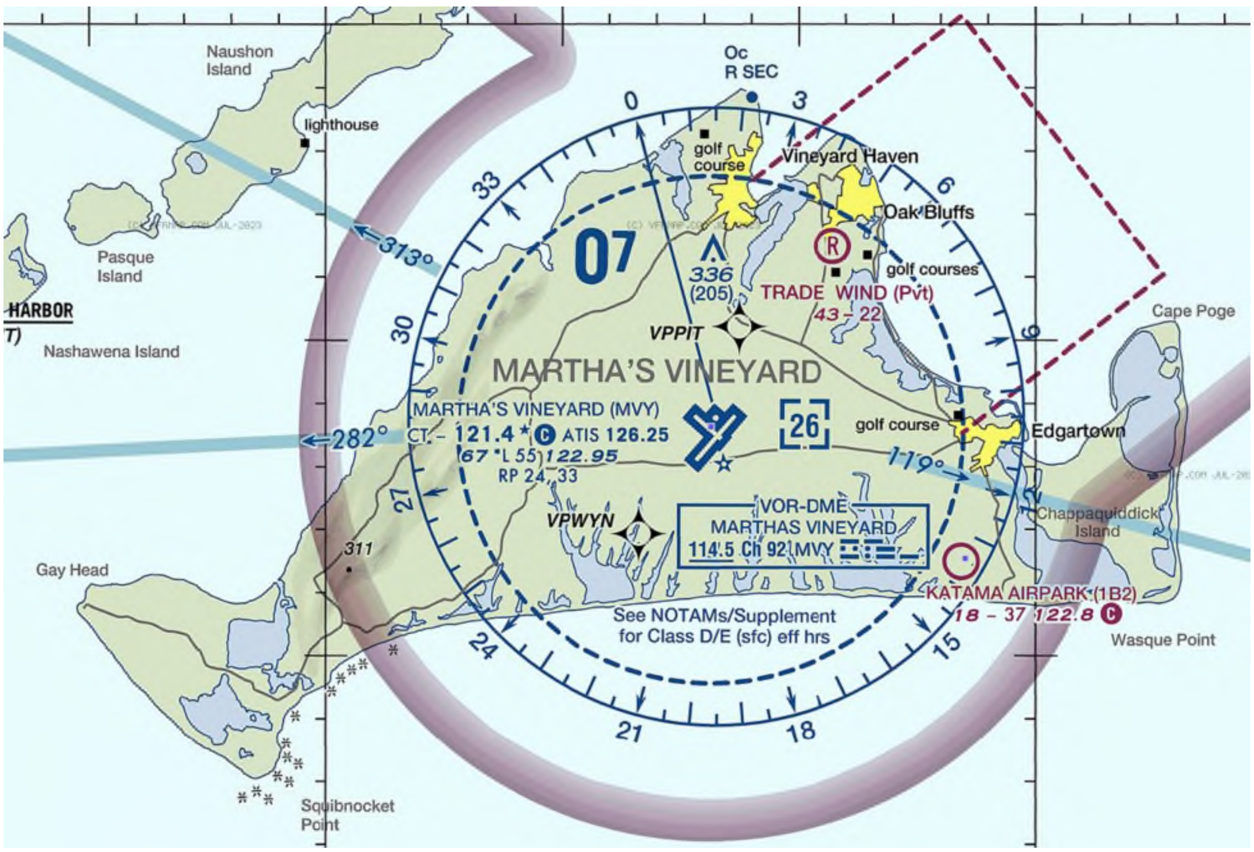

Figure 2-2. Airport Sector Map

Source: http://airnav.com/airports/ accessed Aug. 25, 2023

2.2 Airport Facilities

2.2.1 Airfield

MVY is equipped with two runways: Runway 6/24 and Runway 15/33.

Runway 6/24 (5,504 feet) is the primary runway and supports C-III aircraft. Aircraft are categorized by their approach speed (from A-E) and their tail height and wingspan (from I-VI). Runway 15/33 (3,327 feet) is known as the crosswind runway and is designed for B-II aircraft.

Prevailing wind direction and wind speed usually determine the most favorable runway alignment and configuration at an airport. Strong crosswinds may restrict the use of an airport by aircraft and pilots, depending on the technical capabilities of the aircraft and the skills of the pilot. Smaller aircraft are more affected by crosswinds than larger aircraft.

There are six taxiway exits that connect Runway 6/24 to the airport's apron. Runway 15/33 is served by a taxiway that intersects both airport runways at a 45-degree angle. The taxiways that serve Runway 6/24 are 50 feet wide, and the taxiway serving Runway 15/33 is 35 feet wide.

Table 2-1 summarizes the main characteristics of the two runways and **Figure 2-3** depicts the existing facilities, including taxiways and runways.

2.2.2 General Aviation Facilities

GA facilities include fixed-base operator (FBO) facilities and GA aircraft storage. An FBO is an airport business that caters to the needs of the GA community, offering aircraft and passenger services. GA storage includes T-hangars, conventional/box hangars, and apron space (tie-down). The GA facilities are shown on **Figure 2-3**, with the transient GA ramp and hangar complex labeled.

MVY operates as the Fixed Base Operator (FBO) servicing based and transient aircraft. The FBO provides a variety of services which include aircraft fueling, deicing and anti-icing, parking, tie down and/or hangar storage (for transient aircraft), as well as a conference room, flight planning, weather center access, rental car services, a crew lounge/rest area, and many other services. Airport operations staff are responsible for line service, which includes parking aircraft and pumping 100LL, Jet-A fuel, AvGas, and Diesel fuel. The FBO is open 24 hours per day.

2.2.2.1 Aprons

The aircraft parking apron is located southeast of the airfield. The apron area encompasses approximately 556,000 square feet of space. The parking apron consists of approximately 82 tiedowns available for based or itinerant users. An additional 110,000 square feet of turf provides 28 aircraft tie-downs.

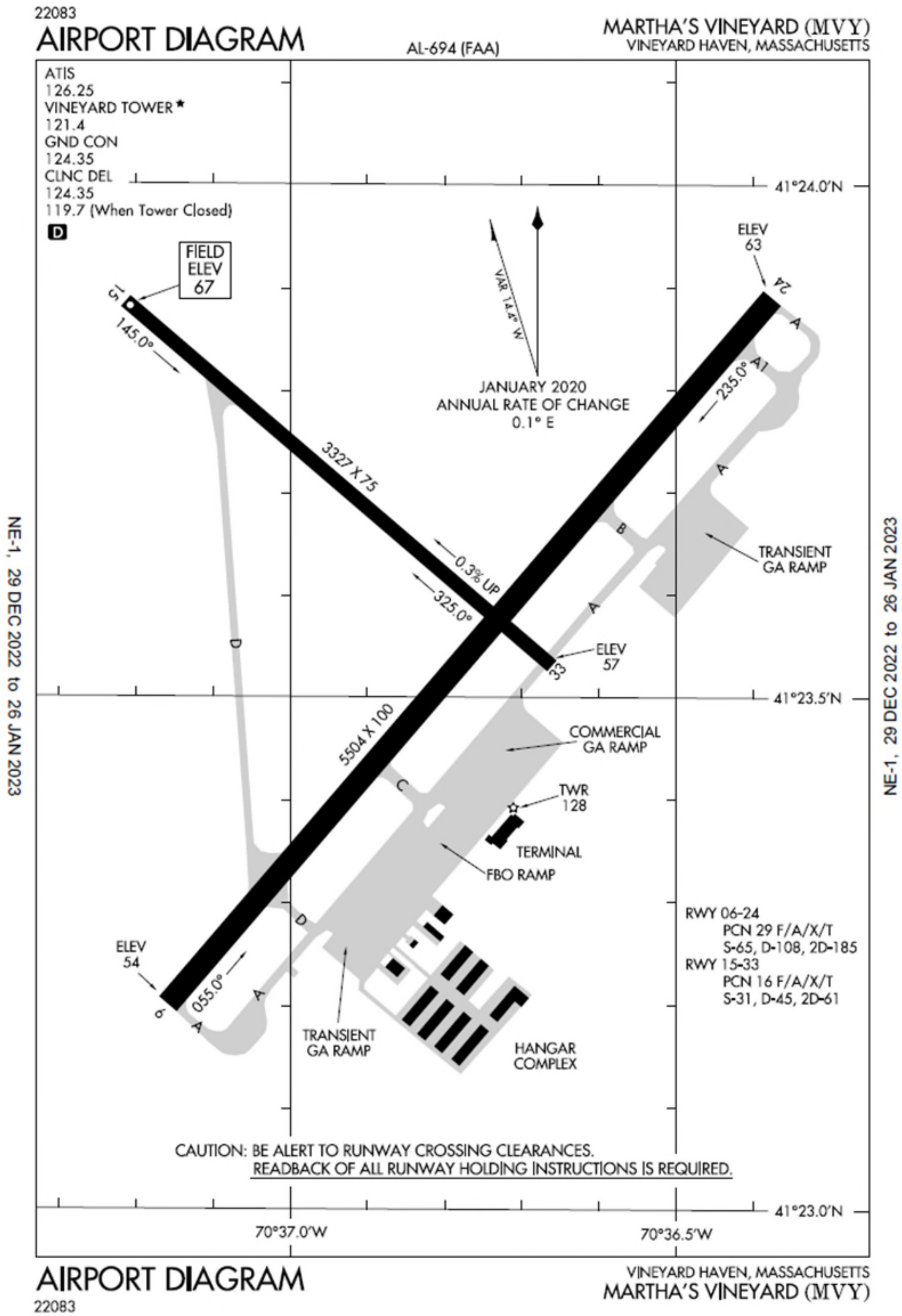

Figure 2-3. Major Airfield and Landside Facilities

Source: FAA Airport Master Record 2023

Table 2-1. MVY Runway Characteristics

Sources: FAA Airport Master Record 2023 and NFDC 2023

Characteristic	Runway 6/24	Runway 15/33
Length	5,504 feet	3,327 feet
Width	100 feet	75 feet
Surface	Asphalt in good condition	Asphalt in fair condition
Lighting	High Intensity Runway Lights	Medium Intensity Runway Lights
Visual Aids	4-box PAPI on the right, 3° glide path (Runway 6 and 24)	-
Weight Bearing	Single Wheel: 65,000 lbs Double Wheel: 108,000 lbs Double Tandem: 185,000 lbs	Single Wheel: 31,000 lbs Double Wheel: 45,000 lbs Double Tandem: 61,000 lbs
Runway Markings	Precision instrument (good condition)	Non-precision instrument (good condition)
Instrument Approach	ILS RWY 24 RNAV (GPS) RWY 6 RNAV (GPS) RWY 24	RNAV (GPS)RWY 15, RNAV (GPS) RWY 33

GPS = Global Positioning System
lbs = pounds
PAPI = Precision Approach Path Indicator
ILS = Instrument Landing System
RNAV = Area Navigation

2.2.2.2 Landside Facilities

The Airport has several facilities vital to successful and efficient daily operation. The terminal building was built in 1998 and provides space for passenger arrival and departure, baggage screening, baggage claim, Transportation Security Administration (TSA) operations, as well as ticket purchasing, rental car services, dining services, restrooms, and other activities. The Airport Rescue and Fire Fighting / Snow Removal Equipment Building is located southwest of the Terminal building and is used to house emergency personnel and medical equipment in the event of an emergency. In addition, equipment to maintain the airport grounds is also stored in this building. Staff dormitories are located on site to ensure airport rescue and/or firefighting services are available 24 hours a day.

The Airport has seven T-hangars for based aircraft with a total of 74 individual storage units, with an eighth hangar soon to be under construction with storage for an additional eight aircraft. Aircraft parking/tiedown areas are divided into several areas at the Airport. There are 28 turf tie-down spots east of the fuel farm, as well as a transient tie-down area directly south of Taxiway A.

2.3 Airport Activity Trends

Figure 2-4 depicts historic and forecast operations at MVY. As the figure indicates, aircraft operations peaked in 2000 at approximately 65,000 operations then decreased to 39,000 operations through 2011. Operations increased between 2012 and 2014, and then decreased to 31,000 operations in 2020. The airport's annual operations count rebounded to over 40,000 operations by 2022. The FAA's Terminal Area Forecast reflects slow forecasted growth at the airport through 2028.

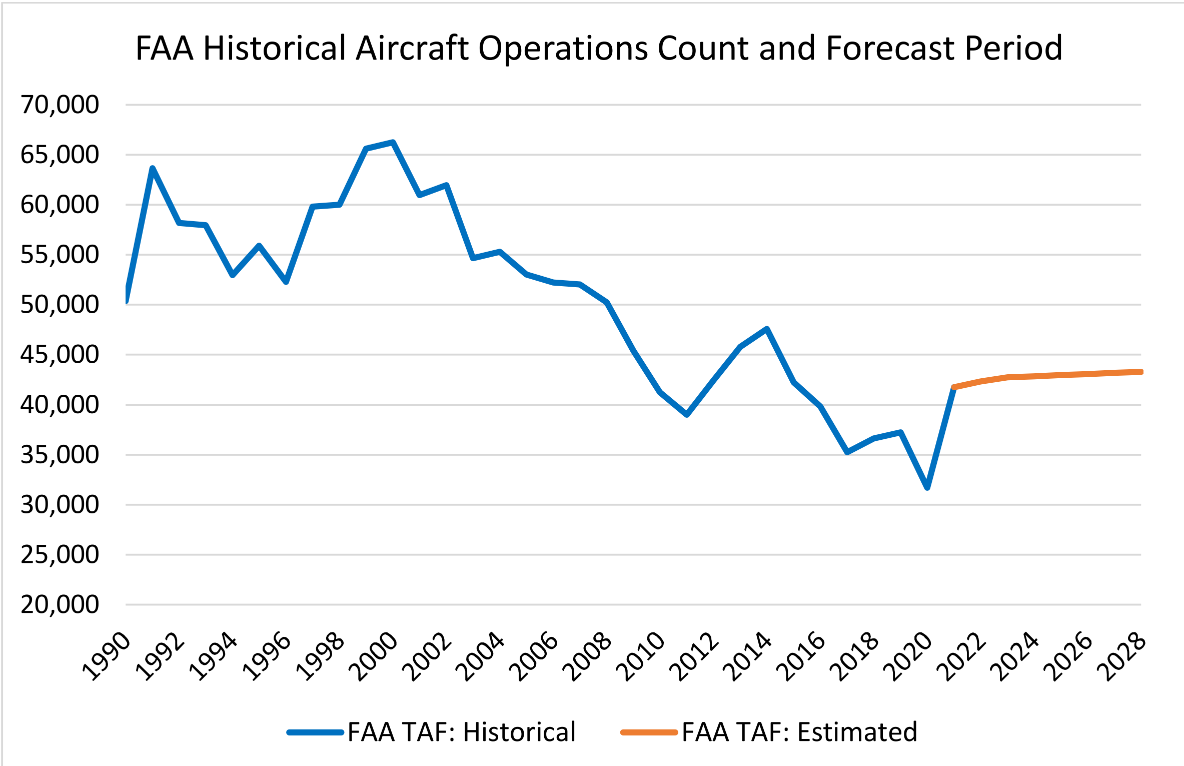

Figure 2-4. Historic and Forecast MVY Aircraft Operations

Sources: FAA TAF

Section 5.2.3 and **Appendix C** provide details on the FAA-approved Part 150 forecasts for this study, including their development and results.

2.4 History of Noise Abatement at MVY

MVAC has a voluntary noise abatement program at MVY. MVAC has chosen to participate in the Part 150 program as a continuation of its efforts to understand and manage noise created by aircraft operations at MVY.

From a national historical perspective, the emphasis on aircraft noise compatibility planning began with the passage of the Airport Safety and Noise Abatement Act of 1979. This Act gave the FAA the authority to issue regulations on noise compatibility planning and provide a means for federal funding of projects dedicated to improving "noncompatible" land uses around an airport. These regulations became the impetus for promulgating 14 CFR Part 150 "Airport Noise Compatibility Planning" (Part 150).

In 2003, MVY developed a noise abatement program as shown in **Figure 2-5** called Fly Friendly, which outlines several voluntary measures that pilots can follow to decrease noise exposure around the airport. The FAA prohibits mandated restrictions of flight paths, hours of operation, and unduly prohibition of open access to airports with exceptions for airports that had restrictions in place prior to a 1990s congressional act. Therefore, the Fly Friendly measures can only be voluntary.

"FLY FRIENDLY" NOISE ABATEMENT PROGRAM

- No departures exceeding 75 dBA between 10:00 p.m. and 6:00 a.m. local time.
- All aircraft avoid intersection departures.
- Corporate pilots use close-in noise abatement profiles as defined by their aircraft manufacturer or by the National Business Aircraft Association (NBAA).
- Preferred runway for noise abatement is Runway 6.
- Use over-water approaches/departures (Runway 6/24) to reduce noise over residential areas especially at night and early morning.
- Pattern altitudes: light aircraft (1,000 feet), large and turbine powered aircraft (1,500 feet).
- Remain 1 mile offshore when circumnavigating the island.
- See FAA Advisor Circular AC90-66A.

Figure 2-5. MVY Noise Abatement Procedures

Source: MVY and HMMH, 2023

Fly Friendly encourages pilots to be aware of noise sensitive areas, which includes avoiding prolonged runups, minimizing tight turns over residential areas, climbing to 2000 feet as soon as possible then reducing power settings, avoid flying low, and keep training patterns as compact as possible. They are encouraged to fly across the least noise-sensitive areas or circumnavigate the island over the ocean.

Fly Friendly recommends pilots delay aircraft turns to avoid flying over the noise sensitive residential areas to the south and west of the airport. To achieve this, aircraft departing from Runway 24 should wait to turn until reaching an altitude of 2000 feet or 2 miles from the runway end, which is over Tisbury Great Pond. Right turns can be made when departing Runway 24 if the aircraft turns before Edgartown-West Tisbury Road and remains over the Manuel F. Correllus State Forest. Aircraft landing on Runway 6 should intercept a 2 mile straight in path or turn over Tisbury Great Pond. **Appendix G** presents an assessment of the current noise abatement program at MVY known as "Fly Friendly".

2.4.1 Noise Comments

The Airport provides an online noise complaint form (https://veoci.com/veoci/p/w/5rafwvkje6pm) as a means of addressing and monitoring noise issues. MVY staff review noise complaints and investigate what aircraft may have caused the issue using the airport flight tracking system. When necessary MVY staff respond back to the complainant.

3 Land Use

Part 150 requires the review of land uses located in the airport environs to understand the relationship between land uses and the noise exposure associated with arriving and departing aircraft. This includes delineation of land uses within the DNL 65 dB and higher DNL aircraft noise exposure contours on the NEMs and identification of noise sensitive uses that may be noncompatible with that level of noise exposure. Identification of a noise sensitive use within the DNL 65 contour does not necessitate that the use is either considered noncompatible or that it is eligible for mitigation. Rather, identification indicates that the use is considered potentially noncompatible, requiring further investigation. Factors that influence compatibility and/or eligibility include but are not limited to:

- previous sound reduction treatments
- current interior noise levels
- structure condition
- ambient and self-generated noise levels
- whether a given use is considered temporary or permanent
- timeframe within which a given structure was constructed[11]

This chapter provides an overview of the municipal jurisdictions with authority to regulate land use in the vicinity of MVY, a description of recommended land uses that are deemed generally compatible under Appendix A of Part 150, the land use data collection and verification process, and an overview of existing land uses and zoning classifications in the vicinity of the airport.

3.1 Land Use Compatibility Guidelines

The objective of airport noise compatibility planning is to promote the compatible growth and development of airports with their surrounding communities. Part 150 requires the review of existing land uses surrounding an airport to understand effects associated with aircraft activity at the airport. A key element of the Noise Exposure Map (NEM) process is the development of detailed land use and zoning maps, including a thorough review of residential and other non-compatible land uses in areas exposed to levels of airport noise approaching or exceeding DNL 65.

The FAA published land-use compatibility guidelines in Part 150, Appendix A, Table 1; these are reproduced in **Table 3-1** of this document. Based on these guidelines, the FAA considers all land uses to be compatible with aircraft-related DNL levels below 65 dB, including residential, hotels, retirement homes, intermediate care facilities, hospitals, nursing homes, schools, preschools, and libraries. These categories will be referenced throughout the Part 150 process.

[11] On March 27, 1998, FAA issued a policy on 14 CFR Part 150 airport noise compatibility programs that limits approval of remedial mitigation measures, e.g., soundproofing, property acquisitions, and relocation, etc., to land uses that were in place as of October 1, 1998 unless an airport can demonstrate that DNL contours were not published prior to that date. New non-compatible uses resulting from airport expansion may be eligible for consideration.

Table 3-1. Part 150 Airport Noise / Land Use Compatibility Guidelines

Source: Part 150, Appendix A, Table 1

Land Use	Yearly Day-Night Average Sound Level, DNL, in Decibels					
	<65	65-70	70-75	75-80	80-85	>85
Residential Use						
Residential other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home park	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail--building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade--general	Y	Y	Y(2)	Y(3)	Y(4)	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

Key to Table 3-1

SLUCM:	Standard Land Use Coding Manual.
Y(Yes):	Land use and related structures compatible without restrictions.
N(No):	Land use and related structures are not compatible and should be prohibited.
NLR:	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30, or 35:	Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dBA must be incorporated into design and construction of structure.

Notes for Table 3-1

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dBA and 30 dBA should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dBA, thus, the reduction requirements are often started as 5, 10, or 15 dBA over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

2) Measures to achieve NLR of 25 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

3) Measures to achieve NLR of 30 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

4) Measures to achieve NLR of 35 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

5) Land use compatible provided special sound reinforcement systems are installed.

6) Residential buildings require an NLR of 25.

7) Residential buildings require an NLR of 30

8) Residential buildings not permitted

3.2 Land Use Data Collection and Verification

MVAC and the Study Team established a study area within approximately five nmi of MVY that meets regulatory requirements of Part 150 and collected detailed land use information from municipalities throughout the study area. Land use data analysis and verification focused on the area within the 2014 DNL 55 contours as published on the airport's website ensure the collection of sufficient land use information. The jurisdictions determined to be within one mile of the airport and to potentially have land uses within the MVY DNL 65 or higher aircraft noise exposure areas were the County of Dukes County, the Town of West Tisbury, and the Town of Edgartown. Data from the MassGIS (Bureau of Geographic Information) parcel database[12] were summarized according to the Part 150 land use categories for the land use map.

The land use map and data were reviewed and verified by the jurisdictions within the study area. **Figure 3-1** shows the results of the land use data collection and verification process.

[12] MVY parcel database pulled from: https://www.mass.gov/info-details/massgis-data-property-tax-parcels on January 23, 2023

3.2.1 Local Municipality Coordination

Within the MVY land use data collection area, the following agencies and municipalities were consulted to document existing land uses, identify any future planned land uses near the airport, and discuss applicable land use controls and/or policies:

- Martha's Vineyard Commission (MVC)
- Town of West Tisbury
- Town of Edgartown

Both towns are located within the County of Dukes County, which encompasses the entire island. The MVC is the regional planning agency for the island and the County of Dukes County. Both towns deferred to the MVC regarding the land use review for this study.

3.2.2 Noise Sensitive Sites

Noise sensitive sites are those land uses considered noncompatible within the DNL 65 contour due to adverse effects of high levels of aircraft noise, like residences, schools, hospitals, nursing homes, religious facilities, outdoor music shells, amphitheaters, parks, campgrounds and libraries.[13] Part 150 requires that properties eligible for inclusion in the National Register of Historic Places (NRHP) to be identified and mapped along with these land uses[14] There are several NHRP historic districts on the island, but they are located within the town centers. The closest identified local historic district to MVY is the West Tisbury Historic District in West Tisbury[15] approximately two nmi west of the airport. **Figure 3-1** shows the land uses within the Study Area and the locations of noise sensitive sites.

[13] These noise sensitive categories are defined in Part 150, Appendix A, Table 1 and are shown in Table 3-1

[14] Nominations for listing historic properties come from State Historic Preservation Officers, from Federal Preservation Officers for properties owned or controlled by the United States Government, and from Tribal Historic Preservation Officers for properties on Tribal lands. A professional review board in each state considers each property proposed for listing and makes a recommendation on its eligibility.

[15] https://www.mvcommission.org/historic-resources

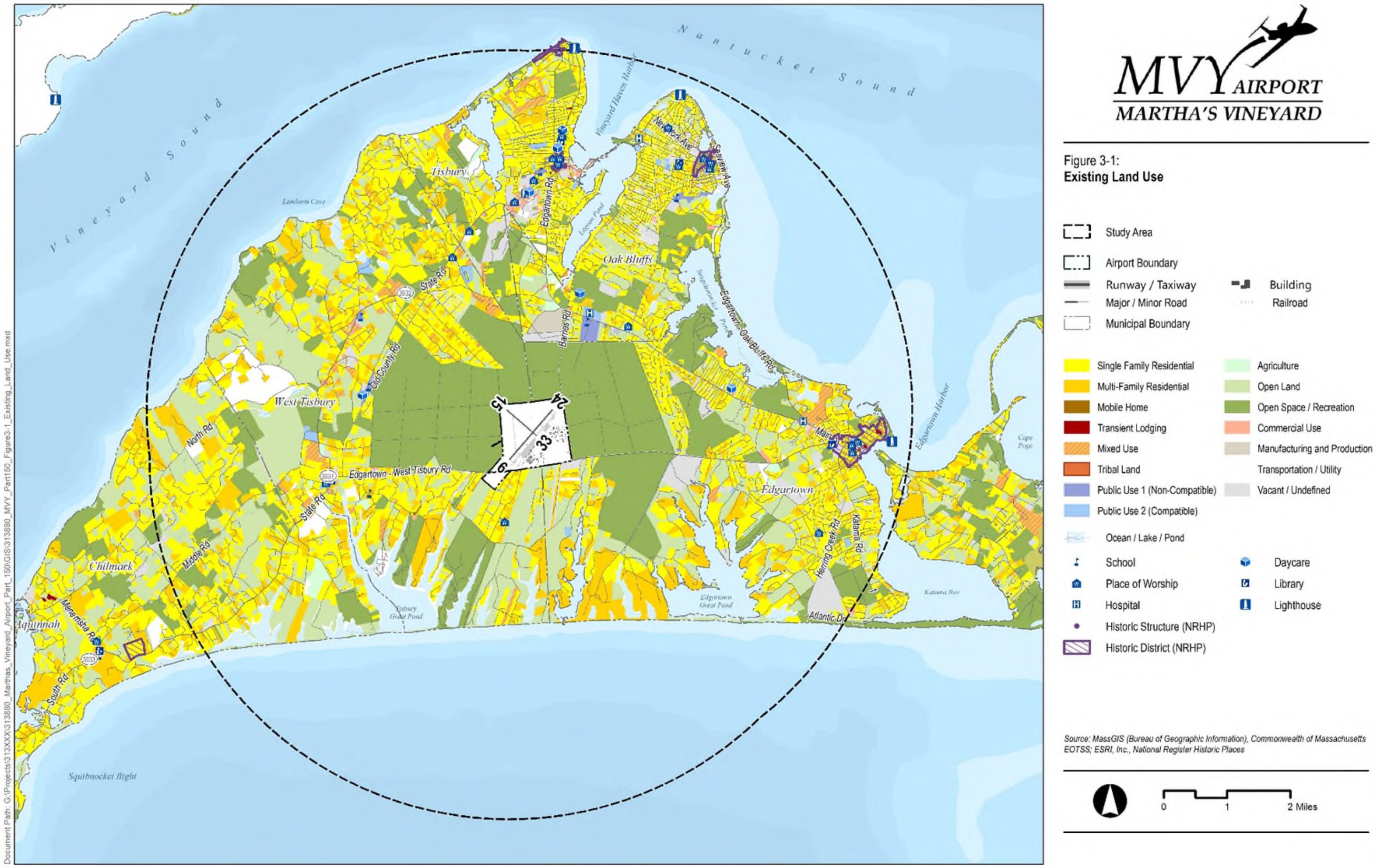

Figure 3-1. Generalized Land Use and Noise Sensitive Sites

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4 Noise Measurements

Part 150 does not require airport operators to measure noise levels and if measurements are conducted, the measurement data cannot be used to calibrate or modify the noise modeling results. However, measurements provide important input to an understanding of the noise environment. It is important to remember that measurements represent a snapshot in time and are representative for only that period, as many factors can affect airport operations and noise levels. The Study Team conducted a noise measurement program in the airport's environs from July 10, 2023 to July 18, 2023.

The following subsections summarize the objectives, design, execution, and results of the noise measurement program. Results are presented as average day night sound level (DNL) and Maximum sound level (L_{max}).

4.1 Noise Measurement Program

Though Part 150 does not require noise measurements, noise measurement results may be included as supplementary information to help describe the existing aircraft noise environment. During scoping for this project, the community was very interested in existing measured noise levels at the airport; therefore, a noise measurement program was included as part of this Study.

The noise measurement program included three primary measurement locations and seven secondary locations where data was collected using portable noise monitors[16] capable of extended, continuous, unattended operation. Over 185 hours of noise measurement data were collected at each of the three primary measurement sites, and 48-120 hours of data were collected at each of the seven secondary locations during the measurement period.

4.1.1 Noise Measurement Instrumentation

The Study Team conducted the noise measurements in accordance with Part 150 Section A150.5 "Noise measurement procedures and equipment" using HMMH-owned Bruel & Kjaer Model 2245 ("BK2245") noise monitors. The BK2245s meet (ANSI) Specification for Sound Level Meters, S1.4–1983 standards for Type 1 precision meters and meet or exceed accuracy requirements defined in Part 150 paragraph 150.5. The Study Team calibrated the equipment in the field in accordance with standards set by the United States National Institute of Standards and Technology (NIST).

The monitors measure continuous A-weighted[17] noise levels at 1-second increments and compute a broad range of noise values, including:

- Cumulative noise exposure metrics, such as:
  - Hourly equivalent continuous sound level (L_{eq})
  - DNL

[16] Bruel & Kjaer Model 2245 Sound Level Meters

[17] The Environmental Protection Agency recommends environmental noise be measured and reported using A-weighting to account for how humans perceive loudness of noise sources. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, Environmental Protection Agency, April 2, 1974.

- Single-event noise metrics, such as:
  - L_{max}
  - SEL

Appendix A provides an in-depth description of these metrics. All measurements were A-weighted, as discussed in **Section 1.4.1** and as required in Part 150 Section 150.5. Per FAA guidance, the noise measurement data was not used to adjust or "calibrate" the Aviation Environmental Design Tool (AEDT).

The noise monitoring units operated on a 24-hour basis during the nine-day measurement period, with breaks for battery changes, calibration, and basic maintenance requirements. To the extent feasible during daylight hours, the Study Team spent time at the monitoring locations to observe and log aircraft and non-aircraft noise-producing events, weather data, and other relevant information.

4.1.2 Noise Measurement Site Selection

The monitoring locations were selected based on the Study Team's and MVAC's recommendations, with input from the TAC[18]. The main consideration in identifying sites was to choose residential land areas that are exposed to aircraft noise in different areas surrounding the airport. Some locations were chosen for their proximity to frequently used flight paths. Radar data from July and August 2022 informed the site selection process.[19]

The focus of the measurements was in the following areas:

- Those exposed to the highest noise levels, which are the residential communities close to MVY under the departure and arrival flight corridors,
- Residential communities exposed to ground noise from aircraft.

The group of sites was selected to provide representative data on the broadest range of aircraft operations and geographic areas surrounding the airport. The chosen locations are presented in **Figure 4-1** and **Table 4-1** provides a summary of the noise measurement sites.

[18] Also, members of the public provided written or emailed suggestions for measurement locations; these were accommodated to the extent possible.

[19] The operations data was obtained from the MVY Vector System.

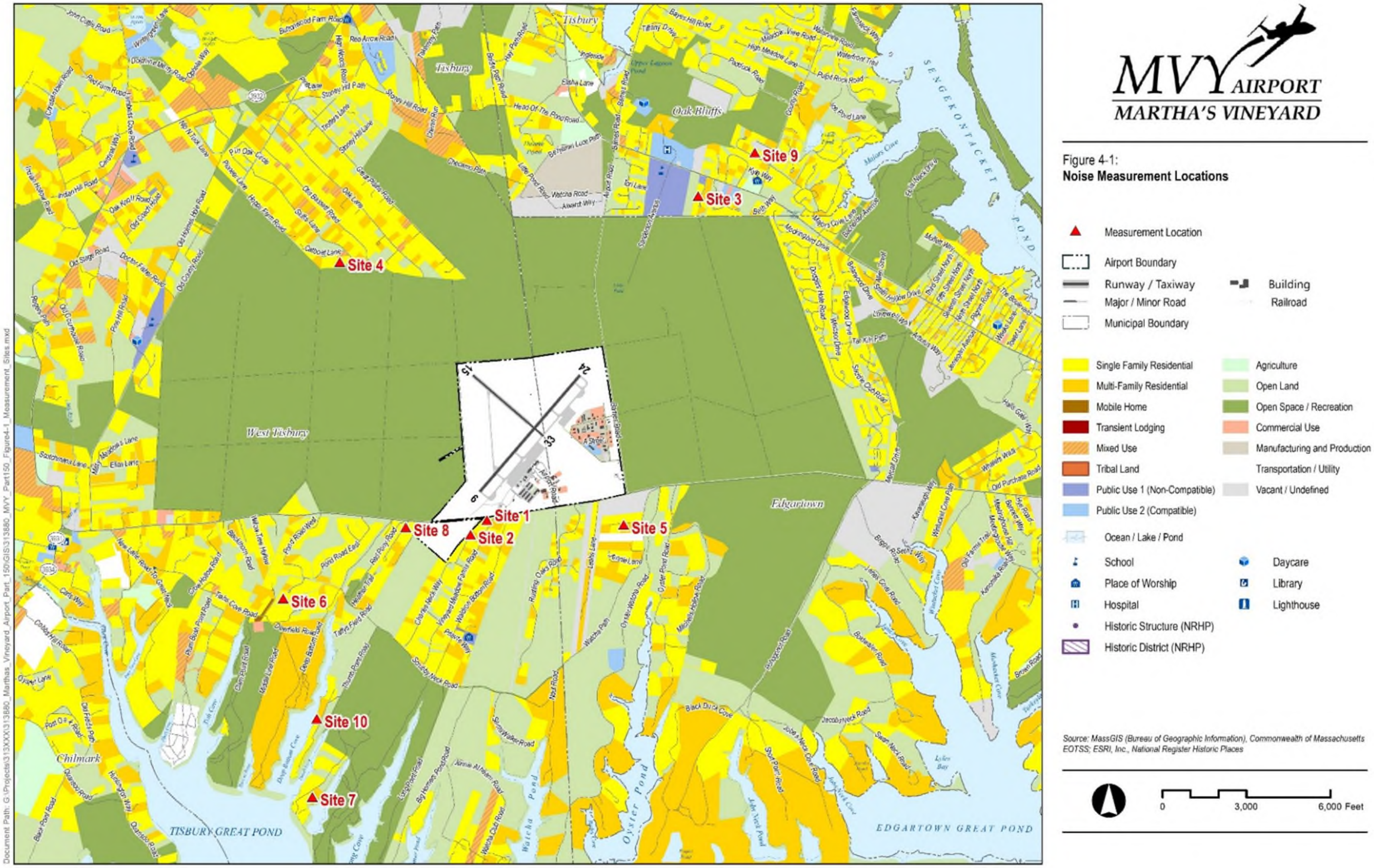

Figure 4-1. Map of Measurement Locations in Relation to MVY

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Table 4-1. Summary of Noise Measurement Sites

Source: HMMH, 2023

Site	General Location	Address	Measurement Dates/Times	Hours of Monitoring
Site 1	South of Airport, proximal to taxiway and Runway 6	9 Vineyard Meadow Farms Road, West Tisbury	**Start: July 13, 2023 11:27** **End: July 18, 2023 12:07**	121
Site 2	South of Airport, proximal to taxiway and Runway 6	41 Vineyard Meadow Farms Road, West Tisbury	**Start: July 10, 2023 15:49** **End: July 18, 2023 11:40**	186
Site 3	Northeast of Airport (Runway 24)	15 Ryan's Way, Oak Bluffs	**Start: July 10, 2023 17:23** **End: July 18, 2023 11:20**	186
Site 4	Northwest of Airport (Runway 15)	14 Catboat Lane, West Tisbury	**Start: July 10, 2023 16:36** **End: July 18, 2023 10:49**	186
Site 5	Southeast of Airport (Runway 33)	35 Watcha Path, Edgartown	**Start: July 10, 2023 18:02** **End: July 13, 2023 9:42**	64
Site 6	Southwest of Airport (Runway 6)	34 South Pond Road, West Tisbury	**Start: July 11, 2023 10:40** **End: July 13, 2023 11:08**	48
Site 7	Southwest of Airport (Runway 6 extended centerline)	176 Middle Point Road, West Tisbury	**Start: July 13, 2023 10:25** **End: July 15, 2023 11:52**	49
Site 8	Southwest of Airport (Runway 6)	208 Edgartown - West Tisbury Road, West Tisbury	**Start: July 15, 2023 11:04** **End: July 18, 2023 11:57**	73
Site 9	Northeast of Airport (Runway 24)	15 Quantapog Road, Oak Bluffs	**Start: July 11, 2023 9:52** **End: July 15, 2023 10:20**	96
Site 10	Southwest of Airport (Runway 6 extended centerline)	159 Thumb Point Road, West Tisbury	**Start: July 15, 2023 12:35** **End: July 17, 2023 12:59**	48

4.1.3 Conditions During Noise Measurement Program

Over the course of the measurement period, the Study Team planned to collect data from each active runway. Runway 6 is the preferred runway for noise abatement. However, runway use is often dictated by the winds as pilots prefer to depart into the wind. Runway utilization rates at MVY for each day of the measurement period are provided in **Table 4-2**. Most of the aircraft operations occurring during the measurement period used Runway 24.

Table 4-2. Measurement Period Runway Utilization

Source: HMMH, 2023

Date	Utilization for each Runway End					
	6	15	24	33	Total	Operation Count
7/10/2023	56.0%	0.0%	44.0%	0.0%	100%	125
7/11/2023	0.4%	0.0%	97.5%	2.1%	100%	238
7/12/2023	0.0%	1.0%	97.1%	1.9%	100%	206
7/13/2023	0.5%	1.0%	98.0%	0.5%	100%	210
7/14/2023	8.5%	4.3%	86.6%	0.6%	100%	164
7/15/2023	0.0%	15.7%	84.3%	0.0%	100%	127
7/16/2023	0.0%	2.0%	98.0%	0.0%	100%	148
7/17/2023	0.0%	0.0%	97.6%	2.4%	100%	207
7/18/2023	0.0%	0.8%	98.4%	0.8%	100%	118
Measurement Period Overall	**7.3%**	**2.8%**	**89.0%**	**0.9%**	**100%**	**1543**

Notes:
1. The Runway 6 operations on July 10 occurred prior to the deployment of the noise monitors.
2. Operations on July 14 were likely fewer than a typical peak season Friday due to a line of storms extending along the East Coast.
3. The airport was closed for a few hours on July 15 following an accident at the airport.

Figure 4-2 graphically depicts the weather conditions and airport operating direction during the noise measurement program. Wind direction, wind speed, cloud cover, and temperature are color-coded to show their variation during the measurement program.

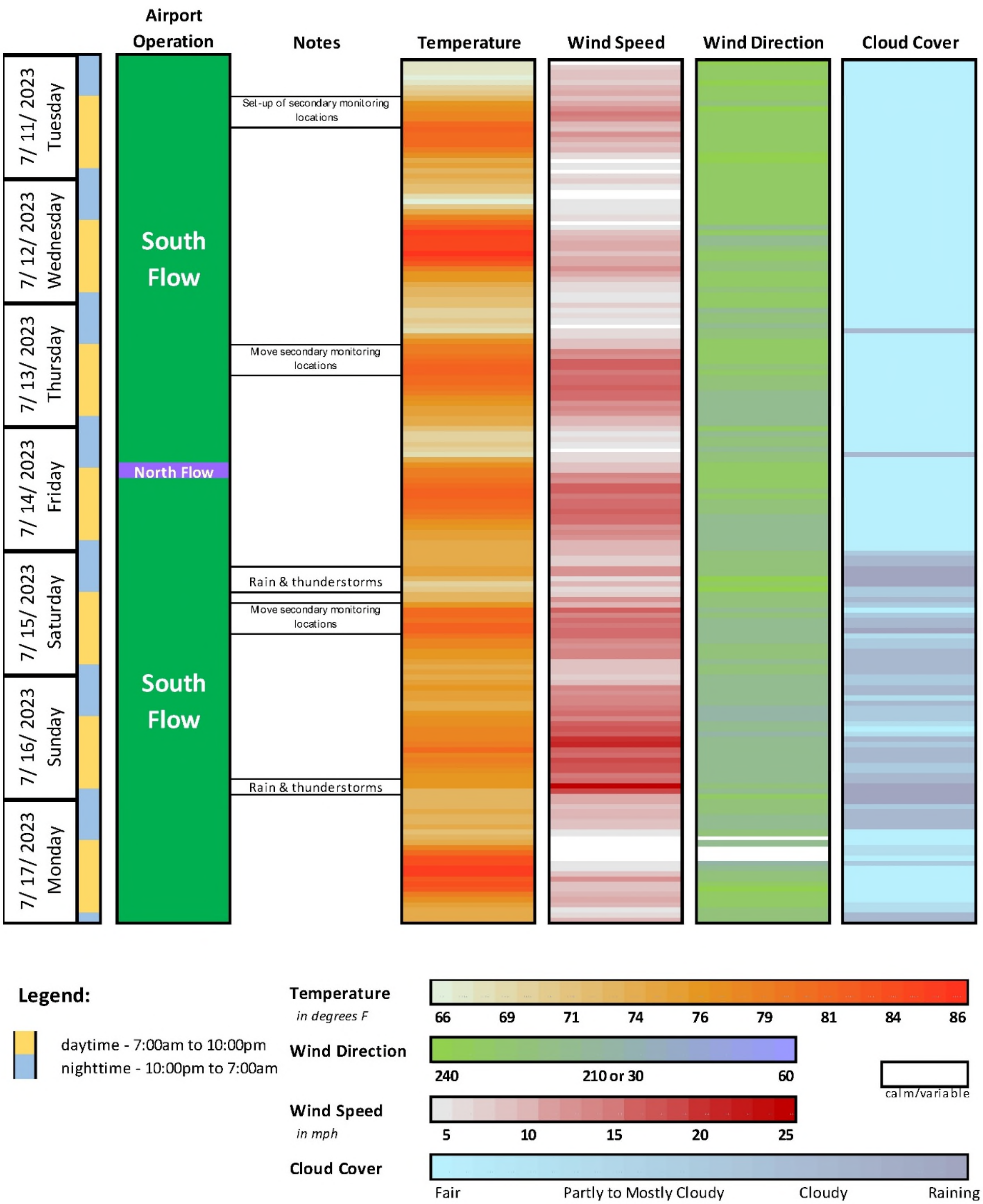

Figure 4-2. Weather and Airport Operating Conditions During the Measurement Program

Sources: https://www.wunderground.com/history/daily/us/ma/west-tisbury/KMVY/date/2023-7-11 to 2023-7-17 and HMMH

4.2 Summary of Cumulative Noise Level Results

By correlating the continuously-collected noise data (where noise levels are recorded every half-second) to radar flight data, the analysis can separate aircraft-created noise from ambient sounds created by animals, weather, or other human activity. The noise energy for any given time period can thus be summed and labeled as the aircraft portion, the community portion, or the total. The cumulative noise levels are presented as hourly averages (L_{eq})[20] and as 24-hour averages with a nighttime weighting (DNL).

The DNL measurement results for the ten temporary measurement locations during the portable noise measurement period (July 10 through July 18, 2023) are summarized in **Table 4-3**. The aircraft-only DNL results ranged from a low of 38 dB at Site 5 to a high of 59 dB at Site 2. The total DNL (aircraft and community noise events) ranged from 50 to 60 dB. These results are compared with noise model calculations in **Section 6.3**.

Table 4-3. Summary of DNL Results at the Noise Measurement Sites

Source: HMMH, 2023

Site Number	DNL	Tues July 11	Wed July 12	Thurs July 13	Fri July 14	Sat July 15	Sun July 16	Mon July 17	Measurement Period Total
1	Aircraft	N/A	N/A	N/A	56	57	59	59	58
	Total	N/A	N/A	N/A	58	59	61	61	59
2	Aircraft	58	57	57	57	59	61	60	59
	Total	59	59	58	58	59	61	61	60
3	Aircraft	49	48	52	51	49	52	54	51
	Total	52	51	54	53	52	55	57	53
4	Aircraft	44	43	45	47	47	45	46	45
	Total	54	51	52	54	58	56	53	55
5	Aircraft	37	39	N/A	N/A	N/A	N/A	N/A	38
	Total	54	52	N/A	N/A	N/A	N/A	N/A	53
6	Aircraft	N/A	46	N/A	N/A	N/A	N/A	N/A	47
	Total	N/A	50	N/A	N/A	N/A	N/A	N/A	50
7	Aircraft	N/A	N/A	N/A	43	N/A	N/A	N/A	43
	Total	N/A	N/A	N/A	52	N/A	N/A	N/A	54
8	Aircraft	N/A	N/A	N/A	N/A	N/A	59	57	58
	Total	N/A	N/A	N/A	N/A	N/A	60	59	59
9	Aircraft	N/A	51	55	55	N/A	N/A	N/A	53
	Total	N/A	53	56	57	N/A	N/A	N/A	55
10	Aircraft	N/A	N/A	N/A	N/A	N/A	50	N/A	52
	Total	N/A	N/A	N/A	N/A	N/A	54	N/A	55

Note: Daily DNL totals are only shown for days with a full 24 hours of measurements. Measurement period average DNL is calculated from the entire measurement period for each site.

[20] The equivalent noise level for any given period of time, denoted L_{eq}, is simply the fluctuating noise energy averaged out over that time frame. Hourly L_{eq} values are reported in Appendix B. By identifying noise from aircraft events, it is possible to separate the aircraft noise (aircraft-only sound levels) from the other noise that occurred (community sound levels).

4.3 Site-by-Site Results

This section provides site-by-site discussions of the noise monitoring locations. Measurement results include single-event sound levels in terms of L_{max}, and cumulative exposure in terms of L_{eq} and DNL. L_{max} measurements provide a basis for comparing the maximum sound levels produced by aircraft and non-aircraft sources at any given site, as well as single-event levels among sites.

Noise events were identified from the sound level data by correlating timestamps with aircraft radar data and detecting exceedance of ambient sound thresholds.[21] To count as an event, a noise source would have to exceed the threshold for a minimum of 10 seconds. The sound and time thresholds were chosen to maximize the number of noise event captures, meaning they were set as low as possible without being so low that events were indistinguishable from background noise. The threshold settings have no effect on the cumulative noise exposure measurements, L_{eq} or DNL.

The measured hourly levels followed a typical daily pattern, increasing in the morning, remaining elevated until the early evening, and then falling during the late evening and nighttime hours, with the lowest levels during the late night and early morning hours. This type of pattern occurred at all noise monitoring sites and is very common at locations affected by human activity, whether it relates to aircraft operations, surface traffic, or other community sources. **Appendix B** presents event logs for each attended monitoring period, site logs detailing the site location, and hourly L_{eq} graphs for each site.

As Sites 2 and 3 were the primary sites closest to the airport and closest to the extended runway centerline, they had the largest set of identified aircraft events during the attended monitoring periods. Aircraft noise event summaries are presented for the attended monitoring periods at Site 2 and Site 3.

4.3.1 Site 1, 9 Vineyard Meadow Farms Road, South Side of Airport

Site 1 was located on Vineyard Meadow Farms Road approximately 900 feet southeast of the extended centerline of Runway 6/24, roughly 1,100 feet southeast of the Runway 6 approach end (Runway 24 departure end). The noise monitor was in the back yard of a single-family residence, approximately 30 feet from the house and 10 feet from a wooded area.

This site was chosen because of its proximity to the airport, with consideration of concerns from neighborhood residents about noise from aircraft ground operations, particularly taxi noise and pre-flight runups from aircraft departing Runway 6. Runway 24 was the primary runway in use during the measurements at this site. The principal aircraft operations affecting the site during the measurement period were departures from Runway 24.

120 full hours of measurements were conducted at Site 1. The hourly L_{eq} ranged approximately from 34 to 73 dB. The highest L_{max} recorded at Site 1 was 88 dB caused by an Embraer 190 departing from Runway 24.

The highest hourly L_{eq} at 73 dB was for the hour starting at 11 a.m. (1100) on the morning of July 14. For aircraft only events, the highest hourly L_{eq} was 72.9 dB for the hour starting at 11 a.m. (1100) on July 14. The overall measured aircraft DNL at Site 1 was 58 dB.

[21] equivalent to 90 percent of the 2-minute rolling average L_{eq}.

4.3.2 Site 2, 41 Vineyard Meadow Farms Road, South Side of Airport

Site 2 was located on Vineyard Meadow Farms Road approximately 800 feet southeast of the extended centerline of Runway 6/24, roughly 1,600 feet southwest of the Runway 6 approach end (Runway 24 departure end). The monitor was in the side yard of a single-family residence, approximately 40 feet from the house and 15 feet from a wooded area.

This site was chosen because of its proximity to both the airport and to the extended runway centerline. Runway 24 was the primary runway in use during the measurements at this site. The principal aircraft operations affecting the site were departures from Runway 24.

184 full hours of measurements were conducted at Site 2. An Embraer 190 departure from Runway 24 produced the highest L_{max} of an attended monitoring period of 88 dB. **Table 4-4** and **Figure 4-3** present a summary of the aircraft noise events by aircraft type during the attended monitoring periods at Site 2.

Table 4-4. Site 2 Summary of Observed Noise Events

Source: HMMH, 2023

Propulsion	Count	L_{max} Range	SEL Range
Air Carrier Jet	5	85 – 88	93 – 95
Corporate Jet	7	75 – 87	83 – 93
Single Piston	9	68 – 83	74 – 91
Twin Piston	4	73 – 81	81 – 87
Single Turboprop	11	70 – 77	79 – 84
Twin Turboprop	2	71 – 71	78 – 79

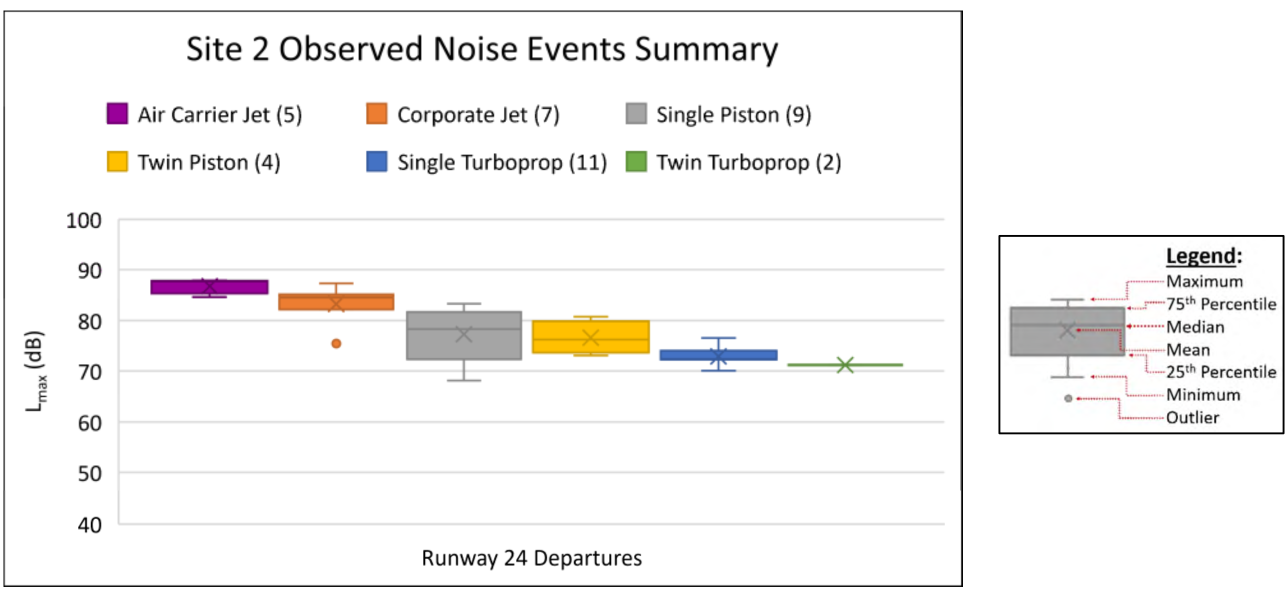

Figure 4-3. Site 2 Attended Monitoring Noise Event Summary

Source: HMMH, 2023

The hourly L_{eq} ranged approximately from 27 to 65 dB. The highest hourly L_{eq} at 64.7 dB was for the hour starting at 3 p.m. (1500) on the afternoon of July 17. For aircraft only events, the highest hourly L_{eq} was 64.5 dB for the hour starting at 3 p.m. (1500) on July 17. The overall measured aircraft DNL at Site 2 was 59 dB, the highest of all the sites during the measurement period.

4.3.3 Site 3, Ryan's Way, North Side of Airport

Site 3 was located on Ryan's Way approximately 900 feet northwest of the extended centerline of Runway 6/24, roughly 7,600 ft northeast of the arrival end of Runway 24 (Runway 6 departure end). The monitor was in the front yard of a single-family residence, approximately 50 feet from the house and 50 feet from a dead-end road.

This site was chosen because of its location in the nearest residential area on the north side of the airport. Runway 24 was the primary runway in use during the measurements at this site. The principal aircraft operations affecting the site were arrivals to Runway 24.

185 full hours of measurements were conducted at Site 3. An Embraer 170 arrival to Runway 24 produced the highest L_{max} of an attended monitoring period of 78 dB. **Table 4-5** and **Figure 4-4** present a summary of the aircraft noise events by aircraft type during the attended monitoring periods at Site 3.

Table 4-5. Site 3 Summary of Observed Noise Events

Source: HMMH, 2023

Propulsion	Count	L_{max} Range	SEL Range
Air Carrier Jet	12	71 – 78	79 – 86
Corporate Jet	18	58 – 72	68 – 81
Single Piston	5	52 – 65	61 – 74
Twin Piston	14	51 – 76	61 – 82
Single Turboprop	7	70 – 77	78 – 85
Twin Turboprop	3	65 – 73	75 – 82

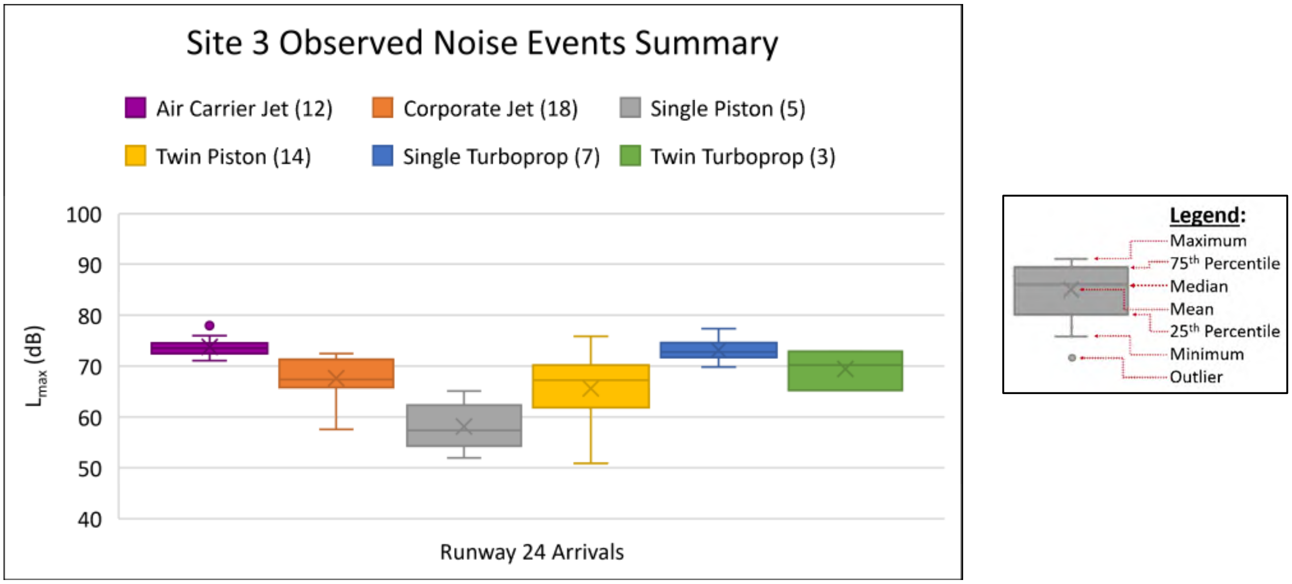

Figure 4-4. Site 3 Attended Monitoring Noise Event Summary

Source: HMMH, 2023

The hourly L_{eq} ranged from approximately 31 to 60 dB. The hour starting at 11 a.m. (1100) on the morning of July 14 had the highest hourly L_{eq} value, of approximately 60 dB. For aircraft only events, the highest hourly L_{eq} was 58.7 dB for the hour starting at 5 p.m. (1700) on July 13. The overall measured aircraft DNL at Site 3 was 51 dB.

4.3.4 Site 4, Catboat Lane, Northwest Side of Airport

Site 4 was located on Catboat Lane directly under the extended centerline of Runway 15/33, roughly 6,200 feet northwest of the arrival end of Runway 15 (Runway 33 departure end). The monitor was in the front yard of a single-family residence, approximately 50 feet from the house and adjacent to the driveway.

This site was selected as representative of the nearest residential area on the northwest side of the airport, in line with the crosswind runway. Runway 24 was the primary runway in use during the measurements at this site. Very little aircraft activity was observed during the attended monitoring periods at Site 4. The principal aircraft operations affecting the site are arrivals to Runway 15 and departures from Runway 33.

184 full hours of measurements were conducted at Site 4. The highest L_{max} recorded at Site 4 was 87 dB caused by a Cessna 208 arriving to Runway 15.

The hourly L_{eq} ranged from approximately 31 to 62 dB. The hour starting at 5 a.m. (0500) on the morning of July 15 had the highest hourly L_{eq} value, of approximately 62 dB. A review of the noise data captured during this period shows periods of sustained elevated noise not consistent with aircraft operations, suggesting strong influence by community noise events in the vicinity of the sound level monitor. For aircraft events, the highest hourly L_{eq} was 58.3 dB for the hour starting at 5 p.m. (1700) on July 15 due to five arrival operations to Runway 15. The overall measured aircraft DNL at Site 4 was 45 dB.

4.3.5 Site 5, Watcha Path, Southeast Side of Airport

Site 5 was located on Watcha Path approximately 600 feet southwest of the extended centerline of Runway 15/33, roughly 4,300 feet southeast of the arrival end of Runway 33 (Runway 15 departure end). The monitor was in the side yard of a single-family residence, approximately 90 feet from the house and 50 feet from a shared driveway.

This site was chosen because of its location in the nearest residential area on the southeast side of the airport, in line with the crosswind runway. Runway 24 was the primary runway in use during the measurements at this site. No aircraft activity was observed during the attended monitoring period at Site 5.

61 full hours of measurements were conducted at Site 5. The highest L_{max} recorded at Site 5 was 69 dB caused by a Mooney M20B overflight, which departed from Runway 24.

The hourly L_{eq} ranged from approximately 33 to 53 dB. The hour starting at 4 a.m. (0400) on the morning of July 13 had the highest hourly L_{eq} value of approximately 52.6 dB. No aircraft operations occurred during this hour, therefore the noise during this period can be attributed to community noise events in the vicinity of the sound level monitor. The hour starting at 5 p.m. (1700) on the afternoon of July 12 had the highest aircraft-only hourly L_{eq} value, of 47.6 dB. The overall measured aircraft DNL at Site 5 was 38 dB.

4.3.6 Site 6, South Pond Road, Southwest of Airport

Site 6 was located on South Pond Road approximately 2,800 feet northwest of the extended centerline of Runway 6/24, roughly 8,000 feet southwest of the arrival end of Runway 6 (Runway 24 departure end). The monitor was in the back yard of a single-family residence, approximately 50 feet from the house and 15 feet from a wooded area.

This site (like site 8) was chosen in response to concerns from neighborhood residents about noise from aircraft making right turns immediately upon departing Runway 24. Runway 24 was the primary runway in use during the measurements at this site and the principal aircraft operations affecting the site were departures from Runway 24.

48 full hours of monitoring were conducted at Site 6. The highest L_{max} recorded at Site 6 was 77 dB caused by an Extra NG departing from Runway 24.

The hourly L_{eq} ranged from approximately 26 to 58 dB. The hour starting at 9 a.m. (0900) on the morning of July 12 had the highest hourly L_{eq} value of 57.6 dB. The hour starting at 11 a.m. (1100) on the morning of July 11 had the highest aircraft only hourly L_{eq} value of 53.2 dB. The overall measured aircraft DNL at Site 6 was 47 dB.

4.3.7 Site 7, Middle Point Road, Southwest of Airport, in “Fingers” Area

Site 7 was located on Middle Point Road approximately 2,600 feet southeast of the extended centerline of Runway 6/24, roughly 2.4 miles southwest of the arrival end of Runway 6 (Runway 24 departure end). The monitor was in the back yard of a single-family residence, approximately 30 feet from the house and near a meadow that leads to Middle Point Cove and Tisbury Great Pond.

This site (and site 10) were chosen in response to concerns from residents about aircraft noise overflying this remote forested location. Runway 24 was the primary runway in use during the measurements at this site. The principal aircraft operations affecting the site were departures from Runway 24.

48 full hours of measurements were conducted at Site 7. The highest L_{max} recorded at Site 7 was 73 dB caused by an Embraer 190 departing from Runway 24.

The hourly L_{eq} ranged from approximately 42 to 56 dB. The hour starting at 10 a.m. (1000) on the morning of July 14 had the highest hourly L_{eq} value of 56.3 dB. The hour starting at 11 a.m. (1100) on the morning of July 11 had the highest aircraft only hourly L_{eq} value of 49.8 dB. The overall measured aircraft DNL at Site 7 was 43 dB.

4.3.8 Site 8, Edgartown – West Tisbury Road, South Side of Airport

Site 8 was located on Edgartown - West Tisbury Road approximately 1,100 feet northwest of the extended centerline of Runway 6/24, roughly 2,900 feet southwest of the arrival end of Runway 6 (Runway 24 departure end). The monitor was in the front yard of a single-family residence, approximately 70 feet from the house and 280 feet from the main road.

This site (like site 6) was chosen in response to concerns from neighborhood residents about noise from aircraft making right turns immediately upon departing Runway 24. Runway 24 was the primary runway in use during the measurements at this site. The principal aircraft operations affecting the site were departures from Runway 24.

71 full hours of measurements were conducted at Site 8. The highest L_{max} recorded at Site 8 was 85 dB caused by an Embraer 170 departing from Runway 24.

The hourly L_{eq} ranged from approximately 36 to 68 dB. The hour starting at 11 p.m. (2300) on the night of July 16 had the highest hourly L_{eq} value of 67.6 dB. The hour starting at 11 p.m. (2300) on the night of July 16 had the highest aircraft only hourly L_{eq} value of 67.3 dB. The overall measured aircraft DNL at Site 8 was 58 dB.

4.3.9 Site 9, Quantapog Road, North Side of Airport

Site 9 was located on Quantapog Road approximately 400 feet northwest of the extended centerline of Runway 6/24, roughly 1.9 miles northeast of the arrival end of Runway 24 (Runway 6 departure end). The monitor was in the front yard of a single-family residence, approximately 50 feet from the house and 60 feet from a dead end road.

This site was chosen due to its location close to the extended runway centerline on the north side of the airport. Runway 24 was the primary runway in use during the measurements at this site. The principal aircraft operations affecting the site were arrivals to Runway 24.

96 full hours of measurements were conducted at Site 9. The highest L_{max} recorded at Site 9 was 84 dB caused by an Embraer 190 arriving to Runway 24.

The hourly L_{eq} ranged from approximately 31 to 62 dB. The hour starting at 2 p.m. (1400) on the afternoon of July 14 had the highest hourly L_{eq} value of 61.8 dB. The hour starting at 2 p.m. (1400) on the afternoon of July 14 had the highest aircraft only hourly L_{eq} value of 60.7 dB. The overall measured aircraft DNL at Site 9 was 53 dB.

4.3.10 Site 10, Thumb Point Road, Southwest of Airport, in "Fingers" Area

Site 10 was located on Thumb Point Road approximately 900 feet southeast of the extended centerline of Runway 6/24, roughly 1.9 miles southwest of the arrival end of Runway 6 (Runway 24 departure end). The monitor was in the back yard of a single-family residence, approximately 30 feet from the house and 80 feet from Deep Bottom Cove.

This site (like site 7) was chosen in response to concerns from residents about aircraft noise overflying this remote forested location. Runway 24 was the primary runway in use during the measurements at this site. The principal aircraft operations affecting the site were departures from Runway 24.

47 hours of monitoring were conducted at Site 10. The highest L_{max} recorded at Site 10 was 80 dB caused by an Embraer 190 departing from Runway 24.

The hourly L_{eq} ranged from approximately 42 to 59 dB. The hour starting at 12 p.m. (1200) on the afternoon of July 17 had the highest hourly L_{eq} value of 58.6 dB. The hour starting at 12 p.m. (1200) on the afternoon of July 17 had the highest aircraft only hourly L_{eq} value of 57.3 dB. The overall measured aircraft DNL at Site 10 was 52 dB.

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5 Development of Noise Exposure Contours

The following sections provide a discussion on the methodology and inputs used to develop the Noise Exposure Map DNL contours for MVY. Additional details are provided in **Appendix C** and **Appendix D**.

5.1 Overview of the Aviation Environmental Design Tool (AEDT)

Consistent with Part 150 requirements, the aircraft noise exposure contours for this study were prepared using the most recent release of the FAA's Aviation Environmental Design Tool (AEDT) that was available at the onset of the study, Version 3e[22]. AEDT is a software system developed by the FAA that models aircraft performance in space and time to estimate fuel consumption and emissions as well as noise and air quality consequences. AEDT is the FAA-approved tool for determining the cumulative effect of aircraft noise exposure around airports. Statutory requirements for the use of AEDT are defined in Part 150[23], Airport Noise Compatibility Planning.

AEDT includes databases containing aircraft noise and emissions profiles as well as airport layout data, which are used in conjunction with various user inputs to perform the noise computations. This chapter provides information on the modeling variables.

5.2 Noise Modeling Inputs

There are several elements that need to be defined or derived for input to the modeling process. **Table 5-1** lists the required noise modeling inputs for AEDT and the source(s) used to obtain each of the inputs. A key data source is aircraft identification and radar data from the airport's Vector system. HMMH analyzed a full year of data (December 1, 2021 through November 30, 2022) to determine various aspects of the airports existing operations.

5.2.1 Airport Physical Parameters

The airport physical parameters of most importance are the locations of the aircraft noise sources, such as the start-of-takeoff roll (SOTR) for departing aircraft and the landing threshold for arriving aircraft. As the airport diagram shows in **Figure 5-1**, MVY has two intersecting runways, which includes four runway ends: 6/24 and 15/33. Each runway end is designated by a number that, with the addition of a trailing "0", reflects the magnetic heading of the runway to the nearest 10 degrees, as seen by the pilot.

- Runway 6/24 is oriented on approximate magnetic headings of 56 degrees and 236 degrees and is 5,504 feet long by 100 feet wide.
- Runway 15/33 is oriented on approximate magnetic headings of 146 degrees and 326 degrees and is 3,327 feet long by 75 feet wide.

[22] Released May 9, 2022 https://aedt.faa.gov/3e_information.aspx

[23] www.faa.gov/airports/environmental/airport_noise/

Table 5-1. Data Sources of Noise Model Inputs

Source: HMMH, 2023

AEDT Input Category	Data Source(s) – all inputs remain constant from 2023 to 2028 except aircraft operations
Physical description of the airfield layout	FAA 5010 data and AEDT database
Aircraft noise and performance characteristics	Standard AEDT database
Aircraft flight operations	MVY Vector system data, FAA OPSNET for Existing Conditions and MVY forecast data for 2023 and 2028
Aircraft ground noise operations	MVY staff and Cape Air
Runway utilization rates	MVY Vector system data
Flight track geometry and utilization rates	MVY Vector system data
Meteorological conditions	AEDT database – National Climatic Data Center data
Terrain data	United States Geological Survey National Elevation Dataset - geoTIFF

Information regarding the existing (2023) airfield layout at MVY was obtained from the FAA 5010 data[24] and airport staff, including existing runway lengths, azimuths, and threshold location. Runway length, runway width, instrumentation and declared distances may affect which aircraft might use a particular runway and under what conditions, and therefore can affect how often a runway would be used relative to the other runways at the airport. **Figure 5-1** depicts the airport diagram, along with annotations added that show:

- Modeled helicopter start/stop locations (red circles)
- Locations of modeled engine idling, representing pre-takeoff engine runup or taxiing (blue circles)

The MVAC confirmed that there are no planned changes to the runway layout that would affect modeling inputs within the five-year forecast timeframe. Therefore, no change to the modeled 2023 runway details is required for modeling the future conditions (2028).

MVY does not have marked helipad locations. However, to model helicopter flight tracks in AEDT, a helicopter start/stop location must be designated in the AEDT model. All arriving and departing helicopters will be modeled utilizing either a helicopter start/stop location located on the intersection of Runways 6/24 and 15/33, or a location on the apron area on the south side of Runway 6/24. These locations are labeled on **Figure 5-1** as HP-1 and HP-2, respectively.

Table 5-2 lists the physical runway parameters, engine runup/idling locations, and helipad layout information that were input to the AEDT model.

[24] https://adip.faa.gov/agis/public/#/public

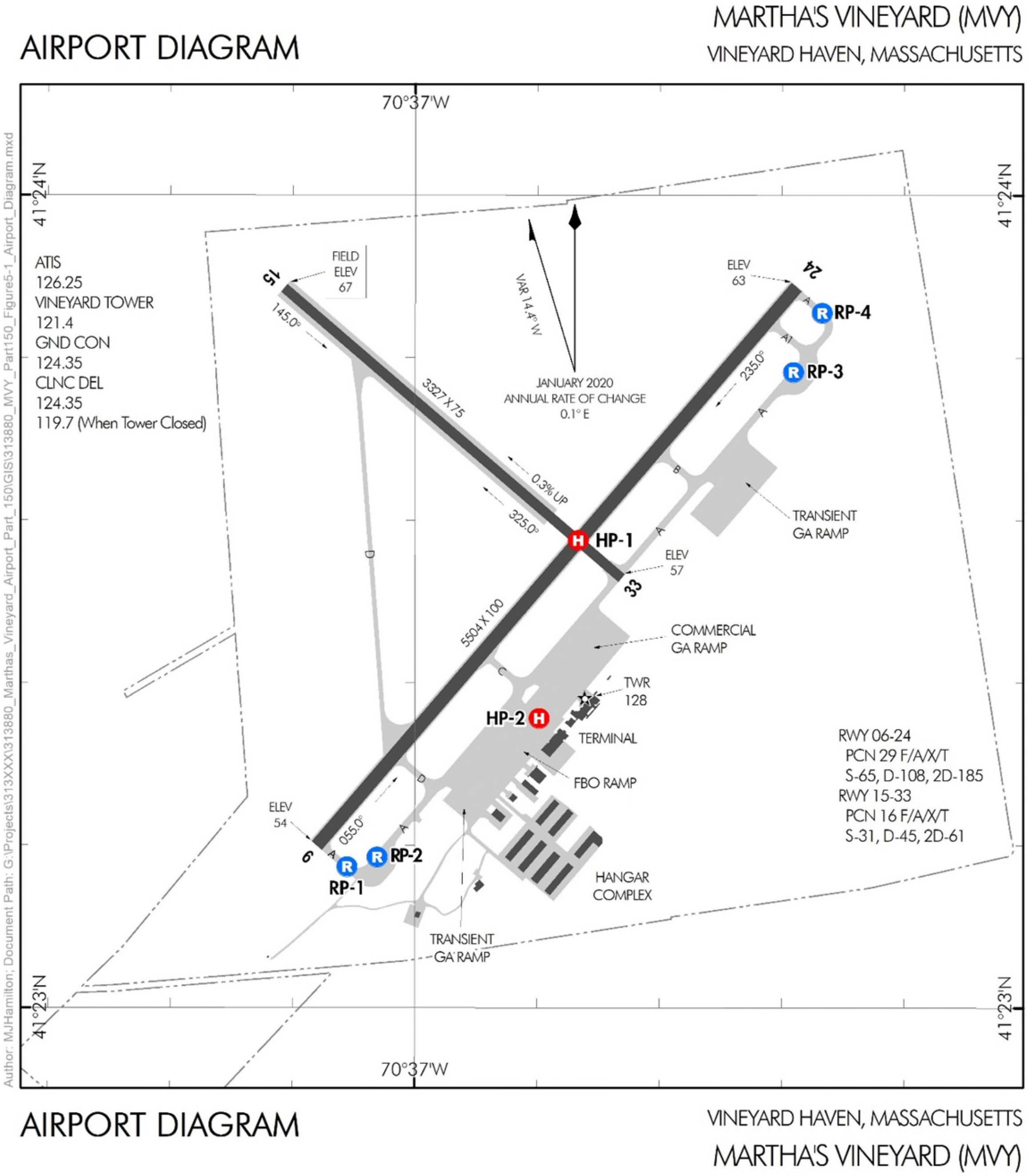

Figure 5-1. MVY Airport Diagram

Sources: FAA (https://aeronav.faa.gov/) and HMMH, 2023

Table 5-2. MVY Airfield Layout Details

Sources: FAA Airport Data and Information Portal (ADIP)

Runway End or Point	Latitude (degrees)	Longitude Aiport Diagram used in Figure (degrees)	Elevation (feet, MSL)	Displaced Landing Threshold (feet)	Glide Slope (degrees)	Threshold Crossing Height (feet, AGL)	Magnetic Orientation (degrees)
6	41.386655	-70.619334	53.9	N/A	3.0	53	56
24	41.398122	-70.606276	62.6	N/A	3.0	52	236
15	41.398092	-70.620245	66.9	N/A	N/A	N/A	146
33	41.392148	-70.611041	56.9	N/A	N/A	N/A	326
HP-1	41.392919	-70.612213	58.9	N/A			
HP-2	41.389269	-70.613272	54.1	N/A			
RP-1	41.386225	-70.618511	52.8	N/A			
RP-2	41.386426	-70.617690	52.2	N/A			
RP-3	41.396367	-70.606357	57.6	N/A			
RP-4	41.397588	-70.605574	59.9	N/A			

Notes: Runway data retrieved from https://adip.faa.gov/agis/public/#/airportData on March 23, 2023
There are no displaced thresholds in use at MVY
Runup and helipad location data from MVAC and Google Earth
HP = Helicopter start/stop location for modeled arrival and departure tracks
RP = Location for modeled runups

5.2.2 Aircraft Noise and Performance Characteristics

FAA approval is required for the use of non-standard aircraft noise and performance modeling in four areas:

1. Substitutions when modeling types that are not present in the AEDT database as standard aircraft types and for which the FAA has not identified pre-approved substitutes
2. User-defined flight parameters when modeling aircraft for which no standard AEDT aircraft would be an appropriate substitute
3. User-defined flight profiles, to address non-standard air traffic control procedures affecting departure or approach profiles
4. User-defined flight profiles to address non-standard departure weight

HMMH developed the fleet mix for noise modeling from the 12 months of Vector system data. The process matches the International Civil Aviation Organization (ICAO) aircraft type designator with aircraft types in the AEDT database, with supplemental information provided by published airline fleet composition. Aircraft types which use MVY infrequently are combined with similar types (unless the type is among the loudest using the airport). **Appendix D** contains a list of the ICAO aircraft type identified in the MVY Vector system data, the associated airframe, and the representative AEDT aircraft type to be used in the noise modeling. For those aircraft types operating at MVY which are not directly represented in the AEDT database, **Appendix D** shows the FAA-approved substitutions for noise modeling.

AEDT requires specific noise and performance data for each aircraft type operating at the Airport. Noise data are included in the form of SEL at a range of slant distances (from 200 feet to 25,000 feet) from each AEDT aircraft engine combination for specific thrust levels. Performance data include thrust, speed and altitude profiles for takeoff and landing operations. The AEDT database contains standard noise and performance data for over 300 different fixed-wing aircraft types, most of which are civilian aircraft. AEDT has standard fixed-wing aircraft flight profiles for takeoffs, landings, and flight patterns or touch-and-go operations, and standard helicopter profiles for takeoffs and landings.

The Vector radar data included aircraft altitude information. HMMH reviewed this information and determined that use of the standard profile data available in the AEDT was appropriate for this study.

All aircraft types except the AgustaWestland AW169 helicopter are either represented in the AEDT database directly or have a pre-approved substitution. The FAA-approved substitution for AEDT modeling of the AgustaWestland AW169 can be found in **Appendix D.**

5.2.3 Annual Aircraft Operations

Consistent with FAA guidance, MVAC submitted a memorandum to the FAA on May 31, 2023 requesting approval of forecasts of MVY operations for 2023 and 2028. The memorandum and the FAA approval (received June 2, 2023) can be found in **Appendix C**. HMMH scaled the fleet mix derived from the Vector System data to match the forecast 2023 and 2028 totals by aircraft category.

5.2.3.1 Forecast Process

McFarland Johnson developed the Part 150 forecast for calendar years 2023 and 2028 from published forecast sources and other industry trends, as described in **Appendix C**.

FAA requires that airport sponsors' locally generated forecasts be consistent with the TAF for the airport. Specific FAA guidance for approval of forecasts states: "For all classes of airports, forecasts for total enplanements, based aircraft, and total operations are considered consistent with the TAF if they meet the following criterion: forecasts differ by less than 10 percent in the 5-year forecast period, and by less than 15 percent in the 10-year forecast period."

Table 5-3 presents a comparison of total aircraft operations for the 2023 and 2028 years in the Part 150 Study forecast to the FAA forecasts for those years as presented in the 2022 TAF. It shows that for 2023, the Part 150 forecast differs from the 2022 TAF by less than 10 percent, but for 2028, the proposed forecast total for noise modeling is 11.2 percent greater than predicted by the 2022 TAF. The FAA relies on data collected by the ATCT for the TAF. The ATCT at MVY is closed 5:00 pm to 7:00 am from November 1 through May 14, and 10:00 pm to 6:00 am from May 15 to October 31. Therefore, the Study Team identified operations from the radar data that occurred during the hours when the tower was closed and adjusted the MVAC forecast to account for all aircraft operations.

Table 5-3. Comparison of 2023 and 2028 MVAC Forecasts to 2022 FAA Terminal Area Forecasts

Source: FAA TAF and MJ, 2023

Year	FAA TAF Forecast (published in 2023)	Forecast Daytime Operations[1]	% Different (MVAC-TAF)	MVAC Part 150 Forecast[2]	% Different (MVAC-TAF)
2023	42,745	44,239	3.49%	46,411	8.6%
2028	43,303	45,918	6.04%	48,148	11.2%

Notes: FAA TAF data retrieved from https://taf.faa.gov on March 23, 2022

1. Daytime operations derived from counts made while the air traffic control tower was open.
2. Scale factors by category were applied to account for operations occurring while the tower was closed, as described in forecast memorandum.

5.2.3.2 Forecast Aircraft Operations

The FAA classifies operations in the following four categories:

- Air Carrier: Operations by aircraft capable of holding 60 seats or more and flying using a three-letter company designator.
- Air Taxi/Commuter: Operations by aircraft of fewer than 60 seats and flying using three-letter company designators or the prefix “T” (TANGO).
- General Aviation: Civil operations not classified as air carrier or air taxi/commuter.
- Military: All classes of military operations.

Table 5-4 and

Table 5-5 depict the 2023 and 2028 forecasted aircraft operations by category.

For aircraft noise exposure calculations using the DNL metric, aircraft operations associated with the average annual day (AAD) are used in the AEDT. The number of annual operations by each AEDT aircraft type is divided by 365 to arrive at the AAD by AEDT aircraft type.

This representation of airport activity does not reflect any particular day but gives an accurate picture of the character of operations throughout the year. Use of the AAD is required by the FAA in Part 150 studies.

Table 5-4. Existing Conditions 2023 Aircraft Operations

Source: HMMH and MJ, 2023

Operations Period	Air Carrier	Air Taxi/ Commuter	General Aviation	Military	Total
Annual	2,165	19,629	24,224	393	**46,411**
Average Annual Day	5.93	53.78	66.37	1.08	**127.15**

Table 5-5. Forecast Year 2028 Aircraft Operations

Source: HMMH and MJ, 2023

Operations Period	Air Carrier	Air Taxi/ Commuter	General Aviation	Military	Total
Annual	2,634	19,899	25,202	413	**48,148**
Average Annual Day	7.22	54.52	69.05	1.13	**131.91**

Table 5-6 and **Table 5-7** present the AAD operational model inputs to AEDT for 2023 and 2028, respectively. The totals by category match the annual average day totals shown in **Table 5-4** and

Table 5-5.

Table 5-6. Modeled 2023 Average Annual Day Operations by AEDT Aircraft Type

Source: HMMH, 2023

Category	Engine Type	AEDT Aircraft Type	Arrivals		Departures		Circuits		Total
			Day	Night	Day	Night	Day	Night	
Air Carrier	**Jet**	EMB170	0.10	--	0.10	--	--	--	0.20
		EMB175	1.51	0.01	1.51	0.01	--	--	3.04
		EMB190	1.35	<0.01	1.35	<0.01	--	--	2.70
Air Carrier Total			**2.96**	**0.01**	**2.95**	**0.01**	**--**	**--**	**5.93**
Air Taxi/ Commuter	**Jet**	BD-700-1A10	0.20	<0.01	0.19	0.01	--	--	0.40
		CL600	1.11	0.04	1.13	0.02	--	--	2.30
		CL601	0.24	--	0.24	--	--	--	0.48
		CNA525C	0.27	<0.01	0.27	<0.01	--	--	0.54
		CNA55B	1.22	0.05	1.25	0.03	--	--	2.55
		CNA560XL	0.77	0.01	0.77	0.01	--	--	1.56
		CNA680	1.72	0.08	1.76	0.03	--	--	3.59
		CNA750	0.57	0.01	0.56	0.02	--	--	1.16
		FAL900EX	0.09	--	0.09	--	--	--	0.18
		GIV	0.29	0.02	0.30	0.01	--	--	0.62
		MU3001	0.19	--	0.19	--	--	--	0.38
	Non-Jet	BEC58P	10.69	0.33	10.82	0.20	--	--	22.04
		CNA208	7.01	0.44	7.18	0.28	--	--	14.91
		COMSEP	0.50	0.05	0.53	0.02	--	--	1.10
		DHC6	0.95	0.01	0.93	0.03	--	--	1.92
Air Taxi/ Commuter Total			**25.83**	**1.06**	**26.22**	**0.67**	**--**	**--**	**53.78**
General Aviation	**Jet**	BD-700-1A10	0.32	0.01	0.33	0.01	--	--	0.67
		CL601	0.34	<0.01	0.34	0.01	--	--	0.69
		CNA560U	0.38	--	0.37	0.01	--	--	0.76
		CNA560XL	0.32	0.01	0.32	0.01	--	--	0.66
		CNA750	0.34	--	0.33	0.01	--	--	0.68
		ECLIPSE500	0.36	0.01	0.37	--	--	--	0.74
		FAL900EX	0.16	0.01	0.17	--	--	--	0.34
		GIV	0.24	0.01	0.24	0.01	--	--	0.50
		GV	0.30	0.02	0.31	0.02	--	--	0.65
		LEAR35	0.43	0.01	0.43	0.02	--	--	0.89
		MU3001	0.32	<0.01	0.31	0.01	--	--	0.64
	Non-Jet	BEC58P	3.93	0.09	3.86	0.16	--	--	8.04
		CNA172	3.67	0.01	3.58	0.10	6.78	<0.01	14.14

Category	Engine Type	AEDT Aircraft Type	Arrivals		Departures		Circuits		Total
			Day	Night	Day	Night	Day	Night	
		CNA182	1.21	<0.01	1.20	0.02	0.39	--	2.82
		CNA208	2.21	0.04	2.19	0.06	--	--	4.50
		CNA441	0.21	--	0.21	--	--	--	0.42
		COMSEP	2.79	0.03	2.75	0.07	0.37	--	6.01
		DHC6	0.74	<0.01	0.74	0.01	--	--	1.49
		GASEPF	3.91	0.01	3.84	0.08	0.39	--	8.23
		GASEPV	3.78	0.02	3.77	0.04	--	--	7.61
	Helicopter	B206L	0.06	--	0.06	--	--	--	0.12
		B429	0.11	0.03	0.09	0.05	--	--	0.28
		R44	0.14	--	0.14	--	--	--	0.28
		S76	0.06	--	0.05	<0.01	--	--	0.11
		SA330J	0.06	<0.01	0.06	0.01	--	--	0.13
		*B430	2.47	--	2.47	--	--	--	4.94
General Aviation Total			**28.88**	**0.34**	**28.54**	**0.67**	**7.93**	**0.00**	**66.37**
Military	Jet	C17	0.07	--	0.07	--	--	--	0.14
	Non-Jet	DHC6	0.15	--	0.15	--	--	--	0.30
		SF340	0.10	--	0.10	--	--	--	0.20
	Helicopter	B429	0.14	--	0.14	--	--	--	0.28
		S70	0.07	--	0.07	--	--	--	0.14
Military Total			**0.54**	**--**	**0.54**	**--**	**--**	**--**	**1.08**
Total			**58.21**	**1.40**	**58.25**	**1.36**	**7.93**	**0.00**	**127.15**

Notes: One circuit equals two local operations (arrival & departure).
Numbers may not appear to be summed correctly due to rounding.
*The B430 represents the Vineyard Wind AW169 helicopters.

Table 5-7. Modeled 2028 Average Annual Day Operations by AEDT Type

Source: HMMH, 2023

Category	Engine Type	AEDT Aircraft Type	Arrivals		Departures		Circuits		Total
			Day	Night	Day	Night	Day	Night	
Air Carrier	Jet	EMB170	0.12	--	0.12	--	--	--	0.24
		EMB175	1.84	0.01	1.83	0.01	--	--	3.69
		**	1.64	<0.01	1.64	<0.01	--	--	3.28
Air Carrier Total			**3.60**	**0.01**	**3.59**	**0.02**	**--**	**--**	**7.22**
Air Taxi/ Commuter	Jet	BD-700-1A10	0.20	<0.01	0.19	0.01	--	--	0.40
		CL600	1.12	0.04	1.14	0.02	--	--	2.32
		CL601	0.25	--	0.25	--	--	--	0.50
		CNA525C	0.27	<0.01	0.27	<0.01	--	--	0.54
		CNA55B	1.24	0.05	1.27	0.03	--	--	2.59
		CNA560XL	0.79	0.01	0.79	0.01	--	--	1.60
		CNA680	1.74	0.08	1.79	0.03	--	--	3.64
		CNA750	0.58	0.01	0.57	0.02	--	--	1.18
		FAL900EX	0.09	--	0.09	--	--	--	0.18
		GIV	0.30	0.02	0.31	0.01	--	--	0.64
		MU3001	0.20	--	0.20	--	--	--	0.40

Category	Engine Type	AEDT Aircraft Type	Arrivals		Departures		Circuits		Total
			Day	Night	Day	Night	Day	Night	
	Non-Jet	BEC58P	10.84	0.34	10.97	0.21	--	--	22.36
		CNA208	7.11	0.45	7.27	0.28	--	--	15.11
		COMSEP	0.51	0.05	0.53	0.02	--	--	1.11
		DHC6	0.97	0.01	0.95	0.03	--	--	1.96
Air Taxi/ Commuter Total			**26.19**	**1.07**	**26.58**	**0.68**	**--**	**--**	**54.52**
General Aviation	Jet	BD-700-1A10	0.34	0.01	0.35	0.01	--	--	0.71
		CL601	0.36	<0.01	0.35	0.01	--	--	0.72
		CNA560U	0.40	--	0.39	0.01	--	--	0.80
		CNA560XL	0.34	0.01	0.34	0.01	--	--	0.70
		CNA750	0.36	--	0.35	0.01	--	--	0.72
		ECLIPSE500	0.38	0.01	0.39	--	--	--	0.78
		FAL900EX	0.17	0.01	0.18	--	--	--	0.36
		GIV	0.26	0.01	0.25	0.01	--	--	0.53
		GV	0.32	0.03	0.32	0.02	--	--	0.69
		LEAR35	0.46	0.01	0.45	0.02	--	--	0.94
		MU3001	0.34	<0.01	0.33	0.01	--	--	0.68
	Non-Jet	BEC58P	4.15	0.10	4.08	0.17	--	--	8.50
		CNA172	3.87	0.02	3.78	0.11	6.50	<0.01	14.28
		CNA182	1.28	<0.01	1.27	0.02	0.38	--	2.95
		CNA208	2.36	0.04	2.34	0.06	--	--	4.80
		CNA441	0.22	--	0.22	--	--	--	0.44
		COMSEP	2.95	0.03	2.90	0.08	0.35	--	6.31
		DHC6	0.79	<0.01	0.78	0.01	--	--	1.58
		GASEPF	4.13	0.01	4.06	0.09	0.37	--	8.66
		GASEPV	4.00	0.02	3.98	0.04	--	--	8.04
	Helicopter	B206L	0.06	--	0.06	--	--	--	0.12
		B429	0.11	0.04	0.10	0.05	--	--	0.30
		R44	0.15	--	0.15	--	--	--	0.30
		S76	0.06	--	0.05	<0.01	--	--	0.11
		SA330J	0.07	<0.01	0.06	0.01	--	--	0.14
		*B430	2.47	--	2.47	--	--	--	4.94
General Aviation Total			**30.37**	**0.36**	**30.01**	**0.71**	**7.60**	**0.00**	**69.05**
Military	Jet	C17	0.07	--	0.07	--	--	--	0.14
	Non-Jet	DHC6	0.16	--	0.16	--	--	--	0.32
		SF340	0.11	--	0.11	--	--	--	0.22
	Helicopter	B429	0.15	--	0.15	--	--	--	0.30
		S70	0.08	--	0.08	--	--	--	0.16
Military Total			**0.57**	**--**	**0.57**	**--**	**--**	**--**	**1.13**
Total			**60.72**	**1.44**	**60.74**	**1.41**	**7.60**	**0.00**	**131.91**

Note: One circuit equals two local operations (arrival & departure).
Numbers may not appear to be summed correctly due to rounding.
*The B430 represents the Vineyard Wind AW169 helicopters.
**737700 represents Airbus A220-300 in the forecast modeling.

5.2.3.3 Departure Stage Length

AEDT uses departure "stage length" (the flight distance between the departure and arrival airport) as a surrogate for aircraft departure weight, since fuel load is the largest factor affecting variation in aircraft weight and therefore climb performance. AEDT includes performance profiles for most commercial aircraft types for a range of stage length values; however, smaller aircraft types have only a single representative weight used for all operations, identified as stage length 1.

The distribution of departures by stage length were derived by an analysis of the city-pair data provided in the MVY Vector system radar data. Where the AEDT database had only one departure profile available (stage length 1) all departures are modeled with that profile. This resulted in only EMB175 (Embraer 175s, 6% in stage 2) and BD-700-1A10 (Bombardier Global Express, 22% in stage 3) being modeled with a stage length higher than stage length 1, all other departures were modeled as stage length 1.

5.2.4 Ground Noise Operations

MVAC collected pre-flight and maintenance runup information from Cape Air and MVY staff which were used to develop ground noise modeling inputs, including:

- Number of daily operations
- Aircraft type
- Location
- Heading
- Power setting
- Duration
- Time (classified as daytime or nighttime, defined as 7:00 am – 10:00 pm or 10:00 pm – 7:00 am)

Maintenance runups are not normally conducted at MVY, however nearby residents have complained about aircraft ground noise. Ground noise sources have been determined to be pre-flight engine runups by air taxi/commuter aircraft and air carrier jet taxi noise. A 3-minute pre-flight runup will be modeled for all Cape Air and Tradewind aircraft conducting departure operations. The pre-flight runups will be modeled at locations RP-2 and RP-3 as shown on **Figure 5-1**, split according to the given aircraft's runway utilization rate. For these, aircraft power will be set to 100 percent, and the aircraft heading will be opposite the eventual takeoff direction. Air carrier jet ground noise will be modeled for 25 percent of those departures to represent noise that occurs when taxiing is assumed from a hold point. In the modeling, the aircraft power will be assumed to be 50 percent for a duration of 25 seconds. That ground noise will be modeled at locations RP-1 and RP-4 (according to the runway utilization rates) and will use a heading perpendicular to the runway. **Table 5-8** and **Table 5-9** summarize the modeled runup activity by AAD for 2023 and 2028, respectively.

Table 5-8. Modeled 2023 Aircraft Ground Noise Operations

Source: HMMH, Cape Air, MVY staff, 2023

AEDT Type	Aircraft Type	Runup Location	Heading (Degrees)	Modeled Thrust	Duration (Seconds)	Annual operations		
						Day	Night	Total
BEC58P	C402/Tecnam P2012	R3	55	100%	180	6.63	0.13	6.75
		R2	235	100%	180	2.63	0.05	2.69
CNA208	Pilatus PC-12	R3	55	100%	180	1.29	0.05	1.34
		R2	235	100%	180	0.51	0.02	0.53
EMB170	Embraer 170	R4	325	50%	25	0.02	--	0.02
		R1	325	50%	25	0.01	--	0.01
EMB175	Embraer 175	R4	325	50%	25	0.28	0.00	0.28
		R1	325	50%	25	0.10	--	0.10
EMB190	Embraer 190	R4	325	50%	25	0.25	0.00	0.25
		R1	325	50%	25	0.09	--	0.09
Note: Cape Air and Tradewind aircraft assumed to conduct pre-flight runups before each departure. Air carrier jet ground noise represents resumed taxiing from a hold point for 25% of departures.								

Table 5-9. Modeled 2028 Aircraft Ground Noise Operations

Source: HMMH, Cape Air, MVY staff, 2023

AEDT Type	Aircraft Type	Runup Location	Heading (Degrees)	Modeled Thrust	Duration (Seconds)	Annual operations		
						Day	Night	Total
BEC58P	C402/Tecnam P2012	R3	55	100%	180	6.72	0.13	6.85
		R2	235	100%	180	2.67	0.05	2.72
CNA208	Pilatus PC-12	R3	55	100%	180	1.31	0.05	1.36
		R2	235	100%	180	0.52	0.02	0.54
EMB170	Embraer 170	R4	325	50%	25	0.02	--	0.02
		R1	325	50%	25	0.01	--	0.01
EMB175	Embraer 175	R4	325	50%	25	0.34	0.00	0.34
		R1	325	50%	25	0.12	--	0.12
737700	Airbus A220-300	R4	325	50%	25	0.30	0.00	0.30
		R1	325	50%	25	0.11	--	0.11
Note: Cape Air and Tradewind aircraft assumed to conduct pre-flight runups before each departure. Air carrier jet ground noise represents resumed taxiing from a hold point for 25% of departures.								

5.2.5 Runway Utilization

Aircraft arriving to a given runway end have a different noise signature than do departing aircraft. For this reason, and because it indicates how often aircraft fly in any given direction, runway utilization is a key factor in determining the noise exposure around an airport. **Table 5-10** and **Table 5-11** summarize runway utilization rates for each aircraft category, developed from the 12-month sample of MVY Vector system data (December 2021 through November 2022). The rates are presented for all categories for each runway end (i.e., Runway 6, Runway 24, Runway 15, and Runway 33). Runway choice is often dictated by wind conditions, but other factors such as the time of day, specific aircraft runway length requirements, and the relative location on the airfield influence the choice as well. The same runway utilization rates were used to model for both the existing (2023) and the forecast (2028) conditions.

Because helicopters do not use the runways like fixed-wing aircraft, helicopter operations are modeled arriving to or departing from one of the "helipad" spots designated on the airfields for modeling purposes. Those spots are indicated on **Figure 5-1**.

Table 5-10. 2023 and 2028 Modeled Jet Runway Use Percentages

Source: Vector Systems data Dec. 2021-Nov. 2022 and HMMH analysis, 2023

Runway	Air Carrier Jets				Air Taxi/ Commuter, GA and Military Jets			
	Arrivals		Departures		Arrivals		Departures	
	Day	Night	Day	Night	Day	Night	Day	Night
6	27.6%	--	26.0%	--	26.5%	25.0%	26.3%	28.3%
24	72.4%	100.0%	74.0%	100.0%	73.3%	75.0%	73.6%	71.7%
15	--	--	--	--	--	--	--	--
33	--	--	--	--	0.1%	--	0.1%	--
Note: Column sums may not appear to be exactly 100.0% due to rounding. Air carrier night operations are rare, and only occur due to operational delays.								

Table 5-11. 2023 and 2028 Modeled Non-Jet Runway Use Percentages

Source: Vector Systems data Dec. 2021-Nov. 2022 and HMMH analysis, 2023

Runway	Air Taxi/ Commuter, GA and Military Non-Jets					
	Arrivals		Departures		Circuits	
	Day	Night	Day	Night	Day	Night
6	24.7%	17.7%	24.4%	25.5%	19.6%	88.9%
24	63.3%	70.3%	61.2%	63.8%	70.8%	11.1%
15	4.4%	8.2%	1.1%	--	2.6%	--
33	7.5%	3.8%	13.3%	10.7%	7.0%	--
Note: Column sums may not appear to be exactly 100.0% due to rounding.						

5.2.6 Flight Track Geometry and Utilization Rates

All flight operations modeled with AEDT are assigned to flight tracks. For this analysis, model flight tracks were developed using the 12-months of radar data from MVY Vector Systems, representing over 34,000 actual flight paths. The HMMH model track development process first 'bundles' the database of flight tracks into groups by operation type, (e.g., arrival, departure, or circuit) and runway end, and then subdivided further by engine type and destination/direction. From there, model tracks were developed to represent each geometrically similar bundle of radar tracks. One 'backbone' track was developed for each bundle, with an equal number (zero, one, or two) of 'dispersion' sub-tracks to either side of the backbone.

This process led to the development of 129 bundles, each consisting of one, three, or five model tracks, for a total of 395 model tracks. **Table 5-12** summarizes the modeled flight tracks by operation (arrival/departure).

Table 5-12. Fixed Wing Track Bundles by Operation Type

Source: HMMH, 2023

Runway	Arrivals (# of Groups)		Departures (# of Groups)		Circuits (# of Groups)		Total (# of bundles)
	Jet	Non-Jet	Jet	Non-Jet	Jet	Non-Jet	
6	7	8	7	7	-	3	32
24	8	12	8	11	-	2	41
15	-	5	-	5	-	3	13
33	1	8	1	7	-	2	19
HP-1	-	8	-	7	-	-	15
HP-2	-	5	-	4	-	-	9
Total	**16**	**46**	**16**	**41**	**0**	**10**	**129**

Figure represents the process of creating backbone and dispersion tracks from a subset of radar data. **Figure 5-3** and **Figure 5-4** represent a sample of Runway 24 jet departure and arrival model flight tracks, respectively, at MVY.

5.2.6.1 Flight Track Utilization

Figure D-1 through **Figure D-20** in **Appendix D** display all of the model flight tracks and include tables of track usage percents. The tables show the level of detail used in the model development, with some tracks having less than 1 percent of operations per runway assignment to represent relatively rare tracks. The relative ratios of model flight track usage reflect the ratios observed in the year-long radar dataset.

Helicopter flight tracks were analyzed separately from the fixed-wing flight tracks. The set of identified helicopter flight tracks and aircraft identification data were divided into nine arrival groups and seven departure groups, in a process similar to the fixed-wing model track development. The expected introduction of Vineyard Wind AW169 helicopters to MVY in 2023 required that additional flight tracks be included in the modeling, as their destination (the wind turbine site) is due south of the island. HMMH developed those hypothetical flight tracks in consultation with Vineyard Winds.

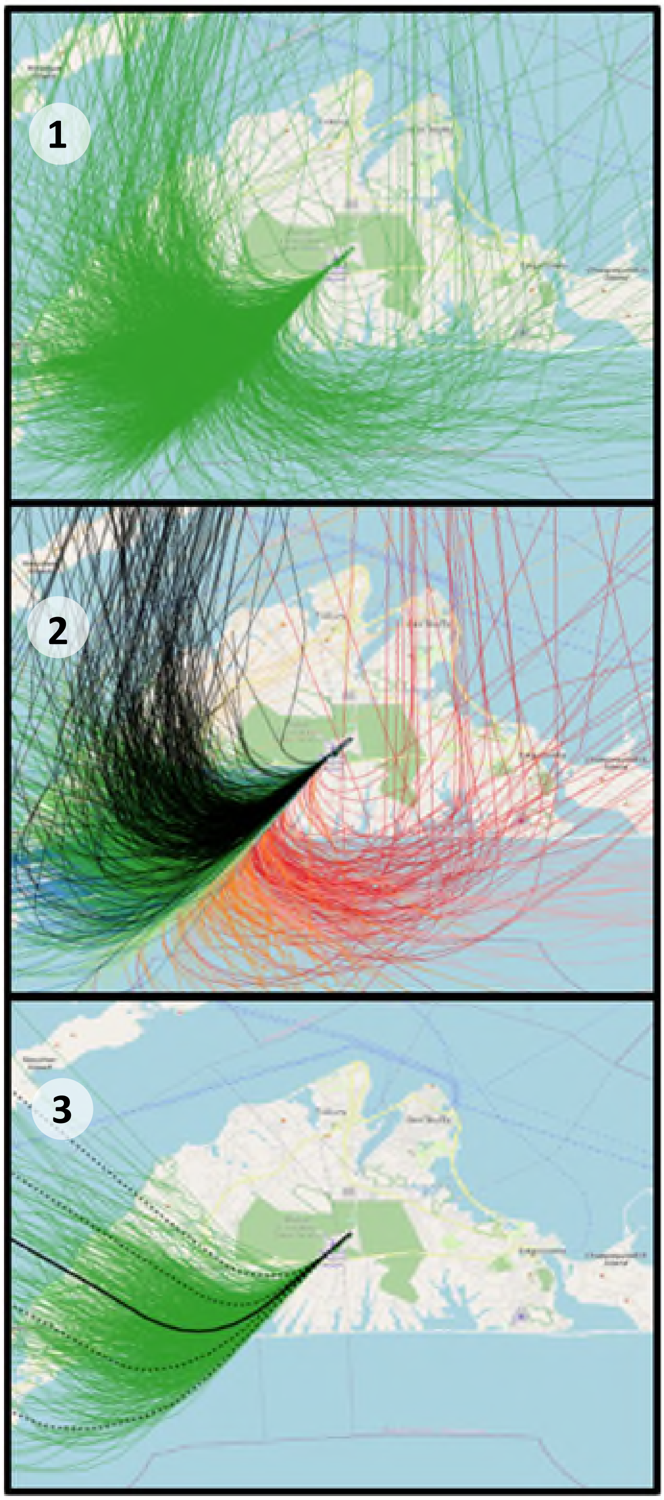

Figure 5-2. Process of Creating Modeled Flight Tracks – Back-bone and Subtracks for Runway 24 Jet Departures

Source: HMMH, 2023

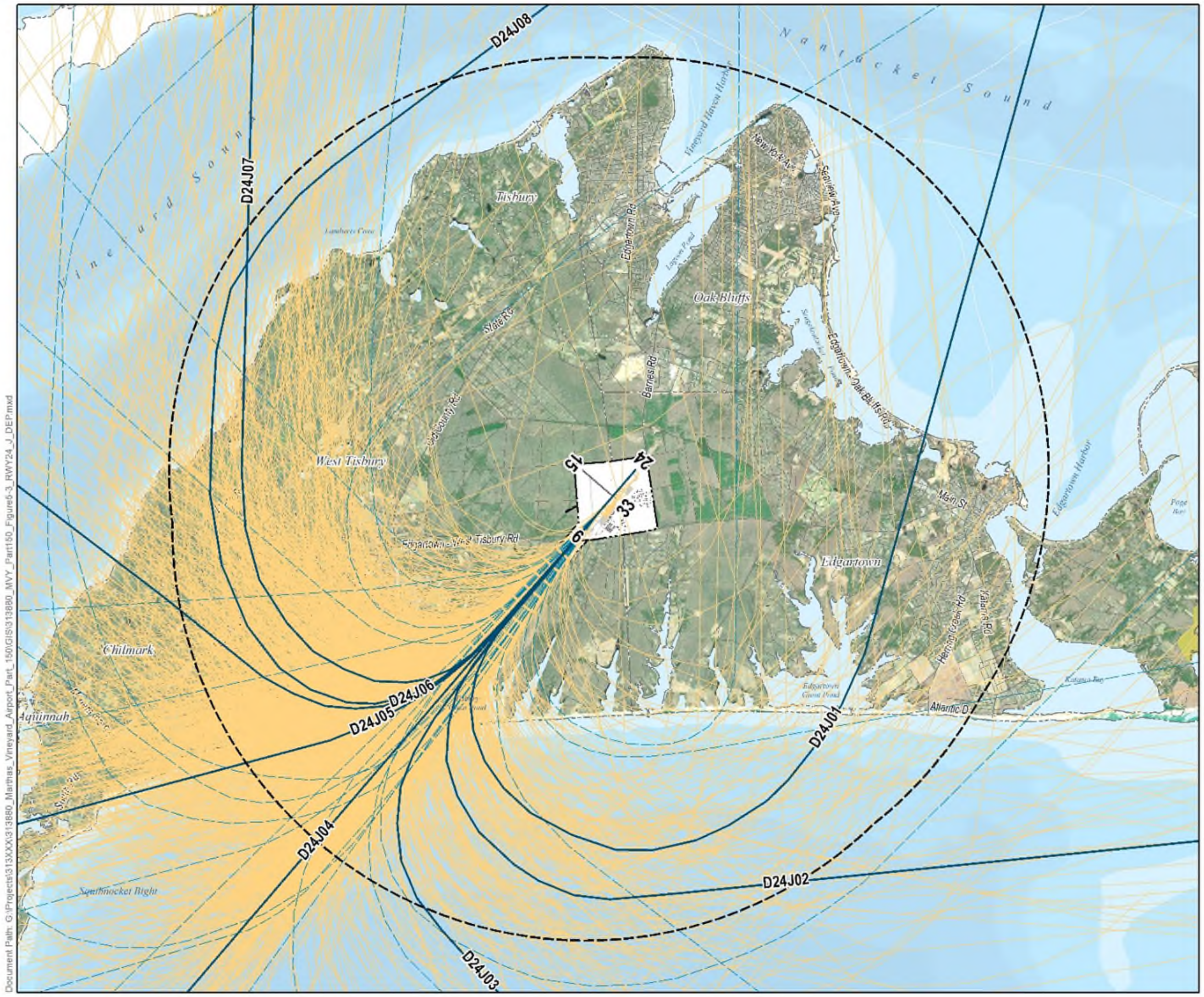

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Figure 5-3:
Jet Departure Flight Tracks, Runway 24

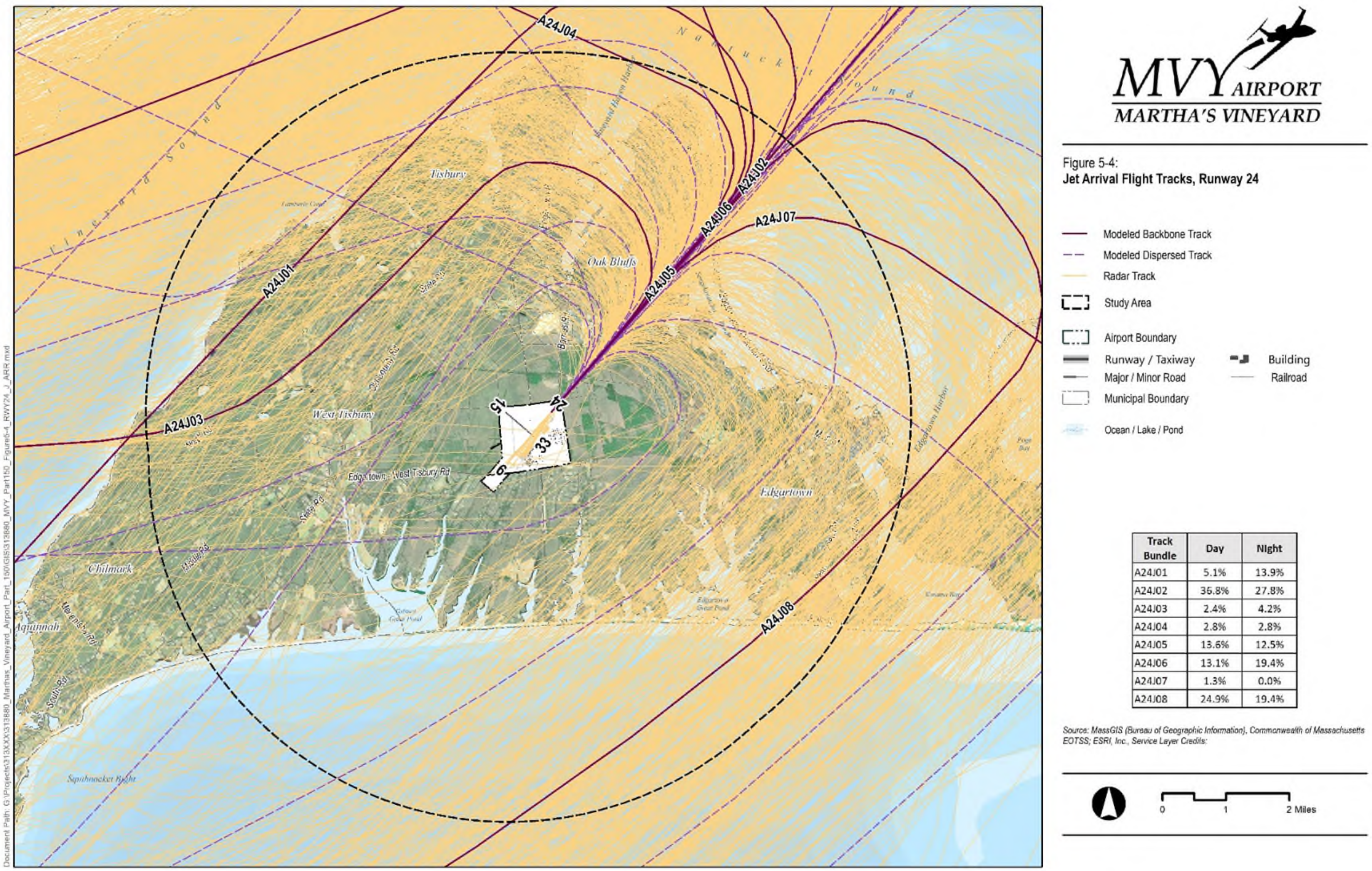
- Modeled Backbone Track
- Modeled Dispersed Track
- Radar Track
- Study Area
- Airport Boundary
- Runway / Taxiway
- Major / Minor Road
- Municipal Boundary
- Ocean / Lake / Pond
- Building
- Railroad

Track Bundle	Day	Night
D24J01	6.6%	6.3%
D24J02	2.9%	0.0%
D24J03	4.2%	0.0%
D24J04	17.5%	22.9%
D24J05	28.0%	31.3%
D24J06	26.2%	29.2%
D24J07	12.4%	6.3%
D24J08	2.3%	4.2%

Source: MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS; ESRI, Inc., Service Layer Credits:

0 1 2 Miles

Figure 5-3. Sample of Jet Departure Flight Tracks, Runway 24, Overlaid by Model Flight Tracks



Track Bundle	Day	Night
A24J01	5.1%	13.9%
A24J02	36.8%	27.8%
A24J03	2.4%	4.2%
A24J04	2.8%	2.8%
A24J05	13.6%	12.5%
A24J06	13.1%	19.4%
A24J07	1.3%	0.0%
A24J08	24.9%	19.4%

Figure 5-4. Sample of Jet Arrival Flight Tracks, Runway 24, Overlaid by Model Flight Tracks

5.2.7 Meteorological Data

AEDT uses meteorological data to adjust aircraft performance and sound propagation based on average weather conditions at the airport. The meteorological parameters include temperature, barometric pressure, relative humidity, and wind speed. The AEDT database includes 10-year average weather (2012 to 2021) from NOAA Integrated Surface Data (ISD). These data for MVY are:

- Temperature: 53.1° F
- Station Pressure: 1013.04 mbar
- Sea Level Pressure: 1016.29 mbar
- Dew point: 46.4° F
- Relative humidity: 78.03%
- Wind speed 8.53 knots

5.2.8 Terrain Data

AEDT uses terrain data to adjust the aircraft-to-ground path length, to take into account locations where terrain variation relative to the airfield makes the ground closer to or farther from the aircraft relative to flat-earth conditions. The terrain data were obtained from the United States Geological Survey National Elevation Dataset with 1/3 arc second (approximately 33 ft.) resolution covering the Study Area.

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6 2023 and 2028 NEMs

The fundamental product of an NEM report are the DNL contours for existing and forecast conditions (2023 and 2028), presented over base maps depicting the airport layout, local land-use control jurisdictions, major land-use categories, discrete noise-sensitive “receptors,” and other information required by Part 150. Section 6.1 presents the Noise Exposure Map figures. Section 6.2 presents the associated land-use compatibility statistics. Section 6.3 compares the modeled DNL for 2023 to the DNL measured in July 2023 at 10 community monitoring locations.

6.1 Noise Exposure Map

Figure 6-1 and **Figure 6-2** are the official Noise Exposure Maps that MVAC is submitting under Part 150 for appropriate FAA review and determination of compliance, pursuant to §150.21. The scale[25] on these figures is 1” to 1,000’. The two figures contain all graphical elements that Part 150 requires be depicted on Noise Exposure Maps, with the exception of flight tracks.[26,27]

As noted in item IV.D of Part 150 Noise Exposure Maps Checklist (the checklist), Part 150 requires that Noise Exposure Maps depict the DNL 65, 70, and 75 dB noise contours.[28] The DNL 60 contour is shown for informational purposes only.

The year of submission for this NEM report is 2023. Therefore, consistent with Part 150 requirements, the existing conditions noise contours represent 2023 and the five-year forecast-case contours represent 2028. **Figure 6-3** presents a comparison of the 2023 and 2028 contours.

6.2 Land Use Compatibility within 2023 and 2028 Noise Exposure Maps

FAA considers all land uses compatible outside of the DNL 65 contour. The DNL 65 contour is entirely contained within the airport boundary, as shown in **Figure 6-1** and **Figure 6-2**. The contours and land use data clearly illustrate that within the DNL 65 Noise Exposure Map contours for both 2023 and 2028 there are no residents and no apparent non-compatible land uses.

As required under Part 150, **Table 6-1** presents the population exposure and housing units within the DNL 65 contours. There are no population or housing units in the existing (2023) and forecast (2028) condition NEMs. In addition, no identified noise-sensitive sites, such as schools or places of worship are within the existing (2023) and forecast (2028) NEMs.

[25] The minimum scale as required by §A150.103(b)(1) is 1” to 2,000’, which is the scale of Figures ES-1 and ES-2 in the Executive Summary of this document.

[26] As noted in item IV.E of the Noise Exposure Map checklist, presented in Table ES-1-2 of this document.

[27] The large-scale maps with flight tracks can be found as an attachment to this document in the electronic version.

[28] The checklist can be found on page xiv.

Table 6-1. Residential Units within 2023 and 2028 DNL 65 Contours

Source: 2020 US Census Block Data, HMMH, 2023

Noise Level (DNL)	Existing Contours (2023)		Forecast Contours (2028)	
	Estimated Population	Estimated Number of Housing Units	Estimated Population	Estimated Number of Housing Units
65 – 70 dB	0	0	0	0
70 – 75 dB	0	0	0	0
75+ dB	0	0	0	0
Total	**0**	**0**	**0**	**0**

Operations at MVY follow a predictable seasonal pattern, with significantly more activity occurring during the summer months. To address concerns about the differences in noise levels during summer as compared to the annual average, the Study Team produced a set of DNL contours portraying peak season conditions. These are presented in **Appendix E**.

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Figure 6-1:
Existing Conditions (2023) NEM

2023 Baseline DNL Contour (65-75 dB)
2023 Baseline DNL Contour (60 dB Informational Only)

Airport Boundary
Runway / Taxiway
Building
Major / Minor Road
Railroad
Municipal Boundary

Single Family Residential
Agriculture
Multi-Family Residential
Open Land
Mobile Home
Open Space / Recreation
Transient Lodging
Commercial Use
Mixed Use
Manufacturing and Production
Tribal Land
Transportation / Utility
Public Use 1 (Non-Compatible)
Vacant / Undefined
Public Use 2 (Compatible)

Ocean / Lake / Pond
School
Daycare
Place of Worship
Library
Hospital
Lighthouse
Historic Structure (NRHP)
Historic District (NRHP)

Note: Entire area shown is within the County of Dukes County.

Source: MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS; ESRI, Inc., National Register Historic Places

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Figure 6-2:
Forecast Conditions (2028) NEM

2028 Forecast DNL Contour (65-75 dB)
2028 Forecast DNL Contour (60 dB Informational Only)

Airport Boundary
Runway / Taxiway
Building
Major / Minor Road
Railroad
Municipal Boundary

Single Family Residential
Agriculture
Multi-Family Residential
Open Land
Mobile Home
Open Space / Recreation
Transient Lodging
Commercial Use
Mixed Use
Manufacturing and Production
Tribal Land
Transportation / Utility
Public Use 1 (Non-Compatible)
Vacant / Undefined
Public Use 2 (Compatible)

Ocean / Lake / Pond

School
Daycare
Place of Worship
Library
Hospital
Lighthouse
Historic Structure (NRHP)
Historic District (NRHP)

Note: Entire area shown is within the County of Dukes County.

Source: MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS; ESRI, Inc., National Register Historic Places

0 1,000 2,000 Feet

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Figure 6-3:
Comparison of Existing Condition (2023) and Forecast Conditions (2028) NEM

2023 Baseline DNL Contour (65-75 dB)
2023 Baseline DNL Contour (60 dB Informational Only)
2028 Forecast DNL Contour (65-75 dB)
2028 Forecast DNL Contour (60 dB Informational Only)

Airport Boundary
Runway / Taxiway
Building
Major / Minor Road
Railroad
Municipal Boundary

Single Family Residential
Agriculture
Multi-Family Residential
Open Land
Mobile Home
Open Space / Recreation
Transient Lodging
Commercial Use
Mixed Use
Manufacturing and Production
Tribal Land
Transportation / Utility
Public Use 1 (Non-Compatible)
Vacant / Undefined
Public Use 2 (Compatible)

Ocean / Lake / Pond
School
Daycare
Place of Worship
Library
Hospital
Lighthouse
Historic Structure (NRHP)
Historic District (NRHP)

Note: Entire area shown is within the County of Dukes County.

Source: MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS; ESRI, Inc., National Register Historic Places

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6.3 Comparison of Measured and Modeled Noise Exposure

As discussed in Chapter 4, a short-term noise measurement program was conducted in July 2023 at ten residential locations. **Table 6-2** presents the average daily measured aircraft-only DNL and the 2023 modeled average annual DNL values as computed by AEDT for each site.

Table 6-2 compares the average DNL measured at the ten measurement locations to the AEDT-computed DNL for the Existing Conditions NEM. Reviewers should bear in mind that the measured aircraft-only noise levels are only from the week-long measurement period and thus represent noise levels for activity at MVY during that period. Variation from the annual average values is to be expected due to variations in fleet mix, operating times and runway use between that subset of days and the annual average.

During the measurement week, MVY was in southwest flow (arrivals to and departures from Runway 24) almost exclusively. On an average annual basis, the opposite flow direction (arrivals to and departures from Runway 6) occurs close to 25 percent of the time. Additionally, Runway 15/33 was utilized at a lower rate during the measurement week than the average annual rate. This resulted in lower measured levels at Sites 4 and 5 due to lower-than-average operations compared to the modeled average annual day results.

While humans can readily discriminate between aircraft and non-aircraft noise, it is a very challenging task for an automated system. This is particularly true at locations where aircraft noise levels are relatively low, as is the case at MVY, where each noise monitor was outside the DNL 65 contour. At such locations, aircraft noise levels tend to be close to, or even below, those of community noise sources; e.g., street traffic, children playing, dogs barking, landscaping equipment, weather sources such as wind and rain, and even insects and birds. As a result, the monitoring system can have difficulty identifying all aircraft noise events, or the events may even be masked by non-aircraft events.

Table 6-2. Comparison of Average Measured to 2023 Annual Modeled Aircraft Noise Exposure

Source: HMMH, 2023

Site	Average Aircraft-only Measured[1] DNL	2023 Annual AEDT-Calculated[2] DNL	Difference (Measured – AEDT)
1	58	59	-1
2	59	57	2
3	51	50	1
4	45	48	-3
5	38	45	-7
6	45	47	-2
7	42	44	-2
8	57	55	2
9	53	51	2
10	51	49	2

Notes:

1. Measured DNL represents the average DNL and the measured data includes only aircraft noise events.
2. AEDT-Calculated DNL for all sites represent the average-annual day DNL for calendar year 2023 for only aircraft noise sources.

7 Stakeholder Engagement

A critical element of the Part 150 Process is stakeholder engagement. This chapter describes outreach efforts conducted as part of the development of this NEM.

14 CFR Part 150 Guidance on Public Participation for the NEM

FAA's acceptance of the NEM will be contingent on an FAA finding that Section 150.21(b) consultation requirements have been met; i.e:

§ 150.21 (b) [for Noise Exposure Maps]: Each map, and related documentation submitted under this section must be developed and prepared … in consultation with states, and public agencies and planning agencies whose area, or any portion of whose area, of jurisdiction is within the Ldn 65 dB contour depicted on the map, FAA regional officials, and other Federal officials having local responsibility for land uses depicted on the map. This consultation must include regular aeronautical users of the airport. The airport operator shall certify that it has afforded interested persons adequate opportunity to submit their views, data, and comments concerning the correctness and adequacy of the draft noise exposure map and descriptions of forecast aircraft operations. Each map and revised map must be accompanied by documentation describing the consultation accomplished under this paragraph and the opportunities afforded the public to review and comment during the development of the map. One copy of all written comments received during consultation shall also be filed with the Regional Airports Division Manager.

7.1 Stakeholder Engagement and Public Participation

The Part 150 Study process includes several outreach efforts to engage the public. The most prominent of these at MVY is the Technical Advisory Committee (TAC) which met three (3) times over the course of the Part 150 Study. In addition, MVAC scheduled two public workshops to provide information and receive input on the study at the outset and on the draft NEM report after results were available.

7.2 Technical Advisory Committee

MVAC composed a diverse group of key stakeholders including, but not limited to, community representatives, aircraft operators/airlines, affected jurisdictions, and land use planners. Representatives from the Massachusetts Department of Transportation (MassDOT) were also included. The FAA participated in an advisory capacity to the TAC.

The committee serves several important functions, such as:

- Representing a broad range of stakeholder groups
- Receiving information about the Study and sharing it with their constituencies
- Reviewing information and providing timely input to the Study Team
- In some cases, providing technical advice to the Study Team

Representation on the committee is designed to include a broad range of perspectives, while keeping the committee to a reasonable size so that deliberations are efficient. Committee meetings are open to the public and the public is encouraged to attend and participate in the open discussion portion at the end of each meeting.

7.2.1 Formation and Role of Advisory Committee

Initial invitations were distributed for the TAC to a key set of stakeholders, listed in **Table 7-1**. These were identified as agencies requiring consultation based on the regulations governing the Part 150 process at 14 CFR 150.21 (b) and 14 CFR 150.105(a).[29] Not all member organizations invited to the TAC chose to send a representative. Several residents participated in the committee representing their own and their neighbors' interests as area homeowners.

Table 7-1. Member Organizations of the Technical Advisory Committee (TAC)

Source: HMMH, 2023

Stakeholder Identified in 14 CFR 150.21 (b) and A150.105(a)			
States, public agencies or planning agencies whose area of jurisdiction is within the DNL 65 dB contour	FAA regional officials	Regular Aeronautical Users of the Airport	Interested Persons
▪ MVY Airport Staff ▪ MVAC ▪ Martha's Vineyard Commission (MVC) ▪ Town of Edgartown ▪ Town of West Tisbury ▪ Town of Oak Bluffs	▪ Midwest Air Traffic Control ▪ FAA New England Region ▪ FAA Flight Standards District Office (FSDO)	▪ Cape Air ▪ American Airline ▪ JetBlue ▪ PlaneSense ▪ Tradewind ▪ Vineyard Wind	▪ National Business Aviation Association (NBAA) ▪ Aircraft Owners and Pilots Association (AOPA) ▪ Massachusetts Airport Management Association (MAMA)

It is important to note that the TAC is advisory only to the Study. That is, the TAC can offer opinions, advice and guidance to the Study, but MVAC has the sole discretion to accept or reject the TAC recommendations in accordance with 14 CFR Part 150 as the representative of the airport sponsor.

As the sponsor of the Part 150 Study and as the operator of MVY, MVAC is a member of the TAC. The FAA, as the primary funding agency for the Studies and as the approval authority, is a key advisor of the TAC. A complete list of the members of the MVY TAC can be found in **Appendix F**.

7.2.2 Summary of Advisory Committee Meetings

The Study Team supported MVY in handling all aspects of meeting logistics. The Study Team also identified specific meeting goals and objectives in advance of each meeting and recommended meeting formats. The Study Team prepared presentations and meeting materials for each TAC meeting and served as the facilitator for the TAC meetings. Topics discussed at each TAC meeting are found in **Table 7-2**.

[29] 14 CFR 150. 105 (a) states: "The airport proprietor shall identify each public agency and planning agency whose jurisdiction or responsibility is either wholly or partially within the Ldn 65 dB boundary."

Table 7-2. Technical Advisory Committee Meeting Topics

Source: HMMH, 2023

TAC Meeting #	Date	Topics Covered
1	January 31, 2023	Overview of the Part 150 process and roles and responsibilities, Noise 101, noise model, and study schedule
2	April 25, 2023	Review of project schedule, land use map, noise model inputs, forecast and noise measurement program plan
3	October 10, 2023	Presentation of noise measurement results, draft DNL contours and draft NEM Report

The TAC meeting facilitators are responsible for keeping the discussion on-topic and on time and for providing meeting summaries. Copies of agendas and summaries for all three TAC meetings are provided in **Appendix F**.

7.3 Public Involvement

Members of the public who have an interest in the study have a role to play and a responsibility to the Study's outcome. Members of the general public were encouraged to stay informed of the Study's progress by visiting the Study's website, attending TAC meetings, participating in public workshops and submitting comments on the Study.

7.3.1 Public Outreach

The Study Team supports MVAC to create and distribute newsletters, press releases, emails and advertisements to inform the community, media and elected officials about the public workshops, and develops supporting media materials for the workshop. MVAC identified meeting locations, handled all logistics for securing space and assure that they are Americans with Disabilities Act (ADA) accessible and (to the extent possible) public transit accessible.

The Study Team members and MVAC staff served as facilitators at various stations at the public workshops and answered questions from the public. The first public workshop occurred on January 31, 2023. Legal, print, and digital advertisements for the workshop ran in the Martha's Vineyard Times newspaper on January 9, 2023, and in the Vineyard Gazette on January 9, 2023. The study was also posted in the classified ads sections of both sources for multiple issuances in January. See **Appendix F** for copies of the announcements.

The second public workshop was held on October 10, 2023. All workshop materials, including copies of the poster boards, are provided in **Appendix F**.

7.3.2 Public Review of Draft NEM

MVAC made the draft NEM available for public review and comment from October 6, 2023 through November 6, 2023. The draft NEM was the primary topic of the second public workshop, held on October 10, 2023. The draft NEM report was available for public review at the following locations:

- On MVAC website[30]
- At three physical locations: (1) Airports Director's Office, 71 Airport Rd, West Tisbury, MA, 9:30 a.m. to 4 p.m. (Mon to Fri), (2) Martha's Vineyard Commission Office, 33 New York Ave, Oak Bluffs, MA, 8:30 a.m. to 4:30 p.m. (Mon to Fri), and (3) West Tisbury Public Library, 1042 State Rd, West Tisbury, MA, 10:00 a.m. to 5 p.m. (Mon to Sat).

The workshop and draft NEM report availability and comment period were advertised through:

- The project website
- Legal print and digital advertisements in the local newspapers, Martha's Vineyard Times and the Vineyard Gazette. Copies of the notices will be included in **Appendix F**.
- Emailed notices to local officials, included in **Appendix F**.
- With the invitation to TAC Meeting #3, TAC members were encouraged to spread the word to their constituents
- The newsletter announcing the draft report results and public review period will be provided as a print handout at the second public workshop.

Over the course of the study, the study team received 11 letters from the public. Each of these is reproduced in Appendix F.6, organized by the order in which they were received.

7.4 Website

The MVAC, with support from the Study Team, developed and maintained a Part 150 Study website. The website address is https://mvyairport.com/mvypart150-faa-noise-study/. The Study Team also monitored social media channels for news and commentary on the Part 150 Study, and made recommendations for responses or engagement, on a case-by-case basis. The Study Team coordinated with MVAC to design and manage the Part 150 public website where all Study related information and resources are posted.

[30] https://mvyairport.com/airport-commission/

Appendix A - Noise Terminology

A.1 Introduction

Noise is a complex physical quantity. The properties, measurement, and presentation of noise involve specialized terminology that can be difficult to understand. To assist reviewers in interpreting the complex noise metrics used in evaluating airport noise, this appendix introduces six acoustical descriptors of noise, roughly in increasing degree of complexity:

- Decibel, dB
- A-Weighted Decibel, dBA
- Maximum A-Weighted Sound Level, L_{max}
- Sound Exposure Level, SEL
- Equivalent A-Weighted Sound Level, L_{eq}
- Day-Night Average Sound Level, DNL

These noise metrics form the basis for most noise analyses conducted at U.S. airports.

A.2 Decibel, dB

All sounds come from a sound source – a musical instrument, a voice speaking, an airplane passing overhead. It takes energy to produce sound. The sound energy produced by any sound source is transmitted through the air in sound waves – tiny, quick oscillations of pressure just above and just below atmospheric pressure. The ear detects these oscillating pressures interpreting it as "sound."

Our ears are sensitive to a wide range of sound pressures. Although the loudest sounds that we hear without pain have about one million times more energy than the quietest sounds we hear, our ears are incapable of detecting small differences in these pressures. Thus, to better match how we hear this sound energy, we compress the total range of sound pressures to a more meaningful range by introducing the concept of sound pressure level.

Sound pressure level (SPL) is measured in decibels (dB). Decibels are logarithms of a ratio, the numerator being the pressure of the sound source of interest, and the denominator being the reference pressure (equivalent to the quietest sound that an average healthy young adult can hear):

$$\textit{Sound Pressure Level (SPL)} = 20 * Log\left(\frac{P_{source}}{P_{reference}}\right) dB$$

The logarithmic conversion of sound pressure to sound pressure level means that the quietest sound that we can hear (the reference pressure) has a sound pressure level of about 0 dB, while the loudest sounds that we hear without pain have sound pressure levels of about 120 dB. Most sounds in our day-to-day environment have sound pressure levels on the order of 30 to 100 dB.

Because decibels are logarithmic, combining decibels is unlike common arithmetic. For example, if two sound sources each produce 100 dB and they are then operated together, they produce 103 dB – not the 200 dB we might expect. Four equal sources operating simultaneously produce another 3 dB of noise, resulting in a total sound pressure level of 106 dB. For every doubling of the number of equal sources, the sound pressure level goes up another 3 dB.

A tenfold increase in the number of sources makes the sound pressure level go up 10 dB. A hundredfold increase makes the level go up 20 dB, and it takes a thousand equal sources to increase the level 30 dB.

If one noise source is much louder than another, the two sources together will produce virtually the same sound pressure level (and sound to our ears) as the louder source alone. For example, a 100 dB source plus an 80 dB source produce approximately 100 dB when operating together (actually, 100.04 dB). The louder source “masks” the quieter one. But if the quieter source gets louder, it will have an increasing effect on the total sound pressure level such that, when the two sources are equal, as described above, they produce a level 3 dB above the sound of either one by itself.

Conveniently, people also hear or interpret sound pressure in a logarithmic fashion. Two useful rules of thumb to remember when comparing sound pressure levels are (1) a 6 to 10 dB increase is generally perceived to be about a doubling of loudness, and (2) changes in sound pressure level of less than about 3 dB are not readily detectable outside of a laboratory environment.

A.3 A-Weighted Decibel, dBA

An important characteristic of sound is its frequency, or “pitch.” This is the per-second rate of repetition of the sound pressure oscillations as they reach our ear, expressed in units known as Hertz (Hz.

When analyzing the total noise of any source, acousticians often break the noise into frequency bands to determine how much is low-frequency noise, how much is middle-frequency noise, and how much is high-frequency noise. This breakdown is important for two reasons:

- Our ear is better equipped to hear mid and high frequencies and is less sensitive to lower frequencies. Thus, we find mid- and high-frequency noise more annoying.
- Engineering solutions to a noise problem are different for different frequency ranges. Low-frequency noise is generally harder to control.

The normal frequency range of hearing for most people extends from a low of about 20 Hz to a high of about 10,000 to 15,000 Hz. People respond to sound most readily when the predominant frequency is in the range of normal conversation, typically around 1,000 to 2,000 Hz. The acoustical community has defined several “filters,” which approximate this sensitivity of our ear and thus, help us to judge the relative loudness of various sounds made up of many different frequencies.

The “A" filter (or “A-weighting”) does this best for most environmental noise sources. A-weighted sound levels are measured in decibels, just like unweighted. To avoid ambiguity, A-weighted sound levels should be identified as such (e.g., “an A-weighted sound level of 85 dB”) or in an abbreviated form (e.g., “a sound level of 85 dBA”) where the “A” indicates the sound level has been A-weighted.

The FAA requires the use of A-weighted sound levels for measuring, modeling, describing, and assessing aircraft sound levels (and sound levels from most other transportation and environmental sources). **Figure A-1** depicts A-weighting adjustments to sound from approximately 20 Hz to 10,000 Hz.

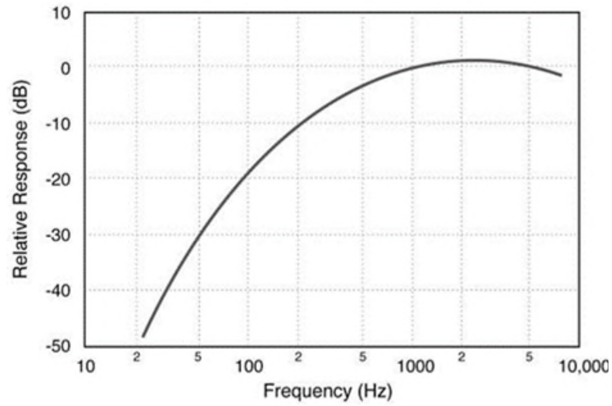


Figure A-1. Frequency-Response Characteristics of A-Weighted Sound Levels

Source: HMMH, 2011

The A-weighted filter significantly de-emphasizes those parts of the total noise at lower and higher frequencies (below about 500 Hz and above about 10,000 Hz) where we do not hear as well. The filter has very little effect, or is nearly "flat," in the middle range of frequencies between 500 and 10,000 Hz where we hear quite easily. Because this filter generally matches our ears' sensitivity, sounds having higher A-weighted sound levels are usually judged to be louder than those with lower A-weighted sound levels, a relationship which otherwise might not be true. It is for this reason that acousticians normally use A-weighted sound levels to evaluate environmental noise sources.

Figure A-2 depicts representative A-weighted sound levels for a variety of common sounds.

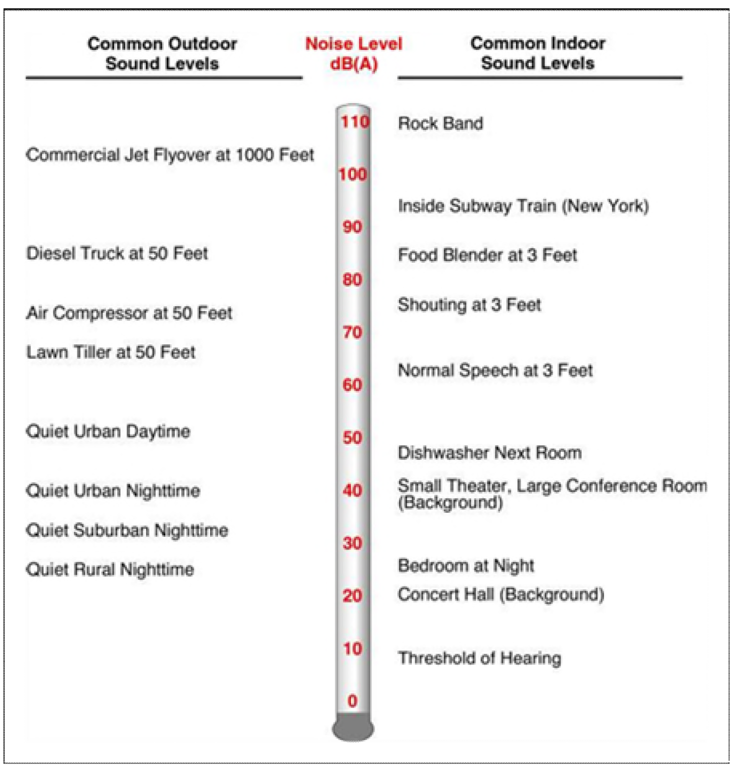


Figure A-2. Representative A-Weighted Sound Levels

Source: HMMH, 2011

A.4 Maximum A-Weighted Sound Level, Lmax

An additional dimension to environmental noise is that A-weighted levels vary with time. For example, the sound level increases as an aircraft approaches, then falls and blends into the background as the aircraft recedes into the distance (though even the background varies as birds chirp, the wind blows, or a vehicle passes by). This is illustrated in **Figure A-3**.

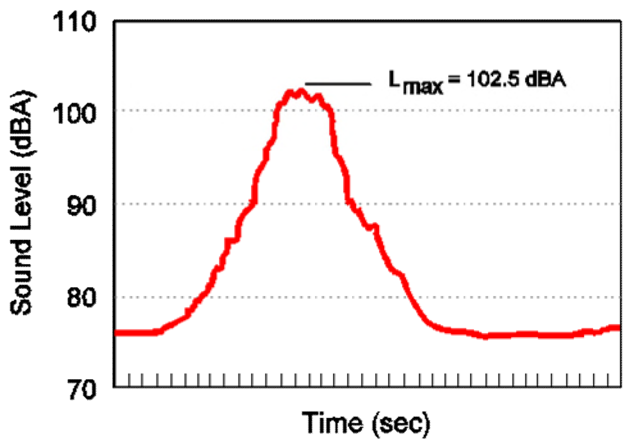


Figure A-3. Variation in the A-Weighted Sound Level over Time

Source: HMMH, 2011

Because of this variation, it is often convenient to describe a particular noise "event" by its maximum sound level, abbreviated as L_{max} (or LA_{max}, if the decibel abbreviation dB is used). **In Figure A-3**, the L_{max} is approximately 102.5 dB.

While the maximum level is easy to understand, it suffers from a serious drawback when used to describe the relative "noisiness" of an event such as an aircraft flyover; i.e., it describes only one dimension of the event and provides no information on the event's overall, or cumulative, noise exposure. In fact, two events with identical maximum levels may produce very different total exposures. One may be of very short duration, while the other may continue for an extended period and be judged much more annoying. The next sections introduce two closely related measures that account for this concept of a noise "dose," or the cumulative exposure associated with an individual "noise event" such as an aircraft flyover.

A.5 Sound Exposure Level, SEL

The most commonly used measure of cumulative noise exposure for an individual noise event, such as an aircraft flyover, is the Sound Exposure Level, or SEL. SEL is a summation of the A-weighted sound energy over the entire duration of a noise event. SEL expresses the accumulated energy in terms of the one-second-long steady-state sound level that would contain the same amount of energy as the actual time-varying level.

In simple terms, SEL "compresses" the energy into a single second. **Figure A-4** depicts this compression.

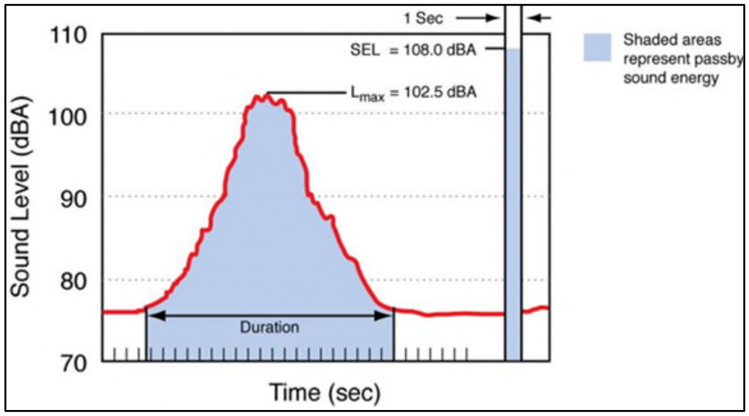


Figure A-4. Graphical Depiction of Sound Exposure Level

Source: HMMH, 2011

Note that because SEL is normalized to one second, it almost always will be higher than the event's L_{max}. In fact, for most aircraft flyovers, SEL is on the order of 5 to 12 dB higher than L_{max}. SEL provides a basis for comparing noise events that generally match our impression of their overall "noisiness," including the effects of both duration and level; the higher the SEL, the more annoying a noise event is likely to be. **Figure A-5** shows a comparison of two different noise events: the first has a shorter duration but a greater maximum level. More noise energy is contained in the second event, which has a higher SEL value.

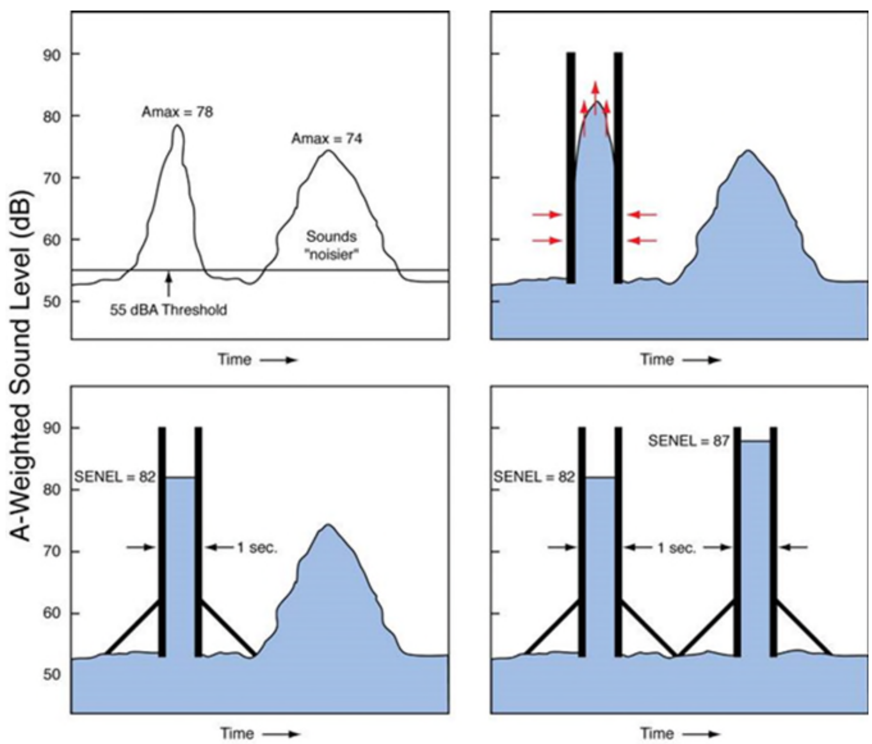


Figure A-5. Graphical Comparison of SEL for Two Noise Events with Different Maximums and Durations

Source: HMMH, 2011

A.6 Equivalent A-Weighted Sound Level, L_{eq}

The Equivalent Sound Level, abbreviated L_{eq}, is a measure of the exposure resulting from the accumulation of sound levels over a particular period of interest, e.g., an hour, an eight-hour school day, nighttime, or a full 24-hour day. The applicable period should always be identified or clearly understood when discussing the metric.

L_{eq} may be thought of as a constant sound level over the period of interest that contains as much sound energy as the actual varying level. It is a way of assigning a single number to a time-varying sound level. This is illustrated in **Figure A-6**.

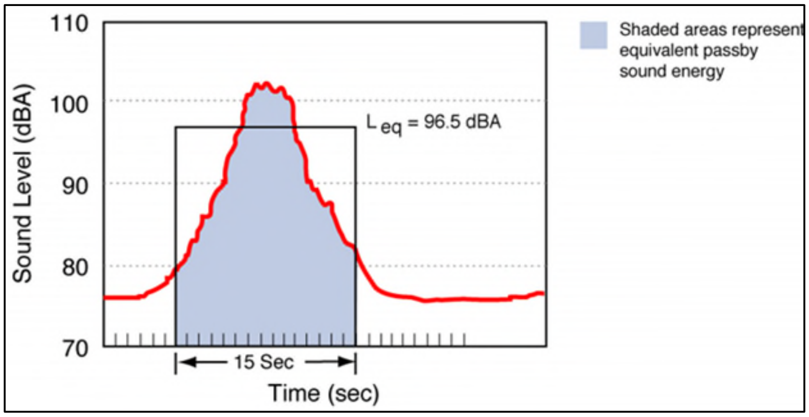


Figure A-6. Example of a One-Minute Equivalent Sound Level

Source: HMMH, 2011

In airport noise applications, L_{eq} is often presented for consecutive one-hour periods to illustrate how the hourly noise dose rises and falls throughout a 24-hour period as well as how certain hours are significantly affected by a few loud aircraft.

A.7 Day-Night Average Sound Level, DNL or Ldn

The previous sections address noise measures that account for short term fluctuations in A-weighted levels as sound sources come and go affecting the overall noise environment. The Day-Night Average Sound Level (DNL or Ldn) represents a 24-hour A-weighted noise dose. DNL is essentially equal to the 24-hour A-weighted L_{eq}, with one important adjustment: noise occurring at night—from 10 pm through 7 am—is "factored up." The factoring up can be made in one of two ways:

- Weighting, by counting each nighttime noise contribution 10 times; e.g., if DNL is calculated by summing the SEL of aircraft operations over a 24-hour period, each nighttime operation is represented by 10 identical daytime operations.
- Penalizing, by adding 10 dB to all nighttime noise contributions; e.g., if DNL is calculated from the SEL of aircraft operations occurring over a 24-hour period, 10 dB are added to the SEL values for nighttime operations.

The 10 dB adjustment accounts for our greater sensitivity to nighttime noise and the fact lower ambient levels at night tend to make noise events, such as aircraft flyovers, more intrusive. **Figure A-7** depicts this adjustment graphically.

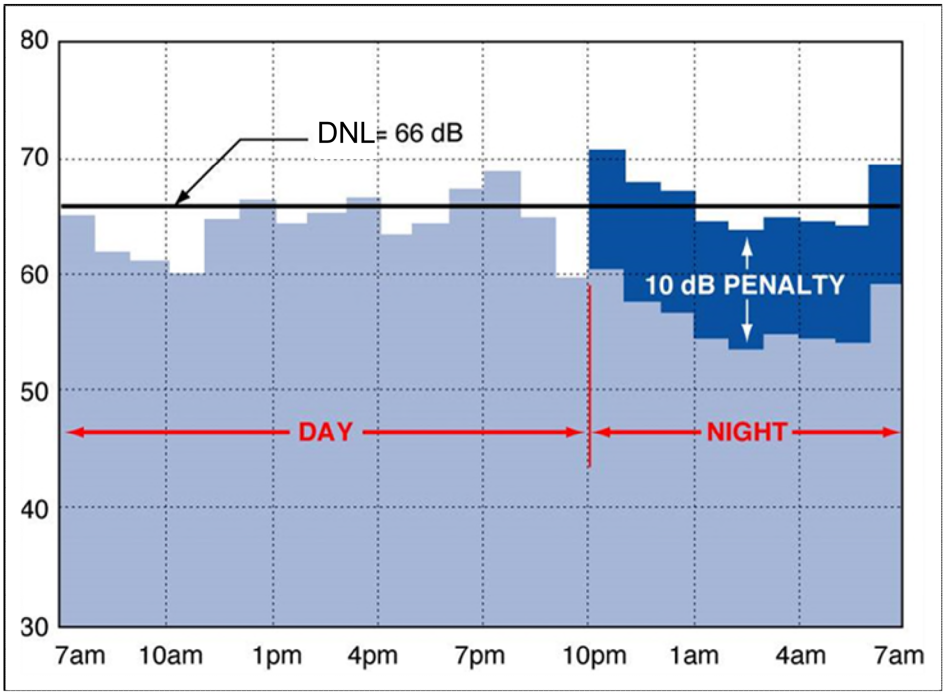


Figure A-7. Example of a Day-Night Average Sound Level Calculation

Source: HMMH, 2011

Most aircraft noise studies use computer-generated estimates of DNL, determined by adding up the energy from the SELs from each event, with the 10 dB penalty / weighting applied to night operations. Computed values of DNL are often depicted as noise contours reflecting lines of equal exposure around an airport (much as topographic maps indicate contours of equal elevation). The contours usually reflect long-term (annual average) operating conditions, considering the average flights per day, how often each runway is used throughout the year, and where over the surrounding communities the aircraft normally fly. Alternative time frames may also clarify shorter-term aspects of a noise environment.

Why is DNL used to describe noise around airports? The U.S. Environmental Protection Agency identified DNL as the most appropriate measure of evaluating airport noise based on the following considerations:

- It is applicable to the evaluation of pervasive long-term noise in various defined areas and under various conditions over long periods of time.
- It correlates well with known effects of noise on individuals and the public.
- It is simple, practical, and accurate. In principle, it is useful for planning as well as for enforcement or monitoring purposes.
- The required measurement equipment, with standard characteristics is commercially available.
- It was closely related to existing methods currently in use.

Representative values of DNL in our environment range from a low of 40 to 45 dB in extremely quiet, isolated locations, to highs of 80 or 85 dB immediately adjacent to a busy truck route. DNL would typically be in the range of 50 to 55 dB in a quiet residential community and 60 to 65 dB in an urban residential neighborhood. **Figure A-8** presents representative outdoor DNL values measured at various U.S. locations.

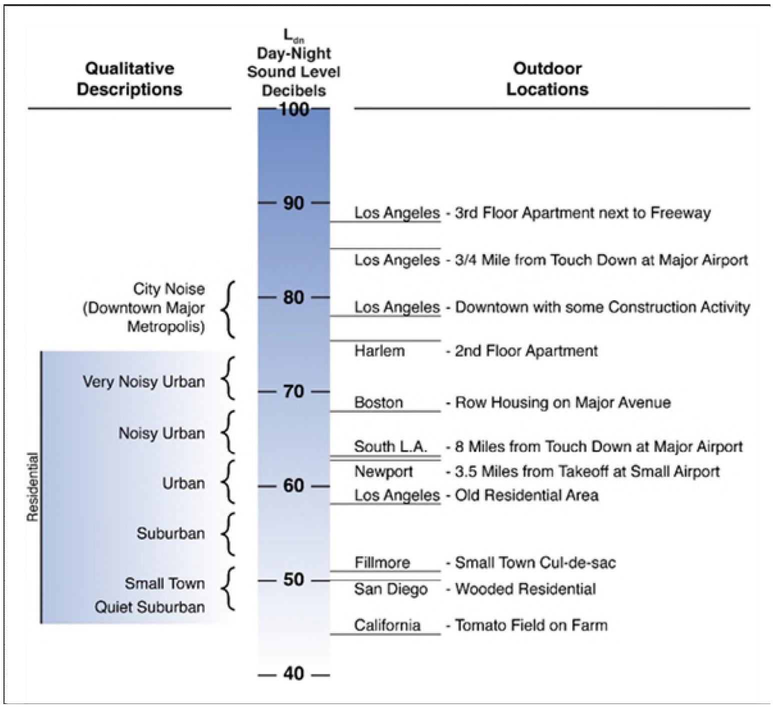


Figure A-8. Examples of Measured Day-Night Average Sound Levels

Source: HMMH, 2011

When preparing environmental noise analyses, the FAA considers a change of 1.5 dB within the DNL 65 dB contour to be "significant." If a change of 1.5 dB is observed, analysts should look between the 60 and 65 dB contours to see if there are areas of change of 3 dB or more; this is considered a "reportable impact." **Section A.2** provided rules of thumb for interpreting moment-to-moment changes in sound level. The following table presents guidelines for interpreting changes in cumulative exposure.

Table A-1. Guidelines for Interpreting Changes in Cumulative Exposure

Source: HMMH, 2011

DNL Change	Community Response	Mitigation
0 – 2 dB	May be noticeable	Abatement may be beneficial
2 – 5 dB	Generally noticeable	Abatement should be beneficial
Over 5 dB	A change in community reaction is likely	Abatement definitely beneficial

Most public agencies dealing with noise exposure, including the FAA, Department of Defense, and Department of Housing and Urban Development, have adopted DNL in their guidelines and regulations.

Appendix B - Noise Measurement Data

B.1 Individual Measurement Site Results, July 11-17, 2023

The individual measurement site results are presented in the following pages. Each site's information consists of a 24-hour bar graph for each day of measurements. The noise energy associated with identified aircraft events was summed for each hour of the day and the resulting values are presented in the form of decibel averages for each hour, denoted as L_{eq}.

The blue portion of each bar represents the aircraft noise energy that occurred at that site during that hour; the orange portion of the bar represents the community (non-aircraft) noise that comprised the rest of the sound energy detected by the monitor during that hour. If no aircraft events were detected by the monitor during a given hour, the bar is entirely orange. Where a bar is entirely (or almost entirely) blue, aircraft noise dominated the sound energy that was detected during that hour.

The graphs with data for all 24 hours also display the calculated day-night average sound level (DNL) for that day in two forms. A black horizontal line indicates the total DNL, incorporating all sounds detected by the monitor. The blue horizontal line indicates the DNL calculated using only sound energy produced by aircraft. Where the two lines are close together, the noise environment was dominated by aircraft. The Y-axis scale is the same for all graphs to allow easy comparison between days and sites.

The series of hourly bar graphs for Site 2 and Site 3 are followed by a table summarizing the aircraft noise events that registered on the site's monitor over the course of the several attended monitoring periods that could be correlated with aircraft flight operations data.

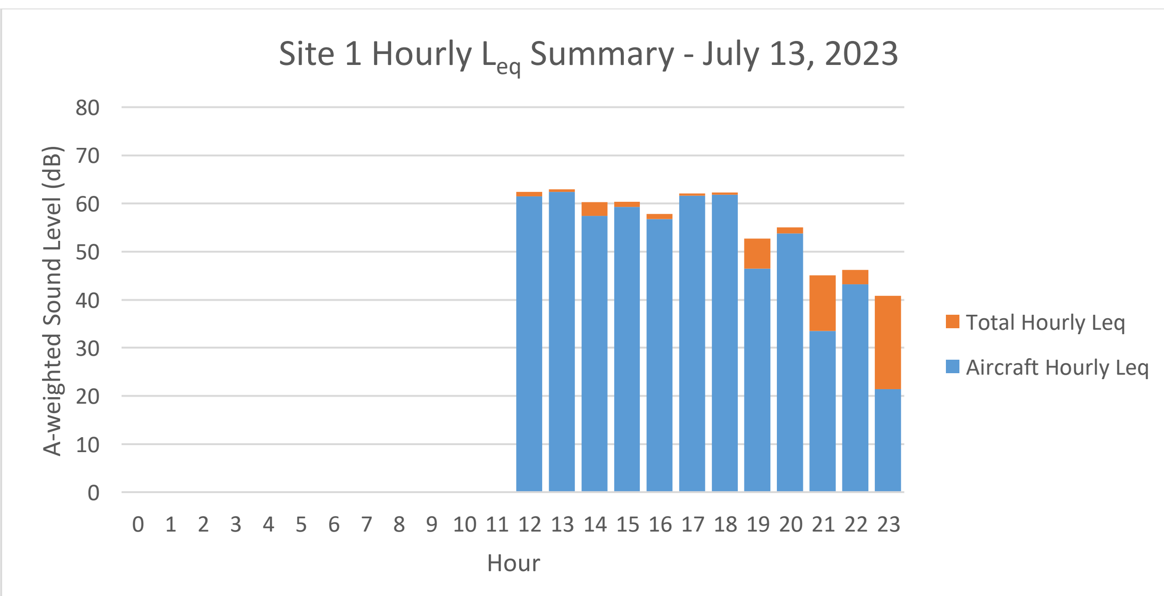


Figure B-1. Site 1 Thursday, July 13, 2023 Hourly L_{eq}

Source: HMMH, 2023

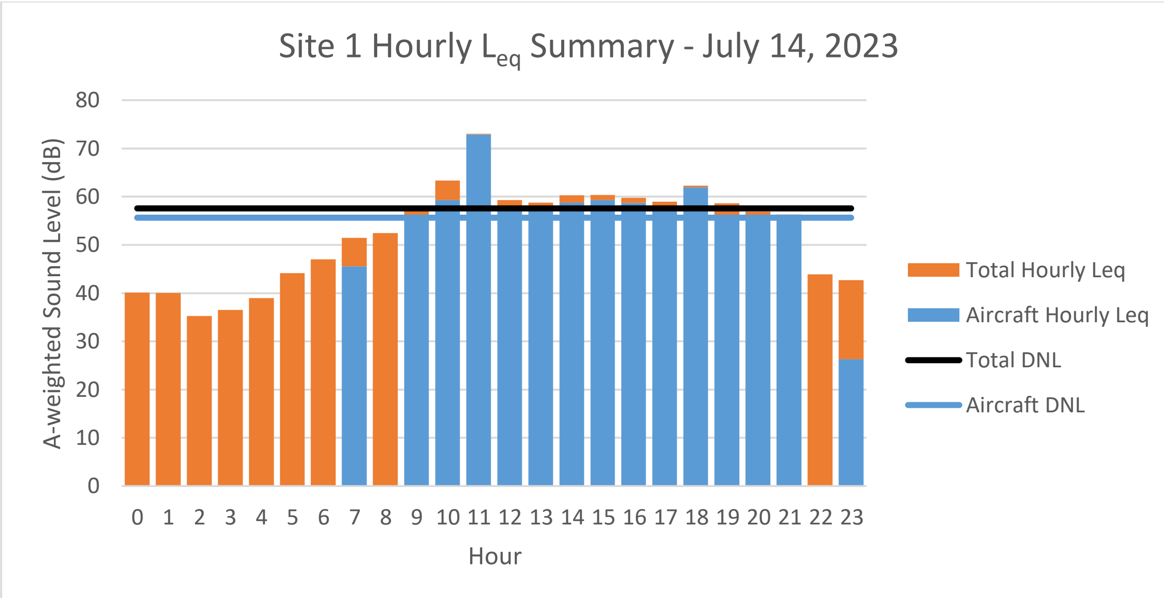


Figure B-2. Site 1 Friday, July 14, 2023 Hourly L_{eq}

Source: HMMH, 2023

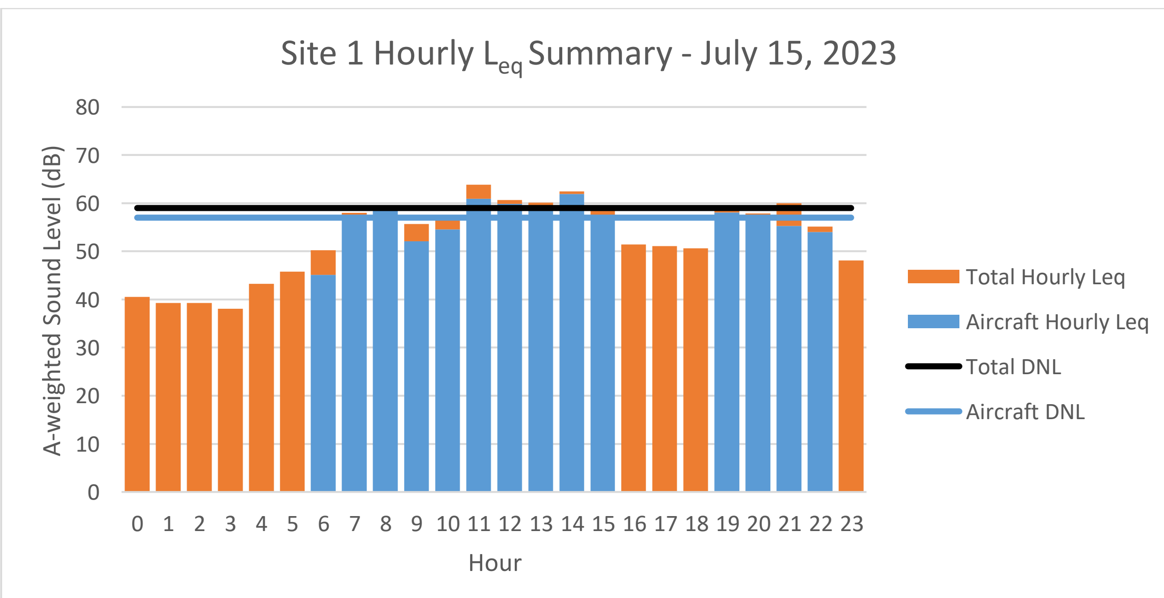


Figure B-3. Site 1 Saturday, July 15, 2023 Hourly L_{eq}

Source: HMMH, 2023

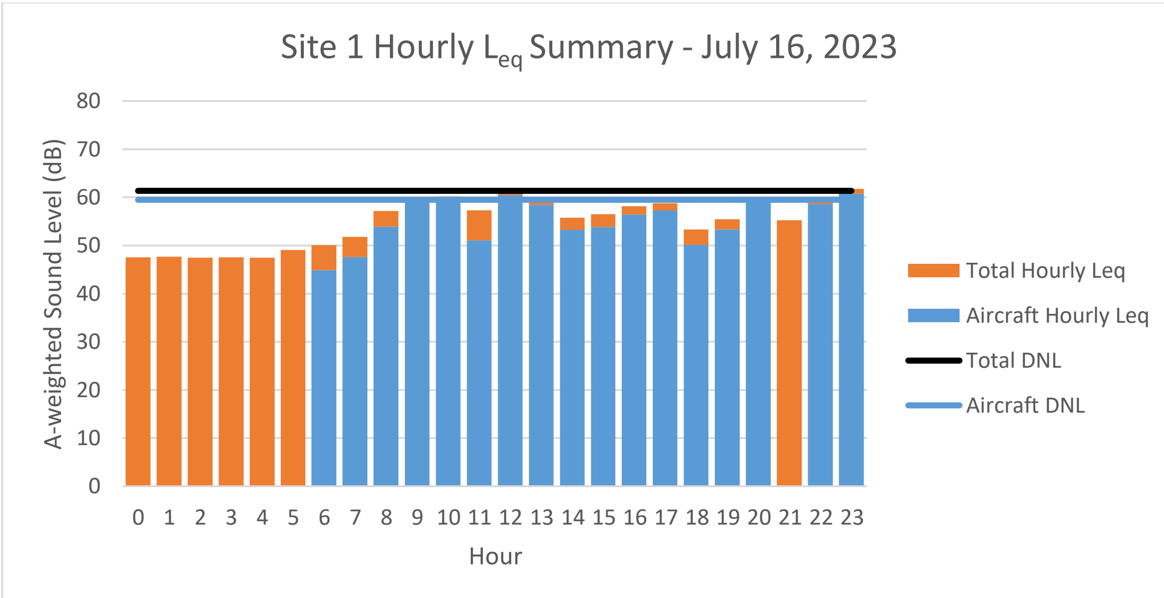


Figure B-4. Site 1 Sunday, July 16, 2023 Hourly L_{eq}

Source: HMMH, 2023

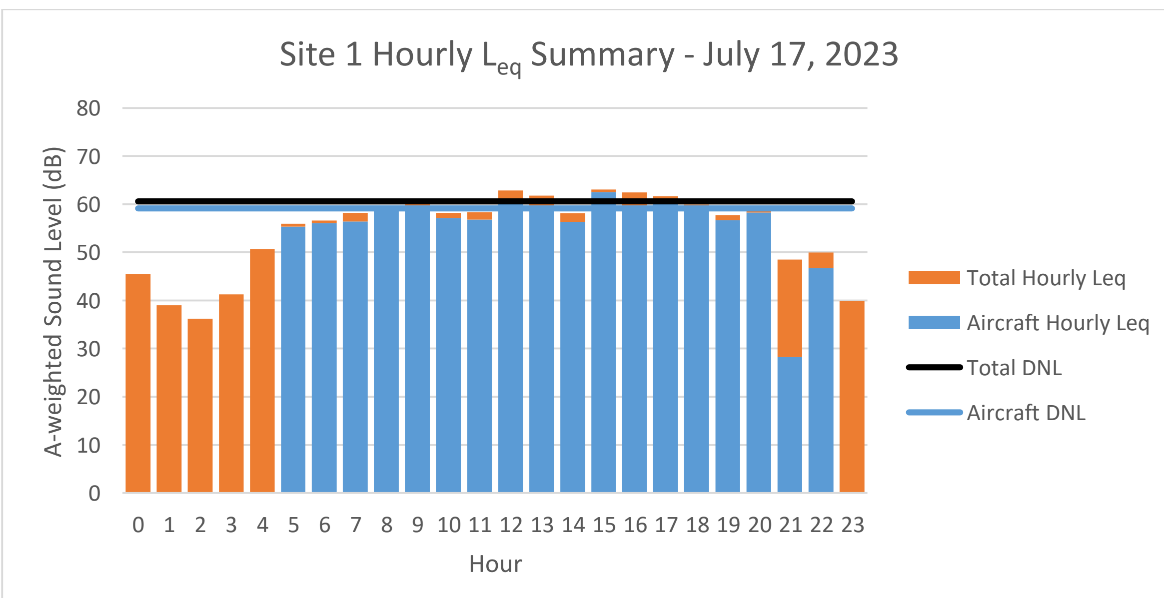


Figure B-5. Site 1 Monday, July 17, 2023 Hourly L_{eq}

Source: HMMH, 2023

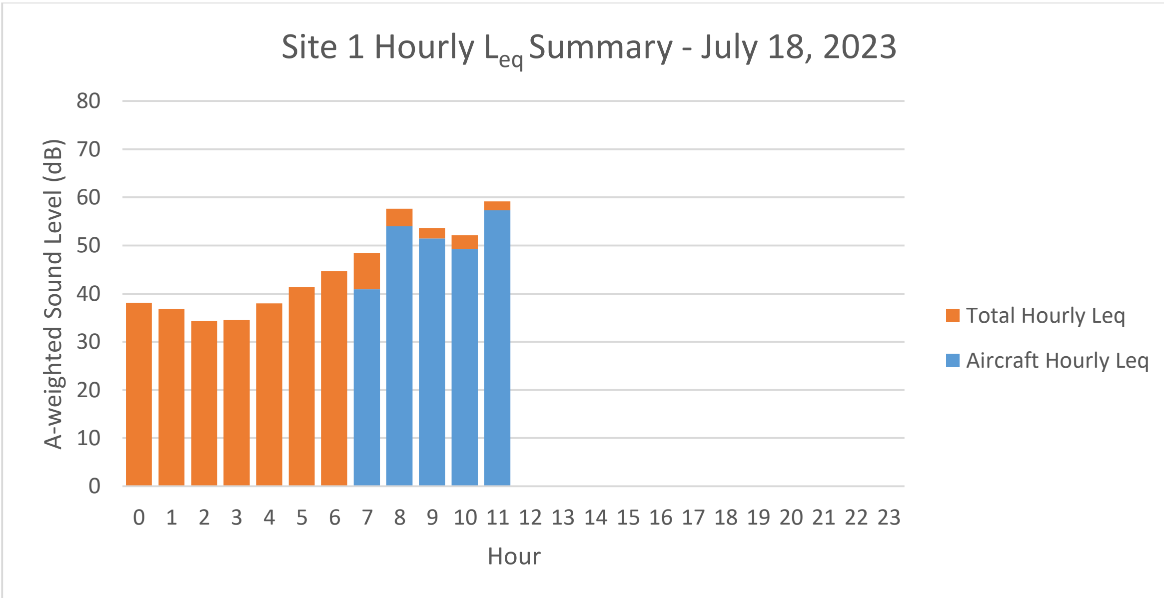


Figure B-6. Site 1 Tuesday, July 18, 2023 Hourly L_{eq}

Source: HMMH, 2023

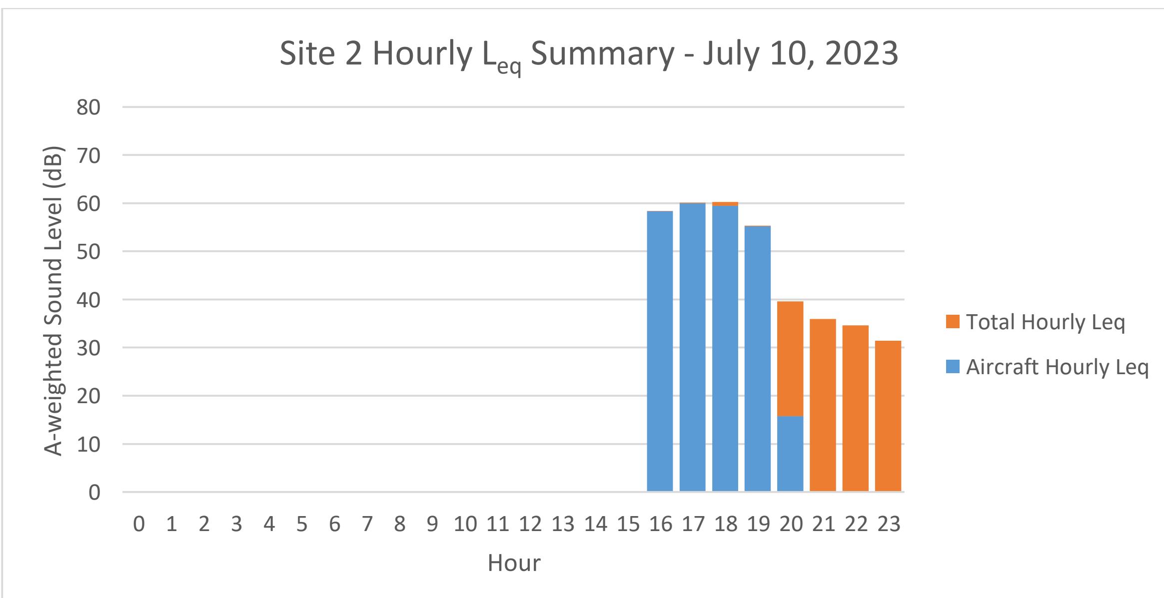


Figure B-7. Site 2 Monday, July 10, 2023 Hourly L_{eq}

Source: HMMH, 2023

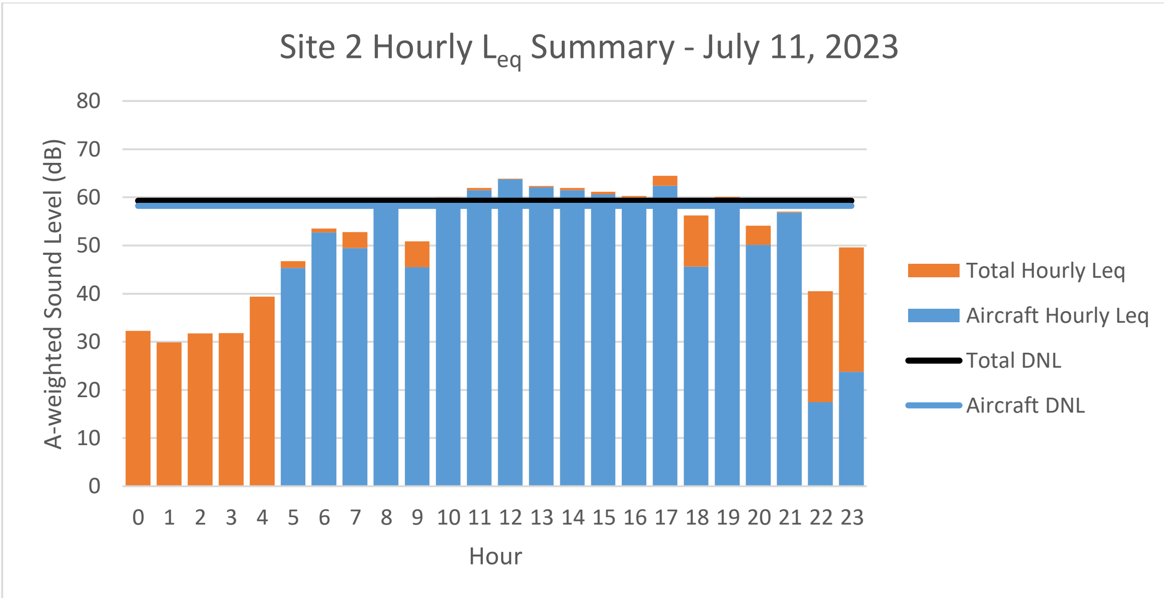


Figure B-8. Site 2 Tuesday, July 11, 2023 Hourly L_{eq}

Source: HMMH, 2023

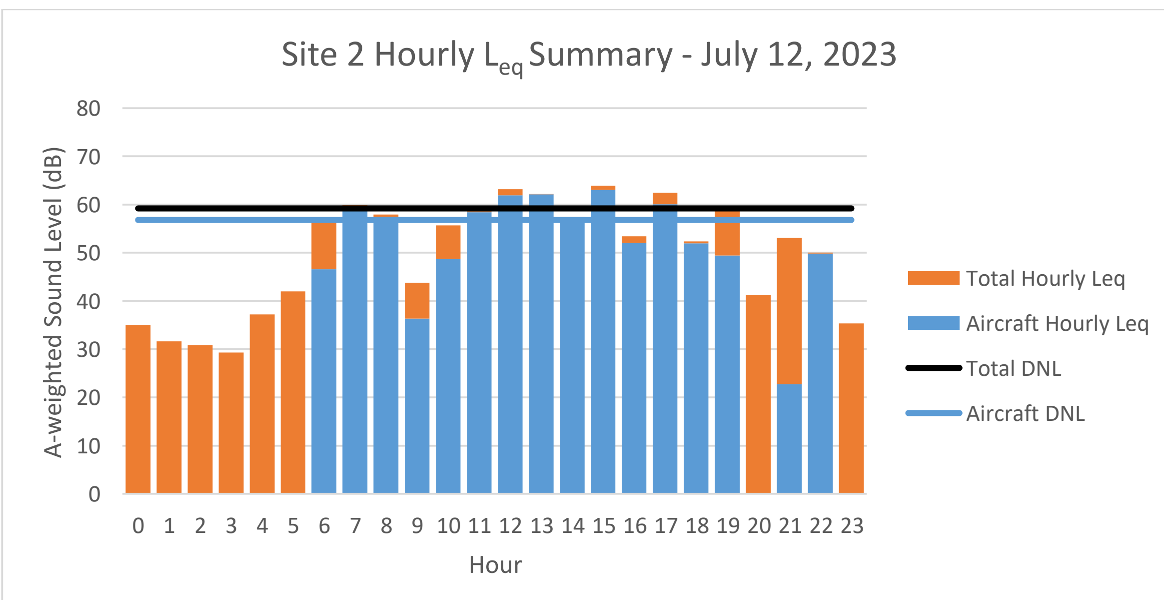


Figure B-9. Site 2 Wednesday, July 12, 2023 Hourly L_{eq}

Source: HMMH, 2023

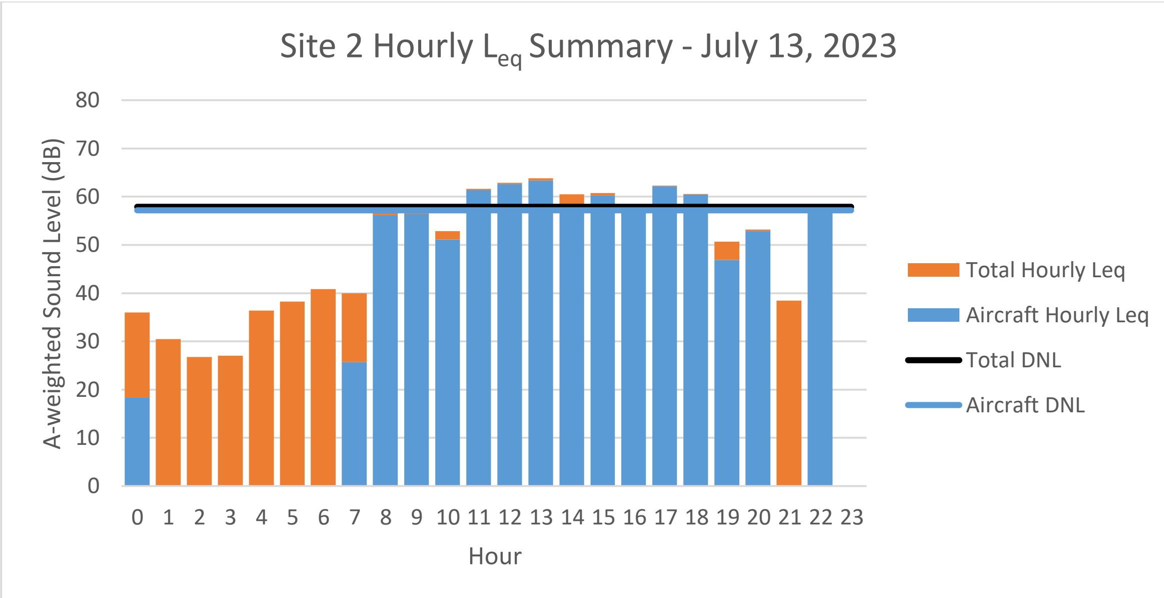


Figure B-10. Site 2 Thursday, July 13, 2023 Hourly L_{eq}

Source: HMMH, 2023

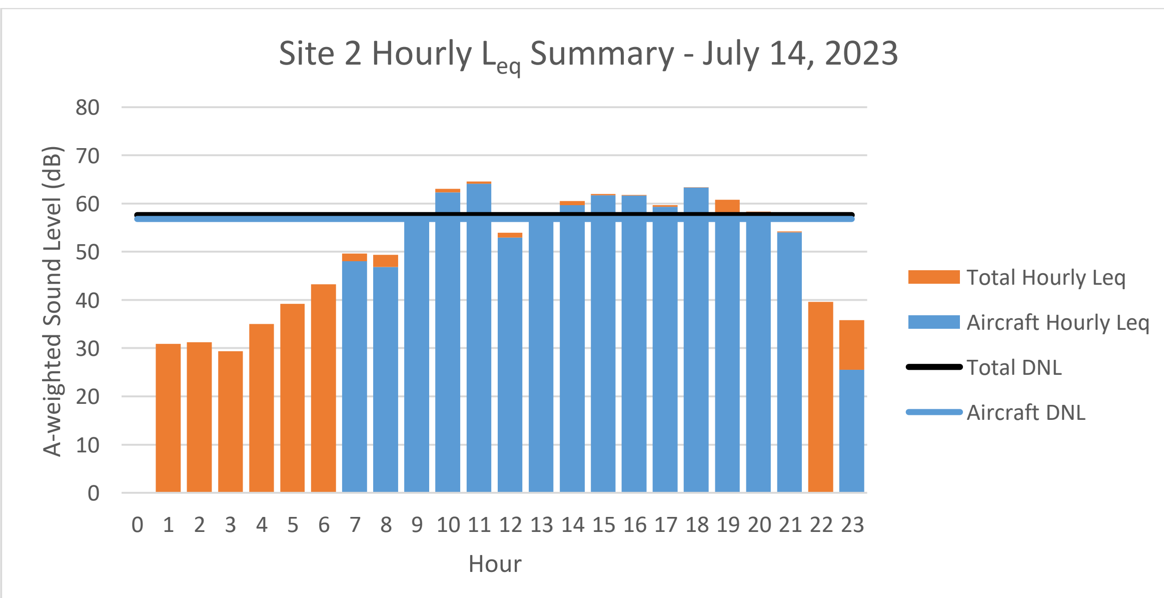


Figure B-11. Site 2 Friday, July 14, 2023 Hourly L_{eq}

Source: HMMH, 2023

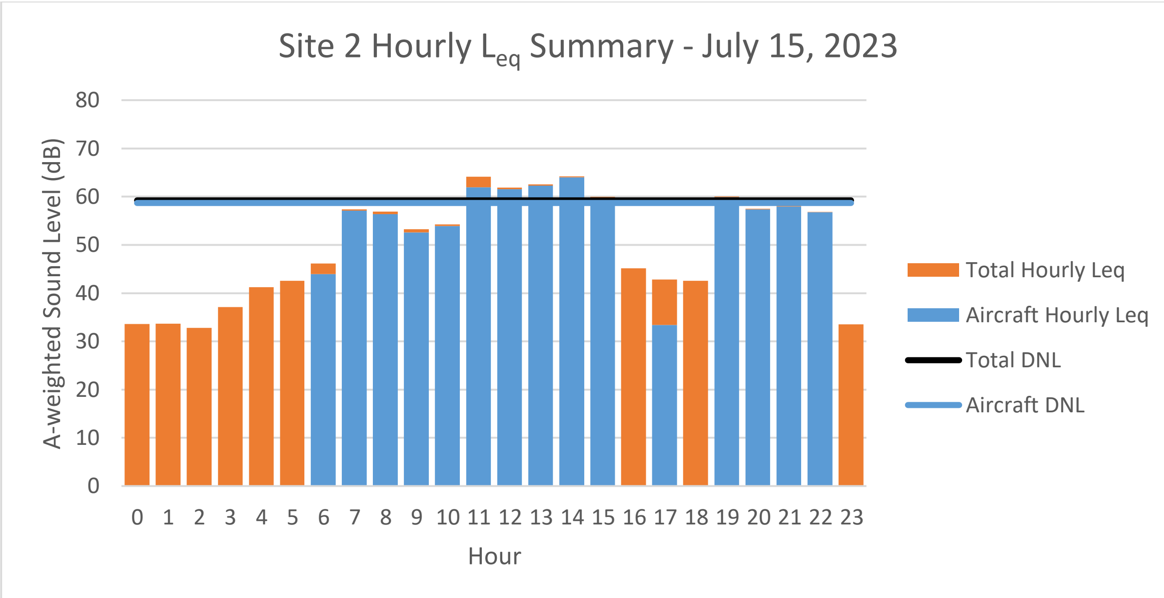


Figure B-12. Site 2 Saturday, July 15, 2023 Hourly L_{eq}

Source: HMMH, 2023

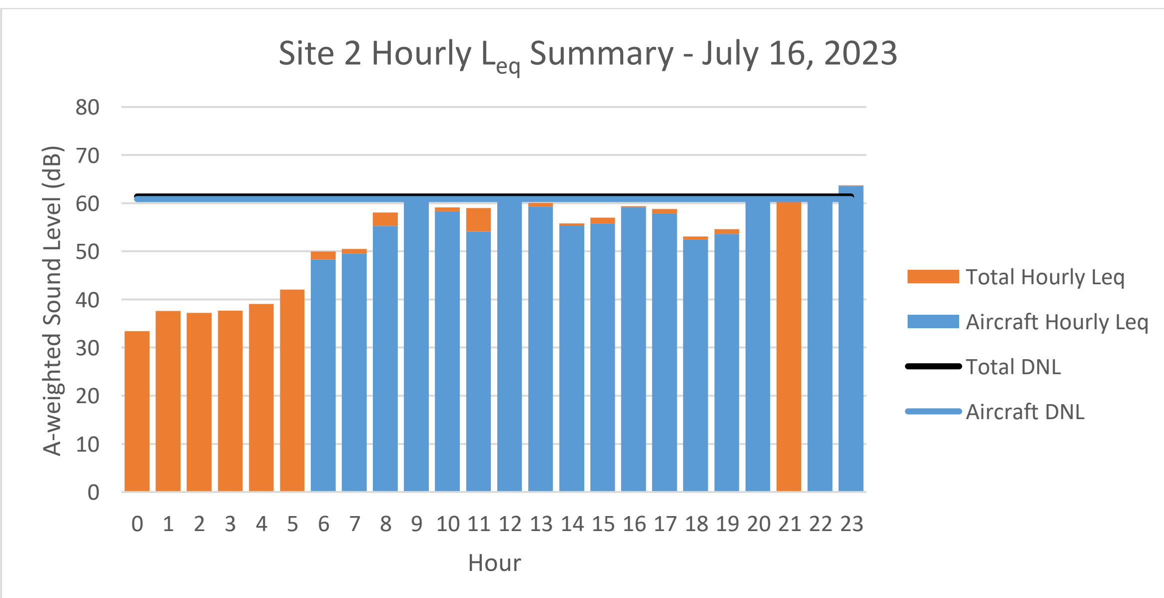


Figure B-13. Site 2 Sunday, July 16, 2023 Hourly L_{eq}

Source: HMMH, 2023

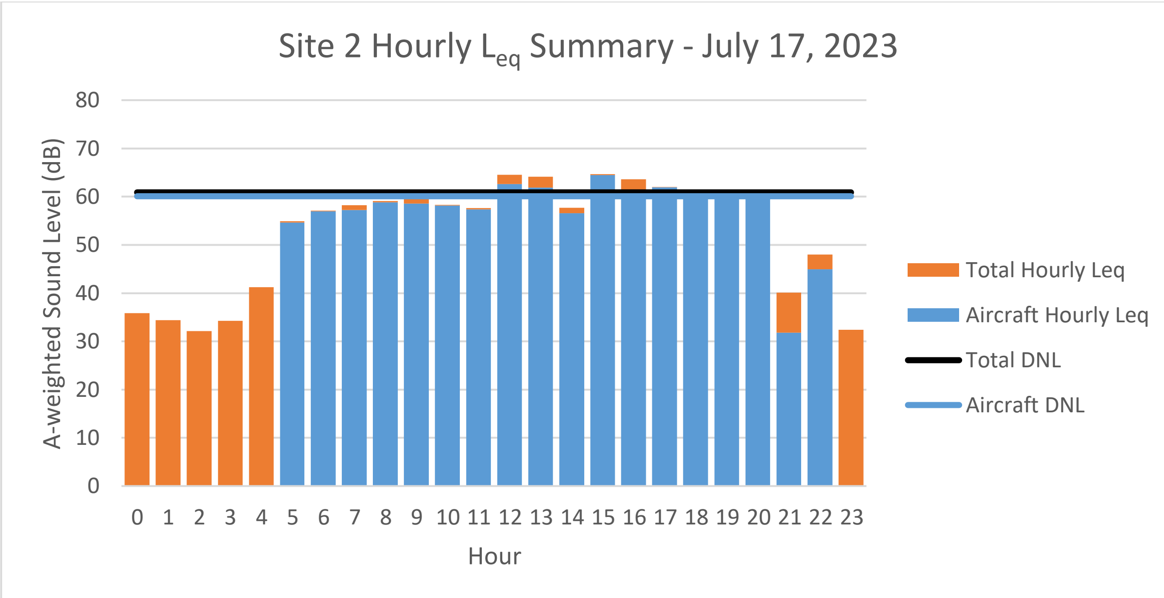


Figure B-14. Site 2 Monday, July 17, 2023 Hourly L_{eq}

Source: HMMH, 2023

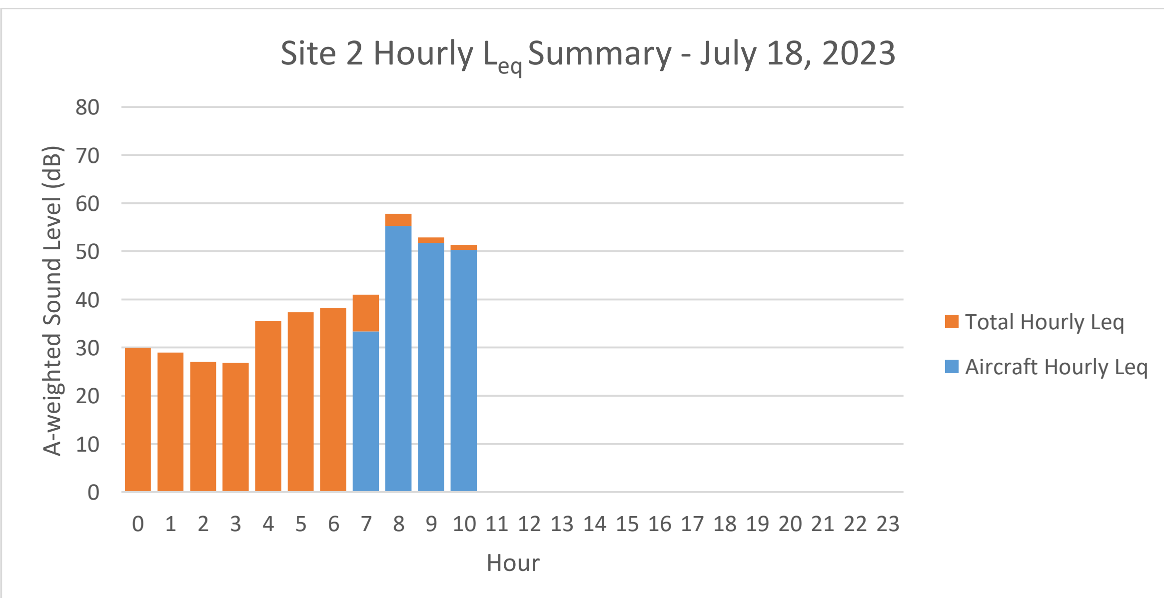


Figure B-15. Site 2 Tuesday, July 18, 2023 Hourly L_{eq}

Source: HMMH, 2023

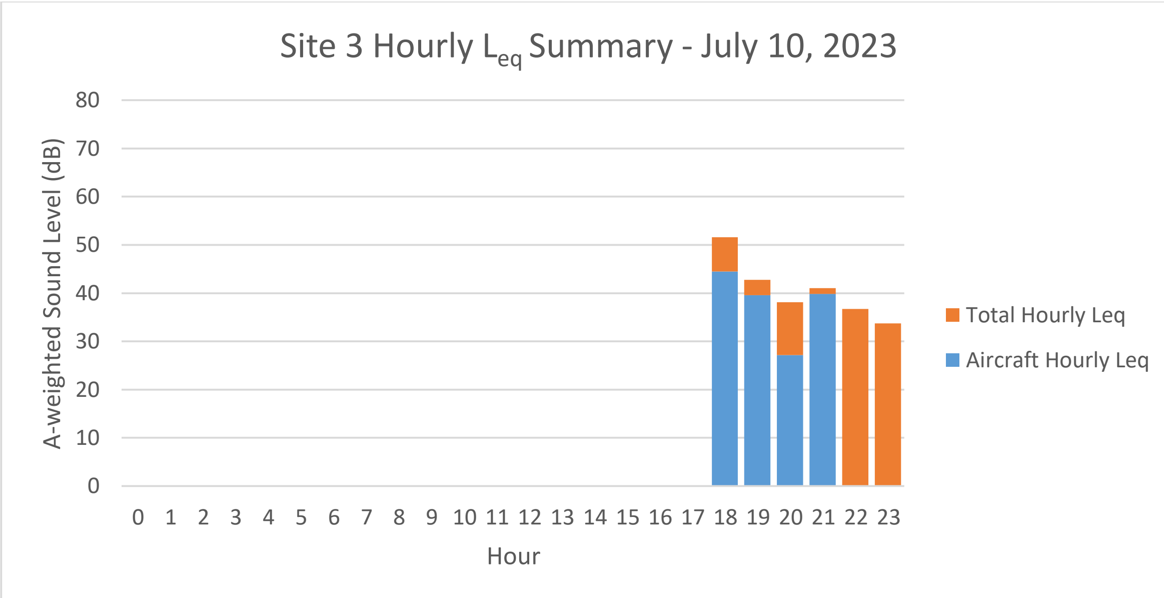


Figure B-16. Site 3 Monday, July 10, 2023 Hourly L_{eq}

Source: HMMH, 2023

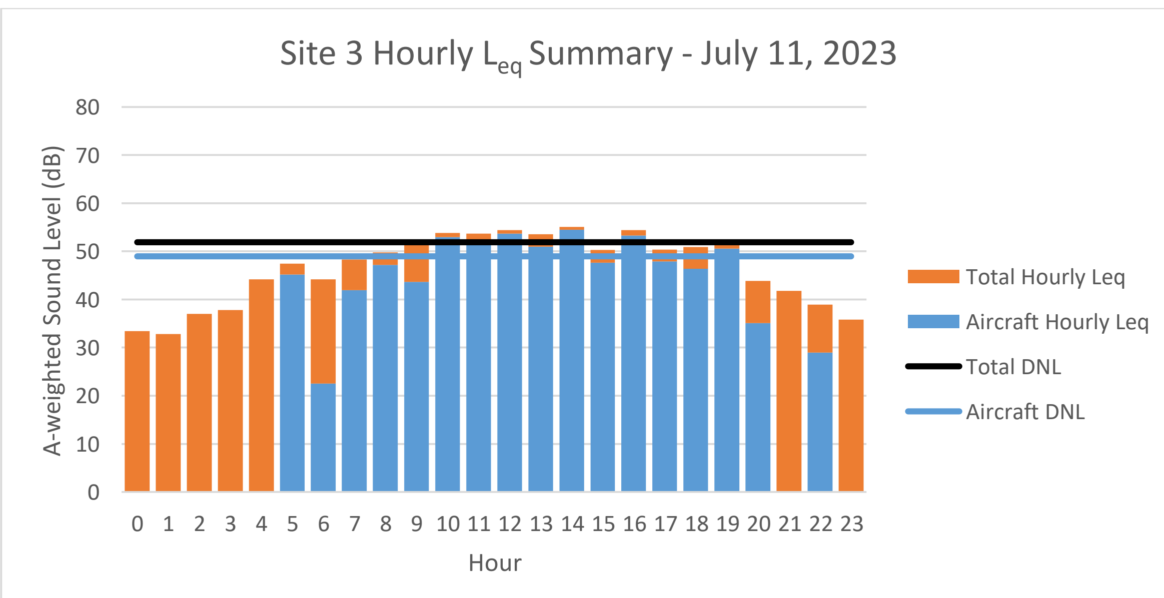


Figure B-17. Site 3 Tuesday, July 11, 2023 Hourly L_{eq}

Source: HMMH, 2023

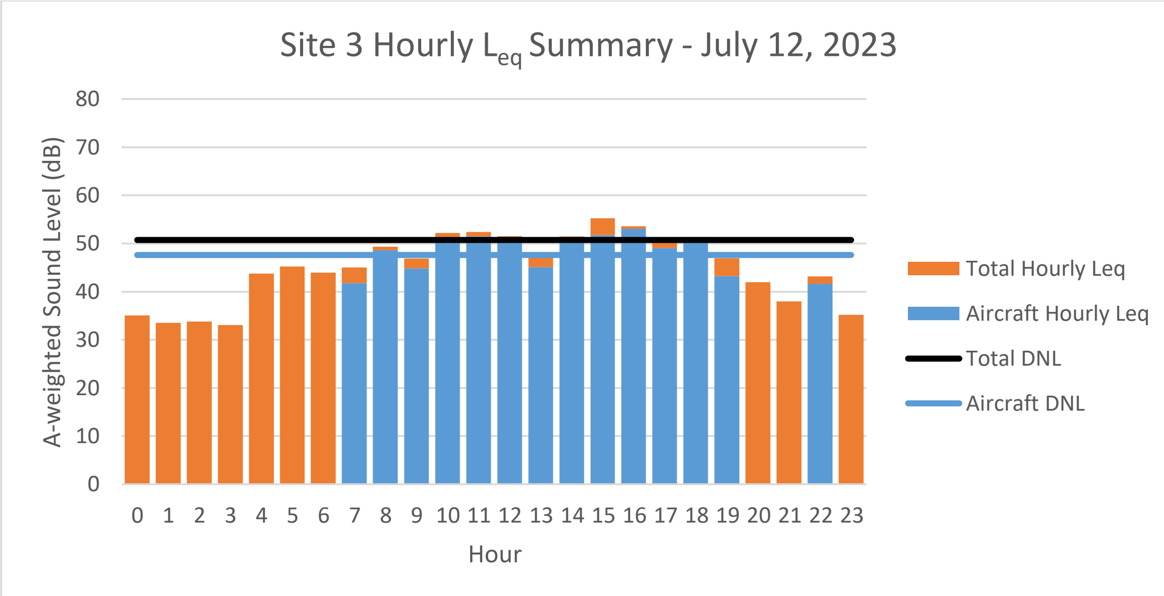


Figure B-18. Site 3 Wednesday, July 12, 2023 Hourly L_{eq}

Source: HMMH, 2023

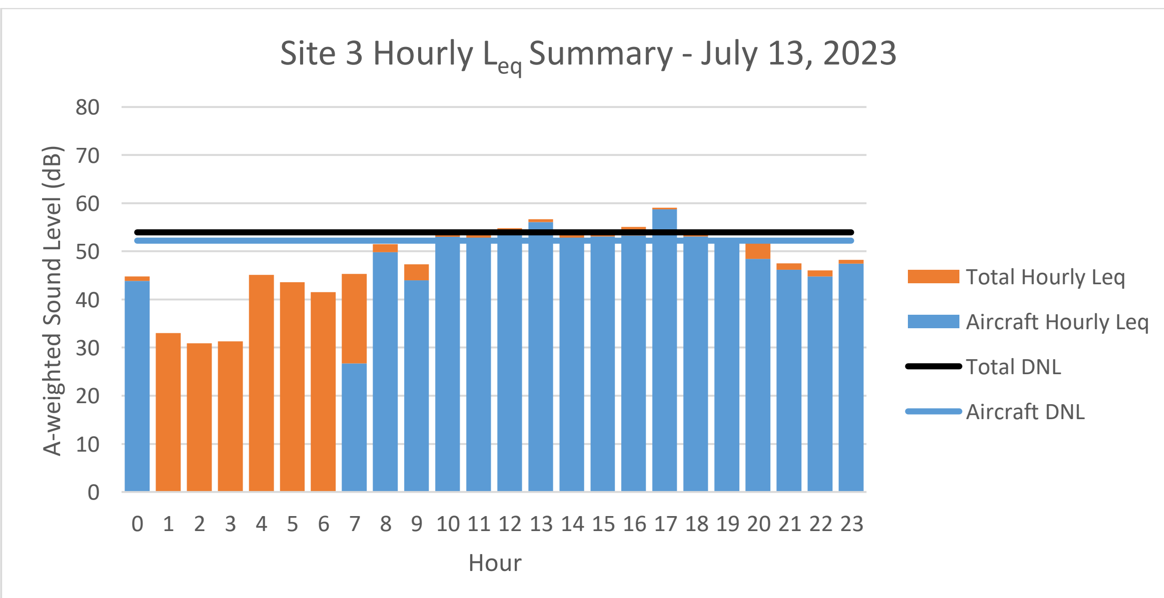


Figure B-19. Site 3 Thursday, July 13, 2023 Hourly L_{eq}

Source: HMMH, 2023

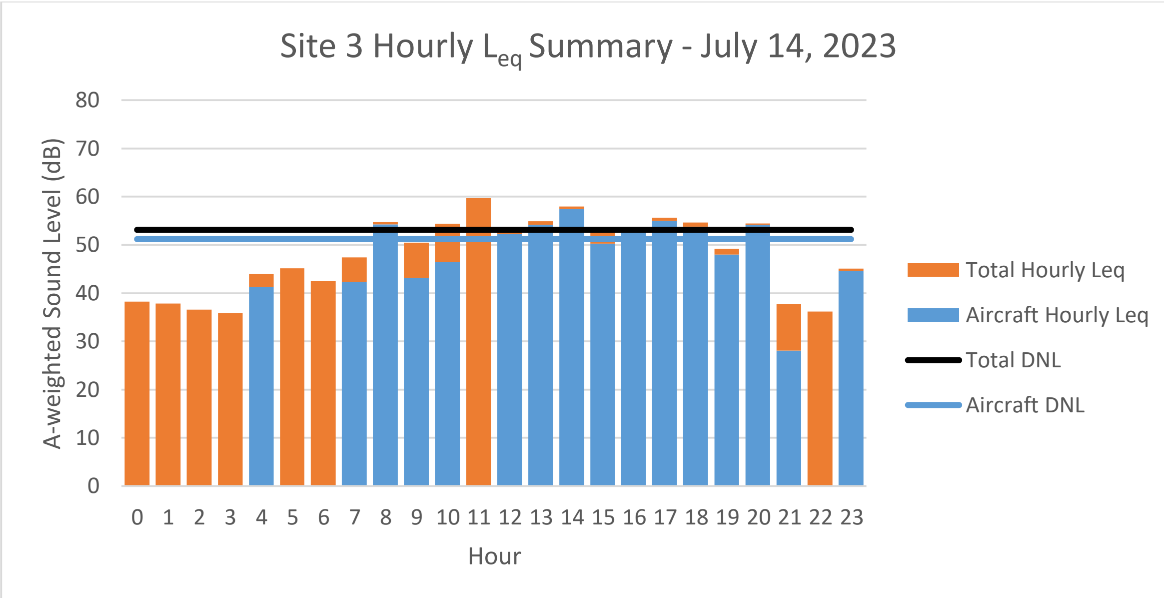


Figure B-20. Site 3 Friday, July 14, 2023 Hourly L_{eq}

Source: HMMH, 2023

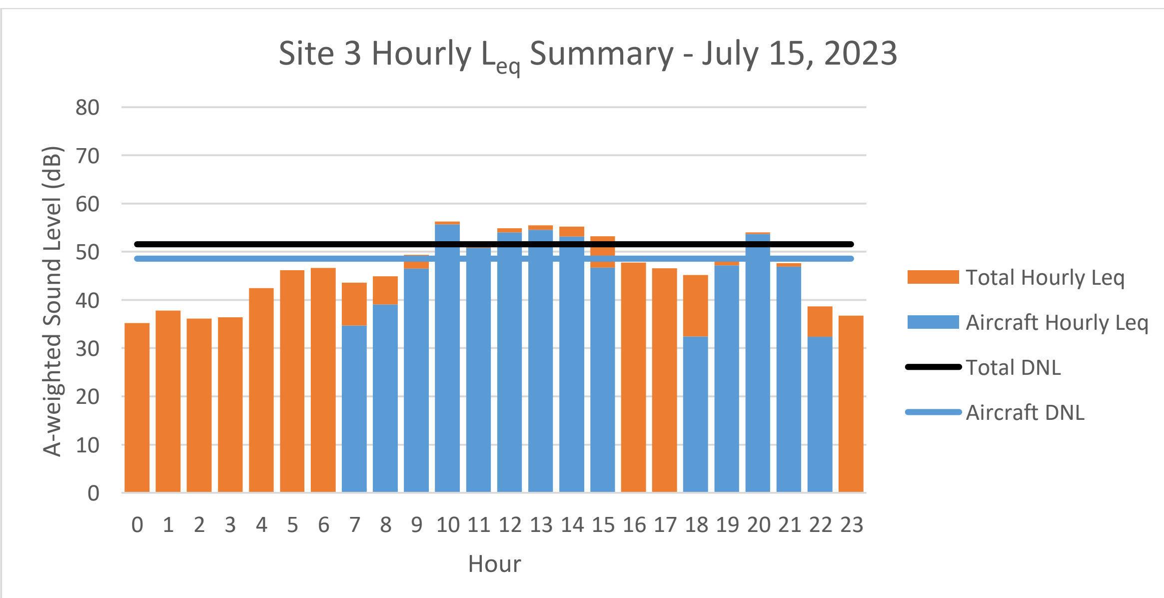


Figure B-21. Site 3 Saturday, July 15, 2023 Hourly L_{eq}

Source: HMMH, 2023

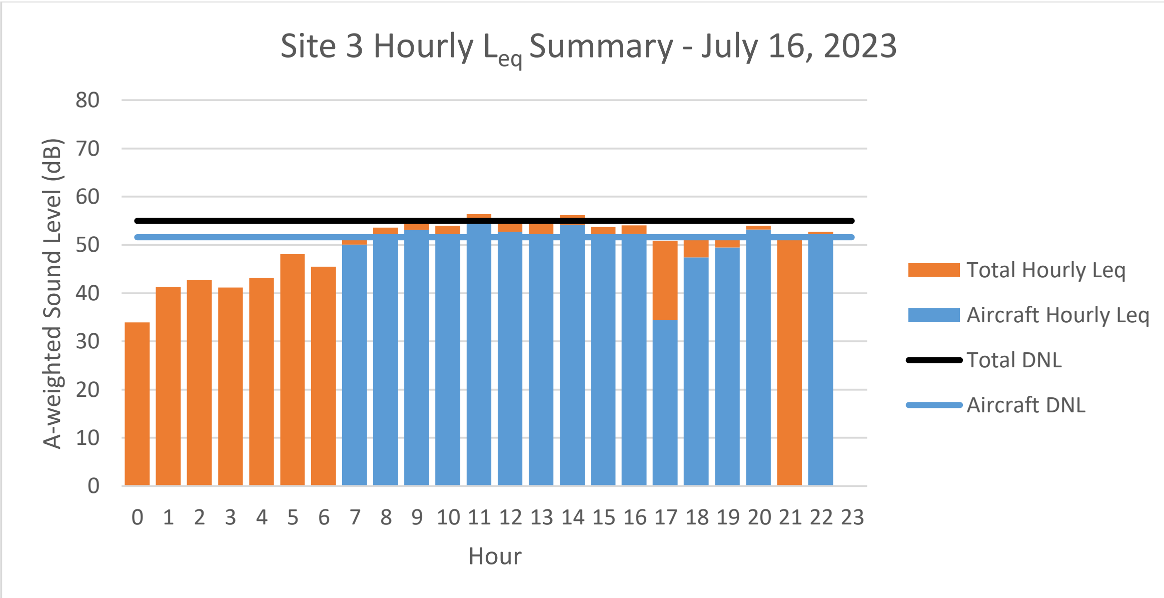


Figure B-22. Site 3 Sunday, July 16, 2023 Hourly L_{eq}

Source: HMMH, 2023

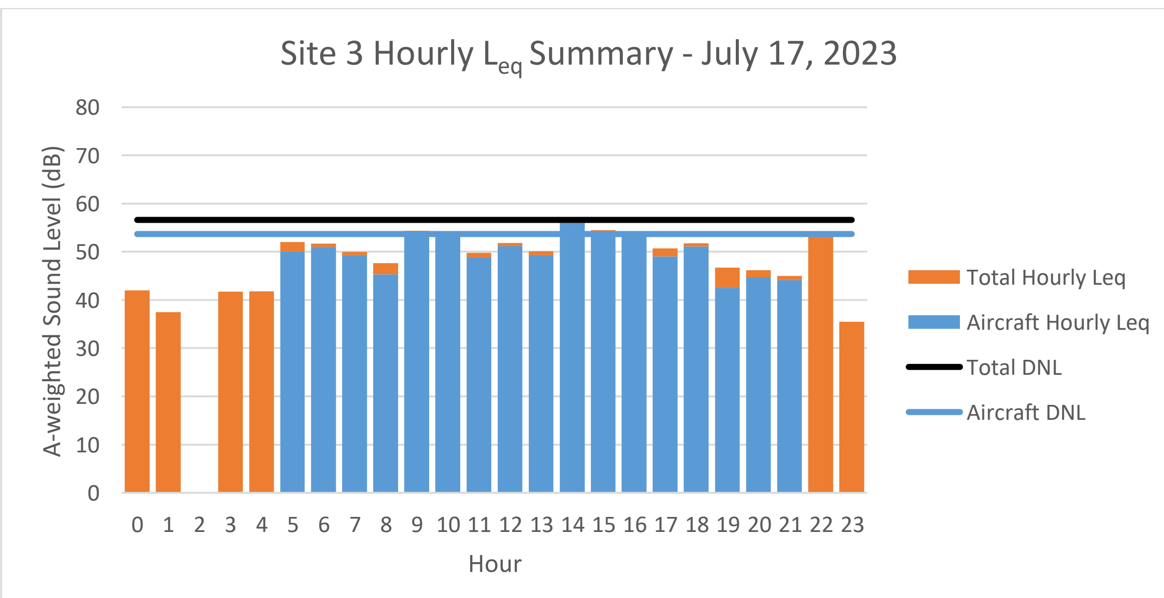


Figure B-23. Site 3 Monday, July 17, 2023 Hourly L_{eq}

Source: HMMH, 2023

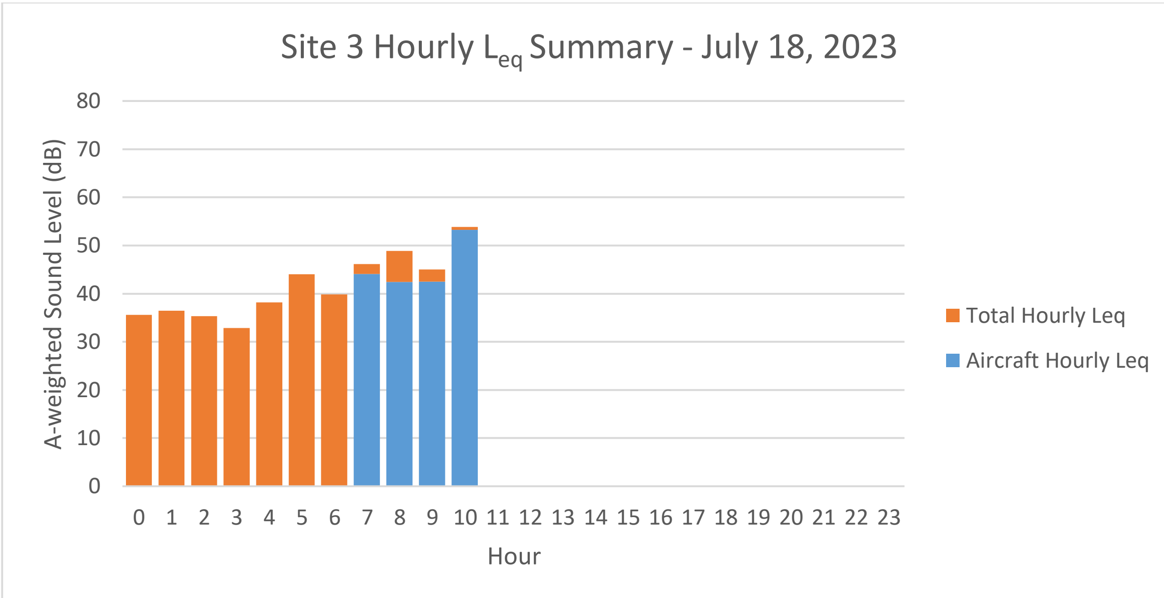


Figure B-24. Site 3 Tuesday, July 18, 2023 Hourly L_{eq}

Source: HMMH, 2023

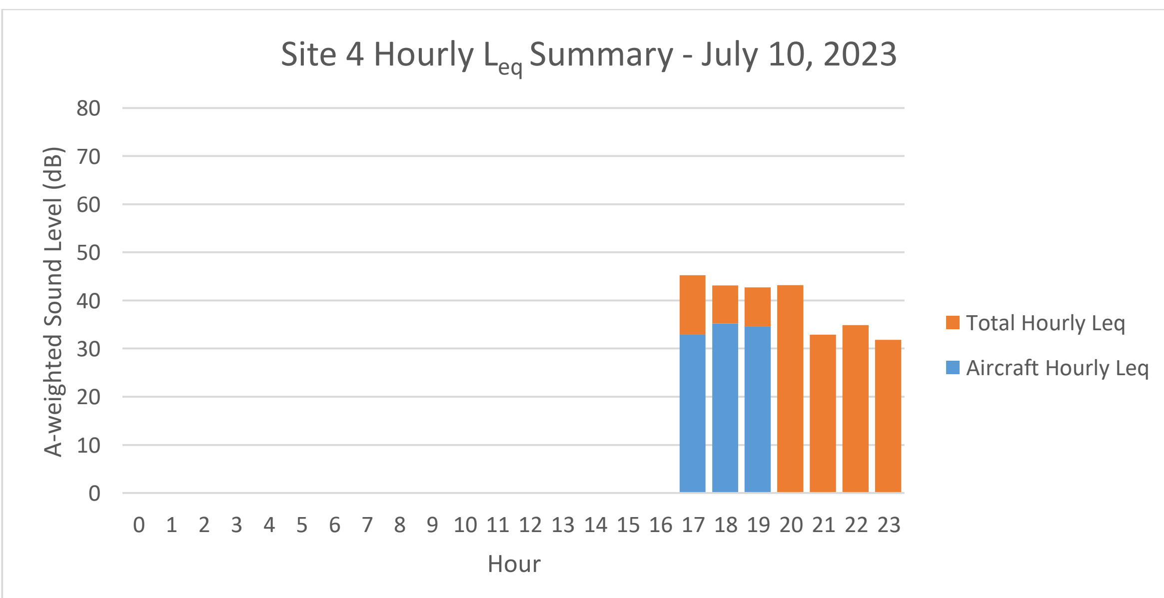


Figure B-25. Site 4 Monday, July 10, 2023 Hourly L_{eq}

Source: HMMH, 2023

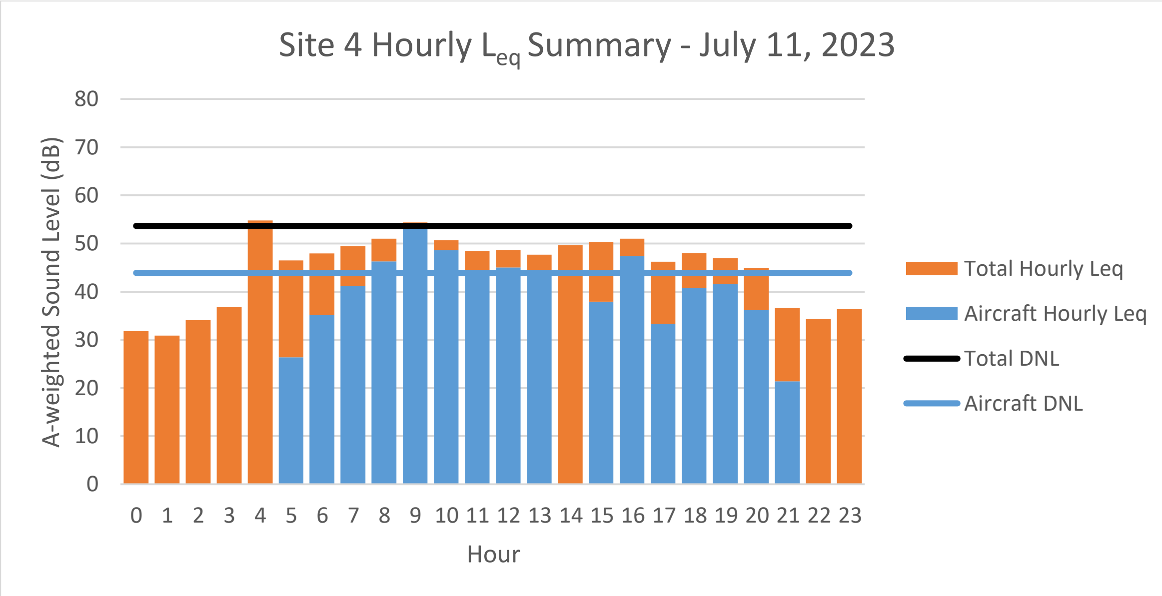


Figure B-26. Site 4 Tuesday, July 11, 2023 Hourly L_{eq}

Source: HMMH, 2023

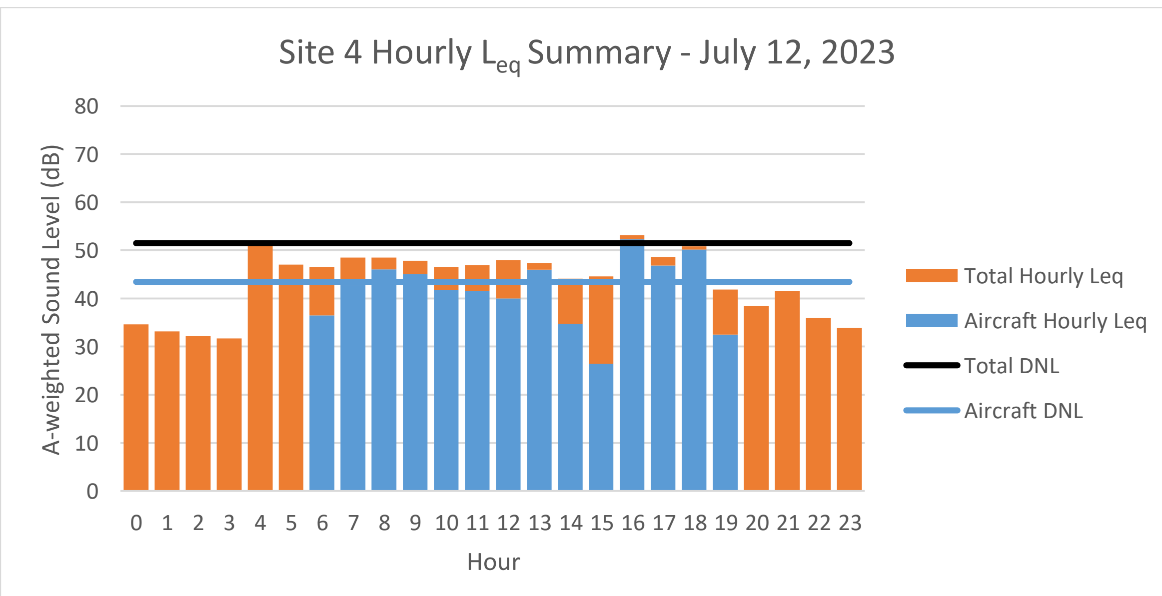


Figure B-27. Site 4 Wednesday, July 12, 2023 Hourly L_{eq}

Source: HMMH, 2023

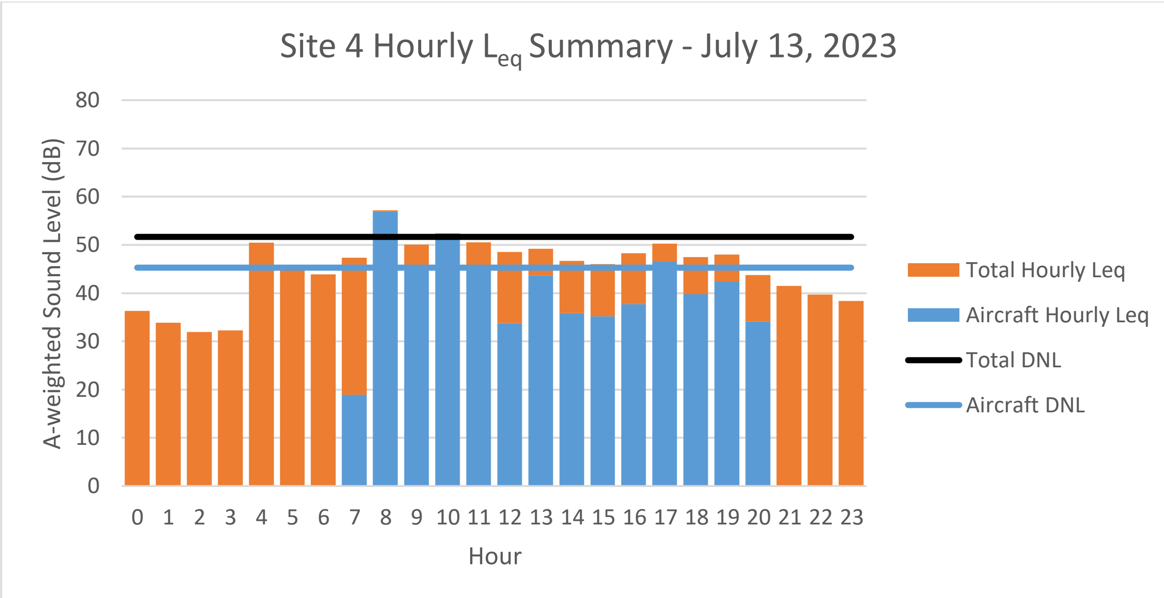


Figure B-28. Site 4 Thursday, July 13, 2023 Hourly L_{eq}

Source: HMMH, 2023

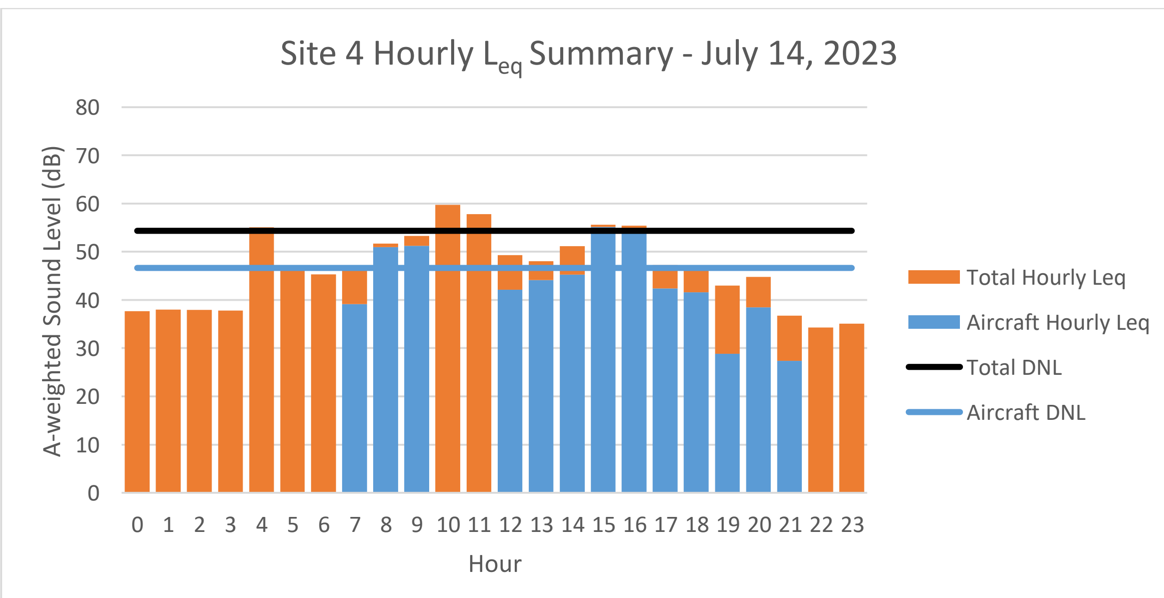


Figure B-29. Site 4 Friday, July 14, 2023 Hourly L_{eq}

Source: HMMH, 2023

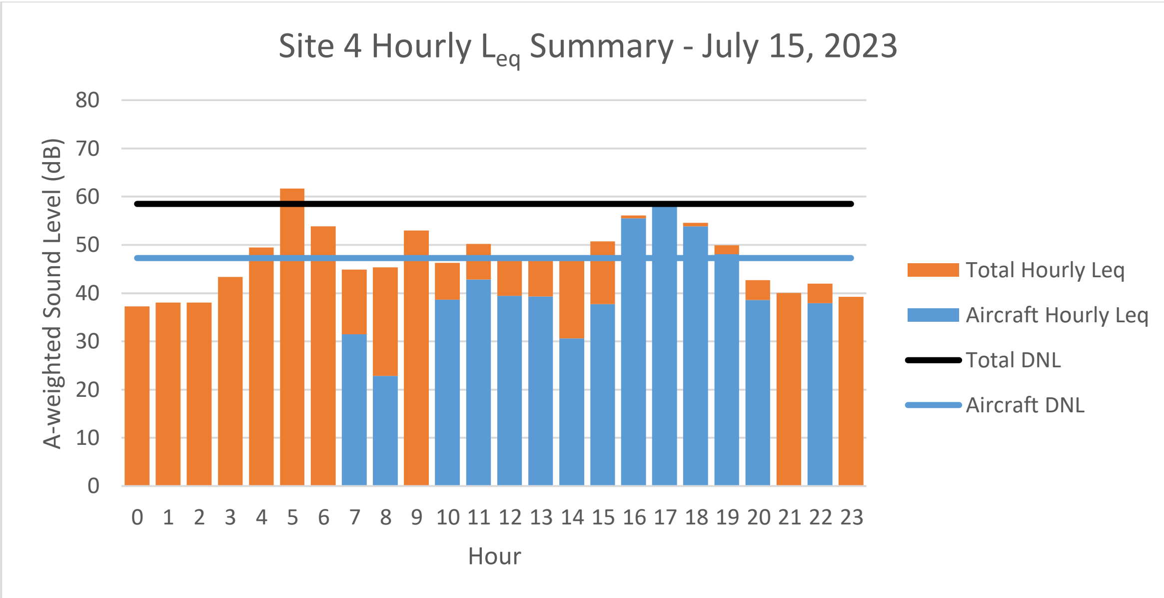


Figure B-30. Site 4 Saturday, July 15, 2023 Hourly L_{eq}

Source: HMMH, 2023

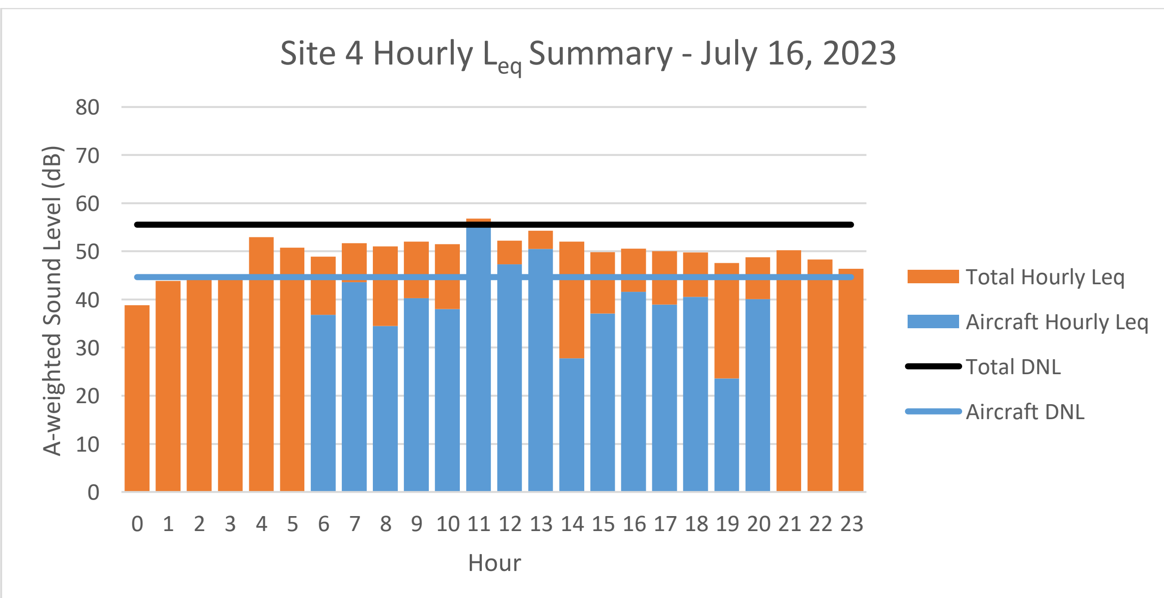


Figure B-31. Site 4 Sunday, July 16, 2023 Hourly L_{eq}

Source: HMMH, 2023

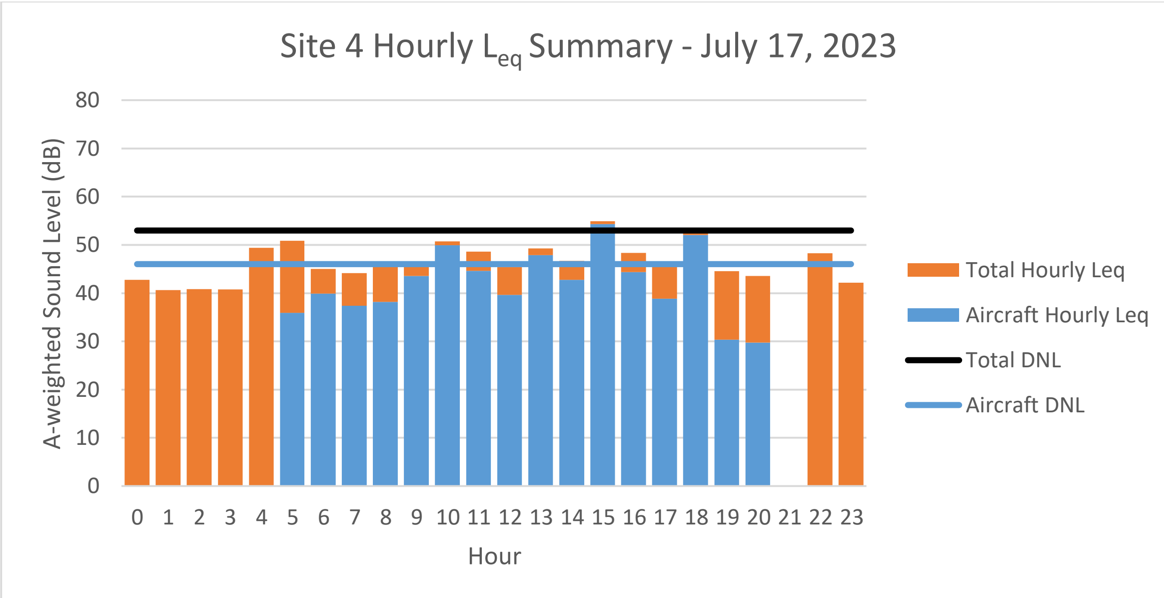


Figure B-32. Site 4 Monday, July 17, 2023 Hourly L_{eq}

Source: HMMH, 2023

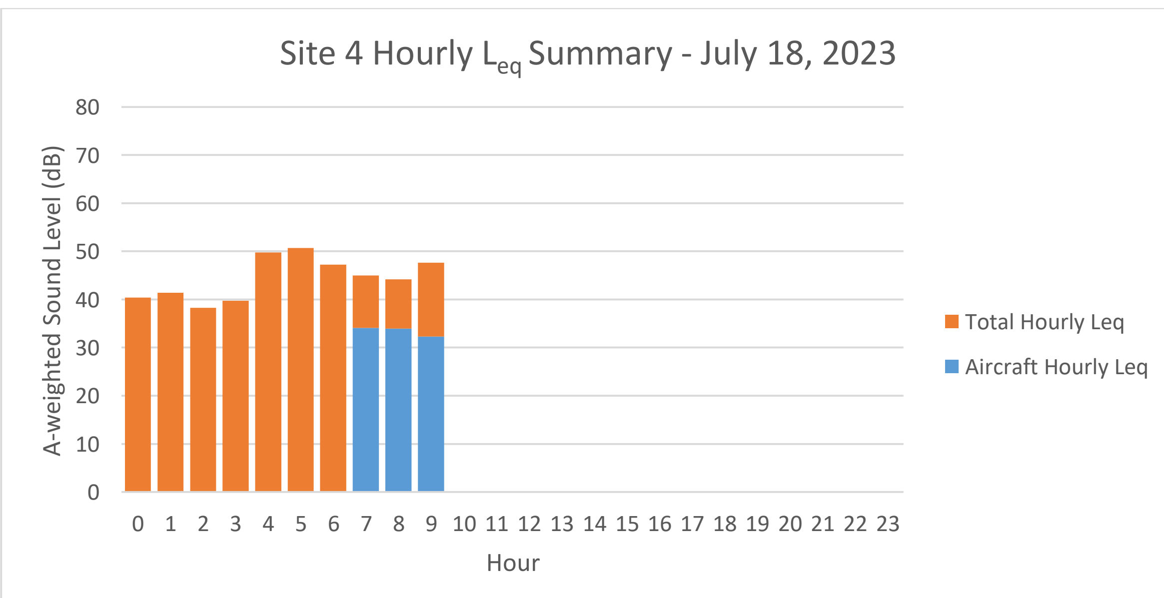


Figure B-33. Site 4 Tuesday, July 18, 2023 Hourly L_{eq}

Source: HMMH, 2023

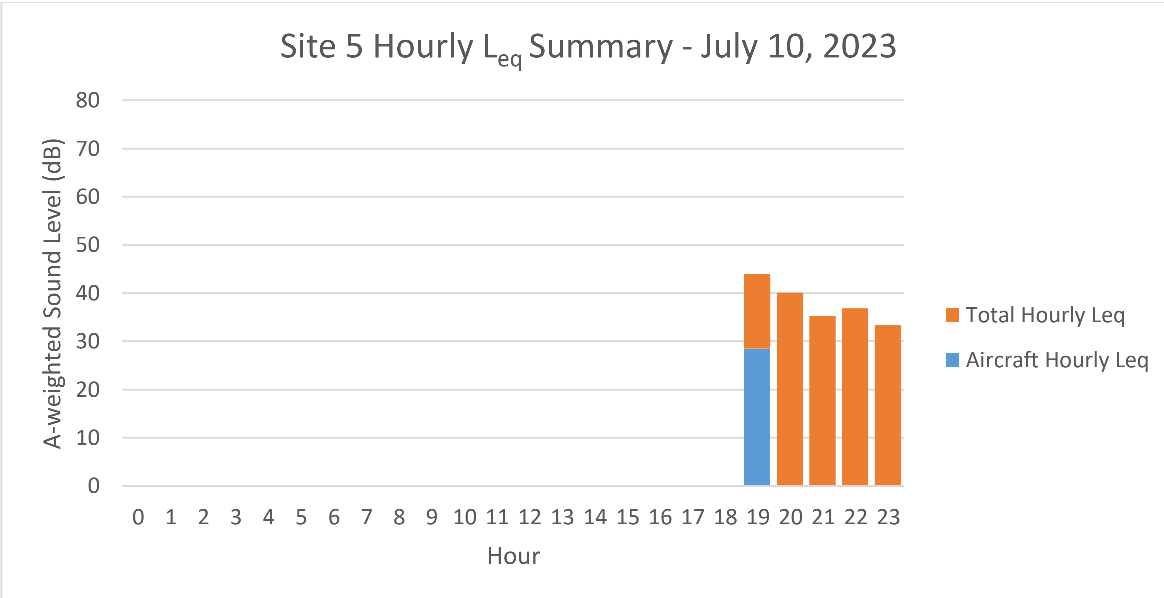


Figure B-34. Site 5 Monday, July 10, 2023 Hourly L_{eq}

Source: HMMH, 2023

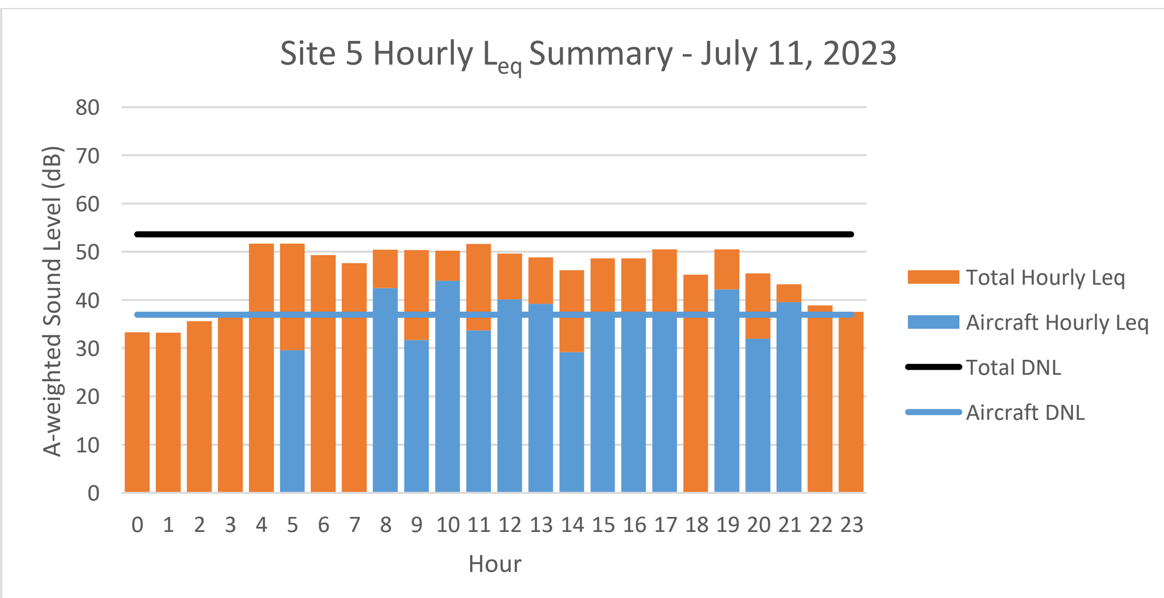


Figure B-35. Site 5 Tuesday, July 11, 2023 Hourly L_{eq}

Source: HMMH, 2023

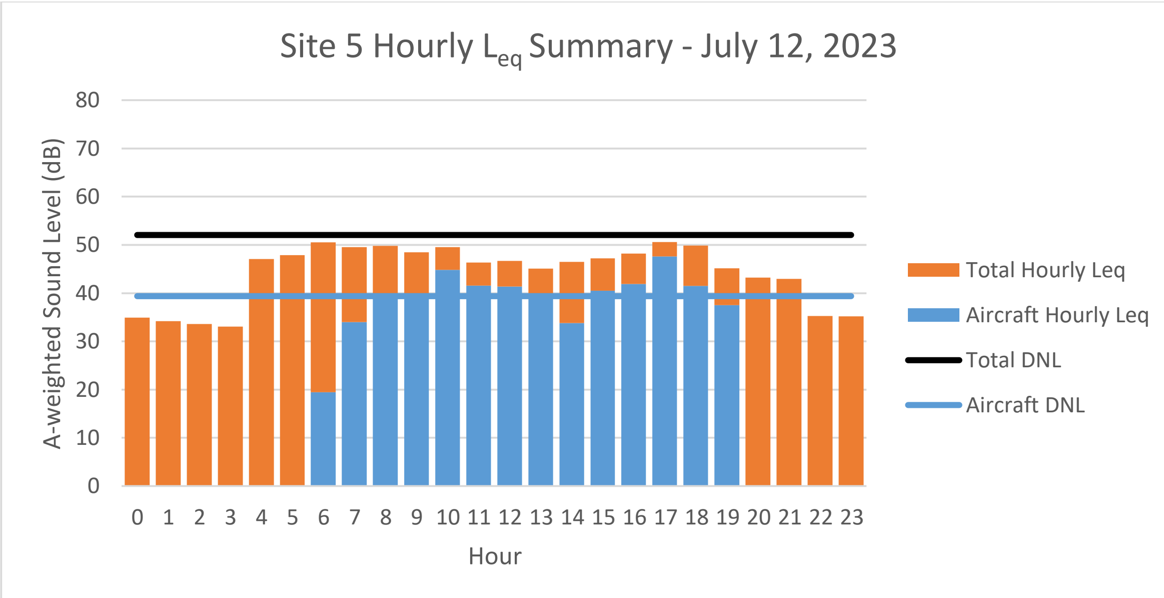


Figure B-36. Site 5 Wednesday, July 12, 2023 Hourly L_{eq}

Source: HMMH, 2023

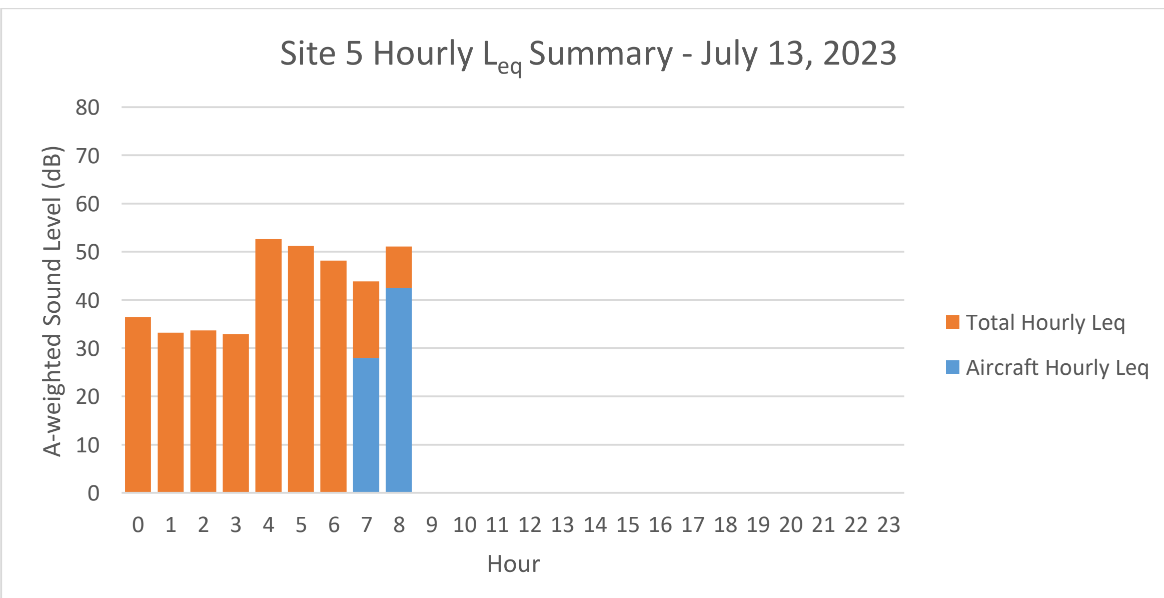


Figure B-37. Site 5 Thursday, July 13, 2023 Hourly L_{eq}

Source: HMMH, 2023

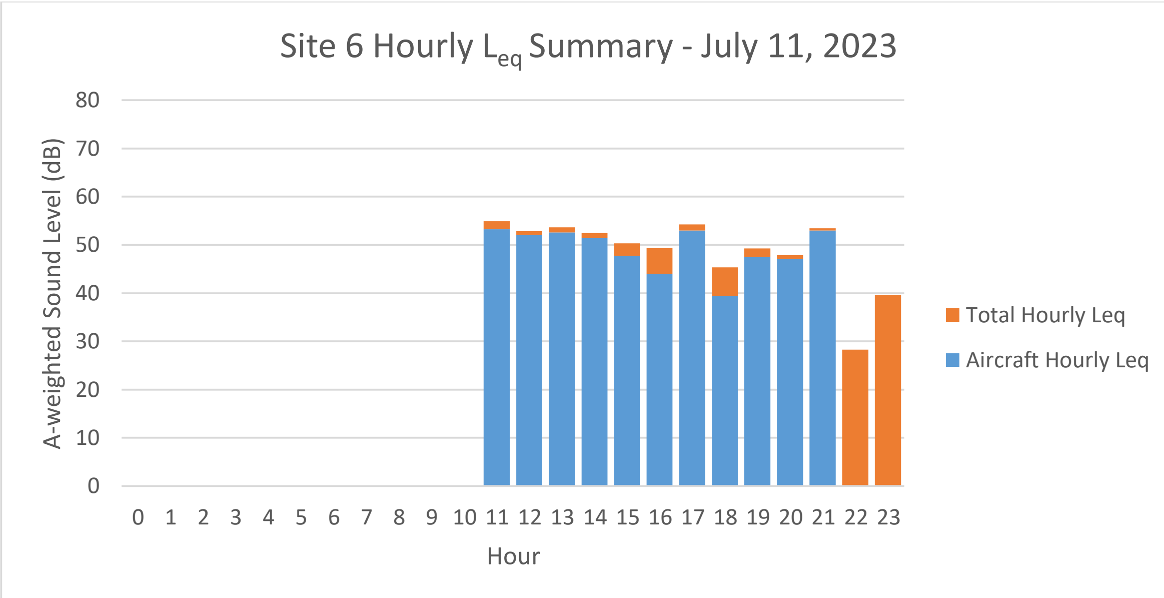


Figure B-38. Site 6 Tuesday, July 11, 2023 Hourly L_{eq}

Source: HMMH, 2023

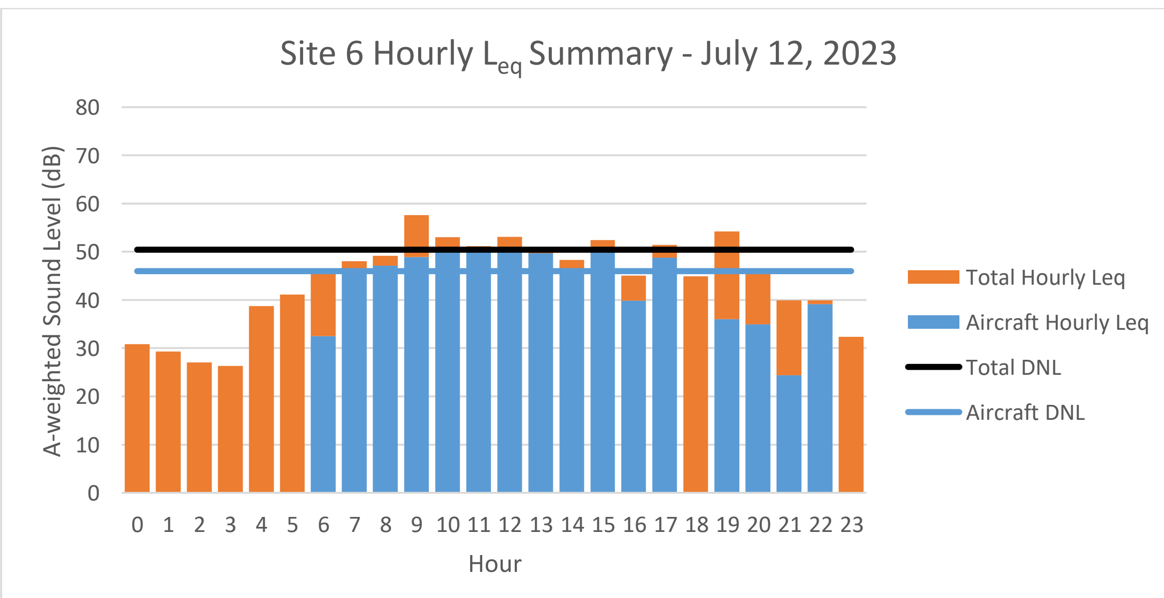


Figure B-39. Site 6 Wednesday, July 12, 2023 Hourly L_{eq}

Source: HMMH, 2023

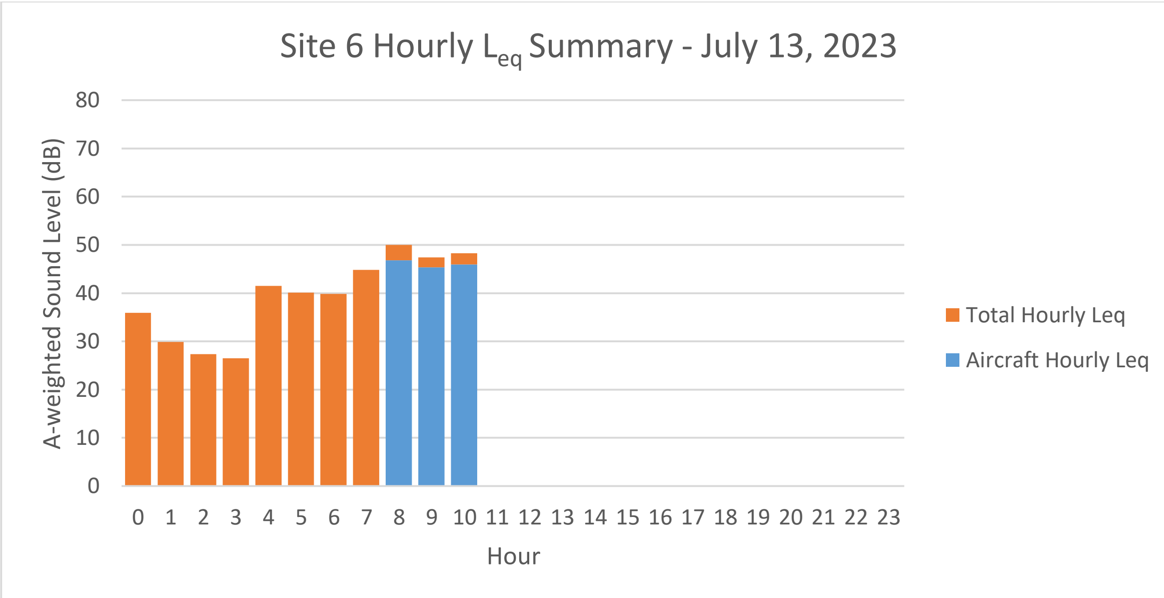


Figure B-40. Site 6 Thursday, July 13, 2023 Hourly L_{eq}

Source: HMMH, 2023

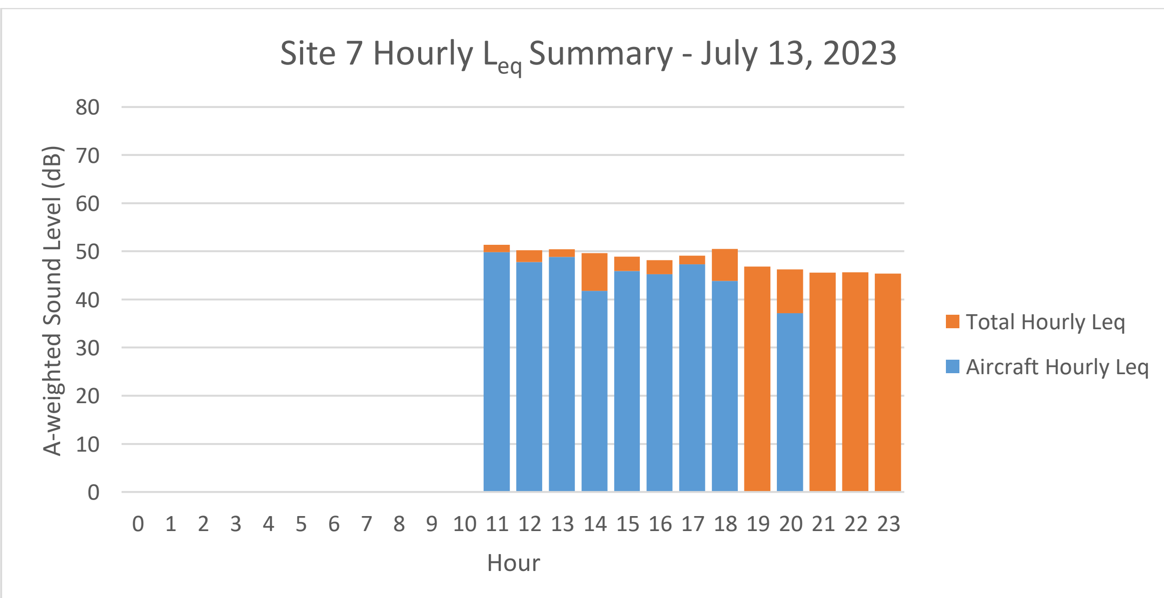


Figure B-41. Site 7 Thursday, July 13, 2023 Hourly L_{eq}

Source: HMMH, 2023

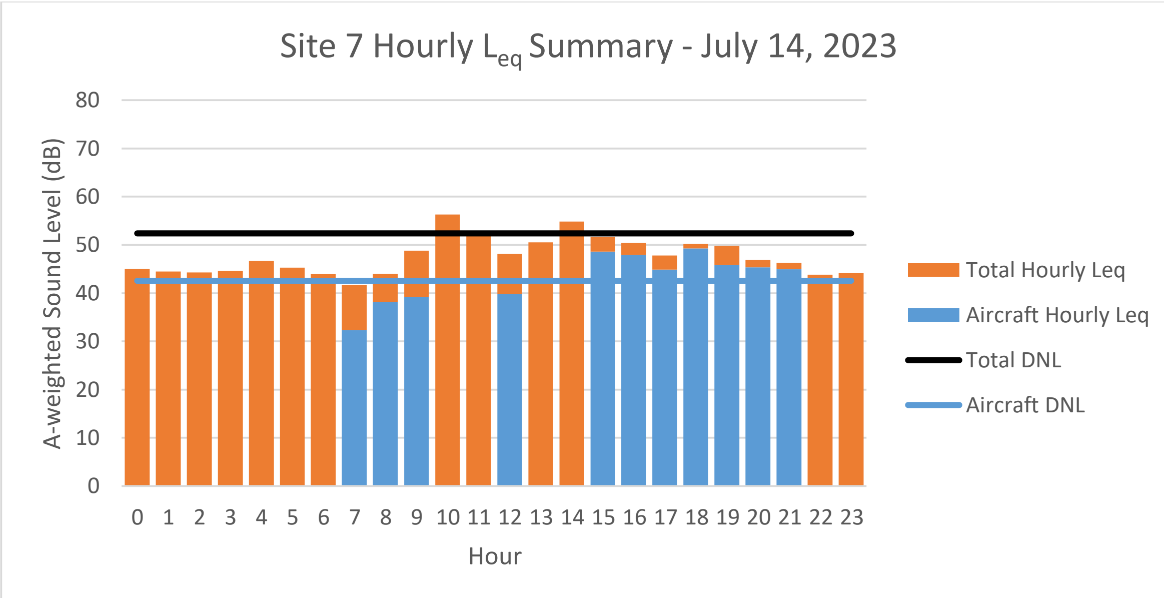


Figure B-42. Site 7 Friday, July 14, 2023 Hourly L_{eq}

Source: HMMH, 2023

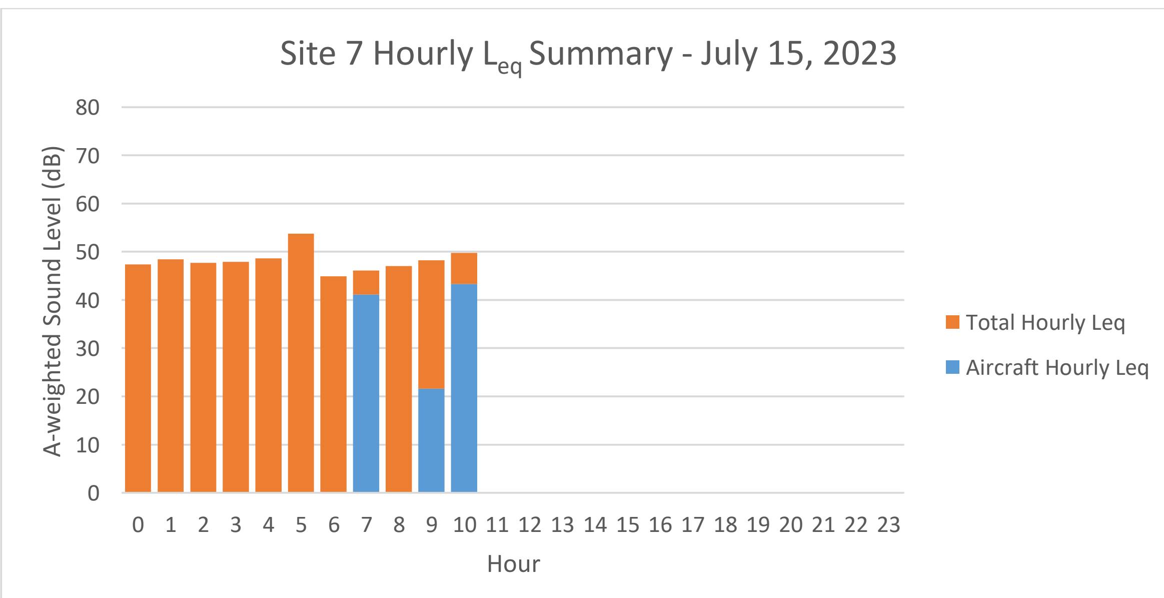


Figure B-43. Site 7 Saturday, July 15, 2023 Hourly L_{eq}

Source: HMMH, 2023

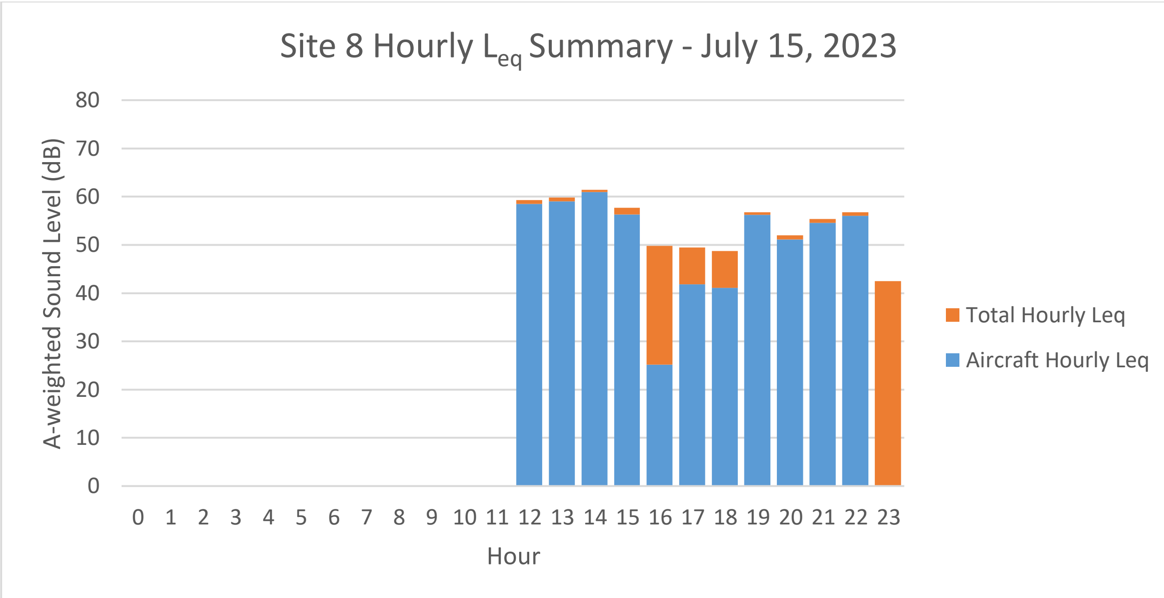


Figure B-44. Site 8 Saturday, July 15, 2023 Hourly L_{eq}

Source: HMMH, 2023

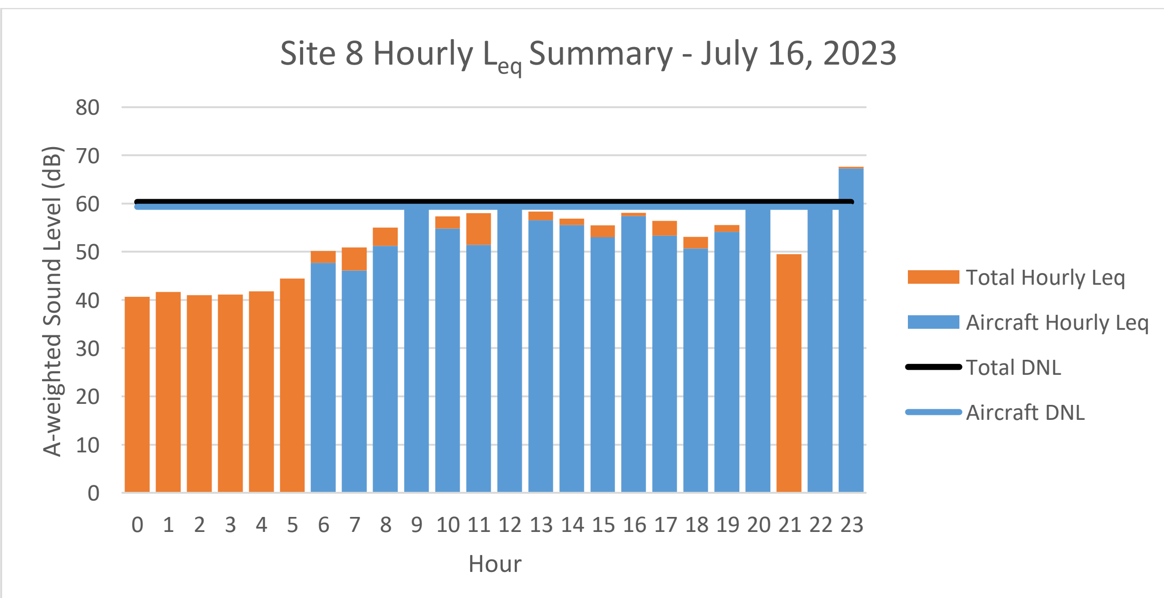


Figure B-45. Site 8 Sunday, July 16, 2023 Hourly L_{eq}

Source: HMMH, 2023

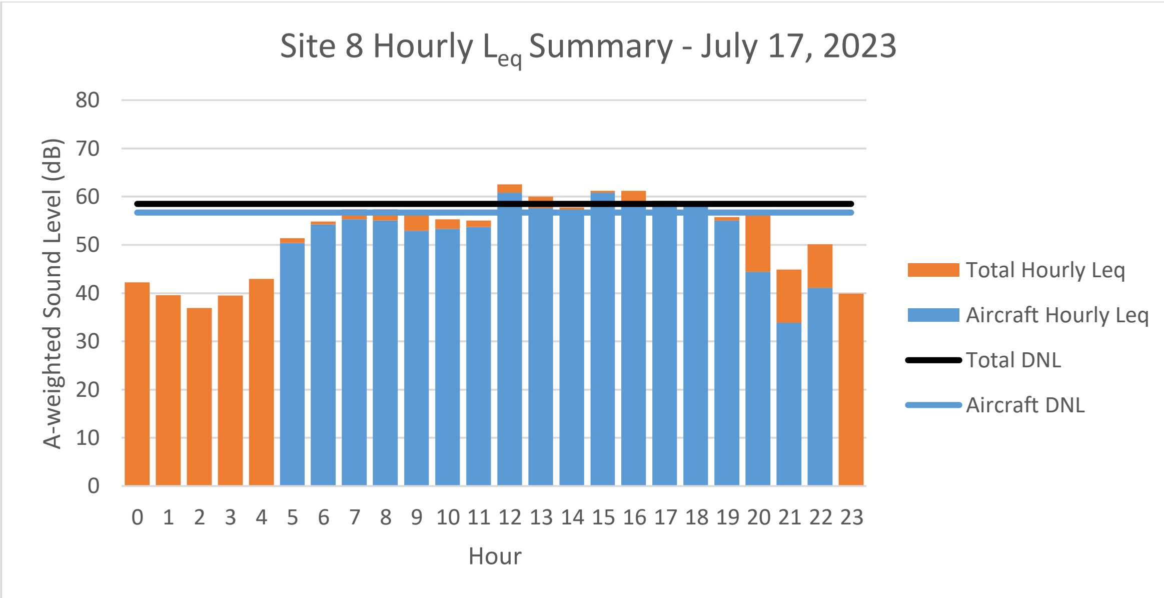


Figure B-46. Site 8 Monday, July 17, 2023 Hourly L_{eq}

Source: HMMH, 2023

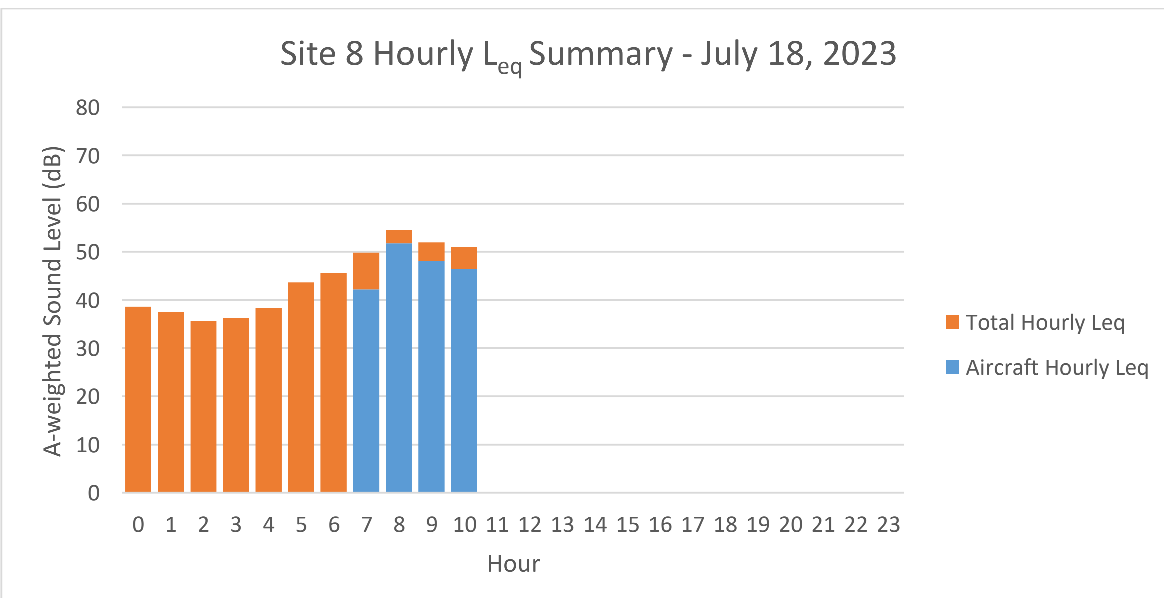


Figure B-47. Site 8 Tuesday, July 18, 2023 Hourly L_{eq}

Source: HMMH, 2023

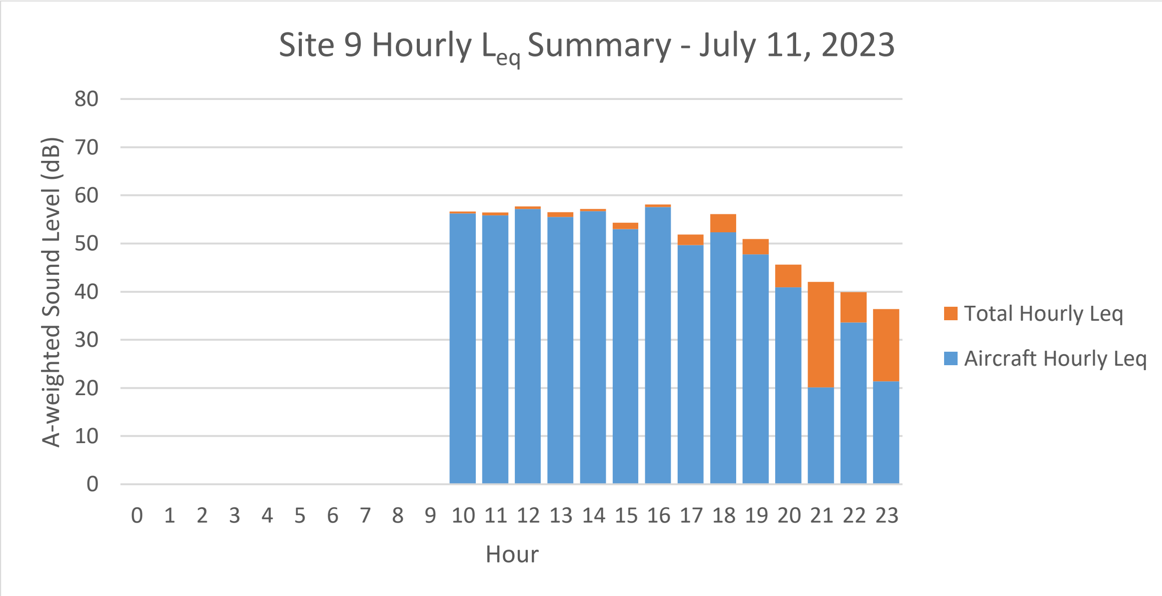


Figure B-48. Site 9 Tuesday, July 11, 2023 Hourly L_{eq}

Source: HMMH, 2023

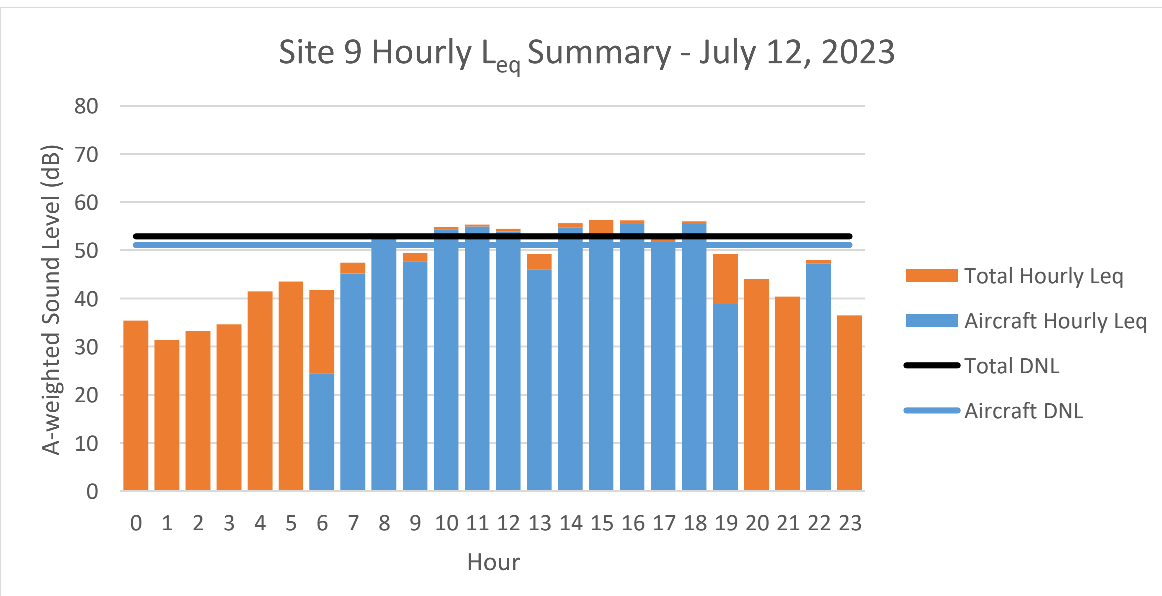


Figure B-49. Site 9 Wednesday, July 12, 2023 Hourly L_{eq}

Source: HMMH, 2023

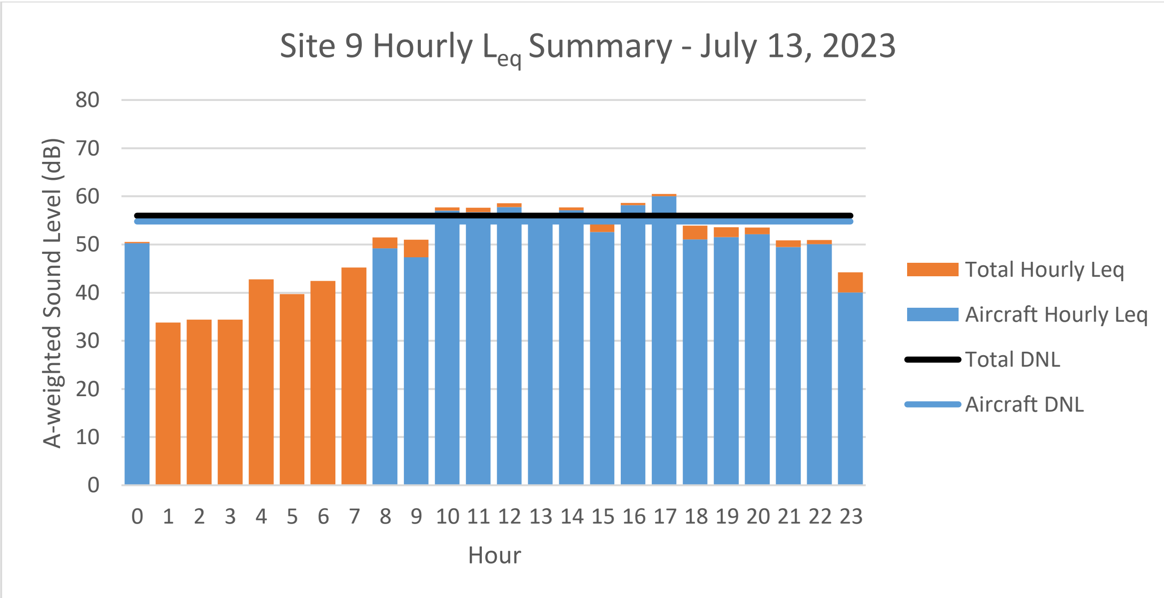


Figure B-50. Site 9 Thursday, July 13, 2023 Hourly L_{eq}

Source: HMMH, 2023

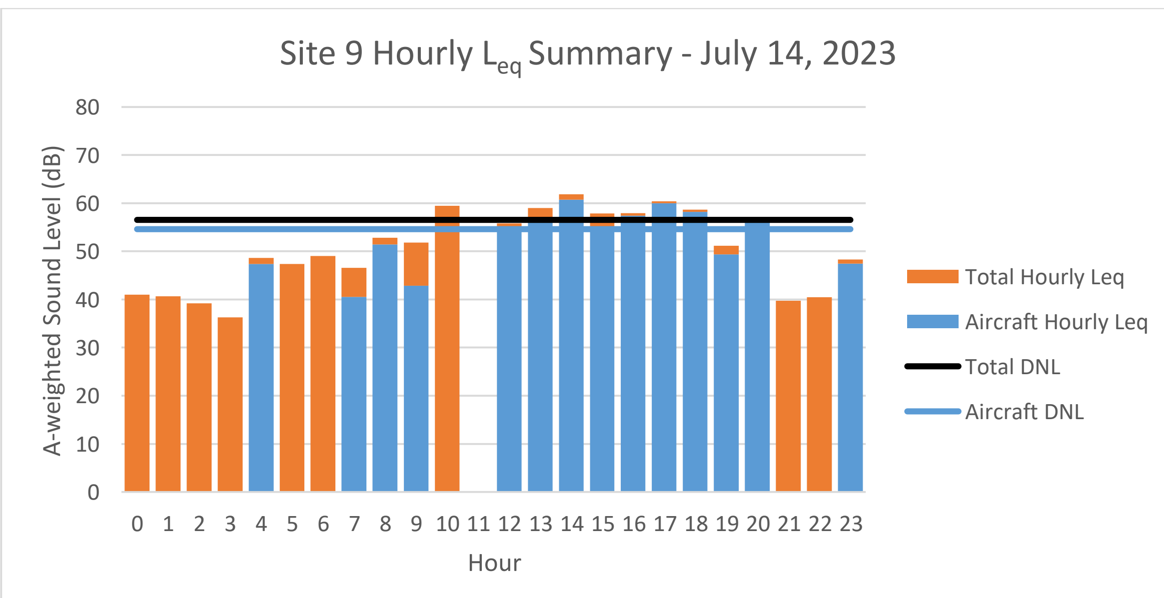


Figure B-51. Site 9 Friday, July 14, 2023 Hourly L_{eq}

Source: HMMH, 2023

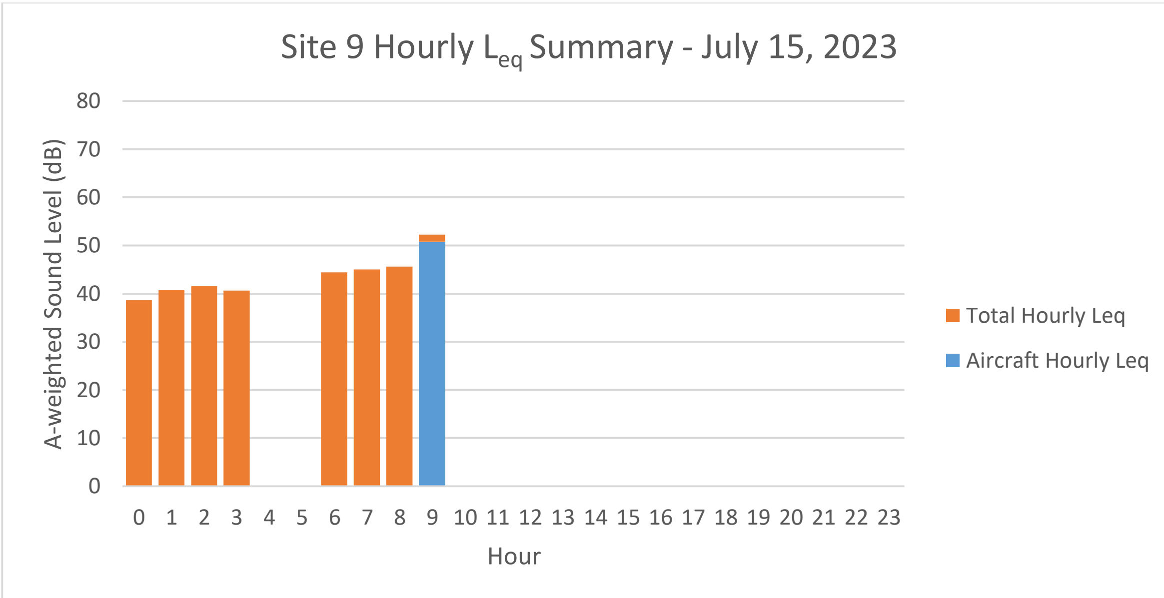


Figure B-52. Site 9 Saturday, July 15, 2023 Hourly L_{eq}

Source: HMMH, 2023

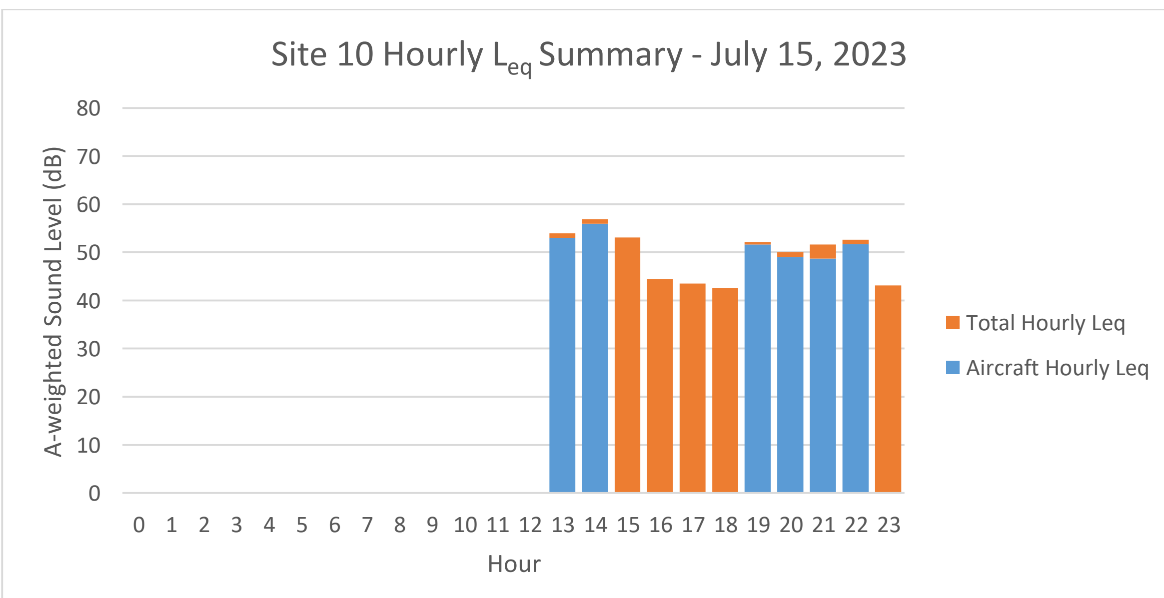


Figure B-53. Site 10 Saturday, July 15, 2023 Hourly L_{eq}

Source: HMMH, 2023

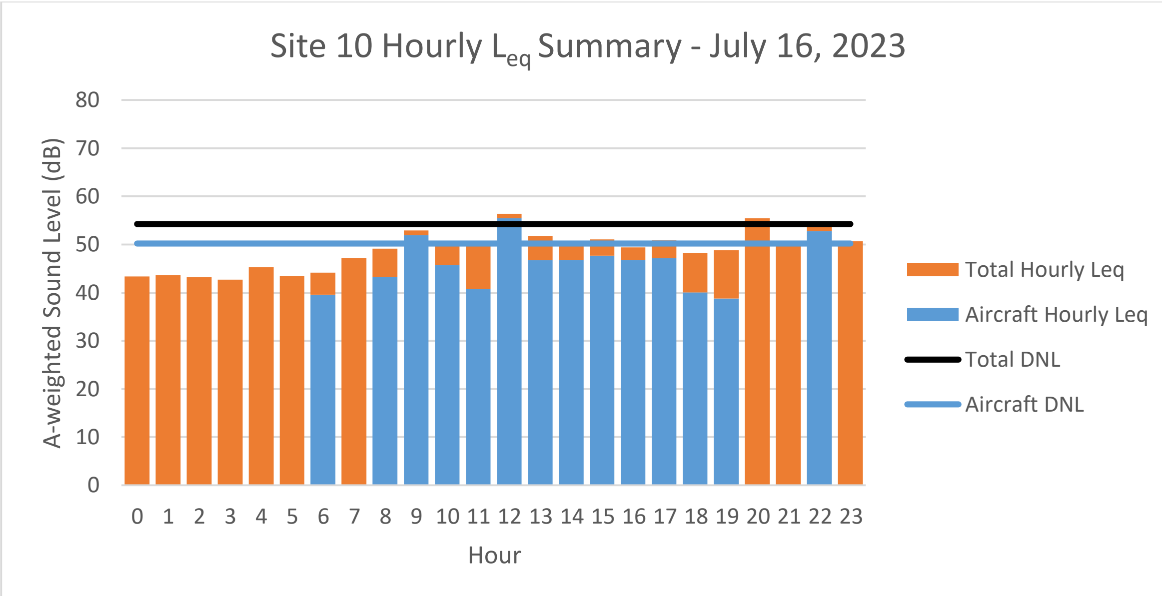


Figure B-54. Site 10 Sunday, July 16, 2023 Hourly L_{eq}

Source: HMMH, 2023

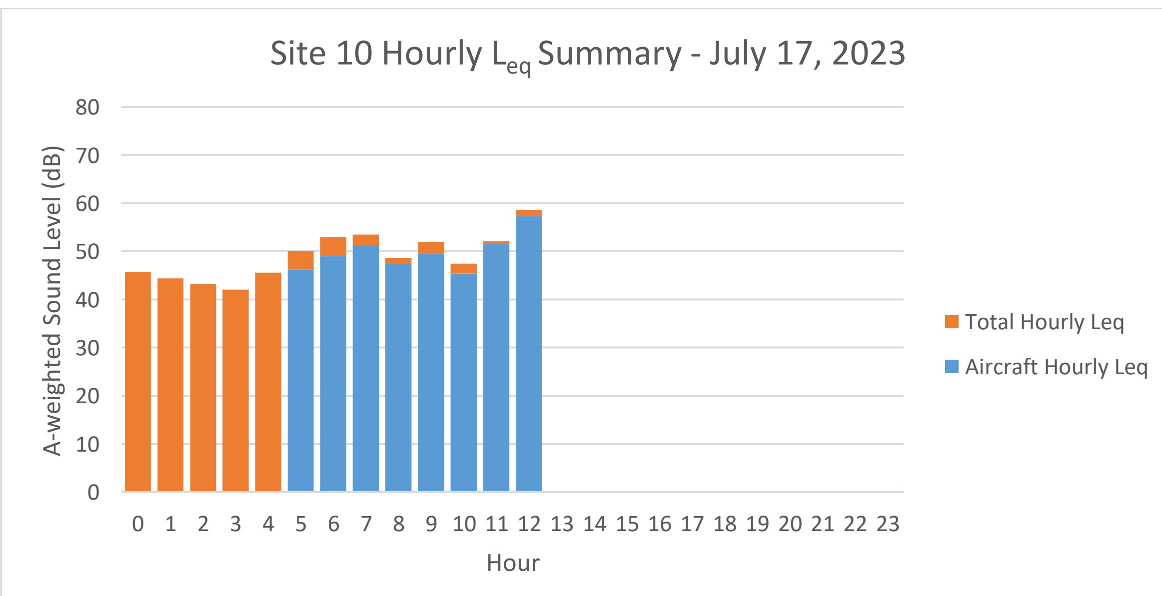


Figure B-55. Site 10 Monday, July 17, 2023 Hourly L_{eq}

Source: HMMH, 2023

B.2 Noise Monitor Logs, July 11-17, 2023

Logs were taken of each site when measurement staff were present. The logs include site photos, current conditions, identification of aircraft overflights and other noise sources. The logs are provided on the next 37 pages.

HARRIS MILLER MILLER & HANSON INC.

Project: MVY Part 150

Proj. #: 03-13880

Personnel: KMSL, BTR, FS

Long Term Noise Monitoring Site Log

Site #: 1

Address: 9 Vineyard Meadow Farms Road, West Tisbury, MA

Noise Sources: Departures from RWY 24, vehicle noise from Edgartown-West Tisbury Road, bird noise

Noise Monitor: BK 2245 Kit # 6

S/N: 100486

Calibrator: BK6

Start Date: July 13, 2023

Start Time: 11:30 AM

End Date: July 18, 2023

End Time: 12:00 PM

Site Pictures:

Avg. Temperature: 75 ˚F   Weather Conditions: Sunny, occasional rain showers & light wind

HARRIS MILLER MILLER & HANSON INC.

Project: MVY Part 150

Proj. #: 03-13880

Personnel: KMSL, BTR, FS

Long Term Noise Monitoring Site Log

Site #: 2

Address: 41 Vineyard Meadow Farms Road, West Tisbury, MA

Noise Sources: Departures from RWY 24, bird noise, several guineafowl in area

Noise Monitor: BK 2245 Kit # 2

S/N: 100482

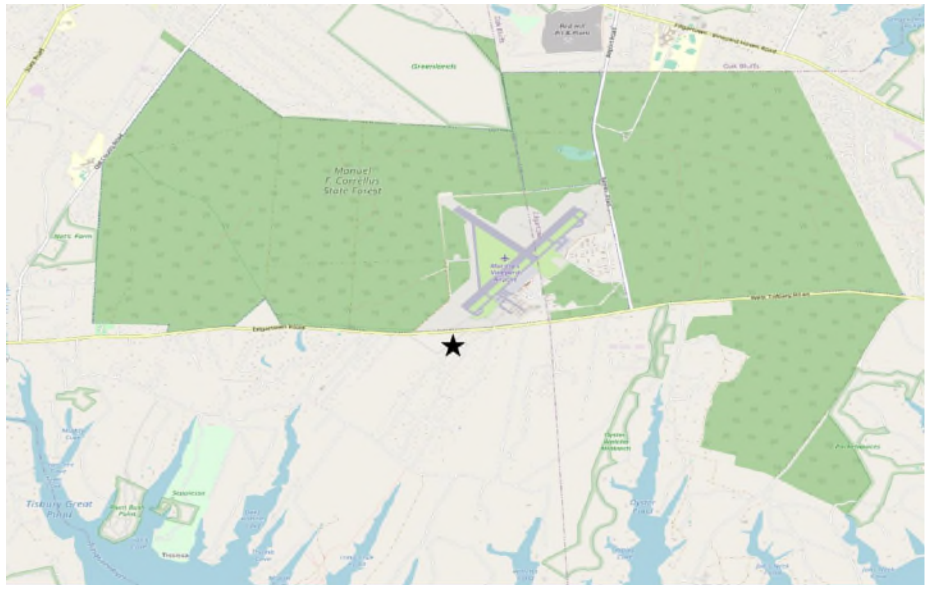
Calibrator: BK2

Start Date: July 10, 2023

Start Time: 3:45 PM

End Date: July 18, 2023

End Time: 11:45 AM



Site Pictures:

Avg. Temperature: 75 ˚F Weather Conditions: Sunny, occasional rain showers & light wind

HARRIS MILLER MILLER & HANSON INC.

Project: MVY Part 150

Proj. #: 03-13880

Personnel: KMSL, BTR, FS

Long Term Noise Monitoring Site Log

Site #: 3

Address: 15 Ryan's Way, Oak Bluffs, MA

Noise Sources: Arrivals to RWY 24, bird noise, occasional truck noise at neighboring residences

Noise Monitor: BK 2245 Kit # 3

S/N: 100483

Calibrator: BK2

Start Date: July 10, 2023

Start Time: 5:30 PM

End Date: July 18, 2023

End Time: 11:15 AM

Site Pictures:

Avg. Temperature: 75 ˚F Weather Conditions: Sunny, occasional rain showers & light wind

Harris Miller Miller & Hanson Inc.

Project: MVY Part 150

Proj. #: 03-13880

Personnel: KMSL, BTR, FS

Long Term Noise Monitoring Site Log

Site #: 4

Address: 14 Catboat Lane, West Tisbury, MA

Noise Sources: Overflights, occasional operations on RWY 15/33, bird & rooster noise, gravel driveway

Noise Monitor: BK 2245 Kit # 4

S/N: 100484

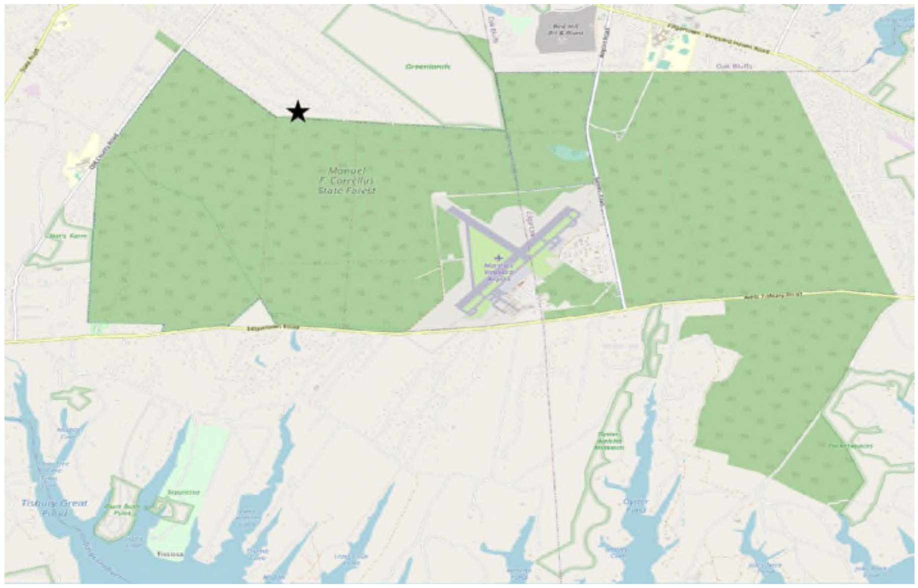
Calibrator: BK2

Start Date: July 10, 2023

Start Time: 4:30 PM

End Date: July 18, 2023

End Time: 10:45 AM



Site Pictures:

Avg. Temperature: 75 ˚F

Weather Conditions: Sunny, occasional rain showers & light wind

HARRIS MILLER MILLER & HANSON INC.

Project: MVY Part 150

Proj. #: 03-13880

Personnel: KMSL, BTR, FS

Long Term Noise Monitoring Site Log

Site #: 5

Address: 35 Watcha Path, Edgartown, MA

Noise Sources: Overflights, power tools/saws in distance, bird noise, lawn mower/weedwacker

Noise Monitor: BK 2245 Kit # 5

S/N: 100485

Calibrator: BK5

Start Date: July 10, 2023

Start Time: 6:00 PM

End Date: July 13, 2023

End Time: 9:45 AM

Site Pictures:

Avg. Temperature: 74 ˚F Weather Conditions: Sunny, light wind

HARRIS MILLER MILLER & HANSON INC.

Project: MVY Part 150

Proj. #: 03-13880

Personnel: KMSL, BTR, FS

Long Term Noise Monitoring Site Log

Site #: 6

Address: 34 South Pond Road, West Tisbury, MA

Noise Sources: Departures from RWY 24, bird noise, irrigation system, lawn mower/weedwhacker

Noise Monitor: BK 2245 Kit # 6

S/N: 100486

Calibrator: BK6

Start Date: July 11, 2023

Start Time: 10:45 AM

End Date: July 13, 2023

End Time: 11:15 AM

Site Pictures:

Avg. Temperature: 74 ˚F   Weather Conditions: Sunny, light wind

HARRIS MILLER MILLER & HANSON INC.

Project: MVY Part 150

Proj. #: 03-13880

Personnel: KMSL, BTR, FS

Long Term Noise Monitoring Site Log

Site #: 7

Address: 176 Middle Point Road, West Tisbury, MA

Noise Sources: Departures from RWY 24, bird noise

Noise Monitor: BK 2245 Kit # 5

S/N: 100485

Calibrator: BK5

Start Date: July 13, 2023

Start Time: 10:30 AM

End Date: July 15, 2023

End Time: 11:45 AM

Site Pictures:

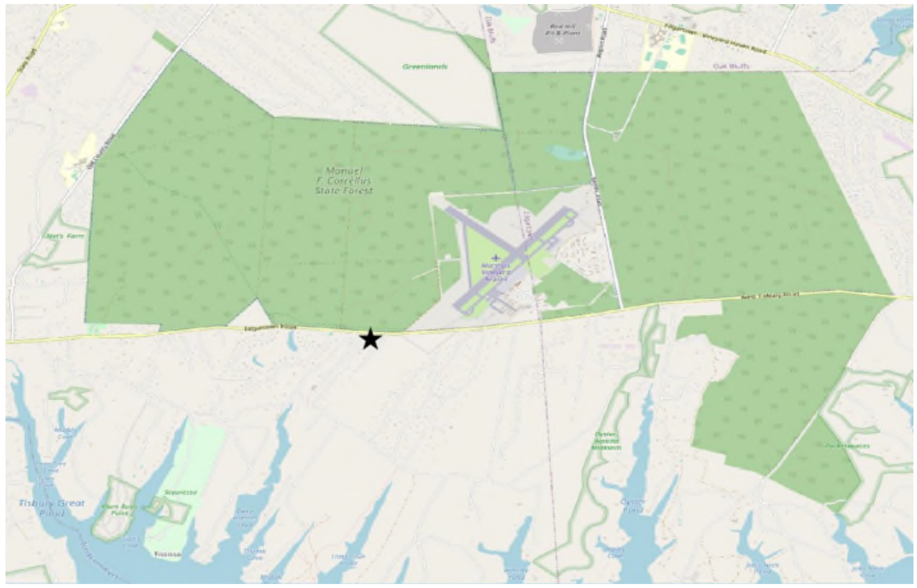
Avg. Temperature: 73 ˚F Weather Conditions: Sunny, occasional rain showers & light wind

HARRIS MILLER MILLER & HANSON INC.

Project:	MVY Part 150
Proj. #:	03-13880
Personnel:	KMSL, BTR, FS

Long Term Noise Monitoring Site Log

Site #:	8
Address:	208 Edgartown-West Tisbury Road, West Tisbury, MA
Noise Sources:	Departures from RWY 24, vehicle noise from Edgartown-West Tisbury Road, bird noise
Noise Monitor:	BK 2245 Kit # 1
S/N:	100481
Calibrator:	BK2
Start Date:	July 15, 2023
Start Time:	11:00 AM
End Date:	July 18, 2023
End Time:	12:00 PM



Site Pictures:

Avg. Temperature: 76 ˚F Weather Conditions: Sunny, occasional rain showers & light wind

HARRIS MILLER MILLER & HANSON INC.

Project: MVY Part 150

Proj. #: 03-13880

Personnel: KMSL, BTR, FS

Long Term Noise Monitoring Site Log

Site #: 9

Address: 15 Quantapog Road, Oak Bluffs, MA

Noise Sources: Arrivals to RWY 24, bird & cicada noise, lawn mower/weedwhacker

Noise Monitor: BK 2245 Kit # 1

S/N: 100481

Calibrator: BK2

Start Date: July 11, 2023

Start Time: 9:45 AM

End Date: July 15, 2023

End Time: 10:15 AM

Site Pictures:

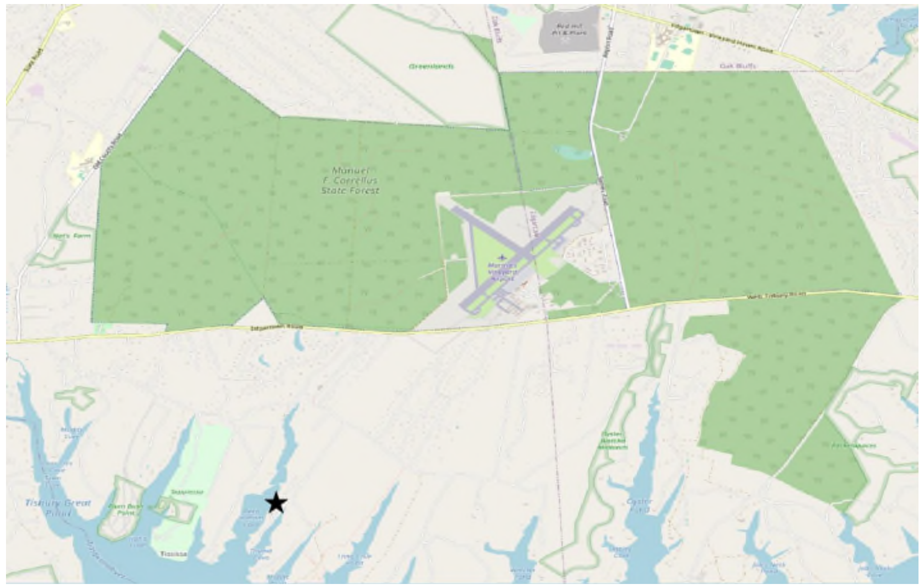
Avg. Temperature: 74 ˚F   Weather Conditions: Sunny, occasional rain showers & light wind

HARRIS MILLER MILLER & HANSON INC.

Project: MVY Part 150
Proj. #: 03-13880
Personnel: KMSL, BTR, FS

Long Term Noise Monitoring Site Log

Site #: 10
Address: 159 Thumb Point Road, West Tisbury, MA
Noise Sources: Departures from RWY 24, bird noise, occasional dog barking, people outside
Noise Monitor: BK 2245 Kit # 5
S/N: 100485
Calibrator: BK5
Start Date: July 15, 2023
Start Time: 12:30 PM
End Date: July 17, 2023
End Time: 1:00 PM



Site Pictures:

Avg. Temperature: 76 ˚F   Weather Conditions: Sunny, occasional rain showers & light wind

HARRIS MILLER MILLER & HANSON INC.

Project: MVY Part 150

Proj. #: 03-13880

MEASUREMENT SITE EVENT LOG

Date: Friday, July 14, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 1 (9 Vineyard Meadow Farms Rd, W. Tisbury)	**Monitor:** BK 6
Weather: temperature 76°F, relative humidity 86%, winds SW 1-2 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
1	Private Owner, Beech 58 Baron, Reg: N2043A	10:22:06
2	Flight E545, Embraer Praetor 500, Reg: N/A	10:27:10
	Steady rain for the past 30 mins expected to increase in intensity. Several claps of thunder have been heard.	10:29:10
3	MVY-FRG, GAJ884, Beech King Air 350i, Reg: N884UP	10:34:11
4	MVY-N/A, CL35, Bombardier Challenger 350, Reg: N/A	11:15:57
5	MVY-BLM, Private Owner, Cessna 414A Chancellor, Reg: N78DG	11:24:39
6	MVY-PHL, CNS575, Pilatus PC-23 NGX, Reg: N131AF	11:25:42
7	MVY-ACK	12:35:04
8	MVY-BOS, Cessna 402C, Reg: N205CA	12:52:46

Project: MVY Part 150

Proj. #: 03-13880

MEASUREMENT SITE EVENT LOG

Date: Sunday, July 16, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 1 (9 Vineyard Meadow Farms Rd, W. Tisbury)	**Monitor:** BK 6
Weather: temperature 80°F, relative humidity 76%, winds S 0-5 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
1	MVY -> ELH, C700	10:49:01
2	MVY->OWD, PA31, N35580	10:54:05
3	MVY -> DCA, RPA4692 (E75L)	11:04:56
4	MVY -> HPN, GPD809 (PC12)	11:17:21
5	MVY- >PWM, EJA509 (E55P)	11:32:11
6	Single engine aircraft	11:34:38
	Light rain starting. Increased wind gusts	12:00:42
	Rain passed already	12:02:55
7	MVY -> BOS, KAP25 (C402)	12:05:42
8	MVY -> MDW, LXJ551 (CL30)	12:18:35
9	MVY -> LGA, RPA5793 (E75L)	12:41:00

MEASUREMENT SITE EVENT LOG

Date: Monday, July 17, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 1 (9 Vineyard Meadow Farms Rd, W. Tisbury)	**Monitor:** BK 6
Weather: temperature 88°F, relative humidity 68%, winds S 1-2 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
1	MVY-TEB, Tradewind Aviation Flight TJ224, Pilatus PC-12/45, Reg: N224TW	10:07:33
2	MVY-BOS, Cape Air, Cessna 402C, Reg: N205CA	10:18:02
3	MVY-LEB, GAJ823, Beech King Air 350i, Reg: N823UP	10:25:51
4	MVY-PBI, Netjets EJA818, Cessna 700 Citation Longitude, Reg: N818QS	10:54:04
5	Cessna 172R Skyhawk, Reg: N760BW	11:03:25
6	Piper PA-31-350, Reg: N35580	11:04:44
	Spike in decibels due to taxiing on the airfield	11:16:50
7	Netjets EJA387, Cessna 680 Citation Sovereign, Reg: N387QS	11:18:51
8	Cessna 172N Skyhawk, Reg: N1226F	11:23:32
9	MVY-BOS, Cape Air, Cessna 402C, Reg: N26156	11:27:43
10	MVY-TEB, Pilatus PC-12 NG, Reg: N913AF	11:36:23
11	MVY-PVC, Netjets EJA309, Embraer Phenom 300, Reg: N309QS	11:40:48
12	MVY-JFK, JetBlue B61339, Embraer E190AR, Reg: N283JB	12:09:26
13	MVY-EWR, Netjets EJA246, Bombardier Challenger 650, Reg: N246QS	12:10:30
14	Piper PA-28R-200, Reg: N4401T	12:11:39
15	MVY-QQQ, Eagle Creek Aviation, Cessna 560XL Citation Excel, Reg: N624WP	12:13:49
16	Beech G58 Baron	12:14:41
17	American Eagle Flight AA4782 land and use reverse thrust	12:17:46
18	Delta fight DL5713 (Embraer E175LR) heard landing, using reverse thrusts and taxing	12:23:30
19	MVY-JFK, JetBlue B61339, Embraer E190AR, Reg: N355JB	12:25:19
20	MVY-SEF, Cessna 680A Citation Latitude, Reg: N92AJ	12:29:49
21	MVY-LGA, Delta DL5793, Embraer E175LR, Reg: N215JQ	12:33:37

HARRIS MILLER MILLER & HANSON INC.

Project: MVY Part 150

Proj. #: 03-13880

MEASUREMENT SITE EVENT LOG

Date: Tuesday, July 11, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 2 (41 Vineyard Meadow Farms Rd, W. Tisbury)	**Monitor:** BK 2
Weather: temperature 84°F, relative humidity 60%, winds SW 2 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
1	JetBlue Flight E190 departure	11:26:00
2	Jet Engine Flight TJ4001 departure	11:40:00
3	Cirrus SR22T, Registration N400TF	11:41:43
4	Aircraft: Cessna R172 Hawk XP, Reg N736BD	11:50:07
5	Aircraft: Pilatus PC-12 NGX, Reg: N434TW	11:55:45
6	Aircraft: Cessna 172P Skyhawk, Reg: N54151	11:56:32
7	Aircraft flyover: Gulfstream G650ER, Reg: N267BW	12:02:48
8	Cessna 182Q Skylane (Flyover), Reg: N4969N	12:06:20
9	Bombardier Challenger 300, Reg: N548FX	12:16:32
10	Cessna 208B Super Cargomaster (Flyover), Reg: N911FE	12:17:26
	Guineafowl Screech	12:23:55
11	SR22 Departure, Reg: N477WW	12:27:31
12	Delta Flight DL5793, Aircraft: Embraer E175LR, Reg: N207JQ	12:29:41

HARRIS MILLER MILLER & HANSON INC.

Project: MVY Part 150

Proj. #: 03-13880

MEASUREMENT SITE EVENT LOG

Date: Wednesday, July 12, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 2 (41 Vineyard Meadow Farms Rd, W. Tisbury)	**Monitor:** BK 2
Weather: temperature 90°F, relative humidity 55%, winds SW 1 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
1	MVY-BOS, Cape Air 9k33, Cessna 402C, Reg: N6879R	15:06:00
2	MVY-BGR, Beech A36 Bonanza, Reg: N1826V	15:15:45
3	MVY-JFK, Jet Blue Flight B61539, Embraer E190AR, Reg: N329JB	15:21:42
4	MVY-LGA, Delta DL5742, Embraer E175LR, N209JQ	15:38:05
5	SR22	15:39:20
6	C337	15:40:03

Project: MVY Part 150

Proj. #: 03-13880

MEASUREMENT SITE EVENT LOG

Date: Sunday, July 16, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 2 (41 Vineyard Meadow Farms Rd, W. Tisbury)	**Monitor:** BK 2
Weather: temperature 77°F, relative humidity 84%, winds S 4-6 mph gust 10 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
1	Beech G58 Baron departure from RWY 24	15:06:43
2	Leaves rustling in wind	15:12:20
3	Passing light shower	15:16:14
4	Beech King Air 350i departure from RWY 24 to FRG	15:23:19
5	Bombardier Challenger 604 departure from RWY 24 to CHA	15:35:42
6	Embraer Phenom 300 departure from RWY 24 to PBI	15:40:59
7	Pilatus PC-12 departure from RWY 24 to BED	15:46:40
8	Pilatus PC-12 departure from RWY 24 to BED	15:58:15
9	Cessna 208B departure from RWY 24. Appears to be a float plane	16:07:50
10	Dassault Falcon 900LX departure from RWY 24	16:15:19
11	Beech King Air 250 departure from RWY 24	16:17:07
12	KAP410 Cessna 402C departure from RWY 24 to BOS	16:20:04
	Guineafowl making noise around meter	16:20:24

Project: MVY Part 150

Proj. #: 03-13880

MEASUREMENT SITE EVENT LOG

Date: Monday, July 17, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 2 (41 Vineyard Meadow Farms Rd, W. Tisbury)	**Monitor:** BK 2
Weather:	

Event	Description / Comments	Event Time (HH:MM:SS)
1	MVY HPN, JBU2665 (E190)	15:12:32
2	MVY TEB, GPD849 (PC12)	15:14:01
3	Single engine aircraft	15:14:40
4	MVY PHL, LXJ555 (CL30)	15:15:29
5	MVY -> OXC, GPD433 (PC12)	15:16:59
6	Overflight by a SR22 (N86NX)	15:33:24
	Distant construction noise is audible & pretty constant	15:34:10
7	GPD617(PC12)	15:49:25
8	MVY HPN, GPD526 (PC12)	15:50:20
9	MVY -> JFK, JBU1539 (E190)	15:54:20
10	FA50 going to HPN	16:10:59
11	PC12 going to PSM	16:12:16
12	Single engine aircraft	16:21:34

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Project: MVY Part 150

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MEASUREMENT SITE EVENT LOG

Date: Tuesday, July 18, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 2 (41 Vineyard Meadow Farms Rd, W. Tisbury)	**Monitor:** BK 2
Weather:	

Event	Description / Comments	Event Time (HH:MM:SS)
1	Bombardier Challenger 604 departure from RWY 24	11:39:43
	End of measurements at Site 2	11:39:57

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MEASUREMENT SITE EVENT LOG

Date: Tuesday, July 11, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 3 (15 Ryan's Way, Oak Bluffs)	**Monitor:** BK 3
Weather: temperature 79°F, relative humidity 64%, winds SW 3-5 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
	Birds chirping, leaves rustling in wind	11:59:37
1	LJY267 Gulfstream G650 overflight LBE to HYA	12:03:03
2	Honda HA-420 arrival on RWY 24 from BED	12:07:18
3	Cirrus SR22 arrival on RWY 24 from OWD	12:10:43
4	CNS24 Pilatus PC-12 arrival on RWY 24 from PVD	12:24:35
	Leaves rustling in wind	12:26:41
5	Can hear DL5793 Embraer 175 departure from RWY 24 in distance. Destination LGA	12:29:27
6	Aircraft in distance. No visual and does not appear on radar. Sounded like it traveled east of the site; from north to south	12:31:26
7	Piper PA-28 arrival on RWY 24 from HTO	12:35:30
8	DL5713 Embraer 175 arrival on RWY 24 from JFK	12:36:33
	Leaves rustling in wind	12:39:19
	FedEx delivery across the street. Noise from opening/closing rear door	12:43:53
	Stronger gust of wind	12:44:04
9	EJA433 Embraer Phenom 300 arrival on RWY 24 from PVD	12:45:48
	Gust of wind	12:47:47
10	JBU1324 Embraer 190 arrival on RWY 24 from BOS	12:49:42

HARRIS MILLER MILLER & HANSON INC.

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MEASUREMENT SITE EVENT LOG

Date: Wednesday, July 12, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 3 (15 Ryan's Way, Oak Bluffs)	**Monitor:** BK 3
Weather: temperature 89°F, relative humidity 60%, winds SW 1-2 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
	Birds chirping	12:20:58
1	DL5713 Embraer 175 arrival on RWY 24 from JFK	12:23:43
2	Piper PA-28 overflight	12:27:43
3	GPD848 Pilatus PC-12 overflight PVD-ACK ~7kft	12:29:19
4	Jet departure heard in the distance	12:43:39
5	KAP33 Cessna 402C arrival on RWY 24 from BOS	12:50:23
6	Cessna 172 overflight from Taunton Municipal	12:51:02
7	JBU1324 Embraer 190 arrival on RWY 24 from BOS	12:52:47

MEASUREMENT SITE EVENT LOG

Date: Friday, July 14, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 3 (15 Ryan's Way, Oak Bluffs)	**Monitor:** BK 3
Weather: temperature 76°F, relative humidity 81%, winds calm	

Event	Description / Comments	Event Time (HH:MM:SS)
	Heavy rain and thunderstorms expected later this morning	9:43:59
	Several operations observed on RWY 6 this morning prior to attended monitoring	9:43:59
	Birds chirping	9:44:08
	Light rain beginning	10:00:10
	Winds increasing 3-5 mph	10:06:35
	Rain increasing in intensity	10:17:24
	Rain increasing in intensity	10:26:50
1	Cessna 560XL Citation arrival on RWY 24 from ACK	16:58:12

MEASUREMENT SITE EVENT LOG

Date: Sunday, July 16, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 3 (15 Ryan's Way, Oak Bluffs)	**Monitor:** BK 3
Weather: temperature 78°F, relative humidity 76%, winds S 3-5 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
	Leaves rustling in wind	10:33:40
1	Cessna Citation 700 departure on RWY 24 to ELH.	10:47:45
2	LXJ551 Bombardier Challenger 300 arrival on RWY 24 from HYA	10:47:45
3	Gulfstream V departure on RWY 24	10:49:36
	Dull taxi noise heard in background	10:58:56
4	Beech B200 Super King Air arrival on RWY 24 from TEB	11:01:36
5	AA4692 Embraer 175 departure from RWY 24 to DCA	11:03:57
	Strong gust of wind	11:04:52
6	Piper PA-34 arrival on RWY 24 from BED	11:12:38
	Strong gust of wind	11:17:57
	Frequent moderate gusts of wind	11:19:16
7	DL5793 Embraer 175 arrival on RWY 24 from LGA	11:25:26
8	Hawker Beechcraft 400XP arrival on RWY 24 from PWM	11:28:15
9	Reverse thrust of landing jet in previous note is audible	11:29:14
10	EJA409 Embraer Phenom 300 departure from RWY 24 to PWM	11:31:01
	Strong gust of wind	11:33:40
	Strong gust of wind	11:37:34
11	Dassault Falcon 900EX arrival on RWY 24 from BED	11:38:53
12	Bombardier Challenger 604 arrival on RWY 24 from BED	11:51:21
13	Beech G58 Baron arrival on RWY 24 from ACK	12:00:37
	Light rain shower	12:04:12
14	LXJ551 Bombardier Challenger 300 departure from RWY 24	12:17:49
15	Hawker Beechcraft 400XP departure from RWY 24.	12:25:58
16	Pilatus PC-12 arrival on RWY 24 from PHL	12:25:58

17	Cessna 525B Citation arrival on RWY 24 from PHL	12:29:07
	Strong gust of wind	12:36:06
18	DL5793 Embraer 175 departure from RWY 24 to LGA	12:39:05
19	Bombardier Global 600 arrival on RWY 24 from BJC	12:43:52
	Reverse thrust from landing jet in previous note audible	12:44:26
20	KAP910 Cessna 402C arrival on RWY 24 from BOS	12:46:18
21	KAP888 Cessna 402C arrival on RWY 24 from BOS	12:48:24
22	GPD668 Pilatus PC-12 arrival on RWY 24 from HPN	12:55:26
23	LXJ586 Bombardier Challenger 350 arrival on RWY 24 from TEB	13:04:12

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MEASUREMENT SITE EVENT LOG

Date: Monday, July 17, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 3 (15 Ryan's Way, Oak Bluffs)	**Monitor:** BK 3
Weather: temperature 79°F, relative humidity 76%, winds calm	

Event	Description / Comments	Event Time (HH:MM:SS)
	Birds chirping	10:12:03
1	JBU1338 Embraer 190 arrival on RWY 24 from JFK	10:40:11
2	EJA309 Embraer Phenom 300 arrival on RWY 24 from MMU	10:44:13
3	Piper PA-31 arrival on RWY 24 from LEB	10:45:26
4	GPD913 Pilatus PC-12 arrival on RWY 24 from HPN. Late turn	10:53:50
5	Cessna Citation 560XL arrival on RWY 24 from MDT	10:55:56
6	Cessna 172R arrival on RWY 24 from EWB	11:00:41
7	KAP88 Cessna 402C arrival on RWY 24 from BOS	11:07:44
8	Cessna 680A Citation arrival on RWY 24 from NCO	11:10:24
9	DL5793 Embraer 175 arrival on RWY 24 from LGA	11:13:28
10	Beech 58 Baron arrival on RWY 24 from Albert Nader Regional Airport. Late turn between monitoring site and runway	11:20:35
11	Piper PA-28 arrival on RWY 24 from HYA	11:22:24
12	Cirrus SR22 arrival on RWY 24 from RUT	11:29:05
	Diesel truck noise at neighboring residence	11:40:08
13	Cirrus G2+ Vision Jet arrival on RWY 24 from MNZ	11:51:12
14	Cessna 560 Citation arrival on RWY 24 from ENW immediately followed by Beech G58 Baron arrival on RWY 24 from BDL	12:00:41
15	Cessna 182N arrival on RWY 24. Tight turn. Birds chirping during event	12:10:27
16	Piper PA-28 departure from RWY 24, overflight	12:13:11
17	AA4782 Embraer 175 arrival on RWY 24 from DCA	12:14:41
18	DL5713 Embraer 175 arrival on RWY 24 from JFK	12:20:14
19	Beech 95-B55 Baron arrival on RWY 24 from BVY	12:32:31
20	C130 overflight	12:54:34
21	Beech 300 Super King Air arrival on RWY 24 from DXR. Tight turn	12:59:07

Harris Miller Miller & Hanson Inc.

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MEASUREMENT SITE EVENT LOG

Date: Monday, July 17, 2023 **Page:** 2	**Personnel:** BTR, KMSL, FS
Site: 3 (15 Ryan's Way, Oak Bluffs)	**Monitor:** BK 3
Weather: temperature 87°F, relative humidity 61%, winds calm	

Event	Description / Comments	Event Time (HH:MM:SS)
	Diesel pickup running in driveway of neighboring residence	14:44:36
1	GPS433 Pilatus PC-12 arrival on RWY 24 from HTO	14:45:56
	Diesel truck at neighboring residence pulling out of driveway	14:47:24
2	Hawker 800XP arrival on RWY 24 from TMB	14:48:53
3	GPD526 Pilatus PC-12 arrival on RWY 24 from HPN	14:52:23
4	Piper PA-31 arrival on RWY 24 from RKD	14:53:40
5	JBU Embraer 190 arrival on RWY 24	15:05:06
6	Electric go-kart pass by with music	15:19:53
7	Dassault Falcon 50 arrival on RWY 24 from TEB	15:27:53
8	Cirrus SR22 overflight	15:33:26
9	Piper PA-34 arrival on RWY 24 from HIE	15:35:15
10	DL5742 Embraer 175 arrival on RWY 24 from LGA	15:37:28
11	EJA414 Embraer Phenom 300 arrival on RWY 24 from HPN	15:41:27
12	KAP1237 Cessna 402C arrival on RWY 24 from BOS	15:42:25
13	Pilatus PC-12 arrival on RWY 24 from BDR	15:44:01
14	EJA811 Cessna 700 Citation arrival on RWY 24 from TEB	15:54:17
	Motorcycle revving engine in distance	15:55:50
15	Beech King Air 350 arrival on RWY 24 from HPN	16:06:14

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MEASUREMENT SITE EVENT LOG

Date: Tuesday, July 11, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 4 (14 Catboat Lane, West Tisbury)	**Monitor:** BK 4
Weather: temperature 86°F, relative humidity 57%, winds SW 4 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
	Can hear distant aircraft, occasional rooster, wind in trees	15:10:01

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MEASUREMENT SITE EVENT LOG

Date: Monday, July 17, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 4 (14 Catboat Lane, West Tisbury)	**Monitor:** BK 4
Weather:	

Event	Description / Comments	Event Time (HH:MM:SS)
1	Cessna Citation 560XL overflight	16:59:04

Harris Miller Miller & Hanson Inc.

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MEASUREMENT SITE EVENT LOG

Date: Tuesday, July 11, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 6 (34 South Pond Road, W. Tisbury)	**Monitor:** BK 6
Weather: temperature 85°F, relative humidity 54%, winds SW 1-2 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
1	Jet Blue Flight B61539, Embraer E190AR, Reg: N273JB	14:57:32
2	Pilatus PC-12/45 departing MVY	15:00:31
3	Piper Archer III departing MVY, Reg: N455H	15:05:42
4	Cessna 402C departing MVY, Reg: N466CA	15:08:09
5	EJA662 Departing MVY, Cessna 680A Citation Latitude, Reg: N662QS	15:29:51
6	Piper PA-46-350P Malibu Mirage Departing MVY, Reg: N178DB	15:33:26
7	Gulfstream G500	15:36:19

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MEASUREMENT SITE EVENT LOG

Date: Wednesday, July 12, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 6 (34 South Pond Road, W. Tisbury)	**Monitor:** BK 6
Weather: temperature 86°F, relative humidity 62%, winds S 1-2 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
	Mowing taking place at the residence	9:51:53
	Irrigation ran for 20 mins and finished at 10:10	10:09:37
	Mowing services ended at 10:25	10:24:35
1	Beech A36 Bonanza, Reg: N212TD, MVY-SFO	10:26:51
2	Bombardier Challenger 300, Reg: N300JE, BED-Flyover	10:30:48
3	Cessna 182T Skylane, Reg: N462JB, MVY-N/A	10:32:28
4	Cessna 162 Skycatcher, Reg: N7007A, MVY-N/A	10:33:15
5	Cessna 162 Skyscratcher, Reg: N7007A	10:37:29
	Mail Truck	10:41:03
6	MVY-N/A Another Flyover, Cessna 162 Skycatcher, Reg: N7007A	10:43:17
7	MVY-N/A Another Flyover, Cessna 162 Skycatcher, Reg: N7007A	10:49:23
8	MVY-BOS, Cape Air Cessna 402C, Reg: N706CA	10:53:01
9	MVY-N/A Another Flyover, Cessna 162 Skycatcher, Reg: N7007A	10:55:12
10	MVY-N/A Another Flyover, Cessna 162 Skycatcher, Reg: N7007A	11:00:23
11	Piper PA-28-181, Reg: N41177P	11:01:01
12	MVY-N/A, Pilatus PC-12/45, Reg: N/A	11:18:06
13	MVY-JFK, JetBlue B61339, Embraer E190AR, N329JB	11:26:17
14	MVY-N/A, Netjet EJA727, Bombardier Challenger 350, Reg: N727QS	12:10:03
15	MVY-LGA, Delta Flight DL5793, Embraer E175LR, Reg: N212JQ	12:32:05

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MEASUREMENT SITE EVENT LOG

Date: Sunday, July 16, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 8 (208 Edgartown-W Tisbury Road, W. Tisbury)	**Monitor:** BK 8
Weather: temperature 79°F, relative humidity 77%, winds SW 2-3 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
1	MVY-ELH, Cessna 700 Citation Longitude, Reg: N814QS	10:47:55
2	MVY-N/A, Gulfstream V, Reg: N/A	10:51:59
3	MVY-OWD, Piper PA-31-350, Reg: N35580	10:53:09
4	MVY-DCA, American Eagle Flight AA4692, Embraer E175LR, Reg: N134HQ	11:05:31
5	MVY-HPN, Tradewind Flight TJ809, Pilatus PC-12 NG, Reg: N809TW	11:16:29
6	MVY-PWM, NetJets Flight EJA409, Embraer Phenom 300, Reg: N409QS	11:31:47
7	MVY-GON, Piper PA-34-220T, Reg: N8401M	11:36:52
8	MVY-BOS, Cape Air 9K25, Cessna 402C, Reg: N499CA	12:06:04
9	MVY-N/A, Hawker Beechcraft 400XP, Reg: N/A	12:18:22
10	MVY-LGA, Delta DL5793, Embraer E175LR, Reg: N217JQ	12:40:46

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MEASUREMENT SITE EVENT LOG

Date: Monday, July 17, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 8 (208 Edgartown-W Tisbury Road, W. Tisbury)	**Monitor:** BK 8
Weather: temperature 87°F, relative humidity 67%, winds S 2-3 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
1	MVY-RUT, Cirrus SR22, Reg: N3891W	15:16:11
2	MVY-PHL, Flexjet LXJ555, Bombardier Challenger 300, Reg: N555FX	15:17:08
3	MVY-OXC, Tradewind Aviation TJ433, Pilatus PC-12 NGX, Reg: N433TW	15:19:13
4	ACK-JFK (Flyover example noise ~50 dB), JetBlue B692, Embraer E190AR ~20,000', Reg: N324JB	15:27:20
5	MVY-N/A, Cessna 208 Caravan (Pontoon), Reg: N/A	15:31:50
	Constant flow of vehicle traffic around 50dB.	15:44:01
6	MVY-HPN, Pilatus PC-12 NG, Reg: N617EX	15:48:19
7	MVY-HPN, Tradewind Aviation TJ526, Pilatus PC-12/45, Reg: N526TW	15:51:01
8	MVY-JFK, JetBlue B61539, Embraer E190AR, Reg: N355JB	15:55:53
9	MVY-N/A, Hawker 800XP, Reg: N/A	15:56:57
10	MVY-BOS, Cape Air 9K1237, Cessna 402C, Reg: N290CA	15:58:15
11	MVY-HPN, Dassault Falcon 50, Reg: N136MV	16:11:02
12	MVY-PSM, Planesense CN1201, Pilatus PC-12 NG, Reg: N367AF	16:12:26

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MEASUREMENT SITE EVENT LOG

Date: Tuesday, July 11, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 9 (15 Quantapog Road, Oak Bluffs)	**Monitor:** BK 1
Weather: temperature 83°F, relative humidity 60%, winds SW 2-4 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
1	EJA662 Cessna 680A arrival on RWY 24 from PNE	14:20:19
2	Piper PA-28 arrival to RWY 24 from NCO	14:27:48
3	EJA116 Bombardier Global 5000 arrival on RWY 24 from HPN	14:31:13
	Leaves rustling in wind	14:34:18
4	DL5742 Embraer 175 arrival on RWY 24 from LGA	14:36:28
5	Noise from Cessna 172P overflight from ACK	14:39:56
	Leaves rustling in wind	14:41:25
6	Bombardier Global 6000 arrival on RWY 24 from BDL	14:42:55
7	MA state police H135 overflight (arrival?)	14:44:58
8	KAP1237 Cessna 402C arrival on RWY 24 from BOS	14:49:10
9	Piper PA-28 overflight. Vehicle passed by immediately after	14:50:27
10	Beech King Air B200 arrival on RWY 24 from HPN	14:55:42

MEASUREMENT SITE EVENT LOG

Date: Wednesday, July 12, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 9 (15 Quantapog Road, Oak Bluffs)	**Monitor:** BK 1
Weather: temperature 81°F, relative humidity 68%, winds calm	

Event	Description / Comments	Event Time (HH:MM:SS)
	Birds chirping	10:00:56
1	Beech A36 Bonanza circuit operation in distance, can hear jet departure	10:02:55
2	FedEx WIG8409 Cessna 208B overflight from PVD	10:03:37
3	Jet departure heard is believed to be Dassault Falcon 50 which departed RWY 24	10:04:36
4	Cessna 182H arrival on RWY 24 from HYA	10:15:02
	Cicada in the distance	10:15:38
5	Several Cessna circuit/pattern flights heard in the distance	10:19:15
	Cicadas in distance	10:22:20
6	Beech A36 Bonanza pattern operation overflight. Cicadas in background	10:23:52
7	Cessna 182T arrival on RWY 24 from BED	10:28:44
8	FedEx WIG8401 Cessna 208B arrival on RWY 24 from PVD	10:30:16
9	KAP88 Cessna 402C arrival on RWY 24 from BOS	10:33:03
10	JBU1338 Embraer 190 arrival on RWY 24 from JFK	10:38:11
11	Pilatus PC-12 arrival on RWY 24 from HPN	10:40:02
	Cicadas in the distance	10:41:20
12	EJA727 Bombardier Challenger 350 arrival on RWY 24 from SFZ	10:42:59
	Crow caw in distance	10:47:23
13	Piper PA-28 overflight from BED	10:49:09
	Cicadas	10:59:12
14	Piper PA-28 arrival on RWY 24 from OWD	11:00:42
15	Cessna 172S Skyhawk overflight (?) from PYM	11:01:44
16	DL5793 Embraer 175 arrival on RWY 24 from LGA	11:09:59
17	Cirrus SR22 arrival on RWY 24 from PSM. Cicadas in background	11:21:28
18	Dassault Falcon 2000EX overflight from PBI	11:26:06

19	Maule MX-7-180C overflight from BAF & Beech A36 Bonanza arrival on RWY 24 from HAR	11:31:32
20	Unknown piston aircraft arrival on RWY 24 (not on radar). Vehicle pass by at same time	11:34:20
21	Daher TBM-910 arrival on RWY 24 from EWB	11:40:01
	Cicadas	11:50:22
22	AA4782 Embraer 175 arrival on RWY 24 from DCA. Vehicle passed by site at same time	11:56:41

HARRIS MILLER MILLER & HANSON INC.

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MEASUREMENT SITE EVENT LOG

Date: Friday, July 14, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 9 (15 Quantapog Road, Oak Bluffs)	**Monitor:** BK 1
Weather: temperature 73°F, relative humidity 80%, winds calm, light rain	

Event	Description / Comments	Event Time (HH:MM:SS)
	Heavy rain and thunder occurred late this morning	12:26:40
1	Pilatus PC-12 arrival on RWY 24 from ACK	12:28:19
2	GPD526 Pilatus PC-12 arrival on RWY 24 from HPN	12:30:06
3	Beech King Air 350i arrival on RWY 24 from HPN	12:34:04
	Lawn appears to have been mowed since previous attended monitoring period	12:37:59
4	Cessna 560XL Citation arrival on RWY 24 from QQQ	12:58:39

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MEASUREMENT SITE EVENT LOG

Date: Sunday, July 16, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 10 (159 Thumb Point Road, W. Tisbury)	**Monitor:** BK 5
Weather: temperature 80°F, relative humidity 78%, winds SW 4-5 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
1	MVY-CHA, Bombardier Challenger 604, Reg: N515LT	15:37:00
2	MVY-PBI, Embraer Phenom 300, Reg: N5A	15:43:12
3	MVY-BED, PlaneSense CNS44, Pilatus PC-12 NGX, Reg: N270AF	15:48:00
4	MVY-BED, PlaneSense CNS46, Pilatus PC-12 NG, Reg: N567AF	15:59:52
	Occasional dog bark nearby	16:08:01
5	MVY-N/A, Dassault Falcon 900LX, Reg: N/A	16:16:32
6	MVY-N/A, Tailwind Air, Beech King Air 250, Reg: N436RJ	16:18:13
7	MVY-BOS, Cape Air 9K410, Cessna 402C, Reg: N290CA	16:21:33

Harris Miller Miller & Hanson Inc.

Project: MVY Part 150

Proj. #: 03-13880

MEASUREMENT SITE EVENT LOG

Date: Monday, July 17, 2023 **Page:** 1	**Personnel:** BTR, KMSL, FS
Site: 10 (159 Thumb Point Road, W. Tisbury)	**Monitor:** BK 5
Weather: temperature 84°F, relative humidity 72%, winds SW 3-5 mph	

Event	Description / Comments	Event Time (HH:MM:SS)
1	Single engine aircraft	11:35:45
2	MVY MDW, EJA309 (E55P), Noise event is drawn out due to aircraft's curving path	11:42:54

Appendix C - Forecast

C.1 Part 150 Forecast

The next 19 pages present the Aviation Activity Forecast prepared for this Part 150 Study, submitted to FAA on May 31, 2023.

A. FORECASTS

A.1. Introduction

To understand potential noise impacts in the future, McFarland Johnson has generated forecasts of aviation activity. This chapter explores the various types of aviation activity at Martha's Vineyard Airport (MVY or the Airport). It will look at the historical and existing aeronautical activity and provide a five-year forecast (2024 through 2028) of aircraft operations to properly assess future noise levels around MVY.

The aviation forecasts have been prepared for the following categories at MVY:

- Enplanements
- Commercial Operations
- General Aviation
- Military
- Based Aircraft
- Aircraft Fleet Mix

Sections A.2 through **A.10** provide background information and details on the various forecast components. **Section A.11** provides a summary of the forecasts. **Section A.12** compares the forecast operations to the FAA Terminal Area Forecast (TAF).

A.2. Previous Airport Forecasts

This section presents three previously developed MVY forecasts, for context.

A.2.1. 2016 Airport Master Plan

The MVY Airport Master Plan provides a sort of roadmap for the future development of the Airport and is the most appropriate mechanism for updating the Airport Layout Plan (ALP). The ALP is a graphical representation of existing conditions and future Airport development and is used to provide a long-term, comprehensive development strategy.

The 2016 *MVY Airport Master Plan Update* was completed in September 2016 and included a noise analysis based on data from 2012. The preferred forecast selected was the FAA TAF, which projected a compound annual growth rate (CAGR) of 2 percent growth in based aircraft, and a 0.24 percent CAGR growth in aircraft operations. The preferred forecast from that study can be seen in **Table A-1**. The actual CAGR growth from 2016 through 2022 per the historical data included in the current FAA TAF was 3.16 percent growth in based aircraft and 1.01 percent for operations.

A.2.2. 2010 Massachusetts State Airport System Plan

The Massachusetts Statewide Airport System Plan (MSASP) is updated approximately every 10 years and is used by the FAA, the Massachusetts Department of Transportation (MassDOT), and the Massachusetts legislature to make programming and funding decisions about Massachusetts airports.

Table A-1: 2016 MVY Airport Master Plan Update Preferred Forecast

	2014	2019	2024	2034
Based Aircraft	77	96	102	112
Jet	0	0	0	0
Multi-Engine Piston	15	19	20	22
Single-Engine Piston	62	77	82	90
Annual Operations	42,080	42,561	43,051	44,069
Local	1,432	1,462	1,492	1,559
Itinerant	40,648	41,099	41,559	42,510

Source: Jacobs Engineering, 2016.

The MSASP Included an overall forecast for the state of Massachusetts that predicted both based aircraft and aircraft operations. It also included individual forecasts for each of the 37 system airports, including MVY. Per the 2010 MSASP, based aircraft at MVY from 2009 through 2020 would increase at a CAGR of 0.92 percent, and aircraft operations through that same time period would increase at a CAGR of 2.45 percent, which can be seen in **Table A-2**. Per the FAA TAF, the actual CAGR of operations from 2009 through 2022[1] was a decline of -0.55 percent, and for based aircraft a decline of -0.51 percent.

Table A-2: MSASP Forecast

	2009	2015	2020	2030
Based Aircraft	94	99	104	113
Aircraft Operations	45,291	56,507	59,096	64,635

Source: Massachusetts SASP, The Louis Berger Group, 2010.

A.2.3. FAA Terminal Area Forecast (TAF)

Finally, the FAA publishes a TAF for all public-use airports in the US. The TAF includes historical and forecast data, including enplanements, operations, and based aircraft. The operations data is further broken down into itinerant and local. The predicted operations and based aircraft forecast levels for 2023 through 2028 in the current TAF can be seen in **Table A-3**.

As can be seen in **Table A-3**, per the TAF, total operations at the airport are expected to increase modestly, at a CAGR of 0.26 percent. Itinerant air carrier aircraft operations are expected to show a more robust CAGR of 1.25 percent over the five-year planning period. Based aircraft counts are forecast to grow at 1.09 percent over the planning period. The comparison between the forecast operations and based aircraft of the AMPU, MSASP, and TAF can be seen graphically in **Figure A-1** and **Figure A-2**.

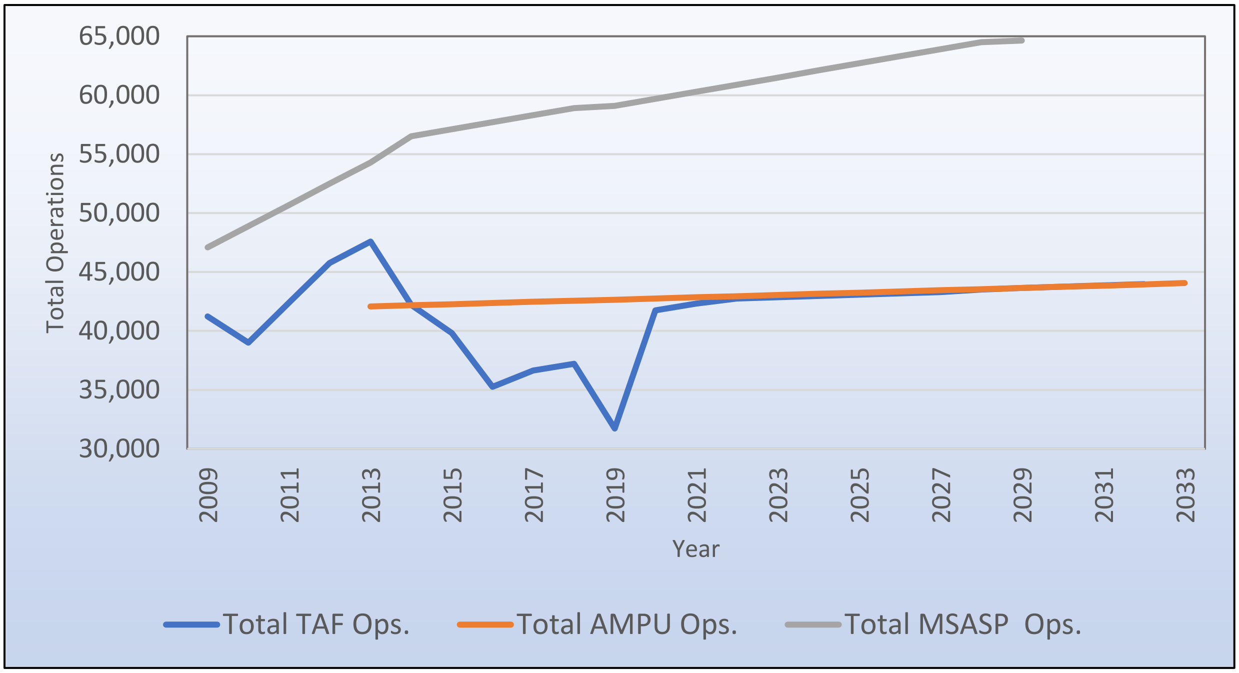
[1] 2022 operations and based aircraft data was utilized as the end period for this calculation instead of 2020 because 2020 activity was skewed down due to Covid-19.

Table A-3: FAA TAF Forecast

	Itinerant Operations				Local Operations		Total Ops	Based Aircraft
	Air Carrier	Air Taxi	GA	Military	GA	Military		
2022	2,073	18,355	18,528	349	2,777	225	42,307	88
2023	2098	18,433	18,534	349	3,106	225	42,745	90
2024	2124	18,511	18,540	349	3,106	225	42,855	91
2025	2151	18,590	18,546	349	3,106	225	42,967	92
2026	2178	18,669	18,552	349	3,106	225	43,079	93
2027	2205	18,748	18,558	349	3,106	225	43,191	94
2028	2232	18,827	18,564	349	3,106	225	43,303	95

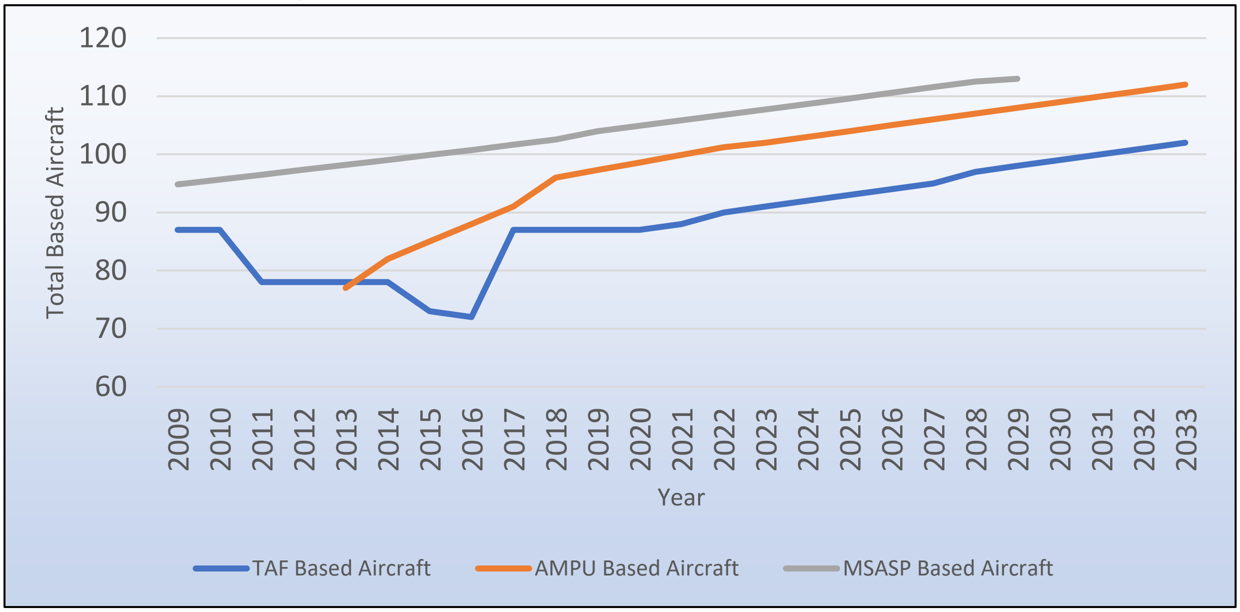
Source: FAA TAF 2023.

Figure A-1: Operations Forecast Comparison



Note: FAA TAF operations from 2009-2022 are inclusive of actual operations recorded.
Source: Jacobs Engineering, Inc., MassDOT, FAA TAF.

Figure A-2: Based Aircraft Forecast Comparison



Note: FAA TAF based aircraft from 2009-2022 is inclusive of actual recorded based aircraft.
Source: Jacobs Engineering, Inc., MassDOT, FAA TAF.

A.3. Trends

A.3.1. Industry Influences

There have been dramatic changes to the airline industry over the past decade. Similar cycles of boom and bust over the decades have shaped commercial aviation into what it is today. MVY is subject to some of these fluctuations but is also somewhat immune. Large transformations like those seen in the airline industry affect nearly all US airports, however, as an island airport that is essentially a pure tourist destination, with little to no business travel, MVY stands apart from other US airports.

Post-Covid Industry Environment – While most airline scheduling and operations practices seen during the 2020-2022 period due to the Covid-19 pandemic are expected to return to more normalized activity by the end of 2023, the results of the upheaval have exacerbated industry trends and influences that had already been underway. Pressures on pilot supply, aircraft upgauging, airline consolidation, and regional airline partnerships have all increased in the post-pandemic environment. Flight frequency reduction, not as dramatic at larger airports, has been a key issue for smaller commercial service airports; dozens of airports have lost airline brand and market options in the past three years with no signs of improvement in the near term.

Technology advancements in virtual meetings during the Covid-19 pandemic resulted in two key changes; new technology made it easier not only to meet anywhere but also to work anywhere. Being a tourist destination, MVY is somewhat immune to the national reductions in business travel. With a very small segment of travelers to MVY doing so for business (the majority being vacationers), MVY has not seen a reduction in business travel as it was never prevalent before Covid-19.

Airline and Hub Consolidation – In the early to mid-2000s, there were close to a dozen major network airlines in business at airports across the United States such as Air Tran, America West, Continental, Northwest, TWA, and US Airways, all of whom have since merged with or have been acquired by other airlines.

Coming out of the large recent mergers, American Airlines and Delta Airlines are currently serving MVY, and additional mergers that could affect MVY are unlikely. Further, the MVY market is well-covered by American Airlines, Delta, JetBlue, and Cape Air, and is not a tourist destination that might be considered by low-cost carriers (LCCs) or ultra-low-cost carriers (ULCCs) who typically favor underserved markets.

Aircraft Up-Gauging – Industry-wide, and especially at small and medium-sized airports, flights by regional jets and turboprops with 50 seats or less are being consolidated into flights by larger regional aircraft. In most cases, the use of these larger aircraft comes at the expense of frequency. A key driver in aircraft upgauging is the lack of qualified pilots. The effect is further emphasized by the fact that there are no 9 to 66-seat aircraft being produced or in development aside from the ATR-42 which only has one operator in the US (Silver Airways). The last 50-seat regional jet was delivered to a US regional carrier in 2005; the implication is that they will likely all be retired within the 20-year planning horizon.

This trend has been included as a highlight in the FAA's *Aerospace Forecast* which notes:

> *US carrier system capacity measure in available seat miles is forecast to grow in line with the demand increases. The number of seats per aircraft is getting bigger, especially in the regional jet market, where we expect the number of 50-seat regional jets to fall to just a handful by 2030, replaced by 70-90 seat aircraft.*

For most major airlines, the number of these larger regional jets allowed in the fleet is limited by the scope clause in their labor contracts with their pilot unions. Some airlines have configured these larger regional jets as two-class 50-seat jets to meet the seat capacities identified in the scope clauses.

For mainline-sized aircraft, airlines have improved seat technology that has allowed them to increase the number of seats on the aircraft while maintaining a reasonable level of service. Aircraft like the Boeing 737-800 and Airbus 320 which have traditionally been 150-seat aircraft have been reconfigured to accommodate between 160 and 189 seats.

MVY is not immune to the aircraft upgauging trend. In reviewing operations information from the FAA Traffic Flow Management System Counts (TFMSC), a trend toward larger and larger aircraft can be seen. Air carrier operations at MVY began in 2011 with frequent operations by the Embraer E135 (37 passengers), and E140 (44 passengers) until 2018. Beginning in 2016, operations to and from MVY utilizing the E170 (80 passengers), and E175 (up to 88 seats) have been seen. Also, the frequency of operations utilizing the E190 (up to 114 seats) has been increasing, going from 192 in 2011 to over 1,200 in 2021.

As the trend continues, and as enplanements and air carrier operations continue to increase (as will be discussed later in this Appendix), it is highly likely MVY will start to see the introduction of the Airbus A220 (100-150 seat capacity), during the planning period as JetBlue is planning to retire the E190 from its fleet by the start of the 2025 summer season.

Pilot Supply – In recent years, impacts associated with a reduced number of pilots entering the aviation industry have become apparent. Reduced pay with the onset of regional jet flying in the 2000s and regulatory changes requiring 1,500 hours of experience for first officers have added to an increasingly expensive training process. These are compounding factors that will likely increase the severity of this labor issue in the coming years. Some industry groups have also identified a similar shortage of qualified aircraft mechanics as well. As previously mentioned, limited pilot supply is a contributing factor to the recent aircraft up-gauging trend.

No airline is immune from the looming pilot shortage, and as such, neither is any airport immune from its potential effects. For MVY, this could result in a reduced frequency of operations, which will continue to escalate the aircraft upgauging trend until more pilots enter the workforce. Cape Air, which has been a staple of commercial air transport on the Cape and Islands, is particularly subject to the national pilot shortage. Many new pilots find employment at airlines such as Cape Air, only to move on to regional or national airlines as soon as they acquire enough flight time.

Fuel Prices – Over the past 10 years, the aviation industry has demonstrated its sensitivity to fuel prices and the associated impact on operational cost and ultimately on aviation demand. On average, fuel represents approximately one-third of the cost of commercial aviation activity. Thus, during spikes in fuel prices like in 2008 and recently, the impacts on both supply and demand are tremendous. Advancements in fuel technology are expected to help reduce industry price-sensitivity to fuel, but fuel prices will likely continue to be a key influencer for aviation activity for some time.

No airport or airline is immune to the effects of increasing fuel prices. Airports like MVY, which are mostly reliant on vacation travelers with disposable income, may be more affected than other airports that either rely heavily on business travelers or that can support LCC and ULCCs.

Electric Aircraft - To counter the high cost and uncertainty associated with fuel, several aircraft manufacturers have begun investing in the development of all-electric aircraft. The prospects that are furthest along in the development phase are predominantly aircraft with nine seats or fewer.

Cape Air, which has been a fixture at the Cape and Island airports, is hoping to be a pioneer and has ordered electric aircraft for its fleet. There are significant regulatory hurdles to overcome before these aircraft can enter revenue service or even be utilized privately on a wide scale, however, electric aircraft could potentially have notable implications on demand. Key considerations associated with the development of electric aircraft include the provision of the necessary facilities for charging and the loss of fuel sales, flowage fees, and tax revenue that funds airport infrastructure.

A Vermont-based electric aircraft developer, Beta Technologies, plans to begin production of their Alia 250 in 2024 and has already begun installing chargers at many New England airports and beyond, including one at MVY. MVY and the routes served by Cape Air appear to be ideal test beds for this emerging technology once it is deployed, and it is expected that MVY will be an early adopter.

A.3.2. Operations

Air Carrier/Commuter – As airlines, especially major/network carriers, upgauge, it is anticipated they will deploy larger aircraft and reduce the frequency of flights. This change will maintain or even boost enplanements; however, it will slow overall operational growth.

Growth is expected to be extremely limited in the category of aircraft with fewer than 60 seats until there is an industry change that significantly improves the availability of pilot resources (i.e., flights with single-pilot operations versus the current two-pilot standard) and/or provides significant fuel saving advantages (i.e. electric powered aircraft).

General Aviation –Multiple factors, starting with increased security procedures after 9/11, then the combination of the great recession with increased fuel and aircraft ownership costs at the same time as a declining pilot population have resulted in sharp declines in general aviation activity over the last 10-20 years. After being stripped to near-minimum demand only, itinerant general aviation activity has begun to grow again. Much of this growth is due to enhancement in turbine aircraft efficiencies; the introduction of smaller turbine-powered aircraft has made entry-level business aviation more affordable than ever. Single-engine turbine-powered aircraft like the 9-seat Pilatus PC-12 or Cessna Caravan and the 4-9 seat very-light-jet Embraer Phenom 100/300 can rival the affordability of commercial aviation in some cases.

Civil (local) aviation suffered from the recession and fuel price spike. Currently, with the pilot shortage bringing an increased demand for flight training, civil aviation has begun to grow again.

Military – The growth or decline of military operations is largely dependent on the security interests of the nation. Military aircraft are constantly relocated throughout the country. Threats to the United States and disaster relief efforts may impact the number of military operations at and around the Airport. Most military operations conducted at civilian airports are associated with training activity.

In the past, with frequent visits by vacationing US presidents, MVY saw an increase in military operations. The Airport has seen lessened military operations in recent years, but that sector of activity could increase again if circumstances change. If military aircraft operations in the region were to increase, it is likely that those operations would occur at the nearby Otis Air Force base on Cape Cod as MVY is traffic saturated in the busy summer months.

Unmanned Aircraft Systems (UAS) - Presently the FAA does not have a counting metric for UAS activity at airports as their integration into the national airspace has been limited. Operations forecasts should be reviewed and updated as UAS' integrate into the national airspace and airport operations, and as FAA identifies a metric/category in which to account for this activity. At this early stage of the emerging UAS technology, predicted changes in operations are speculative at best. This five-year forecast does not include UAS operations at MVY.

A.3.3. Based Aircraft

Single/Multi Piston – In the FAA Aerospace Forecast, piston (single and multi-engine) aircraft are forecasted to follow a negative growth rate over the next 20 years while turbine aircraft numbers grow positively throughout the planning period. As the economic advantages of aircraft leasing, renting, fractional ownership, and flying clubs become more popular, the number of individually-owned piston engine aircraft is decreasing in most regions. While the aircraft counts are decreasing, the negative aspects are offset by enhanced utilization from a broader user base not burdened by high-entry costs.

Turbine/Jet – Advancements in fuel efficiency and aircraft technology have resulted in a wide variety of new products entering the turbine and jet aircraft market. More aircraft options at lower costs have increased the number of aircraft in the business aviation market. With the national forecast for based turbine aircraft following a positive trend, it is forecasted by the FAA Aerospace Forecast that turbo propeller and turbojet aircraft operations will increase throughout the planning period.

Hangar Space – MVY recently demolished an older hangar to allow room for a new hangar operated by Vineyard Wind, the developer of a clean energy offshore wind farm. Vineyard Wind is developing and installing 62 wind turbines 15 miles south of Martha's Vineyard. It is expected they will be basing a fleet of helicopters for construction and ongoing maintenance of their offshore equipment. Also, a new T-hangar is currently under construction at MVY. Conversations with the airport manager indicate that based aircraft parked on the apron at MVY will be moving into the new T-hangar, with no net gain in based aircraft.

A.4. Enplanements

Passenger enplanements are a key indicator in the forecasting efforts for commercial service airports. The results of these forecasts are particularly useful in this noise study as commercial service aircraft comprise the bulk of aircraft operations during the busy summer season. Enplanements can be broken down into two categories: air carrier enplanements (generally in aircraft with more than 60 seats), and commuter enplanements, (generally in aircraft with 60 seats or less). However, for this study, total enplanements will be utilized to forecast demand.

A.4.1. Historical Enplanements Overview

Enplanement data was taken from the FAA TAF. Since 2011, the first year with air carrier enplanements at MVY, those enplanements have increased by a CAGR of 14.85 percent through 2022. Despite a decline from 2014 through 2021, commuter enplanements, which have historically made up the bulk of MVY passengers, have also increased since 2011, but at a much more modest 0.10 percent. In total, since the beginning of recorded

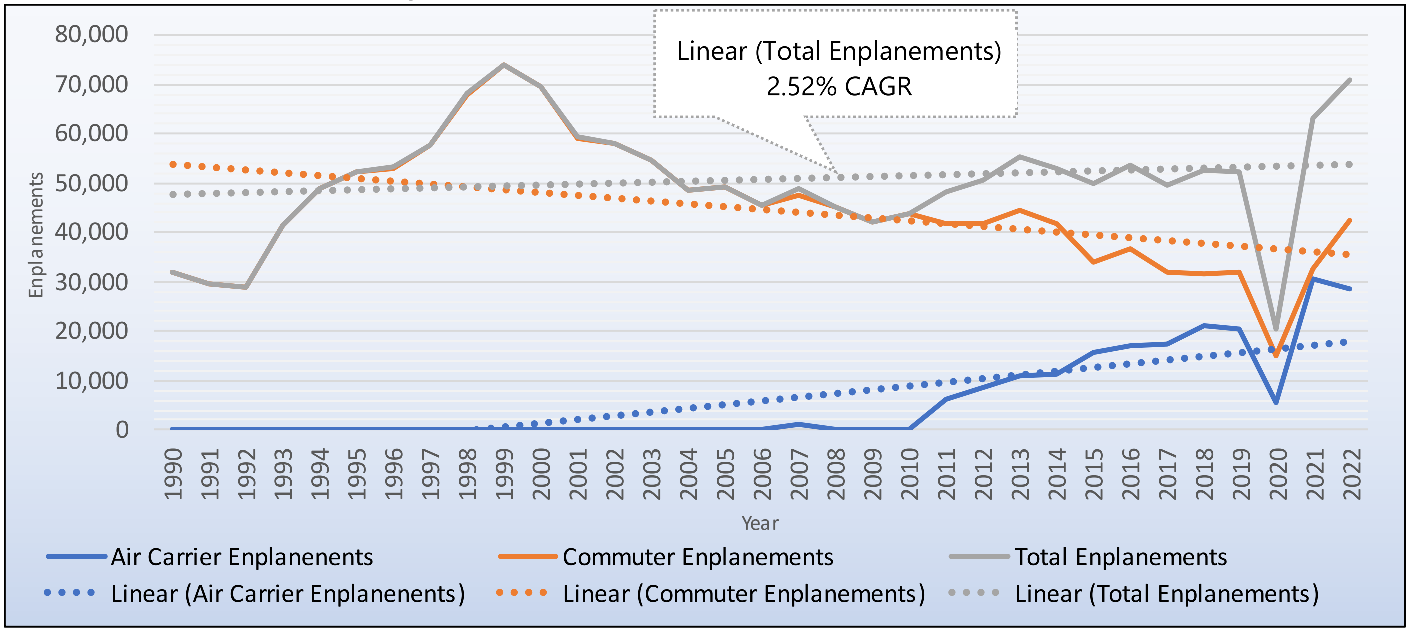
TAF data (1990), enplanements at MVY have increased by a CAGR of 2.52 percent. Historical enplanements can be seen in **Figure A-3**.

Figure A-3 shows that commuter enplanements have been steadily decreasing but have rebounded in recent years. Air carrier enplanements steadily increased, encountered a sharp drop with the onset of Covid-19, then had a sharp increase, possibly attributable to vacationers looking for refuge from the pandemic and seeing vacationing on an island as a way to limit the potential for infection.

A.4.2. Enplanements Forecasts

Given all the information above, it is safe to assume that enplanements will continue to increase at MVY. However, factors such as the cost of fuel and the pilot shortage will have a depressing effect on vacation travel. It is reasonable to assume that air carrier enplanements will continue to increase at a CAGR of 2.52 percent, while commuter enplanements will continue to increase at a CAGR of 0.10 percent. These increases are higher than all previous forecasts but are consistent with the CAGR increase over the past 11 years as shown in the TAF, which saw a significant increase in 2022 (71,046 enplanements) over the previous peak year of 2018 (52,577 enplanements). The forecast for the next five years at MVY can be seen in **Table A-4**.

Figure A-3: MVY Historical Enplanements



Note: The Linear lines represent CAGR since 1990.
Source: FAA TAF.

Table A-4: MVY Enplanements Forecast

Year	Air Carrier Enplanements	Commuter Enplanements	Total Enplanements
2024	29,826	42,383	72,209
2025	30,227	42,426	72,653
2026	30,633	42,470	73,103
2027	31,044	42,513	73,557
2028	31,457	42,556	74,013

Source: McFarland Johnson analysis, 2023.

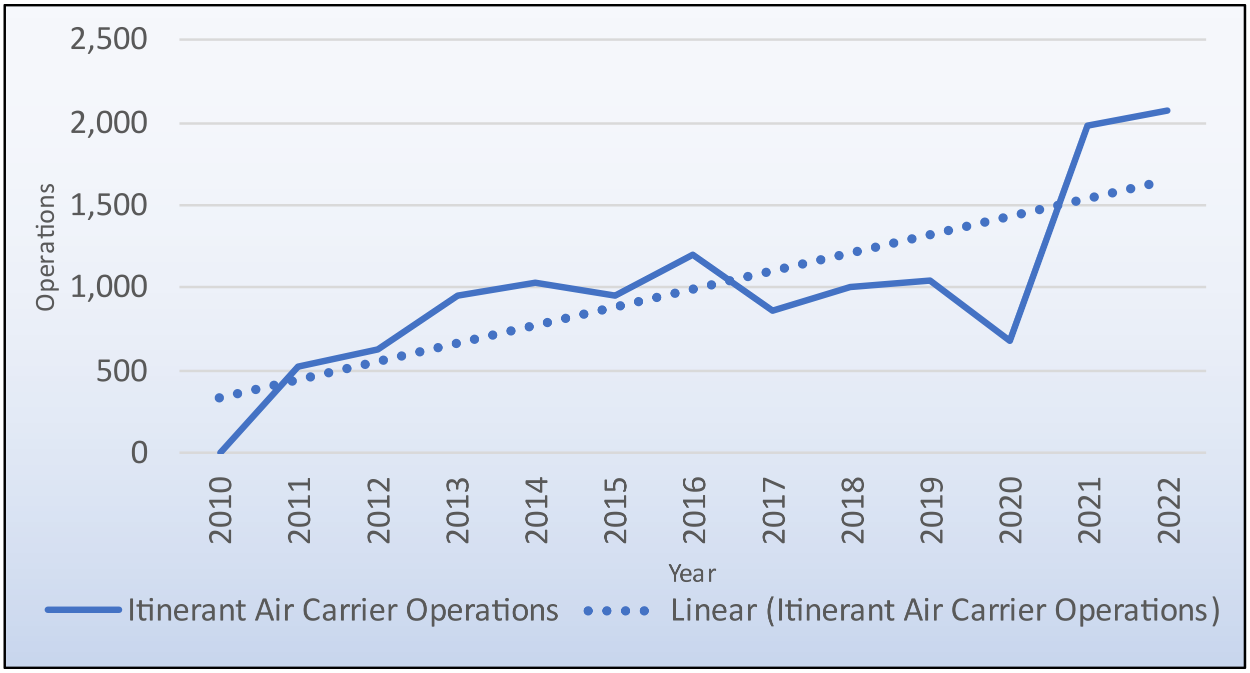
A.5. Air Carrier Operations

Air carrier operations are defined as those utilizing aircraft with 60 or more passenger seats. Currently, American Airlines, Delta, and JetBlue provide these services at MVY. These larger aircraft, although operating with less frequency than smaller aircraft, can have a larger impact on noise, despite recent advances in turbine engine technology in the production of quieter passenger jet aircraft.

A.5.1. Historical Air Carrier Operations

Since 2011, the first year with air carrier operations at MVY, the number of air carrier operations has increased by a CAGR of 13.30 percent to the 2022 level of over 2,000 operations. Historical air carrier ops at MVY can be seen in **Figure A-4**.

Figure A-4: Historical Air Carrier Operations at MVY



Note: The Linear lines represent CAGR since 1990.
Source: FAA TAF, 2023.

A.5.2. Air Carrier Forecast

It is expected that air carrier operations will continue to increase at MVY, however it is unrealistic to expect operations to continue to climb at a CAGR of 13.30 percent.

Predicting air carrier operations post-Covid-19 is challenging but air carrier operations numbers from the more recent past can provide some insight. The growth rate of air carrier operations from 2021 to 2022 rose 4.43 percent as travelers and vacationers emerged from the pandemic. Limiting factors such as aircraft up-gauging and the pilot shortage can be expected to continue within the next five years, which will tend to flatten out the recent growth rate. As such, it is safe to assume a much more modest CAGR of 4.00 percent, which is above what the FAA TAF predicts (1.24 percent), for air carrier operations through the five-year planning period which can be seen in **Table A-5**.

Table A-5: MVY Forecast Air Carrier Operations

Year	Air Carrier Operations
2023	2,156
2024	2,242
2025	2,332
2026	2,425
2027	2,522
2028	2,623

Source: McFarland Johnson analysis, 2023.

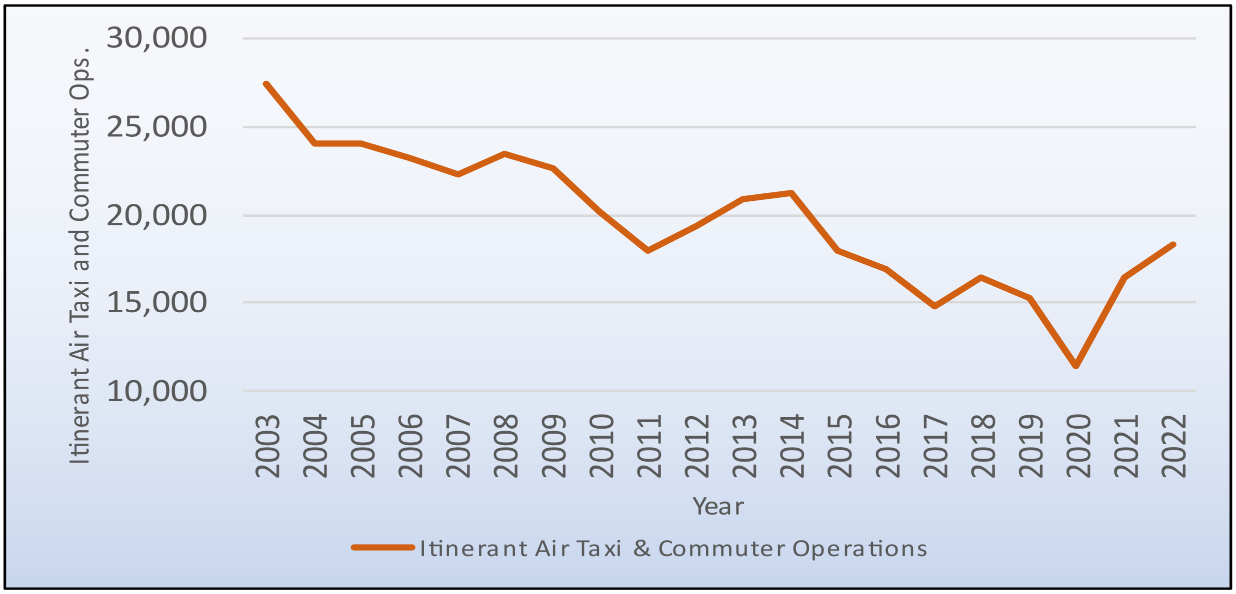
A.6. Air Taxi/Commuter Operations

Air Taxi/Commuter operations include regional and commuter activity and commercial applications within GA such as Part 135 charter activity. With Cape Air operating at MVY, commuter operations play an important role in the total operations and enplanements at the Airport. Historically, the air taxi element has made facility planning difficult because it includes both airline and GA operations.

A.6.1. Historical Air Taxi and Commuter Operations

The FAA TAF keeps data on itinerant air taxi and commuter operations going back to 1990. MJ analyzed the most recent 20 years of the TAF and found a CAGR of -2.00 percent from 2003 through 2022, with a sharp increase in operations in 2021 and 2022, attributed to a post-Covid-19 recovery economy. Historic air taxi and commuter operations can be seen graphically in **Figure A-5**.

Figure A-5: Historical Itinerant Air Taxi and Commuter Operations at MVY



Source: FAA TAF, 2023.

A.6.2. Air Taxi and Commuter Operations Forecast

Air taxi and commuter operations have generally declined in the past 20 years at MVY. Smaller commuter airlines such as Island Air and Rectrix have ceased operations. Scheduled operations with low enplanements have been consolidated, with the result of decreasing operations and decreased schedule frequency.

However, in looking at a shorter-term history of these operations, the CAGR from 2015 through 2022 has been positive at 0.27 percent, which accounts for the normalization of operations after the effects of the Great Recession and the airline mergers. This CAGR is consistent with the forecast growth in commuter enplanements of 0.10 percent and is selected as the growth rate of commuter operations for the next five years. Using a baseline number of 18,355 operations from the FAA TAF (2022), the number of air taxi and commuter operations through the forecast period can be seen in **Table A-6**.

Table A-6: Forecast of Air Taxi and Commuter Operations at MVY

Year	Air Taxi / Commuter Operations
2023	18,405
2024	18,455
2025	18,505
2026	18,556
2027	18,607
2028	18,658

Source: FAATAF, McFarland Johnson analysis, 2023.

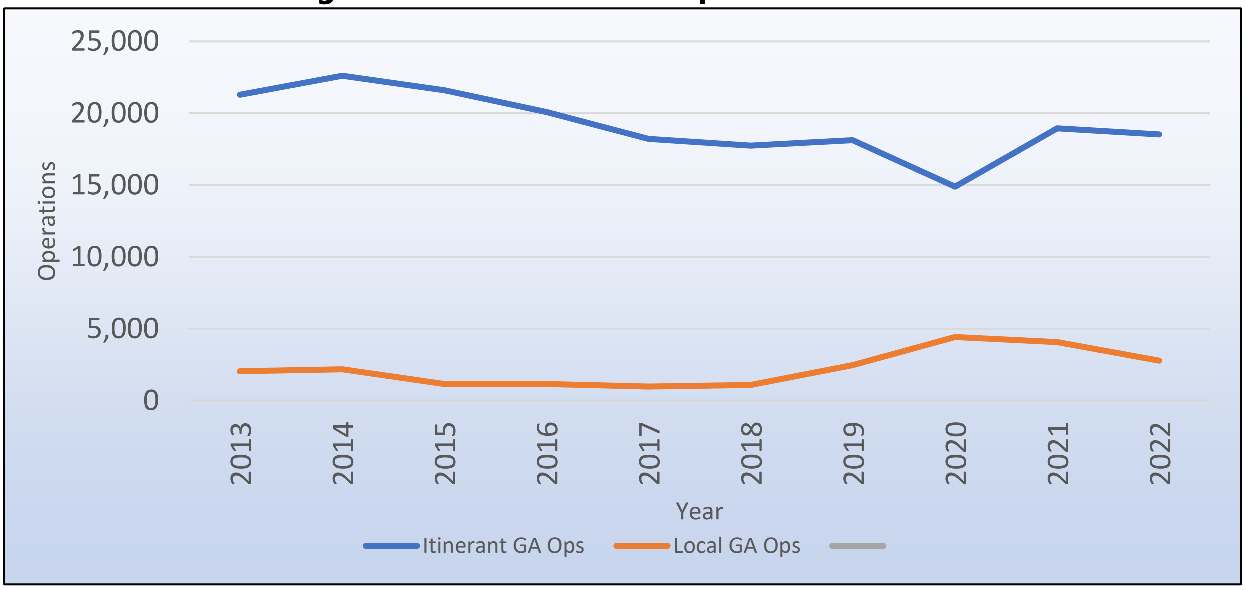
A.7. General Aviation

General aviation (GA) is considered to be all aviation activity that is not commercial service or military. MVY has an active GA community with a total of 87 based aircraft per the Airport 5010 Record. About 50 percent of the aircraft operations at MVY are flown by GA aircraft.

A.7.1. Historic General Aviation Aircraft Operations

Over the past 10 years, GA operations at MVY have been in decline, consistent with national trends. The Covid-19 pandemic saw a sharp drop in total GA operations, particularly itinerant GA operations, while local GA operations (those that stay within 20 miles of the airport) saw a slight increase. Historically, the total GA operations have amounted to slightly more than half of the total operations. Historical GA operations can be seen in **Figure A-6**.

Figure A-6: Historical GA Operations at MVY



Source: FAA TAF, 2023.

A.7.2. General Aviation Operations Forecast

The FAA annually produces a 20-year outlook of all sectors of aviation in the US. Categories include enplanements, aircraft operations, fleet mix, and fuel consumption, among others. The FAA *Aerospace Forecast 2022-2042* provides forecasts of the number of active GA and air taxi hours flown, which can be utilized to forecast GA operations at MVY.

The FAA Aerospace Forecast provides an average annual growth rate for active GA and air taxi hours flown which can be seen in **Table A-7**. That report shows a decline in single-engine (SE) piston aircraft operations and a slight increase in multi-engine (ME) piston operations. All sectors of turbine-powered aircraft are forecast to increase operations.

The *FAA Aerospace Forecast* predicts that single-engine aircraft activity will decline, and other sectors of operations such as turbine and multi-engine aircraft activity will increase. As such, the local GA operations, which are comprised of single- and multi-engine aircraft, are expected to decline over the next five years at a composite rate of -0.84 percent. Vineyard Wind has disclosed that they plan to operate two to four daily round trips in their helicopters, 300 days per year on average, beginning in 2023. As such, the local GA operations have been increased by an additional 1,800 operations beginning in 2023. Itinerant GA operations have been forecast to increase at the *FAA Aerospace Forecast* Total GA Fleet of 1.1 percent.

Table A-7: FAA Aerospace Forecast 2022-2042 – Active GA and Air Taxi Hours Flown

	Piston			Turbine			Total GA Fleet
	SE	ME	TOTAL	TURBO PROP	TURBO JET	TOTAL	
2022-2032	-1.1%	0.2%	-0.9%	1.2%	4.3%	3.3%	1.1%

Source: FAA Aerospace Forecast 2022-2042.

The forecast of GA operations at MVY can be seen in **Table A-8**. By applying an average annual growth rate (AAGR) of -0.84 percent for local operations, and an AAGR of 1.10 percent for itinerant operations[2], to the 2023 GA operations at the Airport over the five-year planning period, the Airport would expect to see 24,224 GA operations in 2028.

Table A-8: MVY Forecast GA Operations

Year	Local GA Operations	Itinerant GA Operations	Total GA Operations
2023	4,553	18,732	23,285
2024	4,530	18,938	23,468
2025	4,507	19,146	23,653
2026	4,484	19,357	23,841
2027	4,461	19,570	24,031
2028	4,439	19,785	24,224

Source: McFarland Johnson analysis, 2023.

A.8. Military

Military operations comprise a very small portion of the overall operations at MVY. However, military aircraft, particularly fighter jets, can be significantly louder than piston or turbine-engine aircraft.

A.8.1. Historic Military Operations

Over the past twenty years, military operations have only accounted for one percent of MVY's total operations. The military operations counts at MVY can be seen graphically in **Figure A-7**.

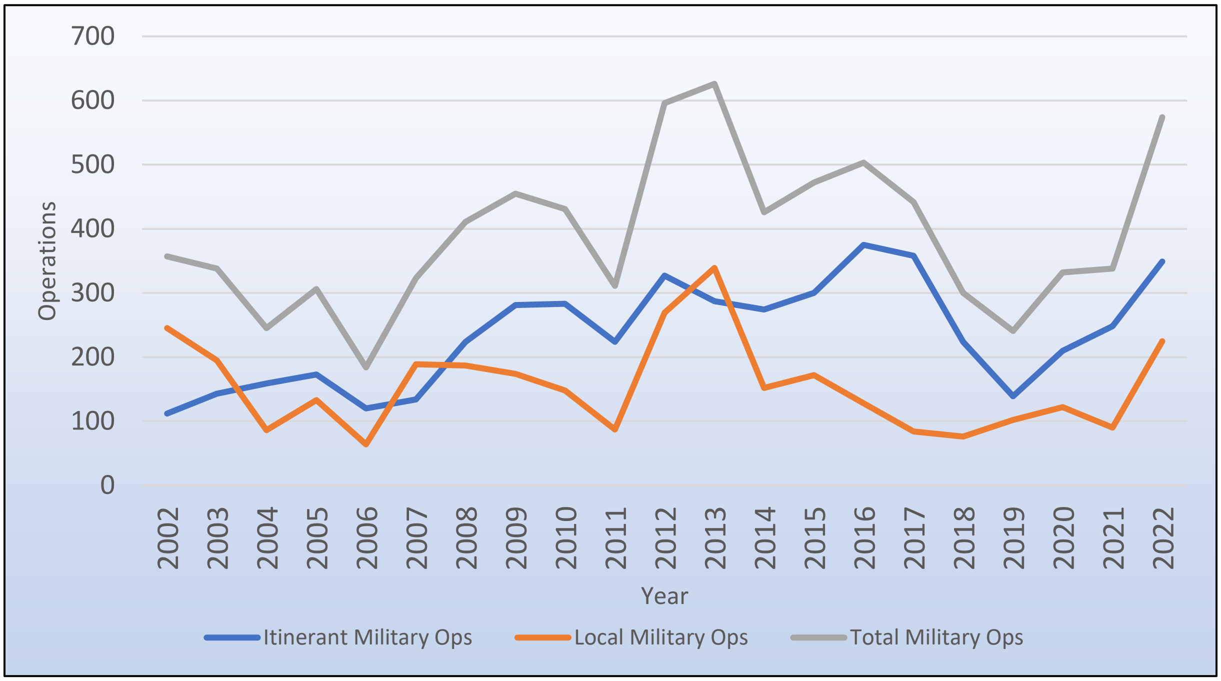
A.8.2. Military Operations Forecast

Total military operations (local plus itinerant) at MVY over the past 20 years, on average, totaled 393 operations per year, which has been chosen as the baseline 2023 forecast number of military operations. Given the low number of military operations compared to total operations, it is difficult to predict whether these operations will increase or

[2] a conservative growth factor, also taken from the *FAA Aerospace Forecast*.

decrease over the next five years. For noise modeling, the forecast number of total military operations has been increased by a one percent year-over-year average which can be seen in **Table A-9**.

Figure A-7: MVY Historical Military Operations



Source: FAA TAF, 2023.

Table A-9: MVY Forecast Military Operations

Year	Local and Itinerant Military Operations
2023	393
2024	397
2025	401
2026	405
2027	409
2028	413

Source: McFarland Johnson analysis, 2023.

A.9. Based Aircraft

The number of based aircraft at MVY has fluctuated over the decades according to the TAF. There appears to have been a peak of 104 aircraft in 2008, with the current number of based aircraft at 87. Over the past 20 years, the TAF has shown a CAGR of 1.21 percent, while the 2016 *Airport Master Plan Update* (AMPU) forecast a CAGR of based aircraft of 2.85 percent, and the MSASP forecast a CAGR of 0.88 percent.

Conversations with airport management indicate that the growth rate of based aircraft at MVY will be flat over the next five years. Vineyard Wind has reported that they will base a helicopter at the Airport, so the forecast of based aircraft at MVY has increased by one over the five-year forecast period. The forecast can be seen in **Table A-10**.

Table A-10: MVY Total Forecast Based Aircraft

Year	Based Aircraft
2023	87
2024	88
2025	88
2026	88
2027	88
2028	88

Source: McFarland Johnson analysis, 2023.

A.10. Aircraft Fleet Mix

Using the Airport's current fleet mix and the assumption of the future based aircraft fleet mix, **Table A-11** presents the forecast of based aircraft by aircraft type for the Airport. Given the short forecast period of five years, the current fleet mix is expected to remain unchanged over the forecast period, with the exception of an additional based helicopter operated by Vineyard Wind.

One notable exception is while the *FAA Aerospace Forecast* predicts a decline in single-engine aircraft, it is expected the number of based single-engine aircraft at MVY will remain at 70 within the planning period.

Table A-11: Forecast Based Aircraft by Type

	2023	%	2024	%	2025	%	2026	%	2027	%	2028	%
SE	70	80%	70	80%	70	80%	70	80%	70	80%	70	80%
ME	14	16%	14	16%	14	16%	14	16%	14	16%	14	16%
Jet	1	1%	1	1%	1	1%	1	1%	1	1%	1	1%
Rotor	2	2%	3	3%	3	3%	3	3%	3	3%	3	3%
Total	**87**	**100%**	**88**	**100%**	**88**	**100%**	**88**	**100%**	**88**	**100%**	**88**	**100%**

Source: McFarland Johnson analysis, 2023.

A.11. Forecast Summary

Table A-12 presents a summary of the aviation demand forecasts developed for MVY that are detailed throughout this chapter. These forecasts are considered reasonable and achievable. They will be used further to develop the noise models.

Table A-12: Aviation Demand Forecast Summary

	Baseline	Forecast				
	2023	**2024**	**2025**	**2026**	**2027**	**2028**
Enplanements						
Air Carrier	29,092	29,826	30,227	30,633	31,044	31,457
Commuter	42,340	42,383	42,426	42,470	42,513	42,556
Total	**71,432**	**72,209**	**72,653**	**73,103**	**73,557**	**74,013**
Operations						
Air Carrier	2,156	2,242	2,332	2,425	2,522	2,623
Commuter	18,405	18,455	18,505	18,556	18,607	18,658
GA Itinerant	18,732	18,938	19,146	19,357	19,570	19,785
GA Local	4,553	4,530	4,507	4,484	4,461	4,439
Military	393	397	401	405	409	413
Total	**44,239**	**44,562**	**44,891**	**45,227**	**45,569**	**45,918**
Based Aircraft						
SE	70	70	70	70	70	70
ME	14	14	14	14	14	14
Jet	1	1	1	1	1	1
Rotor	2	3	3	3	3	3
Total	**87**	**88**	**88**	**88**	**88**	**88**

Source: McFarland Johnson analysis, 2023.

A.12. Comparison with FAA Terminal Area Forecast

To confirm validity, aviation forecasts are often compared with other aviation forecasts prepared for the airport and the region. Ideally, this report's forecasts should be reasonably consistent with other forecasts of future airport activity, and compatible with forecasts for the larger region. The most useful forecasts for comparison are those prepared by the FAA (with the standard being the TAF) and the national and regional forecasts previously referenced in this report. The TAF is prepared annually and includes airport forecasts for all active National Plan of Integrated Airport Systems (NPIAS) airports. **Table A-13** shows the comparison between the aviation demand forecast and the FAA TAF. The comparison shows that the results of this Part 150 forecast are within 10 percent of the TAF within the five-year forecast period.

Table A-13: Aviation Forecast vs. FAA TAF

	Baseline	Forecast					Average Annual Growth
	2023	2024	2025	2026	2027	2028	
FAA TAF (2023)							
Enplanements	71,432	71,823	72,219	72,620	73,022	73,428	**0.55%**
Operations	42,745	42,855	42,967	43,079	43,191	43,303	**0.26%**
Based Aircraft	90	91	92	93	94	95	**1.09%**
Part 150 Forecast							
Enplanements	71,432	72,209	72,653	73,103	73,557	74,013	**0.71%**
Operations*	44,239	44,562	44,891	45,227	45,569	45,918	**0.75%**
Based Aircraft	87	88	88	88	88	88	**0.23%**
Percent Difference From TAF							
Enplanements	**0.00%**	**0.54%**	**0.60%**	**0.66%**	**0.73%**	**0.80%**	**-**
Operations	**3.49%**	**3.98%**	**4.48%**	**4.99%**	**5.51%**	**6.04%**	**-**
Based Aircraft	**3.33%**	**3.30%**	**4.35%**	**5.38%**	**6.38%**	**7.37%**	**-**

**Part 150 Operations include traffic estimated during hours when the tower is closed, according to percentages calculated by category from 2022 Vector system data. TAF Operations do not include operations that occur when the tower is closed.*

Source: FAA TAF, McFarland Johnson analysis, 2023.

A.13. Scaling Factors

One drawback to using the TAF as a basis for the noise model forecasting relates to how the data is collected. At MVY, the FAA relies on data collected by the Air Traffic Control Tower (ATCT). However, the tower has limited hours of operation; it is closed from 5 pm until 7 am each day from November 1 until May 14, and in the warmer months (May 15 until October 31) the tower is closed from 10 pm until 6 am. Vector system radar data collected by HMMH as part of this study (covering December 1, 2021, until November 30, 2022) identified 1,745 operations occurring during the hours when the ATCT was closed in that 12-month time frame.

The study team recommends that scaling factors should be applied when considering the TAF as a baseline for future forecasts. Based on the ratio of operations counted in the Vector system data occurring when the tower was closed to when it was open, the team recommends an increase of 0.45 percent for air carrier operations, 6.67 percent for air taxi/commuter operations, 4.30 percent for itinerant general aviation operations, and 5.08 percent for local civil operations. The counts and scaling factors can be seen in **Table A-14**.

For prudent noise modeling, it is important to account for all future aircraft operations, particularly those that happen during the nighttime hours when people are trying to rest, as nighttime (10 pm to 7 am) aircraft operations are assessed an additional 10 decibel noise weighting. For the purposes of this study, the operations shown in **Table A-15** will be the basis for the noise model at MVY.

Table A-14: Development of Scaling Factors

Category	OpsNET (ATCT Counts)	Radar Data ATCT Open	Radar Data ATCT Closed	Estimate ATCT Closed	Scaling Factor
Air Carrier	2,020	1,990	8	9	0.45%
Air Taxi/ Commuter	18,315	14,175	945	1,221	6.67%
GA Itinerant	17,901	16,668	674	770	4.30%
GA Local	2,361	2,338	118	120	5.08%

Source: McFarland Johnson analysis, 2023.

Table A-15: Forecast Summary with Added Evening and Nighttime Operations

	Baseline	Forecast				
	2023	2024	2025	2026	2027	2028
Operations						
Air Carrier	2,165	2,252	2,342	2,436	2,533	2,634
Air Taxi/ Commuter	19,629	19,683	19,737	19,791	19,845	19,899
GA Itinerant	19,529	19,744	19,961	20,181	20,403	20,627
GA Local	4,695	4,671	4,647	4,623	4,599	4,575
Military	393	397	401	405	409	413
Total	**46,411**	**46,747**	**47,088**	**47,436**	**47,789**	**48,148**

Source: McFarland Johnson analysis, 2023.

Note: Military operations were not increased as it is anticipated military operations occur during daylight hours.

C.2 FAA Approval for Part 150 Forecast

The image below is a copy of the FAA email approving the use of that forecast data.

From: Doucette, Richard P (FAA) <Richard.P.Doucette@faa.gov>
Sent: Tuesday, June 6, 2023 5:36 PM
To: Steve R. Bourque <sbourque@mjinc.com>; Geoff Freeman <gfreeman@mvyairport.com>; Kate M.S. Larson <klarson@hmmh.com>; Robert C. Mentzer <rmentzer@hmmh.com>; Matthew T. O'Brien <mobrien@mjinc.com>
Cc: Quaine, Cheryl J (FAA) <Cheryl.J.Quaine@faa.gov>; Lesperance, Lisa (FAA) <lisa.lesperance@faa.gov>
Subject: RE: MVY Part 150 aviation forecasts

[EXTERNAL]
The FAA has reviewed the revised forecasts for MVY, as part of the Noise Exposure Map update now under way. The FAA finds the forecasts to be acceptable, in compliance with the Terminal Area Forecasts (TAF), and are hereby approved.

Richard P. Doucette
Environmental Protection Specialist
Federal Aviation Administration
New England Region, Airports Division

From: Steve R. Bourque <mailto:sbourque@mjinc.com>
Sent: Wednesday, May 31, 2023 10:34 AM
To: Doucette, Richard P (FAA) <mailto:Richard.P.Doucette@faa.gov>; Geoff Freeman <mailto:gfreeman@mvyairport.com>; Kate M.S. Larson <mailto:klarson@hmmh.com>; Robert C. Mentzer <mailto:rmentzer@hmmh.com>; Matthew T. O'Brien <mailto:mobrien@mjinc.com>
Cc: Quaine, Cheryl J (FAA) <mailto:Cheryl.J.Quaine@faa.gov>; Lesperance, Lisa (FAA) <mailto:lisa.lesperance@faa.gov>
Subject: RE: MVY Part 150 aviation forecasts

Good morning Richard,

We have revised the forecast based on the last TAC meeting to show a flat growth in based aircraft. Only a single helicopter is added which reflects Vineyard Wind's public comments they plan to base a helicopter at MVY.

Also, we have revised the forecast to provide for an "apples-to-apples" comparison of our forecast to the TAF. Since the TAF does not include operations when the air traffic control tower (ATCT) is closed, we have removed the tower closed scaling factors in order to compare our forecast to the TAF, which results in percentages well below ten percent through all five forecast years. At the end of the document, the ATCT closed scaling factors are added in order to provide accurate and conservative noise modeling.

I've attached the updated forecast for your review and approval. Please don't hesitate to reach out to me with any questions or comments.

Thanks,

Steve R. Bourque

Appendix D - Model Inputs

Section D.1 presents the fleet mix for noise modeling developed from the 12 months of Vector system data. Section D.2 presents the 20 model flight track figures. Section D.3 presents the nonstandard modeling memorandum submitted to FAA for modeling of the AgustaWestland AW169 helicopter, as well as the FAA response directing the methodology of the nonstandard modeling.

D.1 Modeled 2023 and 2028 Aircraft Types

Table D-1 lists the ICAO aircraft type identified in the MVY Vector system data, the associated airframe, and the representative AEDT aircraft type used in the noise modeling.

Table D-1. Modeled 2023 and 2028 Aircraft Types

Source: HMMH, 2023

Category	Engine Type	ICAO Type Designator	Airframe	AEDT Aircraft Type
Air Carrier	**Jet**	E170	Embraer ERJ170/ Embraer ERJ170-LR	EMB170
		E190	Embraer ERJ190/ Embraer ERJ190-LR	EMB190
		E75L	Embraer ERJ175-LR	EMB175
		E75S	Embraer ERJ175	EMB175
		BCS3*	Airbus A220-300*	737700
Air Taxi/ Commuter	**Jet**	BE40	Raytheon Beechjet 400	MU3001
		C25B	Cessna CitationJet CJ/CJ1 (Cessna 525)	CNA525C
		C56X	Cessna 560 Citation Excel/ Citation XLS	CNA560XL
		C680	Cessna 680 Citation Sovereign	CNA680
		C700	Cessna 700 Citation Longitude	CNA680
		C750	Cessna 750 Citation X	CNA750
		CL30	Bombardier Challenger 300	CL600
		CL35	Bombardier Challenger 350	CL600
		CL60	Bombardier Challenger 601	CL601
		CL60	Bombardier Challenger 605	CL600
		E545	Embraer Praetor 500	CNA750
		E55P	Embraer Phenom 300 (EMB-505)	CNA55B
		F2TH	Dassault Falcon 2000	CNA750
		F900	Dassault Falcon 900-LX	FAL900EX
		GLEX	Bombardier Global 6000/ Global Express	BD-700-1A10
		GLF4	Gulfstream G400/ Gulfstream IV-SP	GIV
		PC24	Pilatus PC-24	CNA55B
	Non-Jet	B350	Raytheon Super King Air 300	DHC6

Category	Engine Type	ICAO Type Designator	Airframe	AEDT Aircraft Type
		BE20	Raytheon C-12 Huron	DHC6
		C208	Cessna 208 Caravan	CNA208
		C402	Cessna 402	BEC58P
		P212	Tecnam P2012 Traveller	BEC58P
		PC12	Pilatus PC-12	CNA208
		SR22	Cirrus SR22 Turbo (FAS)	COMSEP
		TBM9	DAHER TBM 900/930	CNA208
General Aviation	**Jet**	BE40	Raytheon Beechjet 400	MU3001
		C560	Cessna 560 Citation V	CNA560U
		C56X	Cessna 560 Citation XLS	CNA560XL
		F2TH	Dassault Falcon 2000	CNA750
		F900	Dassault Falcon 900-LX	FAL900EX
		G280	Gulfstream G280	CL601
		GLEX	Bombardier Global Express	BD-700-1A10
		GLF4	Gulfstream G400	GIV
		GLF5	Gulfstream G-5, 5/G-5SP, or G500	GV
		H25B	Raytheon Hawker 800	LEAR35
	Non-Jet	BE36	Raytheon Beech Bonanza 36	GASEPV
		BE58	Raytheon Beech Baron 58	BEC58P
		C172	Cessna 172 Skyhawk	CNA172
		C182	Cessna 182	CNA182
		C210	Cessna 210 Centurion	GASEPV
		C414	Cessna 414	BEC58P
		CH7B	American Champion Cibrata (FAS)	CNA172
		M20P	Mooney M20-K	GASEPV
		P28A	Piper PA-28 Cherokee Series	GASEPF
		P28R	Piper PA-28 Cherokee Series	GASEPF
		P32R	Piper PA-32 Cherokee Six	GASEPV
		PA31	Piper PA-31 Navajo	BEC58P
		PA32	Piper PA-32 Cherokee Six	GASEPV
		PA34	Piper PA-34 Seneca	BEC58P
		PA46	Piper PA46 Malibu (FAS)	GASEPV
		SR20	Cirrus SR20	COMSEP
		SR22	Cirrus SR22 Turbo (FAS)	COMSEP
		BE20	Raytheon C-12 Huron	DHC6

Category	Engine Type	ICAO Type Designator	Airframe	AEDT Aircraft Type
		BE9L	Raytheon King Air 90	DHC6
		C208	Cessna 208 Caravan	CNA208
		PC12	Pilatus PC-12	CNA208
		TBM7	EADS Socata TBM-700	CNA208
		TBM8	SOCATA TBM 850	CNA441
		TBM9	DAHER TBM 900/930	CNA208
	Helicopter	A139	Kaman SH-2 Seasprite	SA330J
		B06	Bell 206 JetRanger	B206L
		EC45	Bell 429	B429
		R44	Robinson R44 Raven / Lycoming O-540-F1B5	R44
		S76	Sikorsky S-76 Spirit	S76
		B430**	Bell 430	B430
Military	**Jet**	C17	C17 – Boeing Globemaster 3	C17
	Non-Jet	BE20	Raytheon C-12 Huron	DHC6
		CN35	CASA CN-235-300	SF340
	Helicopter	BK17	Bell 429	B429
		EC45	Bell 429	B429
		H60	Sikorsky UH-60 Black Hawk	S70

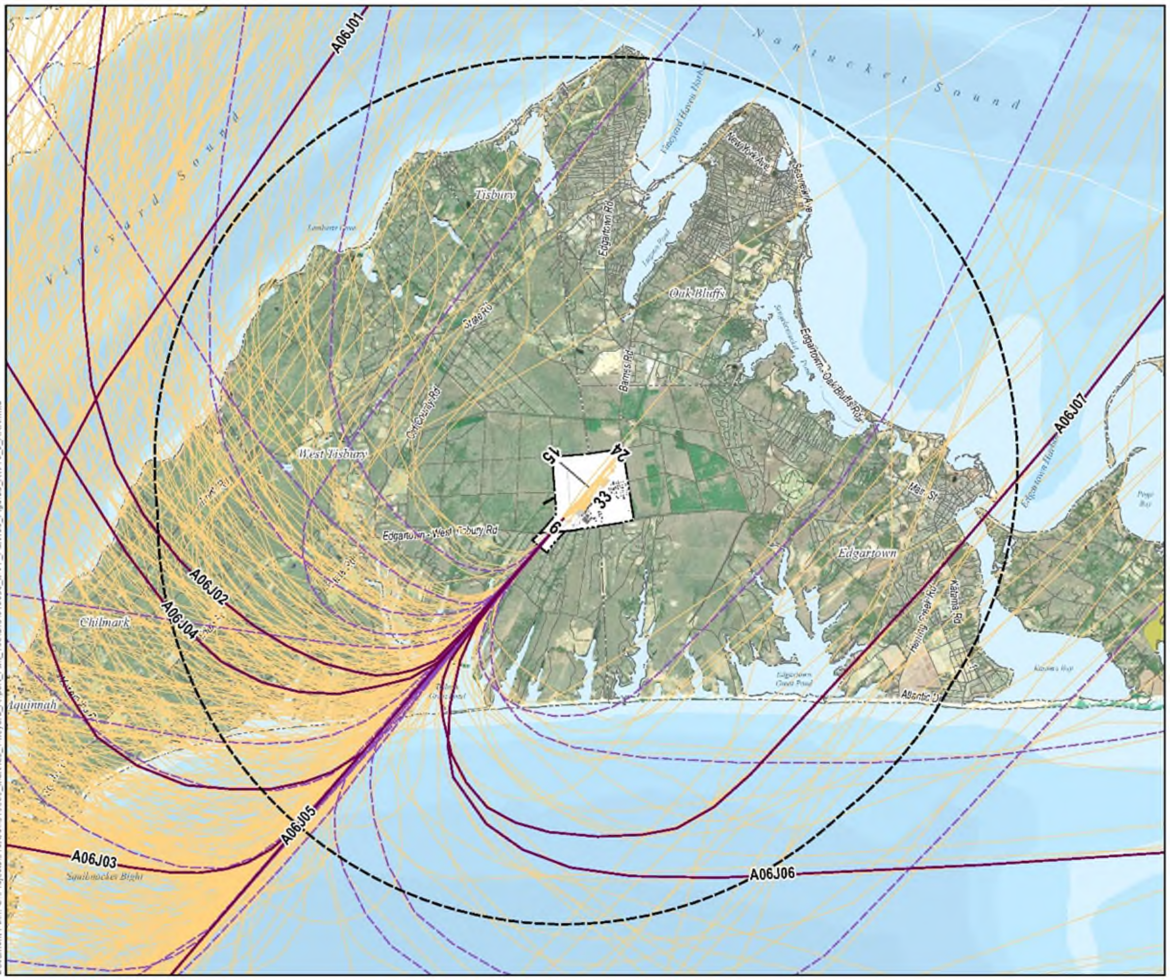
*BCS3 will only be included in the 2028 forecast modeling

**FAA-approved noise modeling substitution for the A169 helicopter

D.2 Model Track Figures

Figures D.1 through D.20 display all of the model flight tracks and include tables of track usage percents. The tables show the level of detail used in the model development, with some tracks having less than one percent of operations per runway assignment to represent relatively rare tracks. The relative ratios of model flight track usage reflect the ratios observed in the year-long radar dataset. Figures D.1 through D.14 show arrival and departure operations by fixed-wing aircraft. Local circuit pattern tracks flown by fixed-wing aircraft are presented in Figure D.15 through Figure D.18.

Helicopter flight tracks were analyzed separately from the fixed-wing flight tracks. Figure D.19 and Figure D.20 present the helicopter arrivals and departures, respectively. The set of identified helicopter flight tracks and aircraft identification data were divided into nine arrival groups and seven departure groups, in a process similar to the fixed-wing model track development.



MVY AIRPORT
MARTHA'S VINEYARD

Figure:
Jet Arrival Flight Tracks, Runway 6

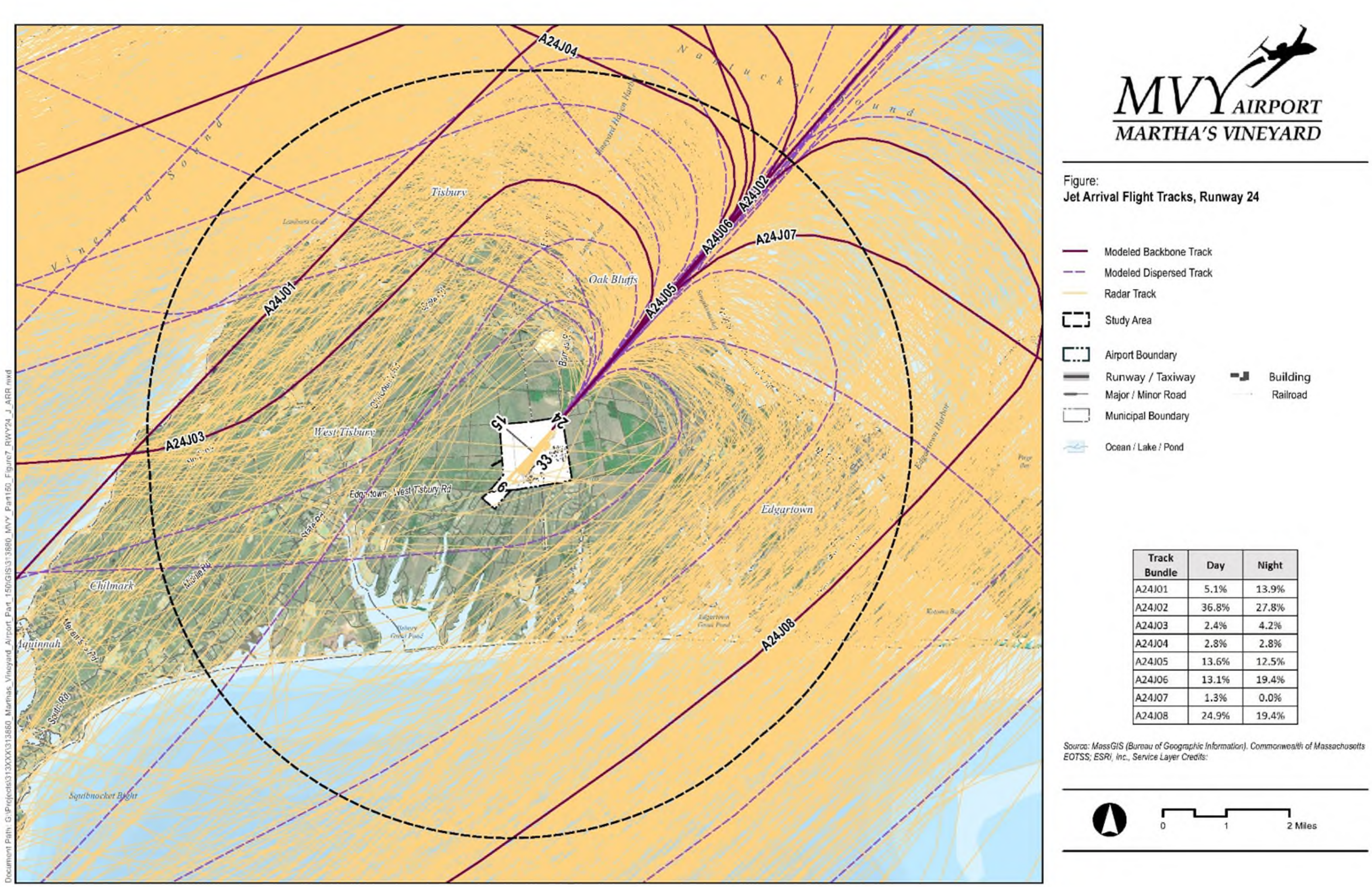
- Modeled Backbone Track
- Modeled Dispersed Track
- Radar Track
- Study Area
- Airport Boundary
- Runway / Taxiway
- Major / Minor Road
- Municipal Boundary
- Ocean / Lake / Pond
- Building
- Railroad

Track Bundle	Day	Night
A06J01	4.8%	8.7%
A06J02	12.4%	0.0%
A06J03	25.5%	21.7%
A06J04	2.1%	0.0%
A06J05	52.6%	69.6%
A06J06	1.1%	0.0%
A06J07	1.5%	0.0%

Source: MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS: ESRI, Inc., Service Layer Credits:

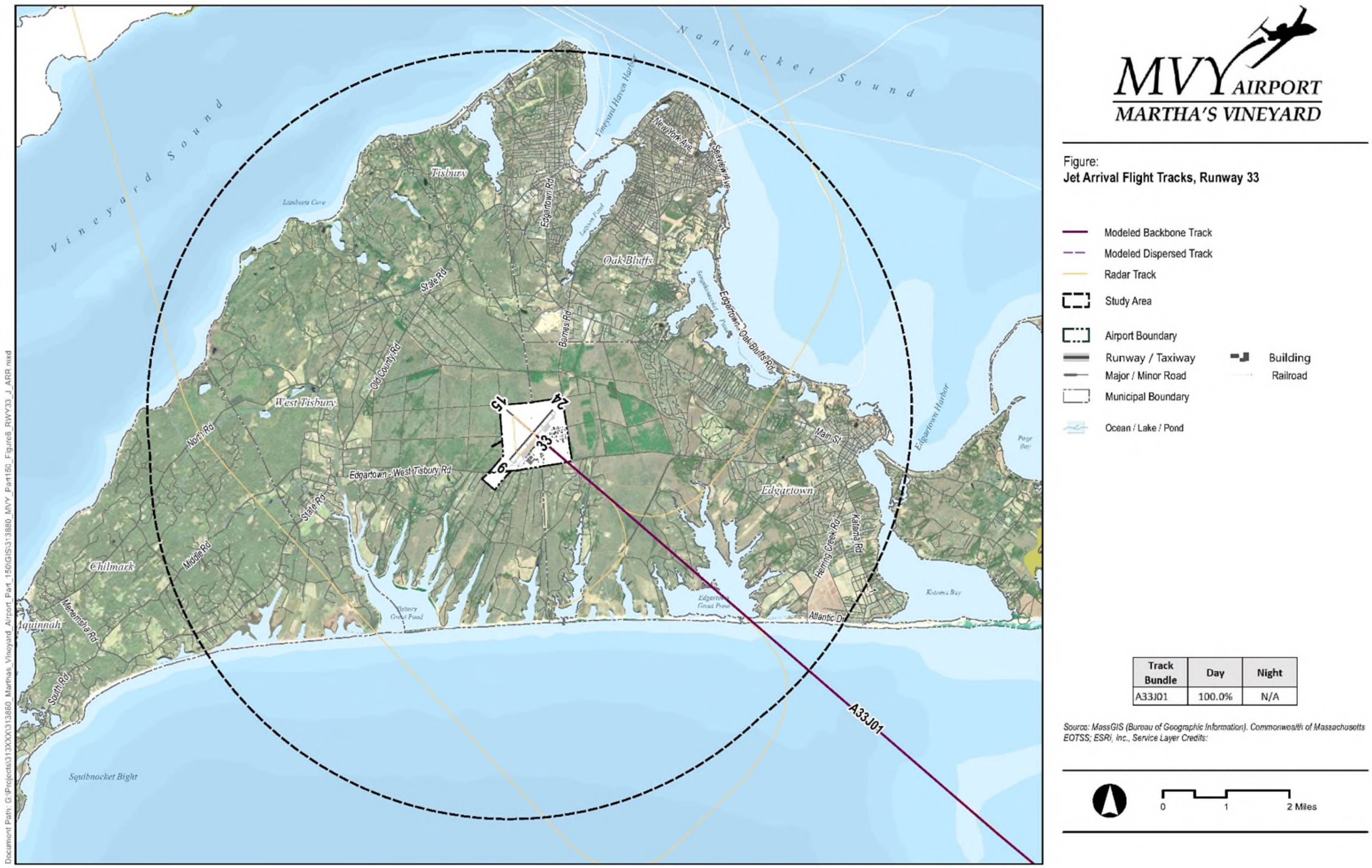
0 1 2 Miles

Figure D-1. Jet Arrival Flight Tracks, Runway 6



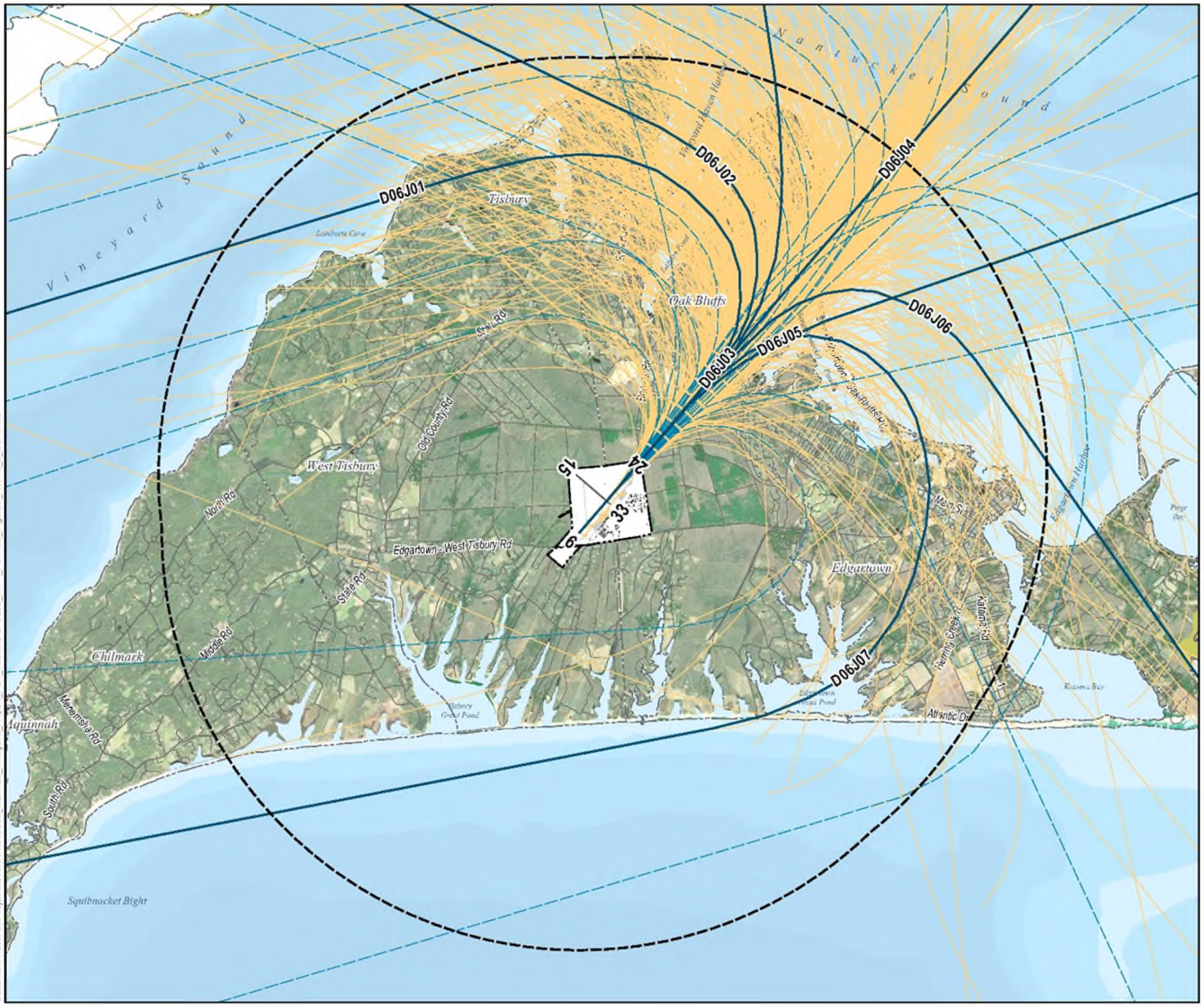
Track Bundle	Day	Night
A24J01	5.1%	13.9%
A24J02	36.8%	27.8%
A24J03	2.4%	4.2%
A24J04	2.8%	2.8%
A24J05	13.6%	12.5%
A24J06	13.1%	19.4%
A24J07	1.3%	0.0%
A24J08	24.9%	19.4%

Figure D-2. Jet Arrival Flight Tracks, Runway 24



Track Bundle	Day	Night
A33J01	100.0%	N/A

Figure D-3. Jet Arrival Flight Tracks, Runway 33



MVY AIRPORT
MARTHA'S VINEYARD

Figure:
Jet Departure Flight Tracks, Runway 6

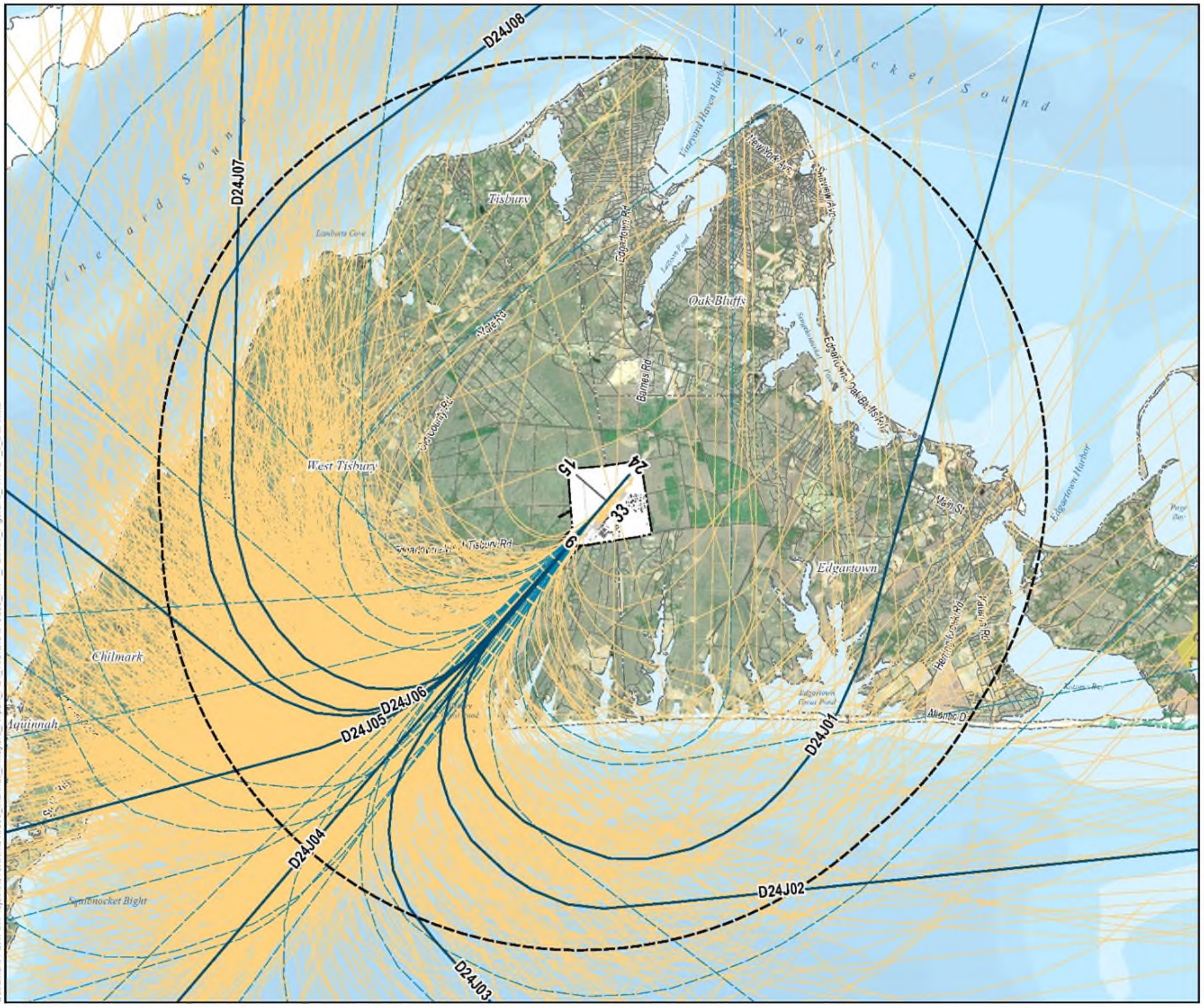
Modeled Backbone Track
Modeled Dispersed Track
Radar Track
Study Area
Airport Boundary
Runway / Taxiway
Major / Minor Road
Municipal Boundary
Ocean / Lake / Pond
Building
Railroad

Track Bundle	Day	Night
D06J01	9.7%	17.6%
D06J02	30.3%	5.9%
D06J03	24.3%	23.5%
D06J04	23.3%	52.9%
D06J05	2.7%	0.0%
D06J06	6.4%	0.0%
D06J07	3.2%	0.0%

Source: MassGIS (Bureau of Geographic Information). Commonwealth of Massachusetts EOTSS; ESRI, Inc., Service Layer Credits:

0 1 2 Miles

Figure D-4. Jet Departure Flight Tracks, Runway 6



MVY AIRPORT
MARTHA'S VINEYARD

Figure:
Jet Departure Flight Tracks, Runway 24

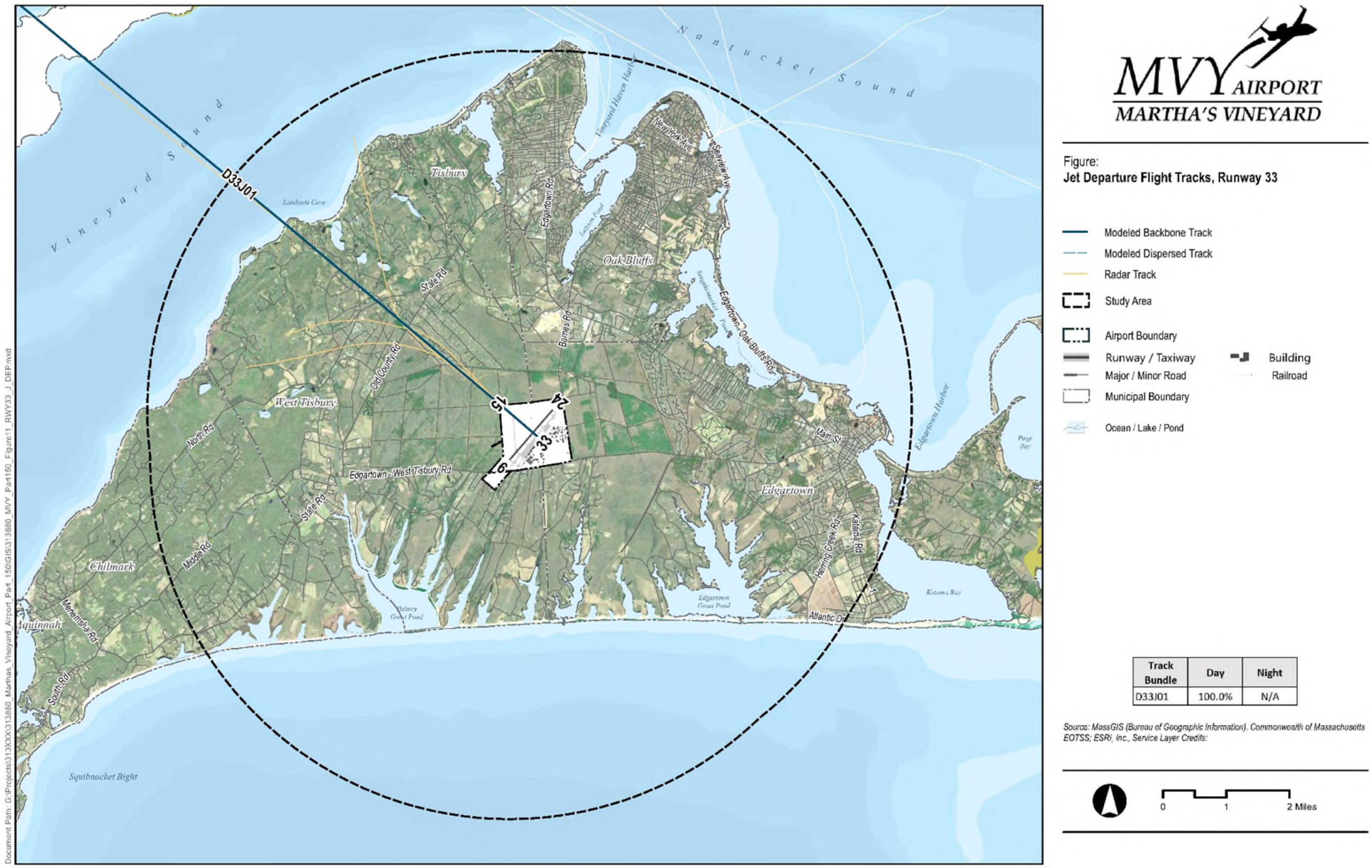
Modeled Backbone Track
Modeled Dispersed Track
Radar Track
Study Area
Airport Boundary
Runway / Taxiway
Major / Minor Road
Municipal Boundary
Ocean / Lake / Pond
Building
Railroad

Track Bundle	Day	Night
D24J01	6.6%	6.3%
D24J02	2.9%	0.0%
D24J03	4.2%	0.0%
D24J04	17.5%	22.9%
D24J05	28.0%	31.3%
D24J06	26.2%	29.2%
D24J07	12.4%	6.3%
D24J08	2.3%	4.2%

Source: MassGIS (Bureau of Geographic Information). Commonwealth of Massachusetts EOTSS; ESRI, Inc., Service Layer Credits:

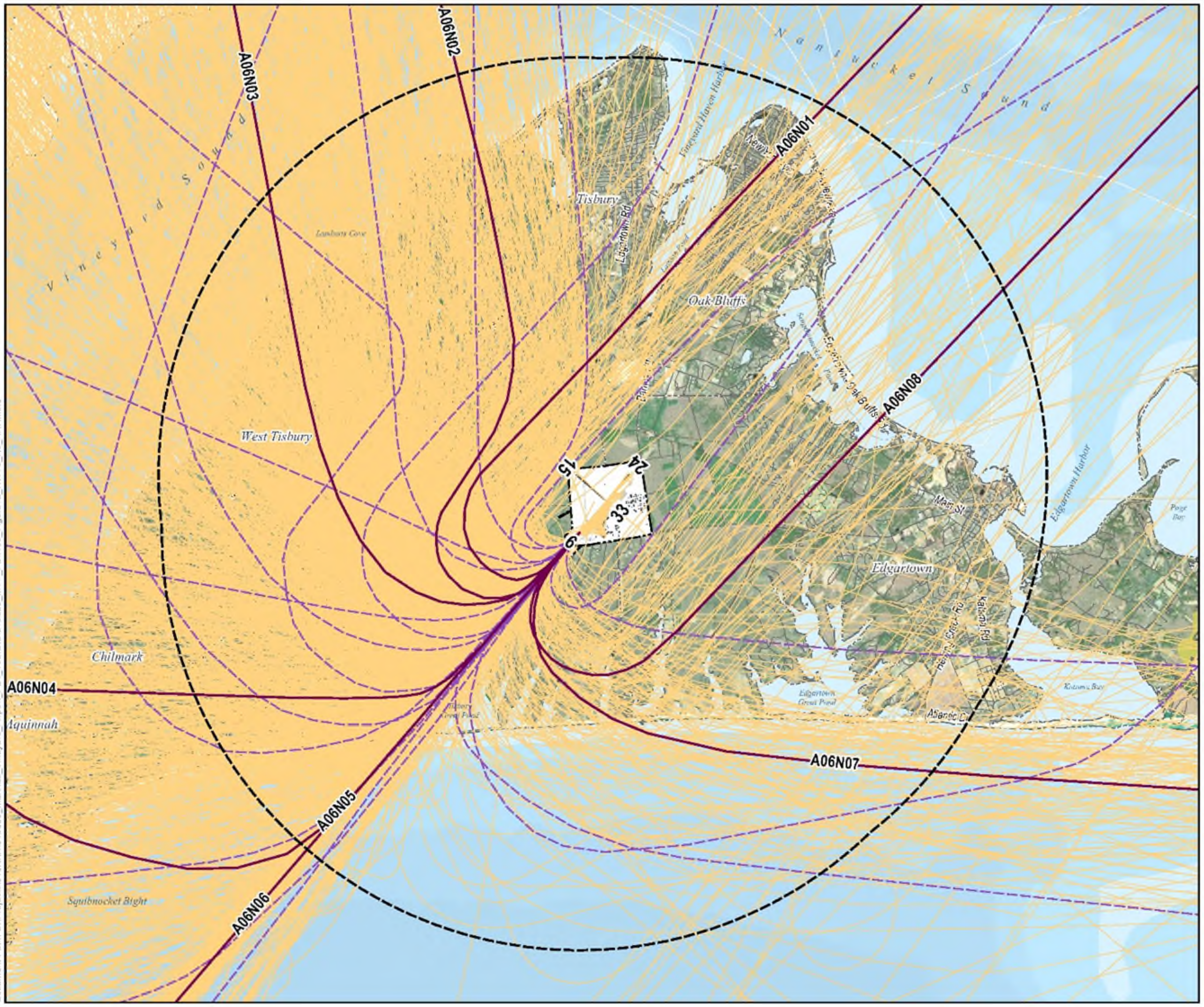
0 1 2 Miles

Figure D-5. Jet Departure Flight Tracks, Runway 24



Track Bundle	Day	Night
D33J01	100.0%	N/A

Figure D-6. Jet Departure Flight Tracks, Runway 33

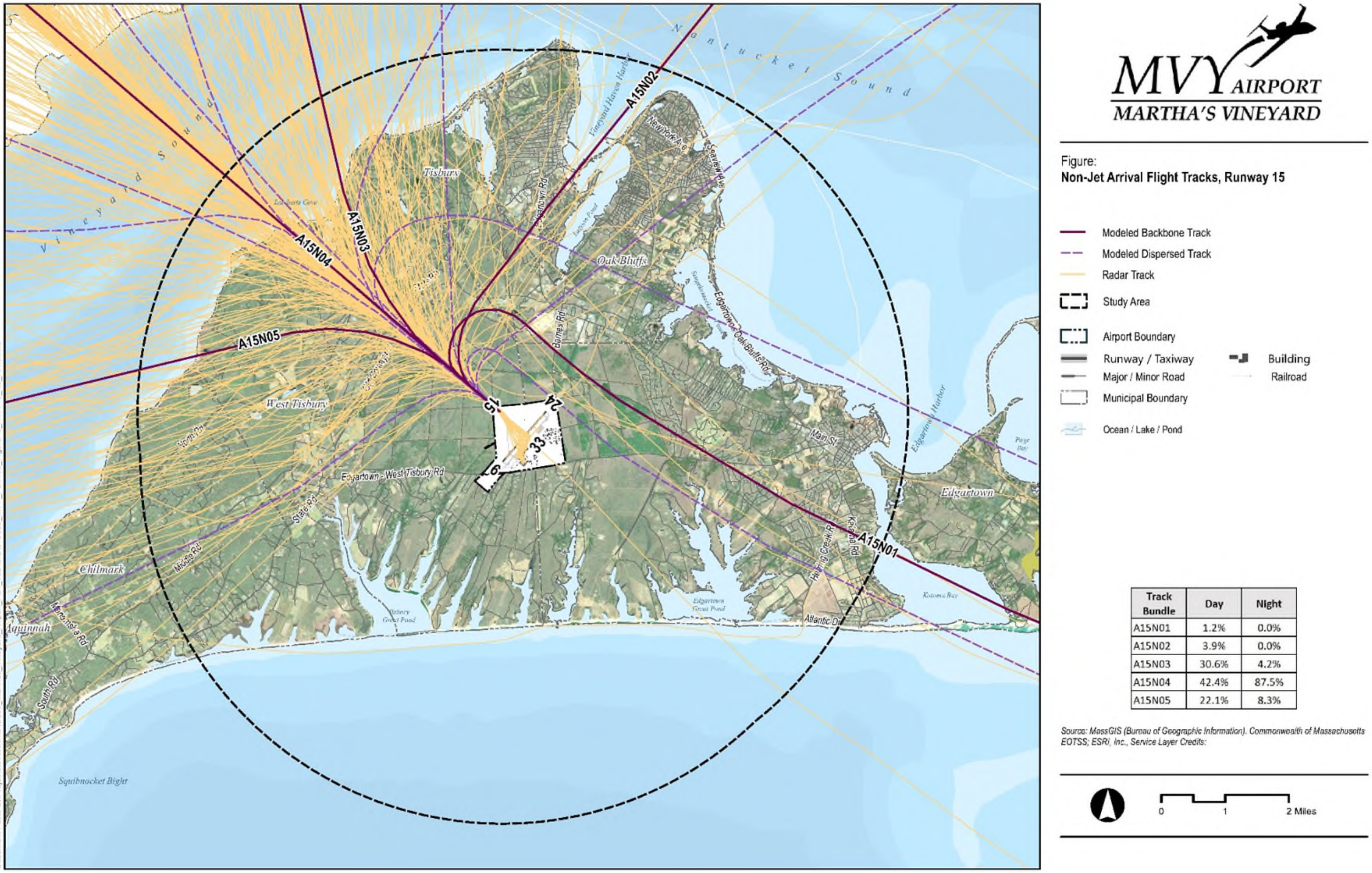


Track Bundle	Day	Night
A06N01	2.8%	13.5%
A06N02	8.2%	1.9%
A06N03	31.3%	30.8%
A06N04	27.0%	21.2%
A06N05	1.8%	0.0%
A06N06	22.6%	25.0%
A06N07	4.2%	0.0%
A06N08	2.2%	7.7%

Source: MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS; ESRI, Inc., Service Layer Credits:

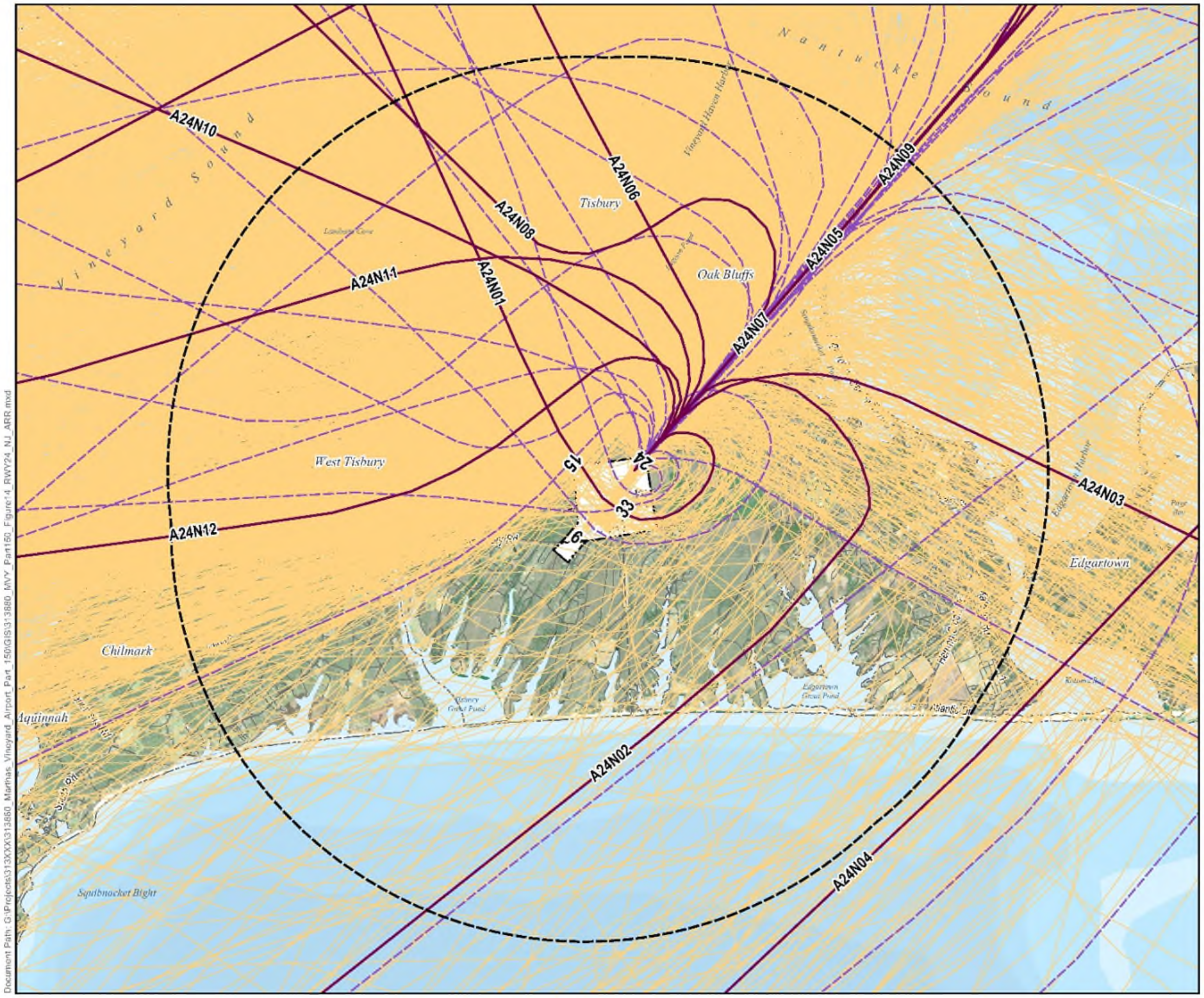
Document Path: G:\Projects\313XXX\313880_Marthas_Vineyard_Airport_Part_150\GIS\313880_MVY_Part150_Figure12_RWY6_NJ_ARR.mxd

Figure D-7. Non-Jet Arrival Flight Tracks, Runway 6



Track Bundle	Day	Night
A15N01	1.2%	0.0%
A15N02	3.9%	0.0%
A15N03	30.6%	4.2%
A15N04	42.4%	87.5%
A15N05	22.1%	8.3%

Figure D-8. Non-Jet Arrival Flight Tracks, Runway 15



MVY AIRPORT MARTHA'S VINEYARD

Figure:
Non-Jet Arrival Flight Tracks, Runway 24

Modeled Backbone Track
Modeled Dispersed Track
Radar Track
Study Area
Airport Boundary
Runway / Taxiway
Major / Minor Road
Municipal Boundary
Ocean / Lake / Pond
Building
Railroad

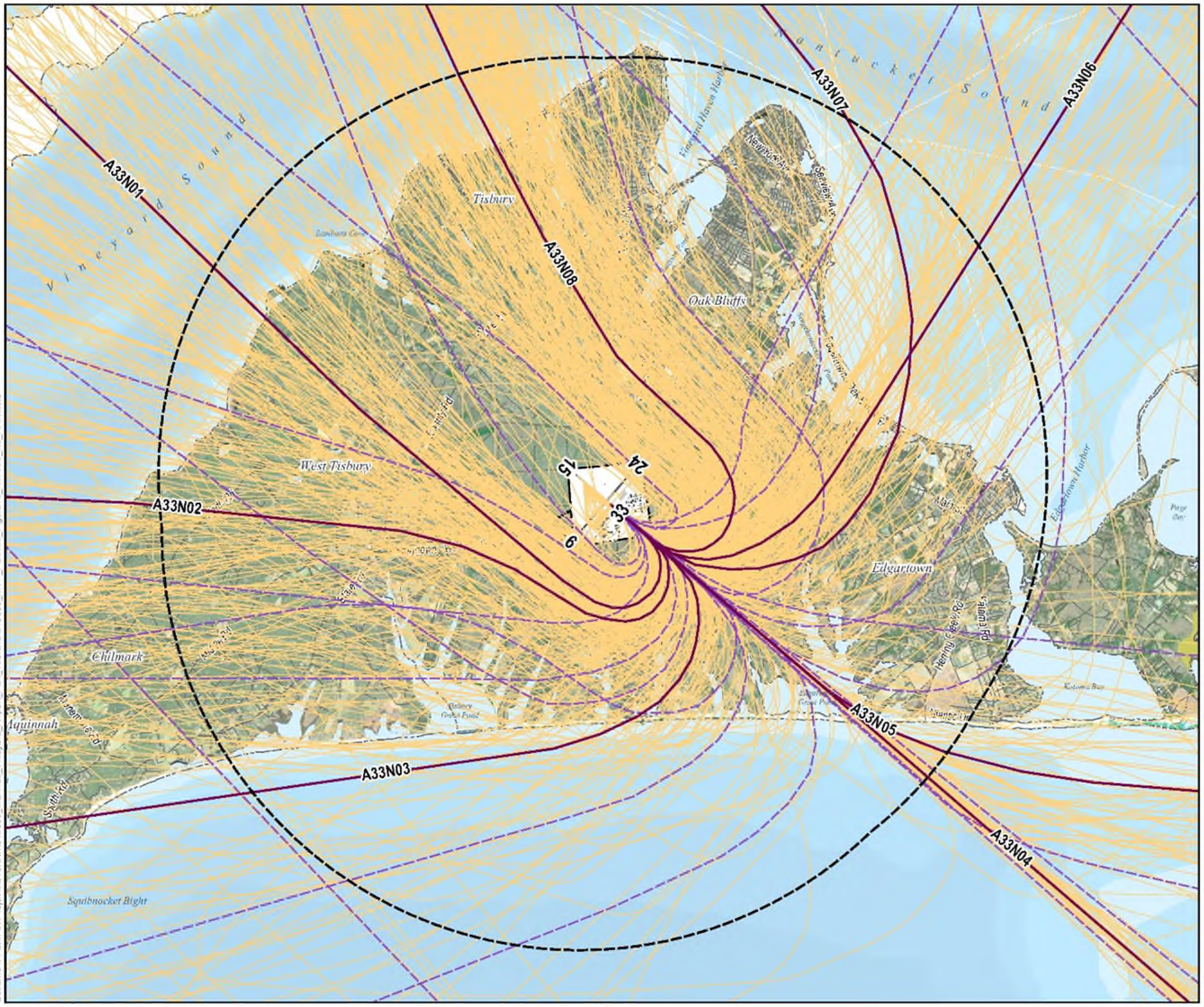
Track Bundle	Day	Night
A24N01	0.3%	1.0%
A24N02	1.5%	4.4%
A24N03	3.8%	2.4%
A24N04	1.4%	0.5%
A24N05	12.8%	41.7%
A24N06	32.3%	11.2%
A24N07	5.3%	4.4%
A24N08	2.2%	0.5%
A24N09	7.0%	11.2%
A24N10	9.2%	5.3%
A24N11	10.0%	7.8%
A24N12	14.2%	9.7%

Source: MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS; ESRI, Inc., Service Layer Credits:

0 1 2 Miles

Figure D-9. Non-Jet Arrival Flight Tracks, Runway 24

Document Path: G:\Projects\313XXX\313860_Marthas_Vineyard_Airport_Part_150\GIS\313860_MVY_Part150_Figure15_RWY33_NJ_ARR.mxd



MVY AIRPORT
MARTHA'S VINEYARD

Figure:
Non-Jet Arrival Flight Tracks, Runway 33

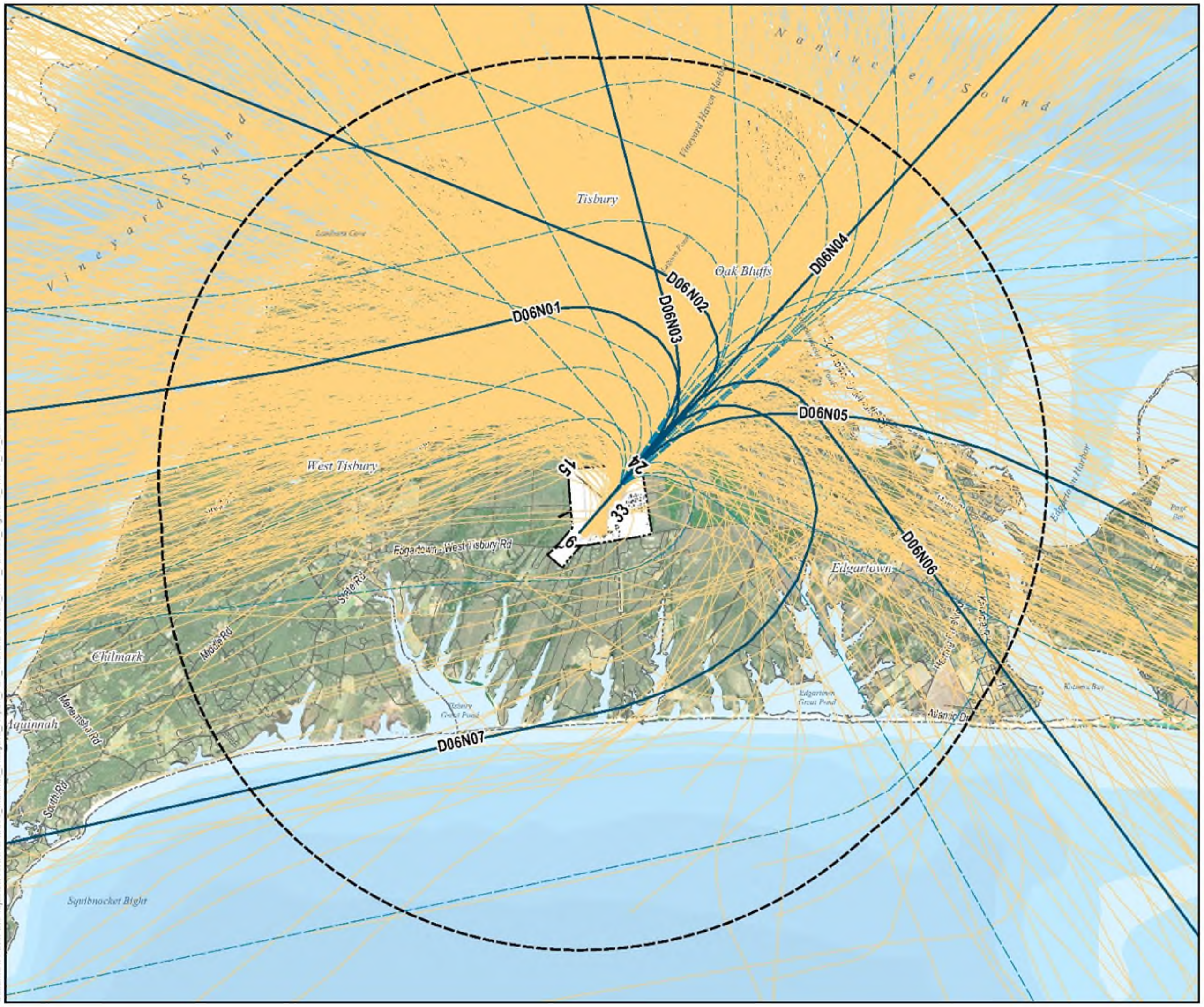
- Modeled Backbone Track
- Modeled Dispersed Track
- Radar Track
- Study Area
- Airport Boundary
- Runway / Taxiway
- Major / Minor Road
- Municipal Boundary
- Ocean / Lake / Pond
- Building
- Railroad

Track Bundle	Day	Night
A33N01	13.0%	18.2%
A33N02	12.1%	0.0%
A33N03	11.2%	9.1%
A33N04	5.0%	0.0%
A33N05	7.5%	0.0%
A33N06	9.1%	63.6%
A33N07	6.0%	0.0%
A33N08	36.1%	9.1%

Source: MassGIS (Bureau of Geographic Information). Commonwealth of Massachusetts EOTSS; ESRI, Inc., Service Layer Credits:

0 1 2 Miles

Figure D-10. Non-Jet Arrival Flight Tracks, Runway 33



MVY AIRPORT
MARTHA'S VINEYARD

Figure:
Non-Jet Departure Flight Tracks, Runway 6

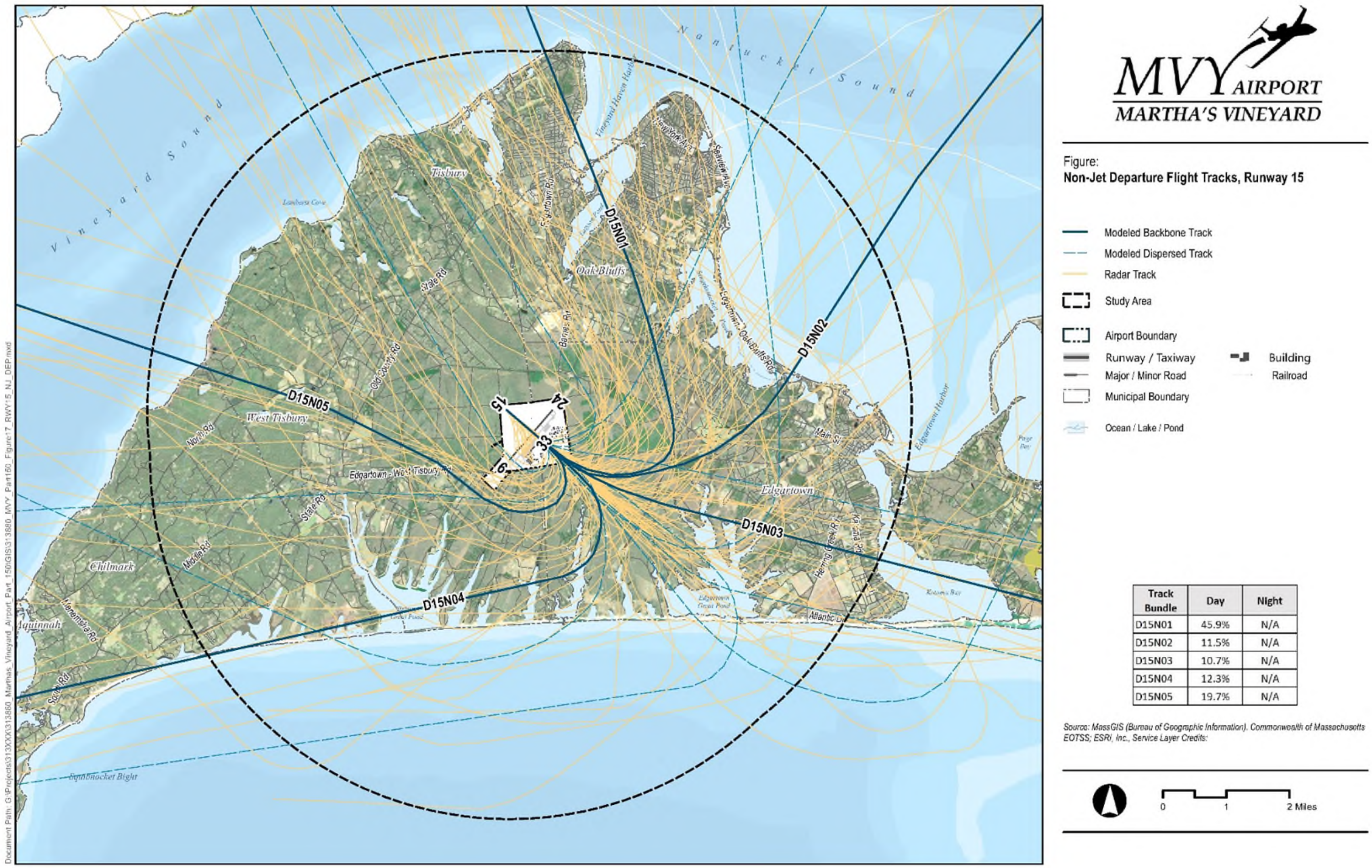
Modeled Backbone Track
Modeled Dispersed Track
Radar Track
Study Area
Airport Boundary
Runway / Taxiway
Major / Minor Road
Municipal Boundary
Ocean / Lake / Pond
Building
Railroad

Track Bundle	Day	Night
D06N01	21.3%	11.8%
D06N02	12.3%	11.8%
D06N03	49.5%	61.8%
D06N04	8.8%	6.6%
D06N05	5.2%	5.3%
D06N06	1.5%	1.3%
D06N07	1.4%	1.3%

Source: MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS; ESRI, Inc., Service Layer Credits:

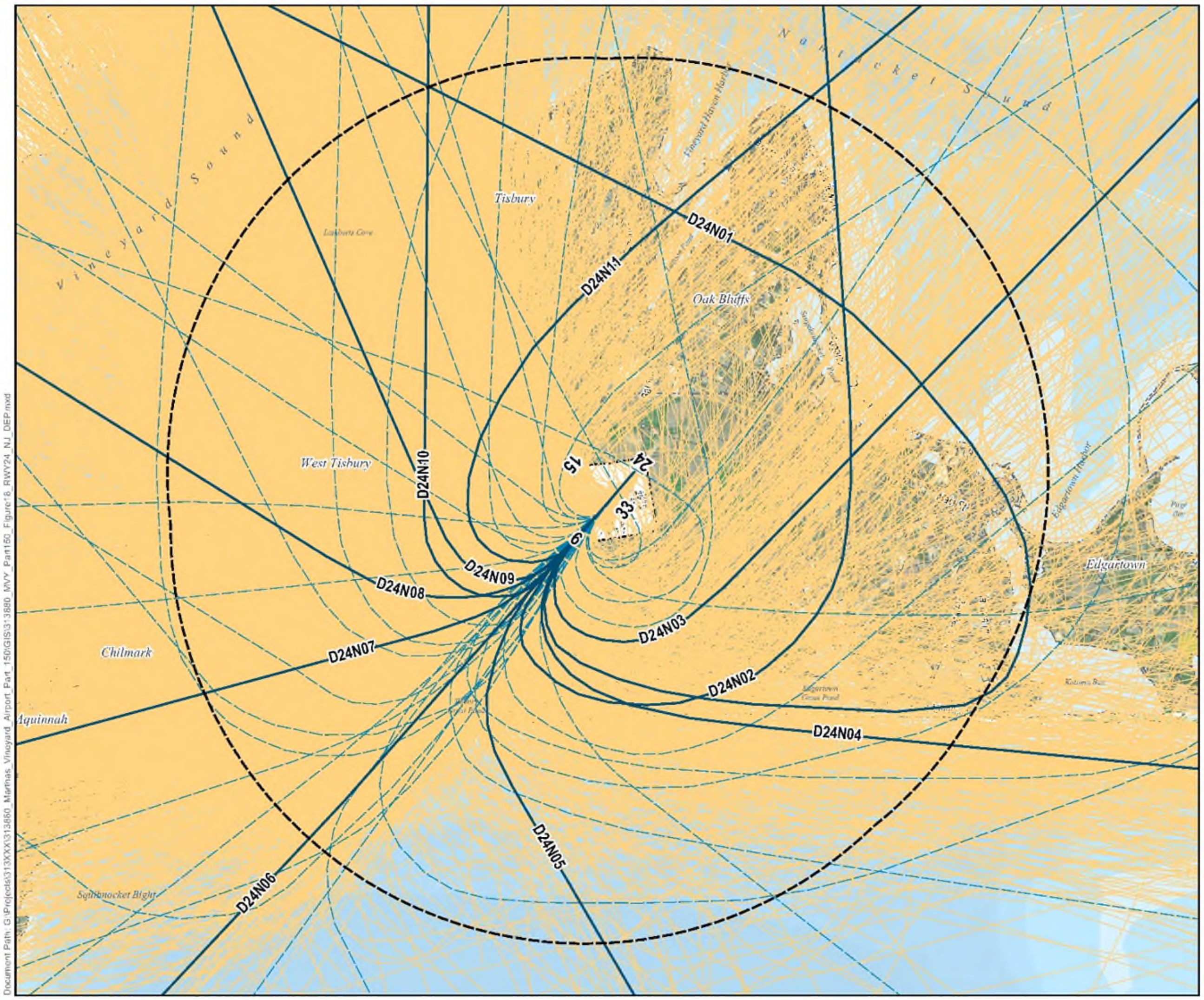
0 1 2 Miles

Figure D-11. Non-Jet Departure Flight Tracks, Runway 6



Track Bundle	Day	Night
D15N01	45.9%	N/A
D15N02	11.5%	N/A
D15N03	10.7%	N/A
D15N04	12.3%	N/A
D15N05	19.7%	N/A

Figure D-12. Non-Jet Departure Flight Tracks, Runway 15



MVY AIRPORT
MARTHA'S VINEYARD

Figure:
Non-Jet Departure Flight Tracks, Runway 24

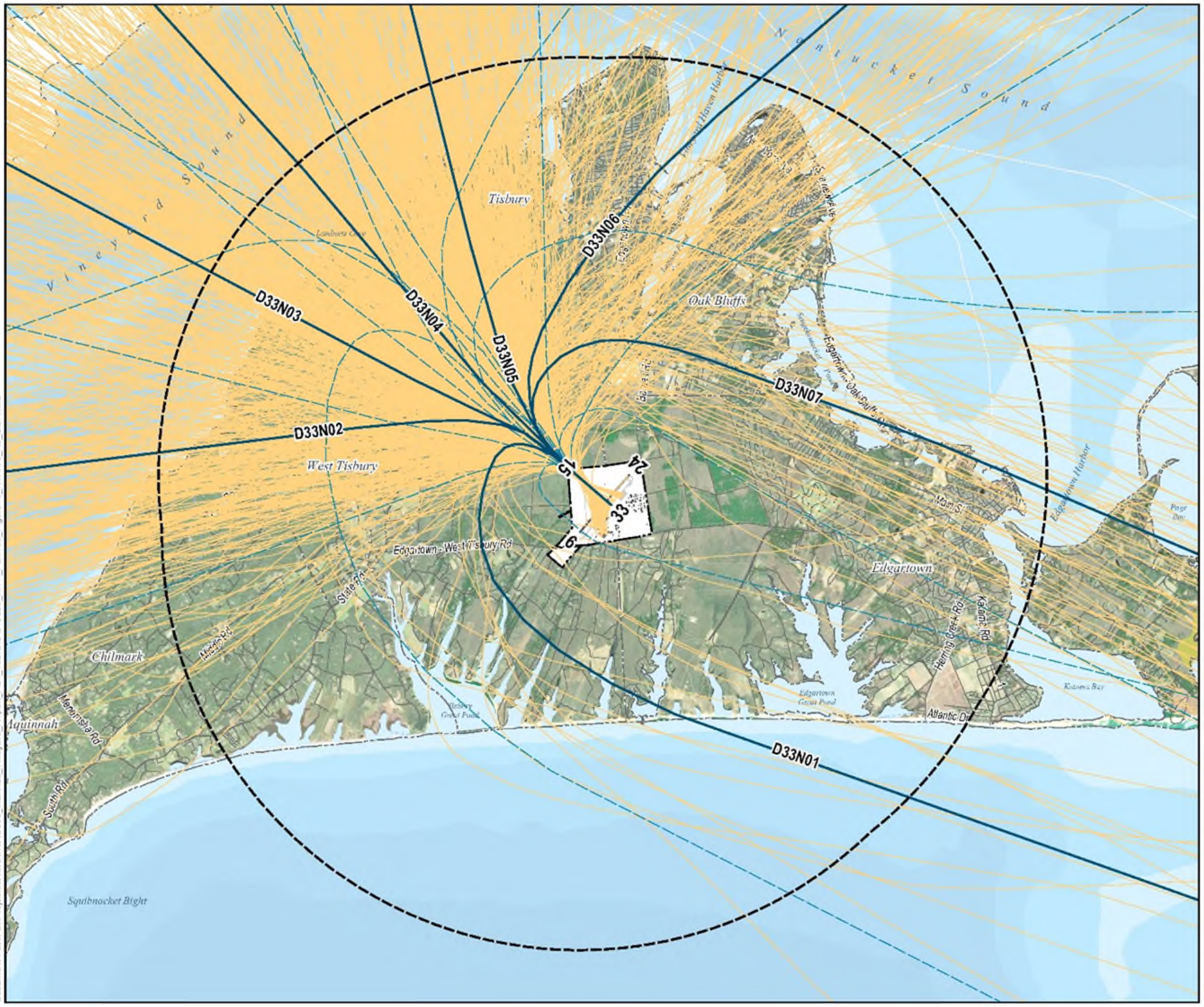
Modeled Backbone Track
Modeled Dispersed Track
Radar Track
Study Area
Airport Boundary
Runway / Taxiway
Major / Minor Road
Municipal Boundary
Ocean / Lake / Pond
Building
Railroad

Track Bundle	Day	Night
D24N01	0.5%	0.0%
D24N02	2.7%	1.6%
D24N03	3.5%	2.1%
D24N04	5.0%	1.6%
D24N05	0.7%	0.0%
D24N06	0.6%	0.5%
D24N07	28.0%	45.3%
D24N08	14.2%	9.5%
D24N09	26.4%	28.9%
D24N10	15.4%	9.5%
D24N11	3.0%	1.1%

Source: MassGIS (Bureau of Geographic Information). Commonwealth of Massachusetts EOTSS; ESRI, Inc., Service Layer Credits:

0 1 2 Miles

Figure D-13. Non-Jet Departure Flight Tracks, Runway 24



MVY AIRPORT
MARTHA'S VINEYARD

Figure:
Non-Jet Departure Flight Tracks, Runway 33

- Modeled Backbone Track
- Modeled Dispersed Track
- Radar Track
- Study Area
- Airport Boundary
- Runway / Taxiway
- Major / Minor Road
- Municipal Boundary
- Ocean / Lake / Pond
- Building
- Railroad

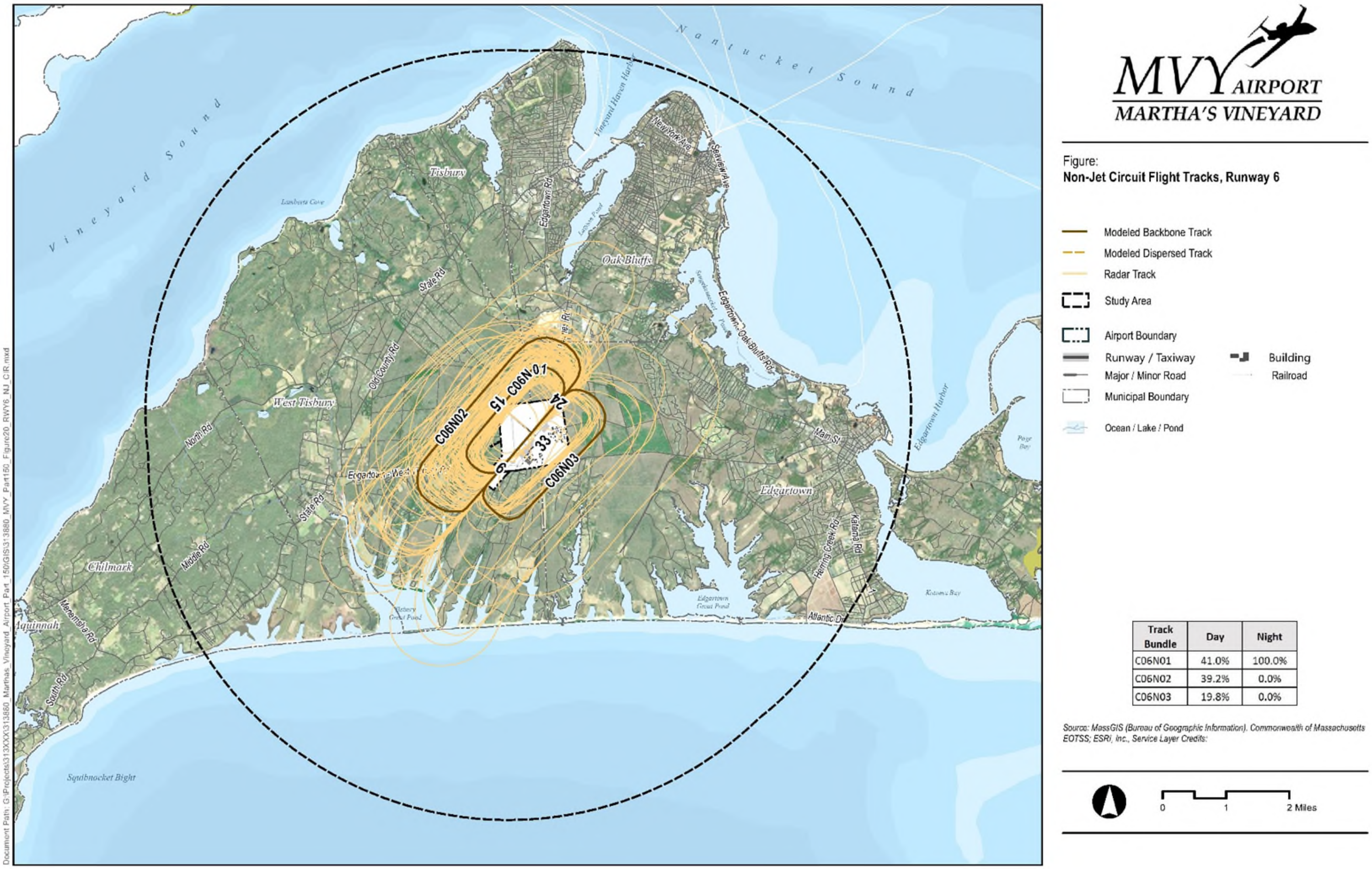
Track Bundle	Day	Night
D33N01	0.9%	0.0%
D33N02	20.1%	37.5%
D33N03	19.4%	25.0%
D33N04	15.0%	3.1%
D33N05	32.6%	25.0%
D33N06	8.5%	6.3%
D33N07	3.5%	3.1%

Source: MassGIS (Bureau of Geographic Information). Commonwealth of Massachusetts EOTSS; ESRI, Inc., Service Layer Credits:

0 1 2 Miles

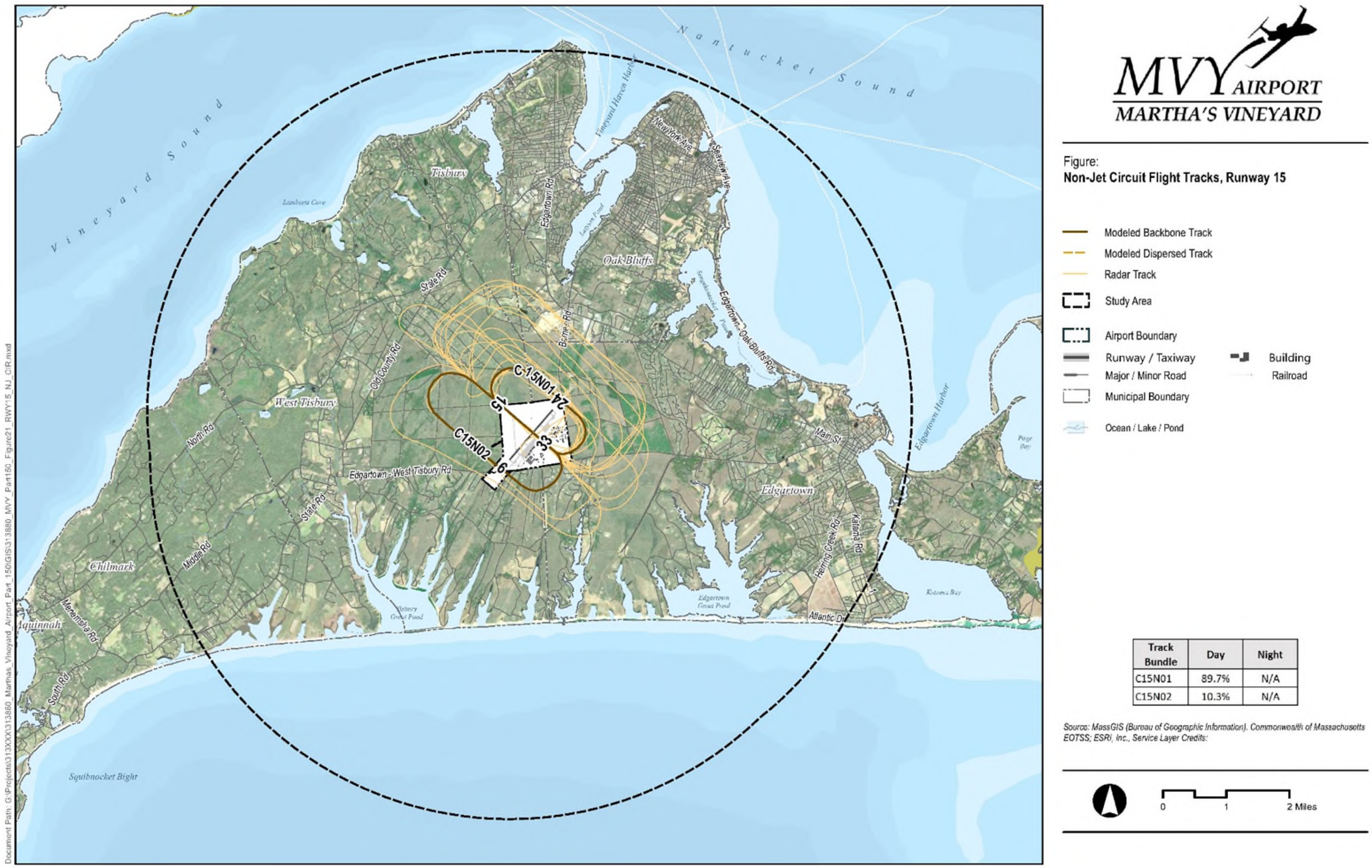
Document Path: G:\Projects\313XXX\313680_Marthas_Vineyard_Airport_Part_150\GIS\313680_MVY_Part150_Figure19_RWY33_NJ_DEP.mxd

Figure D-14. Non-Jet Departure Flight Tracks, Runway 33



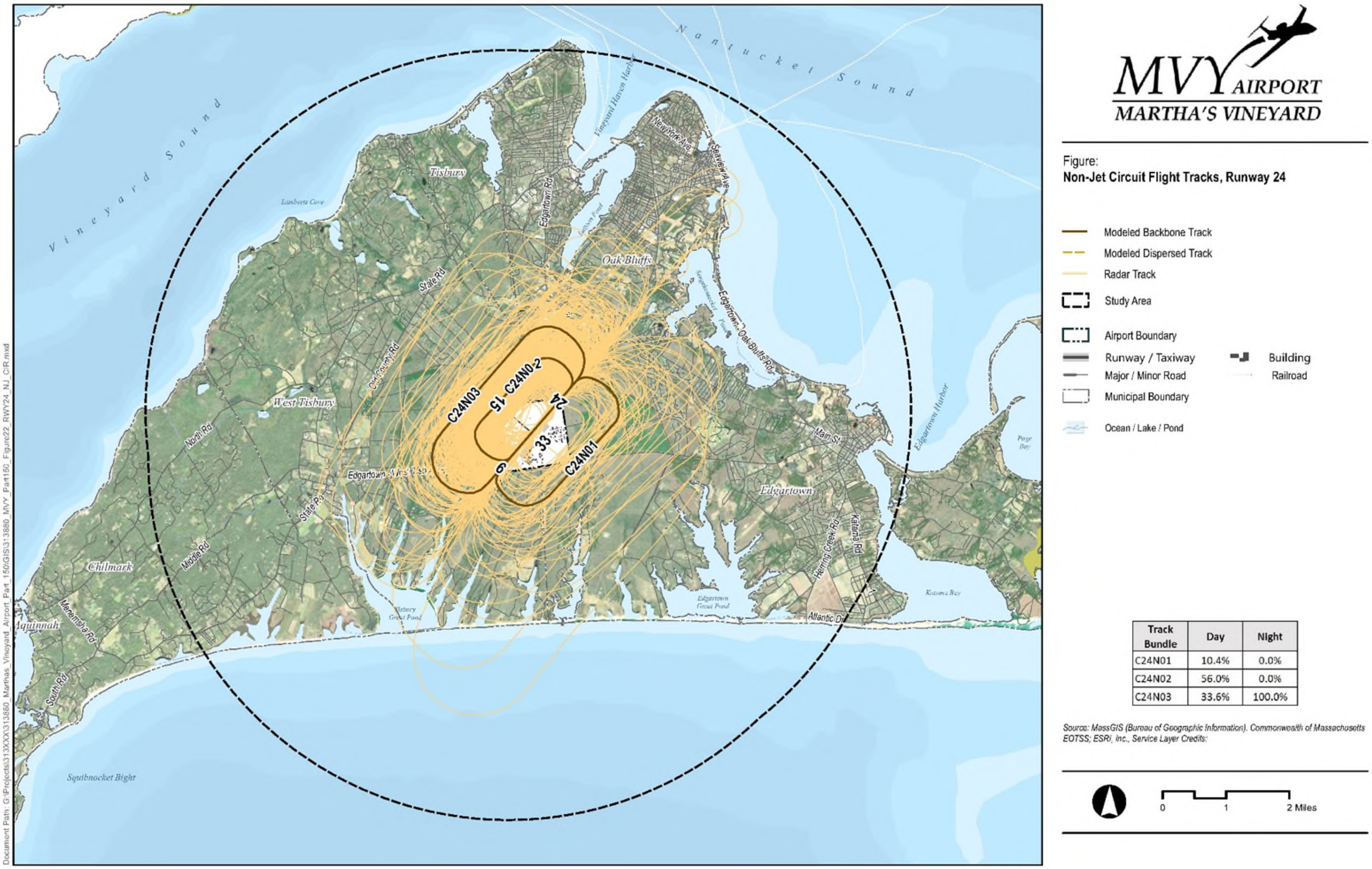
Track Bundle	Day	Night
C06N01	41.0%	100.0%
C06N02	39.2%	0.0%
C06N03	19.8%	0.0%

Figure D-15. Non-Jet Circuit Flight Tracks, Runway 6



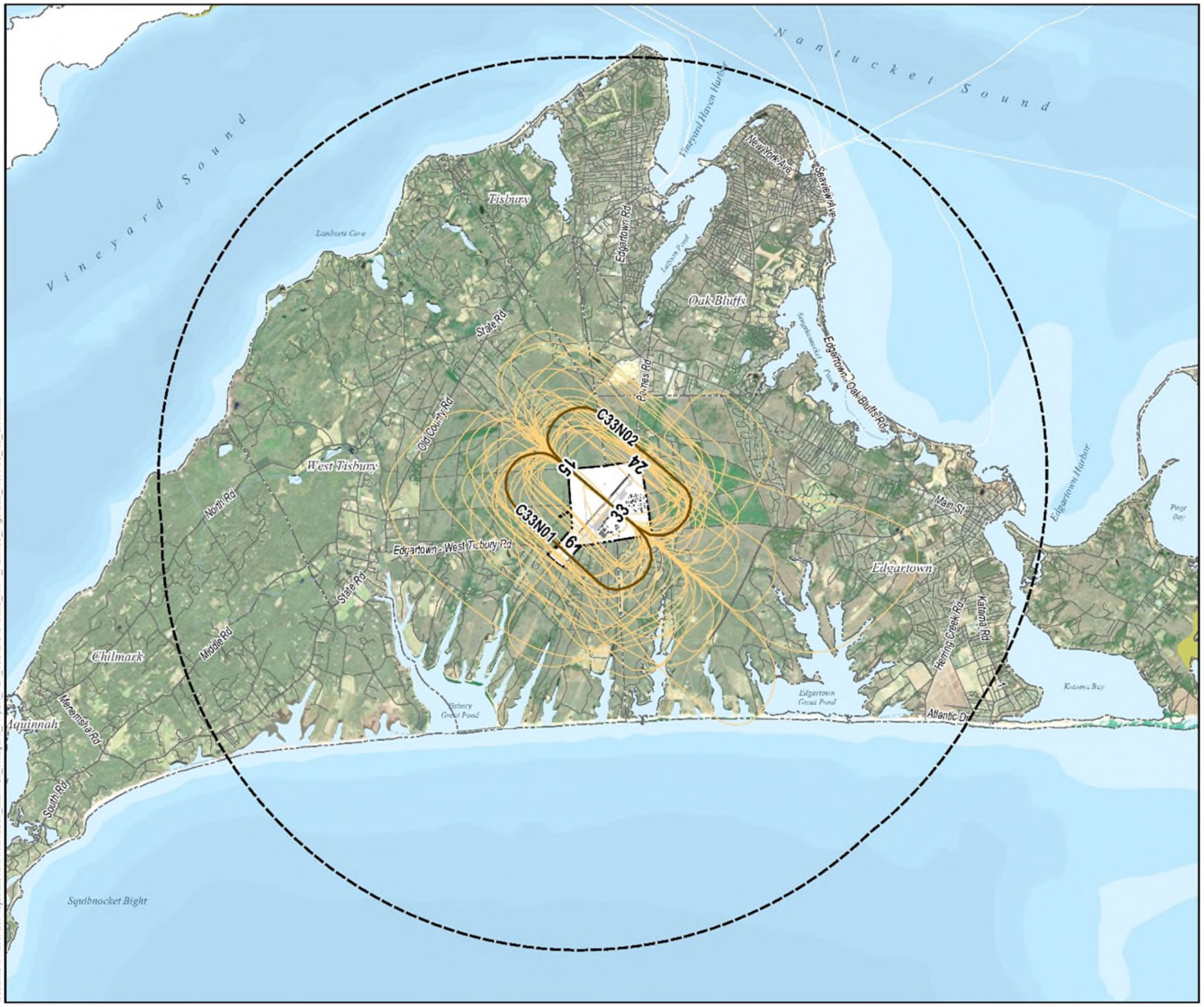
Track Bundle	Day	Night
C15N01	89.7%	N/A
C15N02	10.3%	N/A

Figure D-16. Non-Jet Circuit Flight Tracks, Runway 15



Track Bundle	Day	Night
C24N01	10.4%	0.0%
C24N02	56.0%	0.0%
C24N03	33.6%	100.0%

Figure D-17. Non-Jet Circuit Flight Tracks, Runway 24



MVY AIRPORT
MARTHA'S VINEYARD

Figure:
Non-Jet Circuit Flight Tracks, Runway 33

Modeled Backbone Track
Modeled Dispersed Track
Radar Track
Study Area
Airport Boundary
Runway / Taxiway
Major / Minor Road
Municipal Boundary
Ocean / Lake / Pond
Building
Railroad

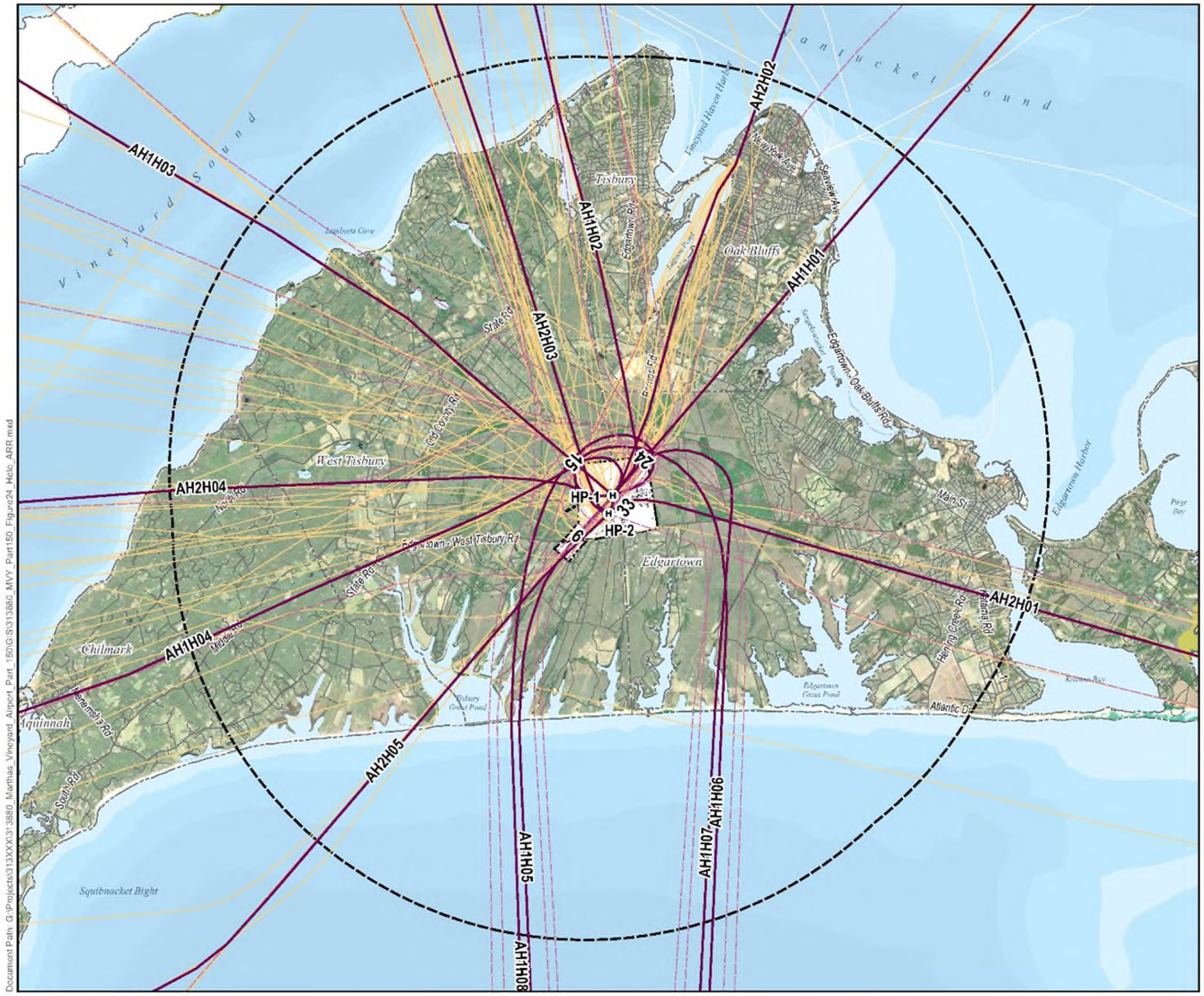
Track Bundle	Day	Night
C33N01	50.0%	N/A
C33N02	50.0%	N/A

Source: MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS; ESRI, Inc., Service Layer Credits:

0 1 2 Miles

Document Path: G:\Projects\313XXX\313880_Marthas_Vineyard_Airport_Part_150\GIS\313880_MVY_Part150_Figure23_RWY33_NJ_CIR.mxd

Figure D-18. Non-Jet Circuit Flight Tracks, Runway 33



MVY AIRPORT
MARTHA'S VINEYARD

Figure:
Helicopter Arrival Flight Tracks

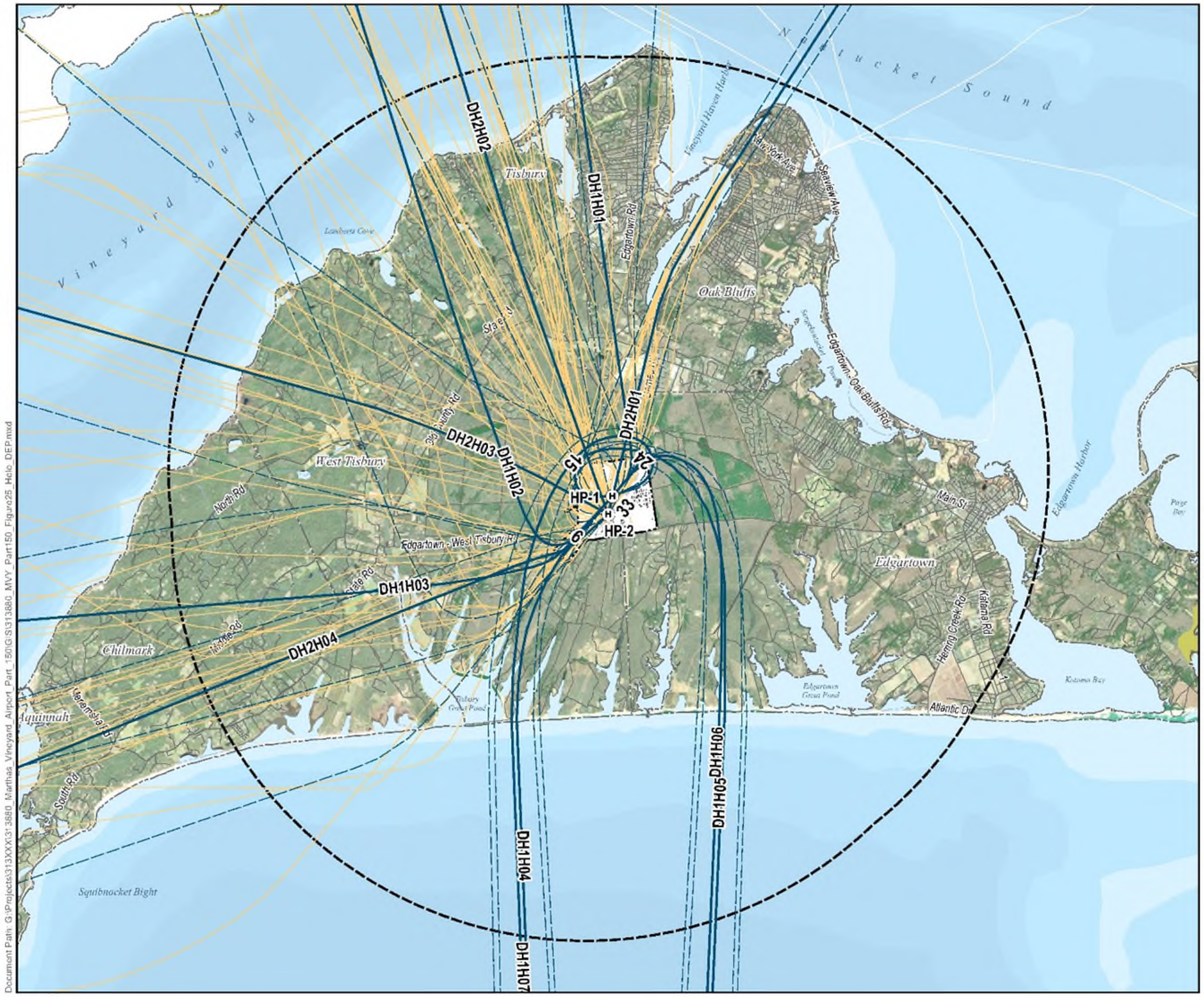
Modeled Backbone Track
Modeled Dispersed Track
Radar Track
Airport Boundary
Runway / Taxiway
Building
Major / Minor Road
Railroad
Municipal Boundary
Ocean / Lake / Pond

	Vineyard Wind Helicopters		Other Helicopters	
Track Bundle	Day	Night	Day	Night
AH1H01	--	--	9.2%	9.1%
AH1H02	--	--	6.1%	0.0%
AH1H03	--	--	6.1%	18.2%
AH1H04	--	--	8.2%	0.0%
AH1H05	17.5%	N/A	--	--
AH1H06	7.5%	N/A	--	--
AH1H07	52.5%	N/A	--	--
AH1H08	22.5%	N/A	--	--
AH2H01	--	--	5.1%	0.0%
AH2H02	--	--	18.4%	54.5%
AH2H03	--	--	19.4%	9.1%
AH2H04	--	--	24.5%	9.1%
AH2H05	--	--	3.1%	0.0%

Source: MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS; ESRI, Inc., Service Layer Credits:

0 1 2 Miles

Figure D-19. Helicopter Arrival Flight Tracks



MVY AIRPORT
MARTHA'S VINEYARD

Figure:
Helicopter Departure Flight Tracks

Modeled Backbone Track
Modeled Dispersed Track
Radar Track
Airport Boundary
Runway / Taxiway
Building
Major / Minor Road
Railroad
Municipal Boundary
Ocean / Lake / Pond

	Vineyard Wind Helicopters		Other Helicopters	
Track Bundle	Day	Night	Day	Night
DH1H01	--	--	3.3%	0.0%
DH1H02	--	--	7.6%	12.5%
DH1H03	--	--	5.4%	6.3%
DH1H04	52.5%	N/A	--	--
DH1H05	22.5%	N/A	--	--
DH1H06	17.5%	N/A	--	--
DH1H07	7.5%	N/A	--	--
DH2H01	--	--	14.1%	37.5%
DH2H02	--	--	34.8%	31.3%
DH2H03	--	--	20.7%	0.0%
DH2H04	--	--	14.1%	12.5%

Source: MassGIS (Bureau of Geographic Information), Commonwealth of Massachusetts EOTSS; ESRI, Inc., Service Layer Credits:

0 1 2 Miles

Figure D-20. Helicopter Departure Flight Tracks

D.3 Nonstandard Modeling Methodology

The following pages present the nonstandard modeling memorandum submitted to FAA on May 11, 2023. Because the AgustaWestland AW169 helicopter is not directly represented in the AEDT database, the Study Team required FAA approval of an alternate means for including the noise by those forecast operations.

In response, FAA provided direction on the modeling methodology, received June 12, 2023. FAA's response letter follows the HMMH memorandum.

HMMH
700 District Avenue, Suite 800
Burlington, MA 01803
781.229.0707

TECHNICAL MEMORANDUM

To:	Richard Doucette, Environmental Protection Specialist, FAA Cheryl Quaine, Environmental Protection Specialist, FAA
From:	Kate Larson, Managing Consultant Bryan Rand, Staff Consultant Robert Mentzer, Jr, Principal Consultant
Date:	May 11, 2023
Subject:	Martha's Vineyard Airport (MVY) Part 150 Noise Exposure Map Nonstandard AEDT Aircraft Noise and Performance Data Substitution Request
Reference:	HMMH Project Number 03-13880

Harris Miller Miller & Hanson Inc. (HMMH) is assisting Martha's Vineyard Airport Commission (MVAC) to prepare a Title 14 CFR Part 150 Airport Noise and Land Use Compatibility Study (Part 150), Noise Exposure Map (NEM) for the Martha's Vineyard Airport (MVY). This Part 150 will include NEM documentation for 2023 and 2028, the anticipated year of submission to the Federal Aviation Administration (FAA) and the fifth year from the anticipated year of submission, respectively.[1] The NEM documentation will include Day-Night Average Sound Level (DNL) noise contours, prepared using the FAA's Aviation Environmental Design Tool (AEDT), Version 3e.[2] During our review of existing and forecasted operations, HMMH found a helicopter type that is not in the AEDT. This technical memorandum describes the need and requests approval for a nonstandard aircraft noise and performance data substitution in the modeling.

HMMH has prepared this technical memorandum in accordance with Section 5 of FAA's document titled "Guidance on Using the Aviation Environmental Design Tool (AEDT) to Conduct Environmental Modeling for FAA Actions Subject to NEPA" dated October 27, 2017.[3] This particular request falls under this Section 5.2.2 "Analysis methods/data that require AEE review and approval" item:

- "Aircraft that do not exist in AEDT default data."

HMMH believes that this request should be routed in accordance with Section 5.1 of that document. After review at FAA headquarters, we would expect a document from the Office of Environment and Energy (AEE) responding to the methods presented in this memorandum. That AEE response would be included in the NEM's technical documentation supporting the noise analysis.

1.0 Aircraft Substitution

The forecast operations are anticipated to include Leonardo S.p.A AgustaWestland AW-169 transport helicopters (FAA Designator A169) [4] flown by Vineyard Wind.[5] The A169 received its Type Certification from FAA February 2, 2017.[6] The helicopter is fitted with two Pratt & Whitney Canada PW210A (turboprop) rated at 1,350 and 1,500 shaft horsepower with five bladed propellors. Maximum takeoff and landing weight is 4,600 kg (10,141 lbs).[7] There is no indication that the A169 is fitted with an onboard Auxiliary Power Unit. The A169 can be fitted with either a wheeled undercarriage or landing skids.[8] The aircraft has capacity for up to 10 seats, (2 crew and 8 passengers).

[1] For consistency with §150.21(a) and §150.21(a)(1)
[2] https://aedt.faa.gov/
[3] https://aedt.faa.gov/Documents/guidance_aedt_nepa.pdf
[4] FAA Order 7360.1H Aircraft Type Designators, Effective April 20, 2023
https://www.faa.gov/documentLibrary/media/Order/2023-03-24_Order_JO_7360.1H_Aircraft_Type_Designators_FINAL_SIGNED.pdf
[5] https://www.vineyardwind.com/
[6] FAA's currently publicly available Type Certificate is R00007RD, Revision 1 February 8, 2022 and is the version referenced in this memorandum
https://drs.faa.gov/browse/excelExternalWindow/5E10680192910402862587E5005449FA.0001
[7] Conversion factor obtained from Aircraft Noise Certification Documents for International Operations
https://www.govinfo.gov/content/pkg/FR-2010-03-02/pdf/2010-4316.pdf
[8] https://www.easa.europa.eu/en/document-library/type-certificates/rotorcraft-cs-29-cs-27-cs-vlr/easar509-aw169

The A169 is not listed in the AEDT 3e FLT_AIRFRAMES table, nor is it listed in FLT_ANP_AIRPLANE_ACFT_SUBS or the AEDT Knowledge Base.[9] The engine type of the A169 is not listed in the AEDT for any other aircraft type. Aircraft noise certification levels are not posted in FAA Advisory Circular 36-1H.[10] Engine emissions factors have not been posted in the ICAO emissions databank.[11]

Available Aircraft Noise and Performance (ANP) data within AEDT 3e provided three ANP types: B430, S76, and B212 as potential substitution candidates based on maximum take-off weight.

Table 1 – Relevant Airframe Comparisons

ANP Type	Category	Engine	Rotor diameter (ft.)	Rotor speed (RPM)	Maximum take-off weight (lbs.)
A169	Actual Type	PW210A	39.8	355	10,141
B430	Potential Substitution	250B17B	42	348	9,300
S76	Potential Substitution	T700-GE-700	44	293	10,000
B212	Potential Substitution	T53-L-13	48.2	324	10,500
Sources: Data for A169 EASA TCDS No. EASA.R.509 https://www.easa.europa.eu/en/document-library/type-certificates/rotorcraft-cs-29-cs-27-cs-vlr/easar509-aw169 Data for B430, S76, B212 AEDT Version 3e FLT_EQUIPMENT table and FLT_ANP_HELICOPTERS table					

AEDT 3e was used to produce sound exposure level (SEL) contours for one departure operation and one arrival operation for each of the potential substitution ANP types listed above. Table 2 and Table 3 summarize the SEL at grid points spaced 0.5 nmi apart on an arrival track from the east and a departure track to the west, respectively, for each ANP type. We have shaded the loudest noise value in each row to help identify the most conservative aircraft substitution. With the exception of the point right on the helipad, the B212 is almost always the loudest.

Figures 1 and 2 compare the arrival and departure SEL contours, respectively, for each ANP type. Unlike most other aircraft, helicopter noise dispersion is not symmetrical in nature; rather, the rotation of the rotors produces more noise on one side than on the other. The outermost (80 dB) contour does not close because the sound exposure level at points on the ground remain above 80 dBA after the aircraft reaches cruising altitude.

In modeling the A169 helicopter operations, we propose to use AEDT 3e equipment ID 5, associated with ANP type B212 to model A169 operations. We have recommended this aircraft due to its similar maximum takeoff weight to the A169 as well as it being generally the loudest and therefore more conservative option of the three ANP types in the SEL comparison.

We are requesting FAA concurrence on the use of the B212 helicopter type to model the A169 helicopter for the MVY Part 150 Study.

[9] https://aedt.faa.gov/Documents/AEDT_FAQ_and_knowledge_base.pdf
[10] https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_36-1H.pdf
[11] At the time of writing, the 02/2023 edition was available on EASA website https://www.easa.europa.eu/en/domains/environment/icao-aircraft-engine-emissions-databank

Table 2 – ANP type A169 Arrival SEL Comparison

Source: AEDT version 3e modeling, HMMH 2023

Distance to Helipad (Nmi)	Modeled SEL Values (dB)		
	B430	B212	S76
0.0	141.31	132.92	124.53
0.5	89.81	93.83	92.13
1.0	85.52	91.02	89.57
1.5	82.79	89.21	87.79
2.0	81.98	88.00	85.78
2.5	83.51	88.14	82.96
3.0	83.37	88.03	82.79
3.5	83.34	88.03	82.78
4.0	83.33	88.03	82.78
4.5	83.33	88.02	82.78
5.0	83.32	88.02	82.78

Table 3 – ANP type A169 Departure SEL Comparison

Source: AEDT version 3e modeling, HMMH 2023

Distance to Helipad (Nmi)	Modeled SEL Values (dB)		
	B430	B212	S76
0.0	142.30	131.67	122.68
0.5	87.03	86.92	85.60
1.0	82.61	83.79	81.80
1.5	83.35	87.99	82.80
2.0	83.30	87.97	82.67
2.5	83.28	87.97	82.66
3.0	83.28	87.97	82.66
3.5	83.27	87.97	82.65
4.0	83.27	87.97	82.65
4.5	83.27	87.97	82.65
5.0	83.27	87.97	82.65

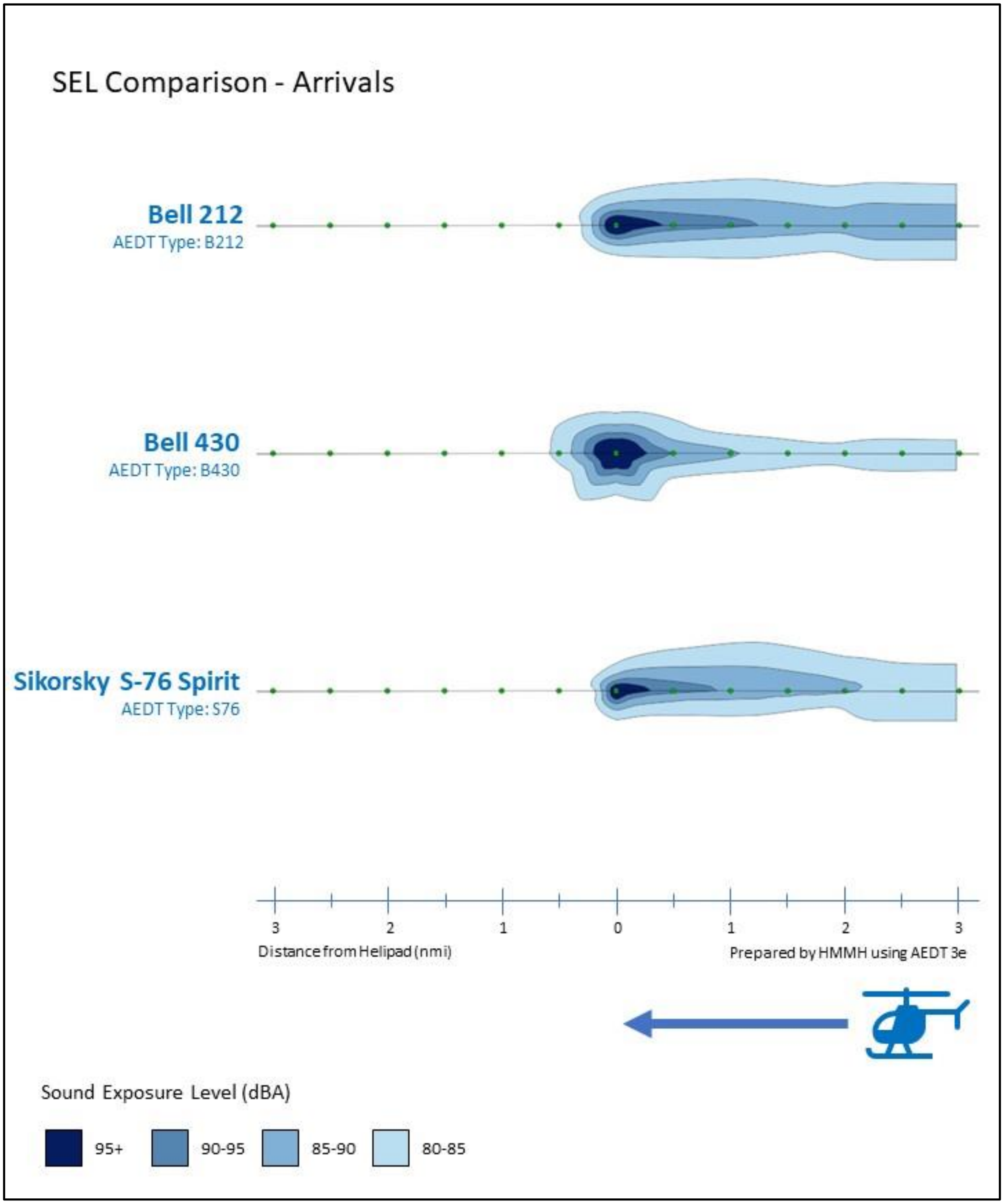


Figure 1. Sound exposure level for one arrival operation from the east for each ANP type

Source: AEDT version 3e modeling, HMMH 2023

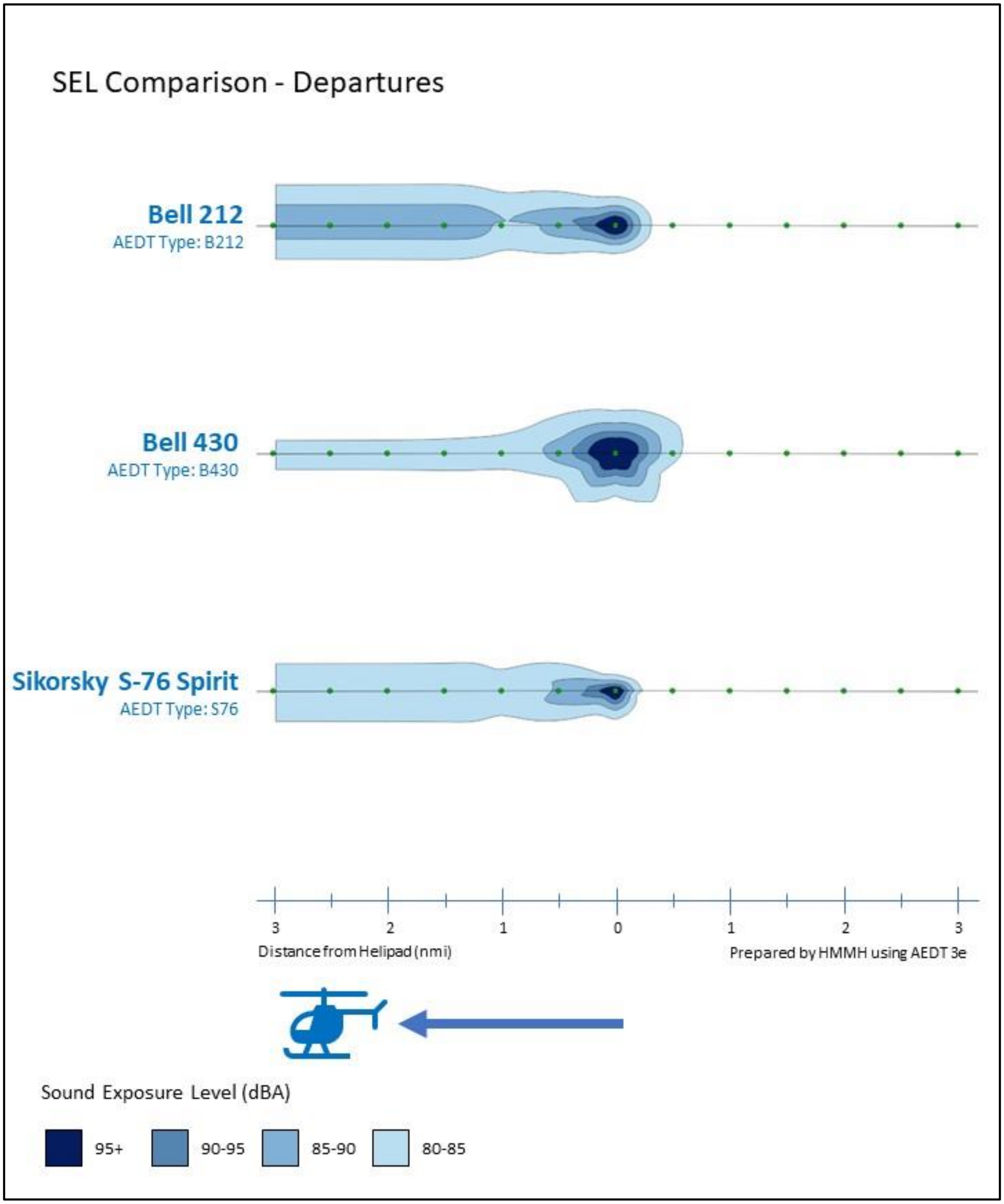


Figure 2. Sound exposure level for one departure operation to the west for each ANP type

Source: AEDT version 3e modeling, HMMH 2023

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Environment and Energy

800 Independence Ave., S.W.
Washington, D.C. 20591

6/12/2023

Cheryl Quaine
Environmental Protection Specialist
New England Region
Federal Aviation Administration
1200 District Ave.
Burlington, MA 01803-5299

Dear Cheryl Quaine,

The Office of Environment and Energy Noise Division (AEE-100) has received the memo from HMMH dated May 11th, 2023, on behalf of the Martha's Vineyard Airport Commission (MVAC) referencing the Title 14 CFR Part 150 Airport Noise and Land Use Compatibility Study (Part 150), Noise Exposure Map (NEM) for the Martha's Vineyard Airport (MVY). In the memo, HMMH requested the approval for a non-standard AEDT aircraft substitution for modeling helicopter operations associated with the Leonardo S.p.A AgustaWestland AW-169 (A169) at MVY.

AEE-100 does not approve the use of the requested Bell 214B-1 (B212 ANP type, T53-L-13 engine, AEDT 3e Equipment ID 4094) substitution for the A169.

Instead, AEE-100 requests that AEDT3e Equipment ID 4126 (Bell 430 mapped to the B430 ANP type, 250B17B engines) be used. The B430 ANP type would generally produce a larger noise signature on arrival and departure at the helipad than the proposed B212 ANP type. The B430 ANP type also has a rotor diameter, rotor speed, number of rotor blades, number of engines, and typical cruise profile more representative of the A169.

Please understand that this approval to use AEDT3e Equipment ID 4126 (Bell 430 mapped to the B430 ANP type, 250B17B engines) is limited to this particular P150 Study and NEM for MVY and for use with AEDT 3e only. Further non-standard AEDT inputs for additional projects at this or any other site will require separate approval.

Sincerely,

Donald Scata
Manager
AEE-100/Noise Division

cc: Susan Staehle, APP-400
Richard Doucette, ANE-601

Appendix E - Peak Season Noise Analysis

E.1 Peak Season Noise Model Inputs

The aircraft operations provided in this appendix represent typical peak season operational levels at MVY, which are significantly higher than the airport's operational levels averaged across the entire year. Area residents indicate that their experience of noise during peak season is significantly greater than noise during off-season months. Although the Noise Exposure Map for the airport must represent the average annual day, MVAC agreed to prepare Existing Conditions peak season noise contours as well, for informational purposes only.

This appendix is organized similarly to the body of the memo for easy comparison, presenting peak season aircraft flight operations, ground noise operations, runway utilization and meteorological data. The other categories of noise model inputs (airport physical characteristics, aircraft noise and performance characteristics, flight track geometry, and terrain data) are the same as for the annual noise modeling and so are not repeated here.

E.2 Peak Season Aircraft Operations

For peak season aircraft noise exposure calculations using the DNL metric, aircraft operations associated with an average summer day are input to AEDT. HMMH summed the peak season operations (defined as July 1 through August 31) from the 2022 Vector system data and divided by 62 to arrive at the average peak season day's operations. This representation of airport activity does not reflect any particular day but gives an accurate picture of the character of operations throughout the peak season. Due to the expected introduction of Vineyard Wind AW169 helicopters to MVY, HMMH added those expected average daily operations to the peak season totals. **Table E-1** presents the Existing Conditions average annual operations compared to peak season average daily aircraft operations by aircraft category.

Table E-1. Forecast Year 2023 Peak Season Aircraft Operations

Source: HMMH, 2023

Operations Period	Air Carrier	Air Taxi/ Commuter	General Aviation	Military	Total
Average Annual Day	5.93	53.78	66.37	1.08	**127.15**
Peak Summer Day	19.10	88.87	119.26	2.71	**229.94**

Figure E-1 shows daily operations and monthly average operations per day from the Vector system data for 2022. The graph illustrates the seasonality of the airport. The orange bars depict the average monthly operations while the blue line indicated the daily operations counts. The peak season months of July and August have nearly equal numbers of daily average operations.

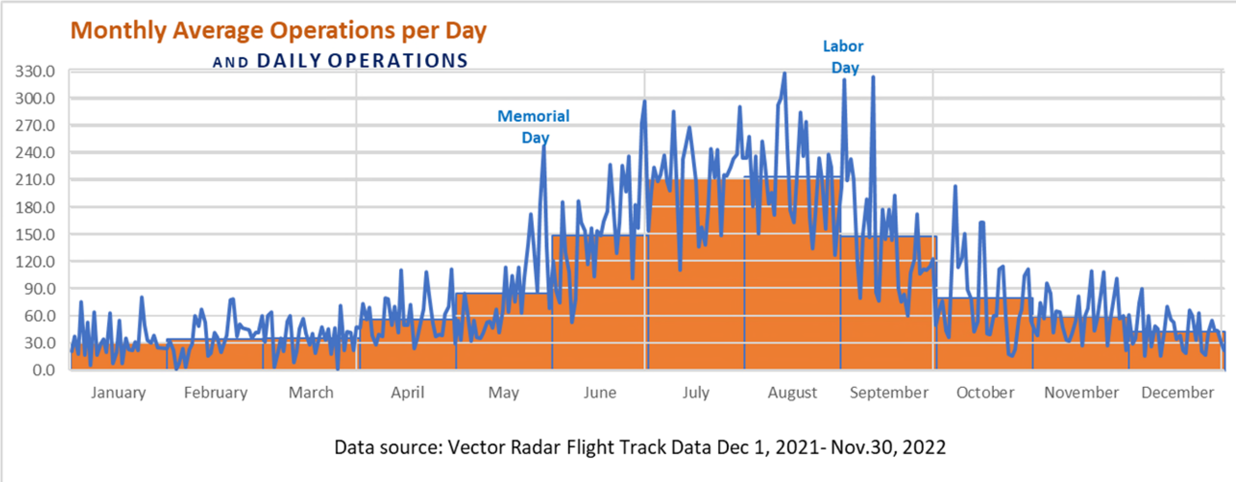


Figure E-1. Monthly Average Operations per Day and Daily Operations

Source: Vector system data Dec. 2021-Nov. 2022 and HMMH analysis, 2023

E.3 Ground Noise Operations

Peak season ground noise operations will be modeled in a similar manner as annual ground noise using average daily operations and runway utilization rates to determine the inputs proportionally.

Table E-2. Modeled Peak Season Aircraft Ground Noise Operations

Source: HMMH, Cape Air, MVY staff, 2023

AEDT Type	Aircraft Type	Runup Location	Heading (Degrees)	Modeled Thrust	Duration (Seconds)	Annual operations		
						Day	Night	Total
BEC58P	**C402/Tecnam P2012**	R3	55	100%	180	8.51	0.39	8.90
		R2	235	100%	180	2.13	0.09	2.22
CNA208	**Pilatus PC-12**	R3	55	100%	180	3.10	0.18	3.28
		R2	235	100%	180	0.77	0.04	0.81
EMB170	**Embraer 170**	R4	325	50%	25	0.01	--	0.01
		R1	325	50%	25	<0.01	--	<0.01
EMB175	**Embraer 175**	R4	325	50%	25	1.06	0.02	1.08
		R1	325	50%	25	0.27	--	0.27
EMB190	**Embraer 190**	R4	325	50%	25	0.82	<0.01	0.83
		R1	325	50%	25	0.20	--	0.20

Note: Cape Air and Tradewind aircraft assumed to conduct pre-flight runups before each departure.
Air carrier jet ground noise represents resumed taxiing from a hold point for 25% of departures.

E.4 Runway Utilization

Table E-3 and **Table E-4** summarize runway utilization rates for each aircraft category, developed from the Vector system data (July and August 2022). The rates are presented for all categories for each runway end. For jets, Runway 24 was utilized 6-9 percent more during peak season than the annual average. For non-jets, Runway 24 was utilized 10-14 percent more during peak season than the annual average.

Table E-3. 2023 Peak Season Modeled Jet Runway Use Percentages

Source: Vector system data Jul.-Aug. 2022 and HMMH analysis, 2023

Runway	Air Carrier Jets				Air Taxi/ Commuter, GA and Military Jets			
	Arrivals		Departures		Arrivals		Departures	
	Day	Night	Day	Night	Day	Night	Day	Night
6	20.2%	--	20.0%	--	20.2%	15.5%	20.4%	21.1%
24	79.8%	100.0%	80.0%	100.0%	79.8%	84.5%	79.6%	78.9%
15	--	--	--	--	--	--	--	--
33	--	--	--	--	--	--	--	--
Note: Column sums may not appear to be exactly 100.0% due to rounding.								

Table E-4. 2023 Peak Season Modeled Non-Jet Runway Use Percentages

Source: Vector system data Jul.-Aug. 2022 and HMMH analysis, 2023

Runway	Air Taxi/ Commuter, GA, and Military Non-Jets					
	Arrivals		Departures		Circuits	
	Day	Night	Day	Night	Day	Night
6	20.2%	10.9%	18.8%	17.6%	12.2%	88.9%
24	76.0%	79.7%	75.2%	75.8%	80.6%	11.1%
15	3.1%	9.4%	0.4%	--	1.2%	--
33	0.7%	--	5.6%	6.7%	6.1%	--
Note: Column sums may not appear to be exactly 100.0% due to rounding.						

E.5 Meteorological Data

Peak season meteorological were calculated using 10 years (2013 to 2022) of MVY weather data for July and August from the National Oceanic and Atmospheric Administration (NOAA). **Table E-5** compares these peak season AEDT inputs to the annual average inputs.

Table E-5. Peak Season Meteorological Data Compared to Annual Averages

Source: NOAA Integrated Surface Data (ISD) 2013-2022 and HMMH analysis, 2023

Parameter	July/August Averages	Annual Averages
Temperature	71.4° F	53.1° F
Station Pressure	1013.07 mbar	1013.04 mbar
Sea Level Pressure	1015.47 mbar	1016.29 mbar
Dew point	65.2° F	46.4° F
Relative humidity	82.40%	78.03%
Wind speed	5.37 knots	8.53 knots

E.6 Land Use Compatibility within Peak Season Contour Map

Figure E-2 presents the 55, 60, 65, 70, and 75 dB DNL contours for informational purposes only. The DNL 55 contour is shown for two reasons: (1) the published 2014 DNL contour figure on the airport's website shows DNL 55, and (2) the DNL 55 contour graphically depicts the aircraft noise over the closest residences, where the DNL 65 and DNL 60 contours do not. The DNL 65 peak season contour is entirely contained within the airport boundary except for a small protrusion into the state forest property adjacent to the northeast end of the airport. **Figure E-3** presents a comparison of the peak season contours to the Existing Conditions DNL 55-75 dB contours.

The contours and land use data clearly illustrate that within the DNL 65 peak season contours there are no residents and no potentially non-compatible land uses. **Table E-6** presents the population exposure and housing units within the DNL 65 contour. There are no population, housing units or individual noise-sensitive locations (such as schools or places of worship) within the peak season contours.

Table E-6. Residential Units within 2023 and 2028 Peak Season Contours

Source: 2020 US Census Block Data, HMMH, 2023

Noise Level (DNL)	Estimated Population	Estimated Number of Housing Units
65 – 70 dB	0	0
70 – 75 dB	0	0
75+ dB	0	0
Total	**0**	**0**

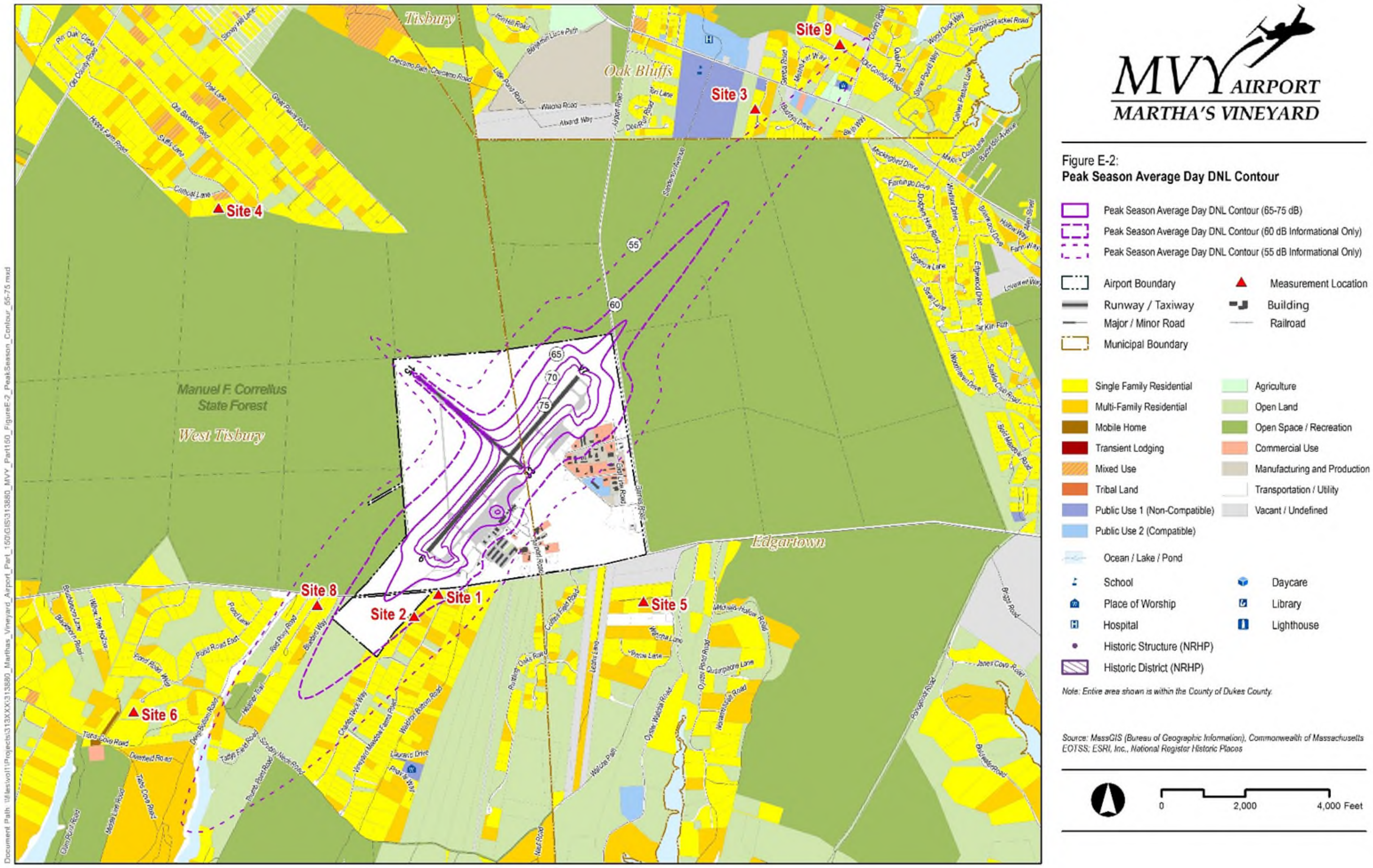


Figure E-2. Peak Season DNL Contour

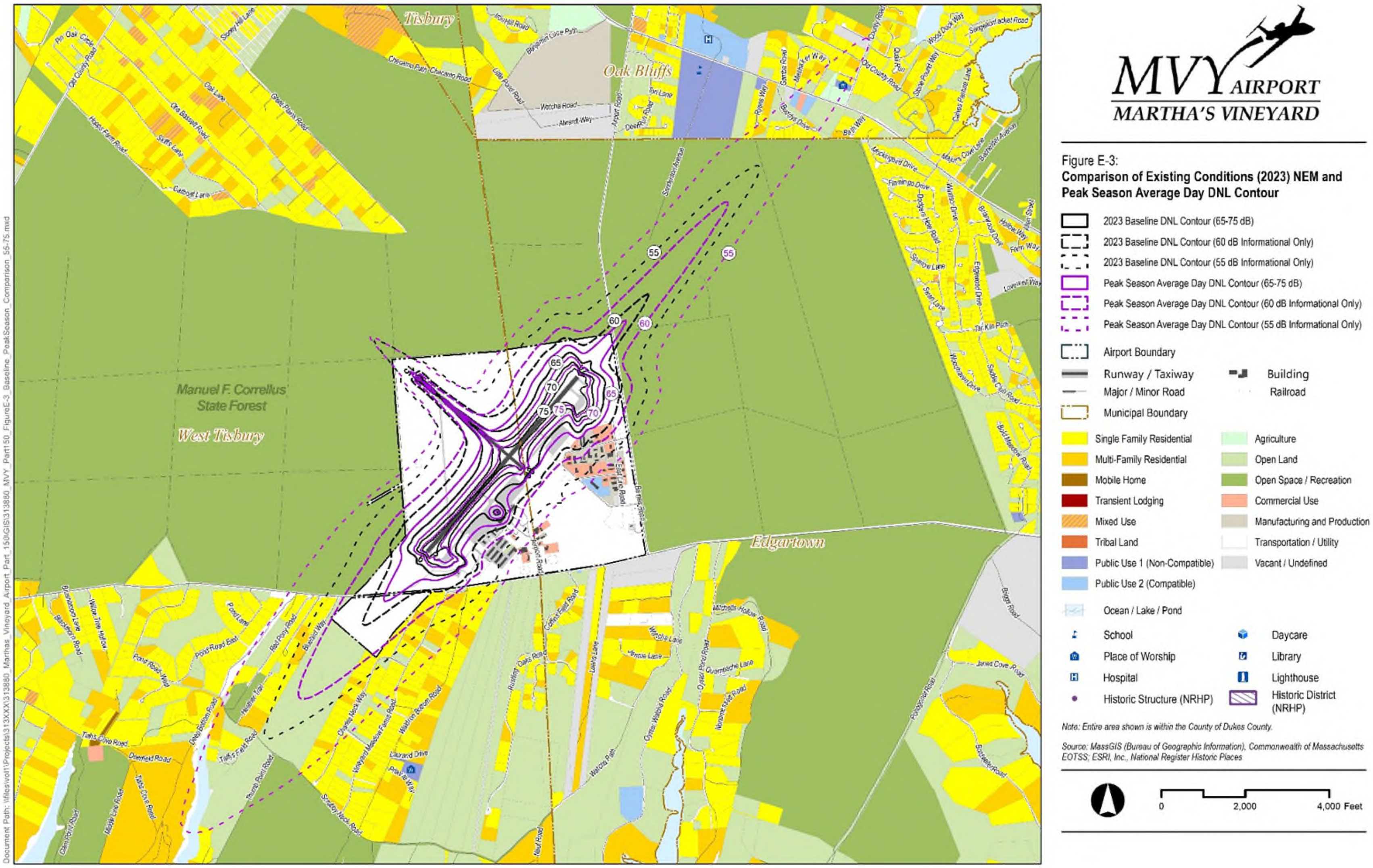


Figure E-3. Comparison of Existing Conditions (2023) and Peak Season DNL Contour

Table E-7 compares the average aircraft-only DNL measured at the ten measurement locations to the AEDT-computed DNL for the peak season. During the measurement week, MVY was in southwest flow (arrivals to and departures from Runway 24) almost exclusively. The opposite flow direction (arrivals to and departures from Runway 6) was modeled to occur close to 20 percent of the time (based on usage seen in the radar data from July and August, 2022).

Operation levels on Friday July 14, 2023 were lower than a typical peak-season Friday due to a line of storms extending along the East Coast of the U.S. On Saturday July 14, 2023 the airport was closed for a few hours due to an accident, which likely resulted in fewer operations than a typical peak season Saturday.

Table E-7. Comparison of Average Measured to Peak Season Modeled Aircraft Noise Exposure

Source: HMMH, 2023

Site	Average Aircraft-only Measured DNL	Peak Season AEDT-Calculated DNL	Difference (Measured – AEDT)
1	58	61	-3
2	59	60	-1
3	51	54	-3
4	45	48	-3
5	38	45	-7
6	45	50	-5
7	42	47	-5
8	57	58	-1
9	53	54	-1
10	51	52	-1

Notes:
1. Utilization of Runway 24 during the measurement period was higher than modeled
2. Utilization of Runway 6, Runway 15, and Runway 33 during the measurement period was lower than modeled

Table E-8 compares the 2023 annual AEDT-computed DNL to the peak season AEDT-computed DNL at the ten measurement locations. Due to the summertime higher frequency of operations and increased use of air carrier jets, the peak season is two to four dB louder in terms of DNL than the annual average day.

Table E-8. Comparison of 2023 Annual to Peak Season Modeled Aircraft Noise Exposure

Source: HMMH, 2023

Site	2023 Annual AEDT-Calculated DNL	Peak Season AEDT-Calculated DNL	Difference (Peak Season – 2023)
1	59	61	2
2	57	60	3
3	50	54	4
4	48	48	0
5	45	45	0
6	47	50	3
7	44	47	3
8	55	58	3
9	51	54	3
10	49	52	3

Appendix F - Public Outreach/Technical Advisory Committee

F.1 Technical Advisory Committee Members

Table F-1 lists the regular members of the TAC during the study process.

Table F-1. Member Organizations Represented on the Technical Advisory Committee

Source: MVAC and HMMH

Name	Affiliation	Name	Affiliation
Cheryl Quaine	FAA	Bob Cassidy	Midwest Air Traffic Control
Richard Doucette	FAA	James Hagerty	Edgartown
Colleen Mailloux	FAA	Jen Rand	West Tisbury
Owen K. Silbaugh Jr.	MassDOT	Jim Graham	West Tisbury
James B. Matz	MassDOT	Jessica Downey	Oak Bluffs
Michael Miller	MassDOT	Bill Veno	MVC
Colin Ewing	Cape Air	Alan Brigish	Deep Bottom
Ryan Baker	Cape Air	David Rhoderick	Deep Bottom
James Seadler	American Airlines	David Foulser	Vineyard Meadow Farms
Greg Jenkins	jetBlue	Sue Kurker	Vineyard Meadow Farms
Chris Maupin	PlaneSense	Erich Mettler	Vineyard Meadow Farms
Adam Schaefer	Tradewind Aviation	Anthony Marchigiano	Waldrons Bottom
Mike Creato	Pilot	Karen Pratt	Community Representative
Bill Brine	Pilot (T.O.E.)	Sean Collins	AOPA
Ted Stanley	Pilot (Direct Flight Inc)	Brittany Davies	NBAA
Myles Peter Rogers	Pilot	Bob Rosenbaum	Airport Commission (MVAC)
Gary BenDavid	Pilot/Hangar Manager	Thomas Hurley	Massachusetts Airport Management Association

F.2 Technical Advisory Committee Charter

The following two pages present a copy of the TAC Charter, outlining the responsibilities of the TAC members to the Part 150 Study.

Charter of the Technical Advisory Committee
Martha's Vineyard Airport Part 150 Study

Introduction

The Martha's Vineyard Airport Commission has formed a Technical Advisory Committee (TAC) to provide input into the MVY Part 150 study in accordance with Title 14 of the Code of Federal Regulations Part 150 (14 CFR Part 150 or Part 150) for Martha's Vineyard Airport (MVY). The MVY Part 150 study will quantify existing and future aircraft noise exposure levels, assess land use impacts according to federal standards, and seek ways to minimize those impacts within Part 150 guidelines. The Airport Commission has invited a cross section of key stakeholders to serve on the TAC to represent the interests of their organization and to provide technical input to the Airport Commission on the MVY Part 150 study.

Advisory Role

The TAC's role is advisory to the Airport Commission and is solely limited to the MVY Part 150 study. TAC members are expected to advise their organizations of the TAC's discussions and to bring input from their organizations back to the TAC discussions. The Airport Commission shall respect and consider the TAC's technical input but shall retain its responsibility for and decision-making authority on the MVY Part 150 study. The TAC and Airport Commission recognize that the Federal Aviation Administration (FAA) is responsible for accepting the MVY Noise Exposure Map (NEM) document and for approving the measures contained in an MVY Noise Compatibility Program (NCP), if a formal NCP is submitted. As such, the Airport Commission intends to submit the NEM (and NCP if warranted) to the FAA that comply with Part 150 and other relevant federal regulations including, but not limited to, the conditions contained in the Airport Commission's federal grant assurances. These regulations and conditions will be fully explained to the TAC.

Primary Members and Alternate Members

The TAC is composed of primary and alternate members who are authorized to represent their respective organizations for the duration of the MVY Part 150 study, which is estimated at one year. TAC members will make every effort to attend and contribute to each TAC meeting throughout the study. The primary member's designated alternate member shall attend the meeting in the TAC member's absence. In the event that a primary member is unable to attend a meeting, the primary or alternate member will notify the Airport Commission Project Manager in advance of the meeting. Alternate members shall stay abreast of the TAC meeting discussions and are encouraged to attend each TAC meeting. However, only the primary member shall represent his/her organization when both the primary and alternate members are present at a TAC meeting.

Should the primary member be unable to continue his/her service on the TAC, his/her organization shall designate a new primary representative. The alternate member shall serve as the primary member until a new primary member is designated and accepted by the Airport Commission. Missing TAC meetings without sending an alternate may result in dismissal from the TAC.

Conduct of TAC Meetings

In order to use the technical expertise of the TAC in the most effective manner, TAC meetings will be facilitated by a professional meeting facilitator. TAC members are encouraged to express their opinions and expected to respect the range of opinions expressed by their fellow TAC members.

TAC meetings will be open to the public. However, the purpose of the TAC is to provide technical input to the Airport Commission on the MVY Part 150 study. Public workshops will be held at two points during the study, which will provide the public with opportunities to provide input and comments. In order to promote balanced and constructive interaction among the TAC members, members of the public will be asked to refrain from commenting during TAC proceedings and member discussions. The public will be directed to provide their comments directly to the Airport Commission through the MVY Part 150 study public comment process rather than during the TAC meeting.

The Airport Commission expects that the TAC meetings will be conducted in a professional and respectful manner. Disrespectful or disruptive behavior at TAC meetings may result in cancellation or suspension of a TAC meeting at the sole discretion of the Airport Commission. Hostile, disrespectful, uncooperative, and other similar negative behaviors by TAC members may result in dismissal from the TAC.

The Airport Commission will issue an agenda in advance of each TAC meeting. The meeting facilitator has the responsibility of assisting the TAC in adhering to the meeting agenda and schedule. The meeting facilitator may extend or shorten the length of a discussion related to an agenda item, based on advice from the TAC or at his or her sole discretion.

Meeting Notes

Notes of the TAC meeting discussions shall be maintained by the MVY Part 150 study consultant team. Notes of the previous meeting shall be distributed to the TAC members prior to each meeting. Formal approval of the meeting notes is not required, but TAC members shall review the meeting notes prior to each meeting and offer any corrections in the presence of the entire TAC.

Meeting Location

The Airport Commission shall designate the meeting location in advance of each meeting. For the convenience of the TAC members, the Airport Commission anticipates that the meeting location will be at or proximate to MVY.

Meeting Frequency, Dates and Times

The Airport Commission currently anticipates approximately three TAC meetings during the project's one-year duration. Therefore, the Airport Commission anticipates a TAC meeting will be held three to five months apart. The actual frequency of TAC meetings will depend on the workflow of the MVY Part 150 consultant team. Every effort will be made to schedule TAC meeting dates and times that will be convenient to the majority of the TAC members. The Airport Commission currently anticipates that the TAC meetings will be held on weekdays during normal business hours (i.e., between 8 am – 5 pm). TAC meetings are expected to be approximately two hours in length.

Voluntary Service

TAC membership is on a voluntary basis. TAC members shall not be compensated for their time or expenses related to their service.

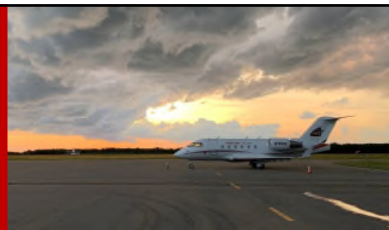
Amendment

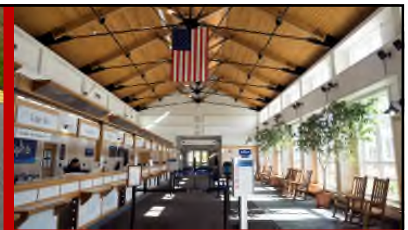
The Airport Commission at its sole discretion may amend and reissue this Charter as needed.

F.3 Technical Advisory Committee Presentations

The following 68 pages present

- a copy of the presentation for TAC Meeting #1 held on Tuesday, January 31, 2023, from 1:00 pm to 3:00 pm at MVY (24 pages)
- a copy of the presentation for TAC Meeting #2 held on Tuesday, April 25, 2023 from 1:00 pm to 3:00 pm at MVY (27 pages)
- a copy of the presentation for TAC Meeting #3 held on Tuesday, October 10, 2023 from 1:00 pm to 3:00 pm at MVY (19 pages)



Welcome!

Airport Noise Compatibility Planning Study (Part 150)
Martha's Vineyard Airport

Technical Advisory Committee Meeting #1
January 31, 2023

Meeting Agenda

- Welcome and introductions
  - Martha's Vineyard Airport Commission
  - Part 150 Consulting Team
- Airport overview
- Part 150 overview
- Technical Advisory Committee
- Aircraft noise terminology "Noise 101"
- Noise model and modeling
- Study schedule
- TAC member discussion
- Adjournment

Martha's Vineyard Airport Commission

- **Geoff Freeman**, Airport Director
  - Part 150 Airport Sponsor
- **Denise Tawa**, Airport Executive Assistant
- The Martha's Vineyard Airport Commission (MVAC) is responsible for the care and operation of the Airport, and the one square mile of land upon which the airport is located.
- The seven-member volunteer commission is appointed to three-year terms by the County Commission and represents a cross-section of experience and backgrounds.
- The MVAC has 18 full-time and up to 8 seasonal employees who
  - operate the airport, the airport business park, airport water, and wastewater services
  - implement policy and
  - ensure compliance with state and federal guidelines for public airports.

Part 150 Consultant Team

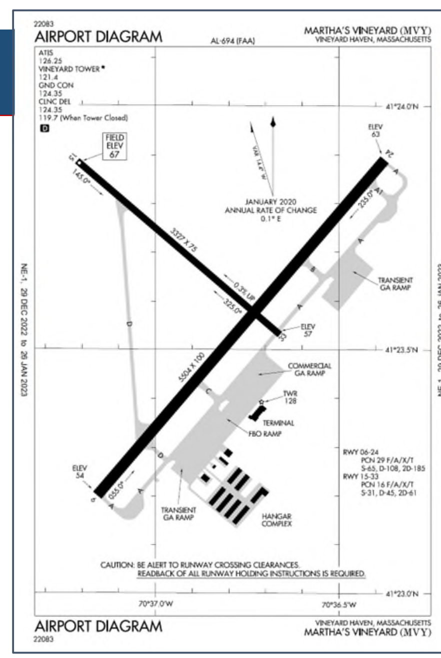
- **Harris Miller Miller & Hanson Inc. (HMMH)**
  - Noise, airspace, and airport planning consulting at over 200 airports worldwide
  - Part 150 studies and/or implementation at 80 airports
  - Noise effects research and consulting
- **McFarland Johnson, Inc. (MJ)**
  - Airport planning and Engineering firm
  - Airport planning studies that included aviation forecasting at over 75 airports
  - Specialists in all phases of airport development (planning, design, & construction)

Part 150 Consulting Team Responsibilities

- ***HMMH Responsibilities***
  - Overall project management, documentation and outreach
  - Aircraft noise analysis and noise measurement program
  - Land use map and GIS database development
- ***MJ Responsibilities***
  - Aviation forecasting
  - Public outreach – scheduling and coordination
  - Coordination with MVY staff, MassDOT and the FAA
- ***HMMH Key Personnel***
  - Bob Mentzer – Principal in Charge
  - Kate Larson – Project Manager
  - Aofei Li – Assistant Project Manager
  - Bryan Rand – Noise Modeler
- ***MJ Key Personnel***
  - Matthew O'Brien – Project Manager
  - Zach Staff – Assistant Project Manager

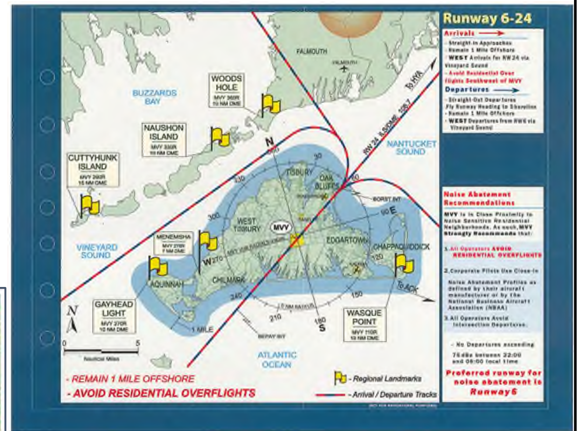
Airport Overview

- History
  - Built in 1942 as Naval Airfield
  - Transferred to Dukes County in 1959
- Existing Airport Facilities:
  - 688 Acres
  - 1 Fixed Based Operator
  - Terminal – 6 Airlines, 2 Gates
  - 2 Runways
  - 7 T-Hangar Buildings
  - 4 Conventional Hangars
  - No flight training school – but airport is used by student pilots from other airports



MVY Existing Noise Abatement Program

- Published noise abatement measures:
  - ✓Preferential Runway Use (RWY 6)
  - ✓Avoid overflying residential areas
  - ✓Avoid intersection departures
  - ✓Use published NBAA "close in" noise abatement departure procedure
  - ✓Nighttime restrictions
  - ✓Recommended flight paths



https://mvyairport.com/wp-content/uploads/2017/07/noischartsover12.5.pdf

https://mvyairport.com/wp-content/uploads/2017/07/noisechartsunder12.5.pdf

Part 150 Overview

- Federal Aviation Administration (FAA) developed the Part 150 Program in response to the federal Aviation Safety and Noise Abatement Act of 1979 ("ASNA")
- Codified under Title 14 of the Code of Federal Regulations (CFR) Part 150
  - Formal *citation* is "14 CFR Part 150," informal is "Part 150"
  - Formal *title* is "Airport Noise Compatibility Planning"
- *Voluntary* FAA-defined process for airport noise studies
  - 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

Part 150 Overview

- In response to ASNA, Part 150 prescribes standards and systems for:
  - measuring noise
  - estimating cumulative noise exposure using computer modeling
  - describing noise exposure
  - coordinating with local land use agencies
  - documenting the analytical process
  - submitting the documentation to FAA
  - FAA and public review processes
  - FAA approval or disapproval process

Part 150 Overview

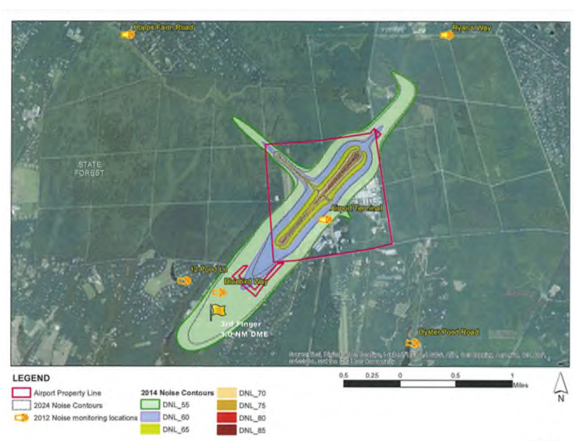
- Two primary elements
  - Noise Exposure Map (NEM) – *Focus of this study*
  - Noise Compatibility Program (NCP)
  - Detailed FAA guidance at www.faa.gov/airports/environmental/airport_noise/
- Consultation required with
  - All local, state, and federal entities with control over land use within DNL 65+ dB
  - FAA regional officials, regular aeronautical users of the airport
  - All parties interested in reviewing and commenting on the draft reports

Part 150 Overview: Noise Exposure Map

- FAA "accepts" NEM as compliant with Part 150 standards
- 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 (at least five years from year of submission)
  - FAA reviews forecasts for consistency with Terminal Area Forecast, TAF

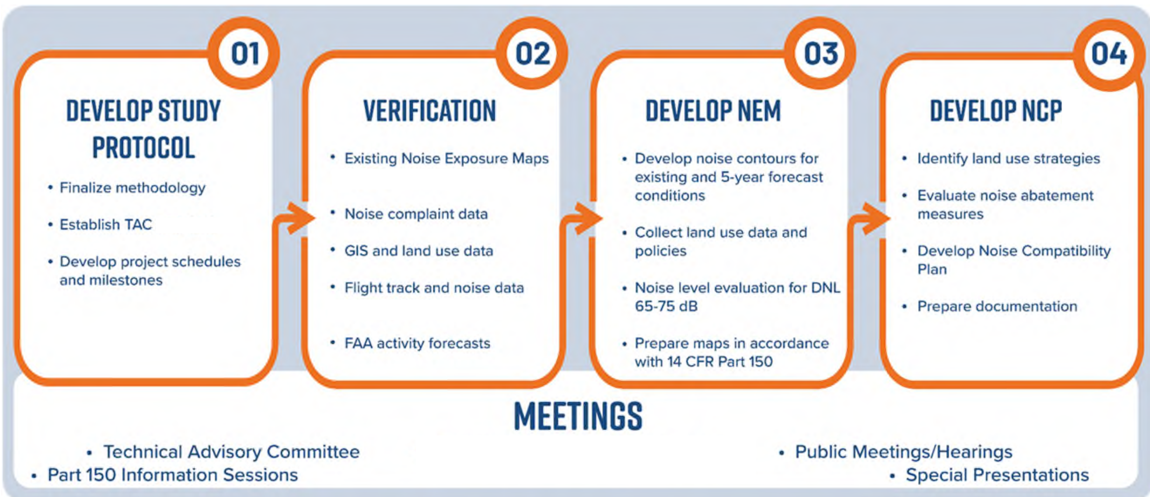
Previous MVY Noise Contour Map

- This noise contour graphic can currently be seen on the MVY airport website
- Entitled "Noise Abatement Program"
  - 2014 (Existing Condition) and 2024 (Forecast Condition) contours
  - Shows locations of previous noise monitoring
  - DNL 55, 60, 65 and higher dB contours
  - Note that DNL 65 is currently the FAA's threshold for assessing noise/land use compatibility



Noise Abatement Program Noise Contours
source:
https://mvyairport.com/wp-content/uploads/2017/07/Noise-Abatement-Program-Noise-Contours.pdf

Part 150 Overview: General Study Process



Noise Compatibility Roles and Responsibilities

Defined by "FAA Noise Abatement Policy Statement" (November 1976)

- Federal government - source emissions, air traffic control, funding, and safety oversight
- State and local government - compatible land use planning and control
- Aircraft operators - noise-sensitive schedules, cockpit procedures, and fleet improvements
- Air travelers and shippers - bear the costs
- Current and potential residents – seek to act in an informed manner
- Airport operators - plan and implement noise compatibility measures

Application of FAA Policy to Part 150 Process

- **MVY Airport Commission**
  - Directs the study - it is the MVAC's project
  - Submits NEM and NCP documentation to FAA
- **FAA Airports Division**
  - Provides input to, reviews and assists with analysis of noise abatement flight procedures
  - "Accepts" documentation and "approves" NCP measures
  - Responsible for implementation of noise abatement flight procedures
  - Assists in funding eligible measures in all three categories
- **Local governments**
  - Provide input to recommended land use measures
  - Implement and enforce land use measures to maintain and improve noise compatibility
- **All stakeholders, including aviation interests, residents, and other interested parties**
  - Monitor study process, provide input, assist with implementation

Part 150 Technical Advisory Committee

- TAC is composed of stakeholders representing all significant interests
  - Key agencies; e.g., Martha's Vineyard Airport Commission (MVAC), Air Traffic Control (ATC)
  - Airport tenants and users; e.g., aircraft operators (airlines and pilots), fixed base operators (FBOs), etc.
  - Local land use jurisdictions; e.g., Martha's Vineyard Commission (MVC), Edgartown, Oak Bluffs, Tisbury, West Tisbury, etc.
  - Aviation trade associations; e.g., National Business Aviation Association (NBAA), Aircraft Owners and Pilots Association (AOPA), Massachusetts Airport Management Association (MAMA), etc.
  - Community representatives
- Members serve on a voluntary basis without compensation
- FAA and MassDOT are invited to TAC meetings provide input as needed

TAC Members

Name	Affiliation	Name	Affiliation	Community Representatives	Pilots
Bob Cassidy	Midwest Air Traffic Control	Colin Ewing	Cape Air	Jim Graham	Mike Creato
James Hagerty	Edgartown	Ryan Baker	Cape Air	Alan Brigish	Bill Brine
Jen Rand	West Tisbury	James Seadler	American Airlines	David Rhoderick	Ted Stanley
	Oak Bluffs	Greg Jenkins	jetBlue	David Foulser	Myles Peter Rogers
Bill Veno	MVC	Chris Maupin	PlaneSense	Sue Kurker	Gary BenDavid
Bob Rosenbaum	Airport Commission	E Kiryanova	Tradewind	Erich Mettler	
Sean Collins	AOPA	Sarah Schweitzer	Vineyard Wind	Anthony Marchigiano	
B Davies	NBAA	Tom Hurley	Massachusetts Airport Management Association	Karen Pratt	

TAC Roles and Responsibilities

- The TAC is advisory to the MVAC solely for purposes of the Part 150 Study including:
  - Review of study inputs, assumptions, analyses, documentation, etc.
  - Input, advice, and guidance related to the study
- TAC members are expected to provide two-way communication between the TAC and their organizations / constituents
- The MVAC shall respect and consider TAC input, but must retain overall responsibility for the Part 150 Study including all recommendations
- The TAC and MVAC recognize FAA is responsible for accepting the Noise Exposure Maps (NEM)

TAC Charter

- Copies of Charter emailed to each TAC member and provided at this meeting
- Charter describes TAC's role, member responsibilities, meeting conduct and logistics, etc.
- 3 meetings anticipated – three to five months apart
  - Agendas and background material will be provided in advance of each meeting
  - Dates and times will be sought that are convenient to a majority of members; e.g., weekdays during normal business hours (9 am to 5 pm)
  - Meetings are expected to be two hours or less in length
- TAC meetings will be open to public observers

Projected TAC Meetings & Public Workshops

Meeting	Date	Topic
TAC Meeting #1	***January 31, 2023 (Today)***	***Introduction to the Part 150 process***
Public Information Workshop #1	January 31, 2023 (Today)	Introduction to the Part 150 study
TAC Meeting #2	Target April 2023	Review of noise modeling inputs
TAC Meeting #3	Target September 2023	Review noise measurement results and draft NEM document
Public Information Workshop #2	Target September 2023	Presentation of the study results

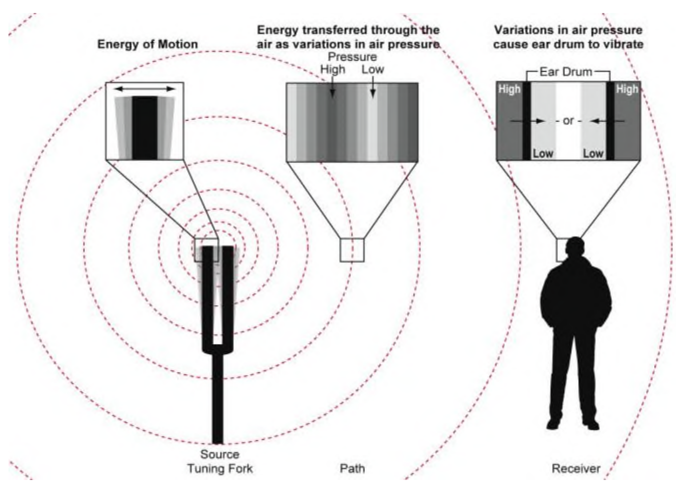
- Please consider attending the public information workshop this evening at Martha's Vineyard Regional High School (Culinary Arts Room) from 6 to 8 pm

Aircraft Noise Terminology

- Sound vs. noise
- The decibel scale (dB)
- The A-weighted decibel
- Single event noise metrics
  - Maximum sound level (L_{max})
  - Sound Exposure Level (SEL)
- Cumulative noise exposure metric
  - Day-Night Average Sound Level (DNL)

What is "Noise"?

- Sound is pressure variation our ears can detect
  - An objective quantity
- Noise is "unwanted sound"
  - A subjective quantity
- We relate sound and noise by considering effects
  - Annoyance
  - Speech interference
  - Sleep disruption



The Decibel Scale

- We use a logarithmic scale – decibels (dB) to express sound levels and noise levels
- Why?
    - o We hear sound pressures over a HUGE range
    - o Decibels compress this range to match the way we interpret sound pressures
    - o 0 to 140 dB
    - o 0.000000003 to 0.003 lbs. per sq. inch (psi)
    - o We "hear" in decibels

"Energy"	dB	Common sounds
100,000,000,000,000	140	Near a jet engine at start of takeoff
10,000,000,000,000	130	Threshold of pain
1,000,000,000,000	120	On stage at a loud rock concert
100,000,000,000	110	
10,000,000,000	100	Jack hammer at 6 feet
1,000,000,000	90	
100,000,000	80	Vacuum cleaner at user's ear
10,000,000	70	Vacuum cleaner at 10 feet
1,000,000	60	Normal speech
100,000	50	
10,000	40	Quiet residential area
1,000	30	
100	20	Whisper
10	10	
1	0	Threshold of hearing
0.1	-10	

Real-Time Decibel Change "Rules of Thumb"

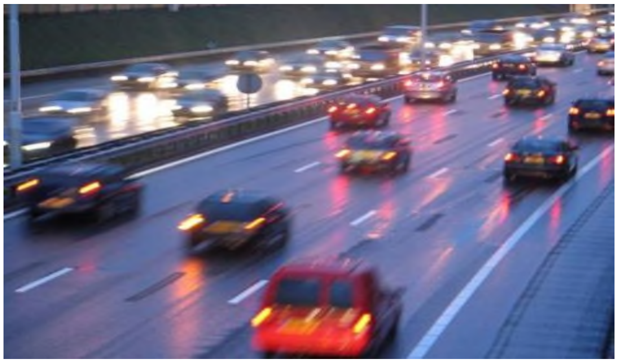
- In a laboratory test, a 1 dB change is generally detectible
- In a normal environment, a 3 dB change is generally the threshold of detectability for a careful listener
    - o Why? Distinct A:B comparisons are rare
- A 6 dB change is clear in most day-to-day situations
- In general, a 10 dB change seems twice as loud
- Different rules of thumb apply to cumulative exposure
    - o More on that in a few slides

Caution: Decibel Addition Isn't ordinary math!

- Decibels are a logarithmic quantity, so…
- Two equal sources:
  - 60 + 60 dB = **63 dB**
- Four equal sources:
  - 60 + 60 + 60 + 60 dB = **66 dB**
- Ten equal sources:
  - 60 + 60 + 60 + 60 + 60 + 60 + 60 + 60 + 60 + 60 dB = **70 dB**
- We are *more* sensitive to small changes and *less* sensitive to large changes

Other factors to consider...

- Sound *quality* matters
  - Sources with the same overall dB level may "sound" different



Other factors to consider...

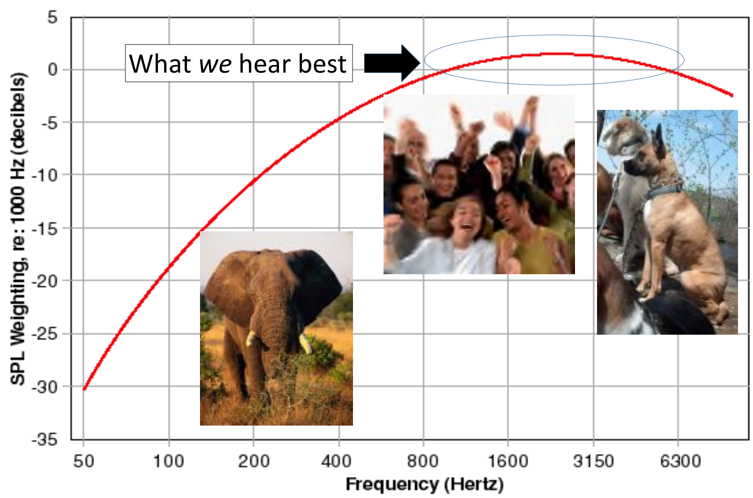
- Duration matters
  - Longer durations increase exposure, even for sources with the same dB level

Other factors to consider...

- *Time of day* matters

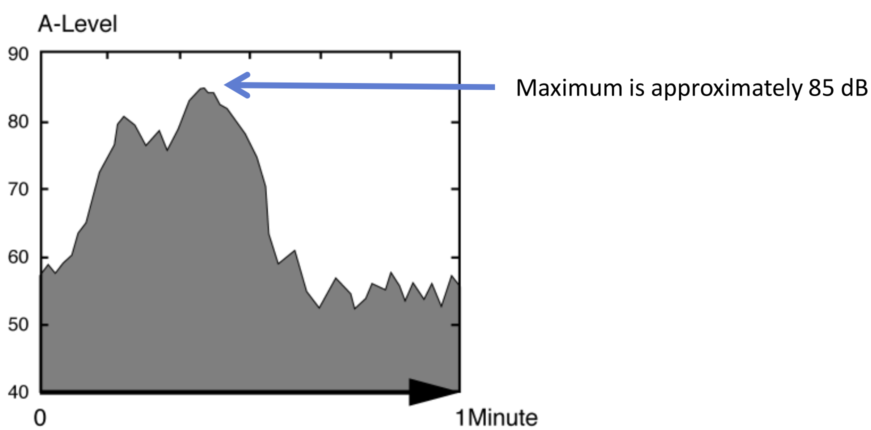
FAA requires use of the A-Weighted Sound Level

- Our ear is not equally sensitive to all frequencies
- A-weighted decibels (dB) measure sound the way we "hear" it
- Part 150 specifies A-weighted noise metrics to describe
  - o Single events
  - o Cumulative exposure
- Consistent with worldwide practice



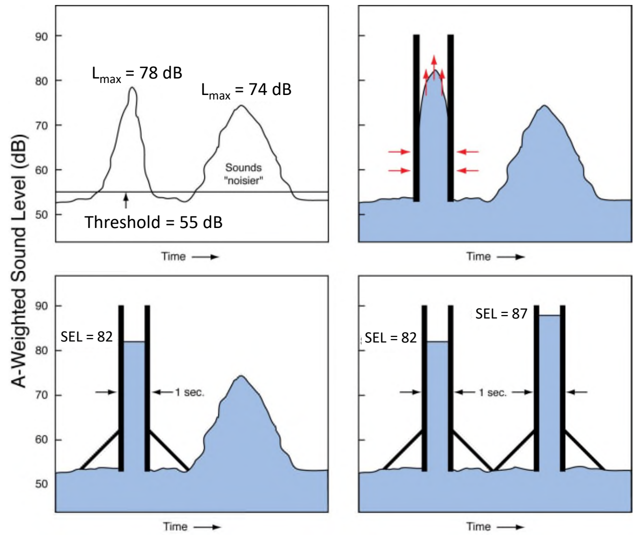
Single Event Noise Metrics: Maximum Sound Level (L_{max})

The simplest way to describe a discrete noise "event" is its maximum sound level (L_{max})



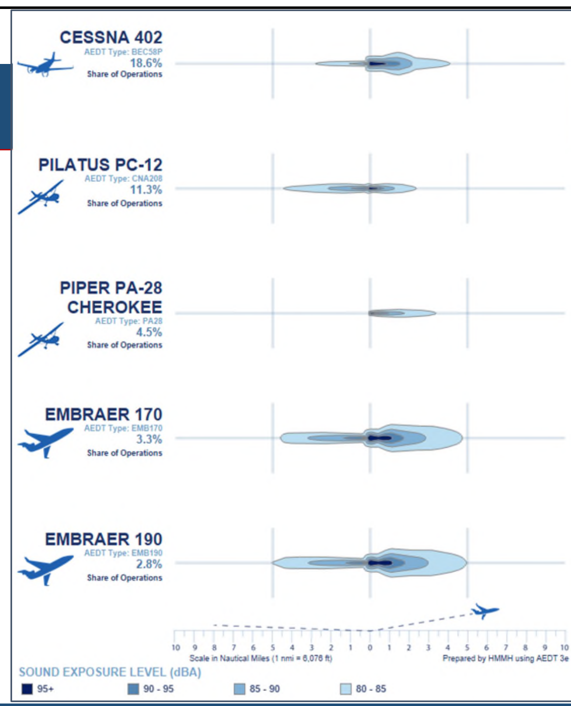
Single Event Noise Metrics: Sound Exposure Level (SEL)

- Duration matters: A longer event may seem "noisier," even if it has a lower or equal maximum level
- SEL measures the total "noisiness" of an event by taking duration into account
- The FAA's noise model (AEDT) uses SEL as the basis for calculating the required noise metric Day-Night Average Sound Level



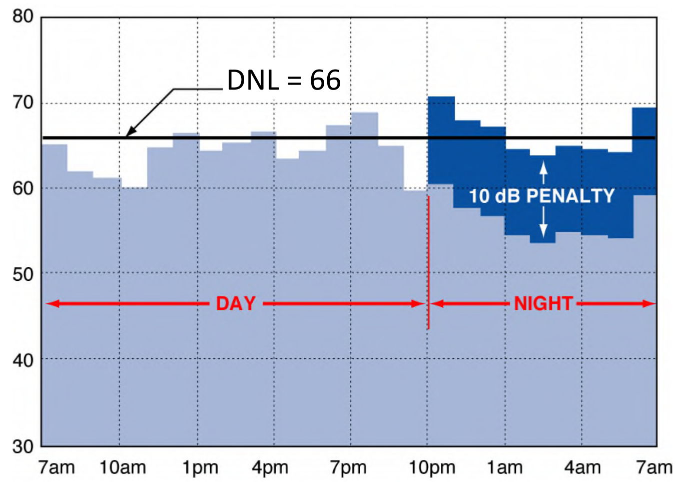
Comparative SELs

- The sound exposure levels created by an aircraft overflight depend on its
  - Engine type
  - Thrust setting profile
  - Altitude profile
  - Airspeed profile
- These graphics compare a typical landing (from left) and takeoff (to right) of different aircraft types that frequently fly at MVY

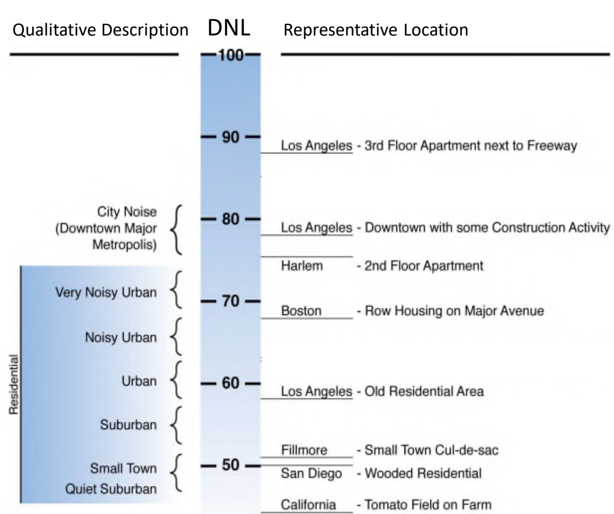


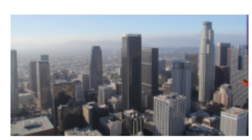
Cumulative Exposure: Day-Night Average Level (DNL)

- Describes 24-hour exposure
- Noise from 10 pm to 7 am is factored up by 10 dB
    - o "Penalty" is equal to counting each night aircraft 10 times
- DNL is the only metric that Part 150 requires for land use compatibility



Typical Community DNL Examples





Source: United States Environmental Protection Agency, Information on Levels Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974, p. 14.

Interpreting Changes in DNL

- 1 - 2 dB change in level
  - May be noticeable
- 2 - 5 dB change in level
  - Generally noticeable
- Over 5 dB change in level
  - Community reaction is likely

- These differ from the previously cited "rules of thumb" for perceiving "real-time" change:
  - 1 dB threshold of detectability in a laboratory test
  - 3 dB threshold of detectability for a careful listener in a normal environment
  - 6 dB in most day-to-day situations

Aircraft Noise Metric Summary

- The decibel is a complex logarithmic quantity based on sound pressure
- A-weighted decibels correlate well with how we hear
- Noise levels can be expressed many ways, including but not limited to:
  - Instantaneous maximum (L_{max})
  - Single event dose (SEL)
  - Long-duration exposure (DNL)
- Best metric to use depends on purpose
- FAA requires use of DNL in a Part 150 study
- Part 150 guidelines consider all land uses compatible below 65 dB DNL

Noise Model and Modeling

- We must use FAA-approved model
  - FAA's Aviation Environmental Design Tool (AEDT)
- Required noise modeling inputs
  - Airport layout
  - Annual average meteorological data
  - Terrain
  - Aircraft operations by day/night for 2023 and forecast 2028
  - Runway utilization rates by aircraft categories
  - Flight track geometry and use by aircraft categories

Noise Modeling: Airport Layout

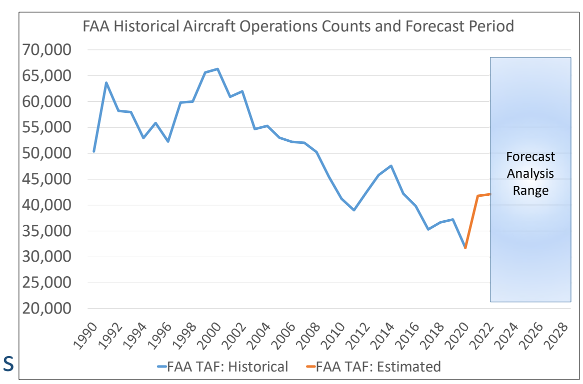
- Existing Airport Facilities:
  - 688 acres
  - 2 runways
  - Runway 15-33
    - 3,327 feet long
  - Runway 6-24
    - 5,504 feet long

Noise Modeling: Major Data Sources

- Best available source(s) will be used for each specific category
  - *Airport layout* - FAA airport diagram, MVY Airport Layout Plan (ALP)
  - *Meteorological* - NOAA National Climatic Data Center
  - *Terrain* - U.S. Geological Survey
  - *Baseline operations* - 2022 data from Vector flight tracking system
  - *Forecast operations* – MVY Master Plan and the FAA's Terminal Area Forecast (TAF)
  - *Flight tracks, profiles, and runway use* – 2022 data from Vector flight tracking system
- Data will be compared to formal and informal procedures
  - FAA Standard Instrument Departure (SID) and approach procedures (APs), etc.
  - MVY's recommended procedures and industry noise abatement procedures
- Modeling assumptions and data will be presented in detail to the TAC.
  - The presentations will be posted on the Part 150 website: https://mvyairport.com/mvypart150-faa-noise-study/
  - **TAC members - *Please offer feedback on sources or assumptions***

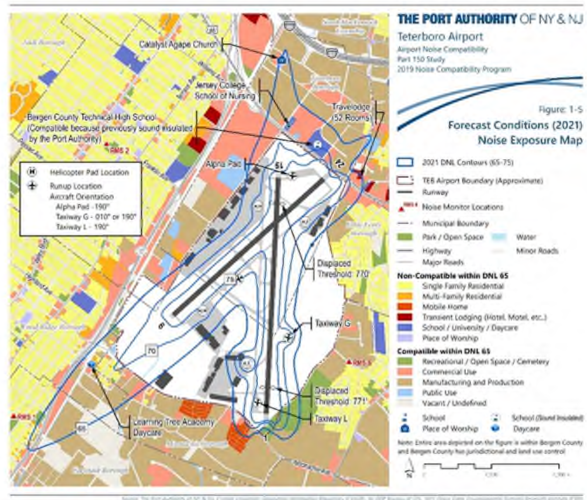
Noise Modeling: Aviation Forecast

- Aviation forecasts will represent annual-average day of aircraft operations by aircraft type and time of day including:
  - Air carrier (passenger)
  - Air taxi/commuter (passenger & freight)
  - General aviation (local & itinerant)
  - Military
- Forecast development will include:
  - Complex analysis of socioeconomics, demographics, & recent airport and industry trends
  - Analysis of fleet mix and representative models of aircraft utilized
- FAA approves the aviation forecasts

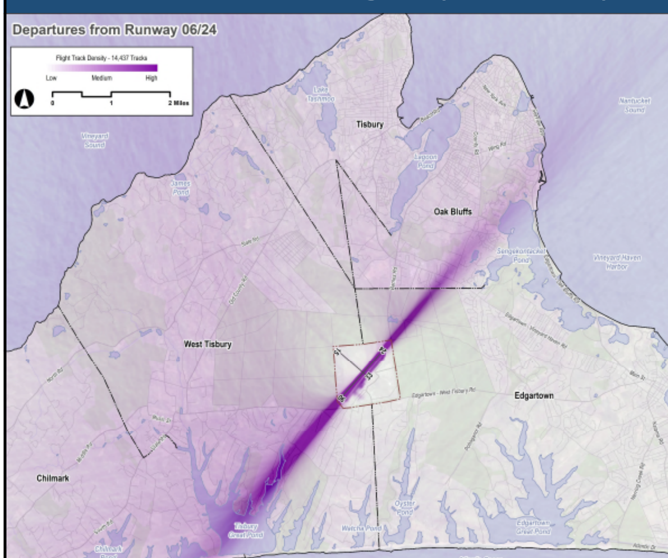


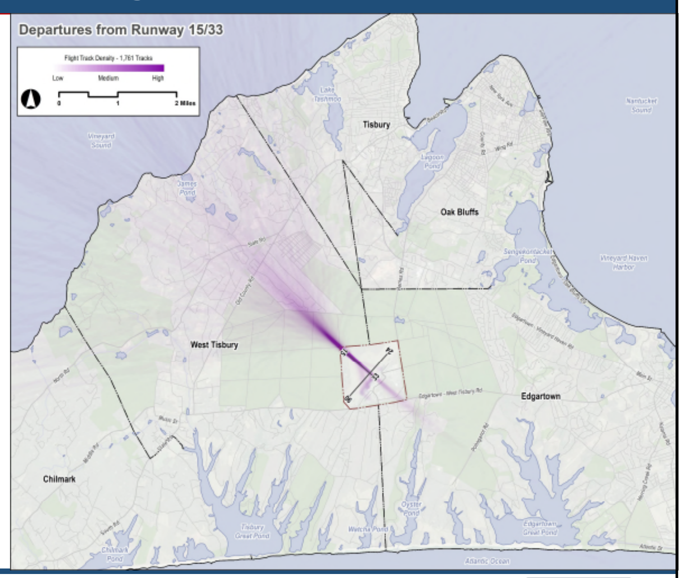
Example Noise Exposure Map

- Major components include:
- DNL 65, 70, and 75 dB contours
- Land use categories
- Historic properties, schools, and places of worship identified
- Jurisdictions responsible for land use/zoning controls
- Noncompatible land uses within the DNL 65+ dB contours

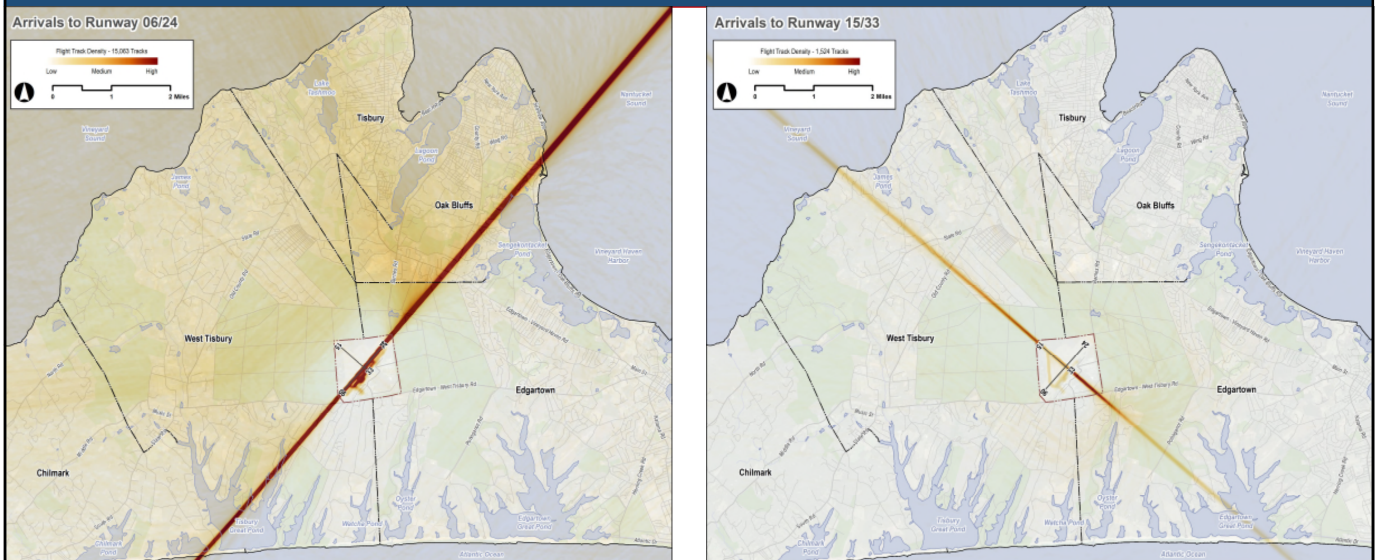


Noise Modeling Input: Departure Flight Tracks





Noise Modeling Input: Arrival Flight Tracks



Projected TAC Meetings & Public Workshops

Meeting	Date	Topic
TAC Meeting #1	***January 31, 2023 (Today)***	***Introduction to the Part 150 process***
Public Information Workshop #1	January 31, 2023 (Today)	Introduction to the Part 150 study
TAC Meeting #2	Target April 2023	Noise modeling inputs
TAC Meeting #3	Target September 2023	Noise measurement results and draft NEM
Public Information Workshop #2	Target September 2023	Presentation of the study results

- Please consider attending the public information workshop this evening at Martha's Vineyard Regional High School (Culinary Arts Room) from 6 to 8 pm

TAC Member Discussion

Adjournment

- Next TAC meeting 2nd Quarter 2023(exact date and time to be determined)
- Project contacts and websites
  - Kate Larson, Project Manager – Part 150 Study
    - Address emails to KLarson@hmmh.com
  - Part 150 Website (https://mvyairport.com/mvypart150-faa-noise-study/)
    - Provides the most relevant information to this study
    - Will be updated regularly for public outreach purposes
    - TAC will receive direct notices
  - MVY Noise Abatement 'Fly Friendly' website
    - https://mvyairport.com/noise-abatement-fly-friendly/

Thanks for attending and participating!

Welcome!

Airport Noise Compatibility Planning Study (Part 150)
Martha's Vineyard Airport

Technical Advisory Committee Meeting #2
April 25, 2023

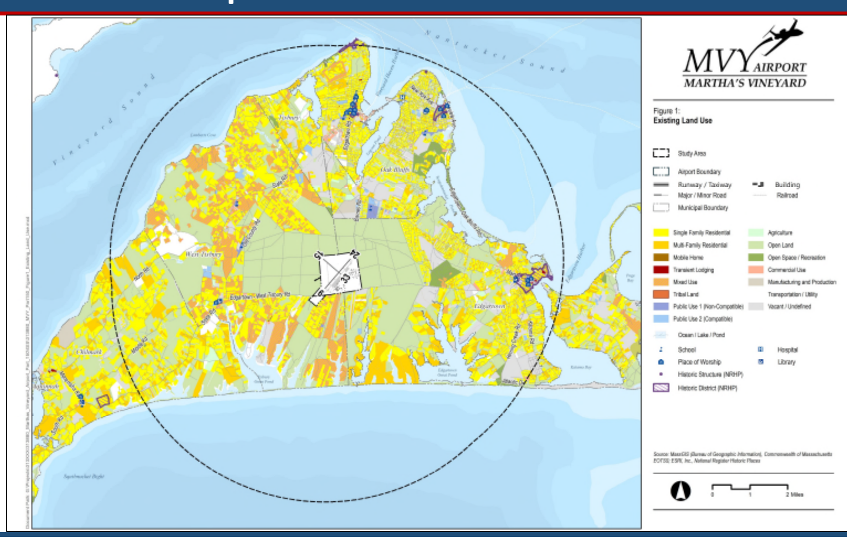
Meeting Agenda

- Welcome and introductions
  - Martha's Vineyard Airport Commission
  - Part 150 Consulting Team
- Project schedule review
- Land use map review
- Discussion of noise model inputs, including forecast operations
- Preview of noise measurement program
- Adjournment

Project Schedule Review

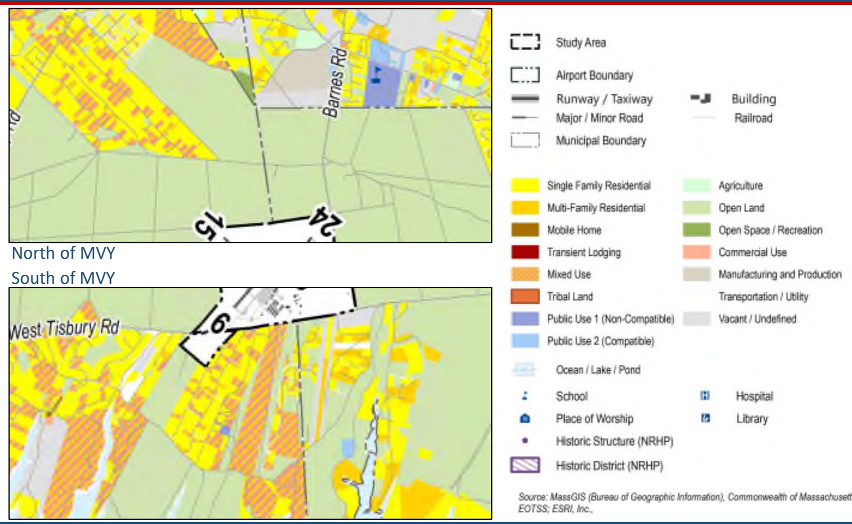
Meeting	Date	Topic
TAC Meeting #1	January 31, 2023	Introduction to the Part 150 process
Public Information Workshop #1	January 31, 2023	Introduction to the Part 150 study
TAC Meeting #2	***April 25, 2023 (Today)***	***Noise modeling inputs***
Noise Measurement Program, July 10 – 18, 2023		
TAC Meeting #3	Target September 2023	Noise measurement results and draft NEM
Public Information Workshop #2	Target September 2023	Presentation of the study results

Land Use Map Review



Land Use Map Review

Zoom-in views of land use closest to Airport



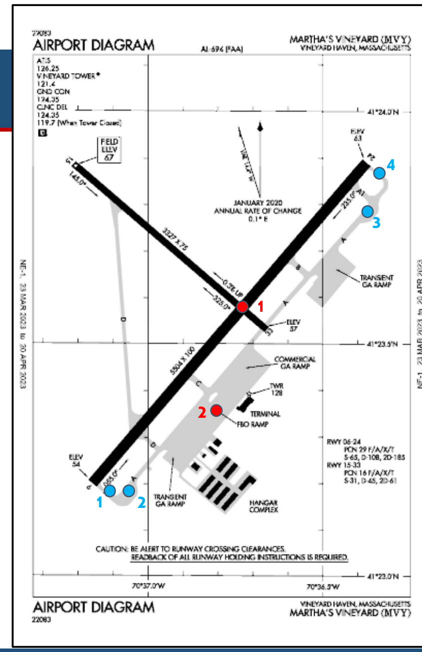
Noise Modeling Inputs

As required, we will use the most recent version of FAA's Aviation Environmental Design Tool (AEDT) that was available at outset of the study, Version 3e. (Released May 9, 2022, https://aedt.faa.gov/3e_information.aspx)

AEDT Input Category	Data Source(s)
Physical description of the airfield layout	FAA 5010 data and AEDT database
Aircraft noise and performance characteristics	Standard AEDT database
Aircraft flight operations	MVY Vector system data/ MJ forecast data
Aircraft ground noise operations	Cape Air staff / MVY staff
Runway utilization rates	MVY Vector system data
Flight track geometry and utilization rates	MVY Vector system data
Meteorological conditions	AEDT database / National Climatic Data Center data
Terrain data	USGS National Elevation Dataset - geoTIFF

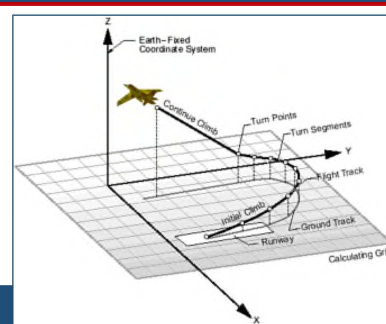
Airport Physical Parameters

- Runway 6/24
  - 60º / 240º
  - 5,504 feet long
  - 100 feet wide
- Runway 15/33
  - 150º / 330º
  - 3,327 feet long
  - 75 feet wide
- "Helipads" modeled at red dots
- Runups/taxi noise modeled at blue dots



Aircraft Noise and Performance Characteristics

- AEDT's database contains:
  - 179 fixed-wing civilian aircraft
  - 84 military aircraft
  - 26 Helicopters
- FAA modeling guidelines provide pre-approved substitutions for hundreds of other aircraft types



Operations Data

- Vector system radar data for 2022 has close to 35,000 fully identified flight records
- We will be modeling 2023 and 2028
- We scale the observed fleet mix up by category to the forecast totals

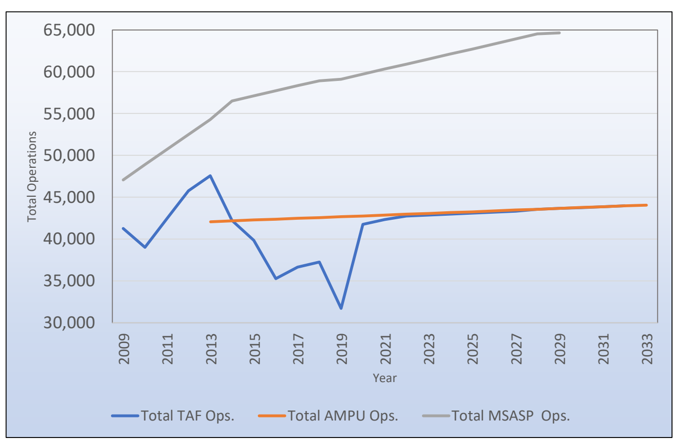
Aviation Forecast

- Discussion Points
  - Previous Airport Forecasts
  - Aviation Industry & Cape and Island Trends
  - Enplanements
  - Air Carrier Operations
  - Air Taxi/Commuter Operations
  - General Aviation
  - Military
  - Aviation Forecasts (Operations & Based Aircraft)

Historical and Forecast - Operations

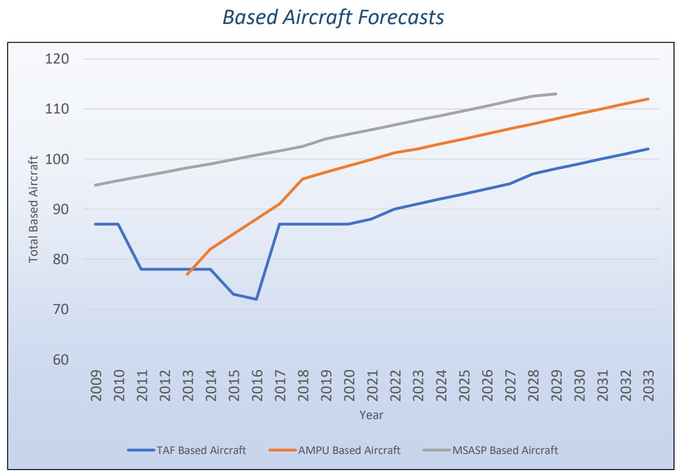
- Review of Previous Forecasts
  - 2016 Airport Master Plan Update (AMPU)
  - 2010 Massachusetts State Airport System Plan (MSASP)
  - FAA Terminal Area Forecast (TAF)

Operations Forecasts



Historical and Forecast – Based Aircraft

- Review of Previous Forecasts
  - 2016 Airport Master Plan Update (AMPU)
  - 2010 Massachusetts State Airport System Plan (MSASP)
  - FAA Terminal Area Forecast (TAF)



Aviation Trends

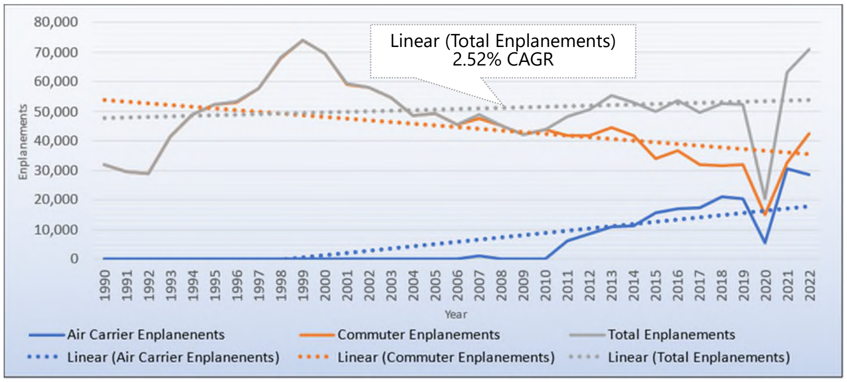
- Post-COVID Recovery
- Airline Consolidation
- Aircraft Up-Gauging
- Pilot Supply
- Fuel Prices
- Electric Aircraft
- New Hangars
- Vineyard Wind

ALICE – an Electric Aircraft

Recent Airline Consolidation

Historical Enplanements

Total enplanements at MVY have seen a continual increase.



Enplanements Forecast

Air Carrier enplanements will be the primary driver of increases in commercial operations.

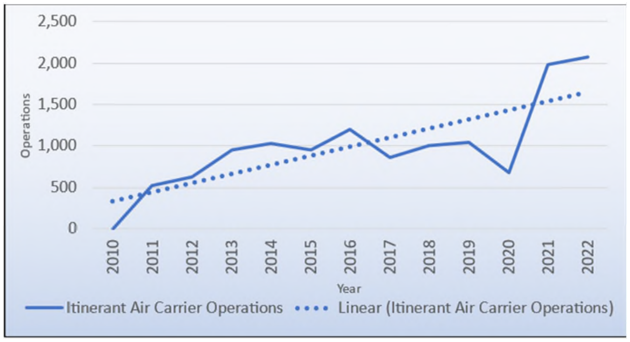
MVY Enplanements Forecast

Year	Air Carrier Enplanements	Commuter Enplanements	Total Enplanements
2024	29,826	42,383	72,209
2025	30,227	42,426	72,653
2026	30,633	42,470	73,103
2027	31,044	42,513	73,557
2028	31,457	42,556	74,013

Air Carrier Operations

Air Carrier operations at MVY have increased since 2010 and it is expected that the trend will continue.

MVY Historic Air Carrier Operations



MVY Air Carrier Operations Forecast

Year	Air Carrier Operations
2023	2,191
2024	2,278
2025	2,369
2026	2,464
2027	2,563
2028	2,665

Air Taxi/Commuter Operations

Air Taxi/Commuter operations have historically decreased. However, given sharp increases over the past two years, a slight increase is forecast.

MVY Historic Air Taxi/Commuter Operations

MVY Air Taxi/Commuter Operations Forecast

Year	Air Taxi / Commuter Operations
2023	19,668
2024	19,722
2025	19,890
2026	19,888
2027	19,974
2028	20,059

General Aviation (GA) Operations

GA operations are forecast to increase following national trends with variations based on recent developments at MVY.

MVY GA Developments

- New 10-Unit T-Hangar
- New Proposed Conventional Hangars
- New Vineyard Wind Hangar
  - 1,800 Additional Operations Expected

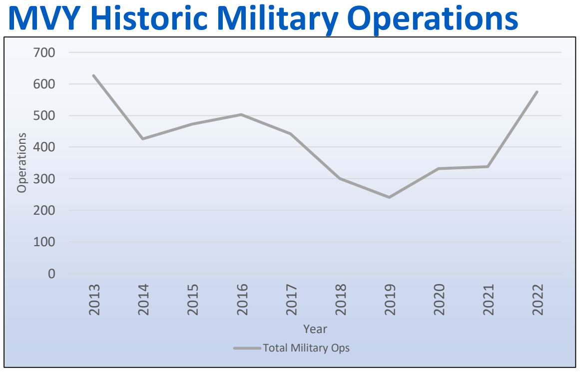
MVY GA Operations Forecast

Year	Local GA Operations	Itinerant GA Operations	Total GA Operations
2023	5040	19,331	24,371
2024	5,095	19,542	24,637
2025	5,150	19,755	24,905
2026	5,207	19,970	25,177
2027	5,263	20,188	25,451
2028	5,321	20,408	25,728

Military Operations

Military operations have varied by year but have been forecast to increase slightly for conservative noise modeling.

MVY Historic Military Operations



MVY Military Operations Forecast

Year	Forecast Military Operations
2023	574
2024	580
2025	586
2026	591
2027	597
2028	603

MVY Forecast Summary

Overall, we expect MVY will see an increase of approximately 2,200 operations from 2023 to 2028.

	Baseline	Forecast				
	2023	2024	2025	2026	2027	2028
Enplanements						
Air Carrier	29,092	29,826	30,227	30,633	31,044	31,457
Commuter	42,340	42,383	42,426	42,470	42,513	42,556
Total	**71,432**	**72,209**	**72,653**	**73,103**	**73,557**	**74,013**
Operations						
Air Carrier	2,191	2,278	2,369	2,464	2,563	2,666
Commuter	19,668	19,722	19,805	19,890	19,974	20,059
GA Itinerant	19,331	19,542	19,755	19,970	20,188	20,408
GA Local	5,040	5,095	5,150	5,207	5,263	5,321
Military	574	580	586	591	597	603
Total	**46,804**	**47,217**	**47,665**	**48,122**	**48,585**	**49,057**

Current and Forecast Year Flight Operations

Operations Period		Air Carrier	Air Taxi/ Commuter	General Aviation	Military	Total
Annual	2023	2,191	19,668	24,371	574	**46,804**
	2028	2,666	20,059	25,729	603	**49,057**
Average Annual Day	2023	6.00	53.88	66.77	1.57	**128.23**
	2028	7.30	54.96	70.49	1.65	**134.40**
Peak Season Avg Day		19.10	88.87	119.26	2.71	**229.94**

Peak season defined as July and August

Current and Forecast Year Flight Operations

Operations Period		Jet	Non-Jet	Helicopter	Total
Annual	2023	9,909	34,531	2,364	**46,804**
	2028	10,647	36,015	2,396	**49,057**
Average Annual Day	2023	27.11	94.61	6.49	**128.21**
	2028	29.15	98.67	6.58	**134.40**
Peak Season Avg Day		67.43	153.72	8.78	**229.94**

Peak season defined as July and August

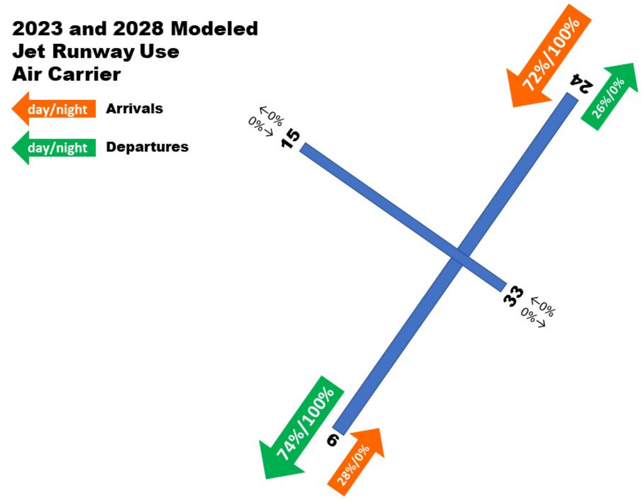
Ground Noise Operations - 2023

Aircraft Type	Runup Location	Heading (Degrees)	Modeled Thrust	Duration (Seconds)	Average Annual Day		
					Day	Night	Total
Cessna 402/Tecnam P2012	R3	60	100%	300	6.64	0.13	6.77
	R2	240	100%	300	2.64	0.05	2.69
Pilatus PC-12	R3	60	100%	300	1.29	0.05	1.34
	R2	240	100%	300	0.51	0.02	0.53
Embraer 170	R4	330	50%	25	0.02	--	0.02
	R1	330	50%	25	0.01	--	0.01
Embraer 175	R4	330	50%	25	0.28	<0.01	0.28
	R1	330	50%	25	0.10	--	0.10
Embraer 190	R4	330	50%	25	0.25	<0.01	0.25
	R1	330	50%	25	0.09	--	0.09

2028 and Peak season ground noise will be modeled in similar proportions

Air Carrier Jet Runway Use

Air carrier jets represent about 5% of MVY flights



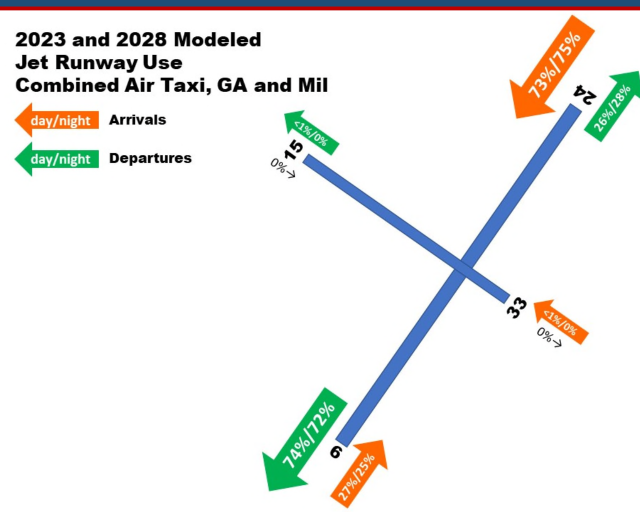
Runway	Air Carrier Jets			
	Arrivals		Departures	
	Day	Night	Day	Night
6	27.6%	--	26.0%	--
24	72.4%	100.0%	74.0%	100.0%
15	--	--	--	--
33	--	--	--	--

Note: Column sums may not appear to be exactly 100.0% due to rounding.

Source: Vector system data Dec. 2021-Nov. 2022 and HMMH analysis, 2023

Combined Air Taxi, GA, and Military Jet Runway Use

Non-air-carrier jets represent about 16% of MVY flights



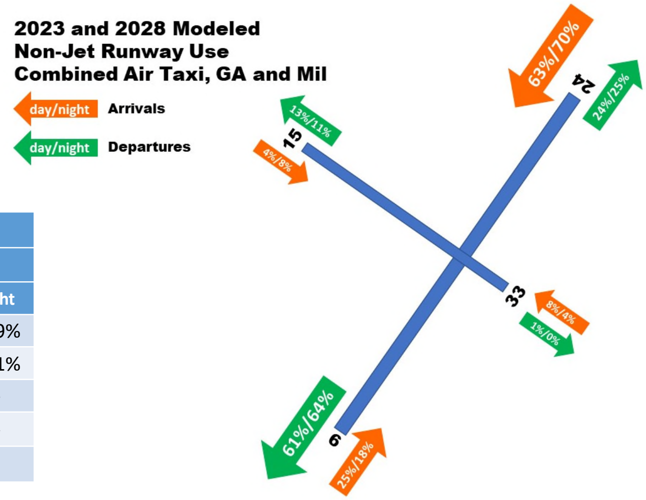
Runway	Air Taxi, GA and Military Jets			
	Arrivals		Departures	
	Day	Night	Day	Night
6	26.5%	25.0%	26.3%	28.3%
24	73.3%	75.0%	73.6%	71.7%
15	--	--	--	--
33	0.1%	--	0.1%	--

Note: Column sums may not appear to be exactly 100.0% due to rounding.

Source: Vector system data Dec. 2021-Nov. 2022 and HMMH analysis, 2023

Combined Air Taxi, GA, and Military Non-Jet Runway Use

- Non-jet fixed wing aircraft represent ~74% of MVY flights
- Only single-engine aircraft will be modeled flying circuits



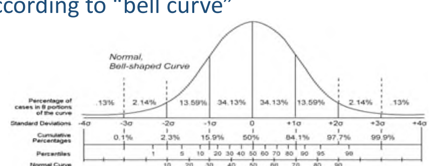
Runway	Air Taxi, GA and Military Non-Jets					
	Arrivals		Departures		Circuits	
	Day	Night	Day	Night	Day	Night
6	24.7%	17.7%	24.4%	25.5%	19.6%	88.9%
24	63.3%	70.3%	61.2%	63.8%	70.8%	11.1%
15	4.4%	8.2%	1.1%	--	2.6%	--
33	7.5%	3.8%	13.3%	10.7%	7.0%	--

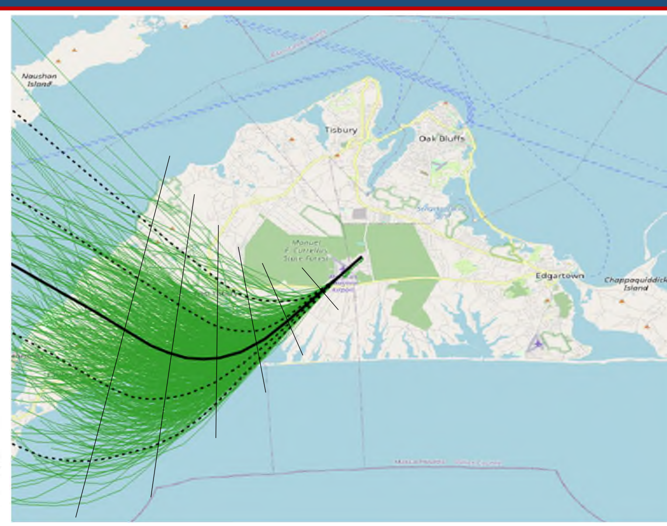
Note: Column sums may not appear to be exactly 100.0% due to rounding.

Source: Vector system data Dec. 2021-Nov. 2022 and HMMH analysis, 2023

Noise Modeling Inputs - Model Track Development

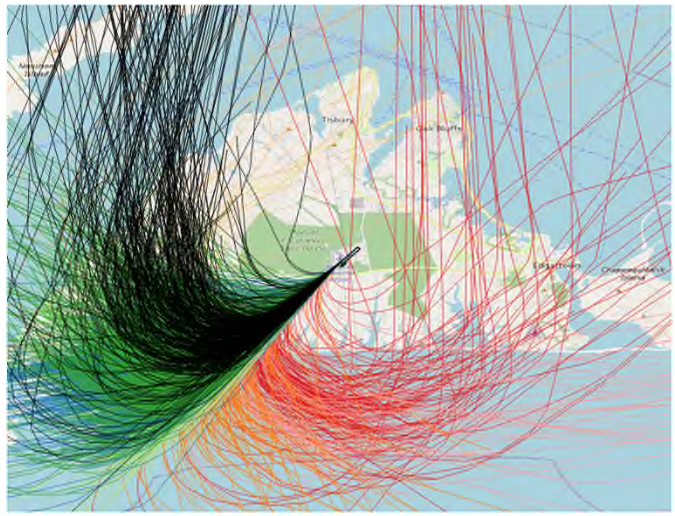
- Green tracks represent one 'bundle' (D24J06)
- Model tracks built to represent geographical distribution
  - o Backbone track (solid black) at geographical median
  - o 'Dispersion' sub-tracks (dashed lines) represent statistical dispersion
  - o Equal number of sub-tracks on each side of backbone track
  - o Track usage percents assigned according to "bell curve"



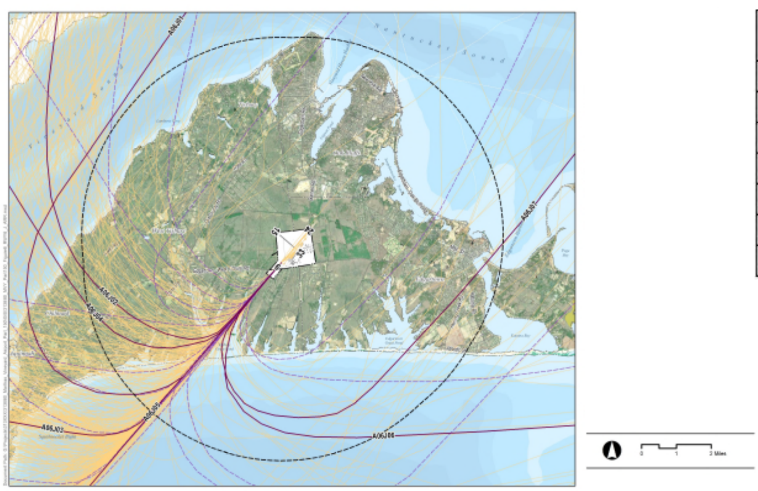


Noise Modeling Inputs - Model Track Development

- All Runway 24 jet departures shown here
- Each color represents a different 'bundle' of geometrically similar tracks
- The bundling & model track building process is repeated for each operation type, runway end, and category (jet, non-jet, helicopter)

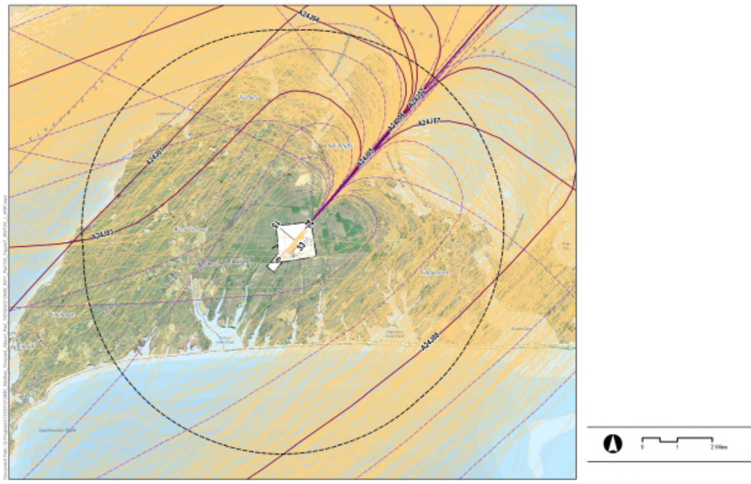


Jet Arrival Flight Tracks, Runway 6



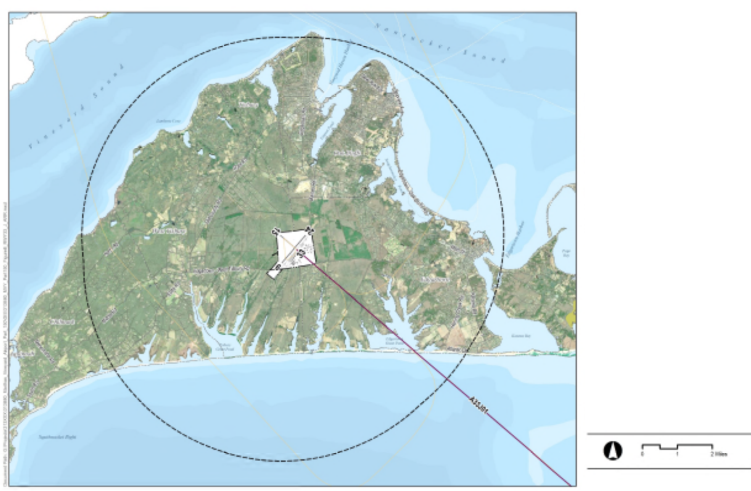
Track Bundle	Day	Night
A06J01	4.8%	8.7%
A06J02	12.4%	0.0%
A06J03	25.5%	21.7%
A06J04	2.1%	0.0%
A06J05	52.6%	69.6%
A06J06	1.1%	0.0%
A06J07	1.5%	0.0%

Jet Arrival Flight Tracks, Runway 24



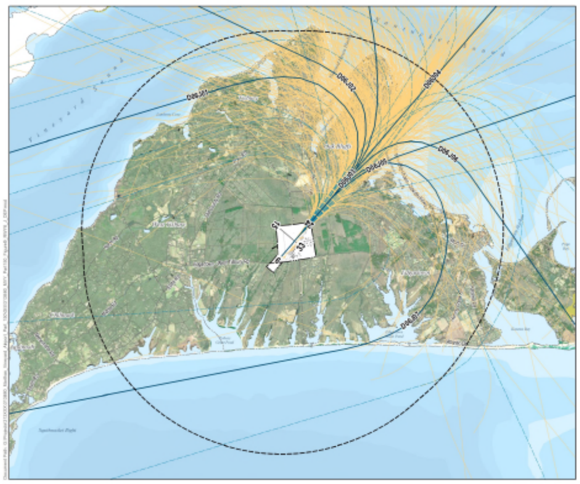
Track Bundle	Day	Night
A24J01	5.1%	13.9%
A24J02	36.8%	27.8%
A24J03	2.4%	4.2%
A24J04	2.8%	2.8%
A24J05	13.6%	12.5%
A24J06	13.1%	19.4%
A24J07	1.3%	0.0%
A24J08	24.9%	19.4%

Jet Arrival Flight Tracks, Runway 33



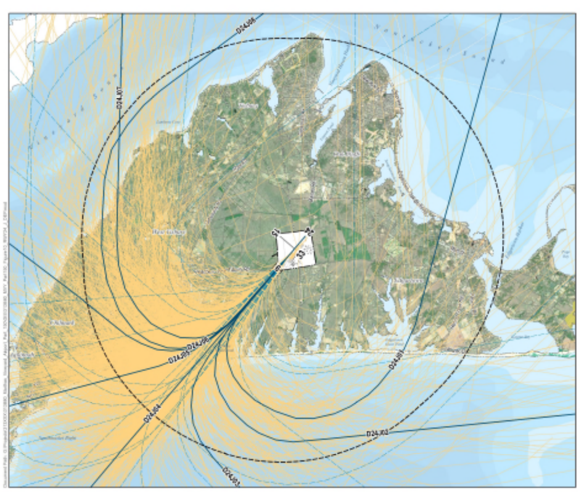
Track Bundle	Day	Night
A33J01	100.0%	N/A

Jet Departure Flight Tracks, Runway 6



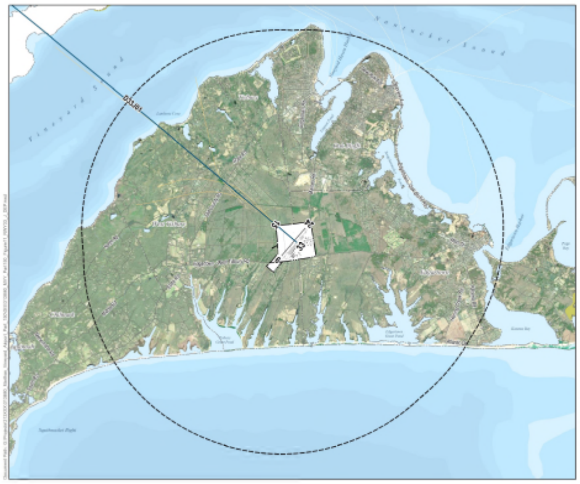
Track Bundle	Day	Night
D06J01	9.7%	17.6%
D06J02	30.3%	5.9%
D06J03	24.3%	23.5%
D06J04	23.3%	52.9%
D06J05	2.7%	0.0%
D06J06	6.4%	0.0%
D06J07	3.2%	0.0%

Jet Departure Flight Tracks, Runway 24



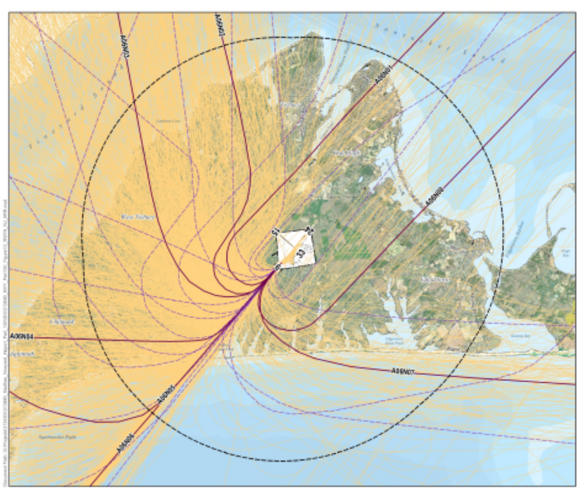
Track Bundle	Day	Night
D24J01	6.6%	6.3%
D24J02	2.9%	0.0%
D24J03	4.2%	0.0%
D24J04	17.5%	22.9%
D24J05	28.0%	31.3%
D24J06	26.2%	29.2%
D24J07	12.4%	6.3%
D24J08	2.3%	4.2%

Jet Departure Flight Tracks, Runway 33



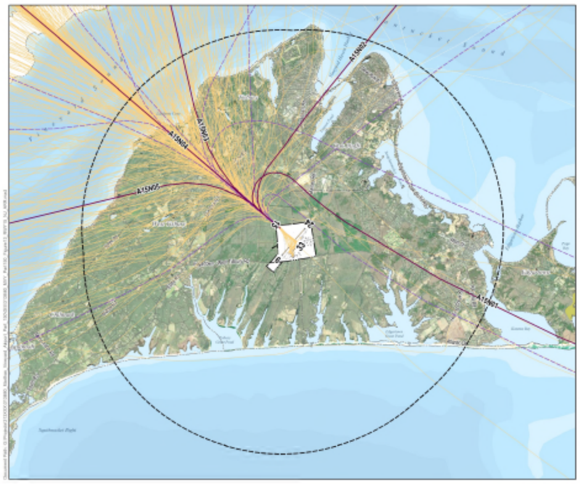
Track Bundle	Day	Night
D33J01	100.0%	N/A

Non-Jet Arrival Flight Tracks, Runway 6



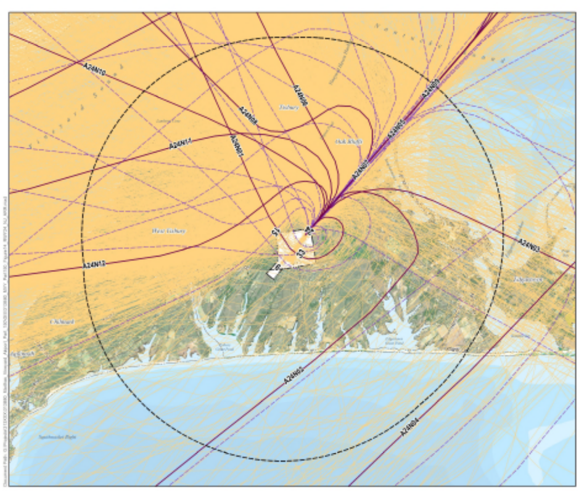
Track Bundle	Day	Night
A06N01	2.8%	13.5%
A06N02	8.2%	1.9%
A06N03	31.3%	30.8%
A06N04	27.0%	21.2%
A06N05	1.8%	0.0%
A06N06	22.6%	25.0%
A06N07	4.2%	0.0%
A06N08	2.2%	7.7%

Non-Jet Arrival Flight Tracks, Runway 15



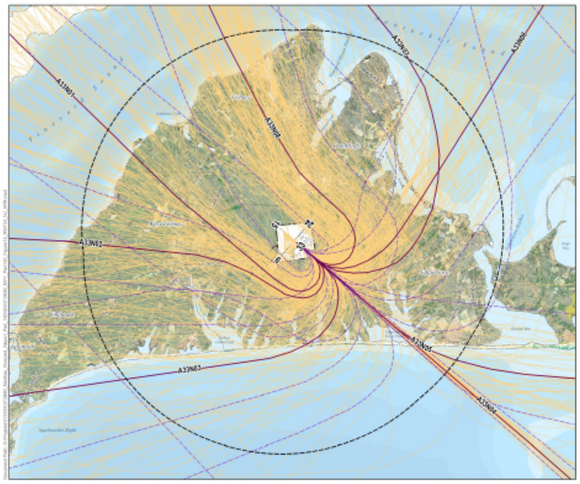
Track Bundle	Day	Night
A15N01	1.2%	0.0%
A15N02	3.9%	0.0%
A15N03	30.6%	4.2%
A15N04	42.4%	87.5%
A15N05	22.1%	8.3%

Non-Jet Arrival Flight Tracks, Runway 24



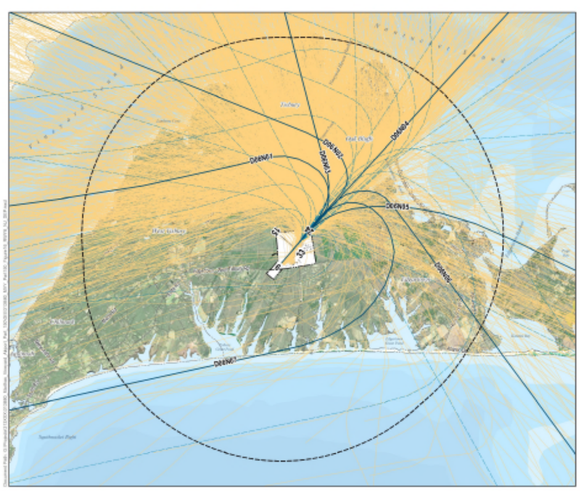
Track Bundle	Day	Night
A24N01	0.3%	1.0%
A24N02	1.5%	4.4%
A24N03	3.8%	2.4%
A24N04	1.4%	0.5%
A24N05	12.8%	41.7%
A24N06	32.3%	11.2%
A24N07	5.3%	4.4%
A24N08	2.2%	0.5%
A24N09	7.0%	11.2%
A24N10	9.2%	5.3%
A24N11	10.0%	7.8%
A24N12	14.2%	9.7%

Non-Jet Arrival Flight Tracks, Runway 33



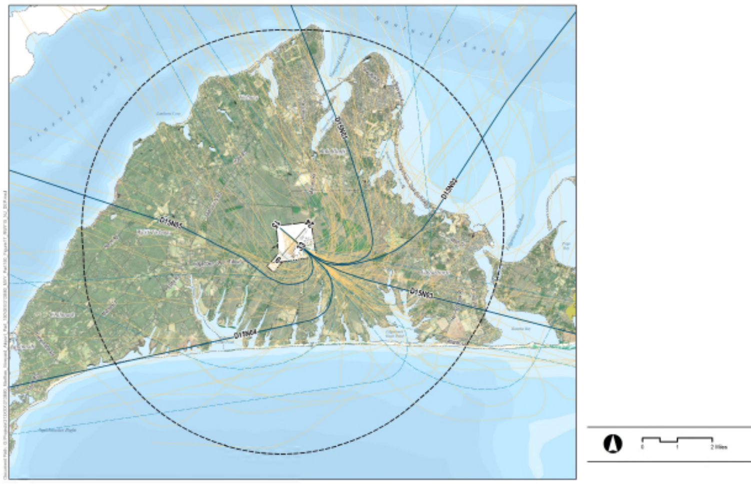
Track Bundle	Day	Night
A33N01	13.0%	18.2%
A33N02	12.1%	0.0%
A33N03	11.2%	9.1%
A33N04	5.0%	0.0%
A33N05	7.5%	0.0%
A33N06	9.1%	63.6%
A33N07	6.0%	0.0%
A33N08	36.1%	9.1%

Non-Jet Departure Flight Tracks, Runway 6



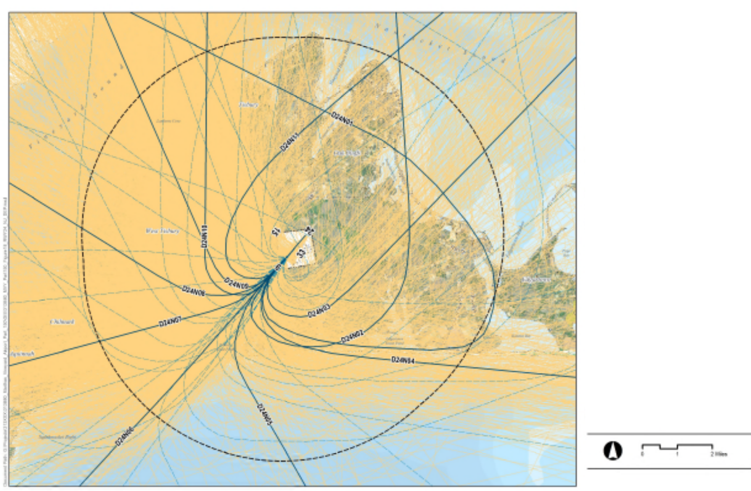
Track Bundle	Day	Night
D06N01	21.3%	11.8%
D06N02	12.3%	11.8%
D06N03	49.5%	61.8%
D06N04	8.8%	6.6%
D06N05	5.2%	5.3%
D06N06	1.5%	1.3%
D06N07	1.4%	1.3%

Non-Jet Departure Flight Tracks, Runway 15



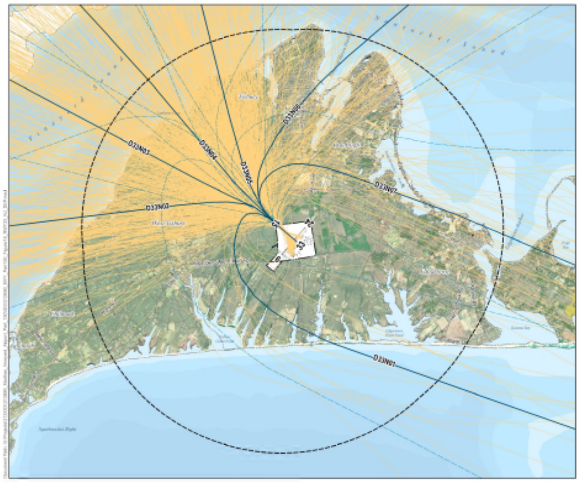
Track Bundle	Day	Night
D15N01	45.9%	N/A
D15N02	11.5%	N/A
D15N03	10.7%	N/A
D15N04	12.3%	N/A
D15N05	19.7%	N/A

Non-Jet Departure Flight Tracks, Runway 24



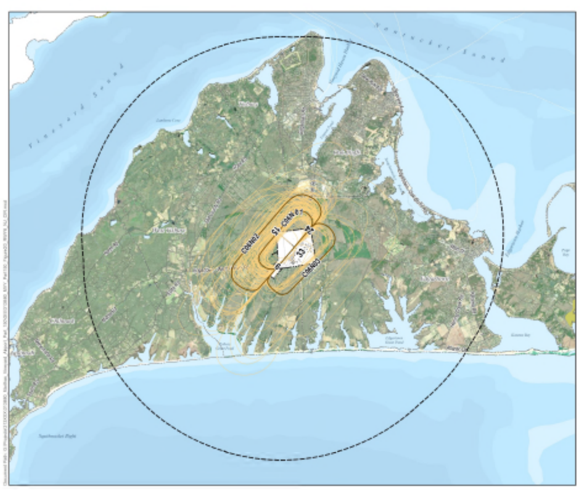
Track Bundle	Day	Night
D24N01	0.5%	0.0%
D24N02	2.7%	1.6%
D24N03	3.5%	2.1%
D24N04	5.0%	1.6%
D24N05	0.7%	0.0%
D24N06	0.6%	0.5%
D24N07	28.0%	45.3%
D24N08	14.2%	9.5%
D24N09	26.4%	28.9%
D24N10	15.4%	9.5%
D24N11	3.0%	1.1%

Non-Jet Departure Flight Tracks, Runway 33



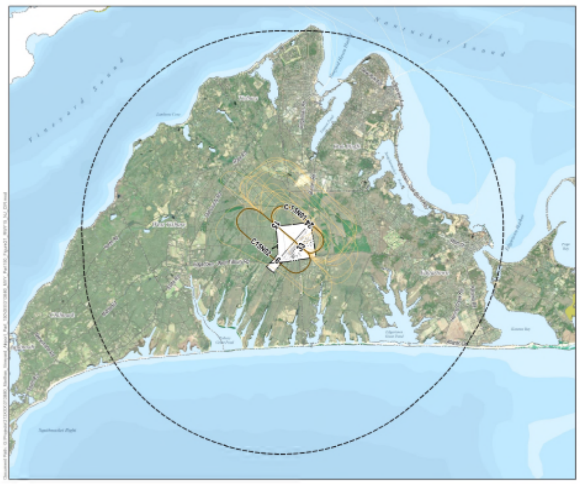
Track Bundle	Day	Night
D33N01	0.9%	0.0%
D33N02	20.1%	37.5%
D33N03	19.4%	25.0%
D33N04	15.0%	3.1%
D33N05	32.6%	25.0%
D33N06	8.5%	6.3%
D33N07	3.5%	3.1%

Non-Jet Circuit Flight Tracks, Runway 6



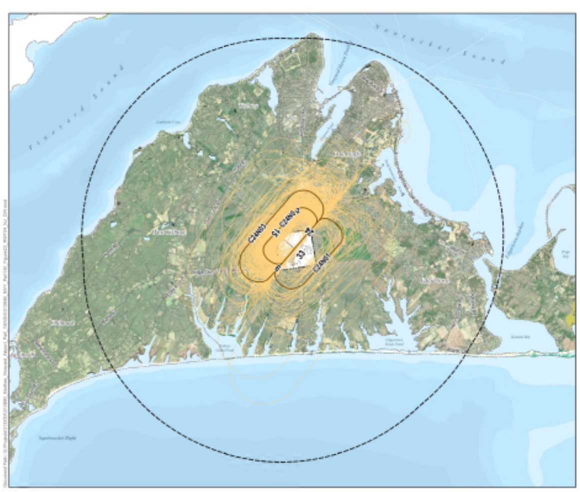
Track Bundle	Day	Night
C06N01	41.0%	100.0%
C06N02	39.2%	0.0%
C06N03	19.8%	0.0%

Non-Jet Circuit Flight Tracks, Runway 15



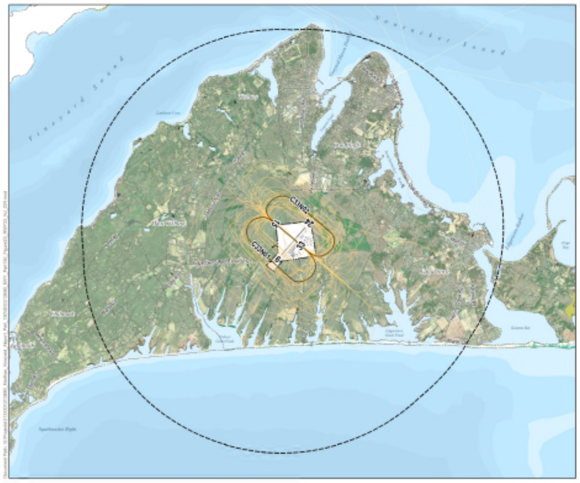
Track Bundle	Day	Night
C15N01	89.7%	N/A
C15N02	10.3%	N/A

Non-Jet Circuit Flight Tracks, Runway 24



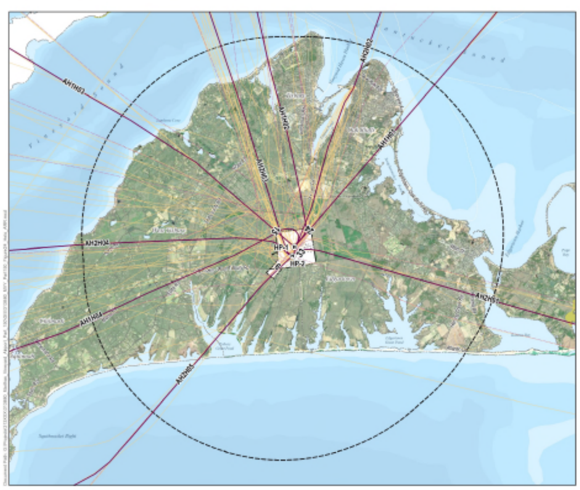
Track Bundle	Day	Night
C24N01	10.4%	0.0%
C24N02	56.0%	0.0%
C24N03	33.6%	100.0%

Non-Jet Circuit Flight Tracks, Runway 33



Track Bundle	Day	Night
C33N01	50.0%	N/A
C33N02	50.0%	N/A

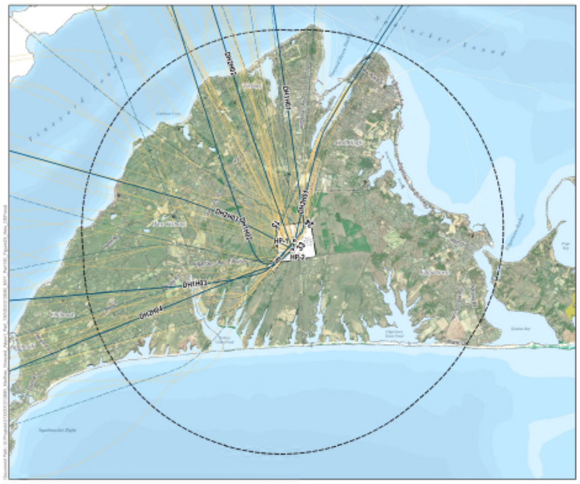
Helicopter Arrival Flight Tracks



Track Bundle	Day	Night
AH1H01	31.0%	33.3%
AH1H02	20.7%	0.0%
AH1H03	20.7%	66.7%
AH1H04	27.6%	0.0%

Track Bundle	Day	Night
AH2H01	7.2%	0.0%
AH2H02	26.1%	75.0%
AH2H03	27.5%	12.5%
AH2H04	34.8%	12.5%
AH2H05	4.3%	0.0%

Helicopter Departure Flight Tracks



Track Bundle	Day	Night
DH1H01	20.0%	0.0%
DH1H02	46.7%	66.7%
DH1H03	33.3%	33.3%

Track Bundle	Day	Night
DH2H01	16.9%	46.2%
DH2H02	41.6%	38.5%
DH2H03	24.7%	0.0%
DH2H04	16.9%	15.4%

Meteorological and Terrain Data

- Meteorological
  - Temperature: 53.1°F
  - Station Pressure: 1013.04 mbar
  - Sea Level Pressure: 1016.29 mbar
  - Dew point: 46.4 °F
  - Relative humidity: 78.03%
  - Wind speed: 8.53 knots
- Terrain
  - USGS National Elevation Dataset
  - Resolution of 1/3 arc second (approx. 33 feet)

example of terrain variation

Noise Measurement Planning

- HMMH and MJ staff will measure noise at multiple sites in residential neighborhoods in peak season
- Planned for week of July 10-18, 2023, using six portable monitors
- Goals:
  - obtain actual Day Night Average Sound Level (DNL) values at residences closest to the airport during the peak season,
  - obtain single event noise data (SELs) from typical airport operations, and
  - understand how noise levels change under different conditions (traffic flow direction and weather changes)

General Neighborhoods for Monitor Sites

- 4 primary sites
  - Use 4 of the 6 monitors
  - Closest residences
  - Busiest air traffic
  - Collect data all week (180 hours)
  - Circles 2, 3, 4, 5
- 5-8 secondary sites
  - Use other 2 monitors
  - Collect 24 – 60 hours
  - Different types of aircraft noise events
  - Circles 1, 2, 6, and other

TAC Member Discussion

Our purpose for presenting noise model inputs before running the model is to accurately represent current and reasonable forecasted operations.

Any comments on the model inputs memo should be addressed to HMMH by May 1, 2023.

Adjournment

- Third and final TAC meeting in September 2023 (date and time to be determined)
- Project contacts and websites
  - Kate Larson, Project Manager – Part 150 Study
    - Address emails to KLarson@hmmh.com
  - Part 150 Website (https://mvyairport.com/mvypart150-faa-noise-study/)
    - Provides the most relevant information to this study
    - Will be updated regularly for public outreach purposes
    - TAC will receive direct notices
  - MVY Noise Abatement 'Fly Friendly' website
    - https://mvyairport.com/noise-abatement-fly-friendly/

Thanks for attending and participating!

Welcome!

Airport Noise Compatibility Planning Study (Part 150)
Martha's Vineyard Airport

Technical Advisory Committee Meeting #3
October 10, 2023

Meeting Agenda

- Welcome and introductions
  - Martha's Vineyard Airport Commission
  - Part 150 Consulting Team
  - Project schedule review
- Review of land use map and noise model inputs, including forecast operations
- Review of Noise Exposure Maps and noise measurement program
- Review of "Fly Friendly" voluntary noise abatement program
- Adjournment

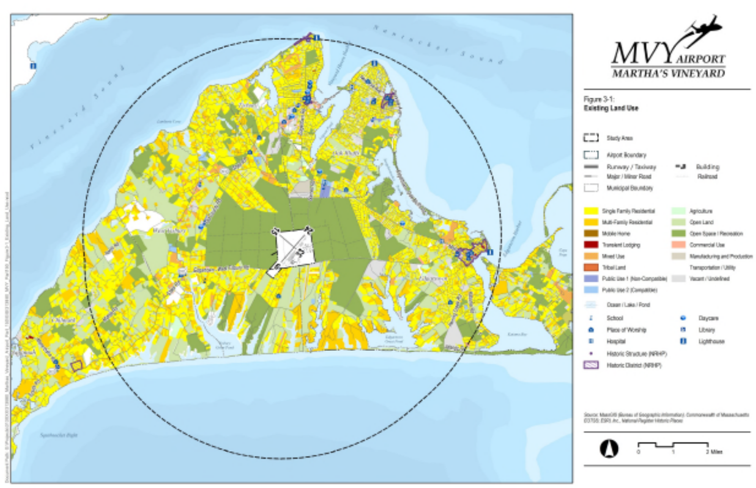
Project Schedule Review

Meeting	Date	Topic
TAC Meeting #1	January 31, 2023	Introduction to the Part 150 process
Public Information Workshop #1	January 31, 2023	Introduction to the Part 150 study
TAC Meeting #2	April 25, 2023	Noise modeling inputs
Noise Measurement Program, July 10 – 18, 2023		
TAC Meeting #3	***October 10, 2023 (Today)***	***Noise measurement results and draft NEM***
Public Information Workshop #2	October 10, 2023 (Today)	Presentation of the study results

Please consider attending the public information workshop this evening at Martha's Vineyard Airport in the airport terminal from 6 to 8 pm

Land Use Map Review

Minor adjustments to the land use map made based on windshield survey observations, July 2023



Land Use Map Review

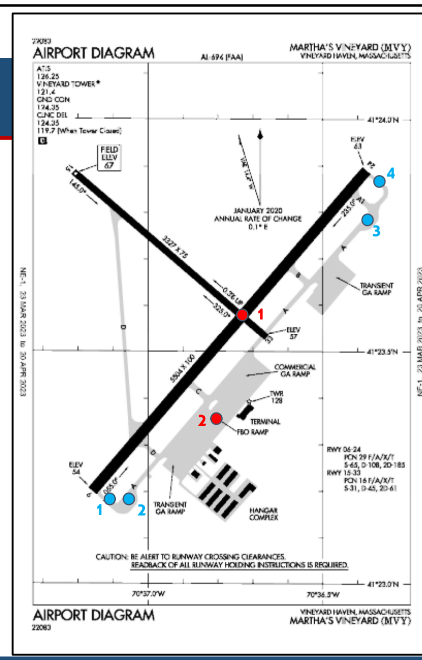
Zoom-in views of land use closest to Airport

North of MVY

South of MVY

Airport Physical Parameters

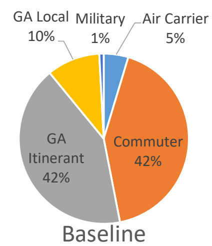
- Runway 6/24
  - 55º / 235º
  - 5,504 feet long
  - 100 feet wide
- Runway 15/33
  - 145º / 325º
  - 3,327 feet long
  - 75 feet wide
- "Helipads" modeled at red dots
- Runups/taxi noise modeled at blue dots

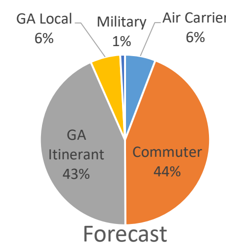


MVY Forecast Summary

Overall, we expect MVY will see an increase of approximately 1,700 operations from 2023 to 2028.

	Baseline	Forecast
	2023	2028
Annual Operations		
Air Carrier	2,165	2,634
Commuter	19,629	19,899
GA Itinerant	19,529	20,627
GA Local	4,695	2,575
Military	393	413
Total	**46,411**	**48,148**





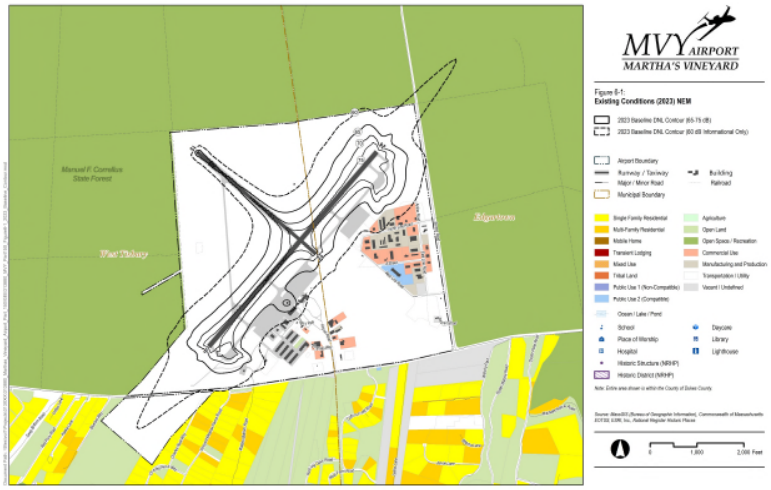
Current and Forecast Year Flight Operations

Operations Period		Jet	Non-Jet	Helicopter	Total
Annual	2023	9,880	34,236	2,295	**46,411**
	2028	10,568	35,257	2,323	**48,148**
Average Annual Day	2023	27.0	93.8	6.3	**127.1**
	2028	29.0	96.6	6.4	**132.0**
Peak Season Avg Day*		67.4	153.7	8.8	**229.9**

*Peak season defined as July and August. Analysis based on counts from 2022 flight data.

Draft Noise Exposure Contours – 2023

- Outermost contour DNL 60 dB shown for informational purposes only



Draft Noise Exposure Contours – 2028

- Outermost contour DNL 60 dB shown for informational purposes only

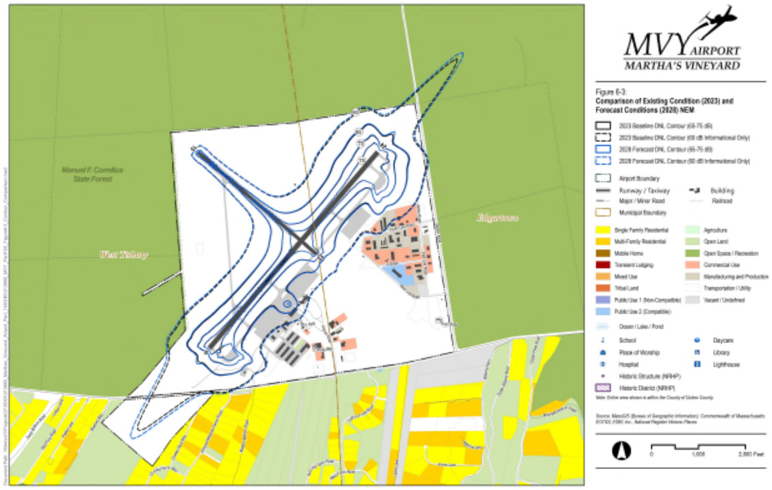
Draft Noise Exposure Contours – 2023/2028

DNL 60 dB (dashed contours) are shown for informational purposes only

Key changes:

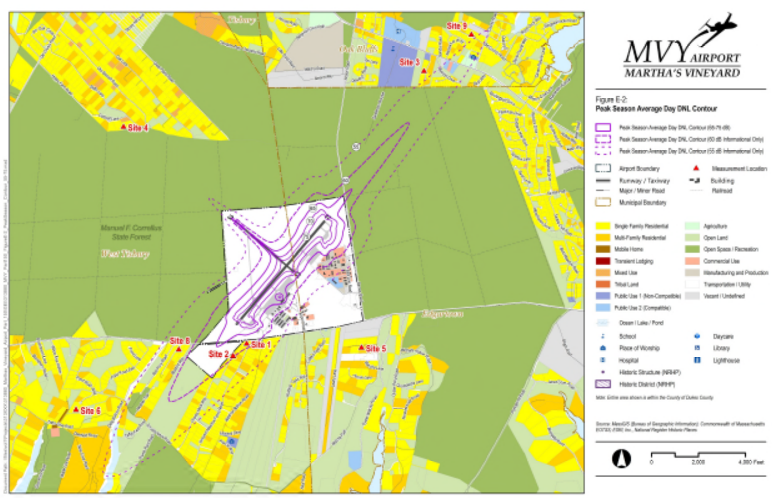
- 3.75% increase in operations from 2023-2028 (4.8 more average daily operations)
- JetBlue fleet mix changes (Embraer 190 → Airbus A220)

Noise Level, DNL	Existing – 2023		Forecast – 2028	
	Estimated Population	Estimated Hou sing Units	Estimated Population	Estimated Ho using Units
65-70 dB	0	0	0	0
70-75 dB	0	0	0	0
75+ dB	0	0	0	0
Total	**0**	**0**	**0**	**0**



Draft Noise Exposure Contours – Peak Season

- Outermost contour DNL 55 dB shown for informational purposes and comparison to contours on MVY website

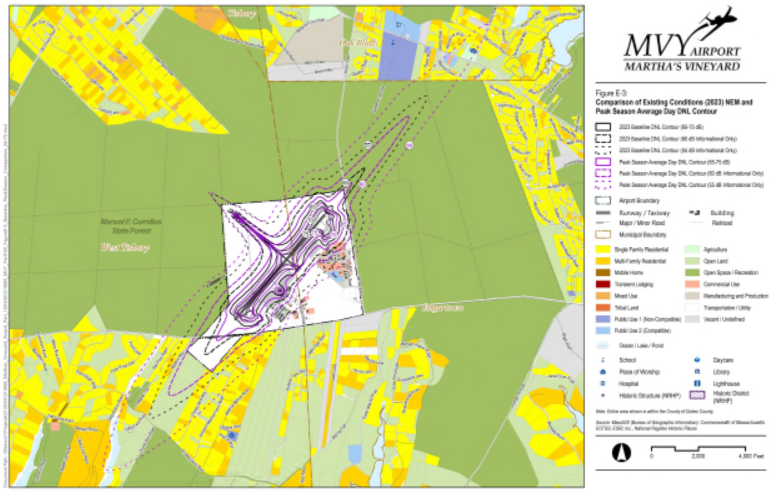


Peak season defined as July and August. Analysis based on counts from 2022 flight data.

Draft Noise Exposure Contours – 2023/Peak Season

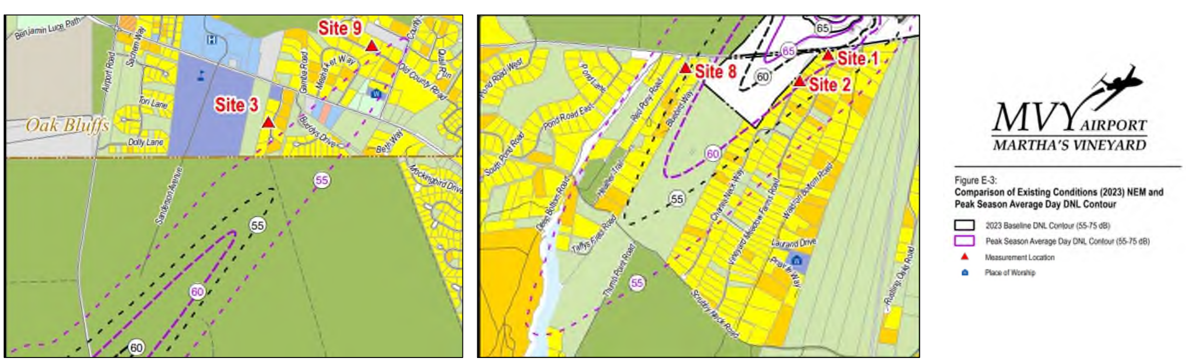
- Outermost contour DNL 55 dB shown for informational purposes and comparison to contours on MVY website

Peak season defined as July and August. Analysis based on counts from 2022 flight data.



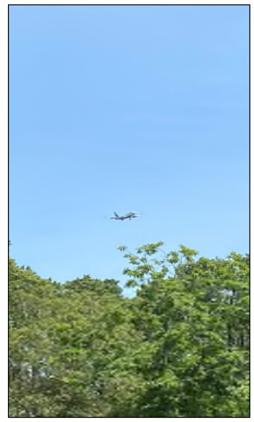
Draft Noise Exposure Contours – 2023/Peak Season

Zoom-in views of land use closest to Airport



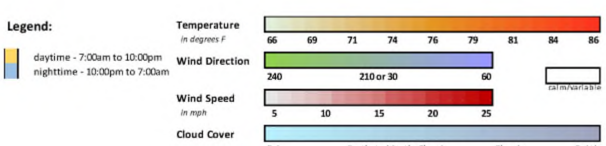
Noise Measurement Program

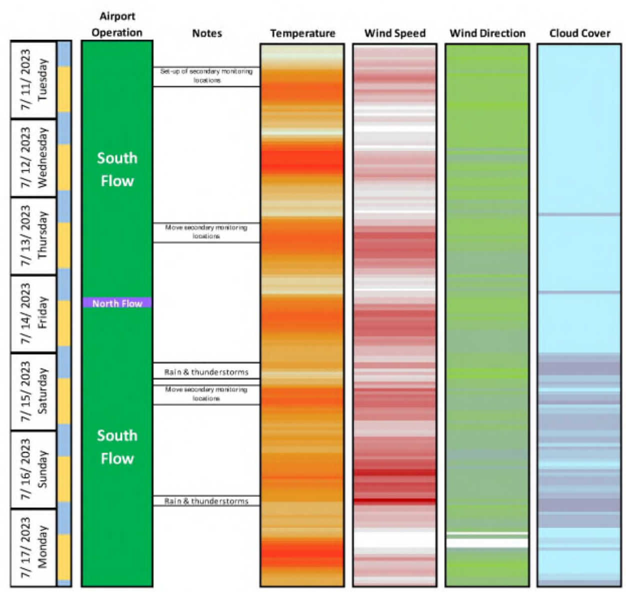
- HMMH and MJ staff measured noise at 10 sites from July 10-18, 2023
  - Staff spent time observing and logging aircraft noise events
- Goals:
  - measure Day Night Average Sound Level (DNL) values during the peak season,
  - obtain single event noise data (SELs) from typical airport operations



Noise Measurement Program

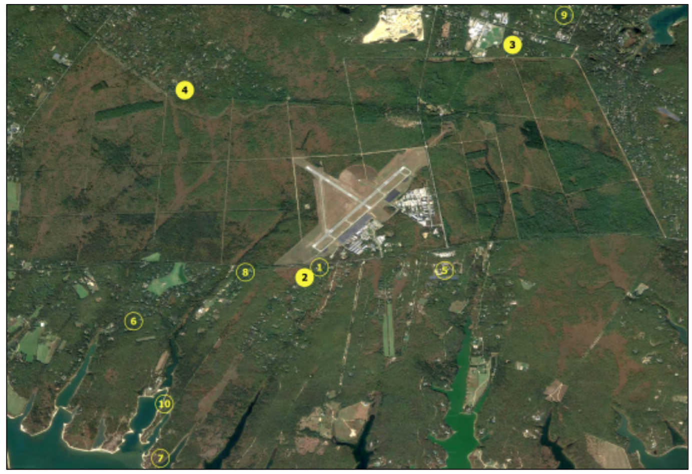
- Airport was in south flow almost exclusively (arrivals to and departures from Runway 24)
- Flow direction corresponds to wind direction
- Excess noise energy from rain and thunderstorms was excluded from DNL calculations
- Airport briefly closed on Saturday afternoon



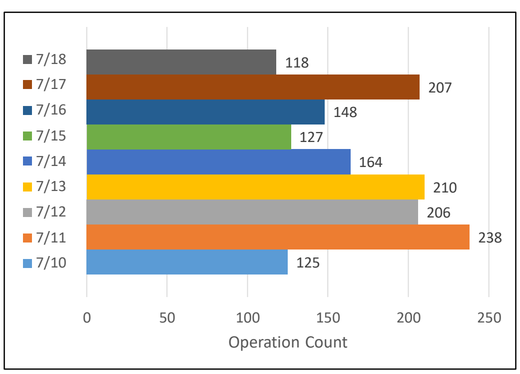


Noise Monitor Locations

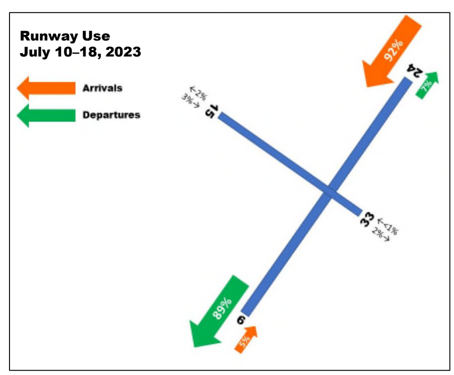
- 3 primary sites
  - Used 3 of the 6 monitors
  - Closest to runway ends
  - Collected data all week (180 hours)
  - Circles 2, 3, 4
- 7 secondary sites
  - Used other 3 monitors
  - 48 – 120 hours at each
  - Different types of aircraft noise events
  - Circles 1, 5, 6, 7, 8, 9, 10



Aircraft Activity During Measurement Program

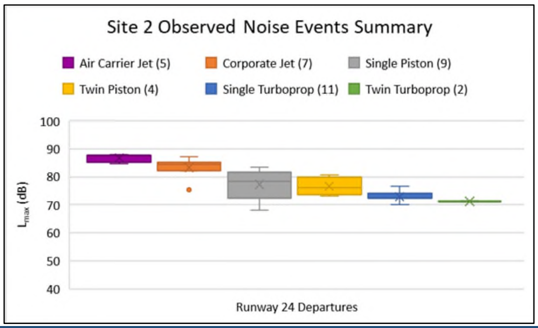


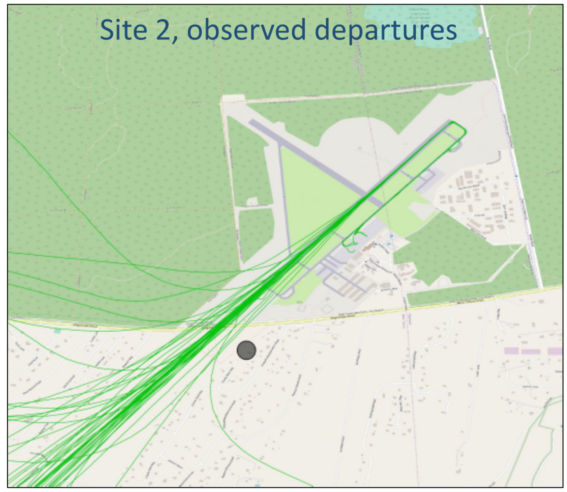
- An average of 230 operations per day were modeled for the peak season contours
- Peak season runway use was modeled with about 80% using Runway 24



Sample of Measured Noise Levels – Aircraft Events

Aircraft Category	Number of Events	L_{max} Range
Air Carrier Jet	5	85 – 88
Corporate Jet	7	75 – 87
Single Piston	9	68 – 83
Twin Piston	4	73 – 81
Single Turboprop	11	70 – 77
Twin Turboprop	2	71 – 71





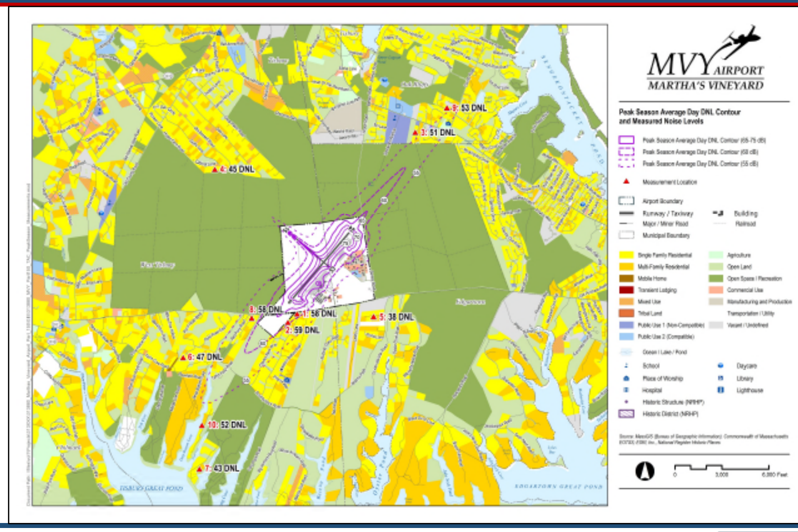
Measured Noise Levels – DNL

- All measured aircraft DNL are well below 65 dB
- Total DNL includes non-aircraft noise sources

Site	Location	Tues July 11	Wed July 12	Thurs July 13	Fri July 14	Sat July 15	Sun July 16	Mon July 17	Aircraft Total DNL	Total DNL with All Sources
1	Vineyard Meadow Farms Road				56	57	59	59	**58**	**59**
2	Vineyard Meadow Farms Road	58	57	57	57	59	61	60	**59**	**60**
3	Ryan's Way, Oak Bluffs	49	48	52	51	49	52	54	**51**	**53**
4	Catboat Lane	44	43	45	47	47	45	46	**45**	**55**
5	Watcha Path	37	39						**38**	**53**
6	South Pond Road		46						**47**	**50**
7	Middle Point Road				43				**43**	**54**
8	Edgartown – West Tisbury Road						59	57	**58**	**59**
9	Quantapog Road		51	55	55				**53**	**55**
10	Thumb Point Road						50		**52**	**55**

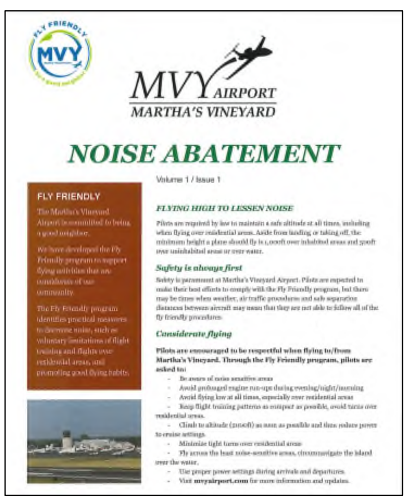
Measured Noise Levels – DNL

Site	Peak Season AEDT-Calculated DNL	Difference (Measured – Peak-Season AEDT)
1	61	-3
2	60	-1
3	54	-3
4	48	-3
5	45	-7
6	50	-5
7	47	-5
8	58	-1
9	54	-1
10	52	-1



Fly Friendly Program Assessment

- MVY's noise abatement program established in 2003
- Voluntary & informal
- Evaluation based on the program materials published on the website, compared to full year of radar flight track data


MVY AIRPORT
MARTHA'S VINEYARD

NOISE ABATEMENT

Volume 1 / Issue 1

FLY FRIENDLY

FLYING HIGH TO LESSEN NOISE

Safety is always first

Considerate flying


Delaying aircraft turns

"Complying with voluntary noise abatement procedures helps maintain the character of Martha's Vineyard that has made it a treasured place to live, work and visit"

VOLUNTARY NOISE ABATEMENT PROGRAMS AT MVY

KATAMA AIRFIELD TRAFFIC (NOT CONTROLLED BY MVY ATC)

NOISE REDUCTIONS ON THE GROUND

MVY frequencies

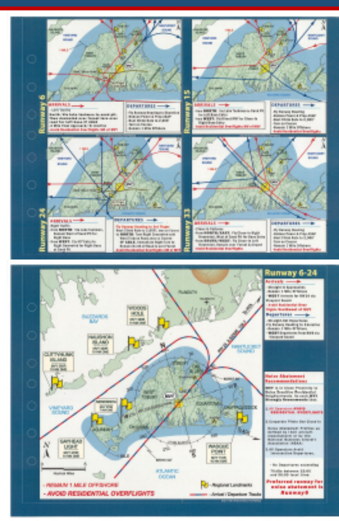
https://mvyairport.com/noise-abatement-fly-friendly/

Fly Friendly Noise Abatement Program

Measure Number[2]	Recommendation[1]	Measure Status[3]
1	Delaying Aircraft Turns	Partially followed
2	No Departures Exceeding the 75dB Between 2200 and 0600 local Time	Followed
3	All Aircraft to Avoid Intersection Departures	Followed
4	Noise Abatement Profiles	N/A
5	Preferred Runway for Noise Abatement is Runway 06	Partially followed
6	Use Over-water Approaches/Departures for Runway 6/24	Not followed
7	Pattern Altitudes	Not followed
8	Remain 1 Mile Offshore When Circumnavigating the Island	Not followed
9	Use FAA Advisor Circular AC90-66A	N/A
10	Noise Reductions on the Ground	N/A

Notes:
(1) Measure information obtained from https://mvyairport.com/noise-abatement-fly-friendly/
(2) Numbering of measures is for the purposes of this evaluation; the measures are not numbered on the Fly Friendly program description published on the airport website

Measure 1: Delaying Aircraft Turns



"Light"
Aircraft under 12,500 lbs

Common light aircraft –
C402 (Cessna 402, Cape Air)
PC12 (Pilatus PC-12 Tradewind)
C172, P28A, C208 etc,
including smaller jets like
C25B (Cessna Citation)
SF50 (Cirrus Vision SF50)
E50P (Embraer Phenom 100)
HDJT (HondaJet), etc.

Aircraft weight data source
https://aspm.faa.gov/aspmhelp/index/Weight_Class.html

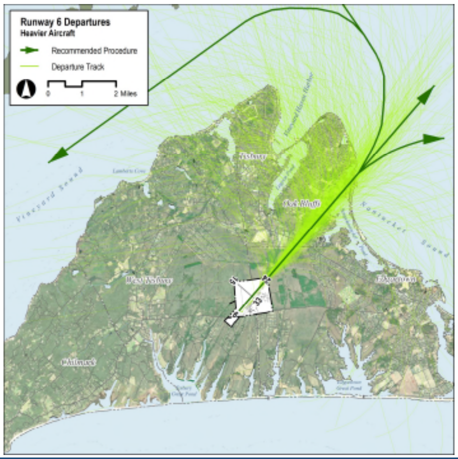
"Heavy"
Aircraft over 12,500 lbs

Common heavy aircraft –
E190 (JetBlue),
E175 (American, Delta),
larger business jets like
C680 (Cessna Citation Sovereign)
C56X (Cessna Citation Excel)
CL60 (Bombardier Challenger 600)
GIV (Gulfstream IV), etc.

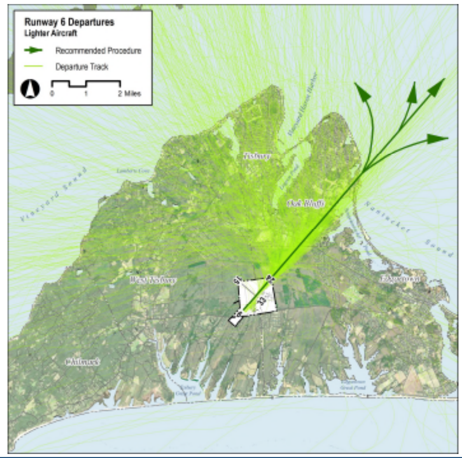
Fly Friendly diagrams can be viewed at
https://mvyairport.com/noise-abatement-fly-friendly/

Flight Track Assessment (Runway 6 departures)

Heavy (>12,500 lbs)

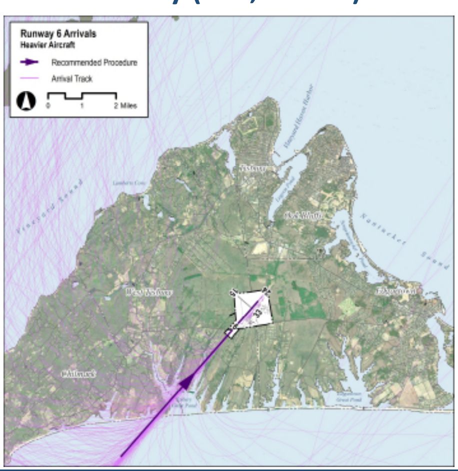


Light (<12,500 lbs)

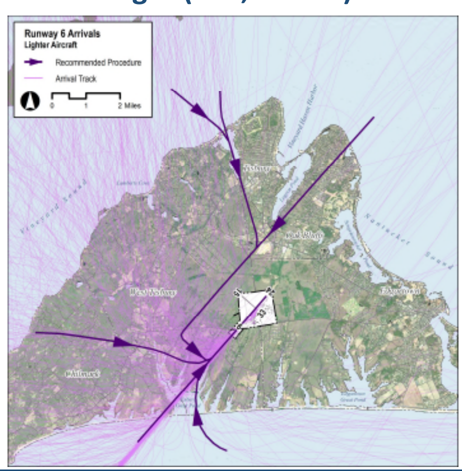


Flight Track Assessment (Runway 6 arrivals)

Heavy (>12,500 lbs)

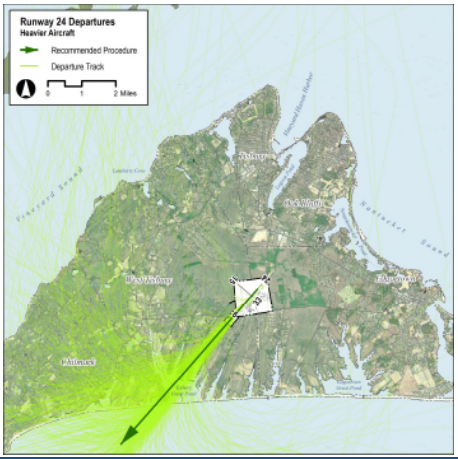


Light (<12,500 lbs)

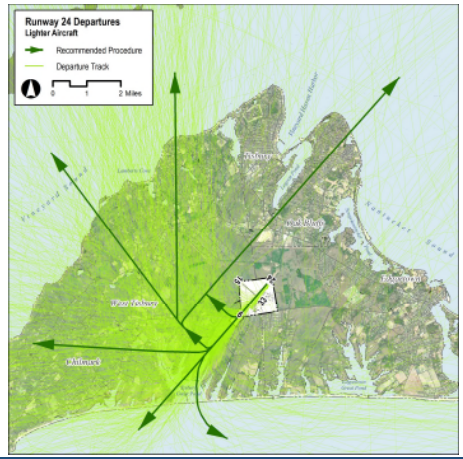


Flight Track Assessment (Runway 24 departures)

Heavy (>12,500 lbs)

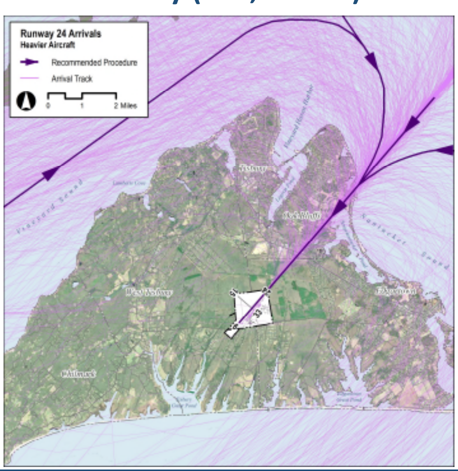


Light (<12,500 lbs)

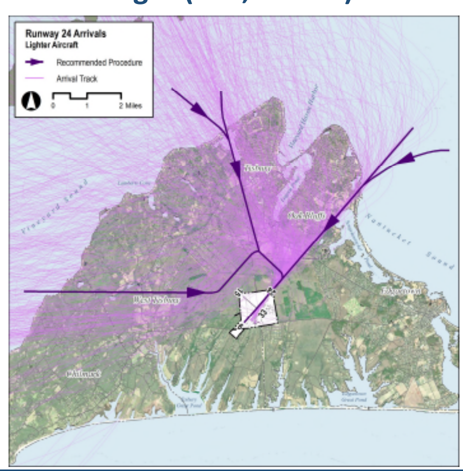


Flight Track Assessment (Runway 24 arrivals)

Heavy (>12,500 lbs)

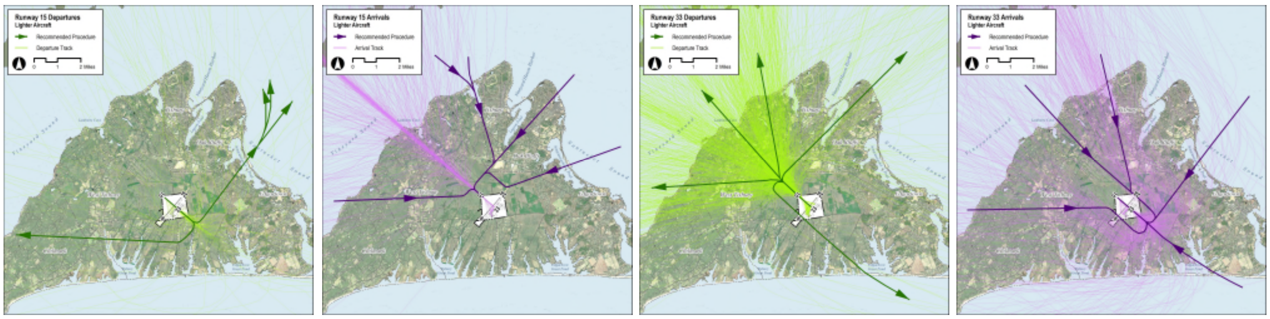


Light (<12,500 lbs)



Flight Track Assessment (Runway 15/33 light aircraft)

Runway 15 **Runway 33**



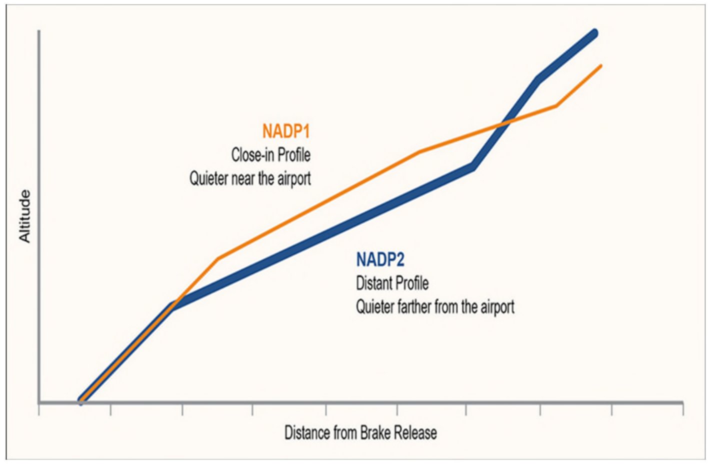
Additional Fly Friendly Measures

- Measure 2: No departures exceeding 75dB between 2200 and 0600 local time
  - In effect 10 pm to 6 am during May 15–October 31, and 5 pm to 7 am during November 1–May 14
- Measure 3: All aircraft to avoid intersection departures
  - Departing aircraft utilize full runway length to maximize altitude once off airport property

Measure information obtained from https://mvyairport.com/noise-abatement-fly-friendly/
Numbering of measures is for the purposes of this evaluation; the measures are not numbered on the Fly Friendly program description published on the airport website

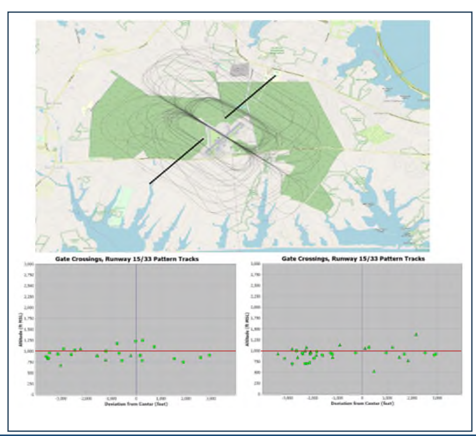
Additional Fly Friendly Measures

- Measure 4: Use NBAA Noise Abatement Profiles ("Close-in")
  - Noise benefit to areas adjacent to the airport
  - MVY has not formally recommended corporate aircraft operators to implement close-in procedures
- Measure 5: Preferred runway for noise abatement is Runway 06
  - Utilization of Runway 6 is 23.4%
- Measure 6: Use Over-water Approaches/Departures (06/24) to Reduce Noise Over Residential Areas, Especially at Night and Early Mornings



Additional Fly Friendly Measures (cont.)

Measure 7: Pattern Altitudes (light aircraft: 1,000 ft; large and turbine powered aircraft: 1,500 ft)



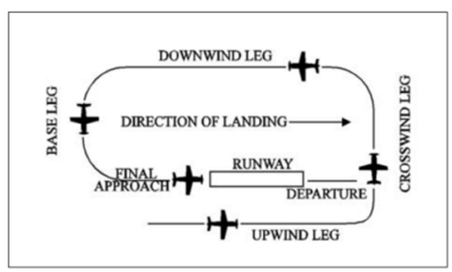
Additional Fly Friendly Measures (cont.)

Measure 8: Remain 1 Mile Offshore When Circumnavigating the Island

- Compliance: 0%

Additional Fly Friendly Measures (cont.)

- Measure 9: Use FAA Advisory Circular AC90-66A
  - Recommended traffic patterns and procedures at airports without control towers or when control tower isn't operating



- Measure 10: Noise Reductions on the Ground
  - Limit APU use to 15 minutes

Next Steps

- Public information workshop on October 10th (today) from 6 to 8 pm
  - Martha's Vineyard Airport terminal
- Public comment period ends November 6
- The final report to be submitted to FAA by December 15
  - FAA will publish a record of acceptance of the NEMs and Report in the Federal Register
- MVY will use the information to
  - Communicate with pilots and ATCT on voluntary measures
  - Potential approach plate formalization – utilize waypoints
  - Communicate with town planning boards

TAC Member Discussion

Any comments on the NEM report should be addressed to HMMH by November 6, 2023.

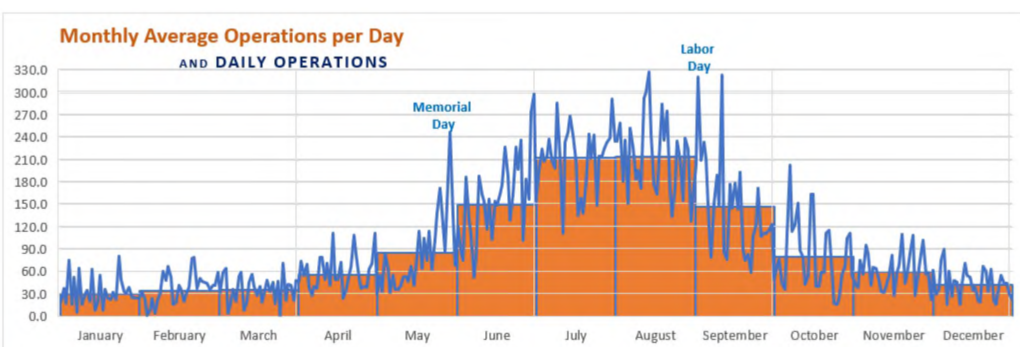
Adjournment

- Thank you for your participation in this process!
- Project contacts and websites
  - Kate Larson, Project Manager – Part 150 Study
    - Address emails to KLarson@hmmh.com
  - Part 150 Website (https://mvyairport.com/mvypart150-faa-noise-study/)
    - Provides the most relevant information to this study
    - Will be updated regularly for public outreach purposes
    - TAC will receive direct notices
  - MVY Noise Abatement 'Fly Friendly' website
    - https://mvyairport.com/noise-abatement-fly-friendly/

Thanks for attending and participating!

Peak Season

Peak season (for noise modeling purposes) is defined as July and August



Data source: Vector Radar Flight Track Data Dec 1, 2021- Nov.30, 2022

F.4 Technical Advisory Committee Summaries

The following 12 pages present

- a copy of the summary notes from TAC Meeting #1 (5 pages)
- a copy of the summary notes from TAC Meeting #2 (4 pages)
- a copy of the summary notes from TAC Meeting #3 (3 pages)

MVY Part 150 Technical Advisory Committee (TAC) Meeting #1 Notes

1/31/2023 1:00 pm, Airport Fire Station conference room, with Zoom meeting connection

- **Introductions** by Geoff Freeman, Airport Director, of consultant team: Matthew O'Brien, Bob Mentzer, Kate Larson, Bryan Rand and TAC members, including FAA and Mass DOT representatives
- Part 150 team roles identified
- **Airport overview**
- MVY existing noise abatement program – all procedures are voluntary
    - Question about abbreviations (NBAA- National Business Aviation Association, AOPA= Aircraft Owners and Pilots Association)
- **Part 150 program overview**
    - NEM = Noise Exposure Map
    - Contains 2 maps: Year of submission (2023) and forecast (2028)
    - NCP = Noise Compatibility Program
    - Description of what NCP is (acknowledgement that it's not a focus of this initial study)
- Previous MVY noise contour map (2014) can be found on current airport website, was not an official Part 150 NEM
    - The study will create similar map, but with contours overlaid on map showing land use
- General study process
    - Question about how many years of data are being used for the study
        - Data for calendar year 2022 (operations, fleet mix, runway use, flight tracks, etc.) will make up most of the base year noise model inputs
    - Question about whether one year of data is sufficient, given the large flight variation in the past several years
        - One year is sufficient for developing "existing conditions" fleet mix and runway use – DNL calculations will use forecast operation levels for 2023 and 2028
        - Will make sure year of data accurately reflects typical airport activity (i.e. will not use 2020)
        - Will make sure 2022 fits the general trend in data
    - Question about what the elements of the data are
        - Description of what the radar data consists of (flight number, airline, registration data, aircraft type, time of operation, runway used, flight path)
        - TAC member pointed out that altitude is critical piece of data in noise analysis; FAA's noise model has altitude profiles in its database; HMMH can compare actual altitude profiles from radar data to the AEDT profiles to confirm reasonableness
    - Question about whether the study is using actual flight paths as opposed to using a filed flight plan
        - Yes, study will be using actual flight paths from radar data as a basis
    - Question about whether the study will take into account the flights that deviate from the voluntary noise abatement flight paths and subject homes to noise for longer amounts of time

            - Yes, study involves developing model flight tracks that represent actual flown flight tracks
    - Question about whether there will be actual noise measurements
        - Yes, however they will not affect the calculation of the noise contours. The noise measurements will be made during the busy season and the measurement results will be shared in the report and at the third TAC meeting
    - Question about whether the data going into the model will be available to be reviewed?
        - Yes, a noise model inputs memo will be provided, which details all data that goes into the model.
        - Follow-up question: will the actual raw data be viewable (before it is averaged and the model flight tracks are created)?
            - Yes, the memo will describe how the operational averaging was done and how the model flight tracks were developed, including maps with actual radar flight tracks
    - Question about how the seasonal variability in operations is dealt with
        - NEM contour represents average annual day
        - The report will have an appendix with a seasonal contour for the summer period
    - Clarifying comment that the model takes all the data in – not just averages – and displays the data as annual average day
        - Breaking down data into categories – jet/non-jet, different sized jets, etc.
    - Question about how much weight the noise complaint data carries in the study. Showed concern that there might not be as much complaint data as there could be if it were easier to submit the complaint
        - Airport has shared all of the complaints that have been collected
        - It is a known issue that noise will occur south of the airport
        - Will be looking at the data to pinpoint where there are noise issues in the community
- Noise compatibility program roles and responsibilities
- Application of FAA policy to part 150 process
    - Question about what FAA's role is in the part 150 process?
        - FAA funds and oversees the process, reviews and accepts the NEM/NCP
        - 65 dB contour is general FAA regulation throughout the country
        - Helps access funding for the sound insulation of homes
    - Question about whether previous MVY part 150 studies will be looked at
        - There was a Part 150 study started in 1987, but it was apparently never submitted to FAA as there is no record of that study filed
        - Ted Stanley (TAC member) chaired a committee in that prior Part 150 study at MVY - he will try to find those documents
    - Question about the steps/process in going from NEM to the NCP?
        - An NCP is only done if there is reason – a finding of incompatible land uses
- **<u>Part 150 Technical Advisory Committee</u>**
- List of members
- TAC roles and responsibilities

- TAC charter (handouts)
- Projected TAC meetings and public workshops dates
- **Aircraft noise terminology**
- What is “noise?”
- Real-time decibel change rules of thumb
- Caution: decibel addition isn’t ordinary math
- Other factors to consider
- FAA requires use of the A-weighted sound level
- Single event noise metrics: maximum sound level (Lmax)
- Single event noise metrics: sound exposure level (SEL)
    - Question about whether ambient noise is taken into account when looking at noise events (i.e. if you are already in a noisy environment, a spike in noise doesn’t seem like much, but the same spike would seem more pronounced in a quiet environment)
        - When conducting measurements, ambient noise is measured and threshold is set on the monitored data to help pick out the individual noise events
- Comparative SELs: “Noise footprint” graphics
    - Question about the timeframe in which the graph is based on
        - It is the noise levels from one flight of the aircraft type
        - The “most common” MVY aircraft types that are depicted are based on operations counts from Dec 2021 to Nov 2022 (12-month sample)
    - Comment that not all jets make same noise levels
        - AEDT has numerous different noise profiles built-in for hundreds of different aircraft types in different modes of operation
- Cumulative exposure: day-night average level (DNL)
    - Question about whether ground operations are included in the calculation (run-ups, etc.) and if they will be included in this study
        - AEDT is capable of modeling ground operations
        - Commentor stressed that ground operations (runups) are a big issue
    - Comment that APU noise adds to ambient annoyance
        - Airport asks that APU noise be limited to short amount of time, but compliance is voluntary
- Typical community DNL examples
- Interpreting changes in DNL
- Aircraft noise metric summary
- **Noise model and modeling**
- Noise modeling: airport layout
    - Question about how helicopter operations are used in the model
        - Helicopter operations can be modeled. A “helipad” is defined because helicopters don’t use the runways as a fixed-wing aircraft would
    - Question about whether the airport is able to mandate helicopters to follow certain flight paths
        - No, the airport is not able to mandate the routes
- Noise modeling: aviation forecast

  - Study consultants will identify trends in historical operations and compare to TAF to produce forecasts
  - Take into account known new operations/changes in fleet mix in the future, trends in development on the island, amount of vacation/leisure travel
  - Question about whether the downward trend in operations at MVY is also observed in other area airports of similar size
    - Can't really speak to other airports at the moment – it may not be applicable to this study
- Example Noise Exposure Map – DNL contours over a land use base map
  - Question about whether seasonal residences can be indicated on the NEM?
    - That level of information isn't available
    - Would still be residential land use – residential is residential
  - Question about where noise information is coming from
    - AEDT contains noise profiles for hundreds of different aircraft
  - Question about whether actual noise measurements are going into the noise model
    - No, but measurements will be taken for a 1 week period during peak season and be compared to what the model would produce for an overflight of that aircraft at that location – measurements will be used to compare to and increase confidence in model output
  - Concern was shown that 1 week of measurements isn't representative enough
    - Measurements will not be used as noise model inputs – only used for comparison to the model
  - Question about whether the existing noise abatement measures will be evaluated
    - Yes, will discuss how they are being used based on data collected
    - Resident stressed that the noise abatement program is not always being followed
  - Resident thought that the noise study would validate stakeholders' concern about aircraft not following the noise abatement measures, and they don't feel so far that they will get a clear answer from this study
    - More measurements may not answer this question
    - Model is using a year's worth of real radar data – data will be used to report on whether aircraft are following voluntary abatement measures
  - Resident doesn't feel that the purpose of the study and the result for the stakeholders has been discussed
    - Purpose is to create NEM for airport and determine if there are incompatibilities between the land uses and the noise levels
  - Ted Stanley stated that if he (as a pilot) follows the noise abatement procedures, he will make more noise than if he flew in a manner to minimize noise
- Noise modeling input: departure flight tracks and arrival flight tracks
- **Projected TAC meetings & public workshops**
  - Question about where the public meeting has been publicized
    - Advertisement in newspapers and general notices since the beginning of January
- **TAC Member Discussion**
  - Question about Katama Airport and how it will affect this study

    - It won't affect the study, only MVY operations (including those that go between Katama and MVY) would be included in the analysis
  - Question about whether all we can expect to come out of this from the FAA is soundproofing, and not any actionable change to air operations
    - Once the data and study are complete, then the NEM acts as a tool to start discussions with FAA about noise abateemnt
  - Question about whether this study will eventually lead to changes to flight tracks over Edgartown
    - May be able to use it in future discussions about noise abatement
  - Resident states he has been working with several different airport directors about this in the past, and agrees with Geoff that the data and study are the right way to go
    - Ted Stanley states that a better solution would be to ask airlines/pilots/ATCT to accommodate the noise abatement measures
- **Adjournment 2:55 pm**

MVY Part 150 Technical Advisory Committee (TAC) Meeting #2 Notes

4/25/2023 1:00 pm, Airport Fire Station conference room, with Zoom meeting connection

Attendee	Organization	Attendee	Organization
In-person attendees		**Zoom attendees**	
Geoff Freeman	MVY Airport – Airport Director	Richard Doucette	FAA
Matthew O'Brien	McFarland Johnson	Cheryl Quaine	FAA
Ferdinand Schoedinger	McFarland Johnson	Steve Bourque	McFarland Johnson
Bob Mentzer	HMMH	Bryan Rand	HMMH
Kate Larson	HMMH	Bill Brine	Pilot
Aofei Li	HMMH	Sean Collins	AOPA
Bill Veno	MVC	Mike Miller	MassDOT
Kevin Gunderson	MVY Airport – Airfield Supervisor	Tom Hurley	MAMA
Jesse Olson	MVY Airport – ARFF Supervisor	Ryan Baker	Cape Air
Thamiris Marta	MVY Airport – FBO Supervisor	Sarah Schweitzer	Vineyard Wind
Colin Ewing	Cape Air	Dave Foulser	Vineyard Meadow Farms community representative
Ted Stanley	Direct Flight Inc	Sue Kurker	Vineyard Meadow Farms community representative
Jim Graham	Deep Bottom community representative	Erich Mettler	Vineyard Meadow Farms community representative
David Rhoderick	Deep Bottom community representative		
Alan Brigish	Deep Bottom community representative		

- **Introductions**
- **Review of project schedule**
    - Matthew O'Brien (MJ) reviewed meeting agenda and schedule
    - Critical deadline to complete project and submit the final document to FAA by Dec 31, 2023 because FAA guidelines state that the year represented by the Existing Conditions Noise Exposure Map (NEM) must match the year of submittal of the document
    - Question about which FAA office the document will be submitted to – It will be submitted to Airports District Office
- **Review of land use map**
    - Data from MassGIS was reviewed to identify land uses throughout the study area
    - TAC to provide feedback if adjustments are necessary
    - This map will be used to identify any land uses that are not compatible with existing and/or forecast noise levels after noise contours are prepared
    - Geoff noted that Oak Bluffs is planning a new residential area near the ice arena – below flight path of primary runway
- **Noise modeling inputs**
    - HMMH provided a review of each noise model input category

- Question about what ground noise sources will be modeled – the data includes pre-flight engine runups, maintenance run-ups, final-turn jet taxiing noise (resuming from a hold point)
- Comment that RWY 6/24 is oriented at 55/235 degrees (magnetic), not 60/240. HMMH will confirm exact parameters before modeling
- Question about the radar accuracy – accurate to a few hundred feet, depends on the radar system. There is a radar point every 4.5 seconds
- **Aviation forecast – presented by MJ**
    - Enplanements are an important driver of commercial (AC/AT) operations
    - Looked at previous forecasts (2016 Airport Master Plan, 2010 MA State Airport System Plan, TAF)
    - Looked at aviation trends (COVID recovery, pilot supply, fuel price, etc.)
    - Looked at items specific to MVY (new hangars, Vineyard Wind operations)
    - Geoff noted that the new hangars are for aircraft that are already based at MVY; not a source of new operations at MVY
    - Vineyard Wind will be operating one based helicopter, 2-4 round trips per day, likely for the lifespan of the windfarm
    - Question about making future projections, were previous projections analyzed to see if they were accurate? – yes, historical forecasts were reviewed
- **Current and forecast year flight operations**
    - Comment that operation numbers don't look correct – winter number is much lower, peak season is much higher. Explanation that average annual day is required for an official NEM - represents both summer and winter (whole year).
    - Question if total peak season average day operations represents enplanements – no, it represents operations (takeoffs and landings)
    - Question if non-jet consists of piston and turboprop – yes, they are grouped together because observed runway usage rates are nearly identical
    - Question if operations occurring when the tower is closed are being modeled with nighttime weighting – yes, all operations occurring between 10 pm and 7 am are counted as nighttime; radar data allows us to estimate how many
    - Question about whether jet/turbine aircraft are actually doing runups – clarified that it is actually just ground noise from taxi hold point (characterized as "revving engines" as aircraft move into takeoff position) that has been identified as bothersome; we will be representing that as a "runup" in the model
    - Cape Air has suggested that we lower the modeled pre-flight runup duration from 5 minutes to 2 – 3 minutes to more accurately represent their standard procedure
- Runway use developed from 12 months of radar flight data
    - Geoff pointed out that RWY 15/33 cannot support air carriers – that is why there are zero Air Carrier Jet operations on it
- **Model flight track development**
    - HMMH explained process of "bundling" radar flight tracks and using statistical 2-dimensional analysis to develop the "backbone" and dispersion track geometry that goes into the model.

        - Observation that most tracks go west (as opposed to east of the airport) – Runway 24 is MVY's most commonly used runway and most destinations are west/north/south of MVY
        - It was noted that Vineyard Wind is not shown in model tracks, as they have not yet started operations
        - Question if operations to the hospital are shown – only if they go to/from MVY
        - Question if altitude is modeled – yes, using standard AEDT altitude profiles
        - It was brought up that pilots are able to use their discretion on their altitude approach/departure profile and that the model's standard profile may not be very representative
        - Question whether HMMH could show tracks grouped by VFR vs IFR – unknown if radar data records contain this information
        - Question about what the radar data altitude capture capability is – usually a few hundred feet above ground
        - Question about whether we can use ADS-B data which contains altitude – we don't have that data currently, but believe it will be available for use in analysis of the noise measurement program data
        - Concern that the AEDT standard profile doesn't represent some of the aircraft – the majority of aircraft are climbing out as fast as possible, if a lot of aircraft differ, then AEDT profiles could be adjusted
        - Question about how many tracks are following the voluntary Fly Friendly guidance – that is going to be looked into and reported on in the document
        - Is it possible to model the noise as if everyone were following voluntary tracks? – the scope of this study is to establish the current and forecast noise conditions at the airport. Hypothetical conditions modeling would be part of a Noise Compatibility Program development analysis, which isn't being done at this time
        - Question about whether the modeling captures the flights that deviate from the voluntary flight paths – the model track development process captures all flights that exist in the radar data
    - Meteorological/terrain data
        - Is direction of wind included? – model algorithms assume that aircraft fly into the wind at takeoff and landing
- **Noise measurement planning**
    - HMMH explains that FAA guidelines do not permit measurements to be used to adjust/calibrate the NEM modeling. Measurements will be included only for informational purposes; results will be compared to the modeling
    - Question if we will be recording the weather data, wind direction, sky cover, etc – yes, weather data will be incorporated
    - Question about whether we will have altitude data – HMMH will get an additional source of radar data that will contain altitude
    - Dave Foulser volunteered his property (in circle 2) – Vineyard Meadow Farms Road as a measurement site
    - HMMH showed annual operations graph with monthly averages and explained the determination of peak season/selection of measurement dates.
- **Committee Member Discussion**

- Question if radar altitude data is readily available to compare to the 12 months of flight tracks – no
- Question about additional source of radar data for altitude for summer measurements – can look into getting ADS-B data
- Question about land use map/how accurate it needs to be – it is FAA requirement to have land use map of study area (5 mile radius), but we are mostly concerned with land use in area close to the airport.
- Question about why AEDT flight profiles were chosen over target trajectories – Part 150 requires use of standard flight profiles – target trajectories are for research purposes only
- Committee is reminded that any comments on the model inputs should be addressed by May 1 by email.

- **Adjournment 2:40 pm**

MVY Part 150 Technical Advisory Committee (TAC) Meeting #3 Notes

10/10/2023 1:00 pm, Airport Fire Station conference room, with Zoom meeting connection

Attendee	Organization	Attendee	Organization
In-person attendees		**Zoom attendees**	
Geoff Freeman	MVY Airport – Airport Director	Richard Doucette	FAA
Denise Tawa	MVY Airport – Executive Assistant	Cheryl Quaine	FAA
Kevin Gunderson	MVY Airport – Airfield Supervisor	Samantha Smithies	FAA
Jesse Olson	MVY Airport – ARFF Supervisor	Colleen Mailloux	FAA
Matthew O'Brien	McFarland Johnson	Michael's iPhone	
Bob Mentzer	HMMH	James Matz	MassDOT
Kate Larson	HMMH	Mike Miller	MassDOT
Bryan Rand	HMMH	Joseph O'Malley	MassDOT
Bill Veno	MVC	Val Johnson	MassDOT
Ted Stanley	Direct Flight Inc.	Sarah Schweitzer	Vineyard Wind
Jim Graham	Deep Bottom community representative	Luke Sudarsky	Charles Neck Way resident
David Rhoderick	Deep Bottom community representative	Sue Kurker	Vineyard Meadow Farms community representative
Bill Brine	Pilot	Alan Brigish	Deep Bottom community representative
Bob Cassidy	Midwest ATC		
Colin Ewing	Cape Air		

- **<u>Introductions</u>**
- **Meeting agenda**
    - Bob Mentzer (HMMH) reviewed meeting agenda and project schedule
- **Review of land use map**
    - HMMH staff reviewed the land uses in person – added a house of worship north of the airport and changed several parcels south of the airport from vacant to residential based on observed construction
- **Noise modeling and DNL contour review**
    - HMMH provided a review of the runup/taxi noise and helipad locations and a breakdown of forecast operations by tower classification
    - Aviation forecast showed increase of 1,700 operations between 2023 and 2028
        - Jim Graham asked if the increase in operations between the existing and future conditions is relatively flat – yes, MJ used other recent forecasts such as the FAA TAF which are all relatively flat
        - Expecting negative growth of GA operations and increase in commercial service, clarified that the increase in enplanements and number of operations is not one-to-one due to upgauging (planes carry more people)
        - Ted Stanley asked for clarification on GA local vs. GA itinerant – it was clarified that GA local consists of pattern operations and GA itinerant consist of GA aircraft departing to/arriving from other airports

        - Alan Brigish asked for clarification on the difference between air carrier and commuter operations – air carrier consist of aircraft with a capacity of 60 seats or greater and commuter, or air taxi, consist of aircraft with a capacity of fewer than 60 seats such as Cape Air
        - Sue Kurker asked if the modeled runup noise included early morning private jets – idling at end of runway was modeled for large jets and Cape Air only
        - HMMH provided a review of the breakdown of operations into jets, non-jets, and helicopters, and the average annual day operations
        - Bill Veno asked whether the helicopter operations for 2023 and 2028 included Vineyard Wind – yes, Vineyard Wind is included in both 2023 and 2028 because the operations (2-4 operations per day) are expected to begin in 2023. It was emphasized that because they haven't began to operate, the model is overstating the noise and is therefore a conservative assumption.
        - HMMH presented the 2023, 2028, and peak season DNL contours and added that the DNL 65 dB contour doesn't leave the airport property
        - Key differences between 2023 and 2028 are a 3.75% increase in operations and JetBlue replacing the Embraer 190 with the Airbus A220
        - The peak season DNL contour was a close match with the measurement sites' DNL values, and it was stressed that the peak season contour is presented for informational purposes only
        - David Rhoderick asked why there is no west skew of the contour from departures that turn west – the loudest aircraft are remaining on runway heading for longer than the smaller, quieter aircraft that turn early
        - Luke Sudarsky asked for clarification on whether the contours assume flights are using straight-in-straight-out tracks – the contour uses model flight tracks which were developed from actual radar flight tracks and do include aircraft that turn

- **Review of noise measurement program**
    - Staff spent time observing flights with a goal to calculate day-night average sound levels and single event noise levels for the peak season
    - The program helps both the community and the modelers better understand the noise environment
    - Bob Cassidy asked for clarification on the number of hours the sample of measured noise levels at Site 2 represents – it represents about 2 or 3 hours each day
    - Aircraft noise dominates the noise environment at sites where the difference between aircraft DNL and total DNL is small (sites close to the airport)
    - The model overstated the noise at each measurement site compared to the measured noise
- **Fly Friendly program assessment**
    - The assessment is based on the program materials published on the MVY website and the measures are numbered for organization in this analysis only
    - Bob Cassidy clarified that heavier IFR aircraft are in contact with ATC and must follow ATC instruction which keeps them on runway heading for longer, while lighter VFR aircraft tend to turn earlier
    - Ted Stanley asked whether the pattern altitude analysis used altitudes in AGL or MSL – the analysis uses MSL however the airport elevation is 68 feet, therefore the difference between AGL and MSL in this instance is negligible

- Sue Kurker asked whether the airport can add a noise abatement suggestion for planes to limit pre-flight runup/idling times – Geoff Freeman clarified that the airport does recommend limiting APU use and offers a quieter GPU for use, and that the flight crews are more conscious of APU noise. Engine idling time can depend on flight checks and directions from the tower while the aircraft is taxiing.
- Geoff clarified that the airport has no control over APU use

- **Committee member discussion/Next steps**
    - Committee is reminded that the public comment period ends on November 6, 2023 and the final report will be submitted to FAA on December 15, 2023
    - Alan Brigish asked whether the presentation slides will be in the report – yes, they will be included in the final report and posted to the MVY website
    - Jim Graham asked whether comments have been received since the draft was made available – yes, three comments have been received and all comments received will be submitted with the final report to FAA
    - Alan Brigish asked for clarification on what is being shown on the pattern altitude graphs – each graph represents altitudes of aircraft crossing a gate that is drawn through the pattern
    - Bill Brine commented that there appears to be an increase in traffic coming from the west and turning over Katama at a low altitude, conflicting with Katama Airfield and asked whether it would be possible for ATC to direct the aircraft away from Katama – can use the official NEM document in future discussions with FAA/TRACON on where the heavy aircraft are flying, possibly modify approach procedures
    - Joe O'Malley asked for clarification on the use of Runway 6 – Runway 6 is used 23 percent of the time, and less during the summer
- **Adjournment 2:45 pm**

F.5 Public Workshop

The following 14 pages present

- A copy of the noise terminology handout provided at both public workshops
- a copy of the poster boards for Public Workshop #1 held on Tuesday, January 31, 2023 from 6:00 pm to 8:00 pm in the Culinary Arts Room at Martha's Vineyard Regional High School (7 pages)
- a copy of the poster boards for Public Workshop #2 held on Tuesday, October 10, 2023 from 6:00 pm to 8:00 pm in the passenger terminal area at MVY (5 pages)

How Do We Describe Aircraft Noise?

Noise 101

We use a number of terms to describe aircraft noise. The metrics described here form the basis for the noise analyses conducted at most airports in the United States.

By definition, noise is unwanted sound. All sounds come from a source such as a musical instrument, a voice speaking, or an airplane passing overhead. It takes energy to produce sound. The sound energy produced by any source travels through the air in waves – tiny, quick oscillations of pressure just above and just below atmospheric pressure. These waves penetrate the ear, creating the sound we hear.

Noise metrics are used to convey aircraft noise levels experienced in the communities near airports. There are two main categories of noise metrics: (1) distinct noise events (single-event noise metrics) and (2) cumulative noise over durations that include a number of distinct events (cumulative noise metrics).

The Decibel, dB

The decibel (dB) is a ratio that compares the sound pressure of the sound source of interest (e.g., the aircraft overflight) to a reference sound pressure (the quietest sound that people can hear). Because the range of sound pressures is very large and our ears are not very sensitive to small differences in them, we use logarithms (a mathematical exponent that indicates the power of ten of a number's size) to simplify the ratio to a smaller range, and express the resulting value in dB. Two useful rules of thumb to remember when comparing individual sound sources are:

- Most people perceive a 10 dB increase to be about a doubling of loudness, and
- Changes of less than 3 dB are not easily detected outside of a controlled and/or laboratory setting.

Frequency, or "pitch", is an important characteristic of sound. The human ear does not respond equally to equal noise levels at different frequencies. To adjust noise levels to resemble the human ear, we apply the "A-filter". The resulting value is the A-weighted sound level, which the EPA recommends and the FAA requires be used for evaluating aircraft noise in communities. Studies have shown that A-weighted sound levels compare well with human judgment/perception of "noisiness" in community settings. A-weighted noise levels are assumed in the reporting of aircraft noise unless explicitly stated to the contrary.

Figure 1: Common Environmental Sound Levels, in dB

"Energy"	dB	Common sounds
100,000,000,000,000	140	Near a jet engine at start of takeoff
10,000,000,000,000	130	Threshold of pain
1,000,000,000,000	120	On stage at a loud rock concert
100,000,000,000	110	
10,000,000,000	100	Jack hammer at 6 feet
1,000,000,000	90	
100,000,000	80	Vacuum cleaner at user's ear
10,000,000	70	Vacuum cleaner at 10 feet
1,000,000	60	Normal speech
100,000	50	
10,000	40	Quiet residential area
1,000	30	
100	20	Whisper
10	10	
1	0	Threshold of hearing
0.1	-10	

Maximum A-Weighted Sound Level, Lmax

A-weighted sound levels vary with time. For example, the sound increases as an aircraft approaches, then falls and blends into the background as the aircraft recedes into the distance. Lmax is the highest value reached during a noise event. However, it is important to realize that two events with identical Lmax values may be perceived quite differently, since one may be of very short duration, while the other may be much longer.

Sound Exposure Level, SEL

SEL is the most common measure of noise exposure for a single aircraft flyover. Mathematically, it is the sum of the sound energy over the entire duration of a noise event – one can think of it as an equivalent noise event with a one-second duration. Because the SEL is "normalized" to one second, it will almost always be larger in magnitude than the Lmax for the event. In fact, for most aircraft events, the SEL is about 7 to 12 dB higher than the Lmax. The fact that it measures noise exposure over time means that a higher SEL can result from either a louder or longer event, or some combination of those factors. **Figure 3** illustrates the concept of Lmax and SEL for an aircraft fly over.

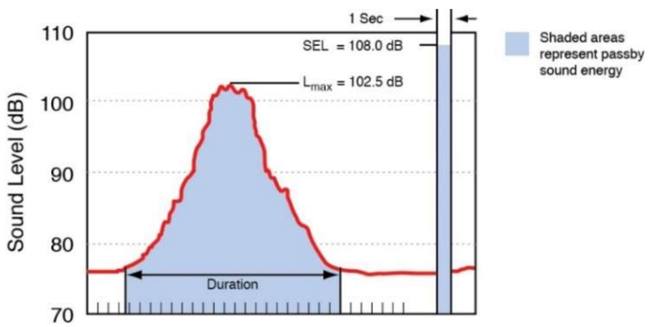


Figure 2: Relationship of Lmax and SEL

Day-Night Average Sound Level, DNL

The Day-Night Average Sound Level (DNL) is a cumulative noise metric, representing noise as it occurs over a 24-hour period, with one important exception: DNL treats noise occurring at night differently from daytime noise. The calculation adds 10 dB to events between 10:00:00 p.m. and 6:59:59 a.m. People often judge noises at night to be twice as loud as they would perceive the same noise during the daytime because background noise at night is lower.

Figure 3 graphically depicts the manner in which the nighttime adjustment applies in calculating DNL. Each bar in the figure is a one-hour equivalent sound level (L_{eq}) (a measure of the exposure resulting from the accumulation of all SELs over one-hour). The 10 dB penalty is added for the nine hours defined as "night".

FAA *requires* that airports use computer-generated DNL contours (FAA Order 1050.1F). Noise contours are

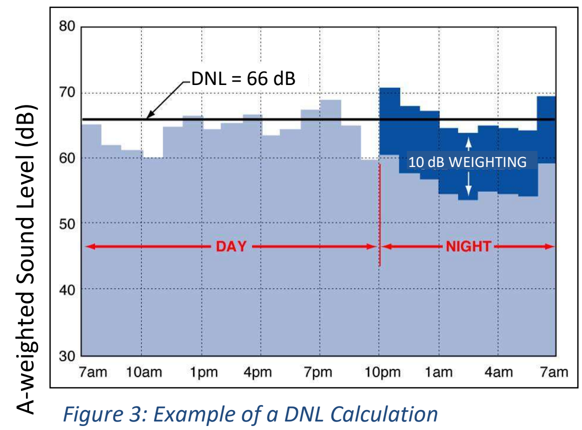


Figure 3: Example of a DNL Calculation

lines of equal noise exposure around an airport (much like topographic maps that indicate contours of equal elevation). DNL contours usually reflect average annual operating conditions, taking into account the average number of flights each day, how often each runway is used throughout the year, and where over the surrounding communities the aircraft fly.

The FAA and most other federal agencies have formally adopted DNL for land use compatibility and for evaluating effects from aircraft operations near an airport. The Federal Interagency Committee on Noise (FICON) reaffirmed the appropriateness of DNL in a 1992 report. The summary report stated; "There are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric." [1]

Noise Modeling

As required by the FAA, the Aviation Environmental Design Tool (AEDT) will be used to generate the DNL contours. AEDT uses a database of aircraft noise characteristics to predict DNL based on aircraft types, operating conditions, aircraft performance, and aircraft flight tracks. The Noise Exposure Map will be based on the average annual day[2] aircraft operations.

For More Information:

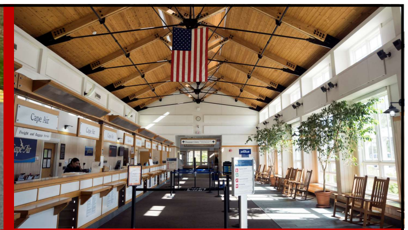
MVY Fly Friendly website page:
https://mvyairport.com/noise-abatement-fly-friendly/

MVY Part 150 Project website page:
https://mvyairport.com/mvypart150-faa-noise-study/

FAA Noise Issues and Information:
http://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/airport_aircraft_noise_issues/

[1] FICON, "Federal Agency Review of Selected Airport Noise Analysis Issues," September 1992.

[2] Average annual day refers to the average daily number of aircraft operations over a year.



Welcome!

Noise Compatibility Study (Part 150) Update
Martha's Vineyard Airport

Public Information Workshop

Part 150 Overview

- Federal Aviation Administration (FAA) developed the voluntary Part 150 program for airports to assess and address land use compatibility
  - Codified under Title 14 of the Code of Federal Regulations (CFR) Part 150
    - Informally called "Part 150"
    - Formal *citation* is "14 CFR Part 150"
    - Formal *title* is "Airport Noise Compatibility Planning"
  - Over 250 airports have participated
  - Sets national standards for noise analysis
  - Provides access to federal funds for mitigation

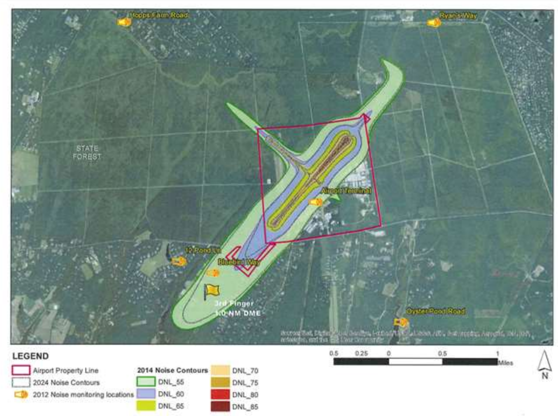
- MVY has begun a Part 150 study

Detailed FAA guidance at www.faa.gov/airports/environmental/airport_noise/

Part 150 Overview: Noise Exposure Map

- FAA “accepts” (or does not accept) NEM as compliant with Part 150 standards
- NEM includes 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+ dB contours
  - Noise / land use compatibility statistics within DNL 65+ dB contours
- NEM includes two calendar years

Conditions/Years	MVY Part 150
Existing Conditions (year of submittal)	**2023**
Forecast Conditions (at least 5 years beyond year of submittal)	**2028**



MVY 2014/2024 noise contours from a previous study

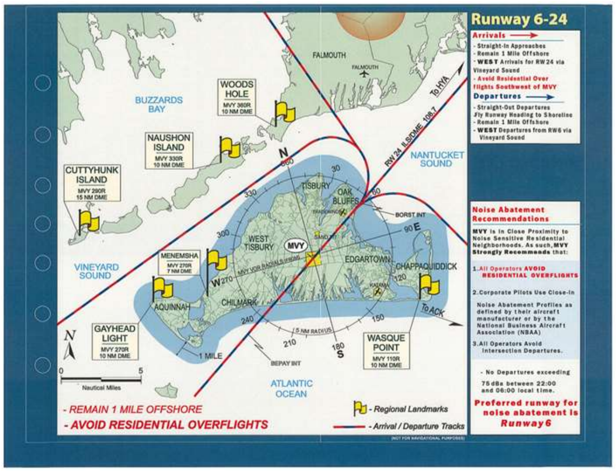
Part 150 Overview: Noise Compatibility Program

- FAA “accepts” an NCP as compliant with Part 150 standards
- FAA reviews and “approves” or “disapproves” recommended measures as compliant with Part 150 standards on an element-by-element basis

- An NCP must address three major categories of proposed actions
  - Noise abatement measures
  - Compatible land use measures
  - Program implementation

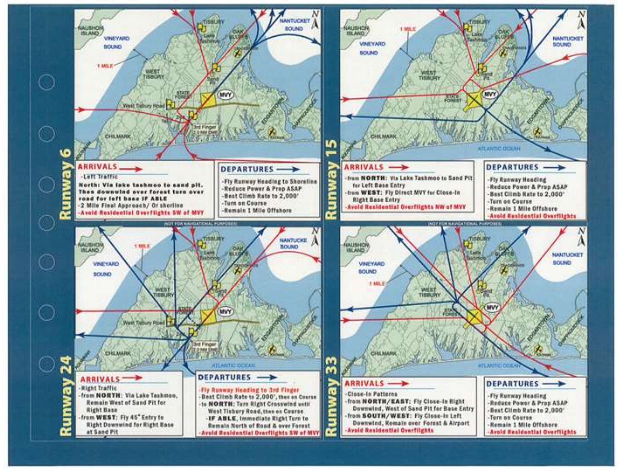
Existing Voluntary MVY Noise Abatement Measures

For Larger Aircraft (>12,500 lbs)



https://mvyairport.com/wp-content/uploads/2017/07/noischartsover12.5.pdf

For Smaller Aircraft (<12,500 lbs)



https://mvyairport.com/wp-content/uploads/2017/07/noisechartsunder12.5.pdf

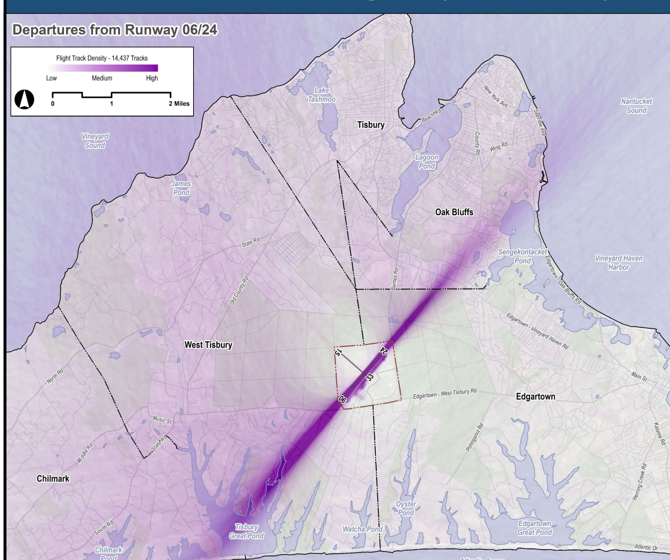
Part 150 Projected Schedule

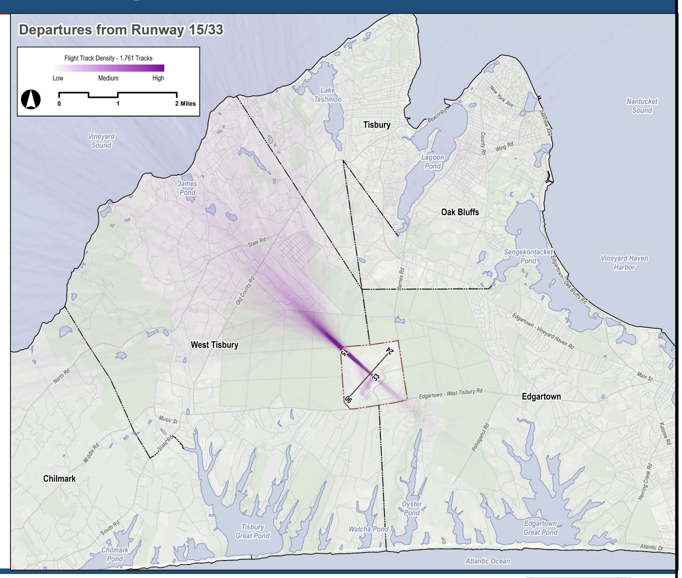
Milestone	Date
Project Kickoff Meeting with the FAA	October 19, 2022
Data Collection, Forecast Development and Noise Model Input	December 2022 thru May 2023
Public Information Workshop #1 – Introduce Project	***January 31, 2023 (today)***
FAA Approvals (forecasts, non-standard modeling if required)	April 2023
Preliminary draft aircraft noise exposure contours for evaluations	May 2023
Noise Measurements during Peak Season	Summer 2023
Draft Part 150 Documentation and Maps (Report)	August 2023
Public Information Workshop #2 – Present Results	***September 2023***
Submit Part 150 Documentation and Maps to FAA	4th Quarter 2023

Noise Modeling Requirements

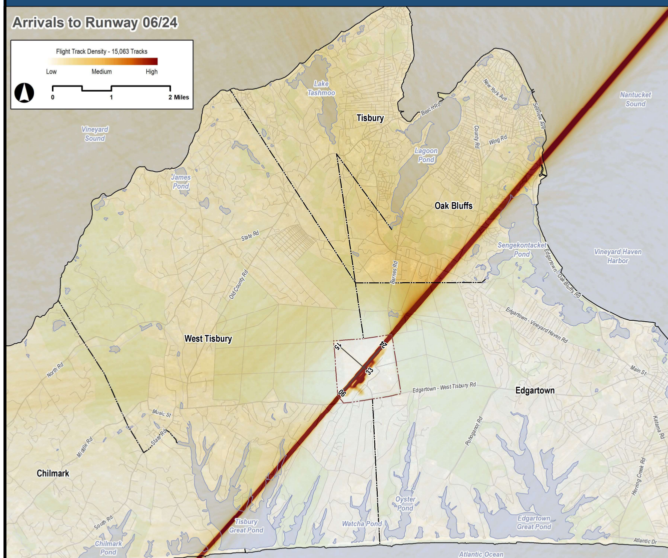
- We must use FAA-approved model
  - FAA's Aviation Environmental Design Tool (AEDT)
- Required noise modeling inputs
  - Airport layout
  - Annual average meteorological data
  - Terrain
  - Aircraft operations by day/night for 2023 and forecast 2028
  - Runway utilization rates by aircraft categories
  - Flight track geometry and use by aircraft categories

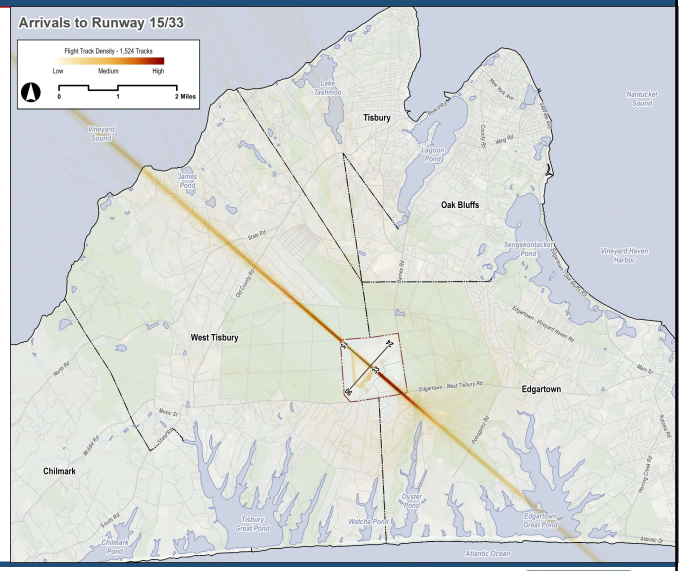
Noise Modeling Input: Departure Flight Tracks





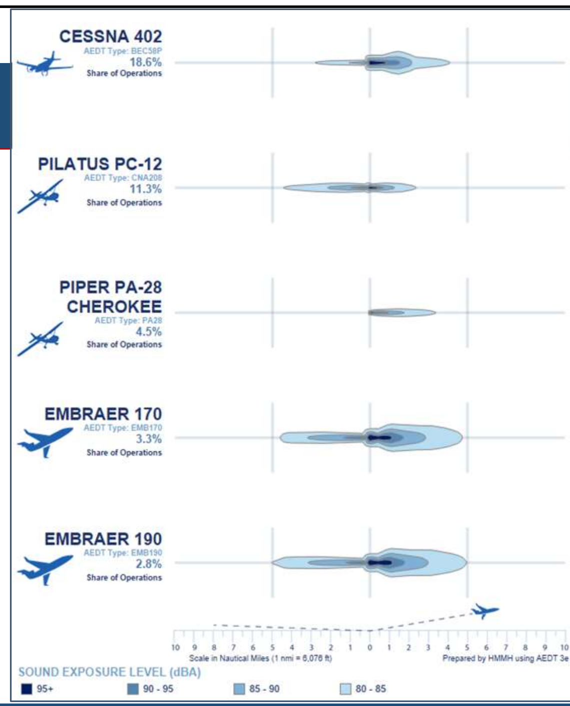
Noise Modeling Input: Arrival Flight Tracks





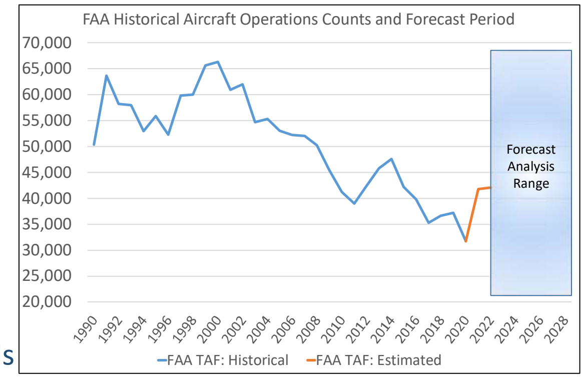
Comparative SELs

- The sound exposure levels (SELs) created by an aircraft overflight depend on its
  - Engine type
  - Thrust setting profile
  - Altitude profile
  - Airspeed profile
- These graphics compare a typical landing (from left) and takeoff (to right) of different aircraft types that frequently fly at MVY



Noise Modeling: Aviation Forecast

- Aviation forecasts will represent annual-average day of aircraft operations by aircraft type and time of day including:
  - Air carrier (passenger)
  - Air taxi/commuter (passenger & freight)
  - General aviation (local & itinerant)
  - Military
- Forecast development will include:
  - Complex analysis of socioeconomics, demographics, & recent airport and industry trends
  - Analysis of fleet mix and representative models of aircraft utilized
- FAA approves the aviation forecasts



hmmh McFarland Johnson Martha's Vineyard Airport Noise Compatibility Study Update | Public Information Workshop MVY AIRPORT MARTHA'S VINEYARD

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Project Contacts and Websites

- Geoff Freeman, Airport Director
- Kate Larson, Project Manager – Part 150 Study
  - Address emails to KLarson@hmmh.com
- Part 150 Website provides most relevant information
  - Will be updated regularly for public outreach purposes
  - https://mvyairport.com/mvypart150-faa-noise-study/
- MVY noise information website provides broader information
  - https://mvyairport.com/noise-abatement-fly-friendly/

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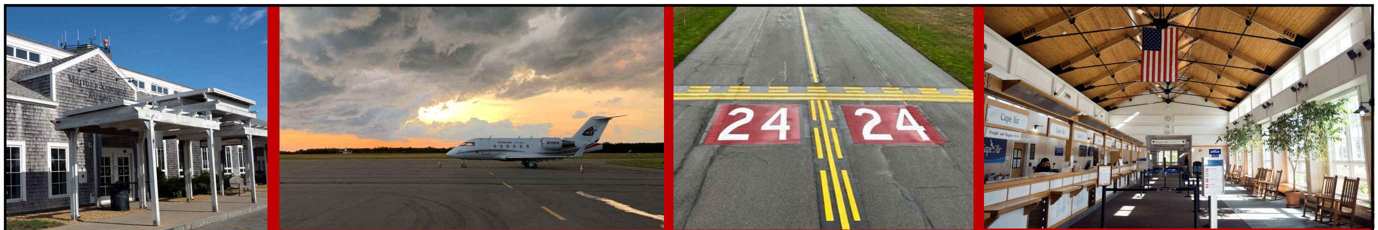

Public Comments

Noise Compatibility Study (Part 150)
Martha's Vineyard Airport

Public Information Workshop

Martha's Vineyard Airport Noise Compatibility Study Update | Public Information Workshop

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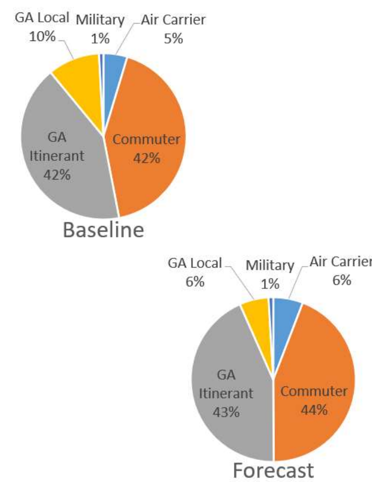
Current and Forecast Year Flight Operations

Operations Period		Jet	Non-Jet	Helicopter	Total
Annual	2023	9,880	34,236	2,295	**46,411**
	2028	10,568	35,257	2,323	**48,148**
Average Annual Day	2023	27.0	93.8	6.3	**127.1**
	2028	29.0	96.6	6.4	**132.0**
Peak Season Avg Day*		67.4	153.7	8.8	**229.9**

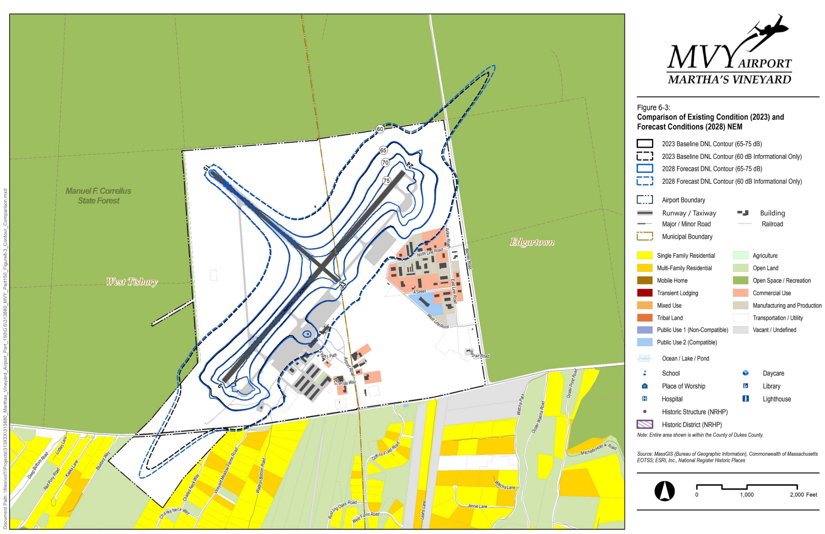


*Peak season defined as July and August. Analysis based on counts from 2022 flight data.

Draft Noise Exposure Contours – 2023/2028

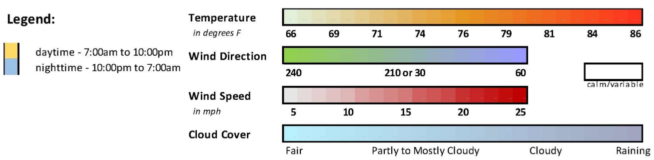
- DNL 60 dB (dashed contours) are shown for informational purposes only
- **Key changes from 2023 to 2028:**
  - 3.75% increase in operations from 2023-2028 (4.8 more average daily operations)
  - JetBlue fleet mix changes (Embraer 190 → Airbus A220)

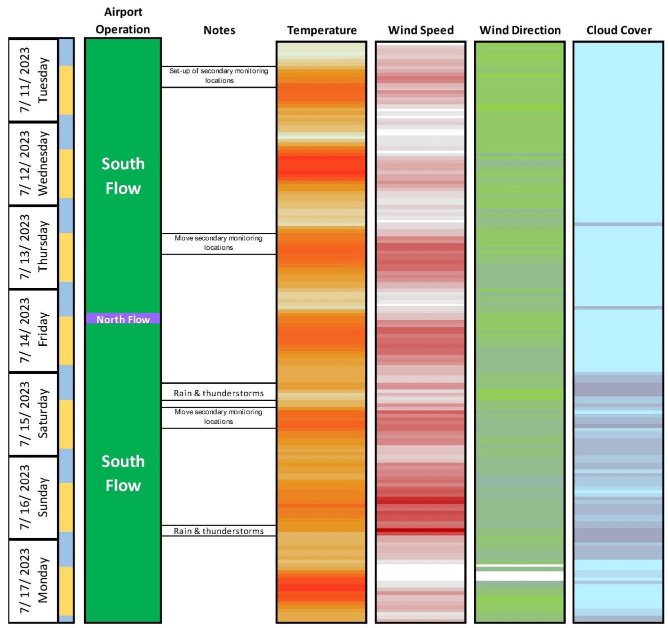
Noise Level, DNL	Existing – 2023		Forecast – 2028	
	Estimated Population	Estimated Housing Units	Estimated Population	Estimated Housing Units
65-70 dB	0	0	0	0
70-75 dB	0	0	0	0
75+ dB	0	0	0	0
Total	**0**	**0**	**0**	**0**



Noise Measurement Program

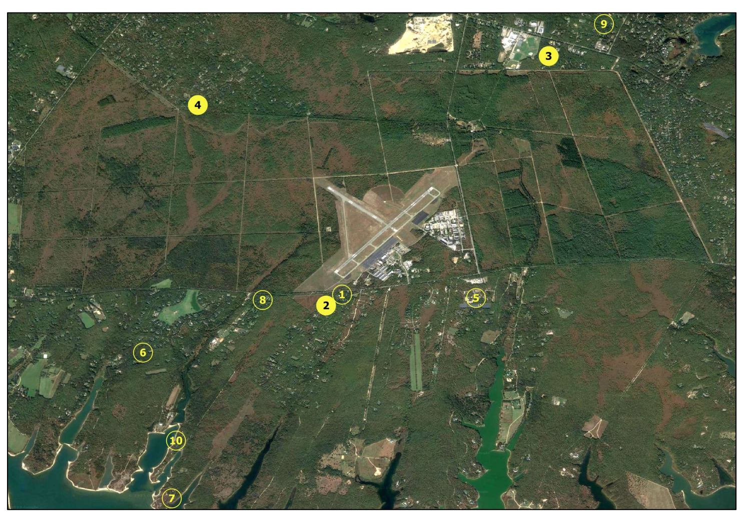
- Airport was in south flow almost exclusively (arrivals to and departures from Runway 24)
- Flow direction corresponds to wind direction
- Excess noise energy from rain and thunderstorms was excluded from DNL calculations
- Airport briefly closed on Saturday afternoon



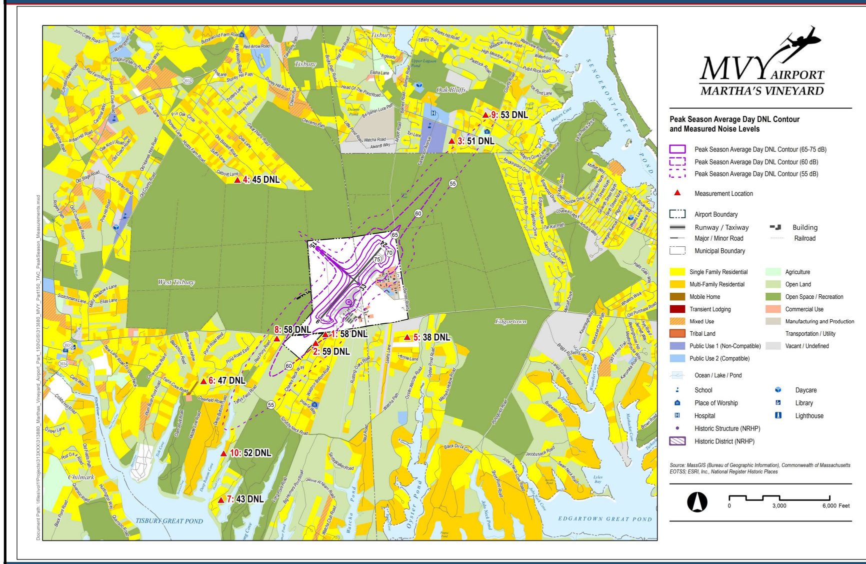


Noise Monitor Locations

- 3 primary sites
  - Used 3 of the 6 monitors
  - Closest to runway ends
  - Collected data all week (180 hours)
  - Circles 2, 3, 4
- 7 secondary sites
  - Used other 3 monitors
  - 48 – 120 hours at each
  - Different types of aircraft noise events
  - Circles 1, 5, 6, 7, 8, 9, 10



Measured Noise Levels – DNL



Site	Location	Aircraft DNL	Total DNL (All Sources)
1	Vineyard Meadow Farms Road	58	59
2	Vineyard Meadow Farms Road	59	60
3	Ryan's Way, Oak Bluffs	51	53
4	Catboat Lane	45	55
5	Watcha Path	38	53
6	South Pond Road	47	50
7	Middle Point Road	43	54
8	Edgartown – West Tisbury Road	58	59
9	Quantapog Road	53	55
10	Thumb Point Road	52	55

Fly Friendly Program Assessment

- MVY's noise abatement program established in 2003
- Voluntary & informal
- Evaluation based on the program materials published on the website, compared to full year of radar flight track data

https://mvyairport.com/noise-abatement-fly-friendly/

FLY FRIENDLY MVY be a good neighbor

MVY AIRPORT MARTHA'S VINEYARD

NOISE ABATEMENT

Volume 1 / Issue 1

FLY FRIENDLY

The Martha's Vineyard Airport is committed to being a good neighbor.

We have developed the Fly Friendly program to support flying activities that are considerate of our community.

The Fly Friendly program identifies practical measures to decrease noise, such as voluntary limitations of flight training and flights over residential areas, and promoting good flying habits.

FLYING HIGH TO LESSEN NOISE

Pilots are required by law to maintain a safe altitude at all times, including when flying over residential areas. Aside from landing or taking off, the minimum height a plane should fly is 1,000ft over inhabited areas and 500ft over uninhabited areas or over water.

Safety is always first

Safety is paramount at Martha's Vineyard Airport. Pilots are expected to make their best efforts to comply with the Fly Friendly program, but there may be times when weather, air traffic procedures and safe separation distances between aircraft may mean that they are not able to follow all of the fly friendly procedures.

Considerate flying

Pilots are encouraged to be respectful when flying to/from Martha's Vineyard. Through the Fly Friendly program, pilots are asked to:

- Be aware of noise sensitive areas
- Avoid prolonged engine run-ups during evening/night/morning
- Avoid flying low at all times, especially over residential areas
- Keep flight training patterns as compact as possible, avoid turns over residential areas.
- Climb to altitude (2000ft) as soon as possible and then reduce power to cruise settings.
- Minimize tight turns over residential areas
- Fly across the least noise-sensitive areas, circumnavigate the island over the water.
- Use proper power settings during arrivals and departures.
- Visit **mvyairport.com** for more information and updates.

Delaying aircraft turns

Because residential communities surround most areas South and West of the airport, pilots should make every effort to wait to turn to minimize noise over residential areas (see map 1a.) Aircraft landing runway 06 will intercept a 2 mile straight in (SILOC) or turn over the 3rd finger of the West Tisbury Great pond. Aircraft departing runway 24 are asked to make their turn at an altitude of 2000ft or 2 miles, 3rd finger of the pond. Right hand turns can be made departing runway 24 before the West Tisbury road and the turn stays within the confines of the State Forest and it is a **SAFE** operation for the pilot and aircraft.

"Complying with voluntary noise abatement procedures helps maintain the character of Martha's Vineyard that has made it a treasured place to live, work and visit"

VOLUNTARY NOISE ABATEMENT PROGRAMS AT MVY

Martha's Vineyard airport has long implemented a voluntary noise abatement program to address aircraft activity that may affact our sourounding communitites.

- No departures exceeding 75 dBa between 2200 and 0600 local time (10:00pm-6:00am)
- All aircraft to avoid intersection departures
- Corporate pilots use close-in noise abatement profiles as defined by their aircraft manufacturer or by the National Business Aircraft Association (NBAA)
- Preferred runway for noise abatement is runway 06
- Use over-water approaches/departures (06-24) to reduce noise over residential areas especially at night and early mornings.
- Pattern altitudes: light aircraft (1000ft) Large and Turbine powered aircraft (1500ft)
- Remain 1 mile off shore when circumnavigating the island
- See FAA Advisor Circular AC90-66A

KATAMA AIRFIELD TRAFFIC (NOT CONTROLLED BY MVY ATC)

- From N/NW: expect MVY transition N & E of shorline at 2000ft or overhead at 3000ft
- From West: expect MVY transition along South shoreline at 2000ft or overhead at 3000ft

NOISE REDUCTIONS ON THE GROUND

Noise on the apron can carry into residential areas. Try to minimize noise on the ramp.

- Auxiliary Power Units (APU) are important for pilots for safety checks and to keep the cabin comfortable. But excessive use creates noise exceeding 110 decibels and air pollution. **Please limit APU use to 15 minutes.**

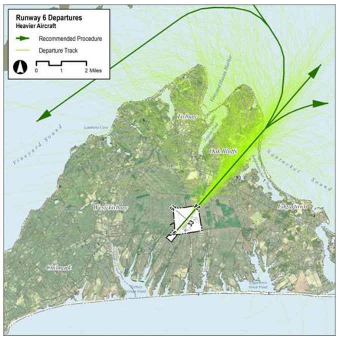
MVY frequencies

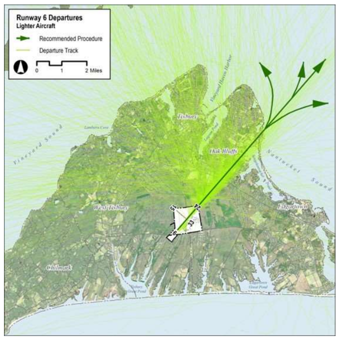
- Tower: 121.4
- Ground: 124.35
- Unicom: 122.95
- Boston South: 119.70

FLY FRIENDLY MVY be a good neighbor

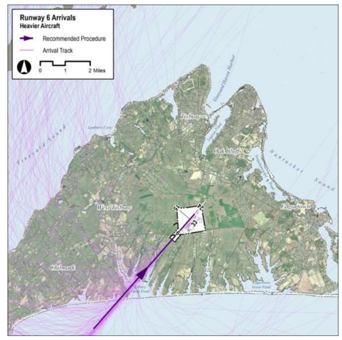
Flight Track Assessment (Runway 6)

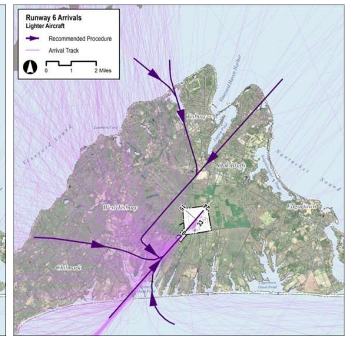
Runway 6 Departures





Runway 6 Arrivals

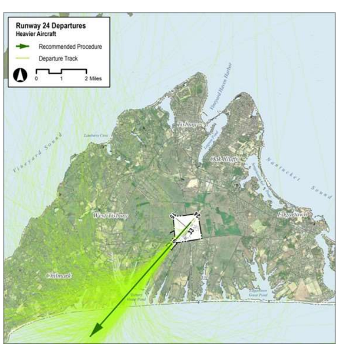


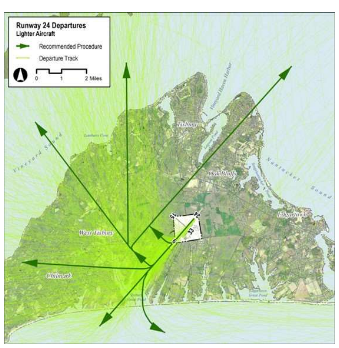


This information can be used by MVY to discuss the Fly Friendly Program with Pilots.

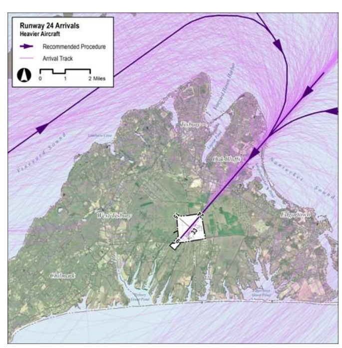
Flight Track Assessment (Runway 24)

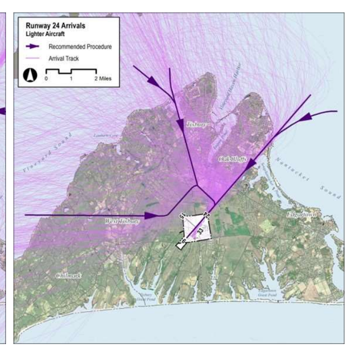
Runway 24 Departures





Runway 24 Arrivals





This information can be used by MVY to discuss the Fly Friendly Program with Pilots.

Part 150 Overview

- Federal Aviation Administration (FAA) developed the voluntary Part 150 program for airports to assess and address land use compatibility
  - Title 14 of the Code of Federal Regulations (CFR) Part 150
    - Informally called "Part 150"
    - Formal *citation* is "14 CFR Part 150"
    - Formal *title* is "Airport Noise Compatibility Planning"
  - Over 250 airports have participated
  - Sets national standards for noise analysis
  - Provides access to federal funds for mitigation
- MVY has completed the Draft Noise Exposure Map

Detailed FAA guidance at
www.faa.gov/airports/environmental/airport_noise/

FAA "accepts" (or does not accept) NEM as compliant with Part 150 standards

NEM includes 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+ dB contours
- Noise / land use compatibility statistics within DNL 65+ dB contours

NEM includes two calendar years

Conditions/Years	MVY Part 150
Existing Conditions (year of submittal)	**2023**
Forecast Conditions (at least 5 years beyond year of submittal)	**2028**

F.6 Public Outreach

The following 26 pages present copies of publicity materials related to the project as well as public comments received by the end of the public comment period on November 6, 2023. Two newsletters were prepared in advance of the public meetings; these were distributed in advance of the meetings as well as printed and available for meeting attendees. Local newspapers advertised the study and the public meetings.

Eleven comment letters were received from members of the public over the course of the study. **Table F-2** lists the commenters' names and dates the letters were received.

Table F-2. Public Comments Received

Source: MVAC and HMMH

Commenter	Date Received
Hannah Kaeka Scott	January 31, 2023
Martha Moore	February 1, 2023
Matthew Sudarsky	February 1, 2023
Luke Sudarsky	July 27, 2023
Maria Marchigiano	August 2, 2023
John Banks	September 29, 2023
Wesley Brown	September 29, 2023
Debra Polucci	September 30, 2023
David Rhoderick	October 22, 2023
Vicky Bijur	November 5, 2023
James Graham	November 5, 2023

VINEYARD GAZETTE

COMMUNITY

Volunteers Needed for Airport Noise Committee

Monday, January 9, 2023 - 2:33pm

The town of West Tisbury is seeking a volunteer to serve on a committee studying noise from the Martha's Vineyard Airport.

The overall goal of the committee, wrote airport manager Geoff Freeman, is "to assess if there are impacts of noise that meet Federal regulations and how we can work with FAA if deemed so to adjust flight patterns...This is a good education tool for all to understand aviation and what level different entities have on controlling it."

At the town select board meeting last week, board members said they would look favorable on applicants who live in the airport's flight path or are otherwise affected. The committee will meet three times over the course of the year, in addition to two public sessions.

Interested parties should submit a letter of interest by Jan. 23 at townadmin@westtisbury-ma.gov.

Martha's Vineyard Airport

MV Times mvtimes.com

Home News & Sports Community Home & Garden A & E Eat & Drink Things to Do Classi

Home › News › Airport to conduct noise study

Airport to conduct noise study

Representatives sought from Island towns.

By **Eunki Seonwoo** - January 9, 2023 14

Martha's Vineyard Airport is looking for people to participate in its noise study. — Eunki Seonwoo

West Tisbury is looking for someone to take part in the Federal Aviation Administration (FAA) Part 150 noise study action committee for Martha's Vineyard Airport. West Tisbury town administrator Jennifer Rand wrote in an email that those interested need to contact her at townadmin@westtisbury-ma.gov by Monday, Jan. 23.

The request for a town representative was discussed during the last West Tisbury select board meeting. The board members considered joining the committee, but could not fit it into their schedules, and decided to advertise the position. West Tisbury town administrator Jennifer Rand said during the meeting that Edgartown also falls under the flight paths, so the airport may also be looking for a representative from the down-Island town.

Airport director Geoff Freeman told The Times on Monday the three Island entities he requested committee representatives for were West Tisbury, Edgartown, and the Martha's Vineyard Commission. So far, he has heard back only from West Tisbury. Edgartown town administrator James Hagerty was not immediately available for comment. Martha's Vineyard Commission executive director Adam Turner was also not immediately available for comment.

The airport had a project kickoff meeting with HMMH, a Burlington-based environmental and transportation planning firm, in October to discuss the study's timeline and what can be expected. A January 2022 memorandum from HMMH about the project scope is also available on the West Tisbury website. According to the memo, phase one of the project consists of preparing a noise exposure map. Depending on the results of this part of the study, phase two may consist of developing a noise compatibility program.

Freeman said the FAA Part 150 noise study is a voluntary grant program that supports airports to "understand and address future noise impacts." The study analyzes and reviews various factors, such as aviation activity over the years, when there is more activity, decibel levels, and more. The study provides a "picture of what type of impact airports have on surrounding communities."

"When this airport was originally built, it was in the middle of nowhere in World War II," Freeman said. Freeman pointed out the increased level of development and population on the Island over the years makes it so more people feel an impact from the airport. Additionally, airport operation numbers are returning to pre-pandemic levels. Freeman said conducting the study shows the airport "trying to be a good neighbor," and provides "hard facts" from an FAA-approved study, rather than anecdotal evidence.

"Sometimes airports don't have as much impact as people think, sometimes they do," Freeman said. The last preliminary noise study was in 2012, when aircraft were louder and less fuel-efficient. A large part of the study is public participation, and the meetings will be posted on the airport website and advertised in the newspapers, according to Freeman. According to an airport press release, a public information session will be held on Tuesday, Jan. 31, at the Martha's Vineyard Regional High School culinary arts room, located at the Sanderson Avenue entrance, from 6 to 8 pm. Freeman said this is the first of three public meetings.

Although the study can show ways the airport can reduce its impact, with FAA support options, Freeman said there are limitations. Freeman said Martha's Vineyard Airport, as a federally obligated airport, can provide educational material to pilots and airlines (e.g. providing data, asking to avoid late-night flights), but it "cannot dictate aircraft operations."

"We want to be good neighbors, and what we can implement after this study, we will do," Freeman said, as long as the options were safe and feasible. He added that the study is not expected to finish until the end of this year.

TAGS photos subscriber

Like 0

Newsletter

Noise Compatibility Study (Part 150)

Martha's Vineyard Airport

Martha's Vineyard Airport (MVY) is participating in the federal Airport Noise Compatibility Planning process under Title 14 of the Code of Federal Regulations (14 CFR Part 150), often referred to simply as Part 150. Participation in this process is voluntary and allows for greater understanding of airport and community noise needs, as well as providing access to Federal Aviation Administration (FAA) funding for some noise compatibility program measures, if necessary. Part 150, developed in response to the Aviation Safety and Noise Abatement Act of 1979 (ASNA), provides standards for the measurement of noise, as well as its analysis, description, and documentation. Part 150 also sets forth a system for review, from both FAA and the public.

The initial focus of the MVY Part 150 study is on creating a noise exposure map (NEM) for the airport. The noise exposure will be evaluated in terms of Day-Night Average Sound Level (DNL), which describes long-term noise exposure in a way that specifically considers the time of day in which aircraft noise events occur (e.g. noise occurring at night is weighted tenfold).

The FAA and most other federal agencies have formally adopted DNL for land use compatibility and for evaluating effects from aircraft operations near an airport.

Noise Modeling

FAA *requires* that airports use computer-generated DNL contours (14 CFR Part 150). Noise contours are lines of equal noise exposure around an airport (much like topographic maps that indicate contours of equal elevation). DNL contours usually reflect average annual operating conditions, taking into account the average number of flights each day, how often each runway is used throughout the year, and where over the surrounding communities the aircraft fly.

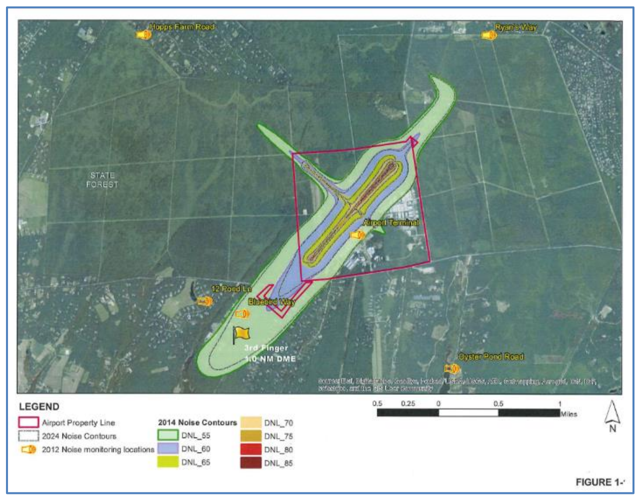


Figure 1: A previous study's noise contour map for MVY, representing 2014 and forecast 2024 noise exposure

As required by the FAA, the Aviation Environmental Design Tool (AEDT) will be used to generate the DNL contours for the MVY Part 150 Study. AEDT uses a database of aircraft noise characteristics to predict DNL based on aircraft types, operating conditions, aircraft performance, and aircraft flight tracks. The NEM document will present two contour maps representing Existing Conditions (2023) and a 5-year Forecast (2028) The official NEM contours must be based on the average annual day aircraft operations (the average daily number of aircraft operations over a year). For informational purposes only, peak-

McFarland Johnson

hmmh

MVY AIRPORT MARTHA'S VINEYARD

season noise contours will be calculated during the course of the MVY Part 150 Study as well, in recognition of the seasonality of the airport.

Noise Abatement Procedures

MVY has a “Fly Friendly” program in place to encourage pilots to use prescribed procedures to minimize noise over residential areas. The Part 150 Study will provide information on the extent to which current operations comply with the recommendations.

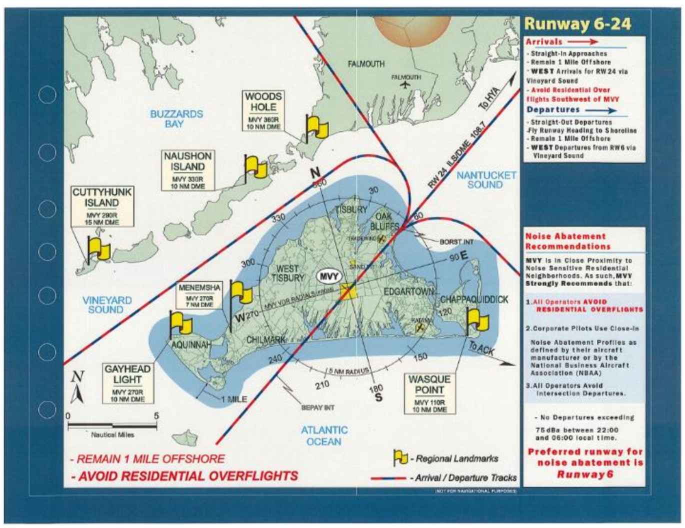


Figure 2: Existing voluntary noise abatement procedures for MVY for aircraft over 12,500 lbs.

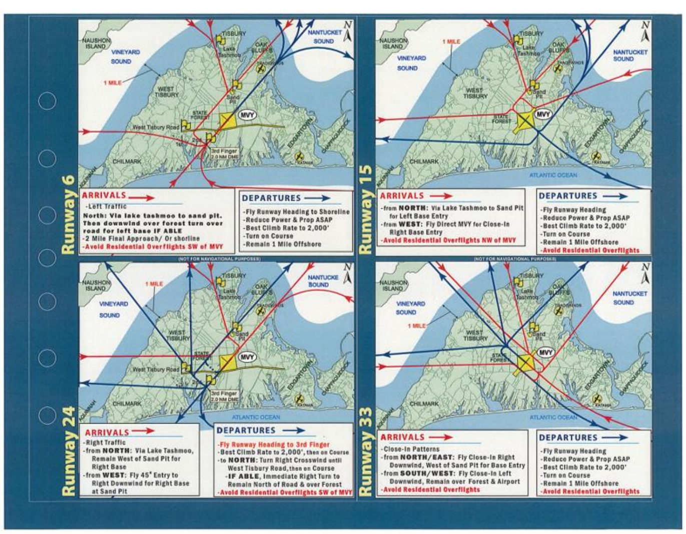


Figure 3: Existing voluntary noise abatement procedures for MVY for aircraft under 12,500 lbs.

Stakeholder Engagement

In addition to specifying the methodology for assessing noise exposure, Part 150 requires that the airport sponsor provide opportunity for stakeholder involvement in the study process. Stakeholders include not only airport users such as pilots and airlines, but also airport neighbors, residents of adjacent communities.

For purposes of the Part 150 Study, MVY has formed a Technical Advisory Committee (TAC) of representatives from various stakeholder groups that will meet at three key phases of the nearly year-long process.

Two Public Information meetings will also be held; the first of these is

January 31, 2023
Location: Martha’s Vineyard Regional High School (Culinary Arts Room)
Sanderson Ave Entrance
Time: **6pm-8pm**

This first meeting will discuss the scope of the project, how a noise exposure map is developed and review the schedule of the project. Airport and Project staff will be on hand to discuss the project and how the public can be involved.

When the draft Noise Exposure Map document has been prepared, the second Public Information meeting will present the study findings at the beginning of the 30-day public review period.

For More Information:

MVY Fly Friendly website page:
https://mvyairport.com/noise-abatement-fly-friendly/

MVY Part 150 Project website page:
https://mvyairport.com/mvypart150-faa-noise-study/

FAA Noise Issues and Information:
http://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/airport_aircraft_noise_issues/

Newsletter #2

Noise Compatibility Study (Part 150)

Martha's Vineyard Airport

Martha's Vineyard Airport (MVY) is participating in the federal Airport Noise Compatibility Planning process under Title 14 of the Code of Federal Regulations (14 CFR Part 150), often referred to simply as Part 150. Participation in this process is voluntary and allows for greater understanding of airport and community noise needs, as well as providing access to Federal Aviation Administration (FAA) funding for some noise compatibility program measures, if necessary. The program provides standards for the measurement of noise, as well as its analysis, description, and documentation. Part 150 also sets forth a system for review, from both FAA and the public.

The focus of the MVY Part 150 Study is on creating a Noise Exposure Map (NEM) for the airport in terms of Day-Night Average Sound Level (DNL). The FAA and most other federal agencies use DNL as the basis for evaluating effects from aircraft operations near an airport, including land use compatibility.

Public Information Meeting

Tuesday, October 10, 2023
6:00 – 8:00 pm
MVY Airport Terminal
open-house style workshop to view results of the study and ask questions of the study team

The MVY NEM development kicked off in January 2023 with a public information meeting. The study team collected data on the current airport operations from FAA records and the airport's Vector System radar flight track data, with input from the Technical Advisory Committee. In addition to the noise modeling required to produce the DNL contour map, the study team conducted a noise measurement program during the peak season and assessed MVY's current voluntary noise abatement program.

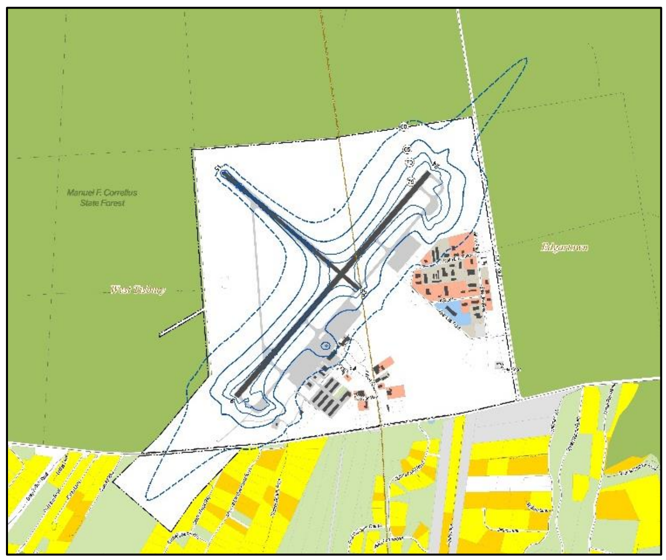


Figure 1. 2028 forecast conditions DNL contours: outermost contour line (dashed) is DNL 60, shown for informational purposes only. FAA's threshold for land use compatibility is DNL 65.

Noise Exposure Map (NEM)

The NEM document presents the two official noise exposure maps: the existing conditions (2023) and the five-year forecast conditions (2028).

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hmmh

MVY AIRPORT MARTHA'S VINEYARD

For informational purposes only, peak-season noise contours have been calculated, in recognition of the seasonality of the airport and residents' concerns. That analysis is provided in an appendix to the document.

Noise Measurement Program

Although Part 150 does not require noise measurements, FAA guidelines allow that noise measurement results may be included as supplementary information to help describe the existing aircraft noise environment. The study team conducted measurements at 10 residential locations from July 10 to 18. Over 185 hours of noise measurement data were collected at each of three primary measurement sites, and 48-120 hours of data were collected at seven secondary locations during the measurement period. The measured noise data are summarized in the NEM report, with detailed site-by-site reporting provided in an appendix.

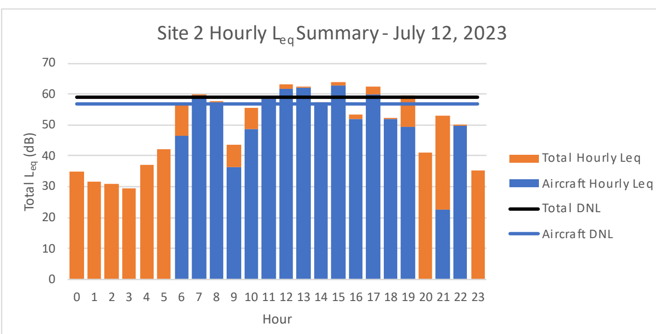

Figure 2. Noise measurement sample; July 12, site 2. Each bar shows hourly average noise level (Leq): blue portion represents aircraft-produced noise energy, orange from other noise sources.

Voluntary Noise Abatement Program

MVY has a voluntary "Fly Friendly" program in place to encourage pilots to use prescribed procedures designed to minimize noise over residential areas. The procedures include the delay of turns after takeoff, use of preferred runways when possible, and limiting nighttime departures by louder aircraft. Detailed measure-by-measure analysis of the program elements is provided as an appendix to the NEM report.

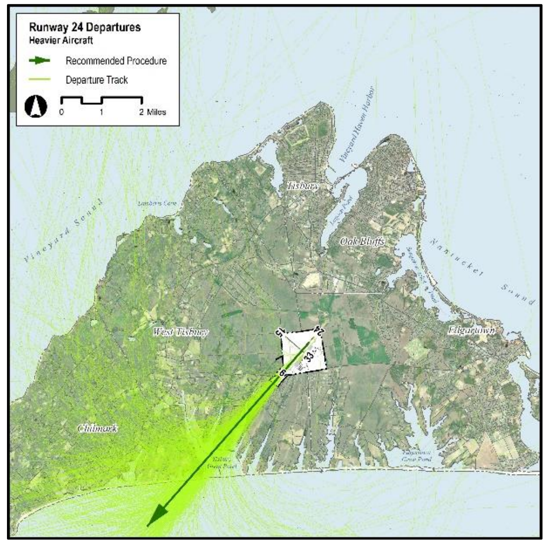

Figure 3. Sample from Fly Friendly analysis: radar flight tracks for heavy aircraft departing Runway 24, superimposed with recommended path – 56 percent remained on runway heading

Public Review and Comment Period

The full Draft Noise Exposure Map document is available for public review, with a 30-day public comment period from October 6 to November 6, 2023. The report can be found on the study website: https://mvyairport.com/mvypart150-faa-noise-study/ in pdf format. Paper copies are available for review during business hours at three locations:

- Airport
- Library
- MVAC offices.

Members of the public may submit written comments by email to the project manager (klarson@hmmh.com), by US mail to **HMMH, 700 District Avenue, Suite 800, Burlington, MA 01803, attn: K. Larson**, or in person at the public meeting on October 10. All written comments will be included in the final NEM submittal to FAA.

For More Information:

MVY Fly Friendly website page:
https://mvyairport.com/noise-abatement-fly-friendly/

MVY Part 150 Project website page:
https://mvyairport.com/mvypart150-faa-noise-study/

FAA Noise Issues and Information:
http://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/airport_aircraft_noise_issues/

MVY AIRPORT MARTHA'S VINEYARD

Noise Compatibility Study (Part 150)

Martha's Vineyard Airport

We welcome your comments! This card may be:

- filled out and left at the comment table today,
- or mailed to: *HMMH, 700 District Ave, Suite 800, Burlington, MA, 01803 (attn: Kate Larson, MVY Part 150 Project Manager)*

Comments by email can be sent to: KLarson@hmmh.com

Commenter's Name: Hannah Kaeka Scott date of comment 1/31/2023

email: hscott14@verizon.net phone: 508-693-7283

mailing address: 808 EDGARTOWN-WEST TISBURY Rd.
Vineyard Haven, MA 02568

Comments:

I live one mile from airport in West Tisbury.
I am very annoyed by the airport noise.

In 1986 a man was in my yard with a dish pointed at the sky! He was doing a noise survey in Oct, mid week when the airport was quiet.

I volunteer my yard for the study.

Also you should consider Flat point Farm area, as I was there one day when the planes were busy.

Hannah K. Scott

You can keep informed through the airport website: https://mvyairport.com/mvypart150-faa-noise-study/

Noise Compatibility Study (Part 150)

Martha's Vineyard Airport

We welcome your comments! This card may be:

- filled out and left at the comment table today,
- or mailed to: *HMMH, 700 District Ave, Suite 800, Burlington, MA, 01803*
  (attn: Kate Larson, MVY Part 150 Project Manager)

Comments by email can be sent to: KLarson@hmmh.com

Commenter's Name: Martha Moore date of comment 2/1/23

email: martym6466@gmail.com phone: 508-696-7980

mailing address: PO Box 3000 PMB 3033, West Tisbury, MA 02575

Comments:

I was told at the meeting 1/31/23 that I could volunteer to have someone come out to my property to monitor noise in July. The worst times for noise are Friday afternoon, Sunday afternoon + Monday morning.
I live at 176 Middlepoint Rd, West Tisbury 02575

You can keep informed through the airport website: https://mvyairport.com/mvypart150-faa-noise-study/

From: Matthew Sudarsky <mvsuds@verizon.net>
Sent: Wednesday, February 1, 2023 3:18 PM
To: Kate M.S. Larson
Subject: Noise Compatibility Study (part150) Martha's Vineyard Airport

Follow Up Flag: Follow up
Flag Status: Flagged

[EXTERNAL]

Matthew Sudarsky 2/1/2023
mvsuds@verizon.net
774-226-3276
119 Charles Neck Way
Vineyard Haven, Ma. 02568

I attended the meeting at the MVRHS on 1/31/23. I must say I was rather disappointed in the meeting. it was more of a presentation than a meeting. We have been living at our property on Charles Neck way year round since 1999, and in those years the noise has steadily gotten worse. We use to be able to sit outside in the summer and enjoy ourselves. Now we can't even have a conversation inside without having to pause every time a jet takes off or lands. the rural character of West Tisbury which the town is so proud of is being replaced by the increased commercial and private jet traffic. The lack of accountability by the aviation sector has to be addressed. We experience private and commercial planes flying directly over our house on a regular basis. We also have planes taking off and landing during supposedly restricted times. Until the aviators are made to pay a significant penalty I am afraid these practices will continue. I know this study is about noise and these are issues you are not concerned with. I have to assume this study has been started as part of a effort to expand the runways. I will oppose any increase in the size of The Martha's Vineyard Airport. It is my understanding that The Martha's Vineyard Airport is one of the second or third busiest airports in the whole state. Without some effective measures the problem is only going to get worse.

Sincerely Matthew Sudarsky
119 Charles Neck Way
Vineyard Haven,

Ma.02568

From:	Luke Sudarsky <mvlsuds@gmail.com>
Sent:	Thursday, July 27, 2023 7:00 PM
To:	Kate M.S. Larson
Subject:	Public Comment for MVY Part 150 Noise Study
Follow Up Flag:	Follow up
Flag Status:	Flagged
Categories:	Reference, check back later

[EXTERNAL]

Hi Kate,

I would like to submit the public comment below in regards to the airports part 150 study.
Thanks,
Luke
——

Hello,

My name is Luke Sudarsky and I am writing this in order to make public comment on the part 150 study currently being conducted by MVY airport. I hope that the airport will take the time to seriously consider the comments below and incorporate them into future plans in order to mitigate noise from arriving and departing airplanes.

First, I would like to commend the airport at undertaking the CFR 14 part 150 study on behalf of the residents affected by airport noise. We hope to continue the process in good faith and hopefully come to an understanding based in the principals of being good neighbors to the communities that surround the airport. We hope this process will validate our experiences of the near constant airplane noise over the Charles Neck Way neighborhood and we hope the airport can implement some changes to help mitigate this issue.

As stated above the airplane noise is nearly constant in the Charles Neck Way Neighborhood and we have seen a substantial increase in terms of noise in the last few years. This near constant noise is more than a minor annoyance and has denied us the use and enjoyment of our property. As seen from the radar views, overflight is a huge problem for the Charles Neck Way neighborhood. We experience upwards of 25-30 overflights per day from both private jets and commercial air carriers during the summer, a time where one would like to spend time outdoors relaxing. We understand living near the airport there will always be some noise, but we are most impacted from the increase in jet traffic we have seen in the last few years. You cannot hear the TV or even undertake a conversation when jets are flying directly over our house at a very low altitude. We are not asking for zero noise, rather we are asking the airport and ATC to apply clearly established voluntary noise abetment to prevent overflight.

Even better we would like the airport following the part 150 study, to institute mandatory noise abetment protocol and change the flight/glide path. This would help prevent residential overflight and move the airplanes towards the acres of uninhabited land that is behind Charles Neck Way. Furthermore, private jets take off at all hours of the night the other night a jet departed the airport at 4:30am and this is not a rare occurrence. We ask that following the study the airport seriously consider using CFR part 161 to implement a mandatory curfew for all non-emergency airplanes. Another suggestion I would like to see the airport explore is to implement preferential runway use of runway 24. Although neighborhoods surround the airport the runway 6 usage leads to near constant overflight of our neighborhood at very low altitude, leading to excessive noise. Preferential use of runway 24 would mean that airplanes have time to gain thousands of feet of altitude over the state forest before any residential overflight and therefore have much less noise impact especially for larger planes.

Finally, I would like to thank you again for taking the time to consider my comments and for undertaking this study to understand the impact MVY airport noise has on surrounding communities. We hope to continue this process and follow through with changes that will make a meaningful impact on our quality of life.

Kind regards,
Luke Sudarsky

From: maria marchigiano <mariamarchigiano@gmail.com>
Sent: Wednesday, August 2, 2023 4:18 PM
To: Kate M.S. Larson
Subject: Noise from airport

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: check back later, Reference

[EXTERNAL]

Hi Kate

My name is Maria and I live at 12 Waldron's Bottom Rd, West Tisbury in close proximity to the airport. I know you were here in the past couple of weeks doing your noise study and I am writing to say that I very much hope you are still monitoring the noise. It has been non stop all day long , beginning as early as 6am. There are times, when we can't even have a conversation if we are outside

Please take some time to monitor what is happening now; it has been awful and some kind of noise barrier is vital to quality of life in this area.

Respectfully

Maria Marchigiano

From: John Banks <john.s.banks@icloud.com>
Sent: Friday, September 29, 2023 4:34 PM
To: Kate M.S. Larson
Subject: MVY Noise Concerns

Follow Up Flag: Follow up
Flag Status: Flagged

[EXTERNAL]

We live on the flight path north east of the airport, and the volume and disturbance impacting our entire neighborhood has grown outrageously over the past 14 years we have lived there.

The airplane size, noise level and frequency of landings and takeoffs make it extremely unpleasant to be outside much of the day in our neighborhood, which otherwise is in a very quite and peaceful setting away from car traffic.

This airplane noise has completely ruined my love of our Vineyard home, and for countless others on the island. Something must be done to address this. Thank you.

Regards,
John Banks
38 Waterview Rd, Oak Bluffs MA
585-781-0301

From:	Sirwesley <sirwesley@aol.com>
Sent:	Friday, September 29, 2023 5:43 PM
To:	Kate M.S. Larson
Subject:	Noise study
Follow Up Flag:	Follow up
Flag Status:	Flagged

[EXTERNAL]

Our home is, especially in the summer, in the direct path of landing planes. It is a never ending source of noise with planes often going over every minute or so from very early morning to late at night. When the wind shifts there is some relief from time to time. The airport has too many planes landing. It has gotten worse and worse over the years. It is time to do something about it to lessen the disturbance on what is supposed to be a quiet rural setting.

Wesley Brown
241 Seaview Avenue
Oak Bluffs

From: Debra Polucci <debrapolucci@gmail.com>
Sent: Saturday, September 30, 2023 1:25 PM
To: Kate M.S. Larson
Subject: Jet noise

Follow Up Flag: Follow up
Flag Status: Flagged

[EXTERNAL]

The summer noise from jets on a summer day on my back deck, and even inside my house can be unbearable. Jet after jet…..loud mad screaming. Arriving one after another. I counted 6 one day, all in a row and within minutes of each other.
Feel free to contact me if you have any questions.
Please make it stop!!!

Thank you,
Debra Polucci
10 Road to Great Neck
West Tisbury, MA
02575

From: David Rhoderick <david.rhoderick@gmail.com>
Sent: Sunday, October 22, 2023 5:54 PM
To: Kate M.S. Larson
Cc: Alan Brigish; James Graham
Subject: Re: Comment for inclusion in the Public Comments section of the MVY Part 150 document.

Follow Up Flag: Follow up
Flag Status: Flagged

[EXTERNAL]

Updated comments, please replace if possible, thanks. And thanks for such a wonderful and helpful study! David

For those living in Deep Bottom Pond, the MVY Part 150 study validates our subjective experience: we are more deeply impacted by the airport than we should be.

1. The majority of all aircraft taking off (70%+) use runway 24, and over 80% of those departures that are not jets turn early and low over Deep Bottom Pond, contrary to the *"Fly Friendly Noise Abatement"* guidelines (43% compliance). Jets are less of a problem as they mostly travel in a straight line from the runway and do not turn.
2. Although less than 30% of all arrivals are from the south, landing on runway 06, over 80% of these non-jet arrivals fly over Deep Bottom Pond, contrary to the *"Fly Friendly Noise Abatement"* guidelines (64% compliance). The height over our homes of these speedy incoming planes, at less than 500ft (according to a glide slope calculation), is alarming, but no altitude data was presented. (The radar data used for circuit pattern analysis **did** include altitude data so it is available.)

From: Vicky Bijur <vicky@vickybijuragency.com>
Sent: Sunday, November 5, 2023 9:38 PM
To: Kate M.S. Larson
Subject: Public comments on airport noise on Martha's Vineyard

Follow Up Flag: Follow up
Flag Status: Flagged

[EXTERNAL]

K. Larson, Project Manager
HMMH 700 District Avenue, Suite 800
Burlington, MA 01803

Dear K. Larson,

I write as a resident of West Tisbury, Massachusetts, who suffers terribly from the noise, constant at times, from the Martha's Vineyard Airport. My family bought our house, at 190 Tiahs Cove Road, fifty years ago, in 1973, at a time when as I recall there were no jets flying in and out of the airport and certainly almost no private planes. In addition, Cape Air flew small planes, not the huge jets that Jet Blue uses. The noise from take-offs and landings now wakes us up early in the morning and disturbs our sleep, after midnight, on a regular basis. The sound of one or two planes an hour would be tolerable, but there are many days when the noise is incessant. That is, there is no reprieve between flights. I have noticed the same amount of noise not just at my house but walking in the woods off Middle Road some miles away.

My understanding is that there was a noise study a few months ago at the end of which the report claimed that the sound of airplanes was drowned out by ambient noise from the West Tisbury/Edgartown Road and/or from the ocean. Where we are—and where hundreds of people live—there is no ambient noise from the road or the waves. And for the record, when I have spent time the homes of people who live on Tiahs Cove and Deep Bottom Cove, the sound of the planes is incredibly loud and not mitigated at all by any background noise. Believe me, the whining and the roar of the planes is far, far louder than the sound of the waves.

Surely the people who fly/own/hire private planes to the Vineyard should be informed of the considerable noise pollution they produce. I often wonder how they would feel if they lived within hearing distance of the airport. In a just world planes would fly as frequently and closely over the homes of people who use private planes or who profit from the airlines as they fly over my house.

I believe that the former Vice Chair of Jet Blue has a house in Menemsha Hills, far from the noise of Jet Blue jets landing and taking off from the Vineyard Airport. Jet Blue is making handsome profits while the people of West Tisbury suffer. Shouldn't Jet Blue be required to do more to ameliorate noise pollution while it's exploiting the island for gain? Have studies been done on the effect of noise pollution on birds and wildlife? Not to mention the effect on the health of the Tisbury Great Pond?

I have been in touch over the years with Geoff Freeman, the airport director, who is polite and a good listener and sympathetic. My impression is that there is absolutely nothing he can do about the huge disturbance to the peace of the Vineyard caused by airport noise.

The Vineyard is a small island. I understand that it would be futile to battle airport noise at a large urban airport. And large airlines could care less about preserving rural quality, the peace of the countryside, the sound of birds, etc., etc. They care about profits. And the people who use private planes to get to the island are insulated by great wealth and care nothing about waking up neighbors late at night or early in the morning. But surely something can be done to cut down on frequency of flights and on the noise. Appealing to the better nature of airlines and of private planes is ineffective and futile. There is a need for much more stringent regulation.

Regards,
Vicky Bijur
190 Tiahs Cove Road
West Tisbury, MA 02575

Date: November 5, 2023 Rev 1

To: Ms. Kate Larson/ HMMH

Subject:Comments to the MVY Airport Part 150 Study

In the Technical Advisory Committee Meeting on October 10th, Bob Cassidy, The Air Traffic Manager for MVY Airport spoke up about a program called "Keep-'em-High." He has since shared that document. Upon review it is a circular issued by the FAA (AC-90-59) that addresses both safety and noise mitigation. It was published in response to the FAA Near Midair Collision Report of 1968. Quoting from the circular:

It is commonly referred to as the "Keep-'em-High" program. The procedure has been in effect for about one year and they have proven to be an effective noise abatement program in addition to *reducing the time that high performance aircraft are exposed to uncontrolled aircraft at lower altitudes*. [my italics].

This procedure is to create a safer flying environment and has the added effect of reducing aircraft noise.

While the original circular was instituted for larger aircraft, could the principles of the "Keep-'em-High" program be instituted within the Fly Friendly Program at Martha's Vineyard Airport?

There are two SAFETY reasons that this might be instituted. One affects the 70+% of summer flights (both large and small aircraft) that takeoff ~~on runway 6 or land on runway 24~~ on runway 24 or land on runway 6, and the large aircraft issue of the summer jets coming up from the south (NY, NJ, DC):

A. For takeoffs on runway 6 or landings on runway 24, there would be fewer overflights of fewer homes as it would be over Long Point and Sepiessa Point). **Safer and quieter.**

B. On the large commercial jets coming up from the south that are landing on runway 6 there has been a tendency, according to ATC and from the HMMH study, for the aircraft to "hug" the south shore and Chappaquiddick and then do a relatively sharp left turn to line up for landing on runway 6. A "Keep-'em High" program would both be safer and create less aircraft noise to the residences on the south shore, Chappaquiddick and over the Meadowview and Farm Neck residential areas. **Safer and quieter.**

Enhancing air traffic safety, especially over residences should be one of the drivers of any aircraft landing/takeoff protocols at an airport. If all aircraft climbed higher and continued on the flight path from runways 6/24, it would result in

✓ **Creating a safer** route for the pilots. If an mechanical problem should occur or another aircraft is within an unsafe area of one's plane, one would have many more choices **when higher in the air**. This is in keeping with the "altitude is my friend" mantra of many pilots.

- ✓ **Mitigating aircraft noise** in both the Vineyard Meadow Farms area and Deep Bottom Pond/Tiah's Cove Road areas for runway 24 takeoffs and runway 6 landings

- ✓ **Mitigating aircraft noise** in both the Chappaquiddick, Meadowview and Farm Neck areason landings on runway 24.

My comment is that perhaps the MVY Airport should institute its own "Keep-'em-High" program or modify the "Fly Friendly" Program to include it, which could result in both safer operations and in the added benefit of helping to mitigate aircraft noise for many MV communities around the airport.

Respectfully submitted,

James Graham

West Tisbury Resident

West Tisbury Representative for the FAA Part 150 Study

194 Pond Road, West Tisbury, MA 02575
grahamjames16@gmail.com
860-946-9107

Appendix G -Fly Friendly Noise Abatement Evaluation

In accordance with Part 150 regulations, the Noise Compatibility Planning documentation can include two elements: (1) Noise Exposure Map (NEM) and (2) Noise Compatibility Program (NCP). This study includes an assessment of the current noise abatement program at MVY known as "Fly Friendly" but will not include an NCP because there are no noise sensitive land uses within the DNL 65 contour.

Noise abatement measures are those that manage noise at the source; such measures include airport layout modifications, noise barriers, flight path changes, preferential runway use, and arrival and departure procedures. The intention of noise abatement measures is to reduce the number of people and noise-sensitive properties exposed to aircraft noise.

MVY has established a Fly Friendly noise abatement program with voluntary measures to reduce the effects of aircraft noise on surrounding communities. MVAC has chosen to participate in the Part 150 program as a continuation of its efforts to manage noise created by aircraft operations at MVY to determine if the FAA will permit such measures. The voluntary noise abatement program encourages pilots to be respectful of residents when flying to and from MVY. The FAA prohibits mandated restrictions of flight paths, hours of operation, and any prevention of open access to airports (with exceptions for airports that had restrictions in place prior to a 1990s congressional Act). Therefore, the noise abatement program can only be voluntary.

This appendix presents the results of the Study Team review of the existing voluntary noise abatement program. **Table G-1** lists a brief description of the existing noise abatement measures. Flight track and aircraft identification data[31] for a 12-month period between December 1, 2021 and November 30, 2022 provided the primary basis for evaluating the extent to which the voluntary noise abatement measures are being followed.

[31] obtained from the MVY Vector system

Table G-1. Status of Existing Voluntary Noise Abatement Measures

Source: MVY and HMMH, 2023

Measure Number[32]	Recommendation	Measure Status[33]
1	Delaying Aircraft Turns	Partially followed
2	No Departures Exceeding 75dB Between 2200 and 0600 Local Time	Followed
3	All Aircraft to Avoid Intersection Departures	Followed
4	Noise Abatement Profiles	N/A
5	Preferred Runway for Noise Abatement is Runway 6	Partially followed
6	Use Over-water Approaches/Departures for Runway 6/24	Not followed
7	Pattern Altitudes	Not followed
8	Remain 1 Mile Offshore When Circumnavigating the Island	Not followed
9	Use FAA Advisor Circular AC90-66A	N/A
10	Noise Reductions on the Ground	N/A
Note: Measure information obtained from https://mvyairport.com/noise-abatement-fly-friendly/		

G.1 Delaying Aircraft Turns

The statement of this measure in the MVY Noise Abatement Newsletter[34] is: *Because residential communities surround most areas South and West of the airport, pilots should make every effort to wait to turn to minimize noise over residential areas. Aircraft landing runway 06 will intercept a 2 mile straight in (SILOC) or turn over the 3rd finger of the West Tisbury Great Pond. Aircraft departing runway 24 are asked to make their turn at an altitude of 2000ft or 2 miles, 3rd finger of the pond. Right hand turns can be made departing runway 24 before the West Tisbury road and the turn stays within the confines of the State Forest and it is a SAFE operation for the pilot and aircraft.* In addition to this description of procedures for arrivals to Runway 6 and departures from Runway 24, diagrams recommending noise abatement procedures are also published on the website for:

- aircraft greater than 12,500 lbs for Runway 6/24, and
- aircraft less than 12,500 lbs for all runway ends.

To determine the compliance of noise abatement measures, flight track and aircraft identification data in the MVY Vector system were used to classify aircraft as "heavy" (greater than 12,500 lbs) and "light"

[32] Numbering of measures is for the purposes of this evaluation; the measures are not numbered on the Fly Friendly program description published on the airport website.

[33] With respect to measures related to runway use or flight procedures, "implemented" means it has been adopted by the FAA within the Airport Traffic Control Tower Standard Operating Procedures or instrument flight procedures for the Airport. With respect to measures under the purview of MVY, "implemented" means the Airport has taken formal action to put the measure into effect.

[34] https://mvyairport.com/wp-content/uploads/2022/07/noisenewsletter.pdf

(less than 12,500 lbs) based on the FAA Traffic Flow Management System Counts (TFMSC) weight class data.[35]

G.1.1 Light Aircraft Arrivals to Runway 6

Voluntary measure: *Arrivals from North via Lake Tashmoo to Sand Pit then downwind over forest turn over road for left base if able, 2-mile final approach/or shoreline, avoid residential overflights SW of MVY.*

Measure Status: Partially followed

Compliance: 64.2% of the light aircraft arrivals to Runway 6

To analyze compliance with this measure, arrivals to Runway 6 were plotted and counted. A gate was drawn with a width of approximately one mile across the final approach path two miles from the Runway 6 end. If an aircraft passed through the gate, it was counted as compliant with this measure.

Figure G-1 presents the light aircraft arrival tracks to Runway 6. Collectively, 64.2 percent (1,950/3,037) of light aircraft arrivals to Runway 6 complied with this measure.

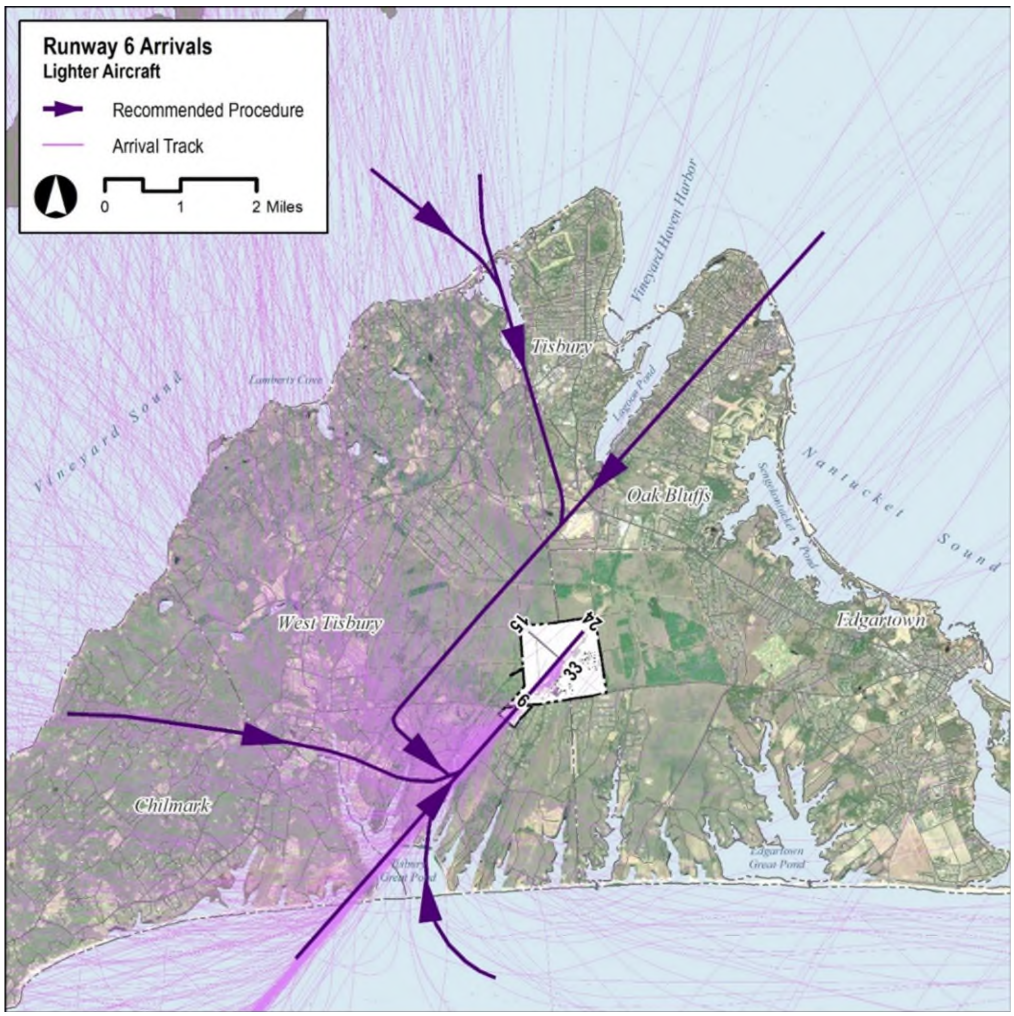

Figure G-1. Light Aircraft Arrival Tracks to Runway 6

Source: Vector System data, Dec. 2021 – Nov. 2022

35 https://aspm.faa.gov/tfms/sys/main.asp

G.1.2 Light Aircraft Departures from Runway 6

Voluntary measure: *Fly runway heading to shoreline, reduce power & prop ASAP, best climb rate to 2,000 ft., turn on course, and remain 1 mile offshore.*

Measure Status: Partially followed

Compliance: 10.4% of the light aircraft departures from Runway 6

To analyze compliance with this measure, light aircraft departures from Runway 6 were plotted and counted. A gate was drawn with a width of approximately one mile across the departure path along the runway heading near the shoreline in Oak Bluffs. If an aircraft passed through the gate and remained one mile offshore, it was counted as compliant with this measure. **Figure G-2** presents the light aircraft departure tracks from Runway 6. Collectively, 10.4 percent (308/2,951) of light aircraft departures from Runway 6 complied with this measure.

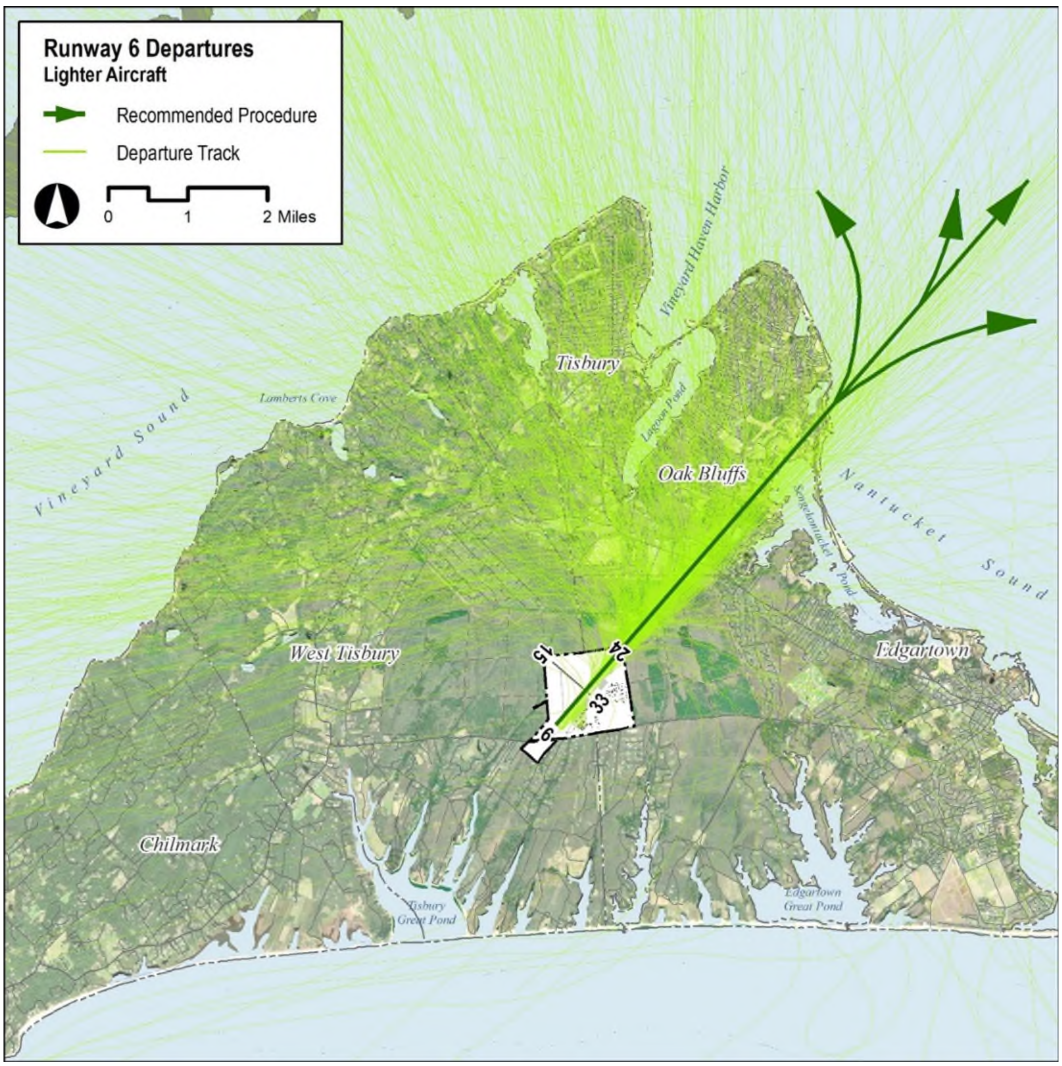

Figure G-2. Light Aircraft Departure Tracks from Runway 6

Source: Vector System data, Dec. 2021 – Nov. 2022

G.1.3 Light Aircraft Arrivals to Runway 24

Voluntary measure: *Arrivals from North to fly via Lake Tashmoo, remain West of Sand Pit for right base; arrivals from West to fly 45^N entry to right downwind for right base at Sand Pit.*

Measure Status: Partially followed

Compliance: 13.5% of the light aircraft arrivals from the north and west to Runway 24

To analyze compliance with this measure, light aircraft arrivals from the north and west to Runway 6 were plotted and counted. A gate from the west edge of the sand pit to the State Forest near Fire Road 57 across the Runway 24 arrival path was drawn. If an aircraft passed through the gate and remained west of the sand pit or south of Edgartown–Vinyard Haven Road, it was counted as compliant with this measure. **Figure G-3** presents the light aircraft arrival tracks to Runway 24. Collectively, 13.5 percent (713/5,271) of light aircraft arrivals from the north and west to Runway 24 complied with this measure.

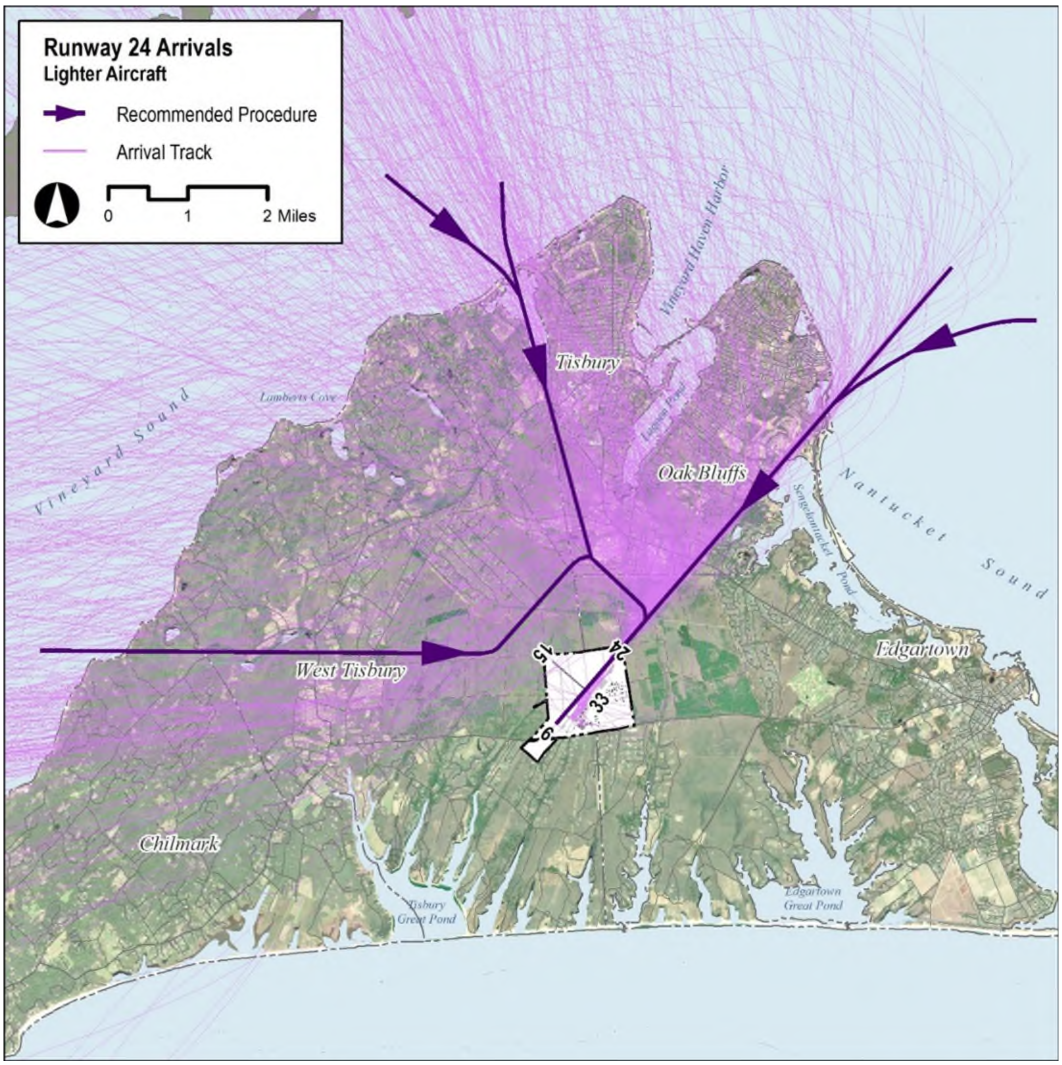

Figure G-3. Light Aircraft Arrival Tracks from North and West to Runway 24

Source: Vector System data, Dec. 2021 – Nov. 2022

G.1.4 Light Aircraft Departures from Runway 24

Voluntary measure: *Fly runway heading to 3rd Finger, best climb rate to 2,000 ft then on course, to North: turn right crosswind until West Tisbury Road, then on Course; if able, immediate right turn to remain north of Road & over Forest, and avoid residential overflights SW of MVY.*

Measure Status: Partially followed

Compliance: 43.4% of the light aircraft departures from Runway 24

To analyze compliance with the Runway 24 departure request "*Aircraft departing runway 24 are asked to make their turn at an altitude of 2,000 ft or 2 miles, 3rd finger of the pond*", light aircraft departures from Runway 24 were plotted and counted. A gate approximately one mile wide was drawn two miles from the Runway 6 end. If an aircraft passed through the gate, it was counted as compliant with this measure. **Figure G-4** presents the light aircraft departure tracks from Runway 24. Collectively, 43.4 percent (3,258/7,513) of light aircraft departures from Runway 24 complied with this part of the measure.

For the light aircraft departures from Runway 24 that were able to make an immediate right turn to the north, another gate was drawn between Edgartown–West Tisbury Road and Runway 15/33. If an aircraft passed through the gate, it was counted as compliant with this measure. Approximately 10.6 percent (796/7,513) of light aircraft departures to the north were compliant with this measure by turning before Edgartown–West Tisbury Road and then staying within the confines of the State Forest.

Overall, approximately 54.0 percent (4,054/7,513) of light aircraft departures from Runway 24 complied with this measure.

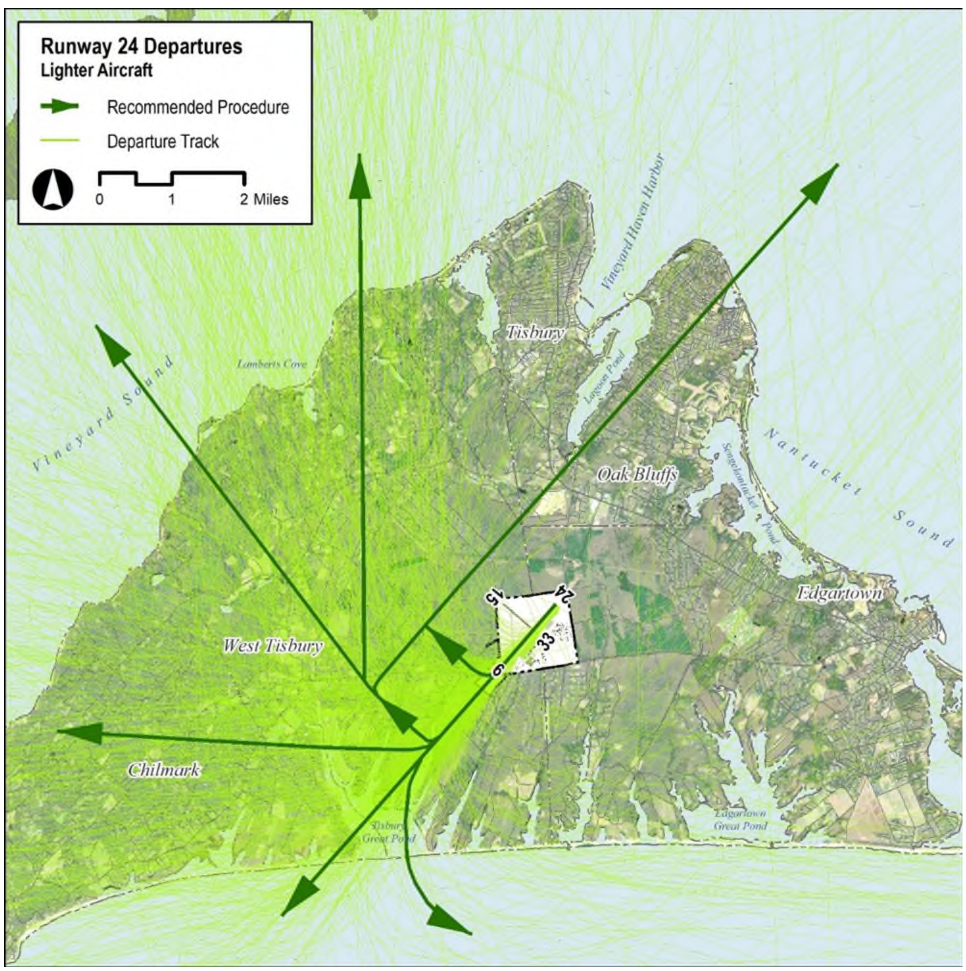

Figure G-4. Light Aircraft Departure Tracks from Runway 24

Source: Vector System data, Dec. 2021 – Nov. 2022

G.1.5 Light Aircraft Arrivals to Runway 15

Voluntary measure: *Arrivals from North to fly via Lake Tashmoo to Sand Pit for left base entry; arrivals from West to fly direct MVY for close-in right base entry to avoid residential overflights Northwest of MVY.*

Measure Status: Partially followed

Compliance: 5.8% of the light aircraft arrivals from the north and west to Runway 15

To analyze compliance with this measure, light aircraft arrivals from the north and west to Runway 15 were plotted and counted. A gate was drawn from Old County Road near West Tisbury School to Checamo Path. If an aircraft did not pass through the gate, it was counted as compliant with that specification. **Figure G-5** presents the light aircraft arrival tracks to Runway 15. Collectively, 5.8 percent (29/499) of the light aircraft arrivals from the north and west to Runway 15 complied with this measure.

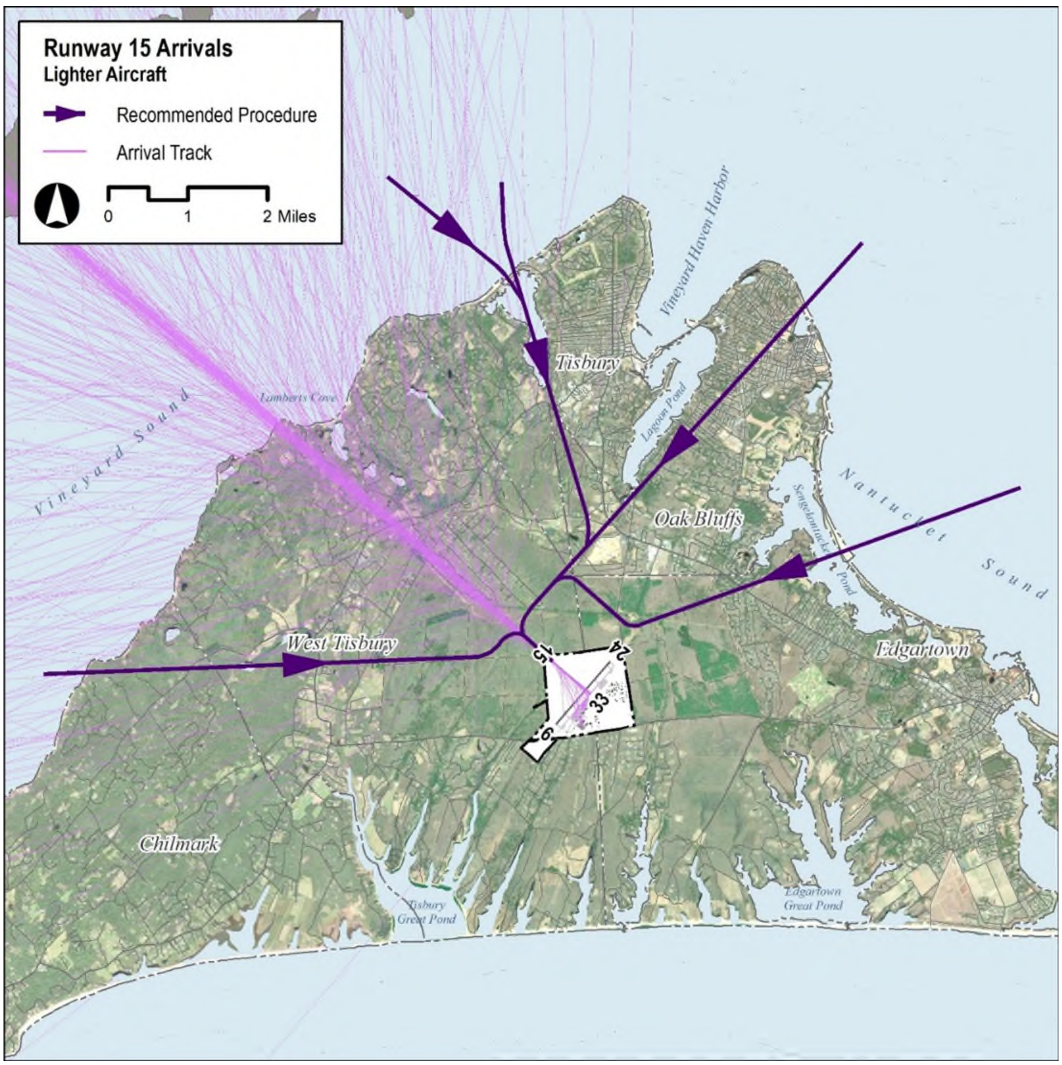

Figure G-5. Light Aircraft Arrival Tracks from North and West to Runway 15

Source: Vector System data, Dec. 2021 – Nov. 2022

G.1.6 Light Aircraft Departures from Runway 15

Voluntary measure: *Fly runway heading, reduce power & prop ASAP, best climb rate to 2,000 ft., turn on course, remain 1 mile offshore to avoid residential overflights.*

Measure Status: Partially followed

Compliance: 7.1% of the light aircraft departures from Runway 15

To analyze compliance with this measure, light aircraft departures from Runway 15 were plotted and counted. Three gates were drawn with a width of approximately one mile near the shoreline across the departure paths to the north, west, and south. If an aircraft passed through any of the gates and remained 1 mile offshore, it was counted as compliant with this measure. **Figure G-6** presents the light aircraft departure tracks from Runway 15. Collectively, 7.1 percent (9/127) of light aircraft departures from Runway 15 complied with this measure.

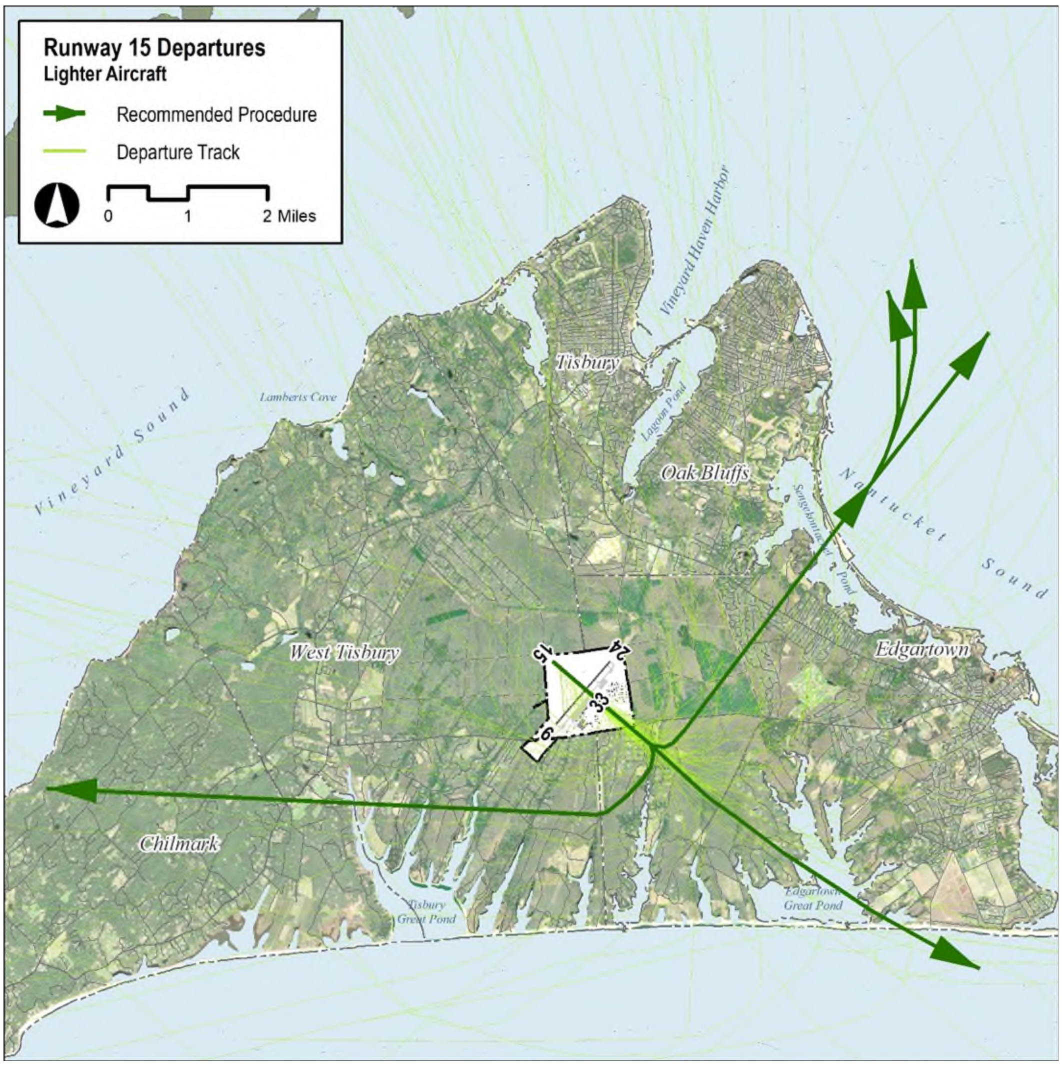

Figure G-6. Light Aircraft Departure Tracks from Runway 15

Source: Vector System data, Dec. 2021 – Nov. 2022

G.1.7 Light Aircraft arrivals to Runway 33

Voluntary measure: *Arrivals from North/East, to fly close-in right downwind, West of Sand Pit for base entry; arrivals from South/West, to fly close-in left downwind, remain over forest & Airport to avoid residential overflights.*

Measure Status: Partially followed

Compliance: 30.4% of the light aircraft arrivals from the north/east and south/west to Runway 33

To analyze compliance with this measure, light aircraft arrivals from the north/east and south/west to Runway 33 were plotted and counted. A gate from Edgartown–West Tisbury Road near Heath Hen Monument to the west edge of the sand pit was drawn. If an aircraft from the south/west passed through the gate for left downwind and remained over the forest and airport, it was counted as compliant with this measure. If an aircraft from the north/east passed through the gate for right downwind and remained west of the sand pit, it was also counted as compliant with this measure. **Figure G-7** presents the light aircraft arrival tracks from the north/east and south/west to Runway 33. Collectively, 30.4 percent (205/675) of the light aircraft arrivals from the north/east and south/west to Runway 33 complied with this measure.

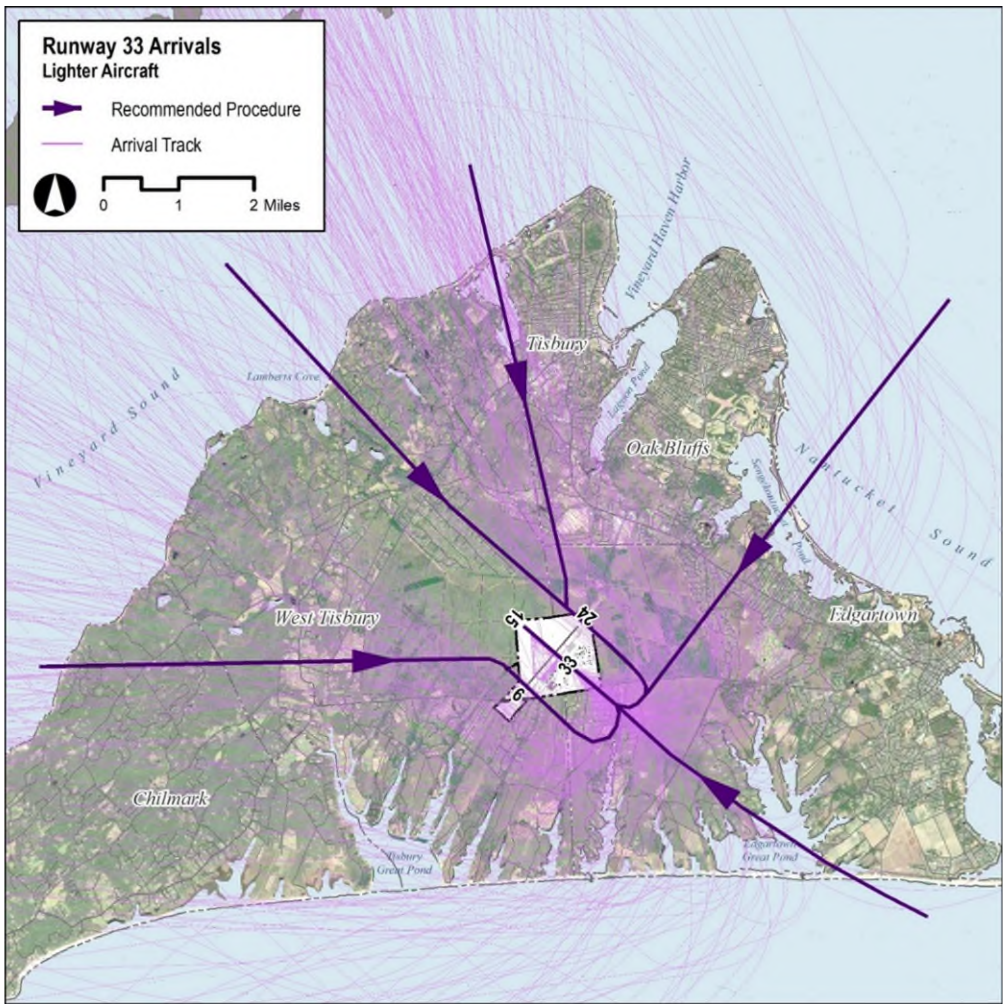

Figure G-7. Light Aircraft Arrival Tracks from North/East and South/West to Runway 33

Source: Vector System data, Dec. 2021 – Nov. 2022

G.1.8 Light Aircraft Departures from Runway 33

Voluntary measure: *Fly runway heading, reduce power & prop ASAP, best climb rate to 2,000 ft., turn on course, remain 1 mile offshore to avoid residential overflights.*

Measure Status: Partially followed

Compliance: 20.4% of the light aircraft departures from Runway 33

To analyze compliance with this measure, light aircraft departures from Runway 33 were plotted and counted. Four gates were drawn with a width of approximately one mile near the shoreline across the departure paths to the north, west, south, and along runway heading. If an aircraft passed through any of the gates and remained one mile offshore, it was counted as compliant with this measure. **Figure G-8** presents the light aircraft departure tracks from Runway 33. Collectively, 20.4 percent (314/1,540) of light aircraft departures from Runway 33 complied with this measure.

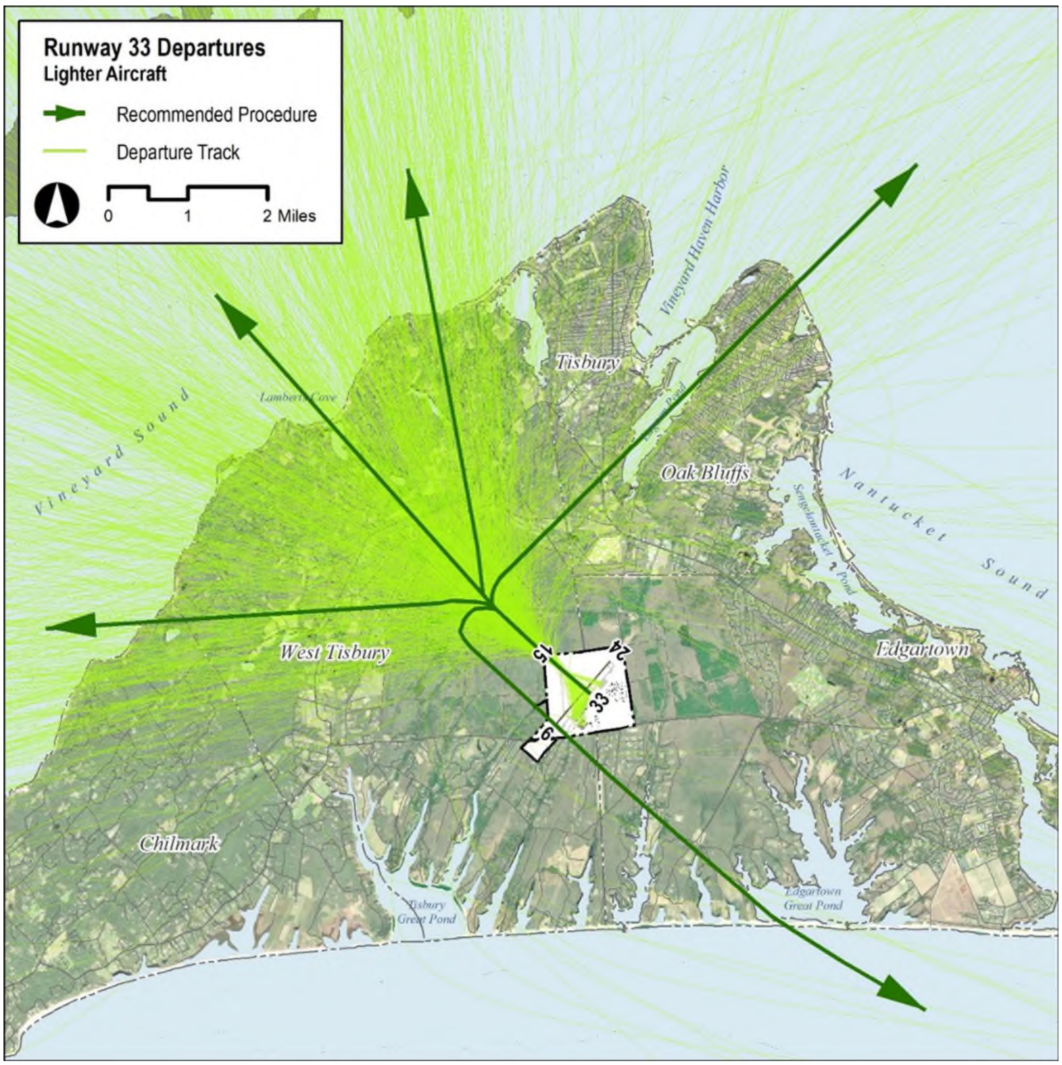

Figure G-8. Light Aircraft Departure Tracks from Runway 15

Source: Vector System data, Dec. 2021 – Nov. 2022

G.1.9 Heavy Aircraft Arrivals to Runway 6

Voluntary measure: *Straight-in approaches, remain 1 mile offshore to avoid residential overflights Southwest of MVY.*

Measure Status: Partially followed

Compliance: 50.8% of the heavy aircraft arrivals to Runway 6

To analyze compliance with this measure, heavy aircraft arrivals to Runway 6 were plotted and counted. A gate was drawn with a width of approximately one mile across the final approach path near the shoreline in Chilmark. If an aircraft remained one mile offshore and passed through the gate, it was counted as compliant with this measure. **Figure G-9** presents the heavy aircraft arrival tracks to Runway 6. Collectively, 50.8 percent (492/968) of heavy aircraft arrivals to Runway 6 complied with this measure.

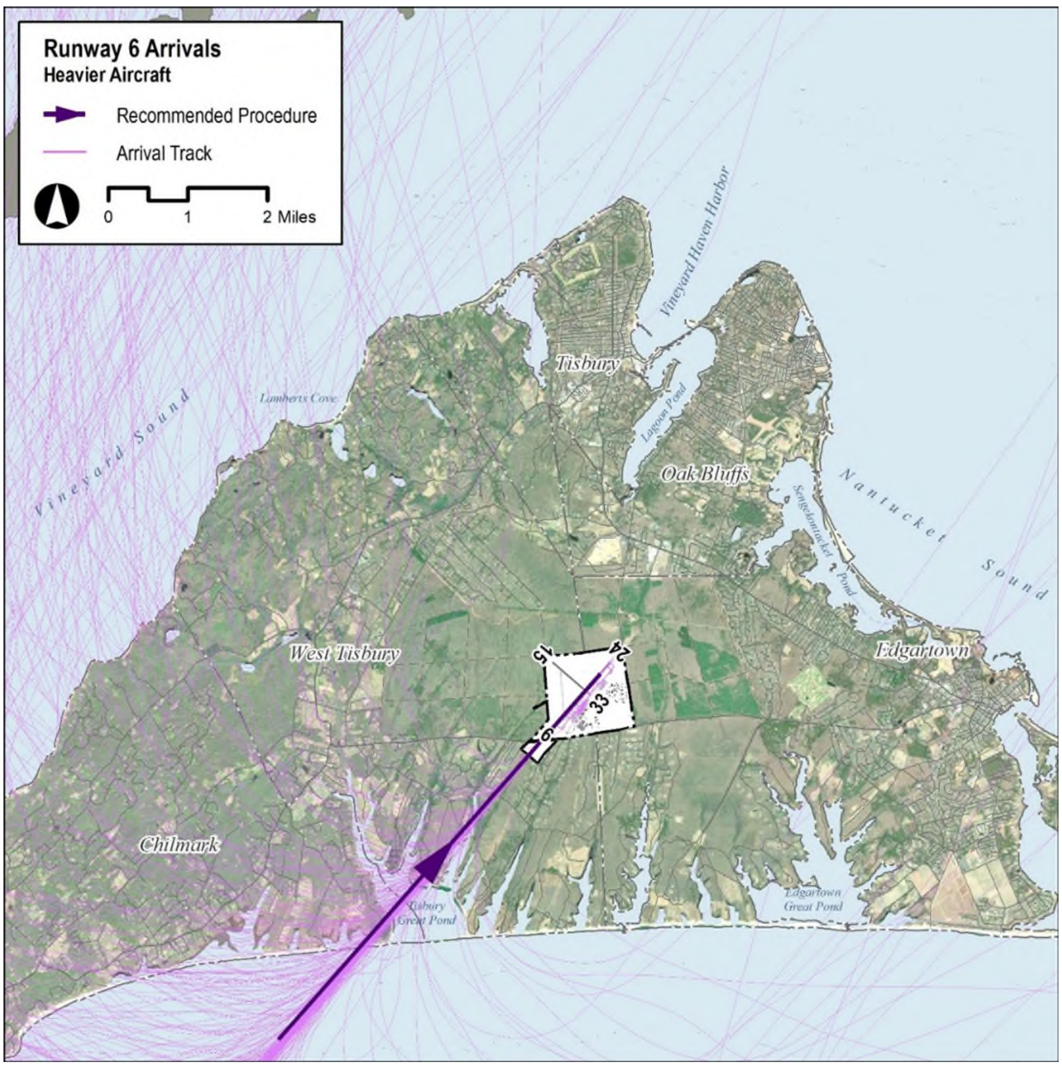

Figure G-9. Heavy Aircraft Arrival Tracks to Runway 6

Source: Vector System data, Dec. 2021 – Nov. 2022

G.1.10 Heavy Aircraft Departures from Runway 6

Voluntary measure: *Straight-out departures, fly runway heading to shoreline, remain 1mile offshore, and West departures from Runway 6 via Vineyard Sound.*

Measure Status: Partially followed

Compliance: 29.2% of the heavy aircraft departures from Runway 6

To analyze compliance with this measure, heavy aircraft departures from Runway 6 were plotted and counted. A gate was drawn with a width of approximately one mile across the departure path along the runway heading near the shoreline in Oak Bluffs. If an aircraft passed through the gate and remained one mile offshore, it was counted as compliant with this measure. **Figure G-10** presents the heavy aircraft departure tracks from Runway 6. Collectively, 29.2 percent (272/932) of heavy aircraft departures from Runway 6 complied with this measure.

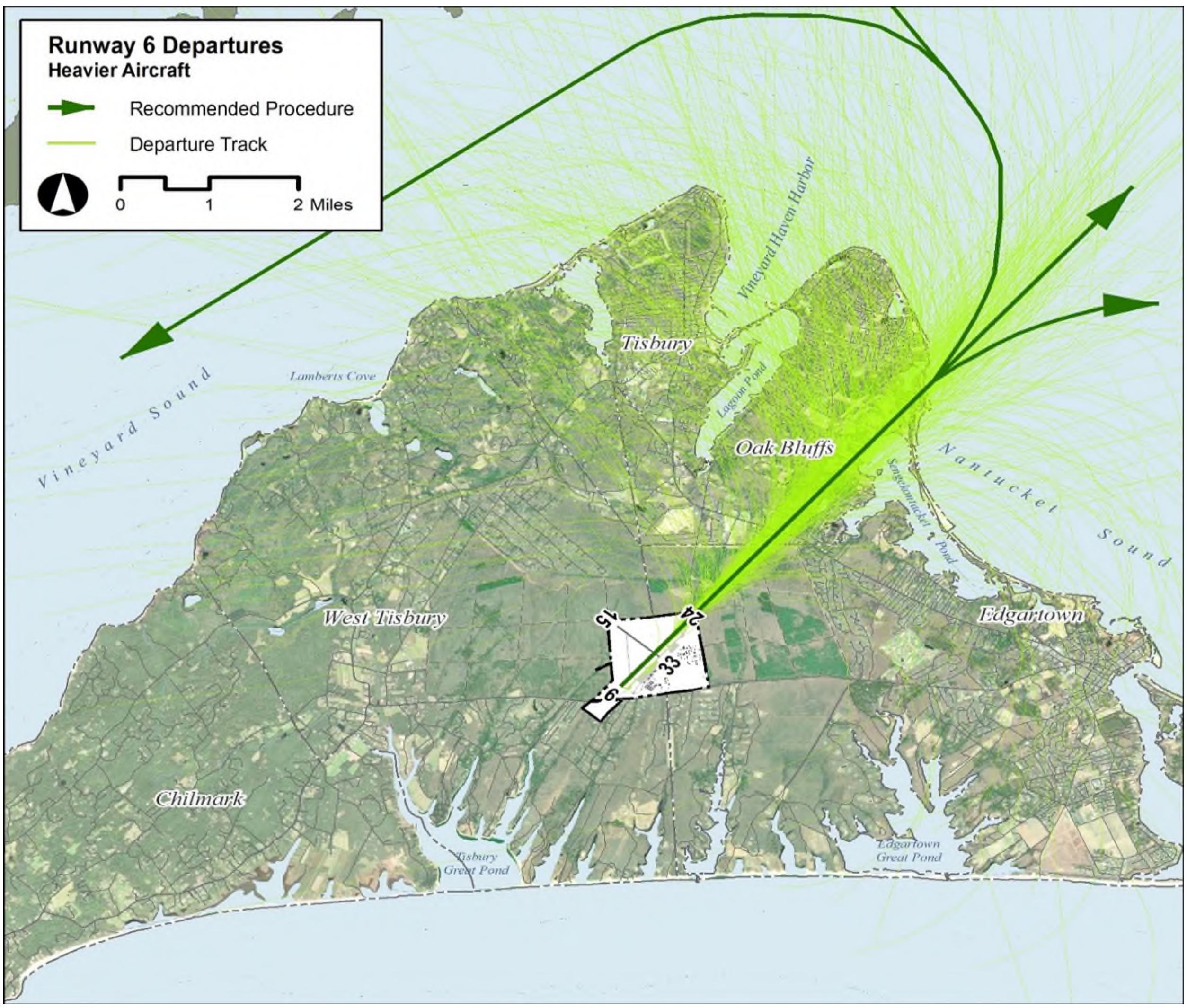

Figure G-10. Heavy Aircraft Departure Tracks from Runway 6

Source: Vector System data, Dec. 2021 – Nov. 2022

G.1.11 Heavy Aircraft Arrivals to Runway 24

Voluntary measure: *Straight-in approaches, remain 1mile offshore, West arrivals for Runway 24 via Vinyard Sound.*

Measure Status: Partially followed

Compliance: 41.8% of the heavy aircraft arrivals from the north and west to Runway 24

To analyze compliance with this measure, heavy aircraft arrivals to Runway 24 were plotted and counted. A gate was drawn with a width of approximately one mile across the final approach path near the shoreline in Oak Bluffs. If an aircraft remained one mile offshore and passed through the gate, it was counted as compliant with this measure. **Figure G-11** presents the heavy aircraft arrival tracks to Runway 24. Collectively, 41.8 percent (1,099/2,631) of heavy aircraft arrivals to Runway 24 complied with this measure.

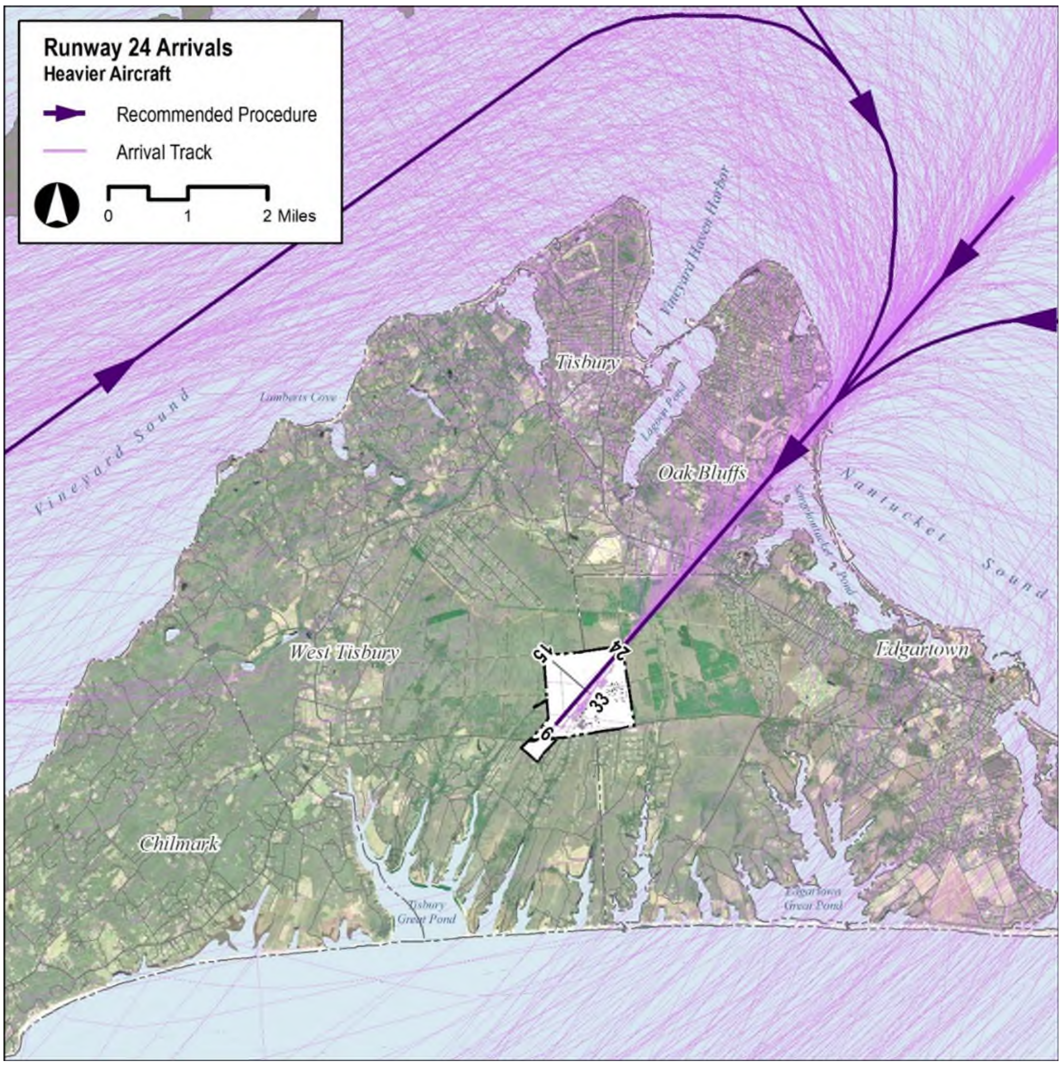

Figure G-11. Heavy Aircraft Arrival Tracks to Runway 24

Source: Vector System data, Dec. 2021 – Nov. 2022

G.1.12 Heavy Aircraft Departures from Runway 24

Voluntary measure: *Straight-out departures, fly runway heading to shoreline, and remain 1 mile offshore.*

Measure Status: Partially followed

Compliance: 22.2% of the heavy aircraft departures from Runway 24

To analyze compliance with this measure, heavy aircraft departures from Runway 24 were plotted and counted. A gate was drawn with a width of approximately one mile across the departure path along the runway heading near the shoreline in Chilmark. If an aircraft passed through the gate and remained one mile offshore, it was counted as compliant with this measure. **Figure G-12** presents the heavy aircraft departure tracks from Runway 24. Collectively, 22.2 percent (560/2,524) of the heavy aircraft departures from Runway 24 complied with this measure. Without regard to remaining one mile offshore, 55.7 percent (1,406/2,524) of the heavy aircraft departures passed through the gate.

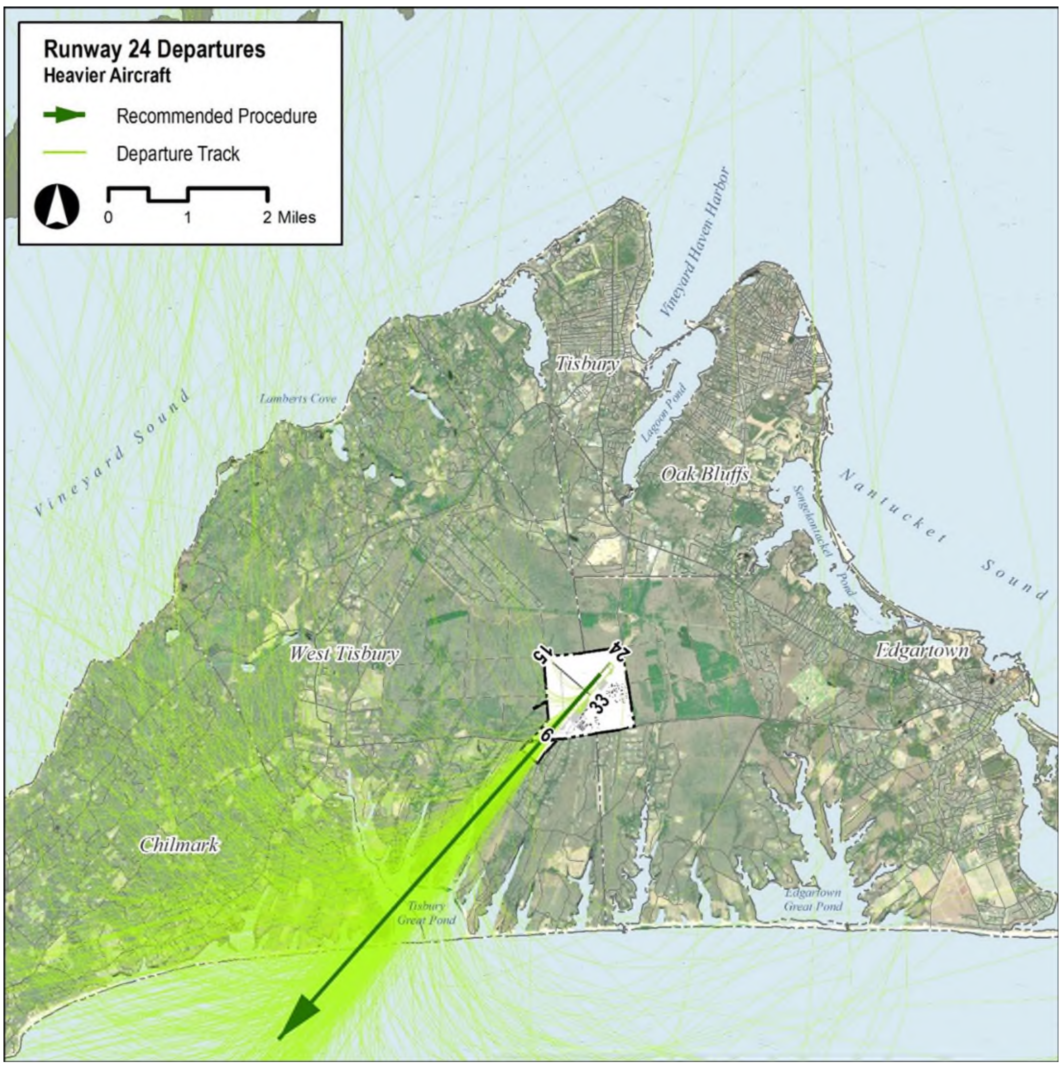

Figure G-12. Heavy Aircraft Departure Tracks from Runway 24

Source: Vector System data, Dec. 2021 – Nov. 2022

G.2 No Departures Exceeding 75dB Between 2200 and 0600 local Time

Measure Status: Followed

Compliance: N/A

According to the "Airport Noise Frequently Asked Questions" page on the MVY website, "A *Voluntary Nighttime Noise Abatement [measure], no departures exceeding 75 dB between 10pm and 6am, is in effect from 10 pm to 6 am daily [May 15 to October 31, and from 5 pm to 7 am daily November 1 to May 14. … The tail numbers of aircraft using Martha's Vineyard Airport during the curfew period are recorded by a contracted company, and forwarded to airport administration. If a "violation" of the voluntary noise curfew is identified, an advisory letter and information about the Martha's Vineyard Airport Noise Abatement Program is then sent to the owner/operator in question. Although the curfew is voluntary, and no penalties exist, activity during the air traffic control tower [closed] … time periods is less than during normal hours of operation.*

G.3 All Aircraft to Avoid Intersection Departures

Measure Status: Followed

Compliance: 99.7% of departures

To analyze compliance with this noise abatement measure, departures from all runways were analyzed. Due to the limited coverage of ground tracks from the sample radar data, it is often not possible to pinpoint the start of takeoff roll for a flight. However, based on the identifiable departure tracks from the sample radar data, approximately 99.7% of all departures complied with this measure by utilizing the full runway length for takeoff.

G.4 Noise Abatement Profiles ("Close-in")

The statement of this measure in the MVY Noise Abatement Procedures is: *Corporate pilots use close-in noise abatement profiles as defined by their aircraft manufacturer or by the National Business Aircraft Association (NBAA)."*

Measure Status: N/A

Compliance: N/A

FAA Advisory Circular 91-53A provides acceptable criteria for two safe Noise Abatement Departure Profile (NADP) procedures for commercial jet aircraft: *Close-in NADP (NADP 1) and Distant NADP (NADP 2)*. As the names of the procedures suggest, the Close-in NADP provides noise benefit to areas adjacent to the airport whereas the Distant NADP provides noise benefit slightly further out from the airport. Airport operators cannot mandate the use of NADP at an airport because airport operators do not have the authority to require specific operating procedures for aircraft in flight; implementation of NADP is voluntary and at the choice of aircraft operators. However, FAA Advisory Circular 91-53A encourages aircraft operators "…to use the appropriate NADP when an airport operator requests its use to abate noise for either a close-in or distant community."

While MVY recommends using the "Close-In" noise abatement profile as the preferred procedure for corporate aircraft, MVY has not formally requested that corporate aircraft operators implement the close-in procedure. Therefore, it is likely that corporate aircraft operators are using their standard procedures rather than the close-in noise abatement profile at MVY. It is likely not as effective with the newer generation of aircraft in operation at MVY today. **Figure G-13** shows a comparison of the two NADP procedures.

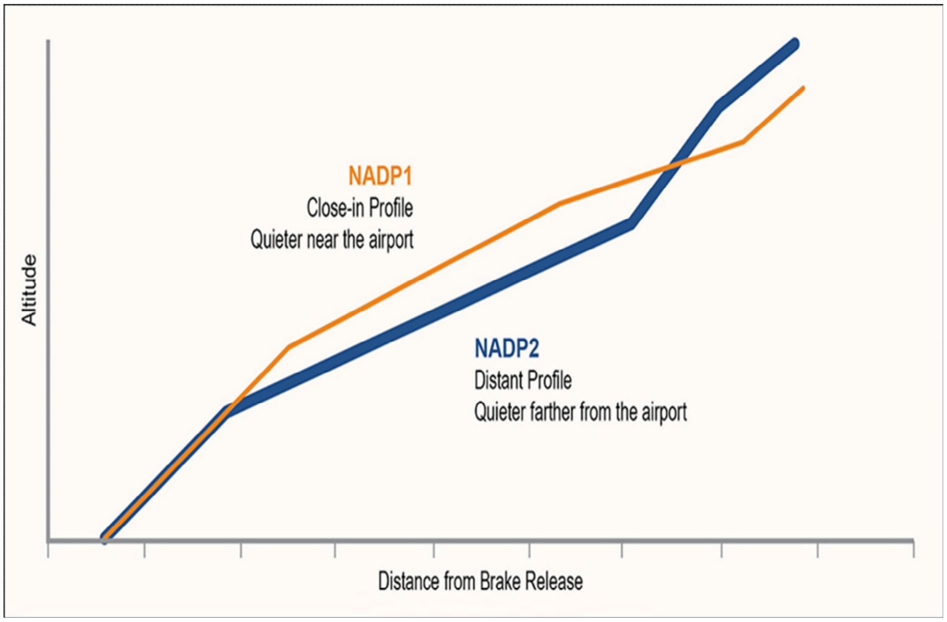

Figure G-13. Overview of NADP-1 (Close-In) and NADP-2 (Distant) procedures

Source: Civil Air Navigation Services Organization and Airports Council International, "Managing the Impacts of Aviation Noise - A Guide for Airport Operators and Air Navigation Service Providers," September 2015

G.5 Preferred Runway for Noise Abatement is Runway 6

Measure Status: Partially followed

Compliance: The utilization of Runway 6 is 23.4%

The purpose of this measure is to avoid overflights of residential areas southwest of the airport. **Table G-2** and **Table G-3** present the runway utilization rates for each aircraft category, developed from the 12-month sample of Vector system data (December 2021 through November 2022). Runway use is often dictated by wind conditions, but other factors such as the time of day, specific aircraft runway length requirements, and the relative location on the airfield influence the choice as well. The predominant wind direction for MVY is west to south winds which favors the use of Runway 24. Overall, 23.4 percent of operations in the sample data utilized Runway 6. Runway 6 was used whenever weather and wind conditions would permit.

Table G-2. Jet Runway Use Percentages

Source: Vector system data Dec. 2021-Nov. 2022 and HMMH analysis, 2023

Runway	Air Carrier Jets				Air Taxi/Commuter, GA and Military Jets			
	Arrivals		Departures		Arrivals		Departures	
	Day	Night	Day	Night	Day	Night	Day	Night
6	27.6%	--	26.0%	--	26.5%	25.0%	26.3%	28.3%
24	72.4%	100.0%	74.0%	100.0%	73.3%	75.0%	73.6%	71.7%
15	--	--	--	--	--	--	--	--
33	--	--	--	--	0.1%	--	0.1%	--

Note: Column sums may not appear to be exactly 100.0% due to rounding.
Nighttime air carrier operations are rare, and only occur due to operational delays.

Table G-3. Non-Jet Runway Use Percentages

Source: Vector system data Dec. 2021-Nov. 2022 and HMMH analysis, 2023

Runway	Air Taxi/Commuter, GA and Military Non-Jets					
	Arrivals		Departures		Circuits	
	Day	Night	Day	Night	Day	Night
6	24.7%	17.7%	24.4%	25.5%	19.6%	88.9%
24	63.3%	70.3%	61.2%	63.8%	70.8%	11.1%
15	4.4%	8.2%	1.1%	--	2.6%	--
33	7.5%	3.8%	13.3%	10.7%	7.0%	--

Note: Column sums may not appear to be exactly 100.0% due to rounding.

G.6 Use Over-water Approaches/Departures (6/24) to Reduce Noise Over Residential Areas Especially at Night and Early Mornings.

Measure Status: Partially followed

Compliance: For light aircraft departures, 10 percent of Runway 6 departures complied with this measure. For heavy aircraft arrivals, 14 to 51 percent complied with this measure, while 22 to 29 percent of heavy aircraft departures used over-water routing (see **Measure 1** for details).

G.7 Pattern Altitudes

The statement of this measure in the MVY Noise Abatement Procedures is: *pattern altitudes: light aircraft (1,000 ft. AGL[36]); Large and Turbine powered aircraft (1,500 ft. AGL).*

Measure Status: Not followed

Compliance: 15.6 % of Runway 6/24 pattern tracks at or above 1,000 ft. MSL; 24.2% of Runway 15/33 pattern tracks at or above 1,000 ft. MSL. No pattern flight tracks for large/turbine-powered aircraft were seen.

To analyze compliance with this measure, light aircraft pattern tracks from Runways 6/24 and 15/33 were plotted and counted. During the sample data period, no large twin/turbine powered aircraft pattern tracks were found in the data. **Figure G-14** presents the light aircraft pattern flight tracks for Runway 6/24. Two gates were drawn across the approximate center of the upwind/downwind tracks; if an aircraft passed through the gate at or above 1,000 ft. MSL, it was counted as compliant with this measure. At the bottom of the figure, cross-section graphs depict the position of the aircraft passing through each of the gates. Dots below the horizontal line indicate aircraft that are lower than 1,000' MSL at the crossing. Collectively, 15.6 percent (146/935) of pattern tracks for Runway 6/24 in the sample were at or above 1,000 ft. MSL.

[36] AGL and MSL as altitude indicators mean "above ground level" and "mean sea level", respectively. Since the airfield elevation is 67 feet, aircraft complying with the recommendation would be at approximately 1,067 ft MSL.

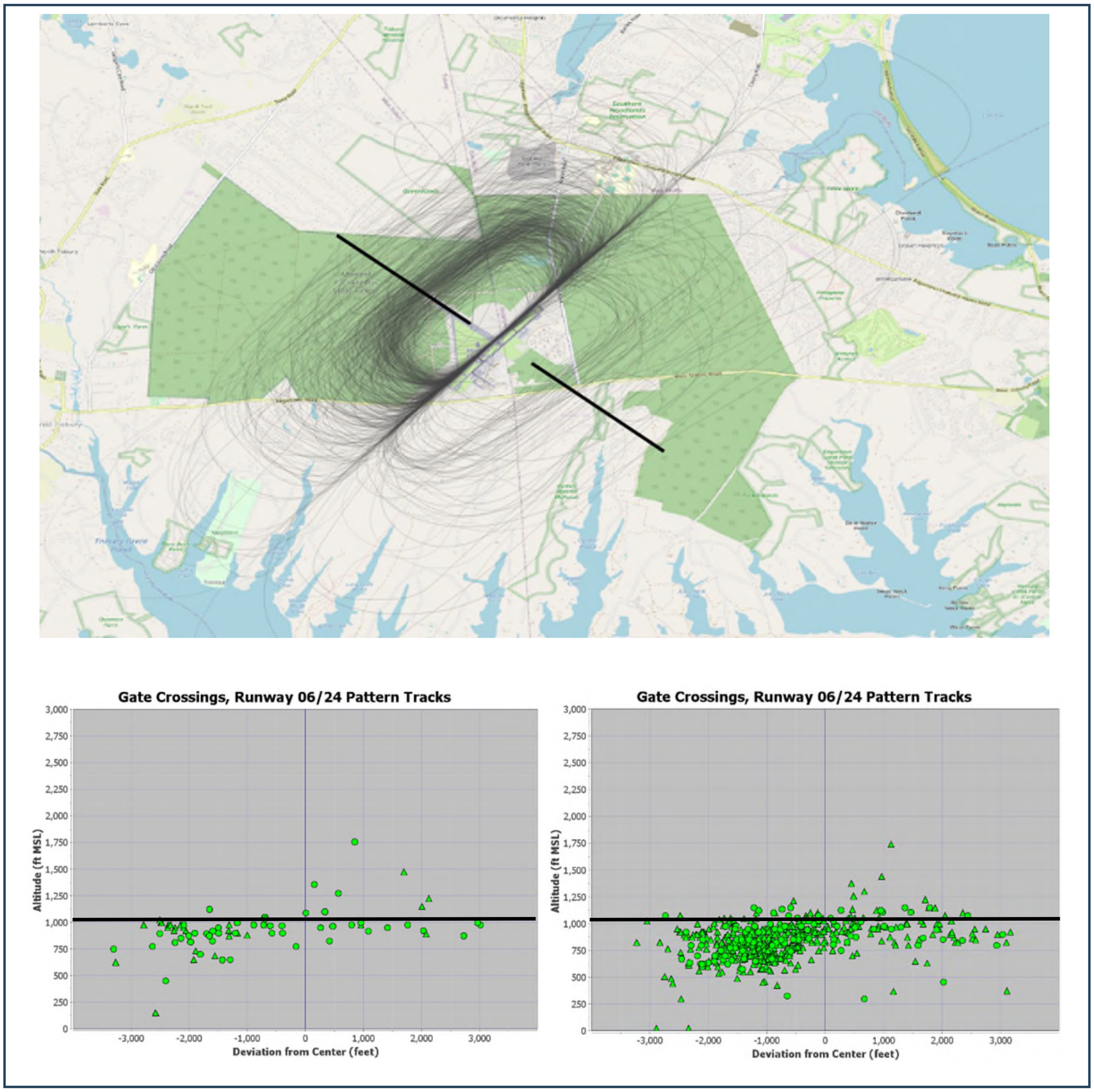

Figure G-14. Runway 6/24 Pattern Tracks

Source: Vector System data, Dec. 2021 – Nov. 2022

Figure G-15 presents the light aircraft pattern flight tracks for Runway 15/33. Two gates were drawn across the approximate center of the upwind/downwind tracks; if an aircraft passed through the gate at or above 1,000 ft MSL it was counted as compliant with this measure. At the bottom of the figure, cross-section graphs depict the position of the aircraft passing through each of the gates. Dots below the horizontal line indicate aircraft that are lower than 1,000 ft. MSL at the crossing. Collectively, 24.2 (24/99) percent of pattern tracks for Runway 15/33 in the sample were at or above 1,000 ft. MSL.

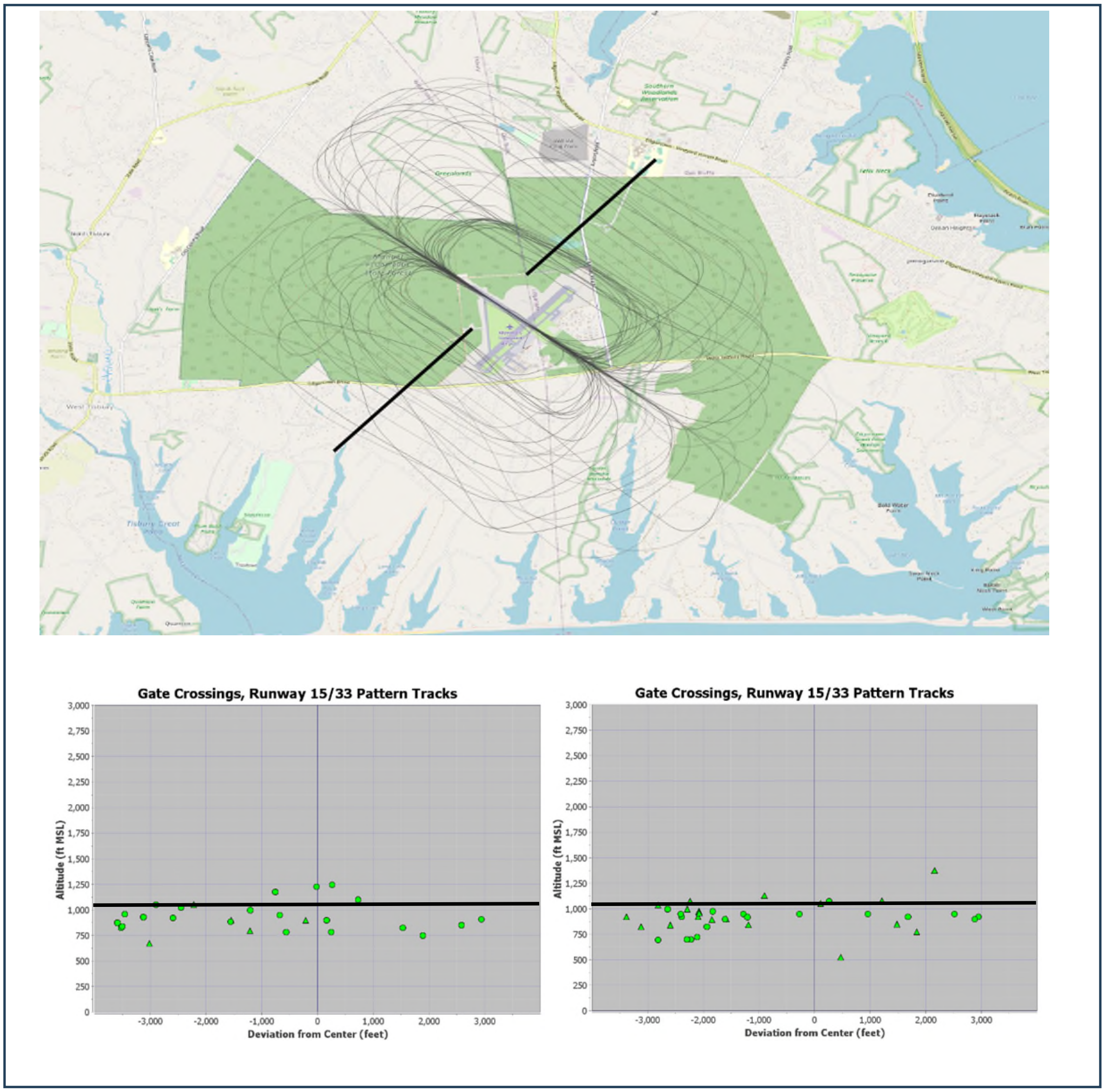

Figure G-15. Runway 15/33 Pattern Tracks

Source: Vector System data, Dec. 2021 – Nov. 2022

G.8 Remain 1 Mile Offshore When Circumnavigating the Island

Measure Status: Not followed

Compliance: 0%

To analyze compliance with this measure, tracks of aircraft circumnavigating the island were plotted and counted. **Figure G-16** depicts the tracks of aircraft which departed from MVY, circumnavigated the island, and landed at MVY in the sample radar data. The distance between the shoreline and flight tracks were measured at numerous points around the island. The majority of the flight tracks are within 1 mile offshore at most points and none of the flight tracks remain one mile offshore the entire trip.

Figure G-16. Tracks of Aircraft Circumnavigating the Island

Source: Vector System data, Dec. 2021 – Nov. 2022

G.9 Use FAA Advisory Circular AC90-66A

Measure Status: N/A

Compliance: N/A

FAA Advisory Circular AC90-66A describes the recommended traffic patterns and operational procedures for aircraft operations at airports without control towers or airports with inoperative control towers.

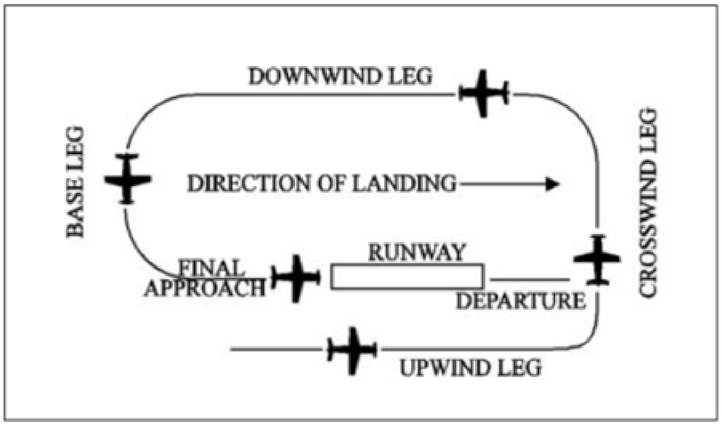

Figure G-17. Traffic Patterns

Source: FAA Advisory Circulars AC90-66C

G.10 Noise Reductions on the Ground

The statement of the measure in the MVY Noise Abatement Newsletter is: *Auxiliary Power Units (APU) are important for pilots for safety checks and to keep the cabin comfortable. But excessive use creates noise exceeding 110 decibels and air pollution. Please limit APU use to 15 minutes*.

Measure Status: N/A

Compliance: N/A

The APU is commonly used by large commercial jets while parked on the apron. Aircraft could shut down the APU when the ground power units (GPU) are provided and connected to the aircraft. GPUs are generally quieter than APUs.