Teterboro Airport

Title 14 Code of Federal Regulations (CFR) Part 150

Noise Compatibility Program

July 2022

Prepared for:

The Port Authority of New York and New Jersey

4 World Trade Center | 150 Greenwich Street, 18th Floor | New York, NY 10007

By:

hmmh

and

Fitzgerald & Halliday, Inc. | Planning Technology, Inc. | RS&H, Inc.

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Executive Summary

(Stand-alone document prepared after FAA approvals of NCP measures)

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THE PORT AUTHORITY OF NY & NJ

Sponsor's Certification

The Port Authority as the airport sponsor submits this Noise Compatibility Program (NCP) for Teterboro Airport in accordance with Title 14 Code of Federal Regulations Part 150 (14 CFR Part 150). The Program was prepared with the best available information and is certified as true and complete to the best of my knowledge and belief.

The Noise Exposure Map (NEM) was submitted under separate cover in May 2017 and accepted by the FAA on June 15, 2017. The NCP is submitted in two volumes – the NCP document and the appendices with background and supporting material.

The NCP report was prepared in consultation with local public and planning agencies whose area or any portion of whose area of jurisdiction is within the 65 Day-Night Average Sound Level (DNL)[1] contour depicted on the NEM and might be affected by any Port Authority recommended measures. The consultation also included federal and local officials having oversight responsibility and regular aeronautic users of the airport. The proposed NCP measures are recommended by the Port Authority and not by a consultant or other third party.

It is further certified that adequate opportunity has been afforded to interested persons to submit their views, data, and comments concerning the formulation and adequacy of the NCP Report and the supporting documentation. The required public hearing was held virtually due to the COVID-19 pandemic restrictions on group gatherings on September 30, 2021 to obtain public comments related to the Port Authority recommended NCP measures.

By:	DocuSigned by: Charles R. Everett Jr. A4FE189A8B2449D...
Title:	Director, Aviation Department, Port Authority of New York & New Jersey
Date:	July 6, 2022

Airport Name:	Teterboro Airport
Airport Owner/Operator:	Port Authority of New York and New Jersey
Address:	4 World Trade Center, 150 Greenwich Street, 18th Floor, New York, NY 10007

1 For the regulatory definition of DNL, see 14 CFR Part 150 §150.7 Definitions: https://www.ecfr.gov/current/title-14/chapter-I/subchapter-I/part-150/subpart-A/section-150.7

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FAA Part 150 NCP Checklist

The FAA has developed checklists for their internal use in reviewing NEM and NCP submissions. For ease of review, the Port Authority has included the FAA's NCP checklist with appropriate page numbers, references and other notes and comments to assist in the document's review, as presented in Table 1.

Table 1: Part 150 Noise Compatibility Program Checklist

Source: FAA/APP, Washington, DC, March 1989; updated December 2007 and published February 2008 (Confirmed December 2019)

Part 150		
Noise Compatibility Program Checklist – Part 1		
Airport name: Teterboro Airport	Reviewer:	
	Yes/No/NA	Supporting Pages/Review Comments
I. SUBMITTING AND IDENTIFYING THE NCP:		
A. Submission is properly identified:		
1. 14 C.F.R. Part 150 NCP?	Yes	Chapter 1, page 1-1
2. NEMs and NCP together?	No	NEM submitted in May 2017
3. Program revision? (To what extent has it been revised?)	No	N/A
B. Airport and Airport Sponsor's name are identified?	Yes	Sponsor's Certification, page xiii
C. NCP is transmitted by airport sponsor's cover letter?	Yes	Cover letter
II. CONSULTATION (INCLUDING PUBLIC PARTICIPATION): [150.23]		
A. Documentation includes narrative of public participation and consultation process?	Yes	Section 1.4 on page 1-7, Chapter 5, Appendix E – Public Outreach
B. Identification of consulted parties:	Yes	
1. All parties in 150.23(c) consulted?	Yes	Section 1.4 on page 1-7, Chapter 5, and Appendix D – Technical Advisory Committee
2. Public and planning agencies identified?	Yes	Chapter 5 and Appendix D – Technical Advisory Committee
3. Agencies in 2, above, correspond to those affected by the NEM noise contours?	Yes	Chapter 5 and Appendix D – Technical Advisory Committee
C. Satisfies 150.23(d) requirements by:		
1. Documentation shows active and direct participation of parties in B., above?	Yes	Chapter 5, Appendix E – Public Outreach

Part 150		
Noise Compatibility Program Checklist – Part 1		
Airport name: Teterboro Airport	**Reviewer:**	
	Yes/No/NA	**Supporting Pages/Review Comments**
2. Active and direct participation of general public and opportunity to submit their views, data, and comments on the formulation and adequacy of the NCP?	Yes	Chapter 5, Appendix E – Public Outreach
3. Participation was prior to and during development of NCP and prior to submittal to FAA?	Yes	Chapter 5, Appendix E – Public Outreach
4. Indicates adequate opportunity afforded to all consulted parties to submit views, data, etc.?	Yes	Chapter 5, Appendix E – Public Outreach and Appendix F - Public Comment
D. Evidence is included there was notice and opportunity for a public hearing on the final NCP?	Yes	Chapter 5, Appendix E – Public Outreach, and Appendix F – Public Comments
E. Documentation of comments:		
1. Includes summary of public hearing comments, if hearing was held?		Chapter 5, Appendix F – Public Comments
2. Includes copy of all written material submitted to operator?		Appendix F – Public Comments
3. Includes operator's response/disposition of written and verbal comments?		Appendix F – Public Comments
F. Is there written evidence from the appropriate office within the FAA that the sponsor received informal agreement to carry out proposed flight procedures?	Yes	Port Authority met with FAA ATCT, ATO and Region to review potential proposed flight procedures. Section 5.4 and Appendix E – Public Outreach
III. NOISE EXPOSURE MAPS: [150.23, B150.3; 150.35(f)] (This section of the checklist is not a substitute for the Noise Exposure Map checklist. It deals with maps in the context of the Noise Compatibility Program submission.)		
A. Inclusion of NEMs and supporting documentation:		
1. Map documentation either included or incorporated by reference?	Yes	Section 1.7 on page 1-14, Figure 1-5 on page 1-17, Existing Conditions, and Figure 1-6 on page 1-19, Forecast Conditions

Part 150		
Noise Compatibility Program Checklist – Part 1		
Airport name: Teterboro Airport	**Reviewer:**	
	Yes/No/NA	**Supporting Pages/Review Comments**
2. Maps previously found in compliance by FAA?	Yes	Appendix A.1 – Federal Aviation Administration Letter of Acceptance for Noise Exposure Map June 15, 2017
3. FAA's compliance determination still valid?		
(a) Existing condition NEM represents conditions at the airport at the time of submittal of the NCP for FAA approval?	Yes	Cover letter, Section 1.7 on page 1-14, FAA-Accepted 2016 and 2021 Noise Exposure Maps
(b) Forecast condition NEM represents conditions at the airport at least 5 years into the future from the date of submittal of the NCP to the FAA for approval?	Yes	Cover letter and Section 1.7 on page 1-14
(c) Sponsor letter confirming elements (a) and (b), above, if date of submission is either different than the year of submittal of the previously approved NEMs or over 12 months from the date shown on the face of the NEM?	Yes	Cover letter provided with official submittal to the FAA.
(d) If (a) through (c) cannot be validated, the NEMs must be redone and resubmitted as per 150.21.	N/A	N/A
4. Does 180-day period have to wait for map compliance finding?	No	Acceptance of the NEM by FAA occurred on June 15, 2017.
B. Revised NEMs submitted with program: (Review using NEM checklist if map revisions included in NCP submittal. Report the applicable findings in the spaces below after a full review using the NEM checklist and narrative.)		
1. Revised NEMs included with program?	No	N/A
2. Has airport sponsor requested in writing that FAA make a determination on the NEM(s), showing NCP measures in place, when NCP approval is made?	No	N/A
C. If program analysis uses noise modeling:		
1. INM, HNM, or FAA-approved equivalent?	Yes	INM7.0d
2. Monitoring in accordance with A150.5?	N/A	N/A
D. One existing condition and one forecast-year map clearly identified as the official NEMs?	Yes	Chapter 1, Section 1.7 FAA-Accepted 2016 and 2021 Noise Exposure Maps, Figure 1-5 on page 1-17, Existing Conditions, and Figure 1-6 on page 1-19, Forecast Conditions

Part 150		
Noise Compatibility Program Checklist – Part 1		
Airport name: Teterboro Airport	**Reviewer:**	
	Yes/No/NA	**Supporting Pages/Review Comments**
IV. CONSIDERATION OF ALTERNATIVES: [B150.7, 150.23(E)(2)]		
A. At a minimum, were the alternatives below considered, or if they were rejected was the reason for rejection reasonable and based on accurate technical information and local circumstances?		
1. Land acquisition and interests therein, including air rights, easements, and developmental rights?	Yes	Chapter 3, Section 3.2 and Appendix G – Noise Compatibility Program Strategies Suggested by Stakeholders
2. Barriers, acoustical shielding, public building soundproofing	Yes	Chapter 2 (Section 2.2), Chapter 3 (Section 3.2), and Appendix G – Noise Compatibility Program Strategies Suggested by Stakeholders
3. Preferential runway system	Yes	Chapter 2, Section 2.2, Appendix G – Noise Compatibility Program Strategies Suggested by Stakeholders
4. Voluntary flight procedures	Yes	Chapter 2, Section 2.2, Appendix G – Noise Compatibility Program Strategies Suggested by Stakeholders
5. Restrictions described in B150.7 (taking into account Part 161 requirements)	Yes	Chapter 2, Section 2.2, Appendix G – Noise Compatibility Program Strategies Suggested by Stakeholders
6. Other actions with beneficial impact not listed in the regulation	Yes	Chapters 2, 3, and 4, Sections 2.2, 3.2, and 4.2, Appendix G – Noise Compatibility Program Strategies Suggested by Stakeholders
7. Other FAA recommendations (see D, below)	N/A	N/A
B. Responsible implementing authority identified for each considered alternative?	Yes	Sections 2.2, 3.2, and 4.2
C. Analysis of alternative measures:		
1. Measures clearly described?	Yes	Sections 2.2, 3.2, and 4.2
2. Measures adequately analyzed?	Yes	Chapters 2, 3, and 4, Sections 2.2, 3.2, and 4.2, and Appendix C – Supplemental Information Related to the Recommended Noise Abatement Measures

Part 150		
Noise Compatibility Program Checklist – Part 1		
Airport name: Teterboro Airport	Reviewer:	
	Yes/No/NA	Supporting Pages/Review Comments
3. Adequate reasoning for rejecting alternatives?	Yes	Sections 2.3, 3.3, and 4.3
D. Other actions recommended by the FAA: As the FAA staff person familiar with the local airport circumstances, determine whether other actions should be added? (List separately, or on back, actions and describe discussions with airport sponsor to have them included prior to the start of the 180-day cycle. New measures recommended by the airport sponsor must meet applicable public participation and consultation with officials before they can be submitted to the FAA for action. See V.E.2., below.)	N/A	N/A
V. ALTERNATIVES RECOMMENDED FOR IMPLEMENTATION: [150.23(E), B150.7©; 150.35(B), B150.5]		
A. Document clearly indicates:		
1. Alternatives that are recommended for implementation?	Yes	Chapters 2, 3, and 4, and Appendix G – Noise Compatibility Program Strategies Suggested by Stakeholders
2. Final recommendations are airport sponsor's, not those of consultant or third party?	Yes	Sponsor's Certification, page xiii
B. Do all program recommendations:		
1. Relate directly or indirectly to reduction of noise and noncompatible land uses? (Note: All program recommendations, regardless of whether previously approved by the FAA in an earlier Part 150 study, must demonstrate a noise benefit if the airport sponsor wants FAA to consider the measure for approval in a program update. See E., below.)	Yes	Chapters 2, 3, 4, Appendix C – Supplemental Information Related to the Recommended Noise Abatement Measures, and Appendix H – Noise Compatibility Program Implementation Schedule
2. Contain description of each measure's relative contribution to overall effectiveness of the program?	Yes	Chapters 2, 3, 4, Appendix C – Supplemental Information Related to the Recommended Noise Abatement Measures, and Appendix H – Noise Compatibility Program Implementation Schedule
3. Noise/land use benefits quantified to extent possible to be quantified? (Note: some program management measures cannot be readily quantified and should be described in other terms to show their implementation contributes to overall effectiveness of the program.)	Yes	Chapters 2, 3, 4, Appendix C – Supplemental Information Related to the Recommended Noise Abatement Measures, and Appendix H – Noise Compatibility Program Implementation Schedule

Part 150		
Noise Compatibility Program Checklist – Part 1		
Airport name: Teterboro Airport	**Reviewer:**	
	Yes/No/NA	**Supporting Pages/Review Comments**
4. Does each alternative include actual/anticipated effect on reducing noise exposure within noncompatible area shown on NEM?	Yes	Chapters 2, 3, 4, Appendix C – Supplemental Information Related to the Recommended Noise Abatement Measures, and Appendix H – Noise Compatibility Program Implementation Schedule
5. Effects based on relevant and reasonable expressed assumptions?	Yes	Chapters 2, 3, 4, Appendix C – Supplemental Information Related to the Recommended Noise Abatement Measures, and Appendix H – Noise Compatibility Program Implementation Schedule
6. Does the document have adequate supporting data that the measure contributes to noise/land use compatibility?	Yes	Chapters 2, 3, 4, and Appendix C – Supplemental Information Related to the Recommended Noise Abatement Measures, and Appendix H – Noise Compatibility Program Implementation Schedule
C. Analysis appears to support program standards set forth in 150.35(b) and B150.5?	Yes	Chapters 2, 3, 4, Appendix C – Supplemental Information Related to the Recommended Noise Abatement Measures, and Appendix H – Noise Compatibility Program Implementation Schedule
D. When use restrictions are recommended for approval by the FAA:		
1. Does (or could) the restriction affect Stage 2 or Stage 3 aircraft operations (regardless of whether they presently operate at the airport)? (If the restriction affects Stage 2 helicopters, Part 161 also applies.)	Yes	Chapter 2, existing restrictive measures implemented prior to ANCA. See supporting documentation in Appendix C.1 beginning on page C-3 – Supplemental Pre-ANCA Information for Existing Mandatory Noise Abatement Measures
2. If the answer to D.1 is yes, has the airport sponsor completed the Part 161 process and received FAA Part 161 approval for a restriction affecting Stage 3 aircraft? Is the FAA's approval documented? For restrictions affecting only Stage 2 aircraft, has the airport sponsor successfully completed th Stage 2 analysis and consultation process required by Part 161 and met the regulatory requirements, and is there evidenced by letter from FAA stating this fact?	No	Chapter 2, existing restrictive measures implemented prior to ANCA. See supporting documentation in Appendix C.1 beginning on page C-3 – Supplemental Pre-ANCA Information for Existing Mandatory Noise Abatement Measures
3. Are non-restrictive alternatives with potentially significant noise/ compatible land use benefits thoroughly analyzed so that appropriate comparisons and conclusions among all alternatives can be made?	Yes	Chapters 2, 3, 4, and Appendix C – Supplemental Information Related to the Recommended Noise Abatement Measures

Part 150		
Noise Compatibility Program Checklist – Part 1		
Airport name: Teterboro Airport	**Reviewer:**	
	Yes/No/NA	**Supporting Pages/Review Comments**
4. Did the FAA regional or ADO reviewer coordinate the use restriction with APP-400 prior to making determination on start of 180-days?	No	Chapter 2, existing restrictive measures implemented prior to ANCA. Appendix C.1 beginning on page C-3 – Supplemental Pre-ANCA Information for Existing Mandatory Noise Abatement Measures
E. Do the following also meet Part 150 analytical standards?		
1. Recommendations that continue existing practices and that are submitted for FAA re-approval? (Note: An airport sponsor does not have to request FAA re-approval if noise compatibility measures are in place from previously approved Part 150 studies. If the airport has implemented the measures as approved in the previous NCP, the measures may be reported and modeled as baseline conditions at the airport.)	Yes	See Chapter 2, Section 2.2
2. New recommendations or changes proposed at the end of the Part 150 process?	Yes	Chapter 2 and Appendix C – Supplemental Information Related to the Recommended Noise Abatement Measures
F. Documentation indicates how recommendations may change previously adopted noise compatibility plans, programs, or measures?	Yes	Chapters 2, 3, 4, and Appendix C – Supplemental Information Related to the Recommended Noise Abatement Measures
G. Documentation also:		
1. Identifies agencies that are responsible for implementing each recommendation?	Yes	Chapters 2, 3, 4, and Appendix H – Noise Compatibility Program Implementation Schedule
2. Indicates whether those agencies have agreed to implement?	Yes	Chapters 2, 3, 4, and Appendix H – Noise Compatibility Program Implementation Schedule
3. Indicates essential government actions necessary to implement recommendations?	Yes	Chapters 2, 3, 4, and Appendix H – Noise Compatibility Program Implementation Schedule
H. Timeframe:		
1. Includes agreed-upon schedule to implement alternatives?	Yes	Proposed schedule included in Chapters 2, 3, 4, and Appendix H – Noise Compatibility Program Implementation Schedule

Part 150		
Noise Compatibility Program Checklist – Part 1		
Airport name: Teterboro Airport	**Reviewer:**	
	Yes/No/NA	**Supporting Pages/Review Comments**
2. Indicates period covered by the program?	Yes	Chapters 2, 3, and 4, and Appendix H – Noise Compatibility Program Implementation Schedule
I. Funding/Costs:		
1. Includes costs to implement alternatives?	Yes	Chapters 2, 3, and 4, and Appendix H – Noise Compatibility Program Implementation Schedule
2. Includes anticipated funding sources?	Yes	Chapters 2, 3, and 4, and Appendix H – Noise Compatibility Program Implementation Schedule
VI. PROGRAM REVISION: [150.23(E)(9)] Supporting documentation includes provision for revision? (Note: Revision should occur when it is likely a change has taken place at the airport that will cause a significant increase or decrease in the DNL noise contour of 1.5 dB or greater over noncompatible land uses. See §150.21(d))	Yes	As described in Section 4.2, "TEB Program Management Measure 11: Update the Noise Compatibility Program" on page 4-15

1. Introduction

This Noise Compatibility Program (NCP) Report documents the second and final phase of the Port Authority's Title 14 Code of Federal Regulations Part 150 (14 CFR Part 150), "Airport Noise Compatibility Planning" Study for Teterboro Airport (TEB). This NCP Report was prepared in accordance with the requirements of 14 CFR Part 150. The Federal Aviation Administration (FAA) checklist that outlines the requirements for NCP documentation is included in this report just prior to Chapter 1. The associated supporting references in this document are identified within the footnotes and/or appendices.

This NCP Report presents the results of the Port Authority's study of airport-related noise exposure in the airport environs. The NCP includes potential measures to minimize land uses surrounding the TEB airport that are not compatible with airport activities due to airport-related noise exposure as identified in the Noise Exposure Maps (NEMs) prepared during the first phase of the Study. While development of the initial NEMs and NCP is voluntary, airport sponsors must have NEMs accepted by the FAA and NCP measures approved by the FAA in order for those NCP measures to be eligible for potential federal funding from the Airport Improvement Program (AIP).

The FAA accepted the Port Authority's 2021 forecast condition NEM contours. Since then, the COVID-19 pandemic has resulted in a reduction of aircraft operations at TEB due to decreases in business travel. The severity and duration of these contractions in aviation operations are unknown, but it is expected that demand for busness travel will grow. Future NEM updates, as discussed in proposed TEB Program Management Measure 10 would reflect updated aviation forecasts.

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 for projects dedicated to improving "noncompatible" land uses around an airport. These regulations provided the impetus for promulgating 14 CFR Part 150 "Airport Noise Compatibility Planning" (Part 150). In 1990, the passage of the Airport Noise and Capacity Act (ANCA) established a national policy on aircraft noise with an emphasis on a phase out of noisier aircraft types.

1.1. How to Use This Document

This document and the Part 150 Study represent steps undertaken in accordance with requirements found in 14 CFR Part 150. The NCP is the second phase of the Part 150 Study for Teterboro. A checklist is provided on page xv, which enumerates specific FAA requirements and the associated location of the supporting text in the document and its appendices. This NCP Report is organized as follows:

- Chapter 1 introduces Teterboro Airport, the Part 150 Study process and the NCP phase, the stakeholders in this process, and summarizes the FAA-accepted Noise Exposure Maps developed in the NEM phase.
- Chapter 2 contains TEB NCP noise abatement measures analyzed and considered for Port Authority recommendation.
- Chapter 3 contains TEB NCP land use measures analyzed and considered for Port Authority recommendation.
- Chapter 4 contains TEB NCP program management measures analyzed and considered for Port Authority recommendation.
- Chapter 5 describes stakeholder engagement efforts undertaken during the NCP phase of the Part 150 process.
- The Appendices, a separate volume to this document provide a glossary of terms, technical information, supporting documentation, and public outreach meeting materials referenced in the NCP Report.

Each individual measure and Appendix H contain the information for compliance with 14 CFR 150.23(e)(8), namely: the period covered by the program, the schedule for implementation of the program, the persons responsible for implementation of each measure in the program, and, for each measure, documentation supporting the feasibility of implementation, including any essential governmental actions, costs, and anticipated sources of funding, that will demonstrate that the program is reasonably consistent with achieving the goals of airport noise compatibility planning under this part. Part 150 sets forth standards for airport operators to use in documenting noise exposure in the airport environs and establishing programs to minimize noise-related noncompatible land use. While participation in the Part 150 program by an airport is voluntary, over 250 airports have participated in the program. Participation may provide eligibility to federal funds for implementation of FAA-approved NCP measures.

This chapter provides:

- A brief summary of the location and setting of TEB (Section 1.2 on page 1-3);
- An introduction to Part 150 (Section 1.3 on page 1-5);
- A summary of roles and responsibilities (Section 1.4 on page 1-7); and
- The FAA-accepted NEM (Section 1.7 on page 1-14,, including Figure 1-5 on page 1-17 and Figure 1-6 on page 1-19).[1]

This volume presents the NCP documentation for Teterboro Airport, as required by the specific provisions of Part 150 Subpart B, Section 150.23, and Appendix B to Part 150 – Noise Compatibility Programs. A separate volume, "Teterboro Airport Part 150 Noise Compatibility Program Appendices", includes the technical information, supporting documentation and public outreach meeting.

[1] Of note, the accepted NEMs in this report are not to a 1"=2,000' scale and out to 30,000' as required by FAA for the official submittal of the Noise Exposure Maps. Those can be found as Attachment C to the Teterboro Airport Noise Exposure Map Report, located here: http://panynjpart150.com/TEB_FNEM.asp, labeled as Final NEM Report Attachment C – Noise Exposure Maps

1.2. Project Location and Airport Setting

This section provides introductory materials on TEB as an airport, including its historical context, its location and purpose, and information on noise terminology to inform the reader of the nuances of the discussion of noise for the remainder of the NCP Report.

Airport History

TEB is the oldest operating airport in the New York and New Jersey Metropolitan area, beginning operations in 1919.[2] The U.S. Army Air Force (now the U.S. Air Force) operated the airport during World War II. The Port Authority purchased TEB in 1949 and entered into an agreement to have Pan Am World Airways operate the airport in 1970. In 2000, the Port Authority resumed full responsibility for TEB with operations under contract with AvPorts.

Since 1959, the Port Authority has been active in addressing airport noise concerns. Examples include implementing noise limits at TEB; voluntarily conducting a soundproofing program for schools in the vicinity of TEB; installing a portable noise monitoring system in 1977 and a permanent system in 1987 consisting of six monitors in the communities around TEB; and establishing a fully-staffed noise office to investigate and respond to aircraft noise issues and interfacing with local communities to assist with understanding aircraft noise as it pertains to airport operations.

Airport Location and Purpose

TEB covers 827 acres. It lies within the municipalities of Teterboro, Hasbrouck Heights, Little Ferry, Moonachie, and Wood-Ridge in Bergen County, N.J., with its northern border on US Highway 46 and its southern border on Moonachie Avenue. Located 12 miles from midtown Manhattan, TEB is designated by the FAA as a general aviation reliever airport.[3]

Reliever airports do not offer scheduled commercial airline service, and at TEB aircraft that weigh more than 100,000 pounds are prohibited from operating.[4] Reliever airports are nonetheless important to an integrated, nationwide air transportation system network and are consequently eligible for grant funding for infrastructure capital improvements. The FAA designates reliever airports by two primary functions:

(1) Relieving congestion at larger, commercial airports serving air carriers in a metropolitan region; and

(2) Providing general aviation aircraft access to the overall community.[5]

[2] https://www.panynj.gov/airports/en/teterboro/about-teterboro.html

[3] General aviation airports primarily serve civil aircraft that are not engaged in commercial air transport operations.

[4] Weight limit at TEB was put in place in 1967, FAA upheld the weight limit on March 1, 2002 and subsequent FAA Authorization Acts have included provisions to prevent funds being used to change the weight restrictions or prior permission rules at TEB (https://www.congress.gov/bill/116th-congress/house-bill/3163)

[5] Title 49 https://www.gpo.gov/fdsys/pkg/USCODE2011-title49/pdf/USCODE-2011-title49-subtitleVIIpartB-chap471-subchapI-sec47102.pdf

Although general aviation operations occur at the Port Authority's nearby commercial air carrier airports, TEB and other reliever airports remove the bulk of smaller and slower aircraft from the regional air traffic, thereby relieving congestion and allowing general aviation operators access to airports that are closer to the planes' occupants ultimate origin or destination points.

The Port Authority airport system is comprised of four commercial airports (Newark Liberty International [EWR], John F. Kennedy International [JFK], LaGuardia [LGA], and New York Stewart International [SWF]) and one general aviation reliever airport (Teterboro, or TEB) serving the region; with each airport fulfilling a particular mission to accommodate the air service requirements of the New York and New Jersey Metropolitan area. The regional context location of the airports is depicted in Figure 1-1.

Contribution to Economy and Airport Development

TEB has the most business jet operations of any airport in the U.S.[6] and supports more than 5,000 jobs resulting in $362 million in annual wages, and nearly $1.2 billion in annual sales activity as of 2018. The Port Authority has invested more than $400 million to upgrade the airport's facilities and open new areas of service to the aviation community.[7]

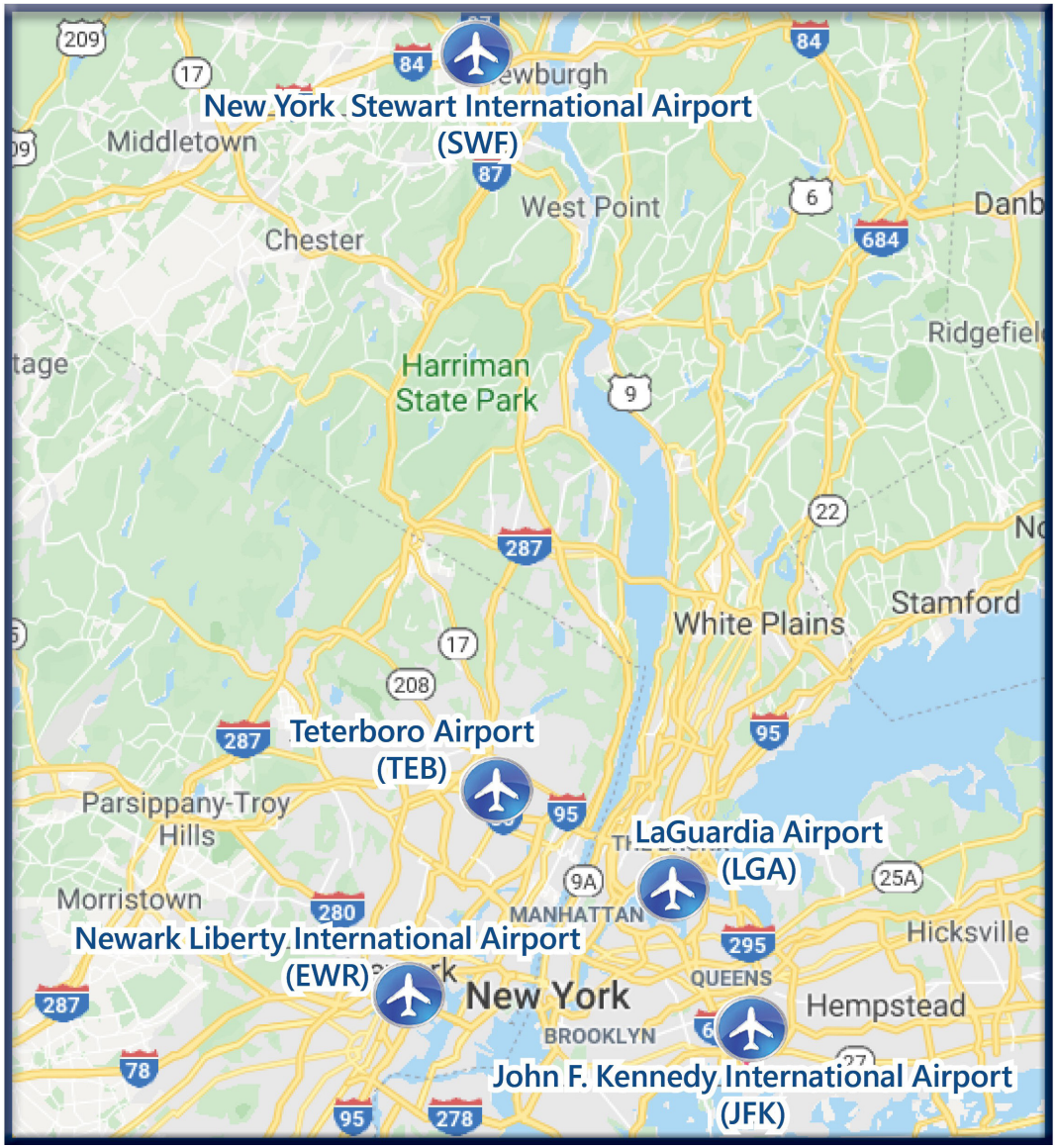

Figure 1-1: Airport Regional Context Location Map
Source: HMMH, 2019

6 FAA Business Jet Report: October 2019 Issue. https://aspm.faa.gov/apmd/sys/bjpdf/b-jet-201910.pdf

7 PANYNJ, 2019. Airport Traffic Report (2018). http://www.panynj.gov/airports/general-information.html

1.3. Part 150 Overview

"Airport Noise Compatibility Planning" is codified in 14 CFR Part 150 or Part 150.[8] Part 150 sets forth standards for airport operators to use when documenting noise exposure around airports and for establishing programs to minimize noise-related noncompatible land use. Specifically, Part 150 prescribes standards and systems for the following:

- Measuring noise
- Estimating cumulative noise exposure
- Describing noise exposure (including instantaneous, single event and cumulative levels)
- Coordinating NCP development with local land use officials and other interested parties
- Documenting the analytical process and development of the compatibility program
- Submitting documentation to the FAA
- FAA and public review processes
- FAA approval or disapproval of the submission

Components of a Part 150 Study

A Part 150 Study includes two principal elements:

(1) A Noise Exposure Map (NEM)

(2) A Noise Compatibility Program (NCP)

Acceptance of an NEM by the FAA is a prerequisite to their subsequent approval of recommended NCP measures.

Noise Exposure Map

The NEM describes the airport layout and operation, aircraft-related noise exposure, land uses in the airport environs, and the resulting noise/land use compatibility situation. Aircraft noise exposure is expressed in terms of the annual-average Day-Night Average Sound Level (DNL).[9] 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 decibels (dB) louder than actual. A brief summary of noise terminology is provided in Section 1.5 on page 1-10. See Appendix A in the TEB NEM Report for a more detailed summary of the noise terminology used throughout the NCP Report.

The NEM must address two periods: existing conditions for the year of submittal of the NEM to the FAA and forecast conditions at least five years following the year of submission. Contours of equal DNL values, similar to terrain contours of equal elevation, form the basis for evaluating the aircraft noise exposure, as well as land use compatibility, based on FAA designations (presented in Table 1-1 on page 1-12) for both the existing and forecast conditions.

The Port Authority conducted an extensive public engagement program to develop the NEM, which included a period of public comment for the draft NEM. Prior to providing the draft NEM Report to the public for comment, the Port Authority provided the draft report to the FAA for their suggested edits and comments. The Port Authority held a public workshop on the NEM on September 22, 2016 and received public comments on that document from September 15 to October 17, 2016. Public and FAA comments were addressed prior to submitting the final NEM to the FAA for acceptance. The FAA evaluated and accepted the TEB NEM as noted in the FAA "Teterboro Airport 14 CFR Part 150 Study – FAA Acceptance of Noise Exposure Maps" letter on June 15, 2017 as provided in Appendix A.1 on page A-5.[10]

Noise Compatibility Program

This NCP Report provides a framework for evaluating aircraft noise exposure and the costs and benefits of Port Authority recommended measures aimed at improving land use compatibility. The NCP also addresses the results of the Port Authority's engagement with local planning authorities in the impacted communities around TEB regarding potential policies and measures to manage existing and future noncompatible land uses. While

[8] 14 CFR (FAR) Part 150, "Airport Noise Compatibility Planning". http://www.ecfr.gov/cgi-bin/text-idx?SID=f8e6df268e3dad2edb848f61b9a0fb51&mc=true&node=pt14.3.150&rgn=div5#se14.3.150_11

[9] For the regulatory definition of DNL see 14 CFR Part 150 §150.7 Definitions. https://www.ecfr.gov/cgi-bin/text-idx?SID=f8e6df268e3dad2edb848f61b9a0fb51&mc=true&node=pt14.3.150&rgn=div5#se14.3.150_17

[10] Port Authority of New York and New Jersey, "Teterboro Airport, Title 14 Code of Federal Regulations (CFR) Part 150, Noise Exposure Map Report, May 2017

the Port Authority maintains ultimate responsibility for the NCP, it is a culmination of efforts by local jurisdictions, agencies, other stakeholders, and the FAA. The NCP development process focused on the following three strategies to improve land use compatibility:[11]

- Noise Abatement – noise reduction at the noise source
- Land Use – noise mitigation for the receivers
- Program Management – means to implement, monitor and/or report on NCP measures

This NCP Report describes all noise compatibility measures considered by the Port Authority, the effectiveness of the measures, the reasons that individual measures were or were not recommended for inclusion in this NCP by the Port Authority, implementation of the measures and funding required to implement. Stakeholder engagement is vital to the development of the NCP.

The Port Authority continued the precedent set in the NEM phase of the Part 150 Study to provide ample opportunity for public and stakeholder input during the development of the NCP, including, but not limited to:

- Regular briefings to the Technical Advisory Committee (TAC) established at the outset of the project
- Informational newsletters
- Engagement with Teterboro Aircraft Noise Abatement Advisory Committee (TANAAC) on the Part 150 Process
- Consultation with agencies with land use jurisdiction and responsibility within the Study Area
- Opportunities for public review and comment during NCP development
- Project-specific materials available on the Port Authority's Part 150 website
- Public workshop to present the Part 150 Study process and resulting NCP
- Public hearing, in conjunction with the public workshop, to gather comments related to the draft NCP

Chapter 5 details the stakeholder engagement process, including specific information regarding the Port Authority's approach to stakeholder engagement, opportunities for comment, and the documentation of those efforts.

Upon completion of the analyses and coordination, the Port Authority submitted the NCP Report to the FAA for review and approval of the individual Port Authority-recommended NCP measures. Upon receipt of the FAA's Record of Approval (ROA) of this NCP, the Port Authority may begin implementation of FAA-approved program measures and apply for federal financial assistance to support implementation of eligible FAA-approved NCP measures at TEB.

A Glossary of Terms and Acronyms used throughout this NCP Report is included in Appendix B.

[11] 14 CFR Part 150, Sec. B150.5(a).

1.4. Roles and Responsibilities

Several groups are involved in the preparation of TEB's Part 150 Study. The primary groups involved are the Port Authority, its staff and consultant team; a TEB Part 150 Study Technical Advisory Committee (TAC) chartered to advise the Port Authority throughout the process; and the FAA. Figure 1-2 displays roles and responsibilities for the Part 150 process.

The Port Authority

As the "airport operator", the Port Authority developed recommendations for this NCP and is responsible for initiating the implementation of FAA-approved measures, and may apply for grant funding for AIP eligible measures. A Port Authority-recommended and FAA-approved measure does not require the implementation of the measure, but merely demonstrates that the measure is in compliance with 14 CFR Part 150 and allows the Port Authority to apply for federal AIP grants for measures that are eligible for federal funding. Additionally, if a measure requires subsequent FAA action, implementation may require environmental study under the National Environmental Polilcy Act (NEPA).

Port Authority of New York and New Jersey

- Airport operator ("proprietor")
- Prepare and publish NEM
- Responsible for determining Noise Compatibility Program elements
- Responsible for pursuing implementation of adopted measures
- Manage consultant team

Part 150 Technical Advisory Committee

- Provides venue for appropriate stakeholders to have official representation during study process
- Members include:
  - Local land use control jurisdiction officials
  - Citizen representatives
  - Airlines, general aviation, and other major aircraft operators and aviation industry trade associations
  - Local business interests, including airport tenants and local chambers of commerce
  - FAA representatives
  - Port Authority representatives from Teterboro Airport
  - Members of the Teterboro Aircraft Noise Abatement Advisory Committee (TANAAC) and Teterboro User's Group (TUG)

Federal Aviation Administration

- Eastern Region Office provides procedural and regulatory guidance
- FAA's Washington headquarters reviews complex technical, regulatory, and legal matters of national policy signficance
- TEB Airport Traffic Control Tower (ATCT) provides input on operational data, safety and capacity effects of noise abatement measures, and implementation.
- Terminal Radar Approach Control Facilities (TRACON) provides input on air traffic and airspace issues

Figure 1-2: Roles and Responsibilities in the TEB Part 150 Study
Source: HMMH, 2019

The Port Authority has retained a team of consultants led by Harris Miller Miller & Hanson, Inc. (HMMH) to assist with the technical tasks required to fulfill Part 150 analysis and documentation requirements. The HMMH Study Team, consisting of Fitzgerald & Halliday, Inc. (FHI), Planning Technology, Inc. (PTI), and Reynolds, Smith & Hills (RS&H), and in close consultation with the Port Authority, has conducted the NCP analysis and developed the NCP Report.

Part 150 Noise Technical Advisory Committee

The Port Authority's establishment of the TEB Part 150 Technical Advisory Committee (TAC) ensures that a wide range of stakeholders is given official representation in the study process.

The TAC was formed to provide varying perspectives and inputs to the NEM and NCP development process. The goal of the TAC is to create an atmosphere of understanding, awareness, and collaboration to derive solutions to improve noise compatibility. Through an invitation from the Port Authority and a voluntary participation process, the TAC brings together representatives from a broad spectrum of entities with interest in the Part 150 process and its outcome. These entities include representatives of the local communities and jurisdictions in the airport's noise-affected environs; local groups such as TANAAC and the Teterboro User Group (TUG); government agencies with aviation and land use responsibilities; and private sector interests, particularly in the aviation industry.

The TAC members are responsible for representing their constituents throughout the study process, to include commenting on the adequacy and accuracy of collected data, simplifying assumptions and technical analyses, and reporting to their constituents. The TAC also served as a forum for stakeholders to discuss complex issues and share their differing perspectives on aircraft noise issues. Section 5.1 on page 5-1 discusses the TAC involvement during the development of the TEB NCP Report.

Federal Aviation Administration

For the NEM, FAA responsibility included approval of non-standard modeling requests, and review and acceptance of the NEM submission to determine that the technical work, consultation, and documentation comply with Part 150 requirements.

For the NCP, FAA responsibility also included the same review and acceptance of the NCP to determine whether the technical work, consultation, and documentation comply with Part 150 requirements.

In addition, the FAA is responsible for review of the details of technical documentation as well as broader issues of safety and consistency of recommended noise abatement measures with applicable federal law. The final role of the FAA is to approve or disapprove each Port Authority-recommended NCP measure. The FAA will evaluate recommended measures with respect to a criteria framework and determine whether each measure merits approval, disapproval, or further review for the purposes of Part 150. Following this determination, the FAA will issue the Record of Approval (ROA). According to Part 150, Appendix B §B150.5 Program standards, the following are requirements of the Noise Compatibility Program:

(a) Reduces existing noncompatible uses and prevents or reduces the probability of the establishment of additional noncompatible uses;
(b) Does not impose undue burden on interstate and foreign commerce;
(c) Provides for revision in accordance with [Part 150]
(d) Is not unjustly discriminatory.
(e) Does not derogate safety or adversely affect the safe and efficient use of airspace.
(f) To the extent practicable, meets both local needs and needs of the national air transportation system, considering trade-offs between economic benefits derived from the airport and the noise impact.
(g) Can be implemented in a manner consistent with all of the powers and duties of the Administrator of FAA.

After issuance of the Record of Approval (ROA) of an NCP, the FAA performs environmental, safety, and other types of reviews of each recommended noise abatement measure in the NCP prior to determining whether the measure can be implemented.

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

(1) The Office of Environment and Energy (AEE)
(2) The Air Traffic Organization (ATO)
(3) The Office of Airports (APP)

- The FAA's **Office of Environment and Energy** (at FAA headquarters) reviews complex technical, regulatory, and legal matters of national environmental policy significance.
- The **Air Traffic Organization** is responsible for providing safe and efficient air navigation services to the entire U.S. airspace. **TEB's Airport Traffic Control Tower** (ATCT) provides significant input to the NCP in several areas, including operational data, judgment regarding safety and capacity effects of alternative noise abatement measures, and implementation requirements. The **New York TRACON** (Terminal Radar Approach Control) also provides input on air traffic issues to the extent that they might affect operational procedures and airspace issues at EWR and other nearby airports, including TEB, LGA, and JFK.
- Two groups in the FAA's **Airports Division** are involved in the review: (1) the **Office of Airport Planning and Programming** ensures that the national airport system is safe, efficient, environmentally responsible, and meets the needs of the traveling public; and (2) the FAA's **Eastern Region Office** is responsible for determining if the NCP satisfies all Part 150 requirements and has final review of the NCP Report for adequacy in satisfying technical and legal requirements.

1.5. Noise Terminology

Information presented in this NCP Report relies upon a reader's understanding of the characteristics of noise (unwanted sound), the effects noise has on persons and communities, and the metrics or descriptors most commonly used to quantify aircraft noise.

Introduction to Noise Terminology

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

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

Noise Metrics

Noise metrics are measures of noise levels or noise exposure. There are two main categories of metrics to describe (1) noise events (single-event noise metrics) and (2) noise experienced over durations (cumulative noise metrics).

Single-event noise metrics are indicators of the intrusiveness, loudness, or noisiness of individual aircraft events. Cumulative noise metrics 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 (dB). Figure 1-3 displays common environmental sound levels in dB.

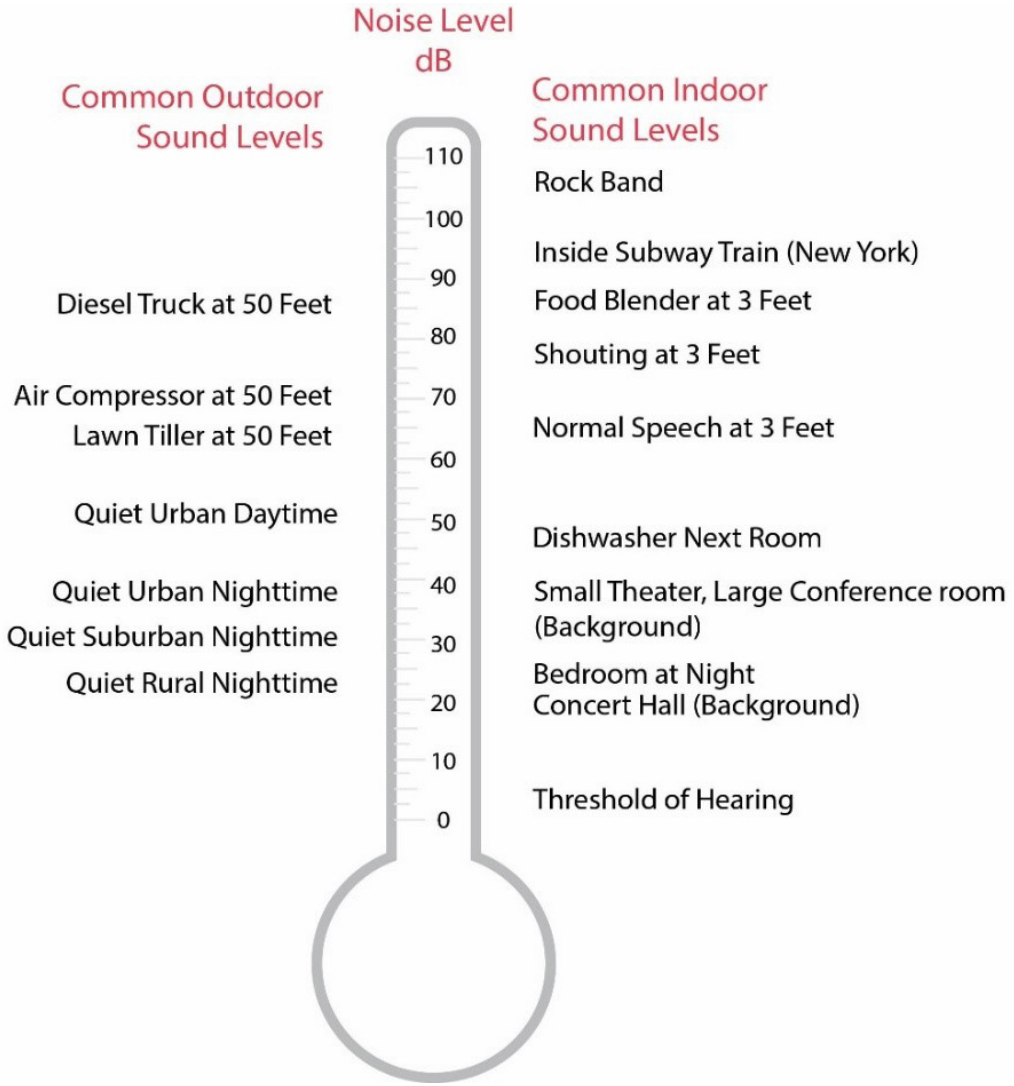

Figure 1-3: Common Environmental Sound Levels, in dB
Source: HMMH, 2019

Day-Night Average Sound Level (DNL)

The ***Day-Night Average Sound Level*** represents the noise energy present during a 24-hour period. DNL represents a weighted average of the noise level over a 24-hour period. Weighting is applied to noise events occurring at night (10:00 p.m. to 7:00 a.m.), with 10 dB added to the actual nighttime sound level. This 10 dB weighting accounts for greater sensitivity to nighttime noise, and the fact that events at night are often perceived to be more intrusive than daytime events (see Figure 1-4).[12]

For purposes of Part 150, DNL reported herein represents the average-annual day of aircraft operations at TEB. For more information regarding noise terminology and noise metrics, please see Appendix A in the TEB NEM Report.

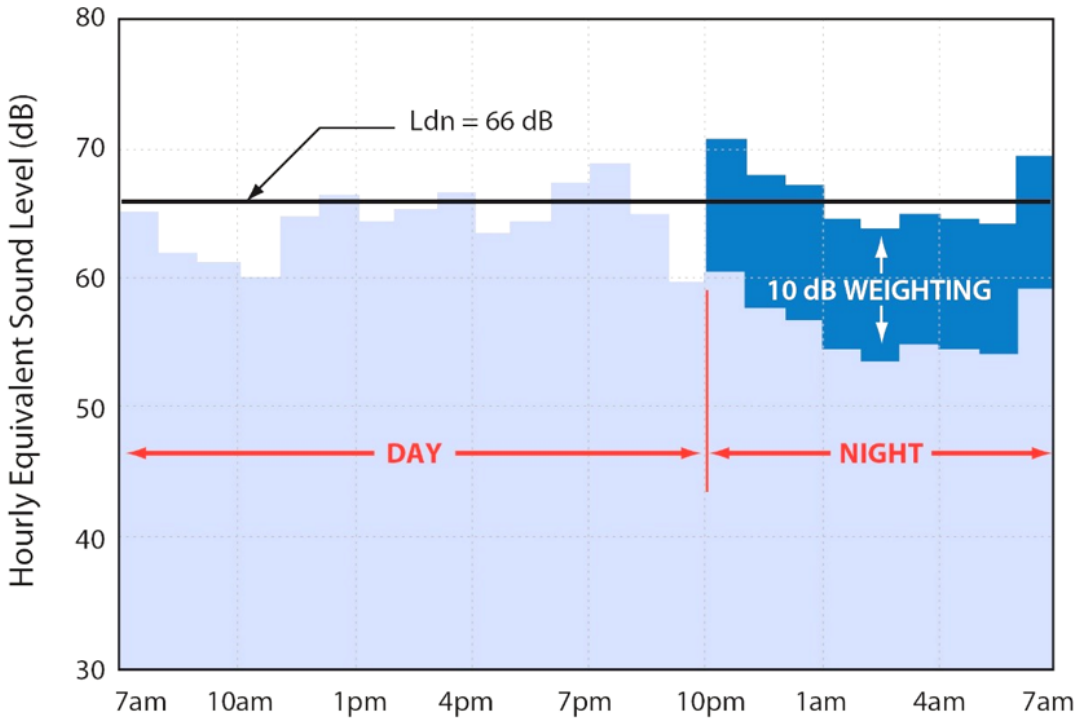

Figure 1-4: Example of a Day-Night Average Sound Level Calculation
Source: HMMH, 2019

[12] 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

1.6. Noise/Land use Compatibility

The objective of airport noise compatibility planning is to promote compatible land use in communities surrounding airports. Part 150 requires the review of existing land uses surrounding an airport to determine land use compatibility associated with aircraft activity at the airport.

The FAA has published land-use compatibility designations, as set forth in Part 150, Appendix A, Table 1 (reproduced as Table 1-1 on page 1-12). As the table indicates, the FAA generally considers all land uses to be compatible with aircraft related DNL levels below 65 dB, including hotels, retirement homes, intermediate care facilities, hospitals, nursing homes, schools, preschools, and libraries. These categories will be referenced throughout the Part 150 process.

The Port Authority and Study Team established a study area and collected detailed land use information from municipalities throughout the study area. The collected land use and zoning information was summarized to match the Part 150 land use categories. The Noise Exposure Maps reproduced in the next section from the TEB NEM include the results of the aircraft noise and land use analysis pursuant to FAA-provided land use compatibility designations.

Table 1-1: 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 (Key and notes on following page)					
	<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	25	35	N	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 1-1

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 1-1

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.*

1.7. FAA-Accepted 2016 and 2021 Noise Exposure Maps

On June 15, 2017 the FAA accepted the 2016 NEM for TEB as summarized in this section of the NCP Report. Figure 1-5 on page 1-17 presents the Noise Exposure Map for existing conditions (2016), and Figure 1-6 on page 1-19 presents the Noise Exposure Map for the five-year forecast conditions (2021). Large format fold out versions of these figures are in Appendix A.2 on page A-27. The existing conditions (2016) are shown in Figure A-1 and the five-year forecast conditions (2021) in Figure A-2. Table 1-2, Table 1-3, and Table 1-4 show dwelling units, population, and noise-sensitive sites, respectively, within the 2016 and 2021 65 DNL contour in five dB intervals.[13]

The noise contours for this study were prepared using the Integrated Noise Model (INM) Version 7.0d, as approved by the FAA.[14] The INM determines the cumulative effect of aircraft noise exposure around airports. The airport-specific information required by the INM 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. This chapter provides a summary of the current FAA-accepted NEM for reference purposes. The fundamental noise elements of NEMs are DNL contours for existing and five-year forecast conditions: i.e., 2016 and 2021 for the current FAA-accepted NEM.

Table 1-2: Dwelling Units within 2016 and 2021 65 DNL Contour[15]
Source: 2010 US Census Block Data, RS&H, HMMH, 2017

Year	Dwelling Units within Contour Interval (DNL)			
	65-70 dB DNL	70-75 dB DNL	>75 dB DNL	Total
2016	183	8	0	191
2021	180	16	0	196

Table 1-3: Population within 2016 and 2021 65 DNL Contour
Source: 2010 US Census Block Data, RS&H, HMMH, 2017

Year	Population within Contour Interval (DNL)			
	65-70 dB DNL	70-75 dB DNL	>75 dB DNL	Total
2016	442	19	0	461
2021	436	39	0	475
Note: Population = 2.42 people * Number of dwelling units				

[13] Day-Night Average Sound Level (DNL) noise contours represent lines of equal noise exposure 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.

[14] The TEB 14 CFR Part 150 Study was initiated in January 2015, prior to the FAA's release of the Aviation Environmental Design Tool (AEDT) on May 29, 2015 and the latest version AEDT 3d on March 30, 2021. When the study began, INM 7.0d was the most current FAA-approved model for determining aircraft noise exposure around airports and was identified as the model required for use in this study. The FAA approval of INM 7.0d use for this study can be found in Appendix D.1 of the TEB NEM Report.

[15] 2010 US Census Block Data. In order to estimate the number of people residing within the noise contours, existing parcel boundary land use maps were overlaid on 2010 US Census TIGER file maps that depict Census blocks – the smallest Census enumeration unit. "Populated Area" data polygons were then created by combining Census blocks with the residential land use, concentrating population and dwelling unit values into the residential portion of the census block where people actually live. For example, in some areas the population is concentrated along the road rather than over several square miles of open or undeveloped land.
Using Geographic Information Systems (GIS) tools, the noise contours were intersected with these "Residential/Census" data for each DNL noise contour interval. The resultant wholly or partially encompassed Residential/Census areas were then identified and the proportion of total area within the contour level was calculated to determine the estimated residential population and dwelling unit counts. This analysis led to an average population multiplier of 2.42 people for each dwelling unit in the vicinity of the TEB 65 DNL contour and was used in Table 1-3 to determine the number of people within each DNL contour interval.

Table 1-4: Noise Sensitive Sites within 2016 and 2021 65 DNL Contour
Source: HMMH and RS&H, 2018

Year	Noise Sensitive Site	Type	Address	City
Within 2016 and 2021	Learning Tree Academy	Daycare	150 Park Place East	Wood-Ridge
	Bergen County Technical High School[1]	School	504 US-46	Teterboro
	Jersey College School of Nursing[2]	School	546 US-46	Teterboro
Within 2021 Only	Catalyst Agape Church[3]	Place of Worship	370 North St	Teterboro

Note 1: The Bergen County Technical School has been sound insulated as a part of the School Sound Insulation Program discussed in Section 3.1 on page 3.2
Note 2: The Jersey College School of Nursing is in a commercial structure and FAA will determine eligibility on a case by case basis.
Note 3: The North Jersey Vineyard Church changed to a different congregation – the Catalyst Agape Church – in the same location. The church occupies a portion of a commercial structure and FAA will determine eligibility on a case by case basis.

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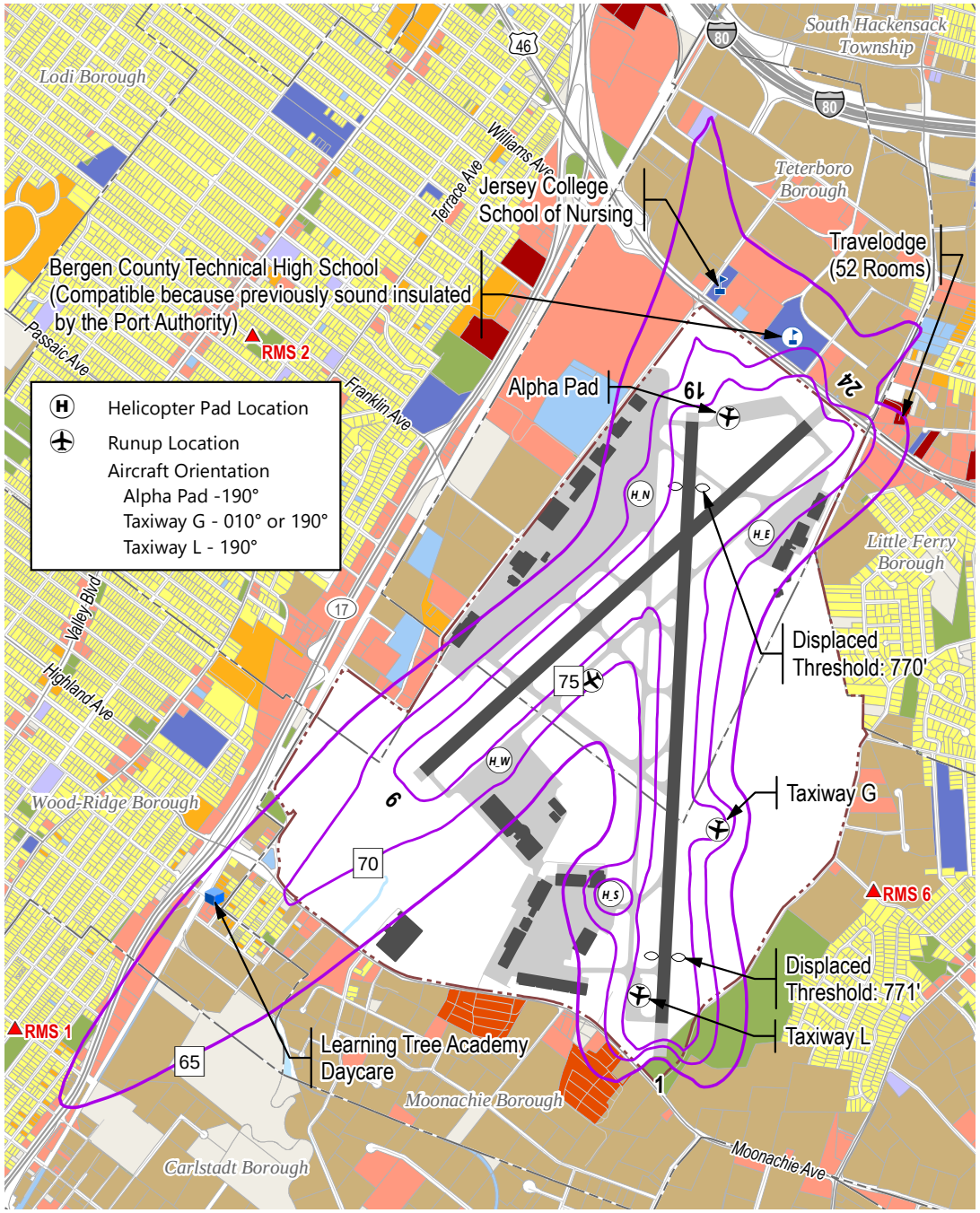

THE PORT AUTHORITY OF NY & NJ

Teterboro Airport

Airport Noise Compatibility
Part 150 Study
2021 Noise Compatibility Program

Figure: 1-5

Existing Conditions (2016) Noise Exposure Map

- 2016 DNL Contours (65-75)
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- School *(Sound Insulated)*
- Daycare

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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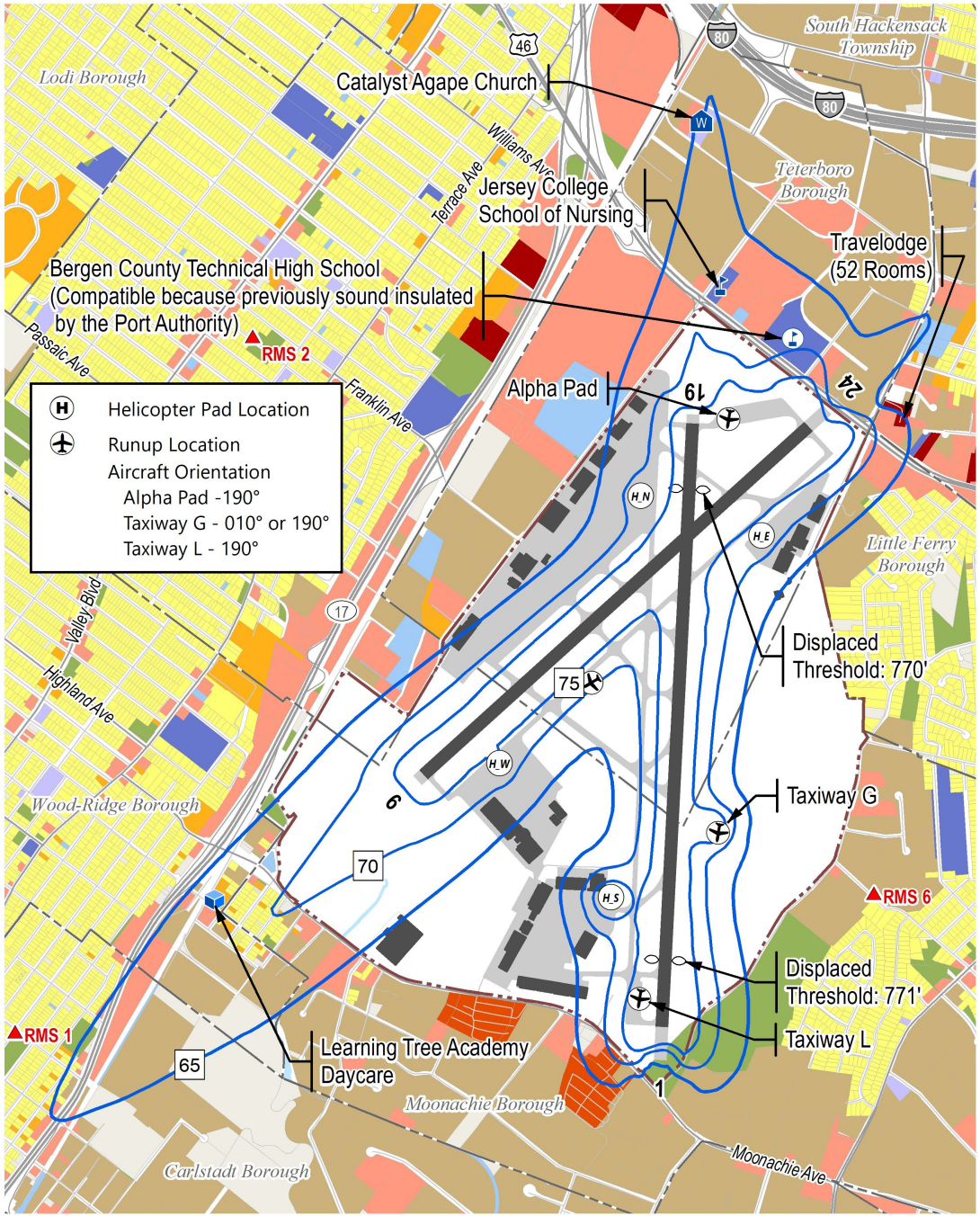

THE PORT AUTHORITY OF NY & NJ

Teterboro Airport

Airport Noise Compatibility
Part 150 Study
2021 Noise Compatibility Program

Figure: 1-6

Forecast Conditions (2021) Noise Exposure Map

- 2021 DNL Contours (65-75)
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- School *(Sound Insulated)*
- Place of Worship
- Daycare

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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2. Noise Abatement Measures

Noise abatement measures are those that control 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 in the NCP is to reduce the number of people and noise-sensitive sites exposed to aircraft noise of 65 DNL or greater.[16]

TEB is located in one of the most highly congested airspaces in the country. TEB is within 20 miles of three large-hub airports (John F. Kennedy International, LaGuardia and Newark Liberty International), and is within 50 miles of three other general aviation airports that serve the New York-New Jersey Metropolitan area. The number and type of noise abatement measures that can be implemented is necessarily limited due to the congested airspace and the need to prevent conflicts in the use of the airspace.

This chapter details the following 16 Noise Abatement Measures recommended for inclusion in this NCP:

- TEB Noise Abatement Measure 1: Implement a Runway 24 Departure Turn to 230 degrees at Night
- TEB Noise Abatement Measure 2: Encourage Intersection Departures from Taxiway K on Runway 1 at Night
- TEB Noise Abatement Measure 3: Design and Implement a Centralized Aircraft Run-up Pad
- TEB Noise Abatement Measure 4: Implement an Offset Approach Procedure to Runway 19
- TEB Noise Abatement Measure 5: Implement an Offset Approach Procedure to Runway 6
- TEB Noise Abatement Measure 6: Implement a Published Approach Procedure to Runway 1 and Increase Usage at Night
- TEB Noise Abatement Measure 7: Implement a Published Departure Procedure from Runway 19
- TEB Noise Abatement Measure 8: Existing Mandatory Permission to Operate Jet Aircraft
- TEB Noise Abatement Measure 9: Existing Mandatory Noise Limits
- TEB Noise Abatement Measure 10: Existing Mandatory Aircraft Maintenance Run-Up Restrictions
- TEB Noise Abatement Measure 11: Existing Voluntary Restraint from Operations between 11:00 p.m. and 6:00 a.m.
- TEB Noise Abatement Measure 12: Existing Voluntary Preferential Runway Use at Night
- TEB Noise Abatement Measure 13: Existing Voluntary Encouragement of the Use of National Business Aviation Association (NBAA) Noise Abatement Departure Procedures (NADP)
- TEB Noise Abatement Measure 14: Existing Voluntary Restraint from the Use of Reverse Thrust
- TEB Noise Abatement Measure 15: Existing Voluntary IFR and VFR Approach and Landing Procedures to Runway 1 at Night
- TEB Noise Abatement Measure 16: Existing Voluntary Helicopter Routes

[16] Title 14 CFR Part 150, Appendix A, Table 1: Part 150 Land Use Compatibility with Yearly Day-Night Average Sounds Levels

2.1 Existing Aircraft Noise Abatement Measures

The Port Authority has pursued aircraft noise abatement measures for several decades, including Maximum Noise Level (MNL) limits applied to departures at TEB in 1987. The Port Authority also installed an airport noise monitoring system at TEB in 1987 consisting of six monitors in the communities around TEB. The original system required manual correlation of measured noise levels with individual aircraft operations; a system upgrade in 1992 added flight tracking and automated this process. The noise departure limit at TEB is a measure that was established before such measures were prohibited by the Airport Noise and Capacity Act of 1990 (ANCA).[17]

At TEB, the Port Authority has a long history of working with the community through the Teterboro Airport Quiet Flying Program that established voluntary and mandatory[18] noise abatement measures well before undertaking this 14 CFR Part 150 Study. Feedback from a range of stakeholders, including community members and airport users has helped to shape the program since the 1970s and has grown into a fully developed program that is managed by the Teterboro Airport Noise Office.

Each existing measure of the program is documented in this chapter to formalize each measure as part of the TEB NCP. These measures are also fully documented and available to airport users through the *Flight Crew Handbook: Teterboro Airport Quiet Flying Program*.[19] A copy of the Flight Crew Handbook is provided in Appendix C.3 on page C-35. Table 2-1 on page 2-3 provides a timeline of actions by the Port Authority, U.S. Congress, and FAA regarding noise abatement at TEB.

[17] Passage of ANCA subsequently prohibited operation of Stage 2 aircraft with a maximum weight above 75,000 pounds within the United States after December 31, 1999. This prohibition provided noise benefits around airports nationwide. As a result of ANCA, airport operators could not establish additional operational restrictions on Stage 2 (or quieter) aircraft in flight except by request through 14 CFR Part 161, Notice and Approval of Airport Noise and Access Restrictions. The FAA Modernization and Reform Act of 2012 (FMRA) prohibits operation of any aircraft not complying with Stage 3 within the 48 contiguous United States after December 31, 2015 eliminating any further airport sponsored efforts to do so.

[18] Mandatory measures are required to be followed by the aircraft operator and the Port Authority can enforce compliance through various efforts, whereas Voluntary measures are recommended to the aircraft operator but the Port Authority cannot enforce compliance.

[19] TEB's current noise abatement program is published at https://www.panynj.gov/airports/pdf/TEB-Flight-Crew-Handbook.pdf. The TEB Flight Crew Handbook is also available electronically as a free app on the Apple and Android app stores.

Table 2-1: Timeline of TEB Noise Abatement Actions
Source: HMMH and Port Authority, 2019

TEB begins noise abatement program	1970 Port Authority
Congress enacted the Noise Control Act, which gave the FAA authority to set limits for aircraft noise emissions. Amendments established three stages of aircraft noise and established a phaseout of aircraft less than Stage 2 with a maximum weight greater than 75,000 pounds by January 1, 1985.	1972 Congress
Congress passes the Aviation Safety and Noise Abatement Act (ASNA), requiring the FAA to establish processes for aircraft noise measurement and noise compatibility planning	1979 Congress
TEB develops, in conjunction with community members and users, several noise abatement measures	1980 Port Authority
FAA codifies Title 14 CFR - Part 150 Airport Noise Compatibility and Planning in the Code of Federal Regulations (CFR) in response to the requirements of ASNA	1984 FAA
Teterboro Aircraft Noise Abatement Advisory Committee (TANAAC) established. TANAAC recommends TEB maximum departure noise level set.	1987 Port Authority
TEB develops, in conjunction with community members, users, and TANAAC, several noise abatement measures	1988 Port Authority
Congress passes Airport Noise and Capacity Act of 1990 (ANCA), preventing airports nationwide from establishing additional operational restrictions on Stage 2 (or quieter) aircraft in flight without FAA approval	1990 Congress
FAA codifies Title 14 CFR - Part 161, Notice and Approval of Airport Noise and Access Restrictions in response to the requirements of ANCA	1991 FAA
ANCA prohibits U.S. operations of Stage 2 aircraft with maximum weight above 75,000 pounds, providing noise benefits nationwide.	2000 Congress
Effective May 1, 2002, the Port Authority banned aircraft not meeting Stage 2 or quieter standards at TEB	2002 Port Authority
Congress passes the FAA Modernization and Reform Act of 2012 (FMRA)	2012 Congress
Port Authority initiates 14 CFR Part 150 Studies for JFK, LGA, EWR , and TEB	2014 Port Authority
FMRA prohibits U.S. operations of aircraft not complying with Stage 3 with maximum weight at or below 75,000 pounds within the 48 contiguous United States	2016 Congress
FAA promulgates the Stage 5 noise standard, this standard is effective December 31, 2017, for certification of new aircraft designs with a maximum takeoff weight of at least 121,254 pounds, and December 31, 2020, for certification of new aircraft designs with a maximum takeoff weight of less than 121,254 pounds.	2017 FAA
	1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 Timeline of TEB Noise Abatement Actions

Note on Special Conditions that Apply to Mandatory Noise Abatement Measures

Provisions in the federal Airport Noise and Capacity Act of 1990 (ANCA) limit an airport sponsor's ability to adopt noise abatement measures that restrict aircraft operations. As a result, before an airport sponsor may adopt new noise-based aircraft restrictions, they must obtain FAA approval pursuant to the procedures and requirements of 14 CFR Part 161.[20, 21] 14 CFR Part 161.3(a) exempts restrictions on aircraft operations in effect prior to October 2, 1990.

As discussed above, several mandatory noise abatement measures were implemented at TEB prior to October 2, 1990. The Port Authority has identified TANAAC meeting minutes, a TRACON report, and news articles from 1987 and 1988 regarding pre-ANCA noise abatement measures.

All materials documenting the existence of these measures prior to October 2, 1990, are included in Appendix C.1 on page C-3 and referenced in the language of the text. In addition, Port Authority has identified language in legislation from the Consolidated Appropriations Act of 2004, which prohibits the use of funds to "change weight restrictions or prior permission rules at Teterboro Airport in Teterboro, New Jersey,"[22] as well as from the Aviation Investment and Modernization Act of 2007, which states that "the Administrator of the Federal Aviation Administration is prohibited from taking actions designed to challenge or influence weight restrictions or prior permission rules at Teterboro Airport in Teterboro, New Jersey."[23] The existing mandatory measures are documented in the *Teterboro Flight Crew Handbook* and, as such, are "grandfathered"[24] and remain part of the TEB Quiet Flying Program.

Existing Mandatory and Voluntary Noise Abatement Measures at TEB

Permission to Operate

The Flight Crew Handbook contains a "Permission to Operate" form, which airport users must submit to the Airport Manager before conducting jet operations. The form requires the aircraft operator to acknowledge awareness of and commitment to be consistent with the Quiet Flying Program. Failure to comply with the Permission to Operate form may result in denial of permission to operate at TEB.[25]

Maximum Noise Level

At TEB, the Port Authority enforces formal Maximum Noise Level (MNL) limits that apply to takeoffs and vary according to each runway end and time of day. There are Remote Monitoring Sites (RMS) at six locations around TEB to track whether aircraft noise is within the MNL. When aircraft exceed these limits by 1.0 dB or more, their operators receive noise violations from the Port Authority. The Port Authority can prohibit aircraft from operating at TEB if they violate the noise limit three times in a two-year period.

[20] 49 USC §47107(d). Upon acceptance of funds from FAA-administered airport financial assistance programs, airport owners or sponsors, planning agencies or other organizations must agree to certain obligation (grant assurances). A list of Grant Assurances for Airport sponsors can be found here: https://www.faa.gov/airports/aip/grant_assurances/media/airport-sponsor-assurances-aip.pdf

[21] FAA Order 5190.6(b), "Airport Compliance Manual" Chapter 13, Section 14, paragraph (a). To be approved, restrictions must meet the following six statutory criteria: 1) the proposed restriction is reasonable, nonarbitrary, and nondiscriminatory. 2) The proposed restriction does not create an undue burden on interstate or foreign commerce. 3) The proposed restriction maintains safe and efficient use of the navigable airspace. 4) The proposed restriction does not conflict with any existing federal statute or regulation. 5) The applicant has provided adequate opportunity for public comment on the proposed restriction. 6) The proposed restriction does not create an undue burden on the national aviation system.

[22] 2004 – Consolidated Appropriations Act, Departments of Transportation, and Treasury, and Independent Agencies Appropriations Act. https://www.congress.gov/bill/108th-congress/house-bill/2673

[23] 2007 Aviation Investment and Modernization Act of 2007, immediately following SEC. 711. PHASEOUT OF STAGE 1 AND 2 AIRCRAFT. https://www.congress.gov/bill/110th-congress/senate-bill/1300/text

[24] A measure is "grandfathered" when a measure is enacted prior to the adoption of a new rule and continues to apply after the new rule takes effect.

[25] Port Authority Rules and Regulations: https://www.panynj.gov/airports/pdf/Rules_Regs_Revision_8_04_09.pdf

Mandatory Run-Up Restrictions

The Port Authority has established mandatory aircraft run-up locations; aircraft operators must contact Airport Operations to request a run-up. All maintenance run-ups are restricted to the hours of 8:00 a.m. to 8:00 p.m., Monday through Saturday, and the hours of 12:00 p.m. to 6:00 p.m. on Sundays. Failure to comply with the run-up restrictions may result in denial of permission to conduct run-ups at TEB.

Voluntary Restraint from Operations

The Port Authority has established the hours of 11:00 p.m. to 6:00 a.m. as a period of voluntary restraint from operations for all aircraft types. The Noise Office sends a letter to aircraft owners or operators that operate aircraft during 11:00 p.m. to 6:00 a.m. to remind them of the Voluntary Restraint from Operations.

Voluntary Preferential Runway Use at Night

Between 10:00 p.m. and 7:00 a.m., all aircraft over 12,500 pounds, jet aircraft, and those aircraft with high noise levels[26] should request Runway 1 for landing when the airport is in north flow and Runway 19 for departures when the airport is in south flow.

Voluntary NBAA Noise Abatement Departure Procedures (NADP)

This measure encourages aircraft operators to utilize the NBAA NADPs with the High-Density Option upon departure from TEB.[27] The departure procedure directs operators to reduce power between 800 feet and 1,500 feet in altitude and to retract flaps which reduces noise.

Voluntary Restraint from the Use of Reverse Thrust

To minimize noise, the Port Authority requests that aircraft operators avoid using reverse thrust upon arrival at power settings other than idle, except when necessary for operational safety.

Voluntary Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) Approach and Landing Procedures

The Port Authority requests that aircraft operators comply with the voluntary IFR and VFR approach and landing procedures to Runway 1 at night documented in the Flight Crew Handbook, in order to reduce noise.[28] The approach procedures recommend methods such as using minimum flaps, lowering landing gear only when necessary and maintaining the highest altitude possible as ways to reduce noise.

Voluntary Helicopter Routes

The Port Authority requests that helicopter operators voluntarily follow the defined helicopter routes as published both in the Flight Crew Handbook and by the FAA. These routes direct helicopters to overfly major roadways and to avoid residential areas. The 14 CFR Part 150 process requires a complete review of existing and potential measures that may reduce the number of people exposed to 65 DNL or higher.

[26] Aircraft with high noise levels determined by the TEB Noise Abatement Office

[27] See TEB Noise Abatement Measure 13: Existing Voluntary Encouragement of the Use of National Business Aviation Association (NBAA) Noise Abatement Departure Procedures (NADP) beginning on page 2-87 for further information regarding NADPs

[28] See TEB Noise Abatement Measure 15: Existing Voluntary IFR and VFR Approach and Landing Procedures to Runway 1 at Night on page 2-91 for further information on IFR and VFR procedures.

The review includes analysis of departure procedures and preferential runway use measures like those already in place at TEB. In addition, Part 150 requires assessment of the following types of measures:

- Flight tracks
- Preferential runway use
- Arrival/departure procedures
- Airport layout modifications
- Use restrictions

Section 2.2 beginning on page 2-7 of this chapter describes the Port Authority recommendations of noise abatement measures. Appendix H provides an estimated implementation schedule for the recommended Noise Abatement measures. Section 2.3 beginning on page 2-96 provides the measures evaluated that the Port Authority is not recommending in this NCP.

The computer model INM version 7.0d (INM 7.0d) was used to model potential NCP noise abatement measures and analysis of benefits. The INM uses airport-specific information (e.g., runway data), flight track information, aircraft operation levels distributed by time of day, aircraft fleet mix, and aircraft altitude profiles to develop noise exposure contours. During an annual average 24-hour period, referred to as "annual average day" (AAD), the INM accounts for each aircraft flight along flight tracks departing from, or arriving to, an airport. The flight tracks are coupled with information in the model's database relating to noise levels at varying distances and flight performance data for each type of aircraft. In general, the model computes and sums noise levels at grid locations at ground level around the airport. The cumulative values of noise exposure at each grid location are used to develop contours of equal noise exposure. The INM can also compute noise levels at user-defined points.

2.2 Recommended Noise Abatement Measures

This section describes each of the noise abatement measures recommended by the Port Authority; along with identifying the associated potential noise benefits and implementation requirements. While many parties were involved in arriving at these recommendations, as discussed in Section 1.4 on page 1-7 and Chapter 5, the recommendations are the Port Authority's and not those of the TAC, consultants, or other stakeholders.

Each recommended noise abatement measure in this NCP is a notional design that was developed in order to determine potential noise benefits. Any approved noise abatement measures would need to be developed in detail by the FAA. Precise implementation details, such as flight track locations and altitudes, developed by the FAA may differ from the notional noise abatement measure designs presented in this NCP, in order to adequately address safety, efficiency, and aircraft performance considerations. Detailed noise abatement measure designs may require environmental review under NEPA, which may yield different noise results than the results presented in this NCP. Contradictory results arising from subsequent environmental review efforts may be due to differences in approaches to noise abatement measure design or noise modeling methodology. Any NEM updates performed by the Port Authority in the future, in accordance with TEB Program Management Measure 10 (presented in Section 4.2), would reflect actual implementation of the NCP measures as of the date of those NEM updates.

The FAA-accepted forecast 2021 NEM contours (as described in Section 1.7 on page 1-14 and shown in Figure 1-6 on page 1-19) provide the baseline for the noise evaluations of all noise abatement measures. For each NCP measure, the DNL contours, number of dwelling units and population exposed to noise at 65 DNL or greater for each measure were compared to the 2021 baseline results. Detailed discussion for each noise abatement measure that the Port Authority recommends as part of the TEB NCP is included below. Appendix C.2, beginning on page C-19 provides supplemental information on TEB Noise Abatement measures 1, 4, 6, and 7.

TEB Noise Abatement Measure 1: Implement a Runway 24 Departure Turn to 230 degrees at Night

Under this proposed noise abatement measure, aircraft departing Runway 24 would turn left to a 230 degree (°) heading at night. Aircraft will continue on this heading until 1.5 DME[29] (approximately 1.5 nautical miles [nmi] from the end of the runway), before initiating a second turn to 280°. This could ensure aircraft remain on the 230° heading beyond the residential area south of Moonachie Avenue before initiating the second turn. Restricting the turn to 280° until after 1.5 DME should also reduce the possibility of new areas being exposed to aircraft overflights west of Route 17 since aircraft would pass over the same areas as the existing procedures.

Currently, FAA directs aircraft to a 240° heading or the RUUDY SIX RNAV after takeoff.[30] The current altitude restrictions in place for departures from Runway 24 would apply to the proposed procedure. The proposed flight track as shown in Figure 2-1 on page 2-9 would follow the procedure as described above. Due to the shared airspace with Newark International Airport (EWR), the implementation of this proposed noise abatement measure would require sequencing of arrivals into EWR or development of a new arrival procedure for EWR to avoid conflicts in the airspace between TEB and EWR. It is currently unknown how often this TEB nighttime departure procedure could be available due to these complexities.

Based on the uncertainty of expected use, the potential noise benefits of this procedure were evaluated for three hypothetical usage rates. The highest usage (80 percent) expected to provide the maximum noise benefit is presented here, however all three usage rates modeled result in a noise benefit; results for the other two use cases can be found in Appendix C.2, beginning on page C-19. The modeling evaluation shows a shift in the 65 DNL contour, along with a reduction in exposed population.

Figure 2-2 on page 2-11 and Figure 2-3 on page 2-13 display the southeastern shift in the 65 DNL contour south of Moonachie Avenue and east of Route 17.

FAA ATO reviewed the procedure for feasibility. Using the Terminal Area Route Generation and Traffic Simulation tool (TARGETS), FAA ATO developed and provided initial and refined conceptual designs of the procedure, which were used for modeling. The TARGETS tool allows FAA ATO to design a procedure, evaluate the procedure against FAA design criteria,[31] safety and flyability for a range of aircraft types, and to modify the procedure if necessary.[32] Appendix C.2 on page C-19 provides supplemental analysis on this measure.

Table 2-2 displays the change in affected dwelling units and population compared to the 2021 baseline. Based on the hypothetical 80 percent use of TEB Noise Abatement Measure 1, there is a decrease in dwelling units and population exposed to 65 DNL or higher as a result of this measure, with as many as 11 dwelling units and 27 people removed from the 65 DNL contour. At 50 percent there is a reduction of 7 units (17 people) and at 65 percent a reduction of 9 units (22 people). Table 2-3 displays no change in noise sensitive sites and a reduction in land area outside the airport boundary when comparing TEB Noise Abatement Measure 1 to the 2021 baseline.

The TAC is supportive of implementing this noise abatement measure.[33] TEB Noise Abatement Measure 1 will be dependent on FAA procedural design that aircraft operators can fly comfortably and safely during the nighttime hours. This measure is consistent with public comments received to position flights over compatible land use.

Table 2-4 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 1.

[29] DME – Distant Measuring Equipment is a transponder-based radio navigation technology that measures slant range distance by timing the propagation delay of VHF or UHF radio signals.

[30] RNAV stands for aRea NAVigation. GPS is an example of RNAV, in general. For the FAA RNAV approaches are a part of Required Navigation Performance (RNP) Approaches (APCH), of which there are several types including Lateral Navigation/ Vertical Navigation (LNAV/VNAV) approaches. See https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/library/factsheets/media/RNAV_QFSheet.pdf

[31] United States Standard for Terminal Instrument Procedures (TERPS) FAA Order 8260.3D https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1032731

[32] FAA. June 25, 2008. "Accelerating More Efficient Flight Departures." Accessed January 30, 2018: https://www.faa.gov/news/updates/?newsId=56533

[33] This was suggested as a potential noise abatement strategy during TAC meeting #8 on September 23, 2016, discussed for analysis during TAC meeting #9 on November 17, 2016 and presented in TAC Meeting #10 on January 27, 2017 and subsequent TAC meetings presenting noise abatement measures. For more information on see TEB TAC Presentations and Meeting Minutes from TAC #8, #9, and #10 in Appendix D.2 beginning on page D-7.

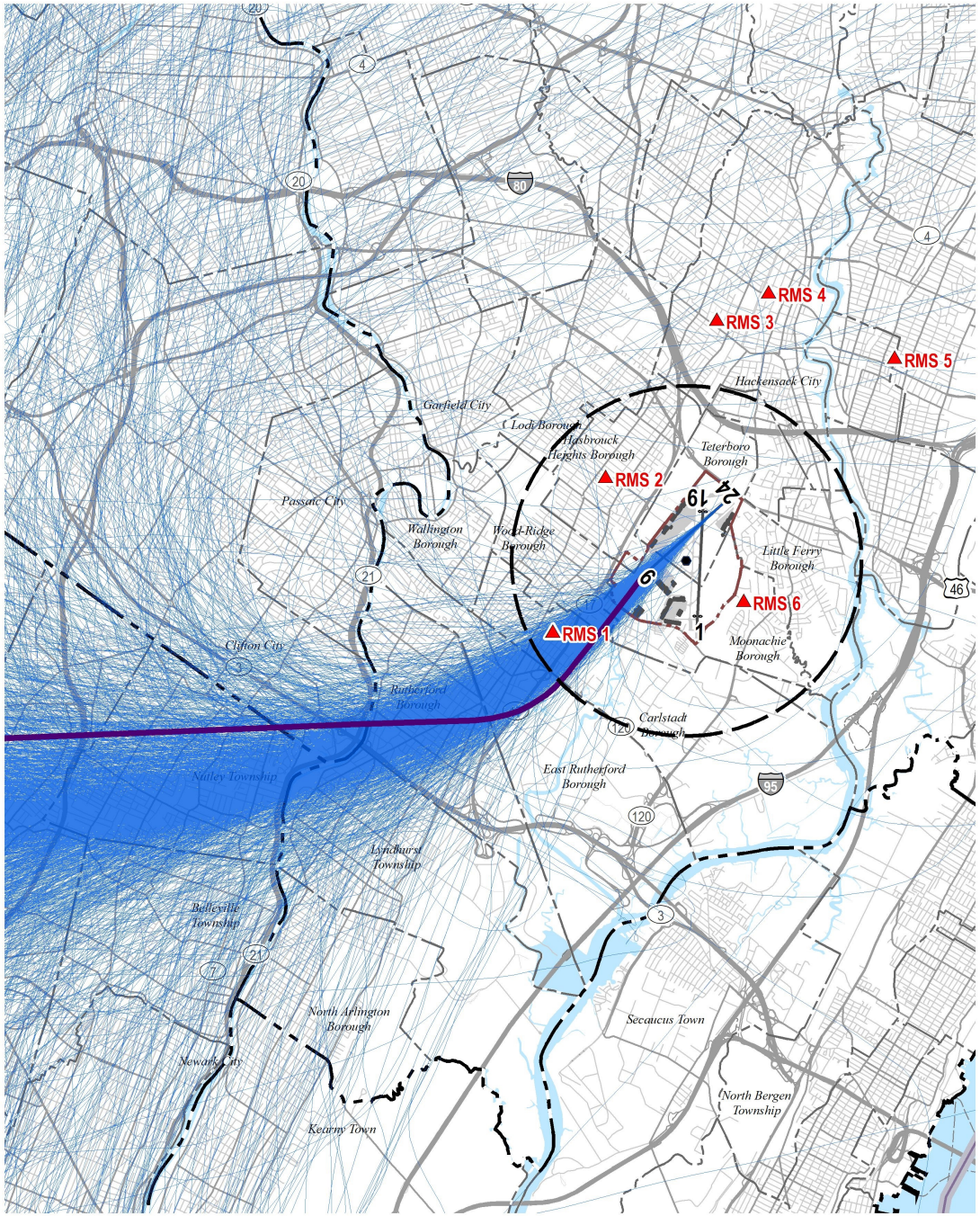

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Figure 2-1

Runway 24 Night Departure Existing Radar Tracks and Average 230° Heading Night Departure Track

- Proposed Departure Track
- Existing Radar Tracks
- TEB Airport Boundary (Approximate)
- Runway
- TEB VOR/DME Location
- 1.5 Nautical Mile VOR/DME Buffer
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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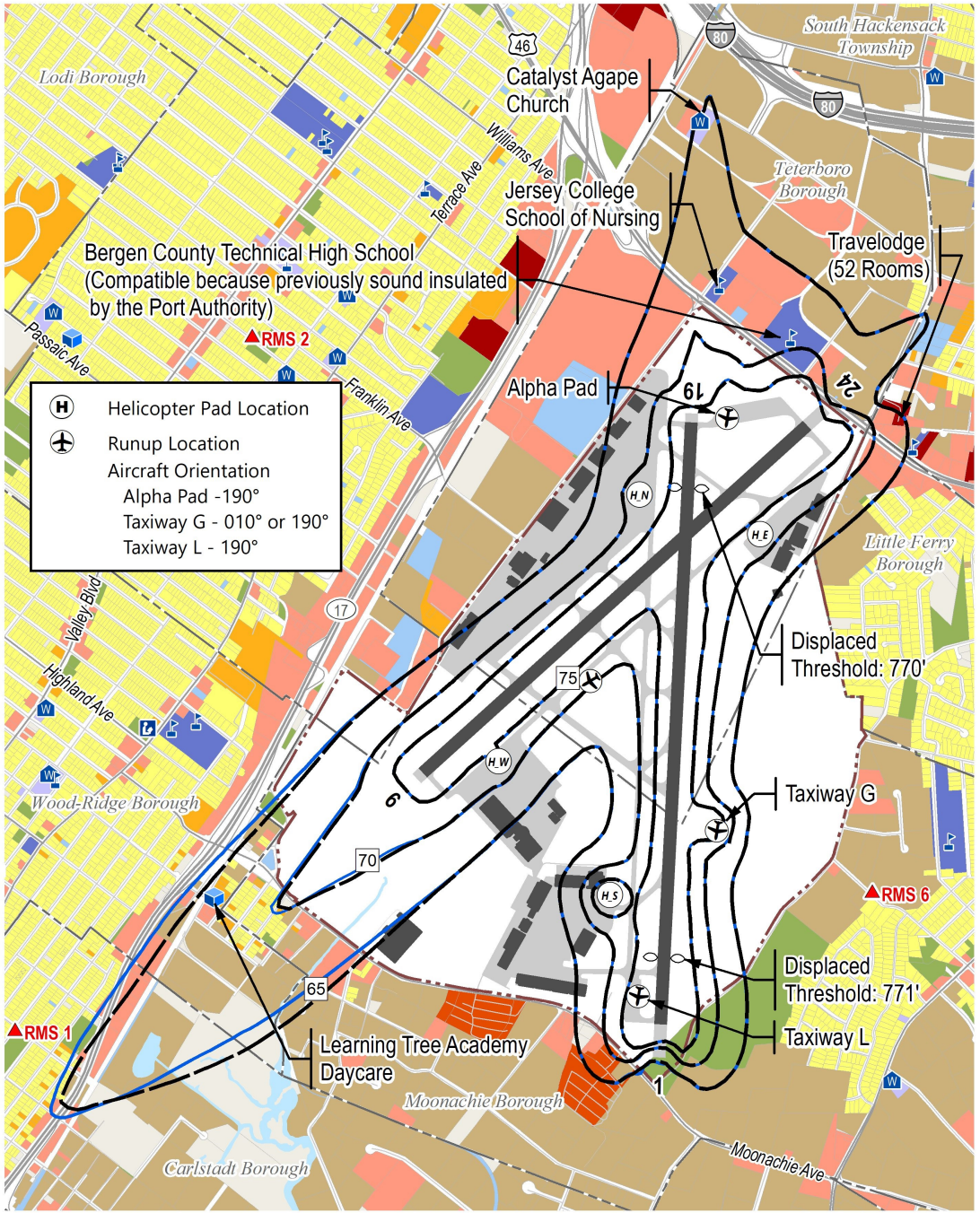

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2021 Noise Compatibility Program

Figure 2-2

Hypothetical 2021 DNL with Runway 24 Departure Turn to 230° Heading at Night Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- Daycare
- Library
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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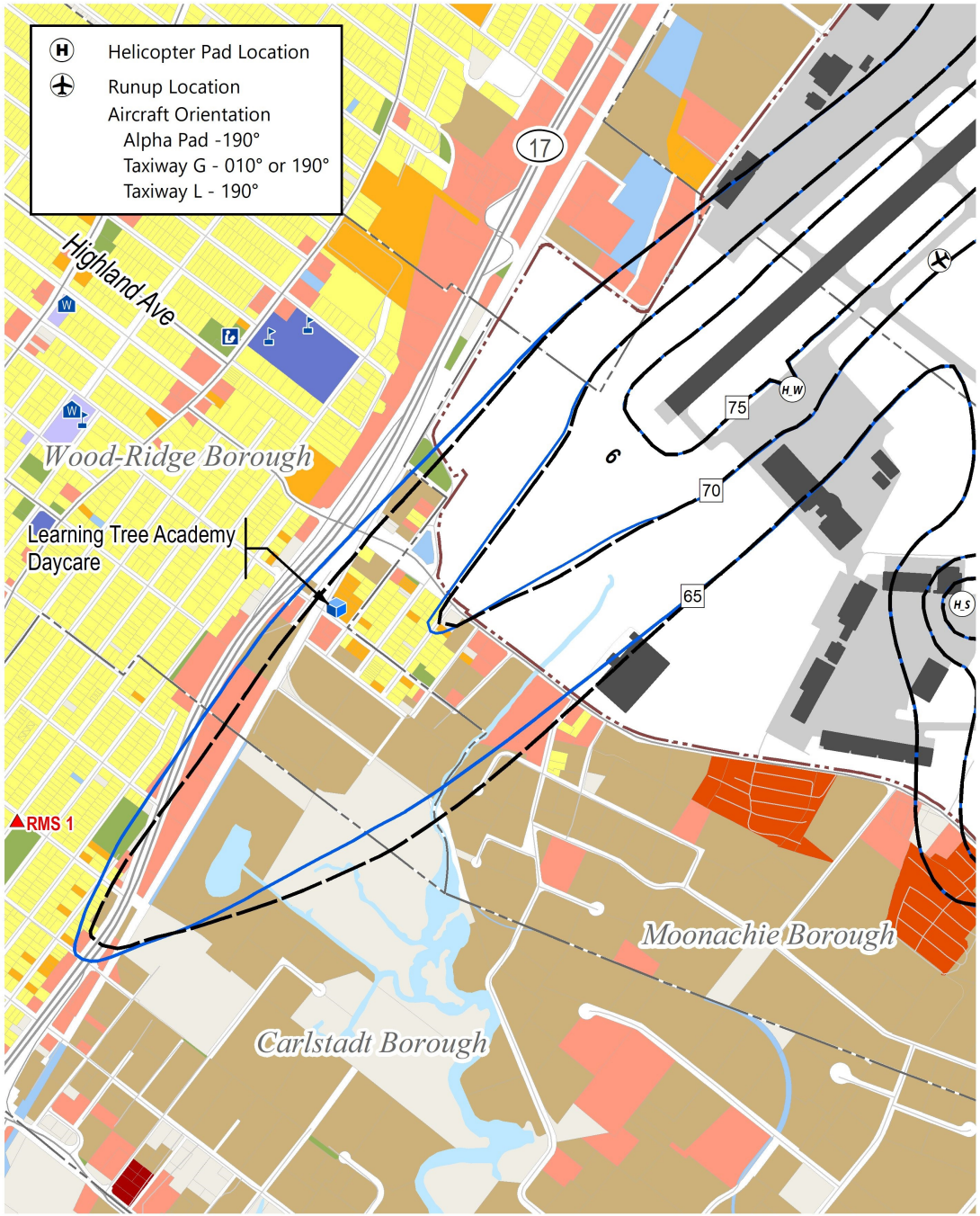

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2021 Noise Compatibility Program

Figure 2-3

Hypothetical 2021 DNL with Runway 24 Departure Turn to 230° Heading at Night Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- Daycare
- Library
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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Table 2-2: Estimated Dwelling Units and Population Counts for 2021 Baseline and Implement a Runway 24 Departure Turn to 230 degrees at Night (TEB Noise Abatement Measure 1) within Different Noise Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are by dwelling unit or population within the DNL contour interval notated)	Number of Dwelling Units			Population		
	65-70	70+	Total	65-70	70+	Total
2021 Baseline	180	16	196	436	39	475
TEB Noise Abatement Measure 1 (80% Use)	175	10	185	424	24	448
Change from Baseline	-5	-6	-11	-12	-15	-27

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change in dwelling units or population within the 65 DNL contour, green indicates a reduction in dwelling units or population within the 65 DNL contour and red indicates an increase in dwelling units or population within the 65 DNL contour.

Table 2-3: Estimated Noise-Sensitive Site Counts and Land Area for 2021 Baseline and Implement a Runway 24 Departure Turn to 230 degrees at Night (TEB Noise Abatement Measure 1) within Different Noise Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are within the 65 DNL contour)	Number of Noise-Sensitive Sites					Land Area Outside the Airport Boundary (Sq. Miles)		
	Transient Lodging	School	Place of Worship	Daycare	Total	Compatible	Noncompatible	Total
2021 Baseline	1	2	1	1	5	0.364	0.040	0.404
TEB Noise Abatement Measure 1 (80% Use)	1	2	1	1	5	0.359	0.039	0.398
Change from Baseline	0	0	0	0	0	-0.005	-0.001	-0.006

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change within the 65 DNL contour, green indicates a reduction within the 65 DNL contour and red indicates an increase within the 65 DNL contour.

Conclusions: *TEB Noise Abatement Measure 1: Implement Runway 24 Departure Turn to 230 degrees at Night* could reduce the number of people exposed to 65 DNL or higher by as many as 17 if this procedure were used 50 percent of the time with higher usage rates resulting in a larger decrease.

The change in heading from 240° to 230° at night could be an effective way to reduce noise levels over residential land use south of Runway 6 and move flight paths over compatible land use south of the airport.

Use of the procedure would be limited to nighttime when EWR arrivals to Runway 22L can accommodate the sequencing of TEB departures from Runway 24 or EWR is operating on an arrival flow that favors use of EWR Runway 29 (use of EWR Runway 29 for arrivals could provide additional airspace for TEB Runway 24 departures).

Table 2-4: Implementation Summary for TEB Noise Abatement Measure 1: Implement Runway 24 Departure Turn to 230 degrees at Night
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	Reduction of up to 17 people in 7 dwelling units exposed to 65 DNL or higher with 50 percent of the aircraft departing Runway 24 at night turning to a 230° heading. Higher reductions with higher usage rates.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 1 because it could reduce noise exposure over residential land use south of Runway 6 and shift flight paths over compatible land use south of the airport.
Responsible Parties	The development, safety review, environmental review, and the decision whether to implement flight procedures consistent with procedure development criteria is the sole responsibility of the FAA. The Port Authority will request that the development process be initiated, then will work with NY TRACON and other FAA personnel to further study and develop this procedure. Implementation of this measure may require an environmental study as required under the National Environmental Policy Act (NEPA); the FAA would be the responsible party to complete such a study.
Estimated Costs	The expected costs associated with the development and implementation of this procedure are internal to the FAA (e.g., ATO) and other coordinating agencies. These costs are unknown, and an FAA AIP grant would not be required.
Funding Sources	The FAA.
Requirements	FAA approval, FAA would coordinate development of the procedure with airport users. Use of the procedure is dependent on revisions to flight procedures at EWR and implementation may require environmental study under NEPA.
Estimated Schedule	The Port Authority to submit a request for its development within six to twelve months of the FAA's Record of Approval for the NCP. FAA design, testing and implementation of the procedure typically takes 18 to 24 months, potentially up to three years once the Port Authority requests initiation of the development process.

TEB Noise Abatement Measure 2: Encourage Intersection Departures from Taxiway K on Runway 1 at Night

This proposed measure would implement an intersection departure[34] from Taxiway K on Runway 1 at night. Aircraft using the intersection departure would enter Runway 1 from the end of the runway, then proceed to Taxiway K (600 feet from the end of the runway) before starting takeoff roll, instead of aircraft powering up and starting their departure from the end of the runway. This approach was preferred by the TAC over aircraft entering the runway at Taxiway K to reduce aircraft lining up for departure in front of the Fixed Based Operator (FBO) ramp west of Runway 1. Figure 2-4 on page 2-19 displays the location of the Taxiway K intersection with Runway 1. This measure would be voluntary, and aircraft would not be restricted from using the full length of the runway if needed.[35] This measure could reduce noise effects at night directly across Moonachie Ave from the end of Runway 1.

In evaluating the potential noise benefit of this noise abatement measure, the usage rate for the measure was assumed to be 80 percent based on the aircraft fleet mix at TEB departing Runway 1 at night. This usage rate assumes that the remaining 20 percent of nighttime departures would still use the full length of Runway 1 (including all heavy jet departures that require a full-length departure distance as well as other smaller aircraft that may need the full-length departure distance due to other considerations, such as takeoff weight and weather conditions). Figure 2-5 on page 2-21 and Figure 2-6 on page 2-23 display the reduction of area within the 65 DNL contour over noncompatible land use to the south of Runway 1, specifically for the mobile home park, resulting from 80 percent use of the TEB Noise Abatement Measure 2 at night.

Table 2-5 displays the reduction in the number of dwelling units and population compared to the 2021 baseline for 80 percent of all Runway 1 night departures starting from Taxiway K. The proposed procedure could reduce the number of dwelling units and population exposed to 65 DNL or higher, with as many as 23 dwelling units and 56 people removed from the 65 DNL contour.

Table 2-6 displays no change in noise sensitive sites, an increase in compatible land area outside the airport boundary, and a reduction in noncompatible land area outside the airport boundary resulting in an overall reduction in land area when comparing TEB Noise Abatement Measure 2 to the 2021 baseline.

Table 2-7 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 2.

The Port Authority will request that the FAA Tower update operational procedures. The Port Authority will need to update the Flight Crew Handbook, airfield signage and other related information to inform aircraft operators of the new noise abatement measure for Runway 1 departures.

[34] Some departing aircraft do not have to use the full length of a runway, and runway and may begin takeoff at a runway/taxiway intersection that is close to the end of the runway – this is known as an "intersection departure".

[35] The recommended procedure is voluntary as the pilot may choose an alternative due to safety or "pilot in command" protocols. For this measure, some pilots may require the additional takeoff length due to weather or operational conditions.

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Figure 2-4

Hypothetical Location of Taxi Route and Start of Takeoff Roll for Aircraft Departing from Taxiway K at Night

- TEB Airport Boundary (Approximate)
- Helicopter Pad Location
- Taxiway Route
- Mobile Home Park

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Source: ;
New Jersey Geographic Information Network (NJGIN)

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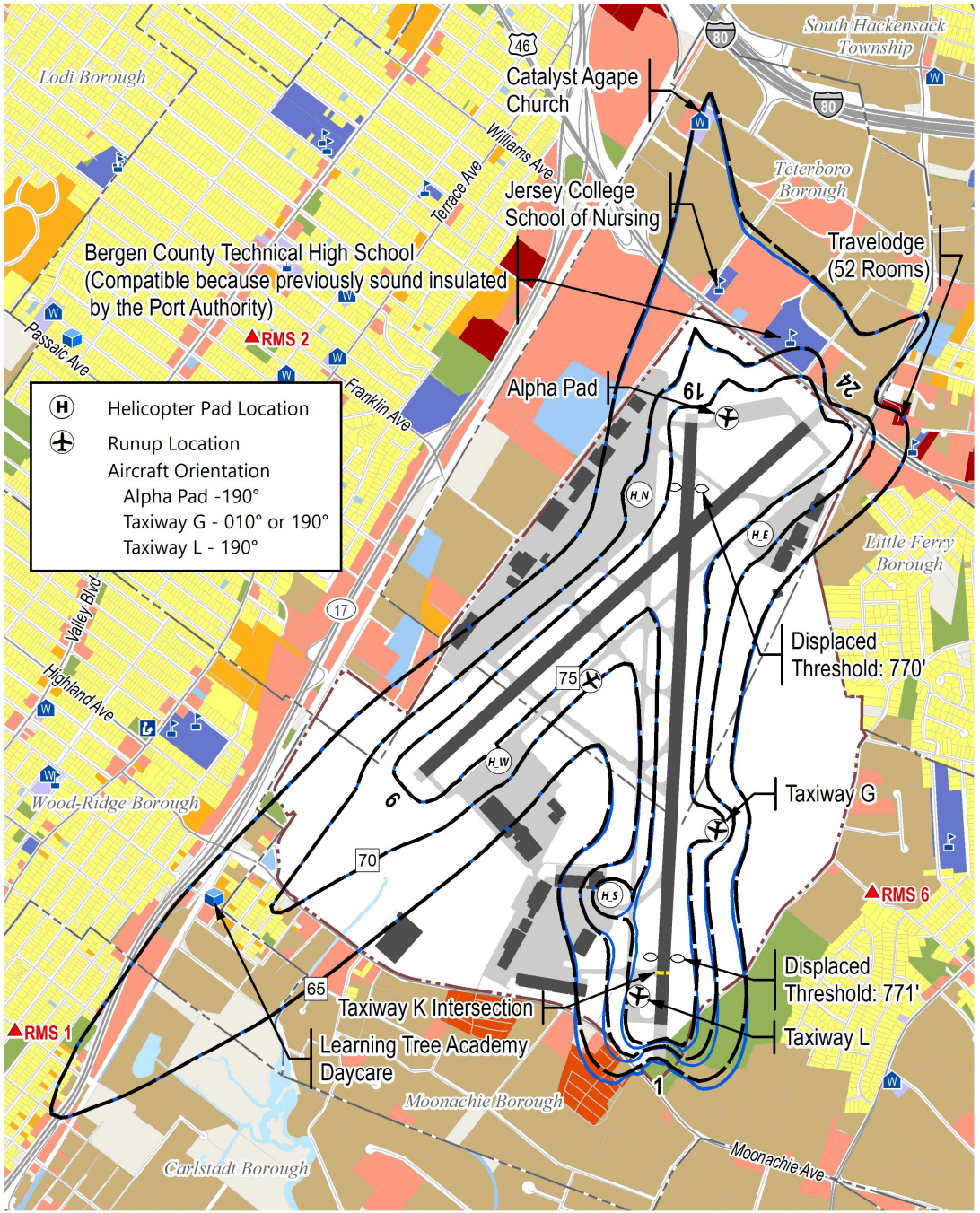

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2021 Noise Compatibility Program

Figure 2-5

Hypothetical 2021 DNL with Aircraft Departing from Taxiway K at Night Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- Daycare
- Library
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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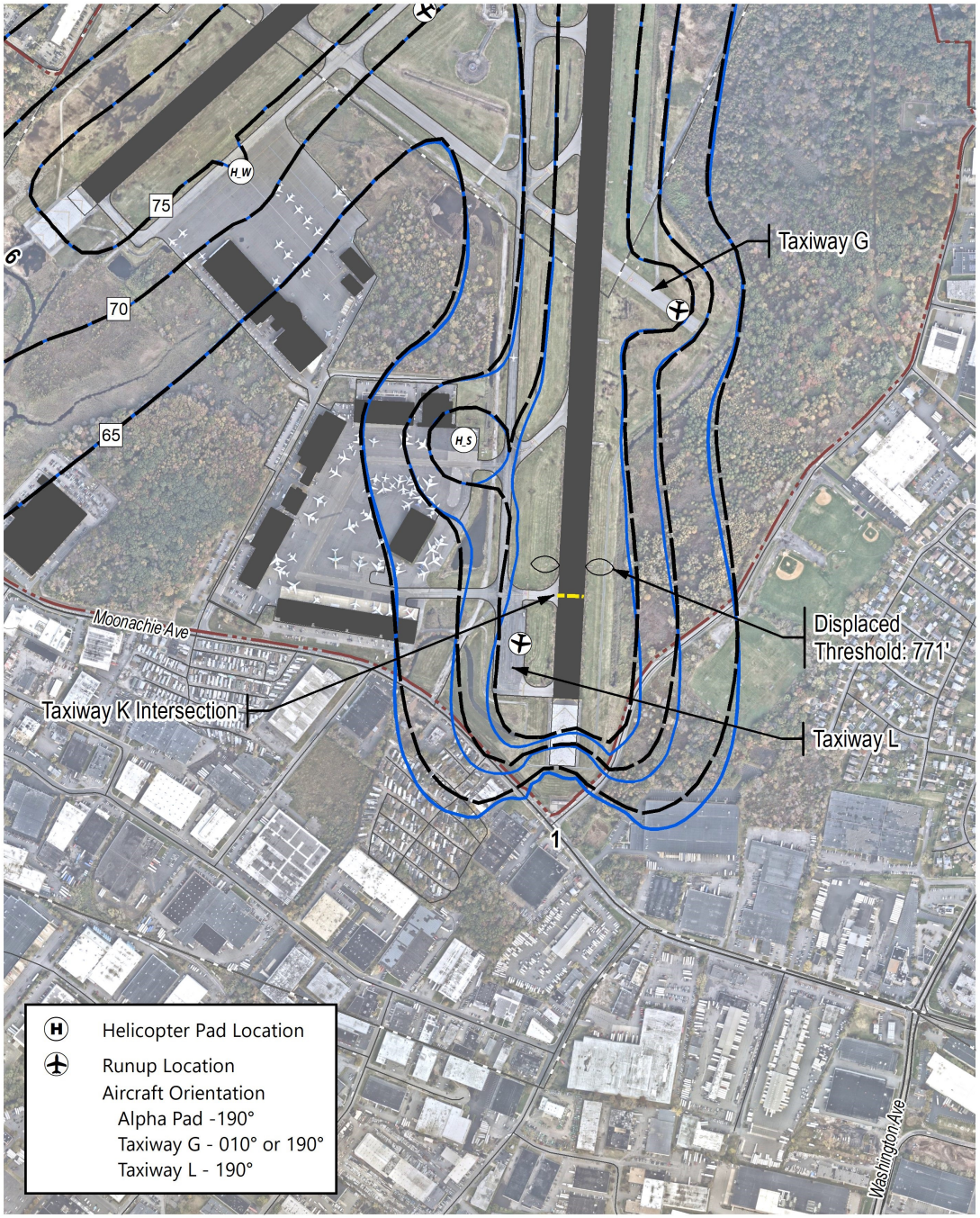

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Teterboro Airport

Airport Noise Compatibility
Part 150 Study
2021 Noise Compatibility Program

Figure 2-6

Hypothetical 2021 DNL with Aircraft Departing from Taxiway K at Night Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Highway
- Major Roads
- Minor Roads
- School
- Library
- Daycare
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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Table 2-5: Estimated Dwelling Units and Population Counts for 2021 Baseline and Encourage Intersection Departures from Taxiway K on Runway 1 at Night (TEB Noise Abatement Measure 2) within Different Noise Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are by dwelling unit or population within the DNL contour interval notated)	Number of Dwelling Units			Population		
	65-70	70+	Total	65-70	70+	Total
2021 Baseline	180	16	196	436	39	475
TEB Noise Abatement Measure 2	166	7	173	402	17	419
Change from Baseline	-14	-9	-23	-34	-22	-56

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change in dwelling units or population within the 65 DNL contour, green indicates a reduction in dwelling units or population within the 65 DNL contour and red indicates an increase in dwelling units or population within the 65 DNL contour.

Table 2-6: Estimated Noise-Sensitive Site Counts and Land Area for 2021 Baseline and Encourage Intersection Departures from Taxiway K on Runway 1 at Night (TEB Noise Abatement Measure 2) within Different Noise Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are within the 65 DNL contour)	Number of Noise-Sensitive Sites					Land Area Outside the Airport Boundary (Sq. Miles)		
	Transient Lodging	School	Place of Worship	Daycare	Total	Compatible	Noncompatible	Total
2021 Baseline	1	2	1	1	5	0.364	0.040	0.404
TEB Noise Abatement Measure 2	1	2	1	1	5	0.365	0.038	0.403
Change from Baseline	0	0	0	0	0	0.001	-0.002	-0.001

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change within the 65 DNL contour, green indicates a reduction within the 65 DNL contour and red indicates an increase within the 65 DNL contour.

Conclusions: *TEB Noise Abatement Measure 2: Encourage Intersection Departures from Taxiway K on Runway 1 at Night* could reduce the number of people exposed to 65 DNL or higher by as much as 56.

Relocating the start of nighttime aircraft departures further away from noncompatible land use south of Moonachie Ave could be an effective way to reduce noise over noncompatible land use south of Runway 1 and would not negatively affect safety or the usage of the runway.

Table 2-7: Implementation Summary for TEB Noise Abatement Measure 2: Encourage Intersection Departures from Taxiway K on Runway 1 at Night
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	Reduction of up to 56 people in 23 dwelling units exposed to 65 DNL or higher with 80 percent of the aircraft departing from Taxiway K on Runway 1 at night.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 2 because it could be an effective way to reduce noise levels experienced at residential land uses south of Runway 1.
Responsible Parties	The development, safety review, environmental review, and the decision whether to implement flight procedures consistent with procedure development criteria is the sole responsibility of the FAA. The Port Authority will request that FAA initiate the development process for this measure and will then work with FAA personnel to implement the measure.
Estimated Costs	The expected costs associated with the development and implementation of this measure is unknown and internal to the FAA (e.g., Air Traffic Organization) and other coordinating agencies. An FAA Airport Improvement Program grant would not be required.
Funding Sources	The FAA.
Requirements	FAA approval of this measure. TEB ATCT to incorporate into Standard Operating Procedures and the Port Authority to update airfield signage and pilot information.
Estimated Schedule	The Port Authority to submit a request for its development within six to twelve months of the FAA's Record of Approval for the NCP. FAA design, testing and implementation of the measure typically could take at least one year once the Port Authority requests initiation of the development process.

TEB Noise Abatement Measure 3: Design and Implement a Centralized Aircraft Run-up Pad

This measure would relocate all aircraft maintenance run-ups[36] to a centralized aircraft run-up pad adjacent to Taxiway Q as shown in Figure 2-7 on page 2-29. Maintenance run-ups currently occur most frequently at the northern end of the airfield on the Alpha Pad and less frequently at the eastern end of the airfield at the Taxiway G ramp, and at the southern end of the airfield on the Taxiway L ramp. Each of these locations is close to the perimeter of the airport. The centralized location would move the runups away from the airport perimeter and keep them close to the main ramp area. Port Authority regulations at TEB restrict all maintenance run-ups to daytime hours, as described in TEB Noise Abatement Measure 10. If the centralized run-up pad is constructed, the existing mandatory measure preferred run-up location and heading would be amended. Figure 2-7 shows the locations of the current run-up pads and the proposed centralized aircraft run-up pad adjacent to Taxiway Q.

The Port Authority and TAC determined that if a centralized aircraft run-up pad were available at TEB, then it would be used for all run-ups. This was discussed during TAC Meeting #7. Notes for this meeting are available in Appendix D.3 on page D-144. Modeling results were presented, and those findings can be found in Appendix D.2, beginning on page D-19 where results of the run-up enclosure modeling were presented. A modeling scenario was created that assumed 100 percent usage of a centralized aircraft run-up pad, with 95 percent of aircraft facing a 240° heading during the run-up and, five percent of aircraft facing a 60° heading during the run-up. The heading percentages (95 percent at 240° and 5 percent at 60°) are the same as the percentages combined from the existing locations and were developed from TEB run-up logs. This scenario represents the maximum noise benefit from this measure, assuming exclusive use of the centralized aircraft run-up pad. Both TEB and the City of Teterboro support implementation of an exclusive centralized aircraft run-up pad. The City of Teterboro expressed that the current Alpha pad run-ups cause disruptions at the courthouse across the street, and further, elimination of the run-ups on Taxiway L could have a noise benefit to the mobile home park.

Run-up durations for the model were based on actual run-up data (recorded in run-up data logs), which ranged from one second to one hour with the most common duration being five minutes. The only differences between the baseline 2021 and the modeled scenario for TEB Noise Abatement Measure 3 are the location of the centralized aircraft run-up pad and the heading of the aircraft; the number of run-ups, aircraft types and durations evaluated are the same. Figure 2-8 on page 2-31 depicts the shift of the 65 DNL contour due to 100 percent use of a centralized aircraft run-up pad adjacent to Taxiway Q. A small reduction of area within the 65 DNL contour over noncompatible land use south of Moonachie Avenue in the mobile home park is shown in Figure 2-9 on page 2-33.

[36] Aircraft maintenance run-ups are test runs of the engines while the aircraft is on the ground usually conducted at a designated location.

The Port Authority developed costs to design and construct a centralized aircraft run-up pad. The estimation for construction cost was approximately $8,000,000 (in 2018 dollars). This total was adjusted to 2019 dollars and includes soft costs (project administration, legal, etc.) associated with this project. Soft costs are estimated at 30 percent of construction costs, plus an additional 15 percent, which was added for unforeseen conditions that may be encountered during construction. In total, the Port Authority estimates a cost of approximately $8,525,000 (in 2019 dollars) to construct a centralized aircraft run-up pad (construction costs plus soft costs).

Table 2-8 displays the reduction in dwelling units and population compared to the 2021 baseline NEM for TEB Noise Abatement Measure 3. Table 2-9 displays no change in noise sensitive sites and a reduction in land area outside the airport boundary when comparing TEB Noise Abatement Measure 3 to the 2021 baseline. The results show that TEB Noise Abatement Measure 3 could decrease dwelling units by five and population by 13 within the 65 DNL contour compared to the 2021 baseline.

The TAC expressed support for implementation of a centralized aircraft run-up pad along Taxiway Q so long as aircraft can safely use the location during the permitted hours at TEB. Relocation of maintenance run-ups to the center of the airfield could address resident requests, received by way of discussion with the City of Teterboro, discussion with the public at the public workshop where the NEM was presented (TEB Public Information Workshop No. 2 on September 22, 2016,[37] as well as discussions with the TEB TAC at meetings #6 and #7).[38]

Table 2-10 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 3.

[37] Public workshop information is available in Appendix G – Public Outreach for TEB Public Workshop #2 and Public Comments are available in Appendix H – Public Comments available in the Teterboro Airport Final Noise Exposure Map at the following link: http://panynjpart150.com/TEB_FNEM.asp

[38] Presentations for TAC meetings can be found in Appendix D.2, beginning on page D-7 and summaries of TAC meetings can be found in Appendix D.3 beginning on page D-137.

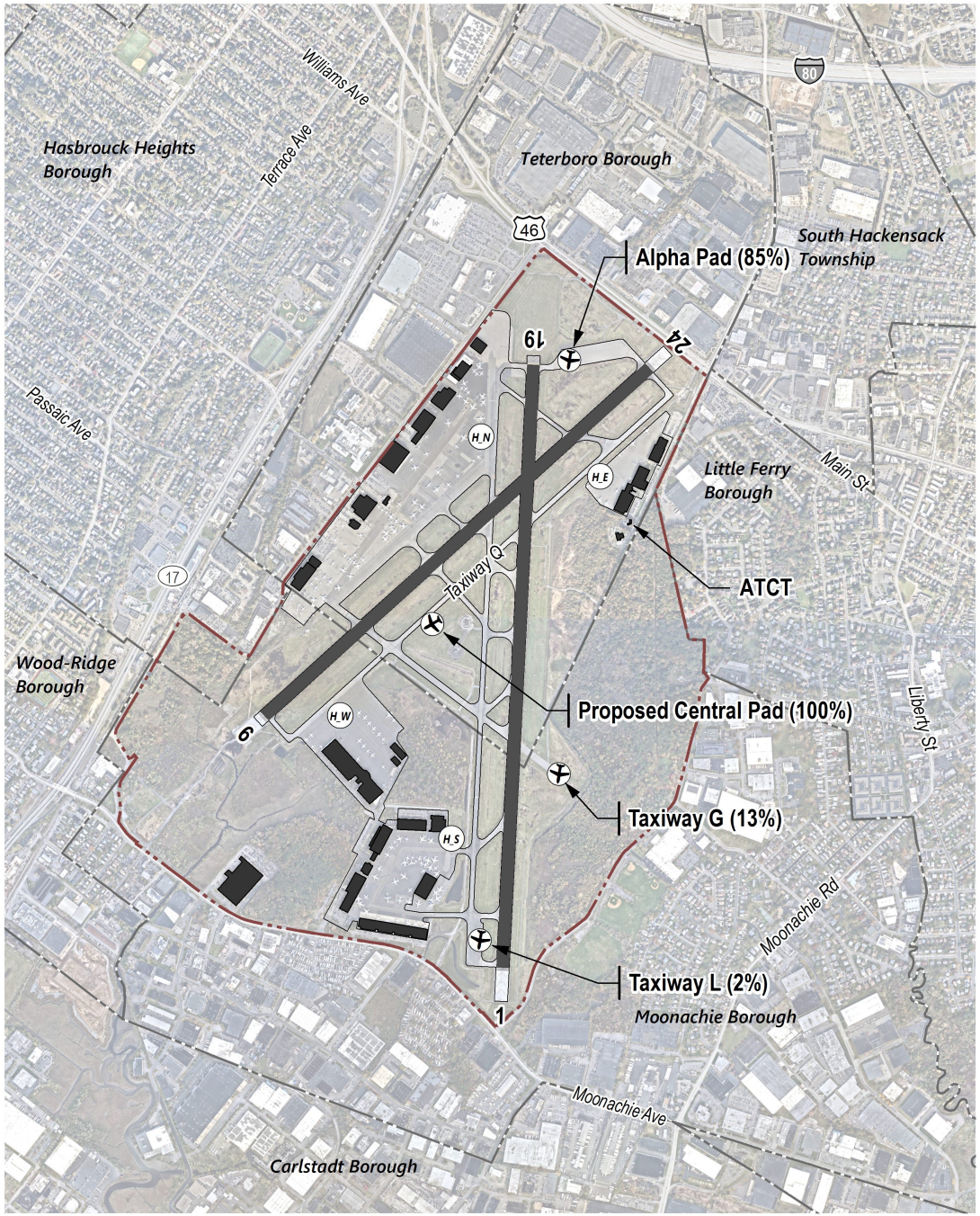

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Figure 2-7

Existing and Proposed Maintenance Run-up Locations

- TEB Airport Boundary (Approximate)
- Runway
- Buildings
- Helicopter Pad Location
- Run-up Location (Pad Usage)

Aircraft Orientation
- Alpha Pad -190°
- Taxiway G - 010° or 190°
- Taxiway L - 190°
- Proposed Central Pad - 240° or 60°

ATCT – Air Traffic Control Tower

- Municipal Boundary

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New Jersey Geographic Information Network (NJGIN)

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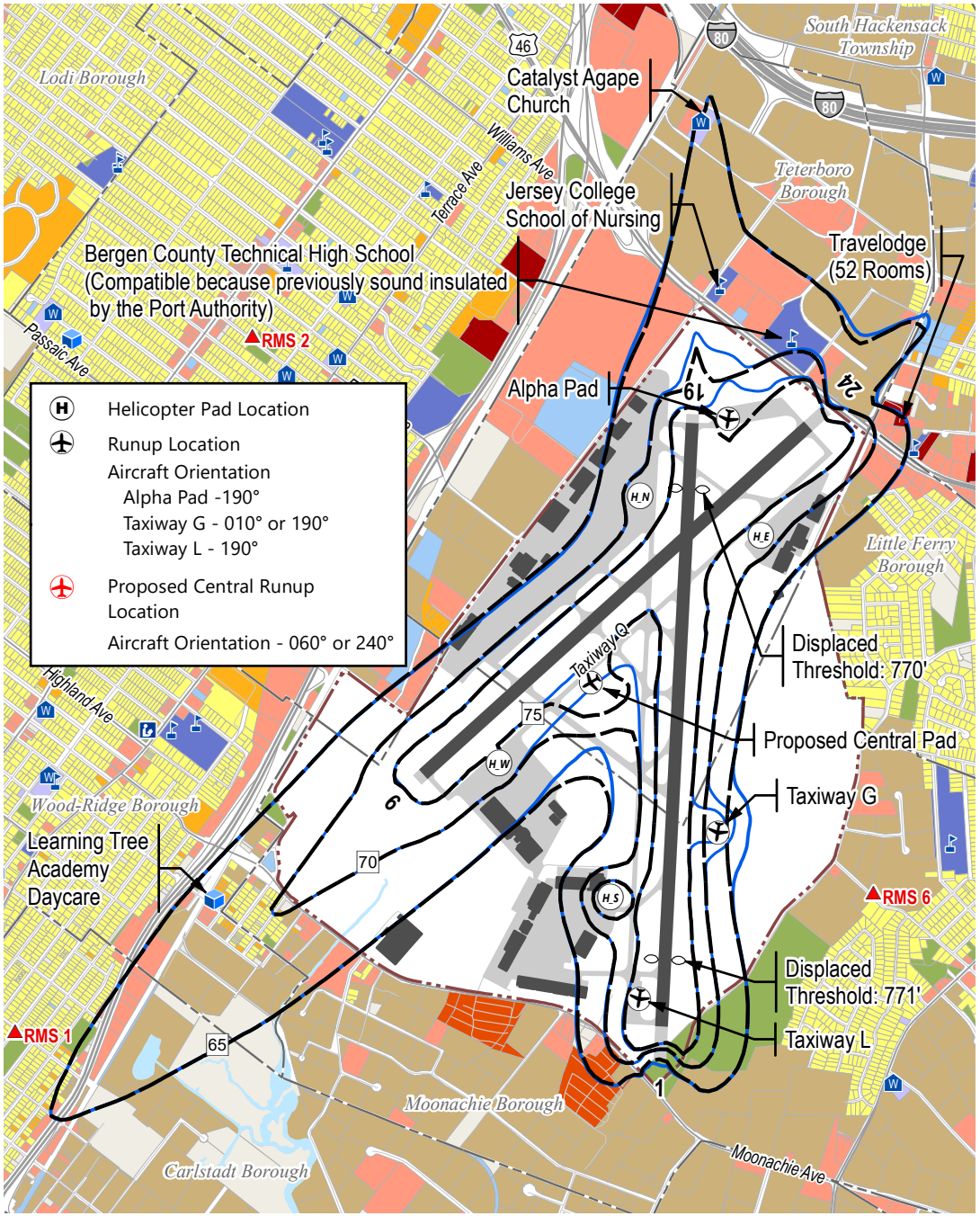

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Figure 2-8

Hypothetical 2021 DNL with Centralized Run-up Facility Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- Daycare
- Library
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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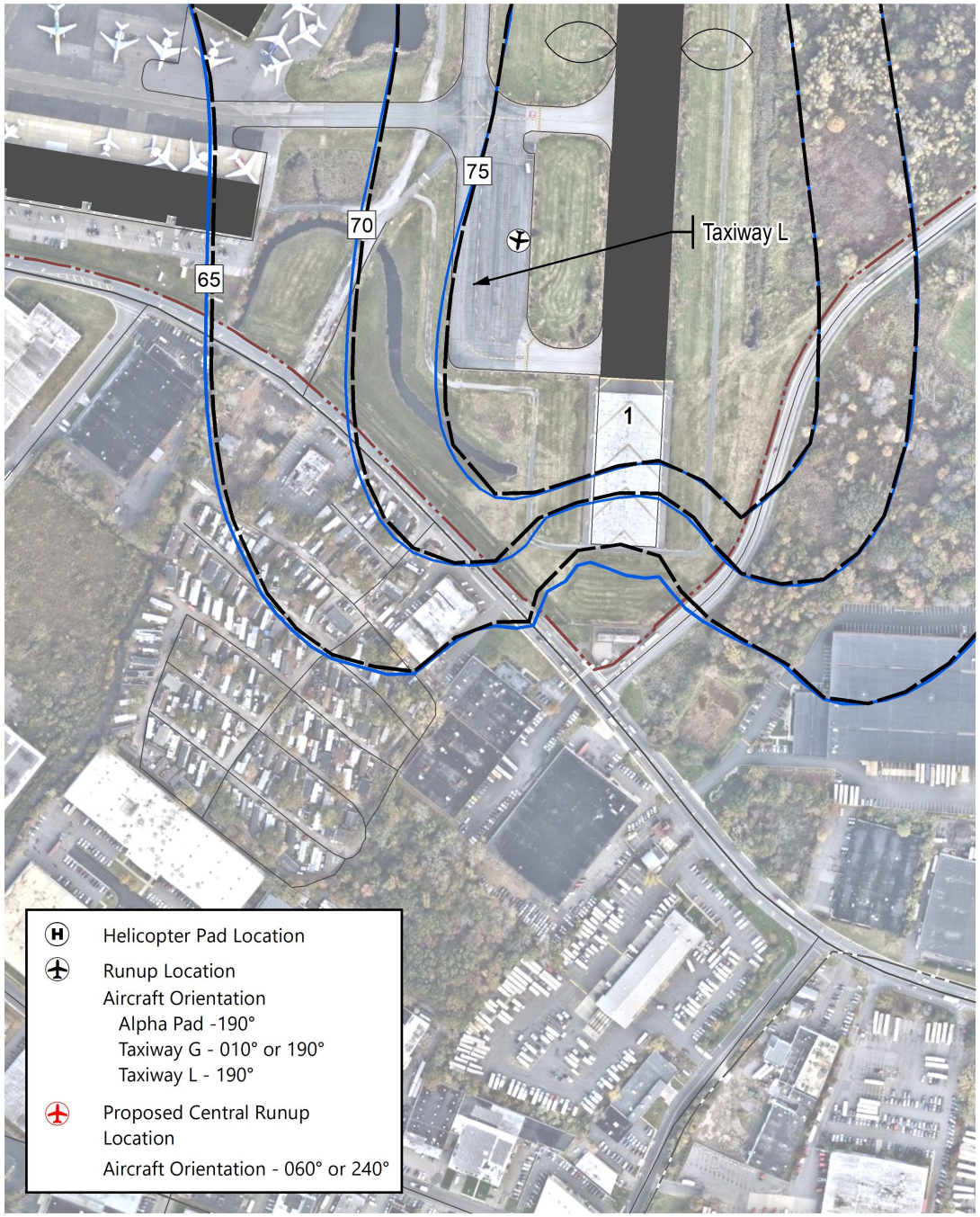

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Figure 2-9

Hypothetical 2021 DNL with Centralized Run-up Pad Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Highway
- Major Roads
- Minor Roads
- School
- Library
- Daycare
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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Table 2-8: Estimated Dwelling Units and Population Counts for 2021 Baseline and Design and Implement a Centralized Aircraft Run-up Pad (TEB Noise Abatement Measure 3) within Different Noise Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are by dwelling unit or population within the DNL contour interval notated)	Number of Dwelling Units			Population		
	65-70	70+	Total	65-70	70+	Total
2021 Baseline	180	16	196	436	39	475
TEB Noise Abatement Measure 3	179	12	191	433	29	462
Change from Baseline	-1	-4	-5	-3	-10	-13

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change in dwelling units or population within the 65 DNL contour, green indicates a reduction in dwelling units or population within the 65 DNL contour and red indicates an increase in dwelling units or population within the 65 DNL contour.

Table 2-9: Estimated Noise-Sensitive Site Counts and Land Area for 2021 Baseline and Design and Implement a Centralized Aircraft Run-up Pad (TEB Noise Abatement Measure 3) within Different Noise Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are within the 65 DNL contour)	Number of Noise-Sensitive Sites					Land Area Outside the Airport Boundary (Sq. Miles)		
	Transient Lodging	School	Place of Worship	Daycare	Total	Compatible	Noncompatible	Total
2021 Baseline	1	2	1	1	5	0.364	0.040	0.404
TEB Noise Abatement Measure 3	1	2	1	1	5	0.356	0.039	0.395
Change from Baseline	0	0	0	0	0	-0.008	-0.001	-0.009

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change within the 65 DNL contour, green indicates a reduction within the 65 DNL contour and red indicates an increase within the 65 DNL contour.

Conclusions: *TEB Noise Abatement Measure 3: Design and Implement a Centralized Aircraft Run-up Pad* could reduce the number of people exposed to 65 DNL or higher by 13 and contain all contributions to the 65 DNL contour associated with run-up noise within the airport property.

Removing run-ups from the Taxiway L location could shift the DNL contour slightly within the mobile home park located south of Runway 1. It could also result in a benefit to the Teterboro Municipal Courthouse and Bergen County Technical High School (previously sound insulated by the Port Authority) north of the Alpha Pad.

Table 2-10: Implementation Summary for TEB Noise Abatement Measure 3: Design and Implement a Centralized Aircraft Run-up Pad
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	Reduction of up to 13 people in 5 dwelling units exposed to 65 DNL or higher with 100 percent of the aircraft using a centralized aircraft run-up pad.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 3 because it could reduce noise levels over residential land use south of Runway 1.
Responsible Parties	The Port Authority following an update to the Airport Layout Plan (ALP) and environmental studies satisfying the National Environmental Policy Act (NEPA) could complete implementation and construction of a centralized run-up pad. Construction of the pad is the responsibility of the Port Authority.
Estimated Costs	An ALP update, the associated environmental review, and construction costs would be approximately $8,525,000, including a 30 percent soft cost estimate and a 15 percent contingency cost.
Funding Sources	90 percent FAA Airport Improvement Program and 10 percent Port Authority.
Requirements	FAA approval of this measure. The Port Authority to complete full design of the proposed run-up location, ALP update and NEPA analysis.
Estimated Schedule	Within two years of FAA approval of the measure, the Port Authority will attempt to initiate an update to the ALP. The ALP update may also require a NEPA evaluation, which could together take one to three years. The NEPA time-frame is heavily dependent on permitting associated with wetlands at TEB. Once the run-up area is constructed, the Port Authority will amend the mandatory run-up measure preferred location list to include the central run-up location.

TEB Noise Abatement Measure 4: Implement an Offset Approach Procedure to Runway 19

This measure would implement an offset approach procedure to Runway 19. An offset approach is a procedure that approaches the runway at a specified angle to the extended centerline of the runway.

Well before the Part 150 Study, TANAAC proposed development of an offset approach to Runway 19. The goal of the TANAAC proposal was to reduce noise, and redirect overflights away from the Hackensack University Medical Center (located to the north of Runway 19).

Independent of the Part 150 Study, and based on the TANAAC proposal, the FAA developed an offset visual approach to Runway 19 in 2016 ("2016 Offset Visual"),[39] and planned a six-month flight test of the procedure. Due to complications with pilots having to manually code the procedure in the aircraft[40] resulting in little use of the procedure as designed, the FAA abandoned the flight test and has not implemented the 2016 Offset Visual as designed.[41] Further evaluation and details of the 2016 Offset Visual are provided in Appendix C.2 on page C-24. As part of the Part 150 Study, the TAC suggested an offset instrument landing system (ILS) approach procedure to Runway 19, which could reduce noise and aircraft overflights over densely populated areas north of TEB and at the Hackensack University Medical Center. This procedure is different than the 2016 Offset Visual as it is an instrument approach. Implementing an instrument approach allows pilots to use it at night and in reduced visibility conditions. The initial flight path will be a straight-line offset from the runway centerline by a specified set of degrees and would not turn to follow State Route 17 like the 2016 Offset Visual. This offset procedure is conceptual and would require further evaluation and design by the FAA as the procedure would need to remain clear of obstacles such as the WABC antenna.

To analyze the potential benefits of implementing TEB Noise Abatement Measure 4, the proposed approach was modeled with various aircraft use percentages at a hypothetical 20° offset ILS from the runway with alignment to the Runway 19 centerline one nautical mile from the runway threshold, as shown in Figure 2-10 on page 2-39.

The evaluation of an offset ILS approach procedure to Runway 19 examined both a hypothetical 25 percent[42] and 50 percent usage of all jet arrivals (day and night) on the model flight track shown in Figure 2-10. An offset ILS of 20° would place the hypothetical arrival procedure approximately over the Route 17 corridor which is an area of lower population density. Both usage rates of the offset ILS approach showed minimal changes to the 65 DNL contour. The changes to the 65 DNL contour are north of the airport and over primarily compatible land use. The shift in the contour is in the area of a noise sensitive site (church); however, the shift is small and the 65 DNL contour still encompasses the area of the church. There is no change to noise sensitive sites or noncompatible land use within the 65 DNL contour due to this noise abatement measure; therefore, this measure provides no benefit within the 65 DNL. Figure 2-11 on page 2-41 and Figure 2-12 on page 2-43 display the shift of the tip of the 65 DNL contour slightly to the west on the north side of the airport, if 50 percent of all jet arrivals (day and night) were to use the offset ILS approach procedure to Runway 19.

[39] Quiet Visual RWY 19

[40] Instead of selecting the available procedure in the aircraft computer, the pilot would have to manually enter each step of the procedure into the aircraft's computer.

[41] FAA. June 15, 2017. TEB Quiet Visual Rwy 19 6-month Test Results. http://teterborousersgroup.org/wp-content/uploads/2017/09/TEB-Quiet-Visual-RWY-19-Test-Presentation-20170615-v4.pdf

[42] See Appendix C.2 on page C-19 for supplemental analysis on TEB Noise Abatement Measure 4

Based on TANAAC requests, the FAA has continued to develop designs for a potential offset approach procedure to Runway 19, including a procedure that would be an RNAV (GPS) offset to the Instrument Landing System (ILS).

When modeling TEB Noise Abatement Measure 4, using an offset approach to Runway 19, would shift overflights away from the Hackensack University Medical Center.

As shown in Table 2-11, modeling shows that the implementation of an offset approach to Runway 19 results in no change to dwelling units or population in the 65 DNL or higher contours. Table 2-12 displays no change in noise sensitive sites and a reduction in land area outside the airport boundary when comparing TEB Noise Abatement Measure 4 to the 2021 baseline.

The TAC is supportive of implementing an offset approach to TEB Runway 19 so long as the FAA can design a procedure the aircraft operators can fly comfortably and safely. The public and TANAAC support positioning flight tracks over compatible land use and away from the Hackensack University Medical Center. While the Port Authority and the TAC support measures to reduce overflights of the Hackensack University Medical Center these measures will have to be fully evaluated within FAA guidelines before they could be implemented. This measure is consistent with such public requests.

FAA continued to develop a version of this procedure outside of the Part 150 process. The FAA developed an offset approach procedure called RNAV (GPS) X Rwy 19 that uses satellite-based technology to guide aircraft along a pathway that generally follows New Jersey State Route 17 to Runway 19. The FAA completed design and the environmental review of this proposed procedure in 2020. The RNAV (GPS) X Rwy 19 approach has been published and available for use since July 1, 2021.

The FAA RNAV (GPS) X RWY 19 is similar to NCP Noise Abatement Measure 4; however, it is GPS based (not an instrument landing system (ILS) procedure as recommended in Noise Abatement Measure 4) and follows a slightly different route to Runway 19 than the notional procedure depicted in Noise Abatement Measure 4.

Table 2-13 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 4.

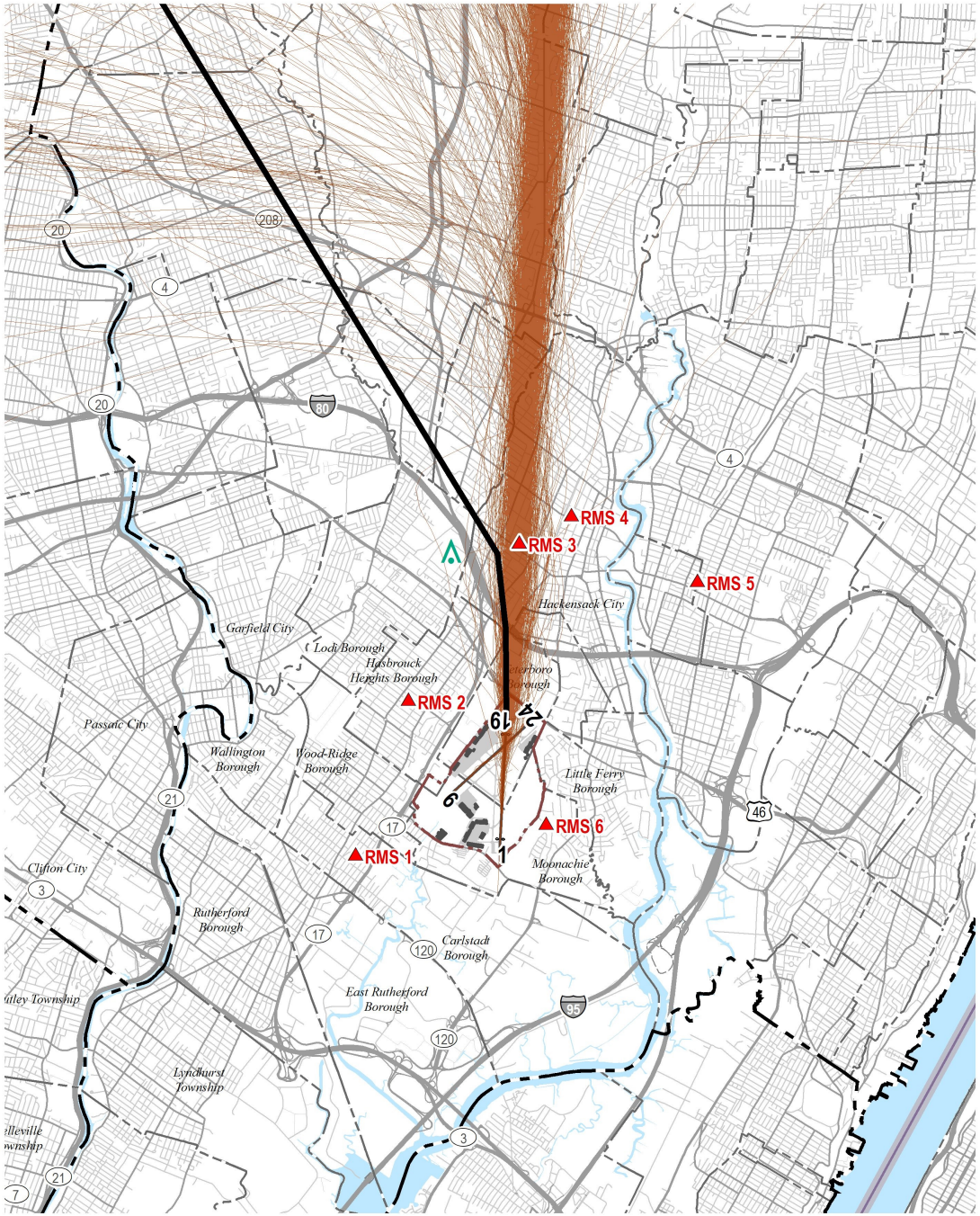

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Figure 2-10

Runway 19 Arrival
Existing Radar Tracks and
Average Offset Approach Flight Path

- Offset Approach Track
- Existing Jet Radar Tracks
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- WABC Antenna (694' AGL)
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Note: RMS3 is located on the roof of the Hackensack University Medical Center

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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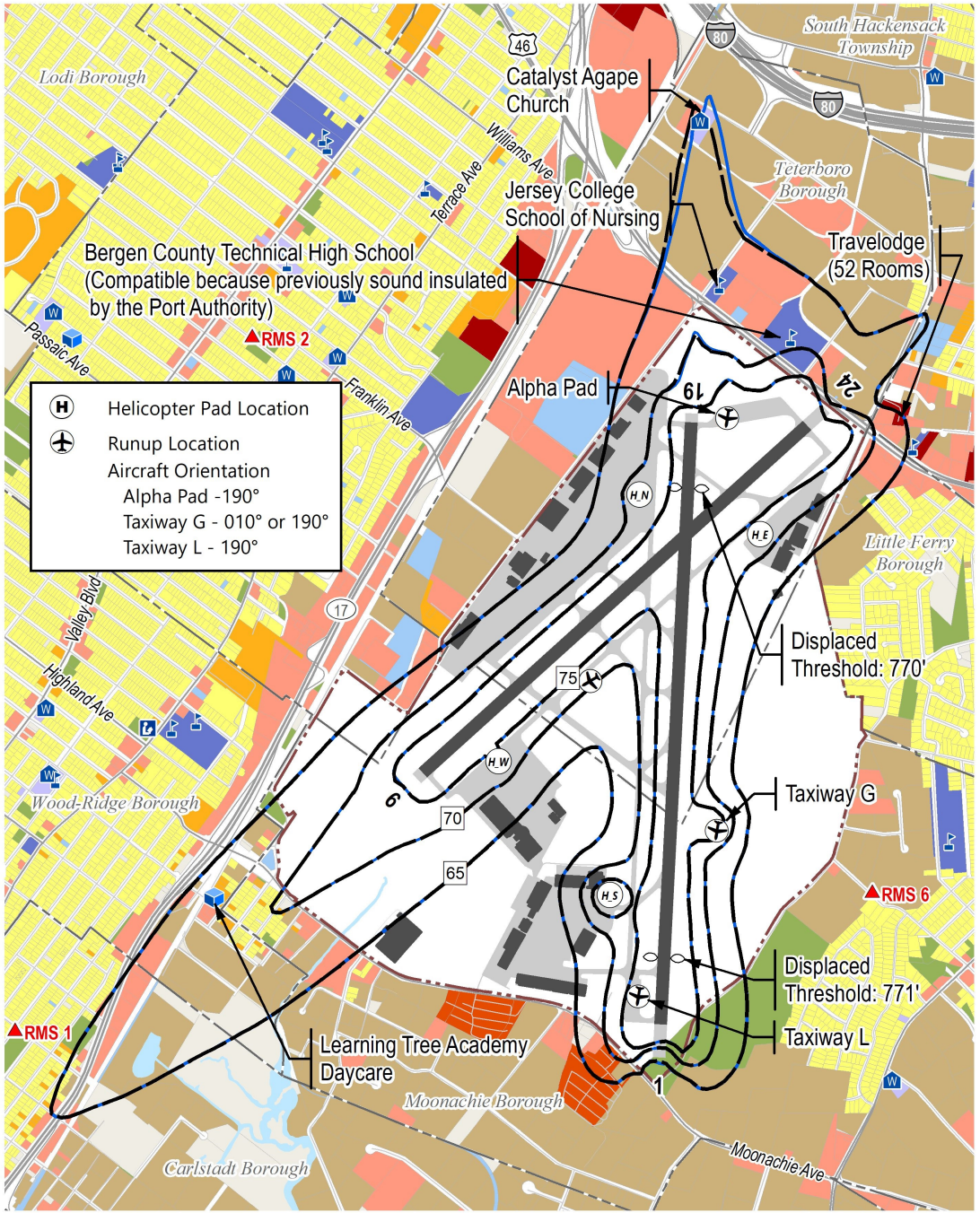

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Figure 2-11

Hypothetical 2021 DNL with Runway 19 Offset Approach Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- Daycare
- Library
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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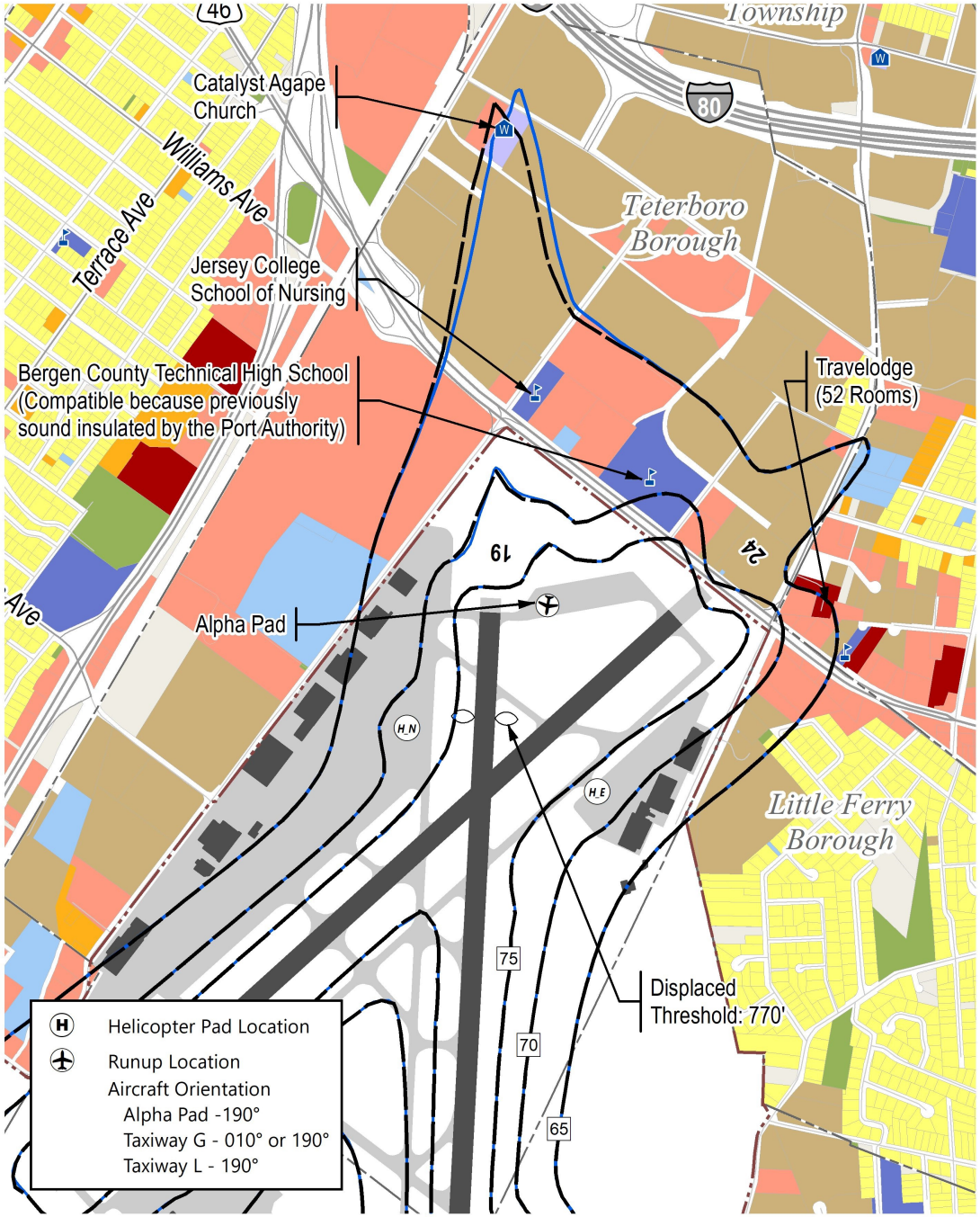

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Figure 2-12

Hypothetical 2021 DNL with Runway 19 Offset Approach Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- Daycare
- Library
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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Table 2-11: Estimated Dwelling Units and Population Counts for 2021 Baseline and Implement an Offset Approach Procedure to Runway 19 (TEB Noise Abatement Measure 4) within Different Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are by dwelling unit or population within the DNL contour interval notated)	Number of Dwelling Units			Population		
	65-70	70+	Total	65-70	70+	Total
2021 Baseline	180	16	196	436	39	475
TEB Noise Abatement Measure 4	180	16	196	436	39	475
Change from Baseline	0	0	0	0	0	0

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change in dwelling units or population within the 65 DNL contour, green indicates a reduction in dwelling units or population within the 65 DNL contour and red indicates an increase in dwelling units or population within the 65 DNL contour.

Table 2-12: Estimated Noise-Sensitive Site Counts and Land Area for 2021 Baseline and Implement an Offset Approach Procedure to Runway 19 (TEB Noise Abatement Measure 4) within Different Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are within the 65 DNL contour)	Number of Noise-Sensitive Sites					Land Area Outside the Airport Boundary (Sq. Miles)		
	Transient Lodging	School	Place of Worship	Daycare	Total	Compatible	Noncompatible	Total
2021 Baseline	1	2	1	1	5	0.364	0.040	0.404
TEB Noise Abatement Measure 4	1	2	1	1	5	0.341	0.037	0.378
Change from Baseline	0	0	0	0	0	-0.023	-0.003	-0.026

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change within the 65 DNL contour, green indicates a reduction within the 65 DNL contour and red indicates an increase within the 65 DNL contour.

Conclusions: *TEB Noise Abatement Measure 4: Implement an Offset Approach Procedure to Runway 19* would not result in any reduction of population or noise-sensitive locations exposed to 65 DNL or higher. However, it could reduce noise levels over the Hackensack University Medical Center by shifting aircraft overflights to an arrival path along the Route 17 corridor with lower population density.

An offset approach procedure to Runway 19 offers potential noise benefit to residential areas north of the airport and the reduction of overflights of the Hackensack University Medical Center. Changes to the 65 DNL contour would be minimal and would occur mainly over compatible land use north of Runway 19. The Port Authority continues to support implementation of this measure by the FAA.

Table 2-13: Implementation Summary for TEB Noise Abatement Measure 4: Implement an Offset Approach Procedure to Runway 19
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	No reduction of people or dwelling units exposed to 65 DNL or higher with either the visual offset approach or the offset ILS approach. However, it could reduce the number of overflights of Hackensack University Medical Center and could shift aircraft overflights along Route 17 with lower population exposure.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 4 because it could reduce overflights of the Hackensack University Medical Center and shift flight paths over compatible land use north of the airport.
Responsible Parties	The development, safety review, environmental review, and the decision whether to implement flight procedures consistent with procedure development criteria is the sole responsibility of the FAA. The Port Authority will request that FAA initiate the development process for this measure, then will work with ATCT and other FAA personnel to further study and develop this procedure. Implementation of this measure may require an environmental study as required under the National Environmental Policy Act (NEPA); the FAA would be the responsible party to complete such a study.
Estimated Costs	The expected costs associated with the development and implementation of this procedure are unknown and internal to the FAA (e.g., Air Traffic Organization) and other coordinating agencies. An FAA Airport Improvement Program grant would not be required.
Funding Sources	The FAA.
Requirements	FAA approval of this measure. The Port Authority supports FAA development of an offset ILS approach to Runway 19. Implementation may require an environmental study under NEPA.
Estimated Schedule	The Port Authority to submit a request for its development within six to twelve months of the FAA's Record of Approval for the NCP. FAA design, testing and implementation of the procedure typically could take 18 to 24 months, potentially up to three years once the Port Authority requests initiation of the development process.

TEB Noise Abatement Measure 5: Implement an Offset Approach Procedure to Runway 6

This measure would implement an offset approach procedure to Runway 6 that was proposed by community members who participated in the TEB NEM Public Workshop. Community members also proposed this procedure to the Port Authority, and it was discussed during the TAC meetings. As shown in Figure 2-13 on page 2-49, aircraft approaching Runway 6 would fly aircraft approaching Runway 6 would fly to the east of Lyndhurst and Rutherford over mostly compatible land uses before rejoining the ILS approach and lining up with the runway centerline near the intersection of Routes 17 and 120 in East Rutherford. The presence of obstructions (radio antennas) north of Route 120 and the Meadowlands does not allow aircraft to remain on the offset longer than the intersection of Routes 17 and 120 in East Rutherford. The TAC agreed this procedure could reduce overflights of residential areas and requested that the procedure be evaluated for the NCP.

To evaluate the proposed procedure, 100 percent usage of this procedure was modeled for all aircraft arriving on Runway 6. The results, as shown in Figure 2-14 on page 2-51, show no change to the 65 DNL contour. This is because the proposed procedure aligns aircraft with the runway centerline, to avoid obstructions, prior to reaching the edge of the 65 DNL contour. There is no change to noise sensitive sites or noncompatible land use within the 65 DNL contour due to this noise abatement measure therefore this measure provides no benefit within the 65 DNL. Table 2-14 displays the comparison of the 2021 baseline to TEB Noise Abatement Measure 5. Table 2-15 displays no change in noise sensitive sites and a reduction in land area outside the airport boundary when comparing TEB Noise Abatement Measure 5 to the 2021 baseline. TEB Noise Abatement Measure 5 would not result in any change of the 2021 baseline 65 DNL contour.

The TAC is supportive of implementing an offset approach to TEB Runway 6 so long as the FAA can design a procedure the aircraft operators can fly safely. The public has requested, by way of public comments to the TEB NEM, that flight tracks be positioned over compatible land use. This measure is consistent with such public requests.

Table 2-16 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 5.

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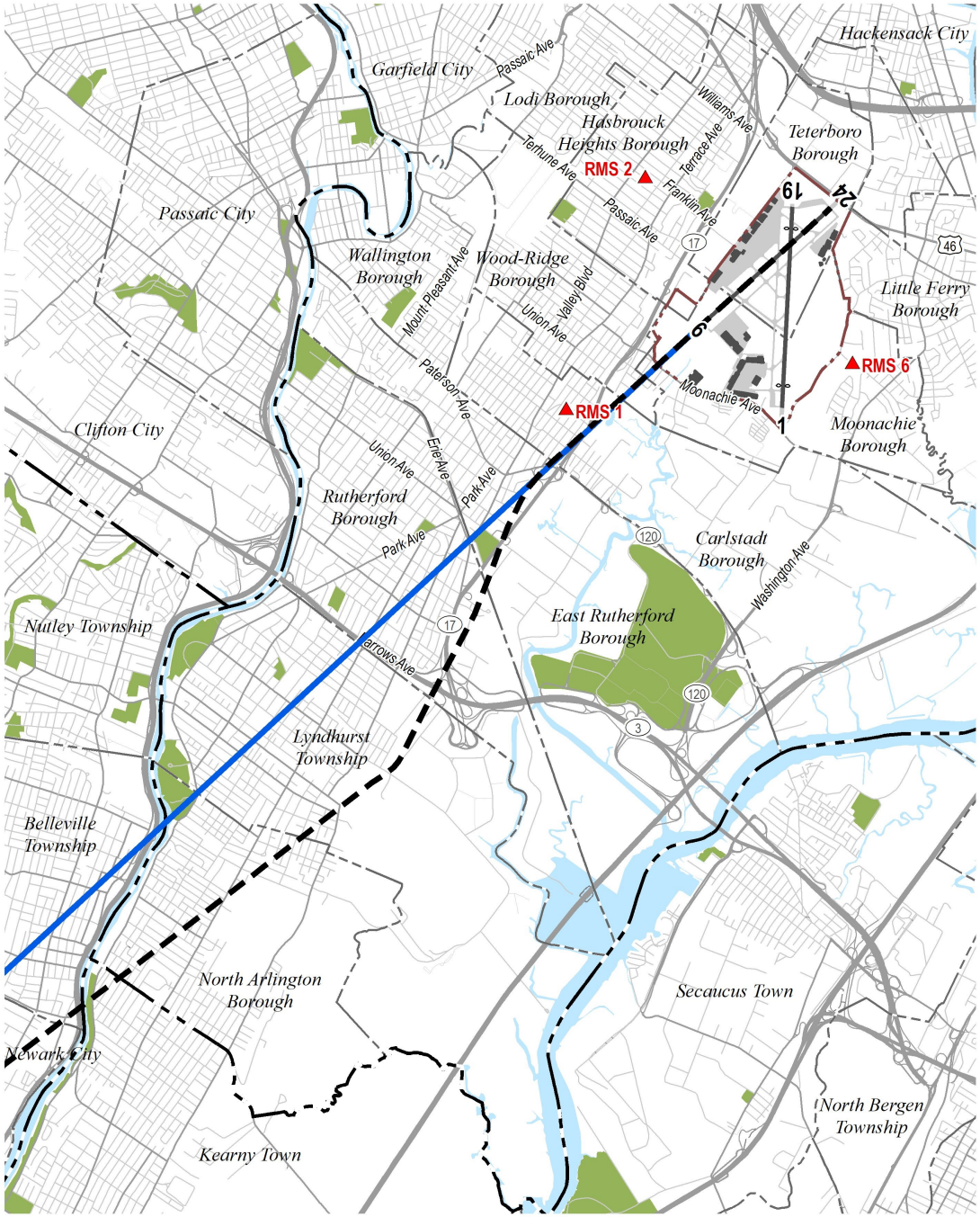

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Airport Noise Compatibility
Part 150 Study
2021 Noise Compatibility Program

Figure 2-13

Runway 6 Existing Approach Path and Offset Approach Flight Path

- Existing Approach Flight Path
- Offset Approach Flight Path
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

N

0 6,000 12,000 Ft

Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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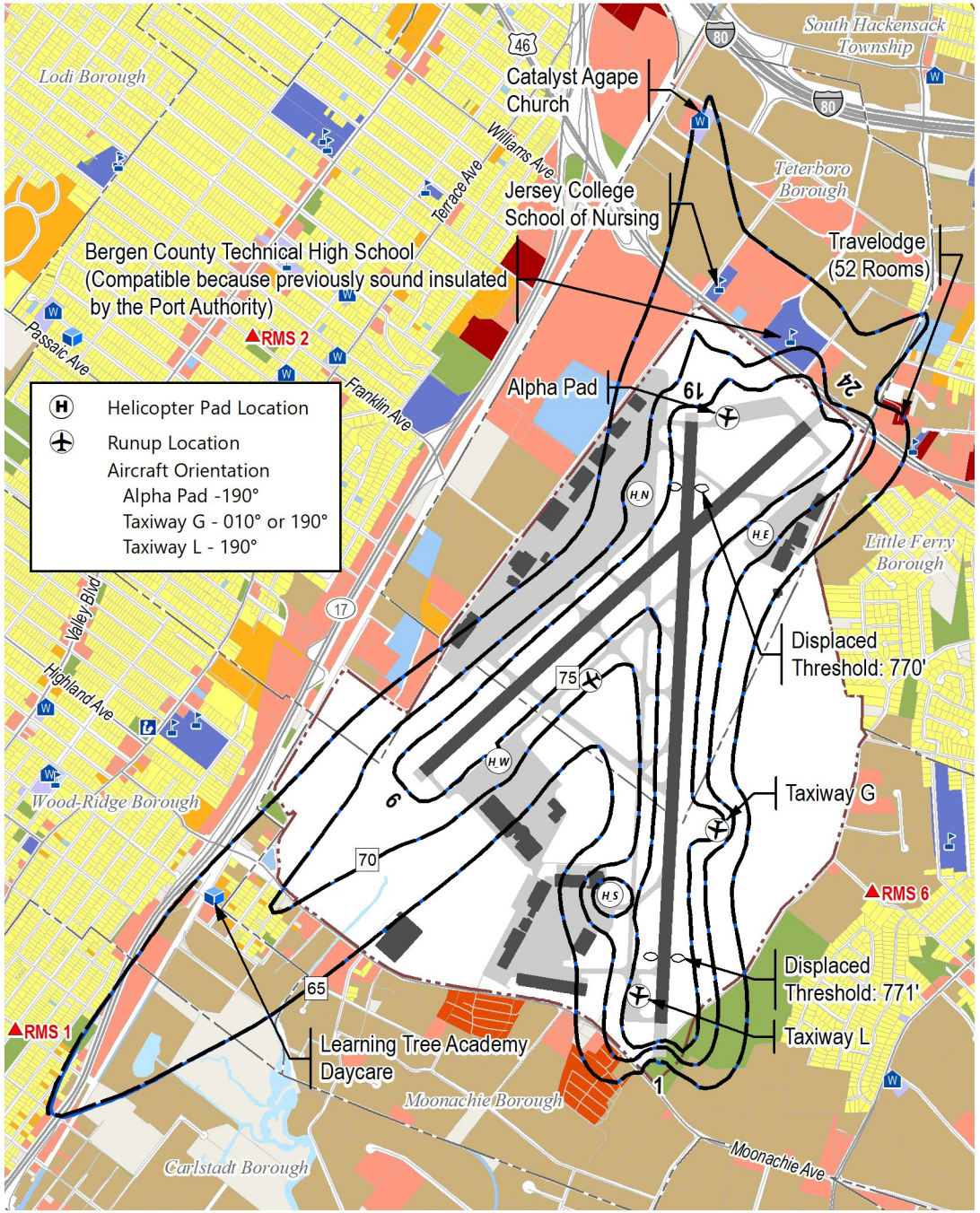

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Airport Noise Compatibility
Part 150 Study
2020 Noise Compatibility Program

Figure 2-14

Hypothetical 2021 DNL with Runway 6 Offset Approach Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- Daycare
- Library
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

N

0 2,000 4,000 Ft

Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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Table 2-14: Estimated Dwelling Units and Population Counts for 2021 Baseline and Implement an Offset Approach Procedure to Runway 6 (TEB Noise Abatement Measure 5) within Different Noise Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are by dwelling unit or population within the DNL contour interval notated)	Number of Dwelling Units			Population		
	65-70	70+	Total	65-70	70+	Total
2021 Baseline	180	16	196	436	39	475
TEB Noise Abatement Measure 5	180	16	196	436	39	475
Change from Baseline	0	0	0	0	0	0

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change in dwelling units or population within the 65 DNL contour, green indicates a reduction in dwelling units or population within the 65 DNL contour and red indicates an increase in dwelling units or population within the 65 DNL contour.

Table 2-15: Estimated Noise-Sensitive Site Counts and Land Area for 2021 Baseline and Implement an Offset Approach Procedure to Runway 6 (TEB Noise Abatement Measure 5) within Different Noise Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are within the 65 DNL contour)	Number of Noise-Sensitive Sites					Land Area Outside the Airport Boundary (Sq. Miles)		
	Transient Lodging	School	Place of Worship	Daycare	Total	Compatible	Noncompatible	Total
2021 Baseline	1	2	1	1	5	0.364	0.040	0.404
TEB Noise Abatement Measure 5	1	2	1	1	5	0.363	0.040	0.403
Change from Baseline	0	0	0	0	0	-0.001	0	-0.001

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change within the 65 DNL contour, green indicates a reduction within the 65 DNL contour and red indicates an increase within the 65 DNL contour.

Conclusions: *TEB Noise Abatement Measure 5: Implement Offset Approach Procedure to Runway 6* would not result in any reduction of population or noise-sensitive locations exposed to 65 DNL or higher. However, by shifting the approach over compatible land use east of Route 17 this procedure could reduce noise levels outside of the 65 DNL contour in residential areas of Lyndhurst and Rutherford. The Port Authority continues to support evaluation and implementation of this measure by the FAA.

Table 2-16: Implementation Summary for TEB Noise Abatement Measure 5: Implement Offset Approach Procedure to Runway 6
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	No reduction of people or dwelling units exposed to 65 DNL or higher. However, it could reduce the number of overflights of Lyndhurst and Rutherford residential areas and could shift aircraft overflights over compatible land use east of Route 17 with lower population exposure.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 5 because it is shown to be an effective way to reduce overflights of Lyndhurst and Rutherford residential areas and shift flight paths over compatible land use south of the airport.
Responsible Parties	The development, safety review, environmental review, and the decision whether to implement flight procedures consistent with procedure development criteria is the sole responsibility of the FAA. The Port Authority will request that FAA initiate the development process for this measure, then will work with ATCT and other FAA personnel to further study and develop this procedure. Implementation of this measure may require an environmental study as required under the National Environmental Policy Act (NEPA); the FAA would be the responsible party to complete such a study.
Estimated Costs	The expected costs associated with the development and implementation of this procedure are internal to the FAA (e.g., ATO) and other coordinating agencies. These costs are unknown and FAA Airport Improvement Program grant would not be required.
Funding Sources	The FAA.
Requirements	FAA approval of this measure. The Port Authority supports FAA development of an offset approach to Runway 6. Implementation may require an environmental study under NEPA.
Estimated Schedule	The Port Authority to submit a request for its development within six to twelve months of the FAA's Record of Approval for the NCP. FAA design, testing and implementation of the procedure typically could take 18 to 24 months, potentially up to three years once the Port Authority requests initiation of the development process.

TEB Noise Abatement Measure 6: Implement a Published Approach Procedure to Runway 1 and Increase Usage at Night

This measure would implement a published approach procedure to Runway 1 in order to increase arrival usage at night. A published approach procedure is a publicly available visual or instrument approach procedure with defined repeatable and predictable flight instructions published by FAA.[43] Currently, there is no published approach procedure (visual or instrument) to Runway 1. The ATCT instructs pilots using Runway 1 for arrivals to fly the Runway 6 ILS and then to circle to Runway 1. For noise abatement reasons, the preferred runway for arrivals to the north between 10 p.m. and 7 a.m. local time is Runway 1. The Port Authority and TAC members agree that a published approach procedure to Runway 1 could help increase use of Runway 1 at night. The use of Runway 1 at night would place arrivals over compatible land use for the majority of the approach to the runway. Conceptually, aircraft approaching Runway 1 would follow the Runway 6 approach and turn to the east to line up with runway centerline for Runway 1. Figure 2-15 on page 2-57 displays the proposed potential flight path to Runway 1.

To evaluate the proposed procedure, 10 percent[44] and 25 percent of Runway 6 approach operations were modeled on Runway 1 at night. The results shown below are for the 25 percent of Runway 6 approach operations modeled on approach to Runway 1 at night using the proposed flight path. The results showed little to no change to the area within the 65 DNL contour near the Runway 1 end but a slight reduction to the area within the 65 DNL south of Runway 6 as seen in Figure 2-16 on page 2-59 and Figure 2-17 on page 2-61. Results for both 10 percent and 25 percent of Runway 6 approach operations on Runway 1 at night provide a benefit within the 65 DNL contour by reducing noncompatible land use south of Runway 6 and no increase in noncompatible land use south of Runway 1.

Table 2-17 displays the modeled change in dwelling units and population compared to the 2021 baseline NEM for TEB Noise Abatement Measure 6. Table 2-18 displays no change in noise sensitive sites and a reduction in land area outside the airport boundary when comparing TEB Noise Abatement Measure 6 to the 2021 baseline. TEB Noise Abatement Measure 6 could remove seven dwelling units and 17 persons from within the 65 DNL contour compared to the 2021 baseline. The TAC is supportive of implementing a published procedure to TEB Runway 1 so long as the FAA can design a procedure the aircraft operators can fly safely. The public has requested, by way of public comments to the TEB NEM, that flight tracks be positioned over compatible land use. This measure is consistent with such public requests.

The TAC is supportive of implementing a published procedure to TEB Runway 1 so long as the FAA can design a procedure the aircraft operators can fly safely. The public has requested, by way of public comments to the TEB NEM, that flight tracks be positioned over compatible land use. This measure is consistent with such public requests. Table 2-19 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 6.

[43] All Published Charts for TEB are available at https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&nasrId=TEB#searchResultsTop

[44] See Appendix C.2 on page C-19 for supplemental modeling analysis on TEB Noise Abatement Measure 6

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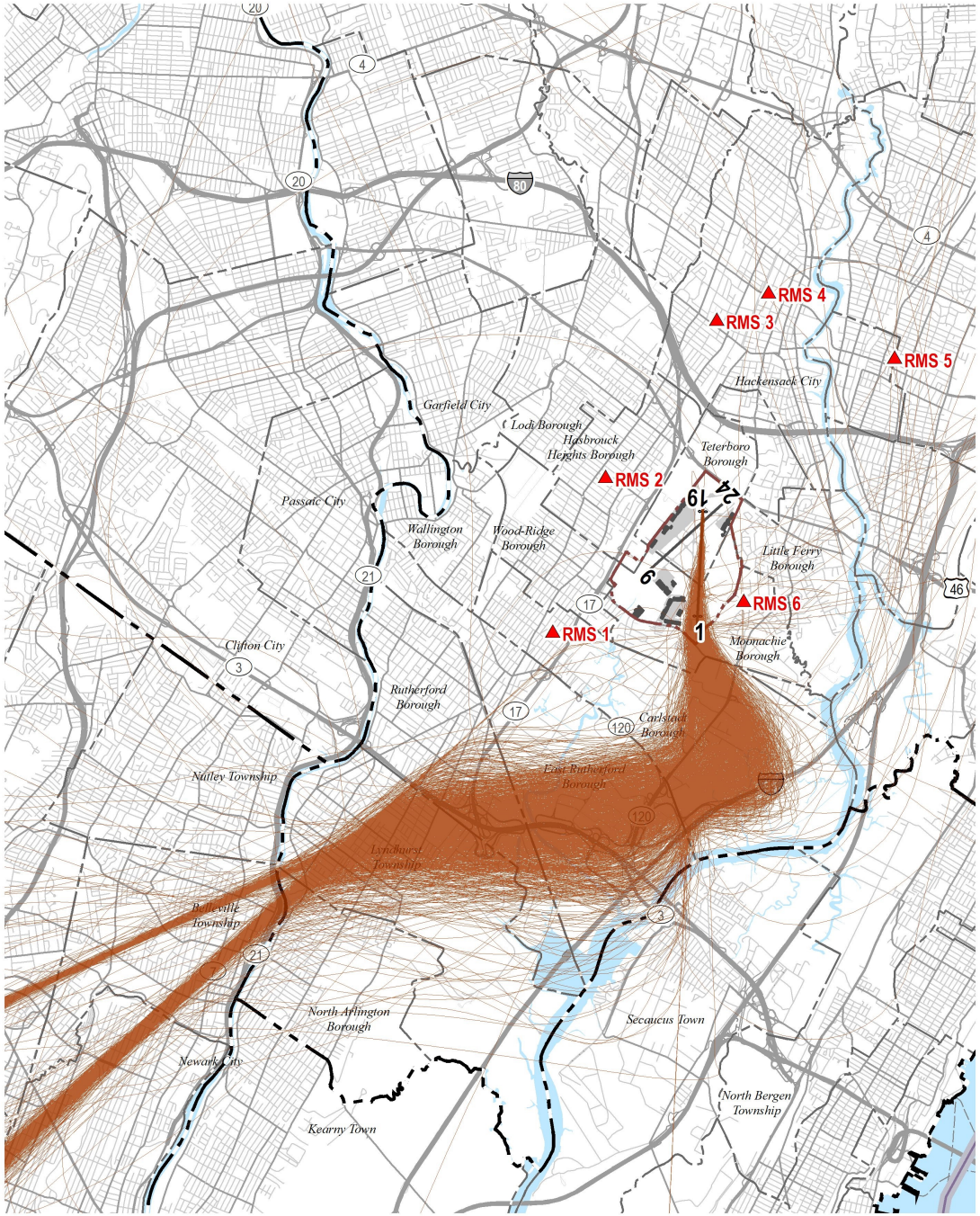

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Part 150 Study
2021 Noise Compatibility Program

Figure 2-15

Runway 1 Arrival
Existing Jet Radar Tracks and
Published Approach Procedure

- Proposed Published Arrival Route
- Existing Jet Radar Tracks
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

N

0 9,000 18,000 Ft

Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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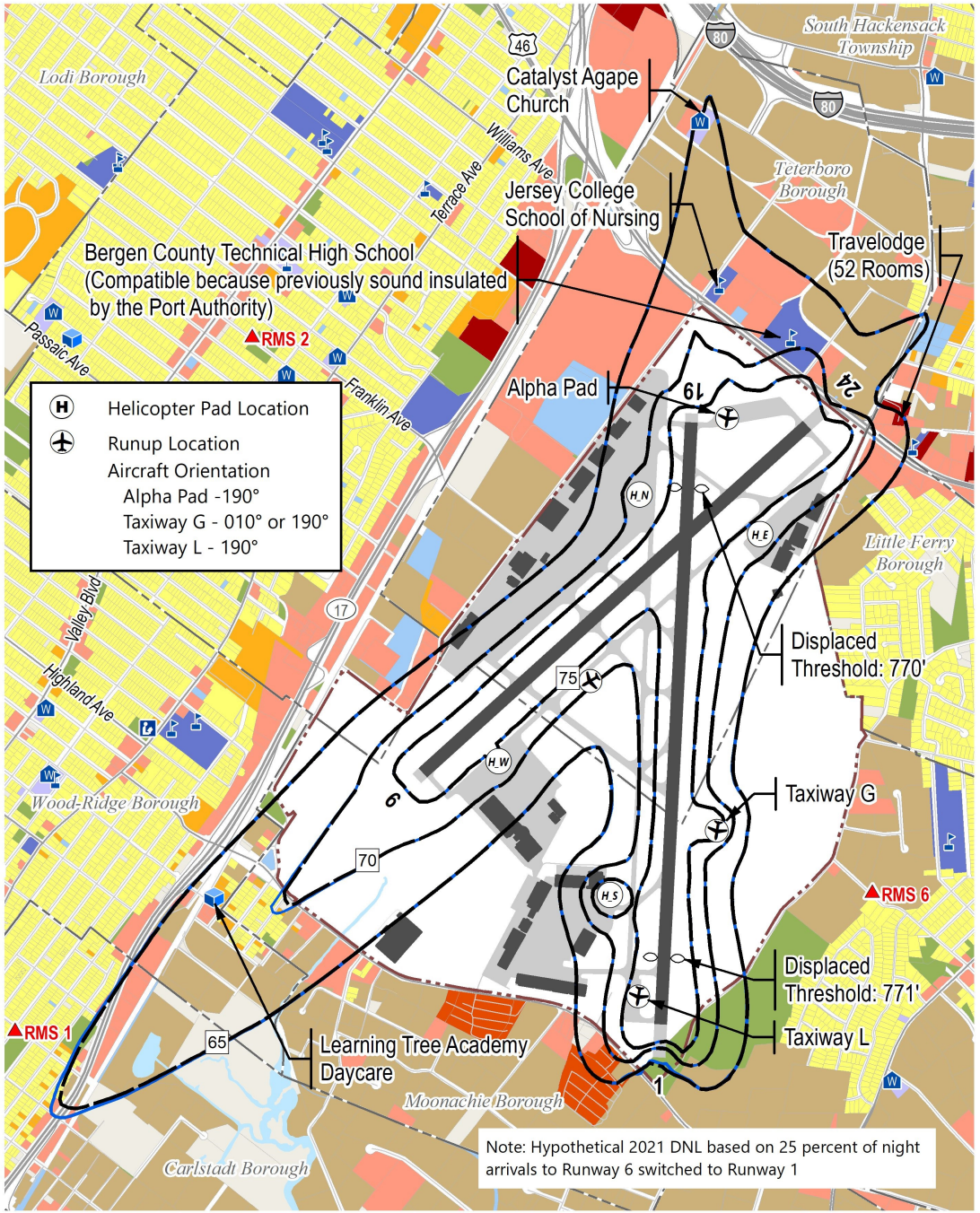

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Part 150 Study
2021 Noise Compatibility Program

Figure 2-16

Hypothetical 2021 DNL with Runway 1 Published Approach Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- Daycare
- Library
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

N

0 2,000 4,000 Ft

Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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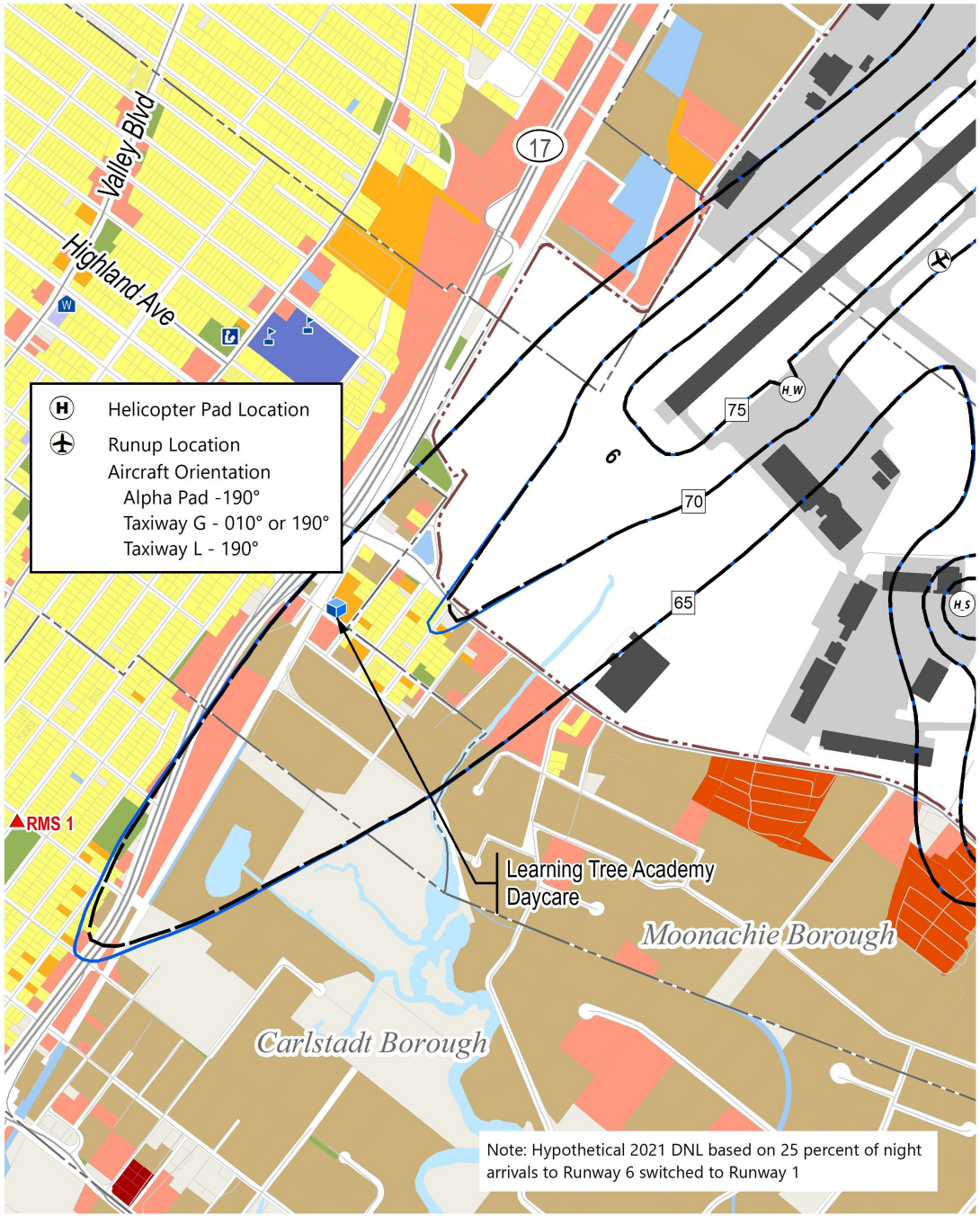

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Teterboro Airport

Airport Noise Compatibility
Part 150 Study
2021 Noise Compatibility Program

Figure 2-17

Hypothetical 2021 DNL with Runway 1 Published Approach Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- Daycare
- Library
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

N

0 1,250 2,500 Ft

Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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Table 2-17: Estimated Dwelling Units and Population Counts for 2021 Baseline and Implement a Published Approach Procedure to Runway 1 and Increase Usage at Night (TEB Noise Abatement Measure 6) within Different Noise Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are by dwelling unit or population within the DNL contour interval notated)	Number of Dwelling Units			Population		
	65-70	70+	Total	65-70	70+	Total
2021 Baseline	180	16	196	436	39	475
TEB Noise Abatement Measure 6	180	9	189	436	22	458
TEB Noise Abatement Measure 6 – Change South of Runway 6	0	-7	-7	0	-17	-17
TEB Noise Abatement Measure 6 – Change South of Runway 1	0	0	0	0	0	0
TEB Noise Abatement Measure 6 – Total change from Baseline	0	-7	-7	0	-17	-17

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change in dwelling units or population within the 65 DNL contour, green indicates a reduction in dwelling units or population within the 65 DNL contour and red indicates an increase in dwelling units or population within the 65 DNL contour.

Table 2-18: Estimated Noise-Sensitive Site Counts and Land Area for 2021 Baseline and Implement a Published Approach Procedure to Runway 1 and Increase Usage at Night (TEB Noise Abatement Measure 6) within Different Noise Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are within the 65 DNL contour)	Number of Noise-Sensitive Sites					Land Area Outside the Airport Boundary (Sq. Miles)		
	Transient Lodging	School	Place of Worship	Daycare	Total	Compatible	Noncompatible	Total
2021 Baseline	1	2	1	1	5	0.364	0.040	0.404
TEB Noise Abatement Measure 6	1	2	1	1	5	0.338	0.036	0.374
Change from Baseline	0	0	0	0	0	-0.026	-0.004	-0.030

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change within the 65 DNL contour, green indicates a reduction within the 65 DNL contour and red indicates an increase within the 65 DNL contour.

Conclusions: *TEB Noise Abatement Measure 6: Implement a Published Approach Procedure to Runway 1 and Increase Usage at Night* could reduce the number of people exposed to 65 DNL or higher by as much as 17 and the number of dwelling units by as much as seven when 25 percent of Runway 6 night arrivals are modeled on Runway 1.

The implementation of a published approach procedure to Runway 1 could be an effective way to reduce noise levels over residential land use southwest of Runway 6 by shifting arrival operations over compatible land use.

Table 2-19: Implementation Summary for TEB Noise Abatement Measure 6: Implement a Published Approach Procedure to Runway 1 and Increase Usage at Night
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	Reduction of up to 17 people in seven dwelling units exposed to 65 DNL or higher with implementation of a published arrival procedure to Runway 1 by shifting arrival operations over compatible land use.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 6 because it is shown to be an effective way to reduce noise levels over residential land use southwest of Runway 6 and could shift operations over compatible land use.
Responsible Parties	The development, safety review, environmental review, and the decision whether to implement flight procedures consistent with procedure development criteria is the sole responsibility of the FAA. The Port Authority will request that FAA initiate the development process for this measure, then will work with ATCT and other FAA personnel to further study and develop this procedure. Implementation of this measure may require an environmental study as required under the National Environmental Policy Act (NEPA); the FAA would be the responsible party to complete such a study.
Estimated Costs	The expected costs associated with the development and implementation of this procedure are internal to the FAA (e.g., ATO) and other coordinating agencies. These costs are unknown and FAA Airport Improvement Program grant would not be required.
Funding Sources	The FAA.
Requirements	FAA approval of this measure. The Port Authority supports FAA development of published approach to Runway 1 and any associated environmental analysis that may be needed.
Estimated Schedule	The Port Authority to submit a request for its development within six to twelve months of the FAA's Record of Approval for the NCP. FAA design, testing and implementation of the procedure typically could take 18 to 24 months, potentially up to three years once the Port Authority requests initiation of the development process.

TEB Noise Abatement Measure 7: Implement a Published Departure Procedure from Runway 19

This measure would implement a published departure procedure from Runway 19. A published departure procedure is a publicly available visual or instrument departure procedure with defined repeatable and predictable flight instructions published by FAA. Currently, there is no published departure procedure (visual or instrument) from Runway 19. Pilots using Runway 19 for departures may request to fly the Dalton Two VFR procedure in the TEB Quiet Flying Program, but they must be very familiar with the procedure in order to fly it due to EWR airspace constraints. For noise abatement reasons, Runway 19 is preferred for departures to the south between 10 p.m. and 7 a.m. local time. The Port Authority and TAC members agreed that a published departure procedure from Runway 19 could help to increase use of Runway 19 for departures. The implementation of a published procedure will allow pilots to utilize this runway during the designated nighttime period more effectively. This is discussed in TEB Noise Abatement Measure 12: Existing Voluntary Preferential Runway Use at Night on page 2-84. Aircraft departing Runway 19 could potentially follow a procedure like the existing Dalton Two VFR departure, turning right to a 280° heading and remaining at or below 1,300 feet. Figure 2-18 on page 2-67 displays the proposed flight path from Runway 19. To analyze the outcome of increased departures from Runway 19, departures were evaluated by increasing its use at night by 10 or 25 percent[45] and reducing the same percentage of departures from Runway 24. The results shown in the figures that follow, as well as Table 2-20 and Table 2-21 on page 2-96, are for the 10 percent of Runway 24 departure operations modeled departing from Runway 19 at night using the proposed flight path. The results indicate a small increase of area within the 65 DNL contour near the Runway 1 end and a reduction of area within the 65 DNL contour south of Runway 6 as shown in Figure 2-19 on page 2-69 and Figure 2-20 on page 2-71.

When the usage rate is increased to 25 percent, a small increase in population and dwelling units within the 65 DNL contour is shown due to expansion of the contour in the residential area south of Runway 1.

If Noise Abatement Measure 7 were implemented, the concurrent implementation of other proposed noise abatement measures, such as the Runway 24 night departure turn or the centralized aircraft run-up pad (TEB Noise Abatement Measures 1 and 3, respectively), may eliminate or reduce the projected increase in the residential area south of Runway 1. Therefore, the Port Authority supports this measure as a possible benefit.

Table 2-20 displays the modeled change in dwelling units and population compared to the 2021 baseline NEM for TEB Noise Abatement Measure 7.

Table 2-21 displays no change in noise sensitive sites and a reduction in land area outside the airport boundary when comparing TEB Noise Abatement Measure 7 to the 2021 baseline. The results show that TEB Noise Abatement Measure 7 could result in a reduction in population and dwelling units within the 65 DNL contour compared to the 2021 baseline with a usage rate of 10 percent.

The TAC is supportive of implementing a new instrument procedure for TEB Runway 19 so long as the FAA can design a procedure the aircraft operators can fly safely. The public has requested, by way of public comments to the TEB NEM, that flight tracks be positioned over compatible land use. This measure is consistent with such public requests.

Table 2-22 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 7.

[45] See Appendix C.2 on page C-19 for supplemental modeling information on TEB Noise Abatement Measure 7

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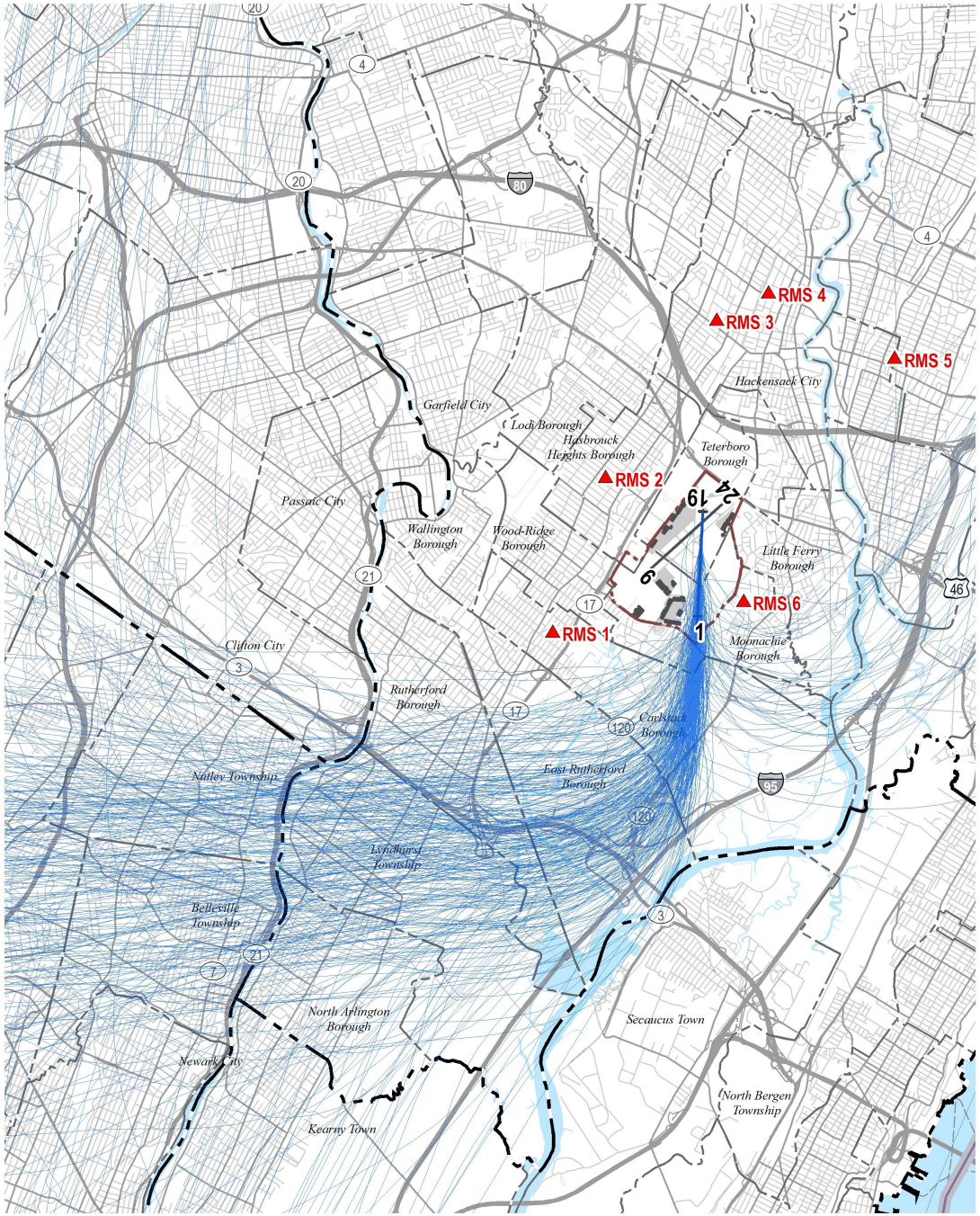

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Part 150 Study
2021 Noise Compatibility Program

Figure 2-18

Runway 19 Departure
Existing Jet Radar Tracks and
Published Departure Flight Path

- Proposed Published Departure Route
- Existing Jet Radar Tracks
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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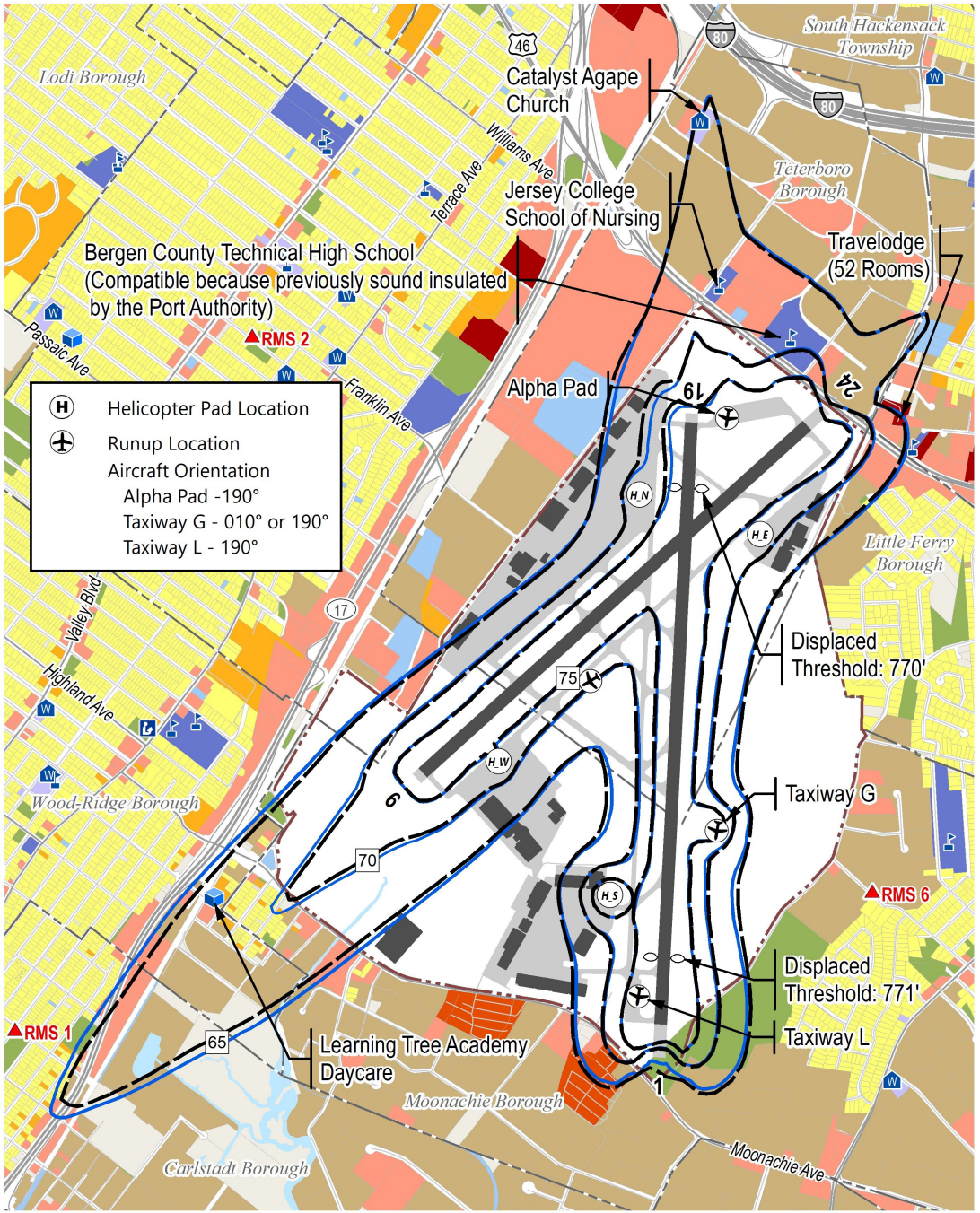

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2021 Noise Compatibility Program

Figure 2-19

Hypothetical 2021 DNL with Runway 19 Published Departure Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- Daycare
- Library
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

N

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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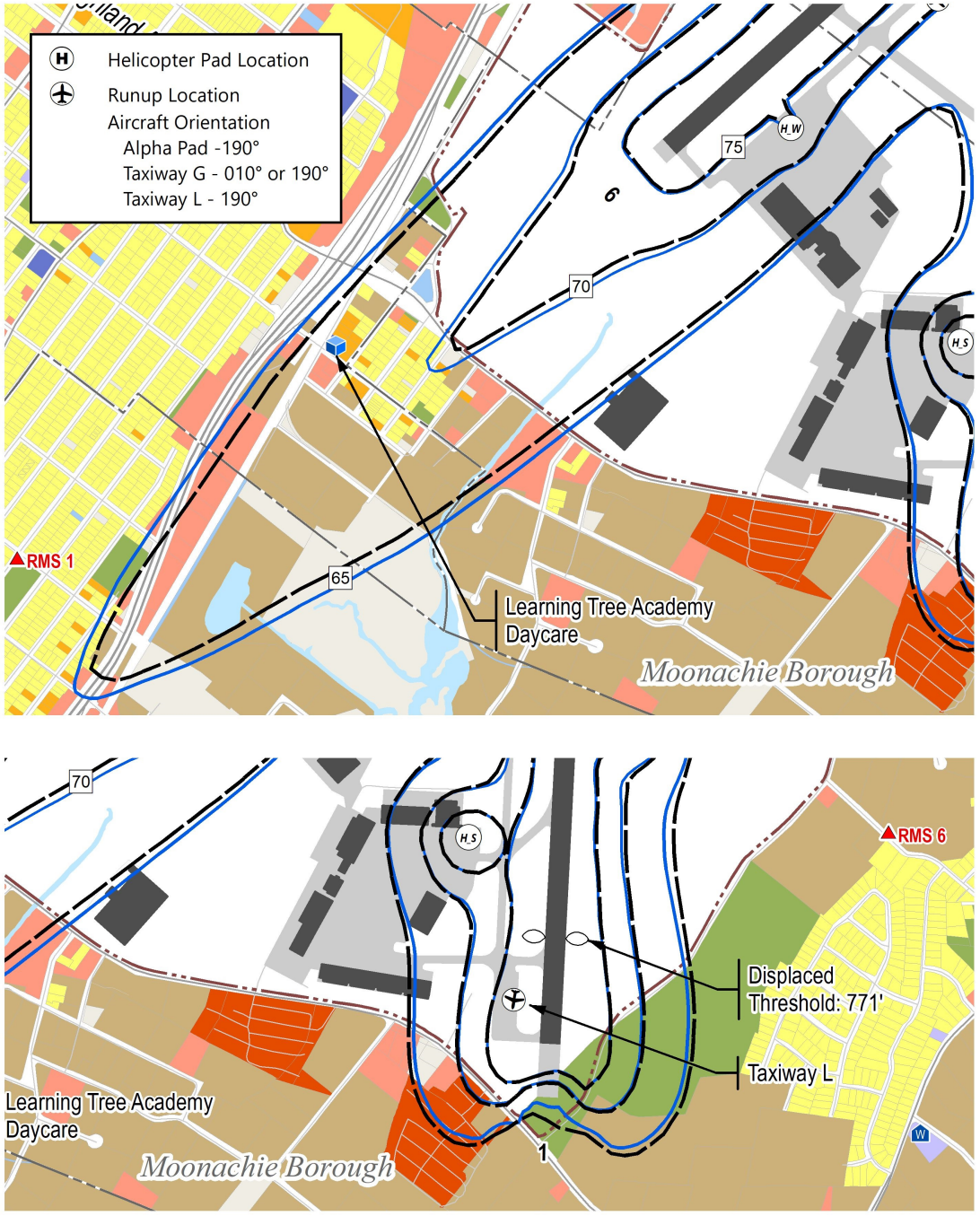

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Figure 2-20

Hypothetical 2021 DNL with Runway 19 Published Departure Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- Daycare
- Library
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

N

0 1,250 2,500 Ft

Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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Table 2-20: Estimated Dwelling Units and Population Counts for 2021 Baseline and Implement a Published Departure Procedure from Runway 19 (TEB Noise Abatement Measure 7) at a 10% usage rate within Different Noise Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are by dwelling unit or population within the DNL contour interval notated)	Number of Dwelling Units			Population		
	65-70	70+	Total	65-70	70+	Total
2021 Baseline	180	16	196	436	39	475
TEB Noise Abatement Measure 7 at 10% usage rate	183	11	194	443	27	470
TEB Noise Abatement Measure 7 at 10% usage rate – Change South of Runway 6	0	-6	-6	0	-15	-15
TEB Noise Abatement Measure 7 at 10% usage rate – Change South of Runway 1	3	1	4	7	3	10
TEB Noise Abatement Measure 7 at 10% usage rate – Total change from Baseline	3	-5	-2	7	-12	-5

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change in dwelling units or population within the 65 DNL contour, green indicates a reduction in dwelling units or population within the 65 DNL contour and red indicates an increase in dwelling units or population within the 65 DNL contour.

Table 2-21: Estimated Noise-Sensitive Site Counts and Land Area for 2021 Baseline and Implement a Published Departure Procedure from Runway 19 (TEB Noise Abatement Measure 7) 10% Usage Rate within Different Noise Contour Intervals
Source: Port Authority and HMMH, 2019

Scenario (All changes are within the 65 DNL contour)	Number of Noise-Sensitive Sites					Land Area Outside the Airport Boundary (Sq. Miles)		
	Transient Lodging	School	Place of Worship	Daycare	Total	Compatible	Noncompatible	Total
2021 Baseline	1	2	1	1	5	0.364	0.040	0.404
TEB Noise Abatement Measure 7 at 10% usage rate	1	2	1	1	5	0.332	0.037	0.369
Change from Baseline	0	0	0	0	0	-0.032	-0.003	-0.035

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change within the 65 DNL contour, green indicates a reduction within the 65 DNL contour and red indicates an increase within the 65 DNL contour.

Conclusions: *TEB Noise Abatement Measure 7: Implement a Published Departure Procedure from Runway 19* could reduce the number of people exposed to 65 DNL or higher by as much as five and the number of dwelling units by as much as two when 10 percent of night departures from Runway 24 are modeled on Runway 19.

The implementation of a new instrument departure procedure from Runway 19 could be an effective way to reduce noise levels over residential land use southwest of Runway 6 by shifting departure operations over compatible land use.

Table 2-22: Implementation Summary for TEB Noise Abatement Measure 7: Implement a Published Departure Procedure from Runway 19
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	Reduction of up to five people in two dwelling units exposed to 65 DNL or higher with a 10 per-cent increase in Runway 19 departures. This increase could be accommodated by implementation of a published departure procedure from Runway 19. Additionally, the measure could shift departure operations over compatible land use.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 7 because it is shown to be an effective way to reduce noise levels over residential land use southwest of Runway 6 by shifting operations over compatible land use.
Responsible Parties	The development, safety review, environmental review, and the decision whether to implement flight procedures consistent with procedure development criteria is the sole responsibility of the FAA. The Port Authority will request that FAA initiate the development process for this measure, then will work with ATCT and other FAA personnel to further study and develop this procedure. Implementation of this measure may require an environmental study as required under the National Environmental Policy Act (NEPA); the FAA would be the responsible party to complete such a study.
Estimated Costs	The expected costs associated with the development and implementation of this procedure are internal to the FAA (e.g., ATO) and other coordinating agencies. These costs are unknown and FAA Airport Improvement Program grant would not be required.
Funding Sources	The FAA.
Requirements	FAA approval of this measure. The Port Authority supports FAA development of a published departure from Runway 19 and any associated environmental analysis.
Estimated Schedule	The Port Authority to submit a request for its development within six to twelve months of the FAA's Record of Approval for the NCP. FAA design, testing and implementation of the procedure typically could take 18 to 24 months, potentially up to three years once the Port Authority requests initiation of the development process.

Note for Existing TEB Noise Abatement Measure 8 through TEB Noise Abatement Measure 16

The Port Authority is recommending existing TEB Noise Abatement Measure 8 through TEB Noise Abatement Measure 16 so that these measures can be formally documented as part of the TEB NCP.[46] The first three measures are mandatory (TEB Noise Abatement Measures 8, 9 and 10) and were implemented prior to October 2, 1990 and are therefore "grandfathered" under ANCA,[47] which implies the Port Authority can continue to enforce such measures.

The existing mandatory and voluntary measures have been communicated to aircraft operators through informational handouts, the Flight Crew Handbook and signs at the airport's FBO's facilities. The Flight Crew Handbook is available in Appendix C.3 on page C-35 and through the Port Authority website.

TEB Noise Abatement Measure 8: Existing Mandatory Permission to Operate Jet Aircraft

This measure stipulates that no jet-powered aircraft may operate at TEB without prior approval of the Airport Manager, and as it was implemented in 1967,[48] it is "grandfathered" under ANCA. This measure helps the Port Authority control noise at the airport by ensuring that aircraft operators are aware of TEB's Quiet Flying Program and that their aircraft meet the mandatory noise limits. Operators of jet aircraft new to the airport or with a changed owner/operator must submit a "Permission to Operate" form to the Airport Manager for review and approval.[49] The form is available on the TEB website and in the Flight Crew Handbook. It requires the operator to acknowledge awareness of and commitment to be consistent with the TEB Flight Crew Handbook.

Congressional legislation has also specifically stated that the FAA administrator is prohibited from acting against the prior permission rules at Teterboro Airport.[50]

The TAC is supportive of continuing the existing Permission to Operate measure. The public has requested, by way of public comments to the TEB NEM, that the Port Authority reduce aircraft noise as much as possible. This measure is consistent with such public requests.

Table 2-23 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 8.

[46] See Teterboro Airport Flight Crew Handbook for these measures. https://www.panynj.gov/airports/pdf/TEB-Flight-Crew-Handbook.pdf

[47] 14 CFR Part 161.3(a) exempts ("grandfathers") restrictions on Stage 2 aircraft operations that were first proposed before October 2, 1990 and on Stage 3 aircraft operations that became effective before that date. As discussed, these ongoing restrictions are implemented through Teterboro Flight Crew Handbook which is presented in Appendix C.3 on page C-35.

[48] See Appendix C.1, beginning on page C-3, for historical information regarding the implementation of Mandatory Permission to Operate Jet Aircraft.

[49] Port Authority Rules and Regulations, Section 9.3: https://www.panynj.gov/airports/pdf/Rules_Regs_Revision_8_04_09.pdf

[50] Consolidated Appropriations Act, H.R.1673, 108th Cong. (2004).

Conclusions: The Port Authority recommends no changes to *TEB Noise Abatement Measure 8: Existing Mandatory Permission to Operate Jet Aircraft*, continuing the mandatory permission to operate as it is currently implemented. This existing measure ensures that aircraft operators are aware of TEB's Quiet Flying Program and that their aircraft will meet the mandatory noise limits.

Table 2-23: Implementation Summary for TEB Noise Abatement Measure 8: Existing Mandatory Permission to Operate Jet Aircraft
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	This existing mandatory measure, which requires aircraft operators to receive permission to operate at TEB, has been a successful part of the TEB Quiet Flying Program.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 8 because it is the continuation of an existing mandatory measure and has been an effective way to reduce aircraft noise at TEB.
Responsible Parties	The Port Authority.
Estimated Costs	Not applicable.
Funding Sources	Not applicable.
Requirements	Existing measure – No requirements to implement.
Estimated Schedule	Not applicable as this measure is currently implemented.

TEB Noise Abatement Measure 9: Existing Mandatory Noise Limits

This measure was implemented in 1987,[51] updated in 1988 and predates ANCA. Therefore, it is not subject to FAA's approval process (Part 161 of the FAA regulations) for operational restrictions. The 95 dBA limit for all runways was enacted in September of 1987, and in May 1988, the TANAAC voted to revise the limits to the levels currently in use today.

The Port Authority uses A-weighted decibel (dBA) measurements to enforce formal "Maximum Noise Level" (MNL) limits that apply to takeoffs.[52] The departure noise limits vary according to runway end and time of day, as follows:

- 80 dBA departure limit on Runway 24 from 10:00 p.m. to 7:00 a.m. local time
- 90 dBA departure limit on Runway 24 from 7:00 a.m. to 10:00 p.m. local time
- 95 dBA departure limit on Runways 01, 19 and 06 at all times
- 95 dBA departure limit for helicopters at all times

The Port Authority has installed Remote Noise Monitoring Sites (RMS) at six locations around TEB to track compliance, as shown in Figure 2-21 on page 2-78.

Aircraft that exceed these limits are issued a noise violation. Aircraft that have received three noise violations in a two-year span are not permitted to operate at TEB. Notifications of noise violations are sent to the operator via registered mail. Failure by the operator to receive notification shall not be cause for dismissal of the violation. A record of First Violation and Second Violation is kept for two years from the date of the violation. On the second anniversary, the record of that violation is expunged.

Operators may conduct up to two flight tests, or "Noise Plots," on any one aircraft at TEB. These tests may be conducted for the purpose of evaluating noise abatement procedures. Permission for such tests will not be granted if there is a record of a Second Violation for the aircraft involved.

If Runway 19 is officially closed by NOTAM, the applicable MNL for Runway 24 is 95 dBA.

If the crosswind component existing at the time of departure on Runway 19 exceeds the maximum allowable crosswind component for the aircraft being used, the MNL for Runway 24 is 95 dBA. Exemptions may be granted by the Airport Manager, in cases where, due to unforeseen circumstances, noise abatement procedures were not used by the pilot in order to assure safety of flight.

Operators may appeal the assessment of a noise violation. There is a well-defined protocol for appeals which can be found in the TEB Quiet Flying Program Flight Crew Handbook.

Discussion of how violations and exemptions to the measure are addressed can be found in the TEB Flight Crew Handbook. The TAC is supportive of continuing the existing Mandatory Noise Limits measure. The public has requested, by way of public comments to the TEB NEM, that the Port Authority reduce aircraft noise as much as possible. This measure is consistent with such public requests.

Table 2-24 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 9.

[51] See Appendix C.1, beginning on page C-3 for documentation regarding the implementation of Existing Mandatory Noise Limits.

[52] Port Authority Rules and Regulations, Section 9.4: https://www.panynj.gov/airports/en/operator-resources.html

Conclusions: The Port Authority proposes no changes to *TEB Noise Abatement Measure 9: Existing Mandatory Noise Limits* and recommends continuing the Mandatory Noise Limits as currently implemented. This existing measure has been an effective way to control noise levels in residential areas around TEB.

Continuation of this procedure would ensure that exposure to high single event noise levels is minimized.

Table 2-24: Implementation Summary for TEB Noise Abatement Measure 9: Existing Mandatory Noise Limits
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	This existing mandatory measure limits operations by aircraft that exceed noise limits set by TEB and has been a successful part of the TEB Quiet Flying Program.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 9 because it is the continuation of an existing mandatory measure and has been an effective way to reduce aircraft noise at TEB.
Responsible Parties	The Port Authority.
Estimated Costs	Not applicable.
Funding Sources	Not applicable.
Requirements	Existing measure – No requirements to implement.
Estimated Schedule	Not applicable as this measure is currently implemented.

TEB Noise Abatement Measure 10: Existing Mandatory Aircraft Maintenance Run-Up Restrictions

This measure predates ANCA and is not subject to FAA's approval process for operational restrictions.

The Port Authority has established mandatory aircraft run-up regulations,[53] as follows:

The procedure listed below shall be followed by all persons who engage in aircraft/engine maintenance run-ups.

(a) Jet and turbine engine aircraft run-ups are prohibited on ramp areas. Piston powered aircraft, when positioned away from buildings and vehicles, may be conducted on ramp areas. Caution should be exercised in order to prevent undue noise and prop blast on airport tenant areas. Aircraft shall not be positioned so that propeller slip-stream or engine exhaust is directed at spectators, personnel, hangars, shops or other buildings in such a manner as might cause personal injury, property damage or the activation of sprinkler systems and/or fire detection systems.

(b) Prior to conducting a maintenance run-up, including piston powered aircraft run-up on ramp areas, the operator shall provide the following information to Airport Operations.

1. *Operator name*
2. *Aircraft owner*
3. *Type of aircraft*
4. *Aircraft registration number*
5. *Whether aircraft will be escorted to run-up area*
6. *Total expected time of run-up operation*
7. *Engine power settings anticipated and approximate period of time at stated settings.*
8. *Reason for engine run-up*
9. *Run-up area requested*

(c) All maintenance run-ups shall be conducted between the hours of 8:00 a.m. and 8:00 p.m., Monday through Saturday, or between the hours of 12:00 p.m. and 6:00 p.m. on Sundays. In an emergency, the Airport Manager, in his or her discretion, may approve maintenance run-ups during other hours – on a case-by-case basis. Run-up hours may be adjusted, at the discretion of the Airport Manager, if the noise impact on the local community so warrants.

(d) All aircraft operators conducting a maintenance run-up must maintain a listening watch on the Teterboro Ground Control frequency (121.9 MHz), or alternate frequency assigned by Air Traffic Control if the aircraft is equipped with only one aeronautical communications radio. If the aircraft is equipped with dual aeronautical radios, listening watch shall be maintained on both Teterboro Ground Control and ARINC (130.575 MHz).

(e) Although it is recognized that, under certain wind conditions, operators may favor aircraft headings other than the preferred headings, the Airport Manager reserves the right to reposition aircraft and/or

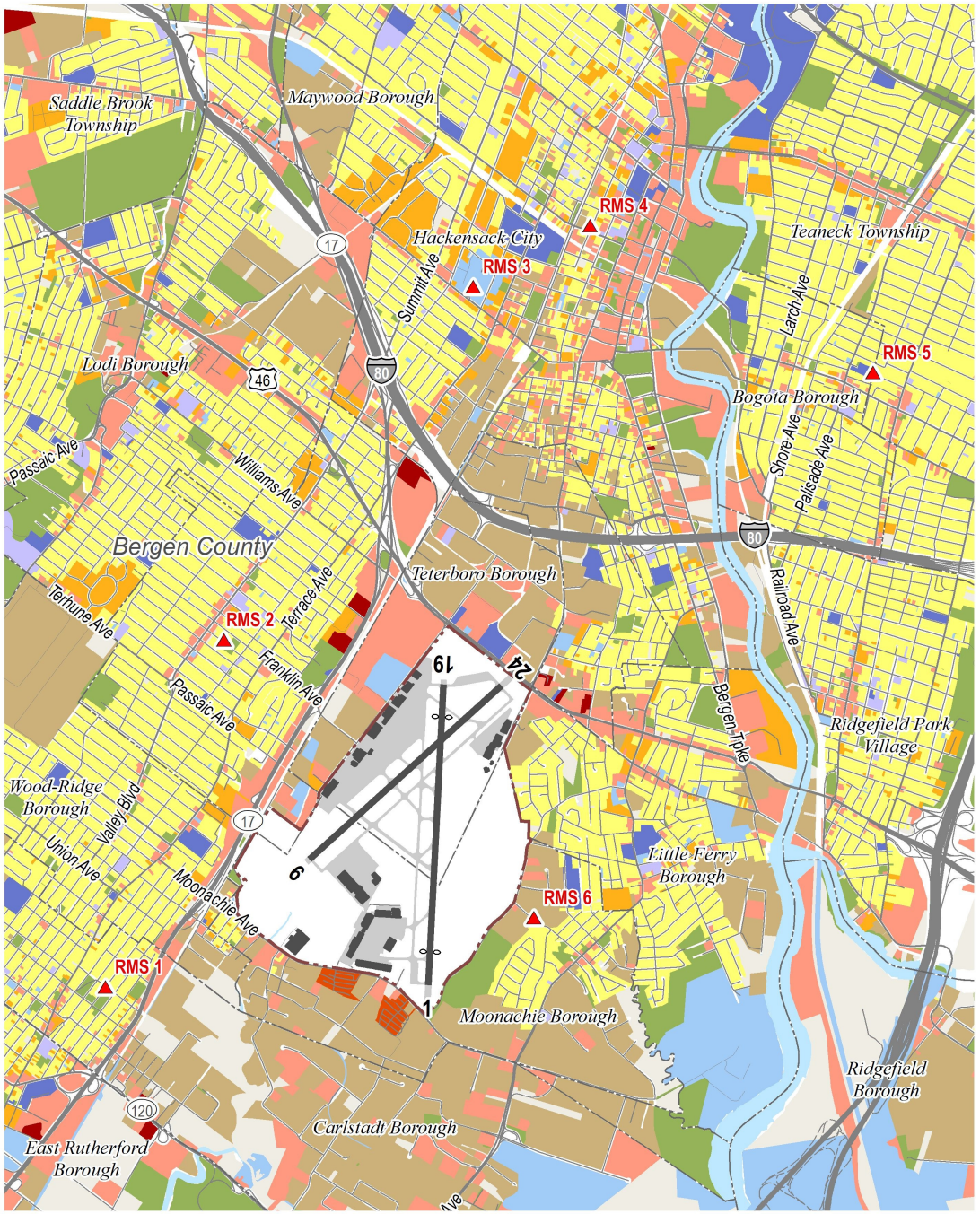
1. *Taxiway Golf at east extension. Preferred headings are 010 degrees and 190 degrees.*
2. *Holding area adjacent to Taxiway Alpha (between Runways 19 and 24). Preferred location is as close to Runway 19 as possible on a heading of 190 degrees.*

[53] Port Authority Rules and Regulations, Section 9.7: https://www.panynj.gov/airports/en/operator-resources.html

At the Airport Manager's discretion some run-ups also occur on the holding area adjacent to Taxiway L near the end of Runway 1. The Port Authority tracks the run-up requests and logs the date, time, aircraft type, duration, location on the airfield and aircraft power settings. Figure 2-7 on page 2-29 depicts the existing run-up locations at TEB.

If TEB Noise Abatement Measure 3: Design and Implement a Centralized Aircraft Run-up Pad were implemented, the centralized run-up pad location in Figure 2-7 would become the designated run-up location under these same rules.

The TAC is supportive of continuing the existing Mandatory Run-up restrictions measure. The public has requested, by way of public comments to the TEB NEM, that the Port Authority reduce aircraft noise as much as possible. This measure is consistent with such public requests. Table 2-25 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 10.



THE PORT AUTHORITY OF NY & NJ

Teterboro Airport

Airport Noise Compatibility
Part 150 Study
2021 Noise Compatibility Program

Figure 2-21

TEB Remote Noise Monitoring Sites

- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

N

0 2,000 4,000 Ft

Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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Conclusions: The Port Authority recommends no changes to *TEB Noise Abatement Measure 10: Existing Mandatory Aircraft Maintenance Run-Up Restrictions*, continuing the mandatory restriction on aircraft maintenance run-ups as currently implemented.

Continuation of this procedure would continue to minimize exposure in noise-sensitive areas to nighttime run-ups. Operations data collected for development of the existing conditions contours show agreement with this measure. The associated substantial noise exposure remains on airport property.

Table 2-25: Implementation Summary for TEB Noise Abatement Measure 10: Existing Mandatory Aircraft Maintenance Run-Up Restrictions
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	This existing mandatory measure limits operating times of aircraft maintenance run-ups and has been a successful part of the TEB Quiet Flying Program.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 10 because it is the continuation of an existing mandatory measure and has been an effective way to reduce aircraft noise at TEB.
Responsible Parties	The Port Authority.
Estimated Costs	Not applicable.
Funding Sources	Not applicable.
Requirements	Existing measure – No requirements to implement.
Estimated Schedule	Not applicable as this measure is currently implemented.

TEB Noise Abatement Measure 11: Existing Voluntary Restraint from Operations between 11:00 p.m. and 6:00 a.m.

The Port Authority currently requests that aircraft operators voluntarily restrain from operating any aircraft between the hours of 11:00 p.m. and 6:00 a.m. in order to reduce off-airport noise at night. Operators who do not abide by this voluntary restraint receive a letter from the Port Authority to:

1) Remind them that the TEB Quiet Flying Program is in place;
2) Notify them of their failure to meet program requirements; and
3) Remind them that only essential flights should be conducted during the restraint period.

The TAC discussed expanding the period by one hour (either starting at 10:00 p.m. or ending at 7:00 a.m.). However, evaluation of radar data for operation times[54] showed that most aircraft abide by the existing voluntary restraint from operation period, and that flights during the additional hour between the voluntary restraint from operation period and the nighttime hours (10:00 p.m. to 11:00 p.m. or 6:00 a.m. to 7:00 a.m.) could likely still occur, and thus would not provide any additional noise benefit.[55]

The TAC is supportive of continuing the existing Voluntary Restraint from Operations measure. The public has requested, by way of public comments to the TEB NEM, that the Port Authority reduce aircraft noise at night. This measure is consistent with such public requests.

Table 2-26 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 11.

Conclusions: The Port Authority recommends no changes to *TEB Noise Abatement Measure 11: Existing Voluntary Restraint from Operations between 11:00 p.m. and 6:00 a.m.*, continuing the voluntary restraint from flying as currently implemented. This existing measure minimizes noise exposure to nearby residential areas and overflights at night.

Continuation of this procedure would continue to reduce exposure in noise-sensitive areas at night.

Table 2-26: Implementation Summary for TEB Noise Abatement Measure 11: Existing Voluntary Restraint from Operations between 11:00 p.m. and 6:00 a.m.
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	This existing voluntary measure limits aircraft operations during the late-night period and has been a successful part of the TEB Quiet Flying Program.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 11 because it is the continuation of an existing voluntary measure and has been an effective way to reduce aircraft noise at TEB.
Responsible Parties	The Port Authority.
Estimated Costs	Not applicable.
Funding Sources	Not applicable.
Requirements	Existing measure – No requirements to implement.
Estimated Schedule	Not applicable as this measure is currently implemented.

[54] See TAC meeting #9 presentation in Appendix D.2 on page D-37

[55] For additional context, see TAC Meeting Minutes from TAC #9 in Appendix D.3, page D-153

TEB Noise Abatement Measure 12: Existing Voluntary Preferential Runway Use at Night

Between 10:00 p.m. and 7:00 a.m. local time, all aircraft over 12,500 pounds, all jet aircraft, and those aircraft with high noise levels (as determined by the Noise Office) should request the runway that has been designated by the Port Authority as a preferential runway for arrivals and departures during this time period.

The designated preferential runways between 10:00 p.m. and 7:00 a.m. are 1) Runway 1 for landing when airport traffic is landing to the north, and 2) Runway 19 for departures when airport traffic is departing to the south.[56] Arriving to Runway 1 and departing from Runway 19 at night could reduce noise levels over residential areas south of Runway 6-24 by routing flight operations over compatible land use south of Runway 1-19.

The TAC agreed the Preferential Runway Use as designated should not change but the TAC discussed possible ways to improve consistency with this nighttime voluntary preferential runway measure. As a result, the Study Team evaluated increasing use of each preferential runway at night (using the existing flight tracks) and discussed these options with FAA ATCT and TRACON. The study team, in conjunction with FAA ATCT and TRACON, concluded that aircraft are using the two preferential runways at night when available under the current options for pilots. TEB Noise Abatement Measure 6 and TEB Noise Abatement Measure 7 could establish published procedures for arrivals to Runway 1 and departures from Runway 19 which could increase use of these runways. The Study Team determined increased use of these runways at night would reduce noncompatible land use.

The TAC is supportive of continuing the existing Voluntary Preferential Runway Use measure. The public has requested, by way of public comments to the TEB NEM, that flight tracks be positioned over compatible land use. This measure is consistent with such public requests.

Table 2-27 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 12.

[56] This information is contained in the FAA TEB Tower Letter to Airmen: LTA-TEB-24 as shown in Appendix C.2 on page C-32. and the as part of the TEB Quiet Flying Program in Appendix C.3 on page C-35.

Conclusions: The Port Authority recommends continuing *TEB Noise Abatement Measure 12: Existing Voluntary Preferential Runway Use at Night* as currently implemented. The existing measure encourages use of flight procedures over compatible land use which could reduce noise exposure to nearby residential areas at night.

Table 2-27: Implementation Summary for TEB Noise Abatement Measure 12: Existing Voluntary Preferential Runway Use at Night
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	This existing voluntary measure reduces operations on Runway 6-24 at night and has been a successful part of the TEB Quiet Flying Program.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 12 because it is the continuation of an existing voluntary measure and has been an effective way to reduce aircraft noise at TEB.
Responsible Parties	The Port Authority.
Estimated Costs	Not applicable.
Funding Sources	Not applicable.
Requirements	Existing measure – No requirements to implement.
Estimated Schedule	Not applicable as this measure is currently implemented.

TEB Noise Abatement Measure 13: Existing Voluntary Encouragement of the Use of National Business Aviation Association (NBAA) Noise Abatement Departure Procedures (NADP)

This existing measure encourages aircraft operators to utilize the latest NBAA NADP for departures at TEB.[57] The use of NADPs is hard to evaluate and track since it is based on pilot procedures and many manufactures recommend similar measures, therefore adherence to this measure is unknown.

The NBAA recommends the use of its High Density NADP procedure for airports with "high density" (congested airspace) such as TEB.

NBAA recommends that aircraft operators follow a Noise Abatement Departure procedure as shown in Figure 2-22, which includes a thrust reduction to a "quiet climb" power setting starting at elevation 800 feet and then resumption of a normal climb at elevation 1,500 feet for TEB. The "quiet climb" between elevation 800 feet and 1,500 feet has the potential to reduce noise as it reduces the amount of thrust used at lower elevations over nearby residential areas.

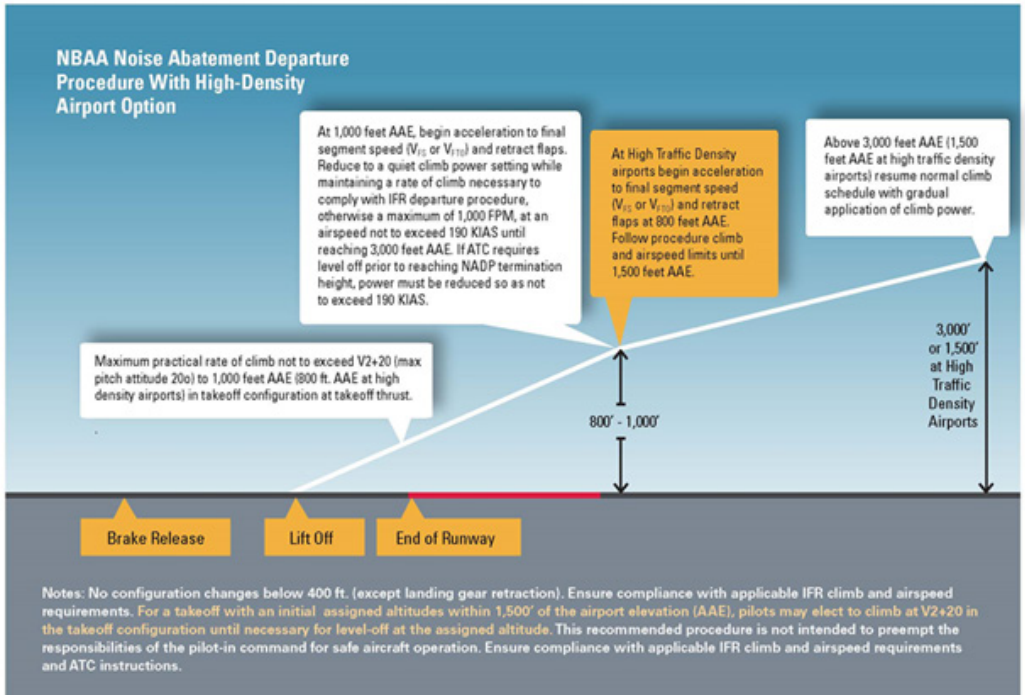

Figure 2-22: TEB Noise Abatement Measure 13 NBAA NADP with High Density Option
Source: NBAA 2018 (https://www.nbaa.org/ops/environment/noise-abatement/_images/NBAA_NADP_HighDensityAirport-large.jpg)

[57] As shown on pages 9 and 10 of the TEB Quiet Flying Program in Appendix C.3 on page C-43.

The NBAA NADP procedures are designed for the types of jets that operate at TEB. The steps a pilot would take following both the standard and high-density option procedures are summarized in Table 2-28. The Port Authority recommends the use of the High-Density option NBAA NADP.

The TAC is supportive of continuing the existing use of NBAA NADPs measure. The public has requested, by way of public comments to the TEB NEM, that the Port Authority reduce aircraft noise during flight. This measure is consistent with such public requests.

Table 2-29 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 13.

Table 2-28: Major steps in NBAA's standard NADP compared to the high-density airport option
Sources: NBAA 2019.

Step	Standard NADP	High-Density Airport Option (TEB Recommendation)
Brake release	Takeoff configuration and takeoff thrust	Takeoff configuration and takeoff thrust
Liftoff	Maximum practical rate of climb to 1,000 feet above airfield elevation (AAE)	Maximum practical rate of climb to 800 feet AAE
Thrust reduction	Retract flaps and reduce to a quiet climb power setting after 1,000 feet AAE	Retract flaps and reduce to a quiet climb power setting after 800 feet AAE
Resume normal climb schedule	At 3,000 feet AAE	At 1,500 feet AAE
Results in reduced climb power setting between	1,000 feet to 3,000 feet (2,000 feet of climb)	800 feet to 1,500 feet (700 feet of climb)

Conclusions: The Port Authority recommends continuing *TEB Noise Abatement Measure 13: Existing Voluntary Encouragement of the Use of National Business Aviation Association (NBAA) Noise Abatement Departure Procedures (NADP)* as currently implemented. This existing measure may reduce noise exposure to nearby residential areas. The NBAA High-Density NADP procedure consists of pilot instructions during departures designed to minimize noise levels on the ground. Adherence to the existing measure is difficult to quantify because aircraft operators do not report every step taken during the arrival procedure (e.g. flap and power settings), but any reduction in single event noise is beneficial for the neighboring communities.

Table 2-29: Implementation Summary for TEB Noise Abatement Measure 13: Existing Voluntary Encouragement of the Use of National Business Aviation Association (NBAA) Noise Abatement Departure Procedures (NADP)
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	This existing voluntary measure encourages aircraft operators to follow NBAA NADPs and has been a successful part of the TEB Quiet Flying Program.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 13, specifically the voluntary use of the NBAA High-Density Airport Option, because it is the continuation of an existing voluntary measure and has been an effective way to reduce aircraft noise at TEB.
Responsible Parties	The Port Authority.
Estimated Costs	Not applicable.
Funding Sources	Not applicable.
Requirements	Existing measure – No requirements to implement.
Estimated Schedule	Not applicable as this measure is currently implemented.

TEB Noise Abatement Measure 14: Existing Voluntary Restraint from the Use of Reverse Thrust

The Port Authority recommends that aircraft operators of all turbojet aircraft continue to voluntarily restrict the use of reverse thrust activity after landing at TEB except when necessary for operational safety. Use of reverse thrust changes the direction in which air is exhausted through the jet engines resulting in a short period of increased noise which can typically be heard outside of the airport. Therefore, any reduction in the use of reverse thrust could have a noise benefit. Reverse thrust is used primarily to decelerate the aircraft after landing and is dependent upon aircraft type, aircraft weight, runway length, and runway surface condition.

This voluntary procedure has been communicated to aircraft operators through informational handouts, the Flight Crew Handbook and signs at the airport's FBO facilities. The Handbook is available through the Port Authority website and is provided as part of the Permission to Operate requirement.

This measure benefits area residents by reducing single event noise levels from arrival operations. The TAC is supportive of continuing the existing Voluntary Restraint from the Use of Reverse Thrust. The public has requested, by way of public comments to the TEB NEM, that the Port Authority reduce aircraft noise. This measure is consistent with such public requests.

Table 2-30 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 14.

Conclusions: The Port Authority recommends *TEB Noise Abatement Measure 14: Existing Voluntary Restraint from the Use of Reverse Thrust* as currently implemented. This existing measure may reduce noise exposure to nearby residential areas. Adherence to the existing measure is difficult to quantify, but any reduction in single event noise is beneficial for the neighboring communities.

Continuation of this procedure could reduce exposure in noise-sensitive areas. This procedure results in no change to the 65 DNL contour.

Table 2-30: Implementation Summary for TEB Noise Abatement Measure 14: Existing Voluntary Restraint from the Use of Reverse Thrust
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	This existing voluntary measure limits reverse thrust arrival operations and has been a successful part of the TEB Quiet Flying Program.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 14 because it is the continuation of an existing voluntary measure and has been an effective way to reduce aircraft noise at TEB.
Responsible Parties	The Port Authority.
Estimated Costs	Not applicable.
Funding Sources	Not applicable.
Requirements	Existing measure – No requirements to implement.
Estimated Schedule	Not applicable as this measure is currently implemented.

TEB Noise Abatement Measure 15: Existing Voluntary IFR and VFR Approach and Landing Procedures to Runway 1 at Night

The Noise Office currently requests that aircraft operators comply with the voluntary Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) approach and landing procedures to Runway 1 at night that are set forth in the TEB Flight Crew Handbook. These instructions provide pilot guidance and techniques for reducing noise on approach to the runway. VFR procedures are possible when the weather is good and visual references can be used for safe operation of the aircraft. IFR procedures are necessary when weather conditions deteriorate, and visual references cannot be used. The approach and landing procedures to Runway 1 are published in the TEB Flight Crew Handbook. If Noise Abatement Measure 6 is approved this measure would be updated to include the name of the published approach procedure to Runway 1 and request that it be flown during the nighttime period.

The TAC is supportive of continuing the existing Voluntary IFR and VFR Approach and Landing Procedures measure. The public has requested, by way of public comments to the TEB NEM, that the Port Authority reduce aircraft noise at night. This measure is consistent with such public requests.

Table 2-31 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 15.

Conclusions: The Port Authority recommends continuing *TEB Noise Abatement Measure 15: Existing Voluntary IFR and VFR Approach and Landing Procedures to Runway 1 at Night* as currently implemented. This existing measure reduces noise exposure to nearby residential areas. Tracking pilot adherence to methods used in the aircraft during approach is difficult to quantify, but any reduction in single event noise is beneficial for the neighboring communities.

Continuation of this procedure could reduce exposure in noise-sensitive areas.

Table 2-31: Implementation Summary for TEB Noise Abatement Measure 15: Existing Voluntary IFR and VFR Approach and Landing Procedures to Runway 1 at Night.
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	This existing voluntary measure has been a successful part of the TEB Quiet Flying Program by requesting aircraft operators follow approach and landing procedures designed to reduce noise.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 15 because it is the continuation of an existing voluntary measure and has been an effective way to reduce aircraft noise at TEB.
Responsible Parties	The Port Authority.
Estimated Costs	Not applicable.
Funding Sources	Not applicable.
Requirements	Existing measure – No requirements to implement.
Estimated Schedule	Not applicable as this measure is currently implemented.

TEB Noise Abatement Measure 16: Existing Voluntary Helicopter Routes

The Port Authority requests that helicopter operators continue to voluntarily follow the helicopter routes depicted in Figure 2-23 on page 2-93. These routes are extracted from the FAA's VFR Helicopter Route Charts.[58] This existing measure keeps helicopter overflights over transportation corridors and compatible land use as much as possible and reduces noise over residential areas.

The TAC is supportive of continuing the existing Voluntary Helicopter Routes measure. The public has requested, by way of public comments to the TEB NEM, that the Port Authority reduce helicopter noise. This measure is consistent with such public requests.

Table 2-32 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Noise Abatement Measure 16.

[58] These are available at: available at: http://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/vfr/.

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Figure: 2-23

Existing Voluntary Helicopter Routes

- TEB Airport Boundary (Approximate)
- TEB Study Area
- Runway
- Helicopter Route
- State Boundary
- County Boundary
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Major Roads
- Minor Roads

Note: TEB Helicopter Routes are advisory only.

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, FAA, "New York Helicopter Route Chart," Effective April 28, 2016

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Conclusions: The Port Authority recommends continuing *TEB Noise Abatement Measure 16: Existing Voluntary Helicopter Routes* as currently implemented. This existing measure keeps helicopter overflights over transportation corridors and compatible land use as much as possible. Most of the helicopter traffic already follows these routes.

Continuation of this procedure could reduce exposure in noise-sensitive areas to helicopter overflights and noise. This procedure results in no change to the 65 DNL contour.

Table 2-32: Implementation Summary for TEB Noise Abatement Measure 16: Existing Voluntary Helicopter Routes
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	This existing voluntary measure requests helicopter operators follow published helicopter routes and has been a successful part of the TEB Quiet Flying Program.
Rationale	The Port Authority is recommending TEB Noise Abatement Measure 16 because it is the continuation of an existing voluntary measure and has been an effective way to reduce aircraft noise at TEB.
Responsible Parties	The Port Authority.
Estimated Costs	Not applicable.
Funding Sources	Not applicable.
Requirements	Existing measure – No requirements to implement.
Estimated Schedule	Not applicable as this measure is currently implemented.

2.3 Noise Abatement Measures Considered but Not Recommended for Inclusion in this NCP

Pursuant to the requirements of Part 150, this section summarizes noise abatement measures that were suggested but that the Port Authority is not recommending for inclusion in this NCP, as well as the reasons for not recommending them. These include the construction of a North-South Runway, Noise Barriers, and Increase Night Departures from Runway 6.

Construct a new North-South Runway

A comment received at the Public Workshop for the TEB NEM suggested the Port Authority construct a new North-South Runway. This could allow arrivals and departures to fly over the existing compatible land use area that is south of TEB while at lower altitudes due to arrival and departure procedures closer to the airport. At present, the runway configuration and the associated arrival and departure procedures limit aircraft from flying only over compatible land uses at low altitudes close to the airport. The TAC and Study Team evaluated this suggestion and determined that this measure was not feasible due to, among other things, cost of constructing a runway, disruption to current operations during the construction process, environmental issues (e.g., a north-south runway would have to be constructed in wetlands area) and potential noise increase to noncompatible land use to the north of the airport. While aircraft using this measure would fly over compatible land use to the south, arrivals to the north could conflict with EWR operations, pilots would also have to stay clear of several obstructions (e.g. radio towers and stadiums) in that area for safety reasons, and they may also have to fly over new potential noncompatible areas to the north. This measure is not recommended for inclusion in this NCP.

Reason for not recommending in this NCP:

Construction of a new North-South runway at TEB would disrupt operations at the airfield for an extended period during runway construction and would require substantial environmental study prior to construction. And as noted above, construction of a new north-south runway would be very costly; could potentially impact wetlands on airport property; and could result in potential noise increases outside of the 65 DNL contour to noncompatible land use north of the airport. While the noncompatible land uses close to the end of Runway 6 might benefit from this measure, arrival and departure operations would still come in from or turn toward the west in order to avoid airspace issues with the EWR. As a result, a new north-south runway would not reduce overflights and noise outside the 65 DNL contour over residential areas to the west of TEB and could possibly increase the area within the 65 DNL contour to the north.

Noise Barriers

Noise barriers, including earth berms and walls, can be effective at reducing noise from a source that is at or near ground level. For a noise barrier to reduce noise, the line of sight between the source and receiver needs to be blocked. Noise barriers are effective when they are at a height capable of deflecting sound waves and close to either the noise source or the receiver. For adequate acoustic performance, the barrier should be constructed of a dense material and gaps of openings should be minimized to prevent transmission of sound through the barrier. Noise barriers at an airport can be effective at reducing ground noise, such as engine run-ups required for maintenance, start of takeoff roll and reverse thrust at arrival.

Figure 2-24 illustrates the noise barrier concept. The barrier at the top of the figure is effectively placed. The barrier at the bottom of the figure is too far from either the source or receiver to be effective. The middle figure demonstrates that an earthen berm can effectively block noise.

The construction of barriers at airports also requires adherence with Title 14 CFR Part 77 (Part 77) "Safe, Efficient use, and Preservation of the Navigable Airspace." This regulation restricts the placement and height of structures near runways.

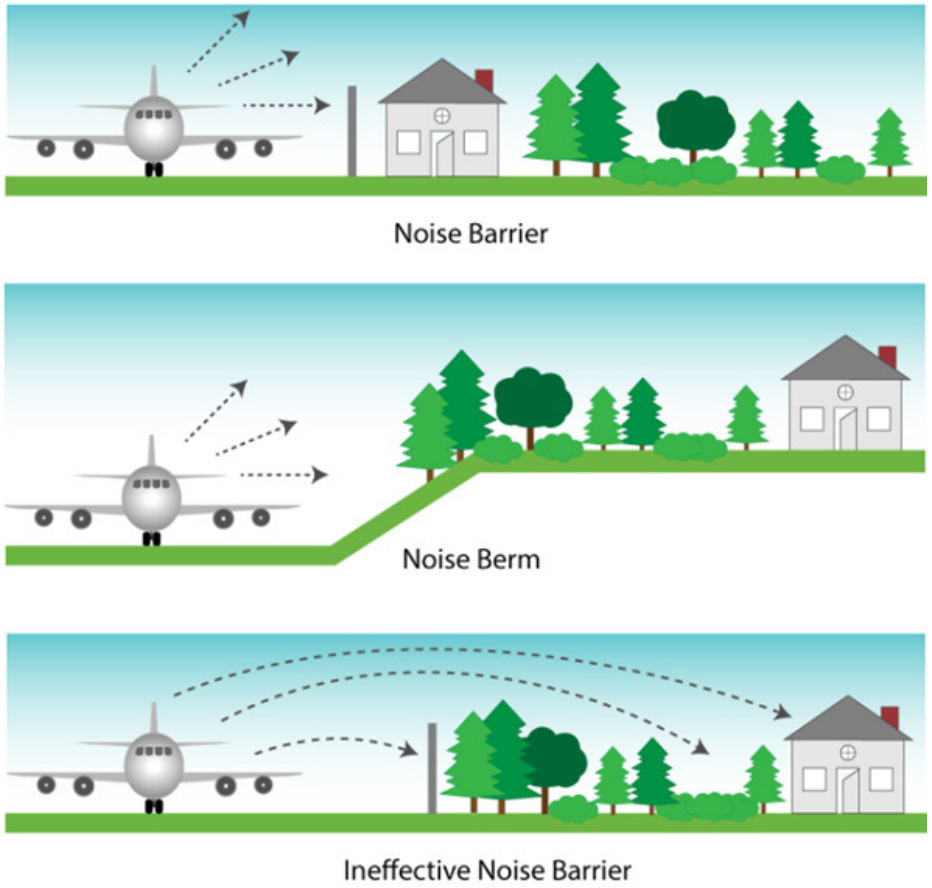

Figure 2-24: Illustration of the Effectiveness of a Noise Barrier for Aircraft Ground Noise
Source: HMMH, 2019

TEB has an existing noise barrier along Moonachie Avenue, just to the southwest of the end of Runway 1. Noise generated from Runway 1 start of takeoff roll, aircraft run-ups at Taxiway L and from aircraft idling waiting to depart on Taxiway L adjacent to Runway 1 have the potential to impact noise levels at the nearby mobile home park. Based on a feasibility analysis of raising or lengthening the barrier to provide additional benefit to the mobile home park, the Study Team determined that the current barrier would need extensive modification to achieve the height needed to make the barrier effective. The evaluation demonstrated that it would be infeasible to lengthen or increase the height of the existing barrier due to Part 77 obstruction restrictions.

The TAC is supportive of expanding the barrier to reduce noise levels in the mobile home park, provided the expansion would meet obstruction guidelines. The TAC reviewed the Study Team screening of potential barriers and agreed that the increased height needed to the existing barrier in order to further reduce noise would result in a conflict with FAA Part 77 guidelines, or the height that could be added without conflicting with Part 77 guidelines is not sufficient to provide a reduction in noise. This measure is not recommended for inclusion in this NCP.

Reason for not recommending in this NCP:
Ground operations at TEB that shape the 65 DNL contour are conducted at locations primarily near the edges of the airfield. Moving all run-up operations to a centralized aircraft run-up pad (TEB Noise Abatement Measure 3) is a better option than construction of barriers. Only the area between the end of Runway 1 and the mobile home park would qualify for consideration of noise barriers as a noise abatement measure and the existing noise barrier in place cannot be raised or lengthened due to obstruction restrictions. Therefore, a barrier would provide no additional benefit to areas of noncompatible land use.

Increase Night Departures from Runway 6

The TAC discussed ways to modify the existing voluntary preferential runway program that would provide noise reductions. One option included increasing departures from Runway 6 at night. This could reduce nighttime noise in the mobile home park behind Runway 1 that is associated with the start of takeoff roll on Runway 1. One of the scenarios evaluated included increasing departures by 25 percent from Runway 6 with a corresponding decrease in departures from Runway 1 at night. The modeling results showed that the noise from the start of take-off roll did not increase area within the 65 DNL contour south of Runway 6 across Moonachie Avenue, but did reduce area within the 65 DNL contour south of Runway 1 in the mobile home park. However, to the north of the airport, under the Runway 6 departure flight path, this scenario resulted in a newly exposed area of noncompatible land use within the 65 DNL contour. As shifting noise from one area of noncompatible land use to another is not consistent with Part 150, any further consideration of modifying the existing voluntary procedure was abandoned. This measure is not recommended for inclusion in this NCP. Figure 2-25 on page 2-101 displays the change in the DNL contours displaying the increase in area within the 65 DNL contour north of Runway 24.

Table 2-33 displays the increase in population and dwelling units north of Runway 6 and the corresponding decrease south of Runway 1.

Reason for not recommending in this NCP:
Although increasing nighttime departure operations from Runway 6 would have the desired effect of reducing area within the 65 DNL contour south of Runway 1 in the mobile home park, it would introduce a newly exposed area of noncompatible land use to the north of Runway 24 within the 65 DNL contour which is inconsistent with the goals of Part 150. Other measures such as Noise Abatement Measure 3 could result in the same reduction of noncompatible land use south of Runway 1 without resulting in an increase in noncompatible land use in other areas.

Table 2-33: Estimated Dwelling Units and Population Counts for 2021 Baseline and Not Recommended Measure to Increase Night Departures from Runway 6
Source: Port Authority and HMMH, 2019

Scenario (All changes are by dwelling unit or population within the DNL contour interval notated)	Number of Dwelling Units			Population		
	65-70	70+	Total	65-70	70+	Total
2021 Baseline	180	16	196	436	39	475
Not Recommended Measure to Increase Night Departures from Runway 6	183	11	194	443	27	470
Not Recommended Measure to Increase Night Departures from Runway 6 – Change North of Runway 6	-5	-4	-9	-12	-10	-22
Not Recommended Measure to Increase Night Departures from Runway 6 – Change North of Runway 24	6	0	6	14	0	14
Not Recommended Measure to Increase Night Departures from Runway 6 – Total change from Baseline	1	-4	-3	2	-10	-8

Note: Cell color indicates whether there is benefit in introducing this TEB Noise Abatement Measure. No coloring indicates no change in dwelling units or population within the 65 DNL contour, green indicates a reduction in dwelling units or population within the 65 DNL contour and red indicates an increase in dwelling units or population within the 65 DNL contour.

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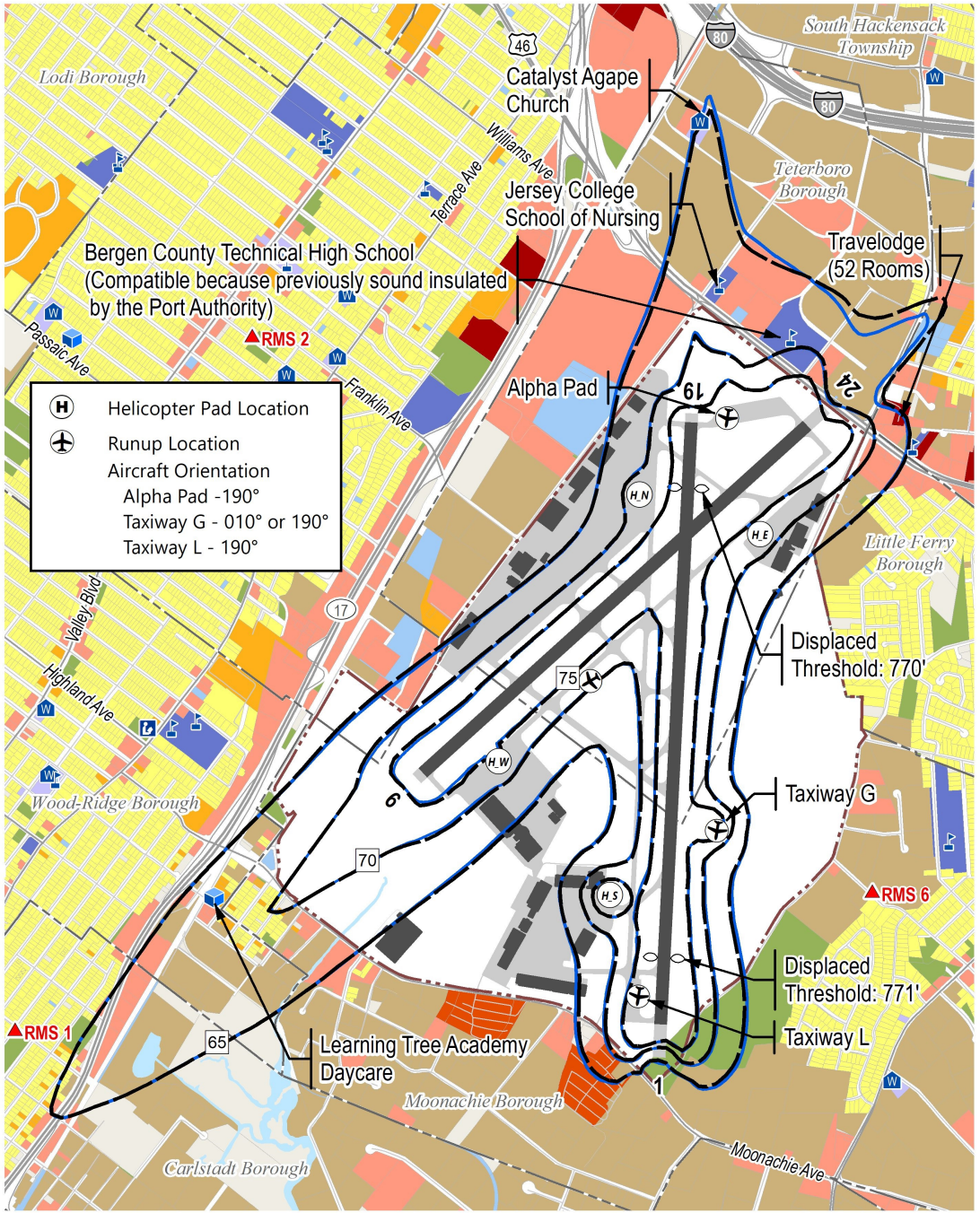

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Figure 2-25

Hypothetical 2021 DNL with Increased Runway 6 Night Departures Compared to 2021 Baseline DNL

- DNL on Accepted 2021 NEM
- Hypothetical 2021 DNL
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

- School
- Daycare
- Library
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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2.4 Summary of Recommended Noise Abatement Measures

Appendix H summarizes the full list of recommended noise abatement measures.

Measures Already in Place at TEB

- TEB Noise Abatement Measure 8: Existing Mandatory Permission to Operate Jet Aircraft
- TEB Noise Abatement Measure 9: Existing Mandatory Noise Limits
- TEB Noise Abatement Measure 10: Existing Mandatory Aircraft Maintenance Run-Up Restrictions
- TEB Noise Abatement Measure 11: Existing Voluntary Restraint from Operations between 11:00 p.m. and 6:00 a.m.
- TEB Noise Abatement Measure 12: Existing Voluntary Preferential Runway Use at Night
- TEB Noise Abatement Measure 13: Existing Voluntary Encouragement of the Use of National Business Aviation Association (NBAA) Noise Abatement Departure Procedures (NADP)
- TEB Noise Abatement Measure 14: Existing Voluntary Restraint from the Use of Reverse Thrust
- TEB Noise Abatement Measure 15: Existing Voluntary IFR and VFR Approach and Landing Procedures to Runway 1 at Night
- TEB Noise Abatement Measure 16: Existing Voluntary Helicopter Routes

Measures to be Initiated at TEB within One Year of FAA Record of Approval

- TEB Noise Abatement Measure 1: Implement a Runway 24 Departure Turn to 230 degrees at Night
- TEB Noise Abatement Measure 2: Encourage Intersection Departures from Taxiway K on Runway 1 at Night
- TEB Noise Abatement Measure 4: Implement an Offset Approach Procedure to Runway 19
- TEB Noise Abatement Measure 5: Implement an Offset Approach Procedure to Runway 6
- TEB Noise Abatement Measure 6: Implement a Published Approach Procedure to Runway 1 and Increase Usage at Night
- TEB Noise Abatement Measure 7: Implement a Published Departure Procedure from Runway 19

Measures to be Initiated at TEB within Two Years of FAA Record of Approval

- TEB Noise Abatement Measure 3: Design and Implement a Centralized Aircraft Run-up Pad

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3. Land Use Management Measures

Land use management measures address aircraft noise in areas of high noise exposure that cannot be eliminated through the implementation of noise abatement measures as described in Chapter 2. Pursuant to the requirements of 14 CFR Part 150,[59] this chapter evaluates corrective and preventive land use measures. Corrective land use measures, which are typically implemented by an airport operator, include land acquisition and sound insulation treatments of structures. In contrast, preventive measures prohibit the introduction of new noncompatible land uses and/or notify potential buyers of properties affected by aircraft noise. Such measures are typically implemented by the local planning and zoning jurisdictions.

The FAA and Port Authority have no regulatory authority to control land uses around airports and recognize that state and local governments are responsible for land use planning, zoning, and regulation. However, as a condition of receipt of federal funding for airport development projects, an airport operator must provide the FAA with written assurances that "appropriate action, including the adoption of zoning laws, have been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations including the landing and takeoff of aircraft."[60] In response to this FAA requirement, this NCP discusses preventive land use management measures in Section 3.3 on page 3-19 and Section 3.4 on page 3-22.

Table 1 of 14 CFR Part 150 (presented in this NCP as Table 1-1 on page 1-9) identifies land uses surrounding an airport that are acceptable within the 65, 70, and 75 DNL contours. The table implies that virtually all land uses outside of the 65 DNL contour are compatible with aircraft noise. Corrective measures are applicable to off-airport land within the 65 DNL contour. Preventive measures can extend beyond the 65 DNL contour to discourage development of noise-sensitive land uses near an airport.

In the context of noise mitigation, strategies that reduce existing noncompatible uses are known as corrective strategies, and those that limit the establishment of additional noncompatible uses are known as preventive strategies. Corrective noise mitigation strategies focus on reducing interior noise exposure, such as through the application of sound insulation or the removal of the uses (e.g., land acquisition). Preventive mitigation strategies are intended to discourage the development of new noncompatible land uses using techniques such as the application of zoning regulations and the modification of building codes.

Noncompatible land uses within the forecast 2021 NEM provided the basis for the cost and schedule estimates for implementation of each recommended land use measure. However, consistent with FAA guidance, the NEM will be updated regularly to ensure the land use measures address current or forecast aircraft noise exposure. Eligibility to implement the land use measures will depend on the FAA-accepted NEM at the time of implementation.

This chapter details the following four Land Use Management Measures recommended for inclusion in this NCP:

- TEB Land Use Measure 1: Acquire Noncompatible Residential Parcels
- TEB Land Use Measure 2: Sound Insulate Eligible Dwelling Units
- TEB Land Use Measure 3: Sound Insulate Eligible Non-Residential Noise-Sensitive Structures
- TEB Land Use Measure 4: Assist with Establishing an Airport Noise Overlay Zone

[59] 14 CFR Part 150, Appendix B, Sec. 150.7(b).
[60] Airport and Airway Development Act of 1970. Pub. L. 91-258. 84 Stat. 219-253. May 21, 1970.

3.1 Existing Land Use Management Measures

Prior to initiating this 14 CFR Part 150 Study, the Port Authority voluntarily implemented a school sound insulation program in the vicinity of TEB. Since the program began in 1983, five schools in the vicinity of TEB have been sound insulated. Total program expenditures for the schools exceed $36.3 million, which was paid for, in part, with FAA AIP grants. The soundproofing program included acoustic windows, insulation, ventilation and air conditioning.

Schools eligible for Sound Insulation were determined from noise contours developed internally by the Port Authority for TEB. Table 3-1 provides a list of the five schools that were sound insulated using AIP grant funding. These are also displayed on Figure 3-1 on page 3-3. Once a school has been insulated through an FAA-funded program, it is considered a compatible use for the purposes of 14 CFR Part 150. The Bergen County Technical High School has been determined to be inside the 65 DNL contour that was developed as part of this Part 150 Study, but the school is considered a compatible land use because of the sound insulation that was previously installed.

Table 3-1: Port Authority School Sound Insulation Program at TEB

Sources: Port Authority, 2019.

School	City	Type
Bergen County Technical High School	Teterboro	High School
Jackson Avenue School	Hackensack	Elementary School
Memorial School	South Hackensack	Elementary School
St. Francis School	Hackensack	Elementary school
Becton High School	E. Rutherford	High School

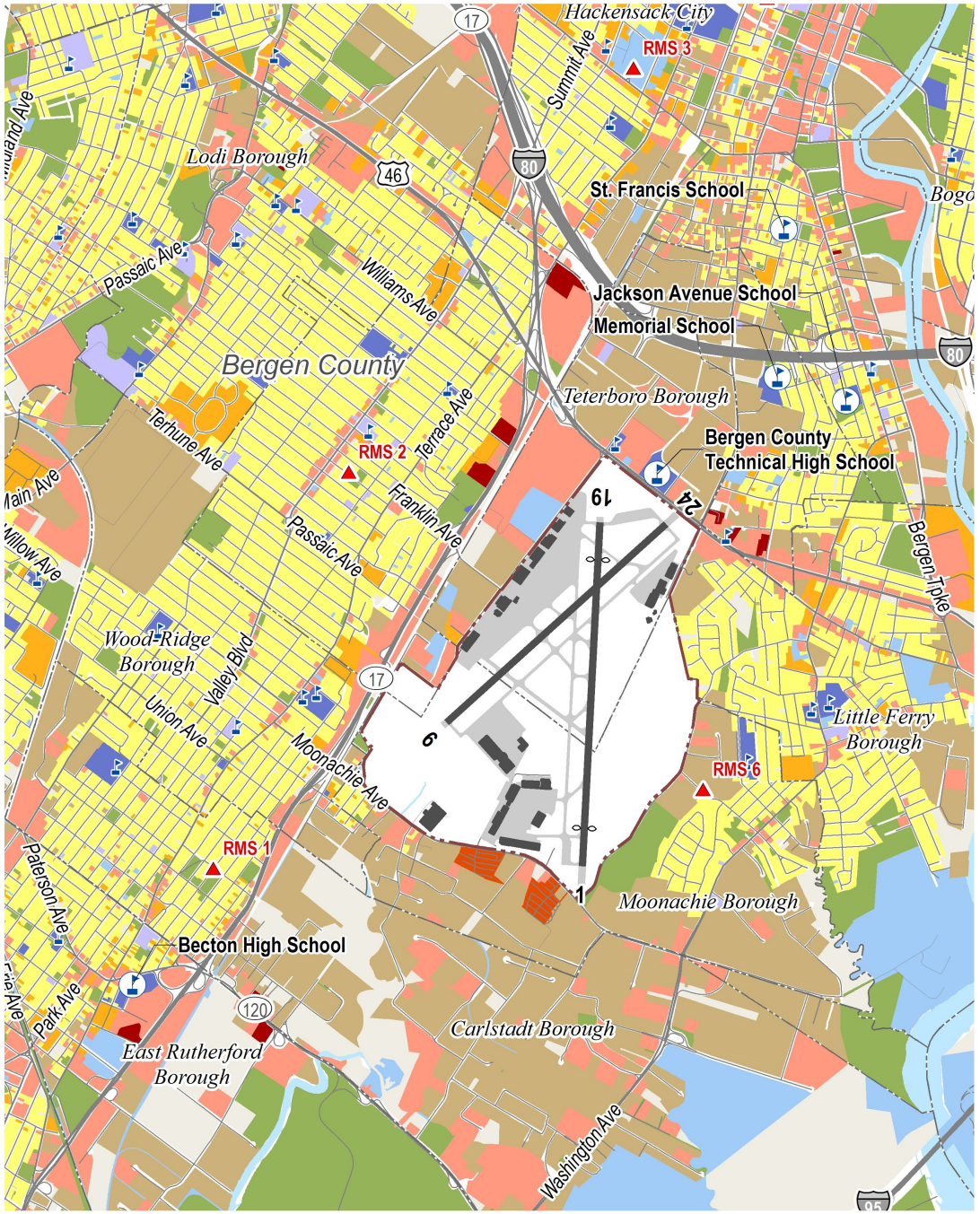

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Figure 3-1

Port Authority Sound Insulated Schools

- School
- Sound Insulated School
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Park / Open Space
- Water
- Highway
- Minor Roads
- Major Roads

Non-Compatible within DNL 65

- Single Family Residential
- Multi-Family Residential
- Mobile Home
- Transient Lodging (Hotel, Motel, etc..)
- School / University / Daycare
- Place of Worship

Compatible within DNL 65

- Recreational / Open Space / Cemetery
- Commercial Use
- Manufacturing and Production
- Public Use
- Vacant / Undefined

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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3.2 Recommended Corrective Land Use Management Measures

The Port Authority recommends the following **corrective** land use management measures as part of the TEB NCP. Corrective measures are applicable to off-airport land within the 65 DNL contour.

TEB Land Use Measure 1: Acquire Noncompatible Residential Parcels

Acquisition of noncompatible residential parcel and/or other interests associated with such parcels is a corrective land use measure because it converts noncompatible land use to a compatible land use.

Pursuant to the requirements of FAA Order 5100.37B Land Acquisition and Relocation Assistance for Airport Projects, an airport that purchases a property with a noncompatible land use utilizing AIP grant funding may modify the land use by removing the noncompatible structure, working with the jurisdiction to rezone the property to a compatible land use, and reselling the property. McCarran International Airport in Las Vegas[61] and Burlington International Airport in Vermont[62] took this approach to reduce noncompatible land uses near their airports.

This approach is intended to create "buffer zones" of compatible land use near the airport. Another approach would be for an airport that has acquired a parcel with a noncompatible land use to sound insulate the structure (thereby making the land use compatible) and then resell it.

The Port Authority is recommending property acquisition as a land use measure for inclusion in this NCP. If this measure is approved, and if the Port Authority acquires any noncompatible parcels using FAA grant funding, it would take action to make the land compatible by rezoning and otherwise comply with applicable FAA requirements for residential property acquisition.

The Port Authority has identified one parcel for potential acquisition: (a mobile home park with approximately 200 units) south of Runway 1 as shown in Figure 3-2 on page 3-7. Over a quarter of the mobile homes (57 total) in this parcel are within the 65 DNL or greater contours. Mobile homes are not considered compatible with airport noise levels greater than 65 DNL. Sound insulation is not an available option for mobile homes because their design and construction do not lend themselves to effective noise reduction measures. The parcel is located very close to the runway end and as shown in Chapter 2 none of the proposed noise abatement measures would remove the entire parcel from the 65 DNL. Land acquisition is the only available mitigation measure for this parcel.

While this parcel is eligible for acquisition, the Port Authority has not determined whether it would acquire this parcel at this time. The 65 DNL includes the entrance and the office to the mobile home park, therefore Port Authority would consider the whole parcel for acquisition. The Port Authority has estimated that as of 2019, it would cost approximately $10.3 million to acquire the mobile home park (land and homes) south of Runway 1.[63, 64] If it were to acquire this parcel using FAA grant funding, the Port Authority would be required to provide relocation assistance to eligible residents in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. Soft costs (relocation assistance, property management, legal, etc.) associated with acquisition were estimated to be approximately 12 percent[65] of the purchase price, bringing the total cost for land to approximately $11.54 million.

This cost estimate includes development of a relocation plan, title research, appraisal and appraisal review, acquisition and negotiations, relocation assistance, closing and recording, project management, demolition, rezoning and/or reselling.

Rezoning would be determined by coordinating with the local jurisdiction to determine how they will modify the parcel to result in compatible land use.

Table 3-2 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Land Use Measure 1.

[61] https://www.mccarran.com/Business/RealEstate
[62] http://www.btvsound.com/reuse-plan/

[63] Average mobile home price determined from available properties selling price listed on Zillow.com
[64] New Jersey Division of Taxation – Tax Search List https://tre-dotnet.state.nj.us/tytr_tlsps/TaxListSearchDetails.aspx accessed April 28, 2019
[65] Soft Cost estimate provided by subject matter experts for the Teterboro area.

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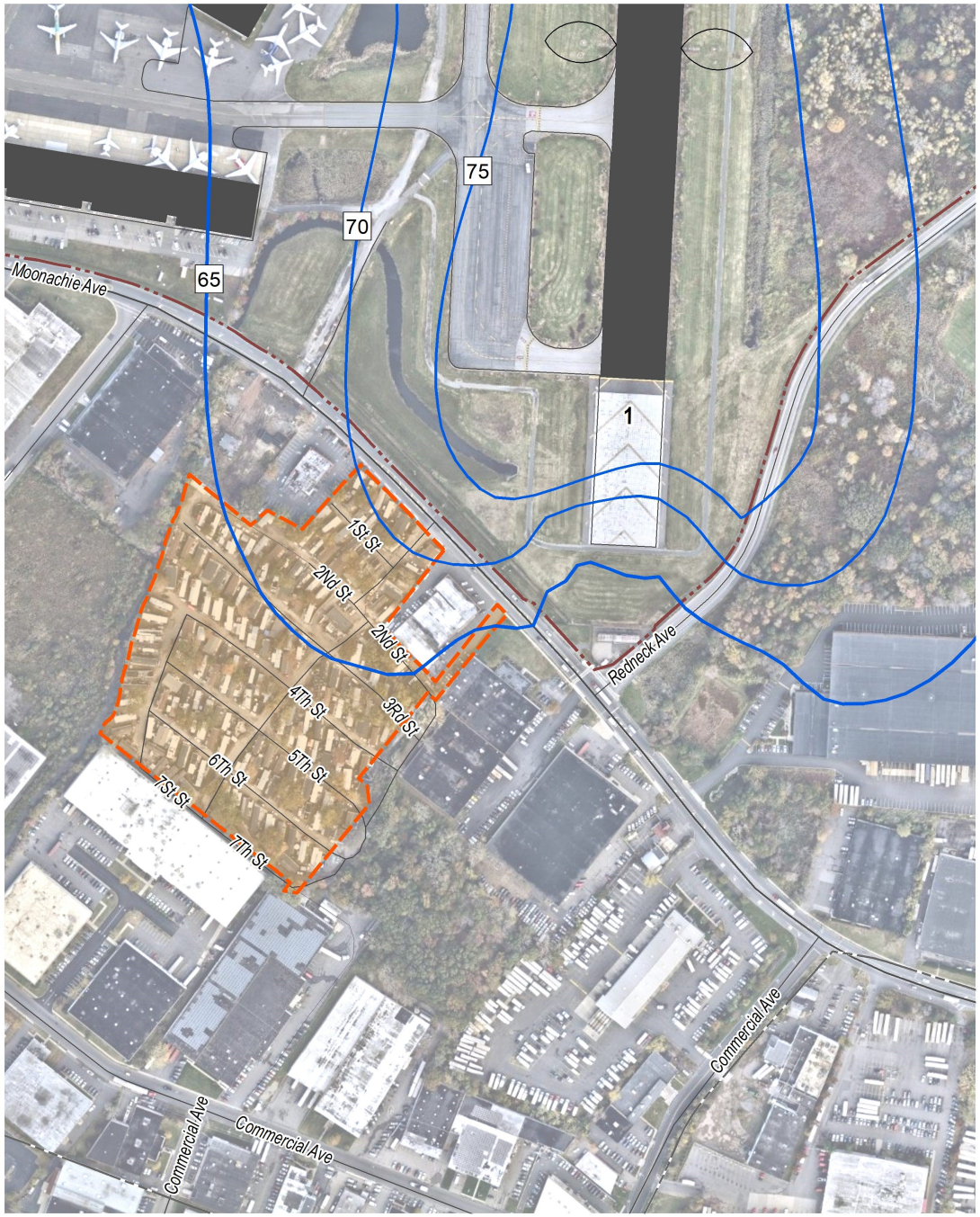

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Figure 3-2

Eligible Noncompatible Residential Parcel for Acquisition

- DNL on Accepted 2021 NEM
- Parcel Eligible for Acquisition
- TEB Airport Boundary (Approximate)
- Runway
- RMS # Noise Monitor Locations
- Municipal Boundary
- Highway
- Major Roads
- Minor Roads
- School
- Library
- Daycare
- Place of Worship

Note: Entire area depicted on the figure is within Bergen County and Bergen County has jurisdictional and land use control

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Source: The Port Authority of NY & NJ, Cornell University Geospatial Information Repository (CUGIR), NJ DEP Bureau of GIS, NYC Open Data, Environmental Systems Research Institute (ESRI)

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Conclusions: *TEB Land Use Measure 1: Acquire Noncompatible Residential Parcels* could reduce the number of people exposed to 65 DNL or higher by 138 and could eliminate all noncompatible land use south of Runway 1.

The acquisition of noncompatible residential parcels and conversion of those parcels to compatible land uses could be an effective way to improve land use compatibility with TEB operations. The Port Authority has identified one parcel for potential acquisition at this time, therefore the Port Authority recommends TEB Land Use Measure 1 for inclusion in this NCP.

Table 3-2: Implementation Summary for TEB Land Use Measure 1: Acquire Noncompatible Residential Parcels
Sources: HMMH and Port Authority, 2021.

Implementation Item	Discussion
Benefits	A reduction of up to 138 people in 57 dwelling units exposed to 65 DNL or higher if the one parcel identified by the Port Authority is acquired. Acquisition of the complete parcel would include up to 200 mobile homes including the 57 within the 65 DNL.
Rationale	The Port Authority is recommending TEB Land Use Measure 1 because it is an effective way to reduce noncompatible land use.
Responsible Parties	The Port Authority.
Estimated Costs	The Port Authority estimates $11.54 million to acquire the mobile home park south of Runway 1. This includes purchase price for the land and mobile homes, relocation assistance for eligible residents and related costs.
Funding Sources	90 percent FAA Airport Improvement Program and 10 percent Port Authority or local jurisdiction.
Requirements	FAA approval; identification of parcels; secured funding for acquisition of parcels.
Estimated Schedule	The Port Authority will seek to request federal financial assistance to set up a land acquisition program for TEB when economic conditions recover following the COVID-19 pandemic and any updates of the NEMs, if necessary. Consistent with Part 150 requirements, the Port Authority will evaluate any changes in the noise environment at TEB and notify the FAA whether the NEM continues to be a reasonable representation of current and/or forecast conditions at TEB or submit an updated NEM to the FAA for acceptance. The noise mitigation program set up task will determine the implementation schedule for TEB Land Use Measure 1.

TEB Land Use Measure 2: Sound Insulate Eligible Dwelling Units

Types of dwelling units include, but are not limited to, single-family units, multi-family units (up to and including high-rise buildings), and multi-use structures (such as those with retail on the ground floor and dwelling units above). Compatible areas of multiuse structures are not eligible for sound insulation.

Sound insulation treatments may include window and door replacement, caulking, weather stripping, and positive air ventilation. The purpose of positive air ventilation is to allow for replacement windows and doors to remain closed to provide the full benefit of the sound insulation treatment to residents. Positive ventilation systems use a fan to draw outside air into an indoor space, pressurizing the space. Indoor air is exhausted out of the building through sound-insulated exterior openings.[66]

Sound insulation does not change the outdoor noise environment (e.g., backyards, patios, and courtyards). The goal of sound insulation under 14 CFR Part 150 is to provide an average interior noise level of 45 DNL or below and to provide at least a 5-dB improvement to the of the structure.

Based on the experience of other airports' residential sound insulation programs, sound insulation is effective in reducing interior noise exposure and has a high level of satisfaction among dwelling unit occupants.

Noise attenuating windows and doors are most effective at reducing interior noise levels when they are closed. Keeping them closed can reduce interior air circulation, which in turn can increase moisture levels. To address such ventilation issues and allow for air circulation inside structures, installation of positive air ventilation systems is commonly included as part of sound insulation programs at other airports. The FAA has determined that positive ventilation systems are an eligible mitigation option for both private dwelling units and non-residential noise-sensitive structures, provided that all other eligibility requirements in the *AIP Handbook* are met.

In residential sound insulation programs funded in part by FAA AIP grants, a dwelling unit is only eligible for sound insulation if it meets all of the criteria set forth in the *AIP Handbook*,[67] Appendix R.[68] A dwelling unit is not eligible for federally funded sound insulation just by virtue of its location inside the 65 DNL contour.

In order to be eligible the dwelling unit must meet, at a minimum, the following criteria:

1) Located within the 65 DNL contour of an FAA-accepted NEM.
2) Constructed before the first publication of FAA-accepted DNL contours.[69] In the case of TEB, FAA-accepted DNL contours were first made available to the public on June 15, 2017. Therefore, dwelling units constructed after June 15, 2017, are not eligible for sound insulation.[70]
3) Adherence with local building codes.[71]
4) An average noise level in h*abitable* rooms at or above 45 DNL (with windows closed).

[66] National Academies of Sciences, Engineering, and Medicine. 2013. Guidelines for Airport Sound Insulation Programs. Washington, DC: The National Academies Press. https://doi.org/10.17226/22519. Section 7.5.3.

[67] FAA Order 5100.38D, Airport Improvement Program Handbook, dated 9/30/2014.

[68] Determination of eligibility would be made when the TEB Noise Compatibility Program has been approved, program protocols have been established, and the NCP implementation phase has been initiated.

[69] 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., sound insulation, property acquisitions, and relocation, to land uses that were in place as of October 1, 1998 unless an airport operator can demonstrate that DNL contours were not published prior to that date. New noncompatible uses resulting from airport expansion may be eligible for funding consideration. For TEB, 65, 70, and 75 DNL contours were first made available to the public on June 15, 2017.

[70] Port Authority of New York and New Jersey, "Teterboro Airport, Title 14 Code of Federal Regulations (CFR) Part 150, Noise Exposure Map Report, May 2017.

[71] Areas within a structure that do not meet the local building code are not "habitable" under FAA requirements and, therefore, are not eligible for sound insulation that is funded with AIP grants. The *AIP Handbook*, Appendix R, provides the following example of an area that is not eligible for sound insulation: "A resident has converted part of a basement to a bedroom and the bedroom conversion does not meet the building code requirements to be categorized as a bedroom. The converted bedroom is not considered habitable space."

The following residential noise-sensitive structures may be eligible for federally-funded positive ventilation systems: (1) structures that qualify for sound insulation and do not have existing positive ventilation systems; and (2) structures that do not qualify for sound insulation and require positive ventilation so that exterior doors and windows can be kept closed to obtain the noise-level reduction required for compatibility.

Residential and non-residential noise-sensitive structures that do not have positive ventilation systems and are determined to be eligible for federally funded positive ventilation systems can be divided into two groups:

1) Existing interior noise exposure of *at least* 45 DNL.
2) Existing interior noise exposure *below* 45 DNL, but only with all exterior doors and windows closed

According to Table C-5 of the *AIP Handbook*, the FAA may not authorize the installation of sound insulation for structures with non-residential noise-sensitive land uses that are located in temporary commercial facilities (e.g., a house of worship or day care facility under lease in a retail/commercial facility). In addition, mobile dwelling units are not eligible because FAA has determined that there are no effective sound insulation methods or materials for mobile homes (*AIP Handbook*, Table C-5).

According to 14 CFR Part 150, Appendix A, Sec. 101, a noise-sensitive land use is considered compatible and, therefore, not eligible for sound insulation "if the self-generated noise from a given use and/or the ambient noise from other non-aircraft and non-airport uses is equal to or greater than the noise from aircraft and airport sources." Ambient noise exposure generally increases as intensity of development increases, ranging from rural to suburban to urban to dense urban environment. The area around TEB includes land uses that can be classified in the middle of this range. Areas in proximity to TEB generally fall within the suburban to urban classification. The areas closest to the Airport would be classified as urban. Information from the Port Authority's Airport Noise and Operations Management System (ANOMS) indicates that community noise exposure at the noise monitors placed around TEB vary from the upper 50 DNL range to the mid 60 DNL range, and in many cases exceed the DNL values for aircraft noise measurements at those sites. Section 5.4 of the TEB NEM Report discusses ambient and self-generated noise in further detail.

According to Appendix R-9 of the *AIP Handbook*, a dwelling unit located outside of the 65 DNL contour may be eligible for sound insulation in some circumstances. Pursuant to Appendix R-9 of the *AIP Handbook*, dwelling units located on or immediately outside the 65 DNL contour may be eligible for sound insulation treatments under the concept of "block rounding." Block rounding involves expanding noise mitigation just beyond the 65 DNL contour to "include parcels contiguous to the project area." The FAA has the option, but is not obligated, to approve a request for block rounding if all requirements in Appendix R, including Table R-2 of the *AIP Handbook* are met, such as being a noise-sensitive land use, having an average sound level above 45 DNL in habitable rooms, and being constructed before publication of FAA-accepted noise contours.

In addition, pursuant to Appendix R-10 of the *AIP Handbook*, an airport sponsor may "consider the use of neighborhood equity when a few dwelling units in the eligible noise contour (pursuant to Paragraph R-6) that do not meet the interior noise level requirements are scattered among dwelling units that meet the interior noise level criteria." The FAA has the option, but is not obligated, to approve such requests for consideration of neighborhood equity. The dwelling units in consideration would have to meet all other eligibility requirements, such as being a noise-sensitive land use, having an average sound level above DNL 45 in habitable rooms, and being constructed before publication of FAA-accepted noise contours.

The FAA also has discretion to fund sound insulation for dwelling units located in structures that contain a mix of residential and commercial uses (e.g., buildings with retail on the first floor and apartments in upper floors).[72] In addition, a modular structure that has a noise-sensitive use may be eligible for sound insulation if the structure is permanent and meets the same building requirements for non-modular structures, as given in Appendix R of the *AIP Handbook*.

For a dwelling unit to be eligible for positive ventilation as part of a treatment package, it cannot have an existing positive ventilation system. A full list of eligibility requirements for positive ventilation is provided in Table R-6 and other relevant parts of Appendix R of the *AIP Handbook*.

In exchange for accepting sound insulation under TEB Land Use Measure 2, the Port Authority will require the property owner to provide an avigation easement. An avigation easement is a conveyance of airspace over another property for use by the airport. The property owner has restricted use of their property subject to the airport sponsor's easement for overflight and other applicable restrictions on the use and development of the parcel. Avigation easements run with the land (i.e., are attached to the property for so long as the easement is in effect). Therefore, an avigation easement binds future property owners and informs them of the property's exposure to aircraft noise while also restricting use of the parcel as described in the avigation easement.

The specific language of the avigation easement will be developed by the Port Authority during the initiation of its noise mitigation program, which will implement the corrective land use measures. The avigation easement will be attached to the property deed and filed with the local jurisdiction prior to the Port Authority accepting the dwelling unit into the TEB sound insulation program. Positive ventilation is paid for by the FAA only on a discretionary basis. Positive ventilation will not automatically be provided to noise-sensitive structures. In addition, an avigation easement would be required in order to receive positive ventilation.

Costs to complete sound insulation for dwelling units were estimated from recent residential sound insulation projects in the northeastern United States, adjusted to reflect construction costs in the New York–New Jersey metropolitan area. This includes data from the first four phases of the sound mitigation program for T.F. Green Airport (PVD) in Rhode Island from 2013 through 2015 (a recent noise mitigation program with similar dwelling unit construction types), along with a review of New York and New Jersey construction cost Indices in RSMeans data from Gordian.[73] The construction cost for each dwelling unit was estimated to be approximately $36,000 to $121,000 (in 2018 dollars), with a weighted average estimated cost of $63,000 for each dwelling unit.ased on soft costs (project administration, legal, etc.) associated with recent residential sound insulation projects in the northeastern United States and based on Port Authority experience with the school sound insulation program, costs other than actual construction costs were estimated to be approximately 30 percent of construction costs. A 15 percent contingency was then added for unforeseen conditions that may be encountered during construction. Assuming no other measures in this NCP are taken to change the noise contours, that 87 percent of the 139 dwelling units[74] within the 2021 65 DNL contour would be eligible for sound insulation, and 100 percent participation in the program, a total of 121 dwelling units[75] and 293 people,[76] would be eligible for sound insulation. The Port Authority estimates a cost of approximately $11.1 million (in 2018 dollars) to complete the TEB residential sound insulation program (construction costs plus soft costs and contingency costs).

[72] 14 CFR Part 150, Appendix A, Table 1 (included in this NCP Report as Table 1-2) indicates that residential land uses are not compatible with aircraft noise exposure of 65 DNL or higher.

[73] Gordian Construction Publishers & Consultants, Construction Cost Indexes with RSMeans data, Volume 44, Number 1, January 2018.

[74] The 57 mobile homes are not eligible. Based on field observations of the presence or absence of storm windows on a sample of properties around TEB, and data from the T.F. Green Airport sound mitigation program (2013–2015).

[75] 57 mobile home units and an estimated 13 percent of the remaining units are not eligible based on FAA guidelines for sound insulation treatment.

[76] Assuming the population multiplier of 2.42 people per dwelling unit from the Noise Exposure Map.

The Port Authority would offer positive ventilation systems to the following categories of structures within the 65 DNL contour (subject to meeting all eligibility requirements): (1) residential and non-residential structures that qualify for sound insulation and do not have existing positive ventilation systems, and (2) residential and non-residential structures that do not qualify for sound insulation and require positive ventilation so that exterior doors and windows can be kept closed to obtain the noise-level reduction required for compatibility. For the second eligibility group, which includes structures that do not qualify for sound insulation and require positive ventilation so that exterior doors and windows can be kept closed to obtain the noise-level reduction required for compatibility, the Port Authority has estimated approximately 13 percent of the identified noncompatible dwelling units (approximately 18 dwelling units or 44 people).[77, 78] These structures may be offered positive ventilation as a means of obtaining noise level reduction with doors and windows closed.

Additional factors evaluated for each site included:

- Existence of air conditioning/positive ventilation
- The existence of a significant number of windows (including stained glass windows)
- Overall condition of the structure (good, fair, or poor)

The Port Authority estimates a cost of $522,000 to provide positive ventilation to an estimated 18 dwelling units (construction costs are assumed to be $20,000 for each dwelling unit). This estimate is based on recent conversations with sound insulation experts and available construction cost index data. Based on soft costs (project administration, legal, etc.) associated with recent residential sound insulation projects in the northeastern United States and based on Port Authority experience with the school sound insulation program, costs other than actual construction costs were estimated to be approximately 30 percent of construction costs. A 15 percent contingency for unforeseen conditions that may be encountered during construction was added.

The total cost of this measure is estimated to be $11.6 million (in 2018 dollars).

In implementing TEB Land Use Measure 2 (if approved by FAA), the Port Authority will follow FAA's guidelines as outlined in the AIP handbook for a residential sound insulation program (i.e. starting at the highest level of noise exposure within the noise contour areas moving outwards to the 65 DNL).

The Port Authority will work with the FAA to develop a plan for identifying eligible properties, including areas outside the 65 DNL to be included for neighborhood equity. This plan will be developed independently of the NCP process, and specifics of the plan will be subject to FAA NCP approval. Once sound insulation programs are well established and proceeding at a relatively regular pace, airport operators typically install sound insulation in 50 to 250 dwelling units each year. Depending on the availability of program funding[79] from year to year, the pace of construction and other factors, this program may take many years to complete. As a result of inflation, the costs for each dwelling unit will increase over time. Therefore, total program costs will be higher than what is projected in 2018 dollars.

Table 3-3 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Land Use Measure 2.

[77] Based on field observations of the presence or absence of storm windows on a sample of properties around TEB, and data from the T.F. Green sound mitigation program (2013–2015).
[78] Assuming the population multiplier of 2.42 people per dwelling unit from the Noise Exposure Map.

[79] The Port Authority intends to fund the cost of residential sound insulation and positive ventilation with FAA AIP grants and, for portions not covered by AIP grants, fees paid by users of TEB pursuant to an agreement between the TEB airport users and the Port Authority. AIP grants can cover up to 90% of eligible costs of residential sound insulation and positive ventilation. Not all contingencies and soft costs may be eligible for AIP funding.

Conclusions: *TEB Land Use Measure 2: Sound Insulate Eligible Dwelling Units* could provide appropriate noise level reduction inside the dwelling units and improve the noise level reduction of the structures by at least 5 dB for up to 336 people in 139 dwelling units exposed to 65 DNL or higher. The sound insulation and/or positive ventilation of dwelling units could be an effective way to improve compatibility with aircraft noise.

Table 3-3: Implementation Summary for TEB Land Use Measure 2: Sound Insulate Eligible Dwelling Units
Sources: HMMH and Port Authority, 2021.

Implementation Item	Discussion
Benefits	Installation of sound insulation and positive ventilation treatments provides adequate noise reduction inside people's homes for compatibility with indoor activities. Once treated, a property is considered compatible with aircraft noise. This measure could benefit up to 293 people in 121 dwelling units exposed to noise levels 65 DNL or higher.
Rationale	The Port Authority is recommending TEB Land Use Measure 2 because it could be an effective way to provide appropriate noise level reduction inside eligible dwelling units.
Responsible Parties	The Port Authority.
Estimated Costs	$11.6 million to provide sound insulation treatments to approximately 139 dwelling units and 336 people, subject to the assumptions and limitations set forth in Section 3.2.
Funding Sources	90 percent of eligible costs FAA Airport Improvement Program and 10 percent Port Authority, fees paid by users of TEB.
Requirements	FAA approval; identification of eligible properties; secured funding to sound insulate properties.
Estimated Schedule	The Port Authority will seek to request federal financial assistance to set up a sound insulation program for TEB when economic conditions recover following the COVID-19 pandemic and any updates of the NEMs, if necessary. Consistent with Part 150 requirements, the Port Authority will evaluate any changes in the noise environment at TEB and notify the FAA whether the NEM continues to be a reasonable representation of current and/or forecast conditions at TEB or submit an updated NEM to the FAA for acceptance. The noise mitigation program set up task will determine the implementation schedule for TEB Land Use Measure 2.

TEB Land Use Measure 3: Sound Insulate Eligible Non-Residential Noise-Sensitive Structures

Non-residential noise-sensitive structures, according to current FAA land use compatibility designations,[80] include public use facilities such as schools, places of worship, libraries, daycares, and transient lodging. Sound insulation programs provide compatible noise environments inside structures to mitigate aircraft noise exposure. Sound insulation treatments may include window and door replacement, caulking, weather stripping, and positive air ventilation.

The purpose of sound insulation is to provide an average interior of 45 DNL[81] or below and at least a 5-dB improvement to the noise level reduction of the structure with the installation of the treatments. All eligibility requirements in Appendix R of the *AIP Handbook* must be met. Several key eligibility requirements are summarized in TEB Land Use Measure 2. In non-residential sound insulation programs funded in part by FAA AIP grants, a structure is only eligible for sound insulation if it meets all of the criteria set forth in the *AIP Handbook*,[82] Appendix R.[83]

A structure is not eligible for federally funded sound insulation just by virtue of its location inside the 65 DNL contour. Rather, to be eligible, the structure must meet, at a minimum, the following criteria:

(1) Located within the 65 DNL contour of an FAA-accepted NEM.
(2) Constructed before the first publication of FAA-accepted DNL contours.[84] In the case of TEB, FAA-accepted DNL contours were first made available to the public on June 15, 2017. Therefore, non-residential noise sensitive structures constructed after June 15, 2017 are not eligible for sound insulation.[85]
(3) Adherence with local building codes.[86]
(4) An average noise level in noise-sensitive rooms at or above 45 DNL (with windows closed).

The following non-residential noise-sensitive structures may be eligible for federally-funded positive ventilation systems: (1) structures that qualify for sound insulation and do not have existing positive ventilation systems, and (2) structures that do not qualify for sound insulation and require positive ventilation so that exterior doors and windows can be kept closed to obtain the noise-level reduction required for compatibility.

Non-residential noise-sensitive structures that do not have positive ventilation systems and are determined to be eligible for federally funded positive ventilation systems would be divided into two groups:

(1) Existing interior noise exposure of *at least* 45 DNL
(2) Existing interior noise exposure *below* 45 DNL, but only with having all exterior doors and windows closed

According to Table C-5 of the *AIP Handbook*, the FAA may not authorize the installation of sound insulation for structures with non-residential noise-sensitive land uses that are located in temporary commercial facilities (e.g., a house of worship or day care facility under lease in a retail/commercial facility). In addition, mobile structures are not eligible because FAA has determined that there are no effective sound insulation methods or materials for mobile homes (AIP Handbook, Table C-5).

[80] 14 CFR Part 150, Appendix A, Table 1.
[81] Average interior DNL from aircraft operations for non-residential noise-sensitive structures is based on the time of day that the facility is in use. For example, places of worship have particular times that noise-sensitive rooms are in use, and the average interior noise level is to be based on the times these rooms are in use rather than a full 24-hour day. For example, schools often use a school-time Leq (equivalent noise level) rather than the DNL for eligibility and design requirements.
[82] FAA Order 5100.38D, Airport Improvement Program Handbook, dated 9/30/2014.
[83] Determination of eligibility would be made when the TEB Noise Compatibility Program has been approved, program protocols have been established, and the NCP implementation phase has been initiated.
[84] 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., sound insulation, property acquisitions, and relocation, to land uses that were in place as of October 1, 1998 unless an airport operator can demonstrate that DNL contours were not published prior to that date. New noncompatible uses resulting from airport expansion may be eligible for funding consideration. For TEB, 65, 70, and 75 DNL contours were first made available to the public on June 15, 2017.
[85] Port Authority of New York and New Jersey, "Teterboro Airport, Title 14 Code of Federal Regulations (CFR) Part 150, Noise Exposure Map Report, May 2017.
[86] Areas within a structure that do not meet the local building code are not "habitable" under FAA requirements and, therefore, are not eligible for sound insulation that is funded with AIP grants. The *AIP Handbook*, Appendix R, provides the following example of an area that is not eligible for sound insulation: "A resident has converted part of a basement to a bedroom and the bedroom conversion does not meet the building code requirements to be categorized as a bedroom. The converted bedroom is not considered habitable space."

According to 14 CFR Part 150, Appendix A, Sec. 101, a noise-sensitive land use is considered compatible and, therefore, not eligible for sound insulation "if the self-generated noise from a given use and/or the ambient noise from other non-aircraft and non-airport uses is equal to or greater than the noise from aircraft and airport sources." Ambient noise exposure generally increases as intensity of development increases, ranging from rural to suburban to urban to dense urban environment. The area around TEB include land uses that can be classified in the middle of this range. Areas in proximity to TEB generally fall within the suburban to urban classification. The areas closest to the Airport would be classified as urban. Information from the Port Authority's ANOMS indicates that community noise exposure at the noise monitors placed around TEB vary from around the upper 50 DNL range to the mid 60 DNL range and in many cases exceed the DNL values for aircraft noise measurements at those sites. Section 5.4 of the TEB NEM Report discusses ambient and self-generated noise in further detail.

The 2021 DNL contours include four non-residential noise-sensitive structures: a school that received sound insulation treatment during the previous Port Authority sound insulation programs, one other school, one place of worship and one daycare, for a total of three potentially eligible non-residential noise-sensitive structures within the 65 DNL contour, as shown in Table 3-4.

Table 3-4: Noise Sensitive Sites within 2016 and 2021 65 DNL Contour
Source: HMMH and RS&H, 2018

Year	Noise Sensitive Site	Type	Address	City
Within 2016 and 2021	Learning Tree Academy	Daycare	150 Park Place East	Wood-Ridge
	Bergen County Technical High School(1)	School	504 US-46	Teterboro
	Jersey College School of Nursing(2)	School	546 US-46	Teterboro
Within 2021 Only	Catalyst Agape Church(3)	Place of Worship	370 North St	Teterboro

Note 1: The Bergen County Technical School has been sound insulated as a part of the School Sound Insulation Program discussed in Section 3.2 on page 3-5.
Note 2: The Jersey College School of Nursing is in a commercial structure and FAA will determine eligibility on a case by case basis.
Note 3: The North Jersey Vineyard Church changed to a different congregation – the Catalyst Agape Church – in the same location. The church occupies a portion of a commercial structure and FAA will determine eligibility on a case by case basis.

The RSMeans Square Foot Cost Estimating Guide[87] and information from similar projects at other airports were used to estimate the cost of sound insulation and positive ventilation for these structures. To provide a basis for cost estimation, square footage of each structure was determined using high-resolution aerial photography and Google Street View. Additional factors evaluated for each site included:

- Existence of air conditioning/positive ventilation
- A significant number of windows (including stained glass windows)
- Overall condition of the structure (good, fair, or poor)

A 10 percent contingency was then added for design, along with an additional 15 percent contingency for unforeseen conditions that may be encountered during construction. An estimate of soft costs (project administration, legal, etc.) associated with non-residential sound insulation was assumed to be similar to the soft costs associated with residential sound insulation, which was estimated to be approximately 30 percent of the construction costs.

The Port Authority has estimated that one non-residential noise-sensitive structure may not qualify for sound insulation.[88]

This structure may be offered positive ventilation as a means of obtaining noise level reduction with doors and windows closed. The Port Authority estimates a cost of $135,000 to provide positive ventilation to one non-residential noise-sensitive structure (construction costs are assumed to be $73,000 for a non-residential noise structure). Additionally, the Port Authority estimates a cost of $10.6 million to provide sound insulation treatments to the two potentially eligible facilities. The total cost of this measure is estimated to be $10.8 million.

The Port Authority will work with the FAA to develop a plan for identifying eligible properties within the 65 DNL. This will be developed independently of the NCP process and specifics of the plan will be subject to FAA NCP approval. Table 3-5 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Land Use Measure 3.

[87] The cost by square foot was determined through a review of similar projects at other airports, adjusted to 2018 dollars using the Building Cost Index published by Engineering News-Record and converted to the New York location factor published by RSMeans.

[88] Based on field observations of the presence or absence of storm windows on a sample of properties around TEB, and data from the T.F. Green sound mitigation program (2013–2015).

Conclusions: *TEB Land Use Measure 3: Sound Insulate Eligible Non-Residential Noise-Sensitive Structures* could provide appropriate noise level reduction inside eligible non-residential noise-sensitive structures and improve the noise level reduction of the structure by at least 5 dB. The sound insulation and/or positive ventilation of eligible non-residential structures could be an effective way to improve compatibility with aircraft noise.

Table 3-5: Implementation Summary for TEB Land Use Measure 3: Sound Insulate Eligible Non-Residential Noise-Sensitive Structures
Sources: HMMH and Port Authority, 2021.

Implementation Item	Discussion
Benefits	Installation of sound insulation and positive ventilation treatments provides noise reduction inside noise-sensitive structures for compatibility with indoor activities. Once treated, the property is considered compatible.
Rationale	The Port Authority is recommending TEB Land Use Measure 3 because it could be an effective way to provide appropriate noise level reduction inside eligible non-residential noise-sensitive structures.
Responsible Parties	The Port Authority.
Estimated Costs	$10.8 million to provide sound insulation treatments to three facilities, based on the assumptions set forth in Section 3.2.
Funding Sources	90 percent of eligible costs FAA Airport Improvement Program and 10 percent Port Authority, fees paid by users for TEB.
Requirements	FAA approval; identification of eligible properties; secured funding to sound insulate properties.
Estimated Schedule	The Port Authority will seek to request federal financial assistance to set up a sound insulation program for TEB when economic conditions recover following the COVID-19 pandemic and any updates of the NEMs, if necessary. Consistent with Part 150 requirements, the Port Authority will evaluate any changes in the noise environment at TEB and notify the FAA whether the NEM continues to be a reasonable representation of current and/or forecast conditions at TEB or submit an updated NEM to the FAA for acceptance. The noise mitigation program set up task will determine the implementation schedule for TEB Land Use Measure 3.

3.3 Recommended Preventive Land Use Management Measures

Based on the experience of other airports and according to the FAA, the preventive land use measures discussed in this section and Section 3.4 on page 3-22 of this NCP Report can be effective in preventing the development of new noncompatible land uses. It is up to state and local governments to decide whether to pursue preventive land use management measures to reduce noncompatible land use. Consistent with the requirements of 14 CFR Part 150, Appendix A, Sec. 150.123, the Port Authority met with land use planning entities in the communities surrounding TEB to educate them about preventive land use measures and to learn their level of interest in potentially pursuing any of these approaches. A summary of those meetings is presented in Section 5.2 on page 5-4 of this NCP Report and meeting notes are provided in Appendix E.2 on page E-49.

Based on this outreach, the land use planning agencies expressed willingness to explore preventive land use measures in the future but were not at this time prepared to act. At least one of the planning agencies expressed a preference for the Port Authority to focus on developing voluntary measures that would incentivize property owners to install noise mitigation rather than the jurisdictions themselves implementing preventive land use measures through changes in zoning or building codes. The Port Authority acknowledges that local jurisdictions currently do not intend to pursue changes to their zoning and building codes to prevent future noncompatible land uses. To the extent that a state or local government would like to evaluate preventive land use measures sometime in the future, the Port Authority will assist in any such evaluation. Therefore, solely to assist jurisdictions that may elect to pursue such land use measures in the future, the Port Authority recommends the **preventive** land use measures set forth below.

TEB Land Use Measure 4: Assist with Establishing an Airport Noise Overlay Zone

Airport noise overlay zones are intended to prevent noncompatible land uses from being developed near an airport. The noise overlay zone works in tandem with the local jurisdictions' existing zoning and provides detailed information regarding the land uses allowable within the overlay zone, such as noise level reduction required for noise-sensitive structures. If the overlay zone allows for noncompatible land uses, such as residential, schools and churches, then the overlay zone will also include specific building codes to ensure compatibility and the addition of avigation easements. These specific codes are generally more stringent than standard building codes, but similar to the existing codes required for energy conservation purposes.

Land use control agencies within the jurisdictions showed interest in establishing airport noise overlay zones to assist in better land use compatibility with aircraft operations. The following land use jurisdictions expressed interest in an overlay zone during meetings, which occurred in January and March of 2017:[89]

- New Jersey Sports and Exposition Authority
- City of Hackensack
- Borough of East Rutherford
- Borough of Hasbrouck Heights
- Borough of Little Ferry
- Bergen County
- Township of South Hackensack
- Borough of Teterboro

The Port Authority could support the local jurisdictions' desire to establish an airport noise overlay zone. Using the forecast NEM as the basis, the Port Authority could provide information to each local jurisdiction responsible for land use zoning designations in developing an airport noise overlay zone that would achieve the land use zoning goals of that community.

Table 3-6 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Land Use Measure 4.

[89] The study team met with the New Jersey Sports and Exposition authority occurred on January 23, 2017 for both TEB and EWR. On January 24, 2017, the study team met with the City of Hackensack, Borough of East Rutherford, Borough of Hasbrouck Heights, and Borough of Little Ferry. The study team met with Bergen County on January 25, 2017 and the Township of Hackensack and Borough of Teterboro on March 20, 2017.

Conclusions: *TEB Land Use Measure 4: Assist with Establishing an Airport Noise Overlay Zone* could help prevent the introduction of new noncompatible land uses.

Table 3-6: Implementation Summary for TEB Land Use Measure 4: Assist with Establishing an Airport Noise Overlay Zone
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	Airport noise overlay zones could help prevent the introduction of new noncompatible land uses.
Rationale	The Port Authority is recommending TEB Land Use Measure 4 to deter the introduction of new noncompatible land uses as required by the FAA Grant Assurances.
Responsible Parties	The local jurisdiction responsible for land use zoning is responsible for development and implementation.
Estimated Costs	25,000 per jurisdiction to allow each jurisdiction to prepare an airport noise overlay zone and for the Port Authority to provide assistance to each jurisdiction to implement.
Funding Sources	90 percent FAA Airport Improvement Program grants and 10 percent Port Authority.
Requirements	FAA approval.
Estimated Schedule	Within one year of FAA approval of this measure, the Port Authority will contact the responsible local land use jurisdictions to explore their interest in pursuing this measure. If a local jurisdiction elects to proceed, the Port Authority will provide information to assist the jurisdiction in developing an airport overlay zone.

3.4 Land Use Management Measures Considered but Not Recommended for Inclusion in this NCP

The Port Authority considered, but does not recommend the following land use management measures as part of the TEB Noise Compatibility Program:

Acquire Avigation Easements

An avigation easement is a conveyance of airspace over another parcel for use by the airport in exchange for a one-time cash payment from the airport to the parcel owner. As a result, the parcel owner has restricted use of the property subject to the airport sponsor's easement for overflight and other applicable restrictions on the use and development of the parcel. Easement rights acquired through the avigation easement typically include the following: the "right-of-flight" of aircraft; the right to cause noise, dust, and other environmental disturbances; the right to remove all objects protruding into the airspace together with the right to prohibit future obstructions or interference in the airspace; and the right of ingress and egress on the land to exercise the other rights acquired.

Avigation easements are intended to be attached to the parcel deed in perpetuity. The easement becomes a means to inform future owners of the parcel's exposure to aircraft noise and restrict use of the parcel as described in the avigation easement.

An appraisal is usually required for the purchase of avigation easements based on fair market value in accordance with FAA Advisory Circular (AC) 150-5100-17, "Land Acquisition and Relocation Assistance for Airport Improvement Program (AIP) Assisted Projects," Section 2.2.8, "Appraisal of Avigation Easements Acquired for Airport Operations and Standards." The compensation value must not be set arbitrarily at the $10,000 maximum value. The easement compensation must be reasonable and relate to the actual value range for the non-complex easement acquisition.

Avigation easement acquisition will be associated with other Port Authority-recommended noise mitigation measures, such as land acquisition and sound insulation, but not for compensation to the parcel owner as a stand-alone measure. This measure is not recommended for inclusion in this NCP.

Reason for not recommending in this NCP:
The Port Authority prefers to focus noise mitigation on those items that provide a noise benefit to the residents and users of the noncompatible structures. This measure would not provide a reduction in noncompatible land use. The Port Authority may reconsider this measure to obtain land use compatibility in a future NCP update. Avigation easements will be required for parcel owners to receive noise mitigation from the land use measures recommended in Section 3.2 on page 3-5.

Implement Cooperative Land Use Agreements

A cooperative land use agreement is an agreement voluntarily entered into between an airport sponsor (i.e., Port Authority) and jurisdictions with local land use authority, which focuses on land use, redevelopment, and infrastructure in the airport vicinity. This agreement is intended to prevent the introduction of new noncompatible land uses with aircraft noise and to share information on proposed land developments between parties. This would promote discussion between the airport sponsor and the jurisdiction about future plans at the airport and inform the airport sponsor about proposed land development that could introduce noncompatible land uses.[90] Such agreements can be effective at preventing the introduction of new noncompatible land uses. This measure is not recommended for inclusion in this NCP.

Reason for not recommending in this NCP:

During the NCP phase of the 14 CFR Part 150 Study, the Port Authority held several discussions with land use agencies. In general, the agencies did not support cooperative land use agreements to promote compatible land use. Therefore, the Port Authority prefers to continue to work collaboratively with land use jurisdictions without implementing cooperative land use agreements at this time. The Port Authority is open to furthering the relationships with the jurisdictions and may recommend cooperative land use agreements as a measure on future updates to the NCP.

Raise Minimum Building Standards

Jurisdictions create, codify and enact into law, and periodically update building codes to protect public health, safety, and general welfare as they relate to the construction and occupancy of structures. In areas of noncompatible land use, particularly within the 65 DNL or higher aircraft noise exposure contours, jurisdictions may implement amended building codes to ensure newly installed structures provide for adequate noise level reduction that results in compatible land use by providing acceptable interior/habitable spaces. Such amended building codes would specify a required interior noise level in terms of DNL and/or a specific noise level reduction in terms of Sound Transmission Class, Outdoor to Indoor Transmission Loss or both. The result would require home builders and contractors to provide plans that provide for the required minimum noise level reduction based on the location of the parcel relative to the 65 DNL or higher aircraft noise exposure contours and the intended use of the interior space(s). This measure is not recommended for inclusion in this NCP.

Reason for not recommending in this NCP:

There is an extremely limited number of vacant parcels within the existing 65 DNL contour. It is relatively rare that jurisdictions are asked to approve plans for newly constructed or large-scale additions to noise-sensitive structures in these locations. In addition, as discussed in TEB Land Use Measure 2, dwelling units and nonresidential structures with noise sensitive land uses are considered compatible if constructed after June 15, 2017 the date in which there is a publicly available aircraft noise exposure contour alerting the communities to the existence of aircraft noise. Therefore, raising the minimum building standards does not seem to have much benefit in reducing noncompatible land uses surrounding TEB. The Port Authority is open to further discussions with the local jurisdictions about preventive land use measures and would offer assistance to jurisdictions expressing an interest in pursuing building code changes.

[90] Cooperative Land Use Agreements were discussed with the TAC in meetings 10, 11 and 12. See Appendix D.2 on page D-50 and Appendix D.3 on page D-159.

Implement Rezoning of Land Uses

The creation or revision of zoning rules is focused on reducing or preventing construction of future noncompatible uses in areas experiencing 65 DNL or higher noise exposure from TEB aircraft operations. This measure is not recommended for inclusion in this NCP.

Reason for not recommending in this NCP:

During the NCP phase of the 14 CFR Part 150 Study, the Port Authority held several discussions with land use agencies. In general, the agencies did not support rezoning to promote compatible land use. In addition, as discussed in TEB Land Use Measure 2, dwelling units and nonresidential structures with noise sensitive land uses are considered compatible if constructed after June 15, 2017 (the date of the first publicly available aircraft noise exposure contour for TEB). Therefore, rezoning noncompatible land uses does not seem to have much benefit in reducing noncompatible land uses surrounding TEB. The Port Authority does not have jurisdiction over zoning codes, but would work with land use and regulatory agencies if they are interested in pursuing noise-related zoning code changes specifically focused toward new development, and may reconsider this measure in future updates to the NCP.

Include Airport Aircraft Noise in Real Estate Disclosures

Real estate disclosure is a preventive land use strategy because it is focused on raising awareness of aircraft noise exposure among potential buyers of property. Real estate disclosures provide the opportunity for the real estate purchaser to learn about the property and the seller's experience in it. Such disclosures inform buyers while also protecting the sellers from future legal action by revealing issues that negatively affect the value, usefulness, or enjoyment of the property.[91] Some communities near airports include aircraft noise in real estate disclosure forms to ensure that the buyer is aware that the property is in the vicinity of an airport.

The decision whether to pursue a policy to include aircraft noise in real estate disclosures is an issue for government entities to decide. During discussion with land use agencies, none showed interest in pursuing real estate disclosures. Therefore, the Port Authority is not recommending this measure.

Reason for not recommending in this NCP:

During the NCP phase of the 14 CFR Part 150 Study, the Port Authority held several discussions with land use agencies. In general, the agencies did not support the inclusion of aircraft noise in real estate disclosures. The Port Authority does not have jurisdiction over real estate disclosures but would work with land use and regulatory agencies if they are interested in pursuing inclusion of aircraft noise in real estate disclosures and may reconsider this measure in future updates to the NCP.

[91] https://webtrak.emsbk.com/panynj4

3.5 Summary of Recommended Land Use Management Measures

Appendix H summarizes the full list of recommended land use measures.

Measures to be Initiated at TEB within One Year of FAA Record of Approval

- TEB Land Use Measure 4: Assist with Establishing an Airport Noise Overlay Zone

Measures with Schedule Dependent Upon External Factors/Pandemic Recovery

- TEB Land Use Measure 1: Acquire Noncompatible Residential Parcels
- TEB Land Use Measure 2: Sound Insulate Eligible Dwelling Units
- TEB Land Use Measure 3: Sound Insulate Eligible Non-Residential Noise-Sensitive Structures

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4. Program Management Measures

Program management measures would enable the Port Authority to monitor the implementation and compliance of the recommended noise abatement and land use management measures described in Chapters 2 and 3 of this NCP Report, as well as enhance the stakeholders' understanding of aircraft noise. Program management measures are critical to the success of the NCP.

This chapter details the following thirteen Program Management Measures recommended for inclusion in this NCP:

- TEB Program Management Measure 1: Maintain Noise Offices
- TEB Program Management Measure 2: Maintain Noise and Operations Management System (NOMS)
- TEB Program Management Measure 3: Maintain Public Flight Tracking Portal
- TEB Program Management Measure 4: Maintain Noise Complaint Management System
- TEB Program Management Measure 5: Maintain Noise Office Website
- TEB Program Management Measure 6: Continue Community Outreach Activities
- TEB Program Management Measure 7: Establish an Airport Noise Community Planners Forum
- TEB Program Management Measure 8: Establish and Manage a Fly Quiet Program
- TEB Program Management Measure 9: Make Aircraft Noise Contours Available in a Geographic Information System (GIS)
- TEB Program Management Measure 10: Update the Noise Exposure Map
- TEB Program Management Measure 11: Update the Noise Compatibility Program
- TEB Program Management Measure 12: Update Airfield Noise Abatement Program Signage
- TEB Program Management Measure 13: The Port Authority to Coordinate with FAA on Development and Implementation of NextGen Procedures

4.1 Existing Program Management Measures

The Port Authority has been proactive in establishing program management measures to address aircraft noise concerns as presented in Table 2-1 on page 2-3. The Port Authority currently has several programs in place to monitor aircraft noise exposure and engage local communities in understanding aircraft noise.

The Noise Abatement Program at TEB has been in place for several decades, and long pre-dates the Port Authority's 14 CFR Part 150 Program for TEB. In fact, elements of the program pre-date the promulgation of Part 150 regulations. The TEB Noise Abatement Program started in the 1970s with the installation of a portable noise monitor and has grown since then. The airport enhanced and improved its noise monitoring system over the years to include permanent monitors connected to a computer system, flight tracking, and a noise complaint management system. TEB airport also has a Noise Abatement Office with several dedicated staff who manage noise and environmental issues at the airport.

Noise Office

The Port Authority Noise Office manages the noise programs for JFK, LGA, EWR, and TEB, including the 14 CFR Part 150 Studies for each airport. Currently, six full-time employees staff the Port Authority's Noise Office, providing public engagement as well as management of the noise monitoring, flight tracking, and complaint management systems in place. The Noise Office operates as the principal office for receiving and responding to aircraft noise complaints from the public and interfacing with stakeholder representatives, communities, and airport users.

TEB has a noise abatement office at the airport with dedicated staff that regularly communicate with FAA personnel, aircraft operators, community members, and aviation industry associations about aircraft noise. In addition, the Noise Office investigates and responds to aircraft noise complaints, compiles data for re-ports to the public and FAA, operates and maintains the Port Authority's noise and operations management system (NOMS) and the public flight tracking portal system, participates in TANAAC and community meetings, and meets with elected officials to discuss aircraft noise issues.

Noise and Operations Management System (NOMS)

The existing NOMS, a system called Airport Noise and Operations Management System (ANOMS™) provided by EMS Bruel & Kjaer, continuously collects noise monitoring data in the vicinity of TEB using permanent and portable noise monitors. It receives flight track data from the FAA and can link noise events and complaints to specific aircraft operations. In addition to providing reliable airport operations and noise monitoring data, ANOMS allows investigation and validation of noise complaints, and provides historical data on runway use, flight tracks, and weather. The Port Authority also uses ANOMS data to enforce the TEB noise limits.

Public Flight Tracking Portal (WebTrak)

ANOMS has a public access component known as WebTrak, which allows the public to view aircraft movements within the New York / New Jersey Metropolitan area on a website.[92] For each aircraft, WebTrak provides specific information regarding aircraft type, altitude, origin and destination airports, and flight identification. Noise level readings at the noise monitors near each airport are also shown in A-weighted instantaneous sound pressure level readings. WebTrak can also be used by the public to submit a noise complaint to the Port Authority through the link to an online web form. The Port Authority also posts runway closure information in a pop-up window on the main WebTrak webpage, which is updated on a weekly basis.

[92] https://webtrak.emsbk.com/panynj4

Noise Complaint Management System (PlaneNoise®)

The Port Authority collects and manages noise complaint information from each of the airports in its system. There are three primary means of filing an aircraft noise complaint: (1) by completing and submitting the form on the Port Authority's website; (2) by leaving a voicemail on the airport's noise complaint hotline; and (3) using WebTrak website. Noise complaints are collected with the help of the Port Authority's PlaneNoise® complaint management system. Each complaint received is compiled in a database, verified for accuracy, analyzed, and mapped for reporting. The Port Authority provides noise complaint reports to the FAA on a monthly basis for informational purposes.

Noise Office Website

The Port Authority maintains a Noise Office website,[93] which provides links to web pages describing the Port Authority's various noise management programs. These include links to submit a noise complaint, WebTrak, noise monitoring, data reports, and airport community roundtables. The noise information website also contains a link to frequently asked questions (FAQs) and a central web page for each of the Port Authority's JFK, LGA, EWR, and TEB 14 CFR Part 150 Studies. TEB, as the general aviation reliever airport also has its own noise abatement website,[94] which lists TEB specific noise abatement information and links to the TEB Flight Crew Handbook and recommended helicopter flight routes.

Community Outreach

The Port Authority, in collaboration with the FAA and representatives of communities surrounding its airports, facilitated the development of airport community roundtables at JFK, LGA, and EWR and continued its participation in TANAAC at TEB during the Part 150 process. Each community roundtable meets on a regular basis to provide opportunities for its members to maintain open communication with the Port Authority and the FAA, seeking mutual and feasible ways to manage aircraft noise. TANAAC was established in 1987, prior to the airport community roundtables at JFK, LGA, and EWR, which were developed in conjunction with this Part 150 Study.

The Port Authority has participated in TANAAC since 1987. As this channel of open communication existed prior to the Part 150 process, TEB was able to continue dialogue with the TANAAC throughout the Part 150 Study. TANAAC provides a forum for ongoing dialogue between the airport and the communities surrounding TEB, and to oversee noise abatement, while insuring the safe and efficient operation of the airport. TANAAC is comprised of the airport operator, federal, state, and local elected officials, FAA representatives, airport users, and representatives of 15 municipalities surrounding the airport.

[93] http://www.panynj.gov/airports/aircraft-noise-information.html

[94] https://www.panynj.gov/airports/teb-noise-abatement.html

Quiet Flying Program

The TEB Flight Crew Handbook[95] provides an overview of TEB's Quiet Flying Program, including all the voluntary and mandatory noise abatement measures at TEB and consequences of noise violations. Descriptions and diagrams of noise abatement procedures, and locations of noise monitors are also included in the Handbook. Aircraft operators are reminded of the Quiet Flying Program by signs placed at the airport entry points as shown in Figure 4-1. A copy of the Flight Crew Handbook is included in Appendix C.3 on page C-35.

Airfield Noise Abatement Signage

TEB has installed four noise abatement signs on the airfield that are located near both ends of each runway. These signs remind pilots of the Quiet Flying Program in place at TEB.

Figure 4-1: Quiet Flying Program Signage

[95] https://www.panynj.gov/airports/pdf/TEB-Flight-Crew-Handbook.pdf

4.2 Recommended Program Management Measures

The Port Authority has considered and is recommending the following program management measures for implementation.

TEB Program Management Measure 1: Maintain Noise Offices

The existing Noise Office at Port Authority and the TEB noise abatement office are vital links between the airport and communities regarding aircraft noise concerns. After FAA's approval of the Port Authority recommended NCP measures, the Noise Office responsibilities will expand to include implementation of the recommended NCP measures and monitoring adherence with the existing and implemented noise abatement measures. It is possible that the Port Authority may need additional staff resources to adequately address the increased responsibilities that come with the implementation and monitoring of Noise Compatibility Programs at JFK, LGA, EWR, and TEB.

Table 4-1 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 1.

Conclusions: *TEB Program Management Measure 1: Maintain Noise Offices* will enable the Port Authority to continue to understand, respond to, and address community concerns associated with aircraft noise from TEB operations. In the future, the Port Authority Noise Office and the TEB Noise Office will facilitate the implementation of the new measures recommended in this NCP Report, as approved by the FAA.

Table 4-1: Implementation Summary for TEB Program Management Measure 1: Maintain Noise Offices
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	The existing Port Authority Noise Office and TEB Noise Office enables the Port Authority to understand, respond to, and address community concerns associated with aircraft noise from TEB operations. In the future, the Noise Offices will continue to maintain the existing program management measures, facilitate the implementation of the new approved NCP measures and monitor adherence with them.
Rationale	The Port Authority is recommending TEB Program Management Measure 1 because the existing TEB Noise Office is the principal office for receiving and responding to aircraft noise complaints from the public and interfacing with stakeholder representatives, the communities, and airport users with the Port Authority Noise Office providing additional support. With the completion of the NCP, both the Port Authority Noise Office and TEB Noise Office staff will be critical in successful implementation of the approved NCP measures.
Responsible Parties	The Port Authority.
Estimated Costs	The FAA does not fund program operating expenses. The Port Authority will continue to fund the operation of both Noise Offices.
Funding Sources	The Port Authority.
Requirements	Port Authority approval for additional staff if and when required.
Estimated Schedule	This measure is already implemented; the Port Authority will continue to operate both Noise Offices.

TEB Program Management Measure 2: Maintain Noise and Operations Management System (NOMS)

The existing NOMS, a system called Airport Noise and Operations Management System (ANOMS™) provided by EMS Bruel & Kjaer, is a key tool used by the Port Authority and TEB Noise Office to correlate noise monitoring data with individual aircraft operations. This supports the investigation of noise complaints as well as communication with the public about the noise environment associated with TEB. The NOMS also retains historical data so that noise and operational trends can be determined.

Table 4-2 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 2.

Conclusions: *TEB Program Management Measure 2: Maintain Noise and Operations Management System* would enable the Port Authority and TEB Noise Office to maintain its ability to investigate noise complaints and provide a means to monitor consistence with NCP noise abatement measures at TEB. The Port Authority will continue to upgrade NOMS software and noise monitors to incorporate future monitoring and flight tracking technologies that would be beneficial to the functions of the Noise Office.

Table 4-2: Implementation Summary for TEB Program Management Measure 2: Maintain Noise and Operations Management System
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	The NOMS enables the Port Authority and TEB Noise Office to correlate noise monitoring data with individual aircraft operations at TEB. This supports the investigation of noise complaints as well as communication with the public about the noise environment associated with TEB.
Rationale	The Port Authority is recommending TEB Program Management Measure 2 because the NOMS is a key tool used by the Port Authority and TEB Noise Office.
Responsible Parties	The Port Authority.
Estimated Costs	The FAA does not fund program operating expenses. The Port Authority will continue to fund the maintenance of the existing system. However, if a system upgrade and/or replacement is needed in the future, then the cost is expected to be to be approximately $55,000. If any of the existing noise monitors need to be replaced and/or upgraded in the future, then the cost for hardware and installation of one noise monitor is expected to be approximately $35,000. Only noise monitors within the FAA-accepted NEM are eligible for AIP funding. These cost estimates are determined based on the development of the existing system as a baseline with added future anticipated cost for system upgrades and/or replacement. The cost for the implementation of this measure is eligible to be partially funded by the FAA.
Funding Sources	For system replacement and/or upgrades of eligible components: 90 percent FAA Airport Improvement Program and 10 percent Port Authority. Funding for maintenance of the existing system and for system replacement and/or upgrades of non-eligible components will be provided by the Port Authority.
Requirements	FAA approval of this measure; and Port Authority to secure funding for system replacement and/or upgrades.
Estimated Schedule	This measure is already implemented; the Port Authority will continue to maintain the existing NOMS. When Port Authority contracts with vendors expire, the Port Authority will attempt to request a federal grant for system replacement and/or upgrades.

TEB Program Management Measure 3: Maintain Public Flight Tracking Portal

The existing public aircraft flight-tracking portal is an internet-based system that allows the public to view aircraft movements in the New York / New Jersey area using a website. The existing portal provides aircraft locations and noise monitor values for current and historical operations at TEB and is used to post information about runway closures. A flight tracking portal essentially provides a public interface for ANOMS and thus is a key communication and educational tool used by the Noise Office.

Table 4-3 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 3.

Conclusions: *TEB Program Management Measure 3: Maintain Public Flight Tracking Portal* will enable the TEB Noise Office to continue providing information to the public about aircraft operations and associated noise levels at TEB. The Port Authority will continue to explore new technologies to incorporate into its flight tracking portal system that would be beneficial to the functions of the Noise Office and the needs of the communities.

Table 4-3: Implementation Summary for TEB Program Management Measure 3: Maintain Public Flight Tracking Portal
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	The existing public flight tracking portal enables the Port Authority to provide information to the public about aircraft operations and associated noise levels at TEB. This supports the Port Authority's communication with the public about of operations at TEB.
Rationale	The Port Authority is recommending TEB Program Management Measure 3 because the existing public flight tracking portal is a key tool used by the Port Authority and communities. Costs of system upgrades are to be determined, based on appropriate future technologies, and will be partially funded by the FAA.
Responsible Parties	The Port Authority.
Estimated Costs	The FAA does not fund program operating expenses. The Port Authority will continue to fund the maintenance of the existing system. However, if a system upgrade and/or replacement is needed in the future, then the cost is expected to be to be approximately $3,000. The cost estimate is determined based on the development of the existing system as a baseline with added future anticipated cost for system upgrades and/or replacement. The cost for the implementation of this measure is eligible to be partially funded by the FAA.
Funding Sources	For system upgrades of eligible components: 90 percent FAA Airport Improvement Program and 10 percent Port Authority. Funding for maintenance of the existing system and for system re-placement and/or upgrades of non-eligible components will be provided by the Port Authority.
Requirements	FAA approval of this measure; and Port Authority to secure funding for the system upgrades.
Estimated Schedule	This measure is already implemented; the Port Authority will continue to maintain the existing public flight tracking portal. When Port Authority contracts with vendors expire, the Port Authority will attempt to request a federal grant for system replacement and/or upgrades.

TEB Program Management Measure 4: Maintain Noise Complaint Management System

The existing noise complaint management system, provided by PlaneNoise, is used by the Port Authority to collect and manage noise complaint information from each of the airports in its system. Noise complaints submitted to the Noise Office through the internet and through voicemails are collected with the help of the noise complaint management system. Each complaint received is compiled in a database, verified for accuracy, analyzed, and mapped for reporting. The Port Authority provides noise complaint reports to the FAA on a quarterly basis for informational purposes.

The use of a noise complaint management system enables the Noise Office to efficiently respond to noise complaints and gain insights from noise complaint data.

Table 4-4 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 4.

Conclusions: *TEB Program Management Measure 4: Maintain Noise Complaint Management System* will enable the Noise Office to continue efficient collection and reporting of noise complaints associated with operations at TEB. The Port Authority will continue to upgrade its noise complaint management system to incorporate future functionality that would be beneficial to the functions of the Noise Office and the needs of the communities.

Table 4-4: Implementation Summary for TEB Program Management Measure 4: Maintain Noise Complaint Management System
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	The existing noise complaint management system, provided by PlaneNoise, enables the Port Authority and TEB Noise Offices to efficiently collect and report noise complaints associated with aircraft operations at TEB. This supports the Noise Office function of communicating with the public about the noise effects of operations at TEB.
Rationale	The Port Authority is recommending TEB Program Management Measure 4 because the existing noise complaint management system supports the function of the Port Authority and TEB Noise Offices.
Responsible Parties	The Port Authority.
Estimated Costs	The FAA does not fund program operating expenses. The Port Authority will continue to fund the maintenance of the existing system. However, if a system upgrade and/or replacement is needed in the future, then the cost is expected to be to be approximately $3,000. The cost estimate is determined based on the development of the existing system as a baseline with added future anticipated cost for system upgrades and/or replacement. The cost for the implementation of this measure is eligible to be partially funded by the FAA.
Funding Sources	For system upgrades of eligible components: 90 percent FAA Airport Improvement Program and 10 percent Port Authority. Funding for maintenance of the existing system and for system re-placement and/or upgrades of non-eligible components will be provided by the Port Authority.
Requirements	FAA approval of this measure; and the Port Authority to secure funding for the system upgrades.
Estimated Schedule	This measure is already implemented; the Port Authority will continue to maintain the existing noise complaint management system. When Port Authority contracts with vendors expire, the Port Authority will attempt to request a federal grant for system replacement and/or upgrades.

TEB Program Management Measure 5: Maintain Noise Office Website

The Port Authority's Noise Office website provides links to web pages describing the Port Authority's various noise management programs. These include links to submit a noise complaint, public flight tracking portal, noise monitoring, data reports, and airport community roundtables. The noise information website also contains a link to a central web page for each of the Port Authority's JFK, LGA, EWR, and TEB 14 CFR Part 150 Studies. Thus, the Noise Office website serves as a single point of entry to all the publicly available information and services provided by the Port Authority and TEB Noise Offices. The TEB webpage also contains Teterboro specific information such as the TEB Flight Crew Handbook, information about the maximum noise levels and the voluntary restraint from flying period.

Table 4-5 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 5.

Conclusions: *TEB Program Management Measure 5: Maintain Noise Office Website* will enable the Port Authority and TEB Noise Offices to continue to provide access to publicly available information and services associated with the noise environment at TEB. The Port Authority will continue to maintain its website to enable a single point of entry for the public to access information about the services of the noise office and any Teterboro-specific information.

Table 4-5: Implementation Summary for TEB Program Management Measure 5: Maintain Noise Office Website
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	The existing Noise Office website provides links to the Port Authority's publicly available information and services associated with the noise environment at TEB. This supports the Port Authority and TEB Noise Offices function of communicating with the public about the noise effects of operations at TEB.
Rationale	The Port Authority is recommending TEB Program Management Measure 5 because the existing Noise Office Website support the function of the Port Authority and TEB Noise Offices.
Responsible Parties	The Port Authority.
Estimated Costs	The FAA does not fund program operating expenses. The Port Authority will continue to fund maintenance and upgrades of the Noise Office website.
Funding Sources	Not applicable.
Requirements	Existing measure – No requirements to implement.
Estimated Schedule	This measure has already been implemented; the Port Authority will continue to maintain and upgrade the Noise Office website.

TEB Program Management Measure 6: Continue Community Outreach Activities

The Port Authority will continue to support groups that discuss TEB noise abatement procedures and issues, such as TANAAC and TUG. The TANAAC is a stakeholder engagement group established in 1987, which was developed to provide a forum for ongoing dialogue between the airport and the neighboring communities. TANAAC helped to establish the existing noise abatement program at TEB and now along with the Port Authority oversees noise abatement measures. Its membership includes the Port Authority, TEB airport management, FAA, federal, state and locally elected officials, airport users, and community representatives from fifteen neighboring municipalities.

TANAAC meets quarterly and meetings are open to the public. The TUG is a group of airport users that meets on a regular basis dedicated to enhancing the airports safety, efficiency, and infrastructure in the interest of all the airport's constituents. The TUG regularly meets to discuss use of and adherence to flight procedures at TEB. The Port Authority and TEB staff attend these meetings and provide information as requested.

Table 4-6 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 6.

Conclusions: *TEB Program Management Measure 6: Continue Community Outreach Activities* will enable the Port Authority and TEB Noise Offices to support and maintain meaningful dialogue with the communities, the FAA, and other aviation stakeholders regarding aviation noise at TEB. The Port Authority and TEB Noise Offices will continue to participate in meetings with TANAAC and TUG, and provide information on noise abatement, reports on airport operations and noise monitoring, and engagement on development of new flight procedures.

Table 4-6: Implementation Summary for TEB Program Management Measure 6: Continue Community Outreach Activities
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	Community outreach activities enable the Port Authority to support and maintain meaningful dialogue regarding aircraft noise at TEB. This supports the Port Authority and TEB Noise Offices function of communicating with the public about the noise effects of operations at TEB. TANAAC oversees implementation and adherence with noise abatement measures and recommends measures to address community concerns as they arise and provides engagement with stakeholders on noise issues. TUG provides a platform for dissemination of noise abatement measures and information.
Rationale	The Port Authority is recommending TEB Program Management Measure 6 because existing community outreach activities support the function of the Port Authority and TEB Noise Offices.
Responsible Parties	The Port Authority.
Estimated Costs	The FAA does not fund program operating expenses. The Port Authority will continue its community outreach activities.
Funding Sources	Not applicable at this time; the Port Authority would seek reimbursement if funding becomes available in the future.
Requirements	Existing measure – No requirements to implement.
Estimated Schedule	This measure has already been implemented; the Port Authority will continue its community outreach activities.

TEB Program Management Measure 7: Establish a Community Planners Forum

The Port Authority recommends initiating a Community Planners Forum that will bring together land use planners and local zoning jurisdictions responsible for land use planning in the vicinity of the airport. The Port Authority would provide the venue for this voluntary forum to allow for the sharing and dissemination of aircraft noise related information pertaining to comprehensive planning, land use issues, zoning issues, and noise mitigation efforts by the local jurisdictions. The goal of this measure is to provide a forum for land use planning agencies and zoning jurisdictions to be made aware of aircraft noise related information relating to comprehensive planning, land use issues, zoning issues, and noise mitigation efforts at TEB. Increasing awareness of aircraft noise related information and land use compatibility improves the likelihood that new noncompatible land uses will not be introduced in the future.

Table 4-7 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 7.

Conclusions: *TEB Program Management Measure 7: Establish a Community Planners Forum* will enable the collaboration of various jurisdictions in the airport vicinity to share information pertaining to comprehensive planning, land use issues, zoning issues, and noise mitigation efforts. The voluntary forum would include New Jersey land use planning agencies, local zoning jurisdictions, and other stakeholders at TEB.

Table 4-7: Implementation Summary for TEB Program Management Measure 7: Establish a Community Planners Forum
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	A Voluntary Noise Community Planners Forum that will enable the collaboration of various jurisdictions in the airport vicinity to share aircraft noise related information pertaining to comprehensive planning, land use issues, zoning issues, and noise mitigation efforts at TEB.
Rationale	The Port Authority is recommending TEB Program Management Measure 7 so that there can be a collaboration and sharing of information, with various jurisdictions in the airport vicinity, pertaining to comprehensive planning, land use issues, zoning issues, and noise mitigation efforts for TEB.
Responsible Parties	The Port Authority.
Estimated Costs	At this time there is no cost to implement as Port Authority would provide the venue for the meeting.
Funding Sources	Not applicable.
Requirements	FAA's approval of this measure; and Port Authority to initiate a Community Planners Forum.
Estimated Schedule	Within one year of the FAA's Record of Approval for the NCP, the Port Authority will initiate convening a Community Planners Forum.

TEB Program Management Measure 8: Establish and Manage a Fly Quiet Program

The Port Authority recommends updating the existing TEB Flight Crew Handbook which documents the Quiet Flying Program to provide a comprehensive Fly Quiet Program for TEB. This program will incorporate the existing mandatory and voluntary noise abatement measures at TEB documented in the Handbook along with the additional proposed measures approved in the NCP. The TEB Flight Crew Handbook includes details on maximum noise limits for departures, permission to operate jet aircraft forms, preferential noise abatement runway usage, maintenance run-up restrictions and flight procedures designed to reduce noise over residential communities. The Fly Quiet Program will allow the Port Authority to continue to develop collaborative solutions for abating noise from aircraft operations at TEB.

The Fly Quiet Program encourages pilots and air traffic controllers to use agreed noise abatement flight tracks, noise abatement departure procedures, and preferential runways. The updated program will continue to include airline/pilot awareness campaigns with promotional materials (e.g., handouts/flyers, signage, and other educational materials) to ensure pilots know about the recommended noise abatement procedures at the Airport. The Noise Office would then track adherences to the noise abatement procedures through the Fly Quiet Program and report on them. The Fly Quiet Program would also include the preparation of comprehensive noise reports using the data acquired and maintained in the NOMS system. The Fly Quiet noise reports would be published on the Noise Office website and shared with various stakeholders including, but not limited to, the FAA, TANAAC members, and land use planners.

Table 4-8 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 8.

Conclusions: *TEB Program Management Measure 8: Establish and Manage a Fly Quiet Program* would continue to enable the collaborative development and management of voluntary solutions to abate noise from aircraft operations. The Program would include updating the Handbook into a full Fly Quiet Program for TEB and provide engagement with pilots, FAA air traffic controllers, and other stakeholders at TEB.

Table 4-8: Implementation Summary for TEB Program Management Measure 8: Establish and Manage a Fly Quiet Program
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	Establishment and management of a voluntary Fly Quiet Program would enable the continuation of mandatory measures and the development and management of voluntary solutions for abating noise from aircraft operations at TEB.
Rationale	The Port Authority is recommending TEB Program Management Measure 8 so that aircraft noise can be collaboratively abated and managed at TEB.
Responsible Parties	The Port Authority.
Estimated Costs	Approximately $150,000. The estimated cost was based on previous efforts at other airports.
Funding Sources	90 percent FAA Airport Improvement Program and 10 percent Port Authority (if determined to be eligible for AIP funding).
Requirements	FAA's approval of this measure; and Port Authority to develop the voluntary Fly Quiet program.
Estimated Schedule	Within one year of the FAA's Record of Approval for the NCP, the Port Authority will initiate development of the Fly Quiet Program.

TEB Program Management Measure 9: Make Aircraft Noise Contours Available in a Geographic Information System (GIS)

An interactive NEM (presenting 65 DNL and higher contour lines) can provide the public, land use planning agencies, and other stakeholders with easy access to an airport's noise contours to enhance awareness and decision-making regarding aircraft noise. This measure would involve the Port Authority providing a Google Earth file (or other readily usable file) of the TEB Future Conditions (year 2021) 65, 70, and 75 DNL contours to the public for download.

The Port Authority could also host a map on its Noise Office website that would include these GIS layers as a downloadable file containing noise contour shapes for easy viewing by interested parties.

Interactive noise contour maps for TEB were developed as part of this Study. Those maps allow users to determine whether their residence or other noise-sensitive building is within or outside of the 65 DNL contour. They were favorably received when showcased at the TEB draft NEM workshops and subsequently posted for public access on the TEB 14 CFR Part 150 Study website. It is the Port Authority's intention to maintain public access to these maps.

The Port Authority will also provide the Future Conditions 65 DNL contour to the local planning agencies with land uses within the contour boundary.

Table 4-9 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 9.

Conclusions: *TEB Program Management Measure 9: Make Aircraft Noise Contours Available in a Geographic Information System (GIS)* would provide the public, land use planning agencies, and other stakeholders with easy access to future condition TEB noise contours to enhance awareness and decision-making regarding aircraft noise.

Table 4-9: Implementation Summary for TEB Program Management Measure 9: Make Aircraft Noise Contours Available in a Geographic Information System (GIS)
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	Making TEB noise contours available in a geographic information system will enable the public, land use planning agencies, and other stakeholders with easy access to future condition noise contours.
Rationale	The Port Authority is recommending TEB Program Management Measure 9 to provide easy access to future condition TEB noise contours that could enhance awareness and decision-making for interested parties regarding aircraft noise.
Responsible Parties	The Port Authority.
Estimated Costs	At the present time there is no cost to implement and the Port Authority will use available information and methods to make the contours available.
Funding Sources	Not applicable.
Requirements	Not applicable.
Estimated Schedule	This measure has already been implemented. The Port Authority will maintain public access to the existing interactive noise contour map.

TEB Program Management Measure 10: Update the Noise Exposure Map

The FAA requires that an airport operator maintain NEMs that reflect current or reasonably projected conditions in order to obtain FAA funding for noise programs. Specifically, 14 CFR Part 150, Sec. 150.21(d), states that an airport operator shall "promptly prepare and submit a revised noise exposure map" if any change in the operation of the airport creates a "substantial, new noncompatible use" or a "significant reduction in noise over existing noncompatible uses" that is not reflected on the FAA-accepted NEM on record. The former condition reflects an increase of DNL 1.5 dB over noncompatible uses or land uses that are made noncompatible by the noise increase, while the latter condition reflects a reduction of DNL 1.5 dB over uses that were formerly noncompatible but are made compatible by the noise reduction.

Consistent with Part 150 requirements, the Port Authority will evaluate any changes in the noise environment at TEB and notify the FAA whether the NEM continues to be a reasonable representation of current and/or forecast conditions at TEB or submit an updated NEM to the FAA for acceptance. The Port Authority anticipates updating the NEMs when operations at TEB stabilize as the aviation sector continues to recover from the COVID-19 pandemic.

Table 4-10 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 10.

Conclusions: *TEB Program Management Measure 10: Update the Noise Exposure Map* will enable the Port Authority to meet the requirements of 14 CFR Part 150, Section 150.21(d), if applicable changes in the noise environment occur at TEB.

Table 4-10: Implementation Summary for TEB Program Management Measure 10: Update the Noise Exposure Map
Sources: HMMH and Port Authority, 2021.

Implementation Item	Discussion
Benefits	Updating the Noise Exposure Map will enable the Port Authority to meet the requirements of 14 CFR Part 150 if applicable changes in the noise environment occur at TEB.
Rationale	The Port Authority is recommending TEB Program Management Measure 10 to meet the requirements of 14 CFR Part 150, Section 150.21(d).
Responsible Parties	The Port Authority.
Estimated Costs	Approximately $2 million.
Funding Sources	90 percent FAA Airport Improvement Program and 10 percent Port Authority.
Requirements	FAA's approval of this measure; and Port Authority to secure funding for the update of the Noise Exposure Map when warranted.
Estimated Schedule	The Port Authority anticipates updating the NEMs when operations at TEB stabilize from the COVID-19 pandemic. Thereafter, the Port Authority expects to update the NEM in accordance with Section 174 of the FAA Reauthorization Act of 2018.

TEB Program Management Measure 11: Update the Noise Compatibility Program

14 CFR Part 150, Sec. 150.23(e)(9), states that NCPs must include a "[p]rovision for revising the program if made necessary by revision of the noise exposure map." This may occur if a significant change is identified that results in a revision to the NEMs. Examples of changes are a large addition of noncompatible land uses, or new elements required to achieve land use compatibility. The NCP does not require an update with each NEM update. The Port Authority anticipates updating the NCP only when additional measures and/or modified measures are required to reduce noncompatible land use. The Port Authority is recommending this measure in order to meet 14 CFR Part 150 requirements if an update to the NCP is made necessary by a revision of the NEM.

Table 4-11 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 11.

Conclusions: *TEB Program Management Measure 11: Update the Noise Compatibility Program* will enable the Port Authority to meet the requirements of 14 CFR Part 150, Section 150.23(e)(9), if made necessary by a revision of the Noise Exposure Maps for TEB.

Table 4-11: Implementation Summary for TEB Program Management Measure 11: Update the Noise Compatibility Program
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	Updating the Noise Compatibility Program will enable the Port Authority to meet the requirements of 14 CFR Part 150 if a revision of the NCP is made necessary by a revision of the Noise Exposure Map for TEB.
Rationale	The Port Authority is recommending TEB Program Management Measure 11 to meet the requirements of 14 CFR Part 150, Section 150.23(e)(9).
Responsible Parties	The Port Authority.
Estimated Costs	An NCP update may range from $300,000 to $2 million.
Funding Sources	90 percent FAA Airport Improvement Program and 10 percent Port Authority.
Requirements	FAA's approval of this measure; and Port Authority to secure funding for the update of Noise Compatibility Program when appropriate.
Estimated Schedule	Within two years of FAA acceptance of a revised NEM, the Port Authority will attempt to initiate a review of the NCP to determine if a revision is necessary.

TEB Program Management Measure 12: Update Airfield Noise Abatement Program Signage

TEB has installed four noise abatement signs on the airfield and one at both ends of each runway, reminding pilots of the noise abatement program in place at TEB. Two of the signs also include descriptions of the maximum noise limits for departures from Runway 19 and 24.

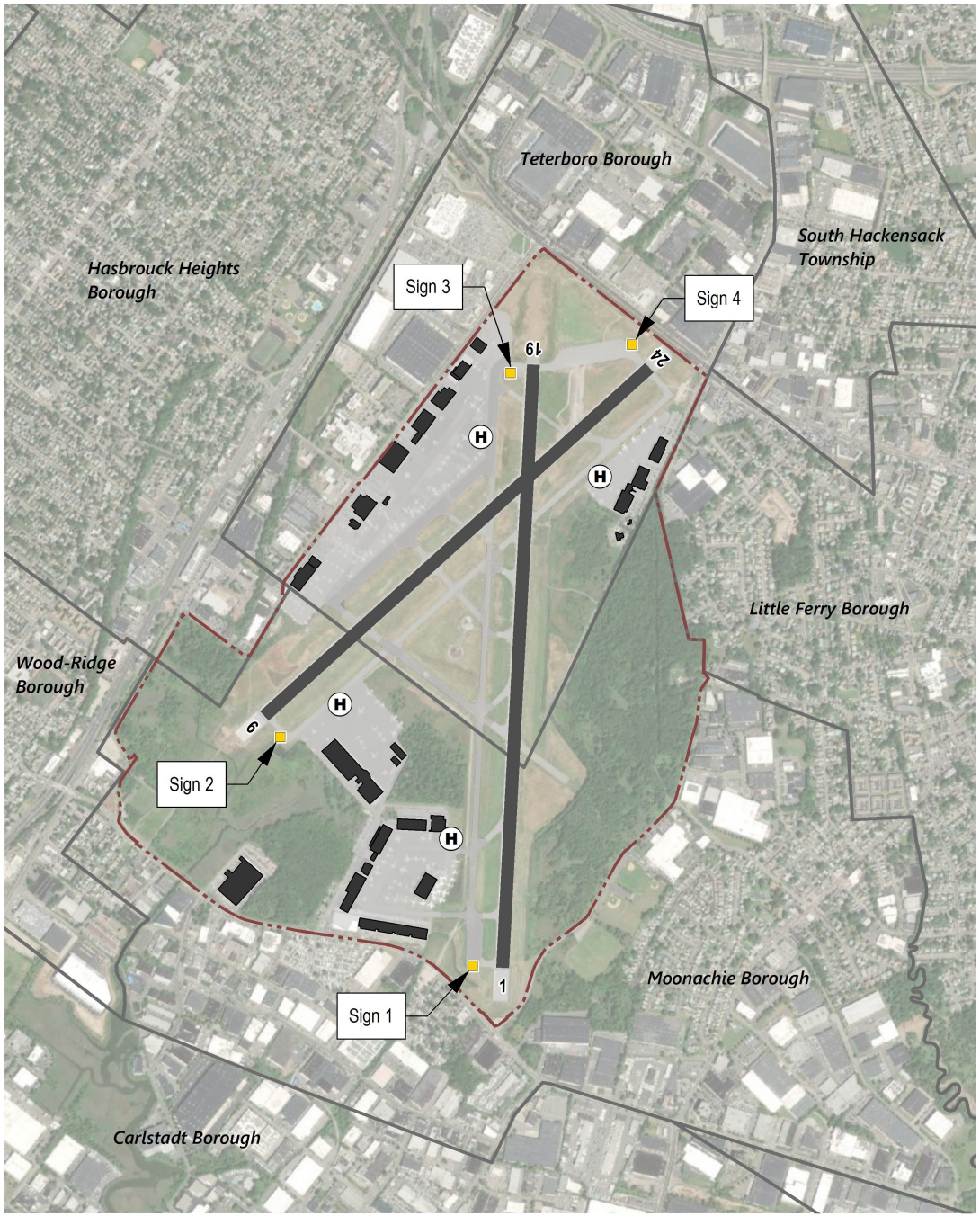
The signs are specific to each runway end and state the following:

- Runway 1 – Fly Quietly Noise Abatement Program in Effect
- Runway 6 – Fly Quietly Noise Abatement Program in Effect
- Runway 19 – Noise Abatement Program in Effect Recommended Use of RWY 19 and Dalton 2 Departure Noise limit 95 dB(A)
- Runway 24 – Noise Sensitive Runway 2200-0700 Local Noise Limit 80 dB(A) Other Times 90 dB(A)

Figure 4-2 on page 4-17 shows the location of each sign on the airfield. One additional sign is proposed to be installed in conjunction with the Noise Abatement measure for a centralized aircraft run-up pad. This sign would remind pilots of the correct headings to use and the mandatory restrictions regarding the time of day for run-ups. The proposed sign would state something like the following:

- Run-ups allowed 0800-2000 Mon-Sat and 1200-1800 Sun, Preferred headings 240° or 60°

Figure 4-3 on page 4-19 displays the location of the proposed centralized aircraft run-up pad and sign. Table 4-12 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 12.



THE PORT AUTHORITY OF NY & NJ

Teterboro Airport

Airport Noise Compatibility
Part 150 Study
2021 Noise Compatibility Program

Figure 4-2

Noise Abatement Signage

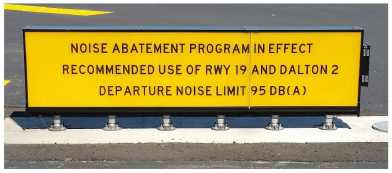
TEB Airport Boundary (Approximate)

H Helicopter Pad Location

Noise Abatement Sign Location

Sign 1 & 2

Sign 3



Sign 4

N

0 2,000 4,000 Ft

Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; New Jersey Geographic Information Network (NJGIN)

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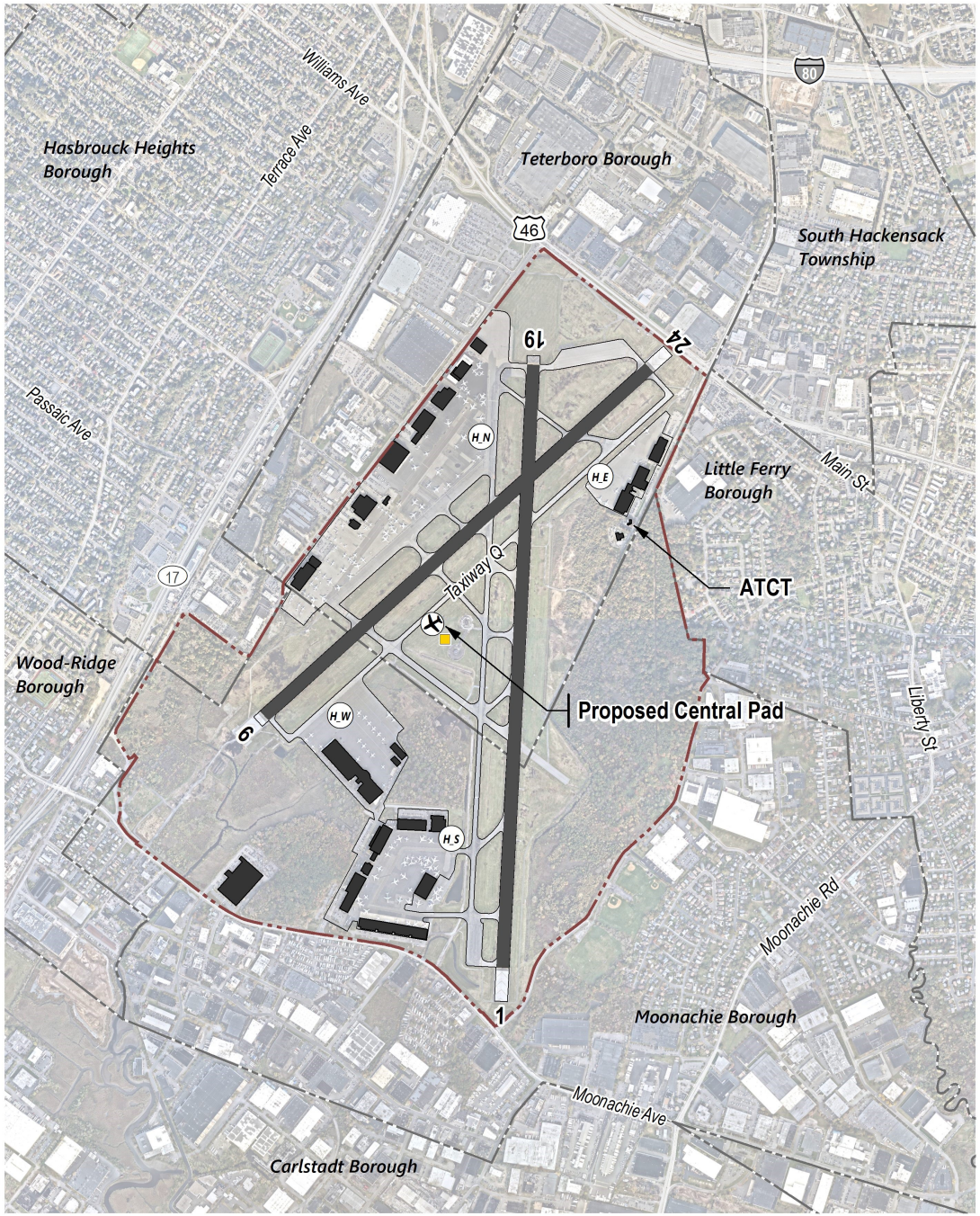

THE PORT AUTHORITY OF NY & NJ

Teterboro Airport

Airport Noise Compatibility
Part 150 Study
2021 Noise Compatibility Program

Figure 4-3

Proposed Airfield Sign Location and Maintenance Run-up Location

- TEB Airport Boundary (Approximate)
- Runway
- Buildings
- Helicopter Pad Location
- Runup Location
  Proposed Central Pad - 240° or 60°
- Proposed Airfield Sign Location
- Municipal Boundary

ATCT – Air Traffic Control Tower

N

0 2,000 4,000 Ft

New Jersey Geographic Information Network (NJGIN)

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Conclusions: *TEB Program Management Measure 12: Update Airfield Noise Abatement Program Signage* will provide noise abatement information to the TEB pilots to follow the recommended procedures. The Port Authority recommends continuing to maintain the existing noise signage and to install one new sign at the centralized aircraft run-up pad once it is constructed.

Table 4-12: Implementation Summary for TEB Program Management Measure 12: Update Airfield Noise Abatement Program Signage
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	The TEB Airfield Noise Abatement Program Signage provides noise abatement information to the TEB pilots. This includes details on maximum noise limits for departures, permission to operate jet aircraft forms, preferential noise abatement runway usage, maintenance run-up restrictions, and flight procedures.
Rationale	The Port Authority is recommending TEB Program Management Measure 12 because the signs developed for the Noise Abatement Program support the function of the Noise Office and are an effective communication tool to remind pilots about noise abatement.
Responsible Parties	The Port Authority.
Estimated Costs	The installation of a new sign in conjunction with a centralized aircraft run-up pad has an estimated cost of $25,000. The existing four signs are in good condition currently, but any future replacement for airfield signage that has exceed its useful life or replacement due to changes in sign panel specifications will be AIP grant eligible.
Funding Sources	90 percent FAA Airport Improvement Program and 10 percent Port Authority.
Requirements	Not applicable.
Estimated Schedule	Within two years of FAA approval of the measure and TEB Noise Abatement Measure 3, the Port Authority will attempt to initiate an update to the ALP. The ALP update could take from one to three years to complete and may result in a NEPA evaluation, which could take another one to three years. Once the ALP and NEPA evaluation (if required) is complete, the Port Authority will develop the orders to conduct aircraft engine run-ups at the centralized locations whenever possible and install the new sign.

TEB Program Management Measure 13: The Port Authority to Coordinate with FAA on Development and Implementation of NextGen Procedures

The Port Authority supports the FAA's efforts to modernize the air transportation system to make flying safer, more efficient and more predictable. FAA's Next Generation Air Transportation System (NextGen) is a comprehensive overhaul of the National Airspace System (NAS) to make air travel more convenient and dependable, while ensuring that flying is as safe, secure, and convenient as possible. Through NextGen, the FAA seeks to build the capability to guide and track aircraft more precisely and efficiently to save fuel and reduce noise and pollution.[96] A key NextGen technology is Performance Based Navigation (PBN), which uses satellites to guide aircraft along precise flight paths.[97] These precise flight paths often result in concentration of aircraft within narrow flight corridors. Because the use of NextGen procedures to guide aircraft along precise flight paths can increase the frequency of overflights of areas below the concentrated flight paths, the Port Authority recommends that the FAA coordinate closely with the Port Authority if and when it evaluates the implementation of NextGen flight procedures in the greater New York/New Jersey region.

FAA's NextGen implementation involves the management of flight procedures for numerous airports in the region and is not specific to TEB. The Port Authority is a member of the NextGen Advisory Committee (NAC),[98] which is a federal advisory committee that makes recommendations to the FAA regarding the possible implementation of NextGen in the New York/New Jersey/Philadelphia airspace; this includes air traffic and airspace management recommendations. Through participation in the NAC, the Port Authority can provide their insight for FAA consideration regarding future airspace and procedure designs for the region. The Port Authority expects to continue that collaborative approach. As a collaborating member of the NAC, the Port Authority can advance measures for further FAA evaluation by either directly engaging with the regional FAA TRACON or submitting them to the NAC.

Additionally, the FAA is working to reduce the concentration of aircraft that results from the implementation of NextGen departure procedures. To address community concerns about the concentration of aircraft on particular flight procedures, Congress enacted legislation requiring FAA to consider dispersal headings,[99] when FAA proposes a new NextGen departure procedure or amends an existing procedure below 6,000 feet over noise sensitive areas. The term "dispersal headings" describes the use of more than one departure heading from a runway, which may result in a reduced concentration of aircraft on departure close into the airport. Reducing the concentration of aircraft using dispersal headings can assist in balancing noise exposure.

Following final approval of this NCP, the Port Authority will, in consultation with the affected communities, request FAA to consider dispersal headings or other lateral track variations pursuant to Section 175 of FAA Reauthorization Act of 2018 when the FAA is evaluating new or amended are navigation departure procedures.

Table 4-13 provides a summary of implementation requirements along with the benefits and rationale for the recommendation of TEB Program Management Measure 13.

[96] www.faa.gov/nextgen/, Last accessed: March 20, 2019.

[97] https://www.faa.gov/nextgen/how_nextgen_works/new_technology/pbn/in_depth/. Last accessed: March 20, 2019.

[98] https://www.faa.gov/about/office_org/headquarters_offices/ang/nac/ Last accessed: March 20, 2019.

[99] Upon request of an airport operator and in consultation with the affected community. FAA Reauthorization Act of 2018, Public Law No. 115-254 (effective October 5, 2018).

Conclusions: *TEB Program Management Measure 13: The Port Authority to Coordinate with FAA on Development and Implementation of NextGen Procedures* would allow the Port Authority to be aware of potential flight path changes that could affect aircraft noise exposure and land use compatibility around TEB. The implementation of NextGen departures in other areas of the United States has resulted in increased noise to some communities. The Port Authority seeks to avoid noise increases resulting from implementation of NextGen flight procedures and requests that the FAA coordinate closely with the Port Authority if and when it is interested in evaluating the implementation of NextGen in the New York/New Jersey region.

Table 4-13: Implementation Summary for TEB Program Management Measure 13: The Port Authority to Coordinate with FAA on Development and Implementation of NextGen Procedures
Sources: HMMH and Port Authority, 2019.

Implementation Item	Discussion
Benefits	Implementation of NextGen technologies for the improvement of flight procedures in the New York/New Jersey/Philadelphia area and its potential noise benefits to noise-sensitive land uses.
Rationale	To find opportunities to reduce community noise exposure through the implementation of NextGen technologies in the airspace. The Port Authority would only support NextGen procedures that would not result in an increase in noise over residential areas.
Responsible Parties	The FAA is responsible to design, test and implement the NextGen flight procedure as well as complete the environmental review under NEPA if required.
Estimated Costs	The expected costs associated with the development and implementation of NextGen procedures are internal to the FAA (e.g., ATO) and other coordinating agencies. The costs to implement such procedures within the FAA are unknown, and an FAA AIP grant would not be required.
Funding Sources	The FAA.
Requirements	FAA approval. Implementation may require an environmental study under NEPA.
Estimated Schedule	Ongoing, as part of the Port Authority's participation in the NAC.

4.3 Program Management Measures Considered but Not Recommended for Inclusion in this NCP

The Port Authority considered but does not recommend the following program management measure as part of the TEB Noise Compatibility Program.

Incentivize a Quieter Aircraft Fleet

TAC members have requested the Port Authority consider incentives to encourage aircraft operators at TEB to obtain a quieter aircraft fleet. Federal regulation requires aircraft meet Stage 3 noise limits to operate in the continental United States. Stage 1 and Stage 2 aircraft are not permitted to operate at TEB. The FAA recently adopted the most stringent Stage 5 noise standards for new aircraft[100] designs after December 31, 2020. In addition, the Port Authority enacted several noise abatement measures prior to and since the passing of ANCA that remain in effect today and have recommended additional noise abatement measures through this NCP. This measure is not recommended for inclusion in this NCP.

Reason for not recommending in this NCP:

The Port Authority does not recommend an incentive program to obtain a quieter aircraft fleet at TEB because changes in federal regulations over time have resulted in a quieter fleet at TEB, and due to the diverse nature of the TEB fleet any additional measures would not be administratively feasible.

[100] For aircraft less than 121,254 pounds, aircraft with heavier weights were required to meet this standard on or after December 31, 2017.

4.4 Summary of Recommended Program Management Measures

Appendix H provides a summary of recommended program management measures.

Measures Already in Place at TEB

- TEB Program Management Measure 1: Maintain Noise Offices
- TEB Program Management Measure 2: Maintain Noise and Operations Management System (NOMS)
- TEB Program Management Measure 3: Maintain Public Flight Tracking Portal
- TEB Program Management Measure 4: Maintain Noise Complaint Management System
- TEB Program Management Measure 5: Maintain Noise Office Website
- TEB Program Management Measure 6: Continue Community Outreach Activities
- TEB Program Management Measure 9: Make Aircraft Noise Contours Available in a Geographic Information System (GIS)
- TEB Program Management Measure 13: The Port Authority to Coordinate with FAA on Development and Implementation of NextGen Procedures

Measures to be Initiated at TEB within One Year of FAA Record of Approval

- TEB Program Management Measure 7: Establish a Community Planners Forum
- TEB Program Management Measure 8: Establish and Manage a Fly Quiet Program

Measures to be Initiated at TEB within Two Years of FAA Record of Approval

- TEB Program Management Measure 12: Update Airfield Noise Abatement Program Signage

Measures for TEB without Identified Timeline

- TEB Program Management Measure 10: Update the Noise Exposure Map
- TEB Program Management Measure 11: Update the Noise Compatibility Program

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5. 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 Noise Compatibility Program (NCP) Report.

The Part 150 Study is an ongoing process that includes several efforts to engage a wide range of stakeholders. The most prominent of these is the Technical Advisory Committee (TAC), scheduled to meet up to 15 times over the course of the Part 150 Study. As of the final submittal of this document, the TAC has met 14 times. In addition, the Port Authority has hosted two public workshops: one held as an introduction to the Part 150 Study in fall of 2015, and one that took place in September 2016 to receive public comment on the draft NEM document. Due to the COVID-19 pandemic, the Port Authority conducted the third public workshop and public hearing virtually to receive public comment on the draft 2021 NCP Report on September 30, 2021.

14 CFR Part 150 Guidance on Public Participation for the NCP

FAA's approval of the NCP will be contingent on an FAA finding that § 150.23 (c) consultation requirements have been met; i.e.:

§ 150.23 (c) [For Noise Compatibility Programs]:

Each noise compatibility program must be developed and prepared … in consultation with FAA regional officials, the officials of the state and of any public agencies and planning agencies whose area, or any portion or whose area, of jurisdiction within the Ldn 65 dB noise contours is depicted on the noise exposure map, and other Federal officials having local responsibility of land uses depicted on the map. Consultation with FAA regional officials shall include, to the extent practicable, informal agreement from FAA on proposed new or modified flight procedures. For air carrier airports, consultation must include any air carriers and, to the extent practicable, other aircraft operators using the airport.

5.1 Technical Advisory Committee (TAC)

The Part 150 Study process benefited from the creation and participation of a TAC. 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
- Reviewing information and providing timely input to the Study
- In some cases, providing technical advice to the Study Team

For the TAC to be representative of all the key perspectives within the vicinity of TEB, the Port Authority invited a diverse group of key stakeholders including, but not limited to, community representatives; aircraft operators/airlines; aviation industry experts; affected jurisdictions; and land use planners. While broad representation was critical, the TAC remained a reasonable size so that deliberations were efficient. While the Port Authority did not officially invite the public to be members of the TAC, all TAC meetings were open to the public.

Formation of the TAC

An initial letter of invitation was distributed to a key set of stakeholders (designated with an asterisk (*) in Table 5-1) describing the Part 150 Study and the responsibilities of TAC members. The identification of agencies requiring consultation was based on the regulations governing the Part 150 process at 14 CFR 150.21 (b) and 14 CFR 150.105(a).53.[101] Of member organizations invited by the Port Authority to provide a representative, not all chose to do so.

Table 5-1: Member Organizations of the Technical Advisory Committee (TAC)
Source: HMMH, 2019

Stakeholders Identified in 14 CFR 150.21 (b) and A150.105(a)			
States, public agencies or planning agencies	**FAA regional officials**	**Regular Aeronautical Users of the Airport**	**Interested Persons**

- Bergen County*
- Port Authority TEB Airport Staff*
- TANAAC*
- Port Authority Noise Office*
- NJ Meadowlands Commission
	- FAA Officials:
	  ▪ FAA Airport Traffic Control Tower (ATCT)*
	  ▪ FAA TRACON
	  ▪ FAA Airports Division*
	  ▪ FAA Flight Standards District Office (FSDO)*
		- Teterboro Users Group (TUG)*
		- United Airlines*
		- Net Jets*
		- Signature Flight Support (FBO)*
		- Jet Aviation (FBO)*
		- Landmark Aviation (FBO)*
		- Atlantic Aviation (FBO)*
		- Meridian Teterboro (FBO)*
			- National Business Aviation Association (NBAA)*
			- Aviation Development Council*
			- EWR Community Roundtable*
			- Aircraft Owners and Pilots Association (AOPA)*
			- Dassault Falcon Jet
			- NJ Sports Authority
			- AvPORTS TEB Staff*

Note1: States, public agencies or planning agencies whose area of jurisdiction is within the 65 dB DNL contour Note: All organizations designated with an asterisk (*) were identified as agencies requiring consultation based on the regulations governing the Part 150 process (14 CFR 150.21 (b)) and received an initial invite to the TAC.			

[101] 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."

Membership

TAC meetings were open to the public, and a standing agenda item existed to offer the opportunity for public comments and discussion at every TAC meeting. Table 5-1 provides member organizations represented in the TAC.

The TAC was advisory only to the Study; this means that the TAC was able to offer opinions, advice and guidance to the Study, but the Port Authority had the sole discretion to accept or reject the TAC recommendations in accordance with 14 CFR Part 150.

The Port Authority as the sponsor of the Part 150 Study, and the owner and operator of TEB, was a member of the TAC. The FAA, as the primary funding agency for the Study and as the approval authority, was a key advisor of the TAC. Appendix D.1 on page D-3 provides a complete list of the TEB TAC members.

Summary of TAC Meetings

The Study Team handled all aspects of meeting logistics including preparing meeting invitations, reminders, agendas, and presentations as well as contacting TAC members in advance of meetings to confirm attendance. The Study Team also identified specific meeting goals and prior to each meeting, recommended the appropriate meeting format, and served as the facilitator for each TAC meeting.

The first nine TAC meetings focused on the development of the NEM; the NEM document provided details on those meetings. Discussion of NCP measures began with the sixth TAC and continued throughout the remainder of the study.

Table 5-2 displays the topics discussed at the TAC meetings involved in the development of the NCP for this Part 150 Study. Appendix D.2 beginning on page D-7 provides TAC presentations while Appendix D.3 beginning on page D-137 provides summaries of TAC meetings.

Table 5-2: Noise Compatibility Program TAC Meeting Topics
Source: HMMH, 2019.

Meeting	Date	Topics Covered
6	May 24, 2016	Review of noise model inputs, comparison of measured and modeled DNL, presentation of complaint graphics, and overview of NCP development process
7	July 29, 2016	Presentation of draft 2016 and 2021 noise exposure maps, discussion of land use analysis, presentation of supplemental DNL contours, and overview of NCP process
8	September 23, 2016	Summary of public workshop #2, overview of Draft NEM Document, discussion of NCP
9	November 17, 2016	Review of comments received on draft NEM during public comment period, continued discussion of NCP noise abatement
10	January 27, 2017	Discussion of NCP compatible land use alternatives and noise abatement alternatives, and overview of upcoming Part 150 milestones
11	March 31, 2017	Presentation and discussion of noise abatement alternatives including contours, incompatible land uses, and population analyses for alternatives and briefing on the results of meetings with local land use jurisdictions
12	June 29, 2017	Continued presentation and discussion of noise abatement alternatives including contours, incompatible land uses, and population analyses for noise abatement alternatives and overview of study schedule update
13	November 9, 2017	Discussion of NCP documentation and outline, continued discussion to finalize noise abatement alternatives for the development of the NCP document, and discussion of existing use restrictions and voluntary measures currently in place at TEB
14	October 25, 2019	Presentation of recommended noise abatement and land use compatibility measures and discussion of NCP monitoring, implementation, and recommendations

5.2 Public Workshops, Public Hearing and other Stakeholder Opportunities to Comment

Members of the public who had an interest in the Study provided input on 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, signing up to receive the project newsletters, attending TAC meetings, participating in public workshops and hearings, and submitting comments on the draft documents prepared for submittal to the FAA over the course of the Study. Details for each of these meetings, resources, and opportunity for public participation in the NCP study are the focus of the remainder of this section.

The Study Team worked with the Port Authority to keep interested parties informed of the public workshops and hearing by:

- Creating and distributing press releases about the location, time, and format of the public workshops and hearing in multiple languages;
- Informing media and elected officials about the public workshops and public hearing; and,
- Developing supporting media materials for each meeting including presentation boards and project newsletters.

To prepare for public meetings, the Study Team worked with the Port Authority to identify appropriate meeting locations within the TEB Study Area, ensured the locations were Americans with Disabilities Act (ADA) accessible and, when possible, public transit accessible. Language interpretation services and refreshments were also provided at public meetings.

The public workshops were conducted in an open house format, with display/ presentation boards and other project information set up around the perimeter of the meeting room by topic area (e.g., noise model development, land use, NEM noise contours and potential NCP measures). Members of the Study Team as well as Port Authority staff served as facilitators at the various workshop stations to present the project information as well as answer questions from the public. A public comment table was also provided so that members of the public could prepare written comments on official project comment sheets. The Study Team prepared a brief summary for each public workshop.

The Part 150 project had two public workshops prior to the release of this draft document: one to introduce the project and the development of the NEM, and the second to present the NEM contours and land use compatibility analysis results. A third joint public workshop and public hearing was scheduled for March 12, 2020 to present the draft NCP Report, however the meeting was canceled due to a scheduling conflict. One member each of the Port Authority and Study Team staff were at the location on March 12, 2020 to make sure the public was aware of the meeting cancellation. Rescheduling efforts had to be postponed due to COVID-19 pandemic restrictions for public assemblies. Due to the COVID-19 pandemic and consistent with the Port Authority's intent to protect the health and safety of the community, the final informational public workshop and hearing on the TEB NCP was conducted on a virtual platform. Table 5-3 lists the dates, times, and locations of each of the workshops/hearing, and indicates where in this Part 150 documentation the workshop materials can be found.

The NEM document contains all public workshop materials for the first two workshops in Appendix G.3, beginning on page G-39. Copies of workshop materials, presentations and the Final NEM document are available on the Port Authority website.[102] This NCP document contains all materials resulting from the third public workshop and for the public hearing in Appendix E.1.

The TEB NCP Report was the primary topic of the final workshop. In conjunction with the virtual public workshop, the Port Authority held a virtual public hearing. At the hearing, the public was provided the opportunity to make comments on the record. Following the final workshop and public hearing, all comments provided during the hearing and all public comments that the Port Authority received during the public comment period for the NCP were added to the NCP documentation. The comments are provided in Appendix F.3 starting on page F-13.

[102] http://panynjpart150.com/TEB_documents.asp

Table 5-3: TEB Part 150 Public Meetings
Source: HMMH, 2021.

Public Meeting	Purpose	Date	Time	Location	Material Location
Public Workshop 1	Introduce Part 150 Study	10/15/2015	5:00 p.m. to 7:00 p.m.	Holiday Inn Hasbrouck Heights	NEM Document; Appendix G.3, page G-39
Public Workshop 2	Present the Draft Noise Exposure Map	9/22/2016	5:00 p.m. to 7:00 p.m.	Bergen County Offices in Hackensack	NEM Document; Appendix G.3, page G-39
Public Workshop 3	Present the Draft Noise Compatibility Program	9/30/2021	5:00 p.m. to 6:30 p.m.	Virtual Meeting Online	NCP Document; Appendix E.1
Public Hearing	Receive public comment on the Draft Noise Compatibility Program		7:00 p.m. to 9:00 p.m.	Advanced Registration was Required drafttebncp.eventbrite.com	NCP Document; included in Appendix E.1 and F.4

The Port Authority made the draft TEB NCP available for public review and comment from September 1, 2021 throught October 15, 2021. The draft TEB NCP Report was made available for public review in the following manners:

- The Study website (http://panynjpart150.com/TEB_DNCP.asp)
- Hard copy, USB, or CD of the draft TEB NCP Report provided to individuals upon request (specifically indicating lack of access to a computer or the internet) on a first-come, first-served basis.

The public workshop, hearing and draft TEB NCP Report availability and comment period were advertised through:

- The Study website (http://panynjpart150.com/TEB_homepage.asp)
- Legal advertisements in numerous print publications, including:[103]
  - The Newark Star Ledger
  - The Bergen Record
  - The El Especialito (in Spanish)
  - The Korea Daily (in Korean)
  - Hackensack Chronicle
- Notices to elected officials[104]

[103] Legal Advertisements provided in Appendix E.1.
[104] Notices sent to elected officials provided in Appendix E.1.

Summary of Public Comments

Throughout the NCP phase and the public comment period of the TEB 14 CFR Part 150 Study, members of the public could submit comments on the study to the Port Authority by using a dedicated Port Authority email address at NJPart150@panynj.gov. The Port Authority received two public comments through email and one public comment via postal mail during the draft TEB NCP comment period of September 1, 2021 through October 15, 2021. Nine comments were provided during the Public Hearing held on September 30, 2021. Since each commenter discussed multiple topics, each of the 12 comments were delineated into comment topics. Appendix F.4 provides copies of all written comments received. The Port Authority received comments through email, postal mail and at the public workshops and hearing.

Table 5-4 lists and provides the number of comment topics received for the most frequent comment categories received during the public comment period. All comments received during the NCP public comment period, ending October 15, 2021, are provided in Appendix F. Frequent comment categories are listed in descending order from most to least frequent.

Table 5-4: Most Frequent Public Comments Topics Received
Source: Port Authority and HMMH, 2022.

Comment Category	Number of Comments
FAA RNAV (GPS) X RWY 19 Offset Approach	The Port Authority received six comments on the FAA RNAV (GPS) X RWY 19 offset approach procedure.
Airport Access Restrictions	The Port Authority received five comments on airport access restrictions.
Health Effects and Other Environmental Concerns	The Port Authority received three comments on the health effects of noise.

5.3 Public and Planning Agency Coordination

Part 150 Section A150.123 requires that the NCP provide active and direct participation of the public and planning agencies with jurisdiction within the 65 DNL contour. As depicted in the TEB NEM documentation, agencies having land use jurisdiction within the 65 DNL contour primarily include Bergen County, Port Authority, TANAAC and the NJ Meadowlands Commission.

Table 5-1 on page 5-2 lists members of those jurisdictions' planning staffs included in the TAC to provide the consultation required under 14 CFR Part 150, Subpart B, §150.23 (d). In addition to TAC meetings, the Study Team held meetings with each local jurisdiction within the TEB Part 150 Study Area to inform them about the Part 150 project and to discuss possible corrective and preventive land use measures. Typically, corrective land use measures are the responsibility of the airport owner, whereas preventive land use measures are the responsibility of the planning jurisdictions.

Presentations to TANAAC

TANAAC is comprised of the airport operator, federal, state, and local elected officials, FAA representatives, airport users, and representatives of 15 municipalities[105] surrounding the airport. The committee holds four meetings a year. There is one vote for each member, with the exception of the Airport Manager, who votes only in the case of a tie. The general public may attend to observe the proceedings.

The Port Authority has attended each TANAAC meeting during the study and provided a brief update on the Part 150.

The Study Team has presented detailed updates on the progress of the study to TANAAC on six occasions. The NEM document lists the three meetings the Study Team held with TANAAC during the NEM phase of the study. During the NCP process, the Study Team has attended meetings on three occasions to introduce the NCP process, provide the status of the NCP, provide potential NCP alternatives and solicit their thoughts on each, and present the complete list of measures in the draft NCP to get their comments throughout the course of the development of the NCP.

Table 5-5 summarizes these meetings. Figure E-1 in Appendix E.2 on page E-53, provides a map of TANAAC towns as well as TANAAC meeting notes and study related presentations.

[105] During the October 25, 2017 TAC meeting, Rochelle Park was added as a 15th member town

Table 5-5: TANAAC Meetings
Source: HMMH, 2019.

Meeting Date	Attendees	Purpose
July 27, 2016	Port Authority, Study Team	Reviewed the study schedule including TAC and the Public Workshop schedule. Presentation of the draft NEM contours and introduction to the NCP process. Discussion of the possible NCP measures.
October 26, 2016	Port Authority	Provided update on NEM workshop, the study schedule and status of the NCP phase.
January 25, 2017	Port Authority, Study Team	Provided an update on the NCP study, the land use compatibility evaluation and local jurisdiction meetings. Reviewed the TAC meeting schedule and solicited feedback on the study.
April 26, 2017	Port Authority	Provided update on NEM workshop, the study schedule and status of the NCP phase.
July 26, 2017	Port Authority	Provided an update on the NCP phase, newsletter availability and the TAC meeting schedule.
October 25, 2017	Port Authority	Provided an update on the NCP phase, status of noise abatement measures and the TAC meeting schedule.
January 24, 2018	Port Authority	Provided an update on the status of the NCP and the TAC meeting schedule.
April 25, 2018	Port Authority	Provided an update on the status of the NCP.
July 25, 2018	Port Authority	Provided an update on the status of the NCP document and schedule.
October 24, 2018	Port Authority	Provided an update on the status of the NCP document and schedule.
January 23, 2019	Port Authority,	Provided an update on the status of the NCP document and schedule.
April 24, 2019	Port Authority	Provided an update on the status of the NCP document and schedule.
July 24, 2019	Port Authority	Provided an update on the status of the NCP document and schedule.
October 30, 2019	Port Authority, Study Team	Reviewed the October TAC meeting and the Draft NCP document. Discussion of the upcoming public workshop and hearing and how comments may be submitted
January 22, 2020	Port Authority	Provided update on NCP workshop, Public comment and the Draft NCP Report.

Land Use Jurisdictional Meetings

In January and March 2016, and again in February and March 2017, the Study Team and Port Authority staff met with representatives from various local municipalities and jurisdictions.

Eleven municipalities within the land use data collection area, including the New Jersey Sports and Exposition Authority, were consulted to provide an introduction of the Part 150 Study and how it could potentially affect each municipality. A listing of these municipalities and jurisdictions can be found in Appendix E.3 on page E-103. Additionally, the initial project meeting was used to obtain existing, planned, and future land use data including, but not limited to, jurisdictional boundaries, open space and environmental feature plans, historic properties, current master plan or general plan, zoning maps, and redevelopment plans. Appendix E.3 on page E-108 contains the initial outreach letter sent to each municipality within the land use date collection area, which was also used to facilitate the discussion during each initial project meeting.

The meetings facilitated an open discussion of the Part 150 process. Each jurisdiction was interested in how the results of the study could affect them and they requested to stay informed throughout the Study. A follow-up meeting was conducted with each jurisdiction to provide information on the NEMs, discuss potential NCP measures, and to provide an overview of continued opportunities for their involvement in the process. Appendix E.3 on page E-109 contains the handout each jurisdiction received used to facilitate the discussion during each meeting. The discussion of possible NCP measures provided information as to which measures could be implemented by the jurisdiction, and which measures could be implemented by the Port Authority in coordination with a jurisdiction. Each meeting emphasized that neither the FAA nor the Port Authority have land use controls and that this authority rests with the jurisdictions. Appendix E.3 on page E-104 contains a summary of each follow-up meeting that occurred.

Jurisdictions were generally interested in the following:

- Overlay zoning,
- Cooperative land use agreements,
- Community planners forum, and
- Updates on noise mitigation

Table 5-6 provides each jurisdiction the Port Authority sought for consultation and the meeting dates between the jurisdiction and the Port Authority along with the Study Team, where applicable.

Table 5-6: Local Jurisdiction Meetings
Source: HMMH, 2019.

Jurisdiction	Initial Meeting Date	Second Meeting Date
City of Hackensack	January 26, 2016	January 24, 2017
Borough of Wood-Ridge	January 26, 2016	February 15, 2017
Bergen County	January 27, 2016	January 25, 2017
Township of South Hackensack	January 27, 2016	March 30, 2017
Borough of East Rutherford	January 28, 2016	January 24, 2017
Borough of Carlstadt	January 28, 2016	May 24, 2017
Borough of Hasbrouck Heights	January 28, 2016	January 24, 2017
Borough of Teterboro	March 2, 2016	March 30, 2017
New Jersey Sports & Exposition Authority	March 3, 2016	January 23, 2017
Borough of Little Ferry	No Meeting – N/A	January 24, 2017
Borough of Moonachie	No Meeting – N/A	February 16, 2017

5.4 Other Opportunities for Stakeholder Engagement and Public Input

The Study Team and the Port Authority held numerous meetings with stakeholders to discuss the Part 150 Study, its process, methodology, and content development throughout the NCP phase. These meetings included TEB airport staff, TEB airport users and coordination with FAA lines of business and the other Port Authority's Part 150 Study Team for NY airports.

Study-Specific Meetings

The Port Authority simultaneously conducted Part 150 Studies at four separate airports; two in New Jersey and two in New York. The Port Authority, as the airport sponsor for all four airports, is responsible for the four studies and manages the consulting team led by HMMH for the New Jersey studies and the consulting team led by Environmental Science Associates (ESA) for the New York studies.

As the NCP portions of the four studies began to review and evaluate mitigation measures, the Port Authority initiated cross-team meetings, which occurred on an as-needed basis to discuss potential NCP measures, ways of maintaining consistency and efficiency between the studies, and similar issues that affect the outcome of the studies. The Port Authority and Study Teams also convened a series of joint meetings with FAA and airlines during the course of the study to review potential noise abatement measures. The intent of these meetings was to obtain necessary information and guidance for the various noise abatement procedures.

On November 10, 2016, the FAA presented a webinar to the Study Teams, TAC members, and the interested public about the complexity of the New York/New Jersey airspace and how aircraft locations and altitudes must be actively managed by air traffic controllers to maintain safe separation of aircraft in a variety of weather conditions. A link to this webinar can be found on the TEB 14 CFR Part 150 Study website.[106]

Additional meetings were held throughout 2017, as the potential procedures were evaluated and refined. The major airlines were involved and the FAA participated in meetings to review the refined concepts in fall 2017. Their input helped to finalize the potential measures evaluated in each NCP Report. Table 5-7 summarizes these meetings. Copies of the agendas, presentations and meeting minutes are provided in Appendix E.4, beginning on page E-119.

Table 5-7: Part 150 Study Speci ic Meetings Source: HMMH. 2019

Meeting Date	Attendee Groups	Subject Matter
January 27, 2017	Port Authority, HMMH, FAA TRACON, FAA Airports Division	Discussion regarding possible Noise Abatement procedures at EWR and TEB.
May 24, 2017	Port Authority, HMMH, FAA TRACON, FAA Airports Division	Discussions regarding possible Noise Abatement procedures at all four NY/NJ airports.
September 8, 2017	Port Authority, HMMH, ESA, FAA AEE, FAA Airports Division, FAA TRACON, FAA ATCT, American Airlines, Delta Airlines, FedEx, JetBlue, Southwest Airlines, United Airlines, and United Parcel Service	Proposed Noise Abatement Procedure Concepts: Further discussions regarding the 230° turn at night and reducing conflicts with Newark.
November 3, 2017	Port Authority, HMMH, ESA, FAA AEE, FAA Airports Division, FAA TRACON, FAA ATCT, American Airlines, Delta Airlines, FedEx, JetBlue, Southwest Airlines, United Airlines, and United Parcel Service	Proposed Noise Abatement Procedure Concepts: Further discussions regarding the 230° turn at night and reducing conflicts with Newark.
February 22, 2018	Port Authority, HMMH, FAA TRACON, FAA Airports Division	Meeting to discuss the proposed TEB Approaches.

[106] http://panynjpart150.com/TEB_links.asp, accessed April 29, 2019

Presentation to the Teterboro Users Group (TUG)

The Study Team presented an update on the progress of the NCP study to the TUG on July 19, 2017. TUG membership is comprised of corporate aircraft operators, fixed-base operators, various service companies, and private aircraft owners that are based at Teterboro Airport or use it on a regular basis. The Study Team focused on the draft noise abatement procedures to solicit input from the users during the July 2017 meeting. Their comments and suggestions helped the Study Team refine the proposed procedures. Table 5-8 provides summary and date of TUG meetings that the Study Team attended. Copies of the agenda, presentation and meeting minutes for the July 2017 meeting are provided in Appendix E.5, beginning on page E-135.

Newsletters

The Study Team prepares newsletters, which are distributed in electronic format to TAC members, community representatives, elected officials, and other interested stakeholders included in the stakeholder database. In addition to project newsletters, stakeholders in the database also received TAC meeting and public workshop notices. Newsletters are also posted on the Study website

Table 5-9 provides information on the newsletters related to the NCP phase to date. Copies of the newsletters are provided in Appendix E.6, beginning on page E-149.

Newspaper Articles

The Study Team has collected and archived newspaper articles regarding the Part 150 Study at TEB and other articles related to noise and flight procedures at the airport during the Part 150 proceedings. These articles are provided in Appendix E.7, beginning on page E-153. Any additional newspaper or other articles will continue to be collected and added to Appendix E.7 through the end of the Part 150 Study at TEB.

Table 5-8: TUG Meetings
Source: HMMH, 2019.

Meeting Date	Attendee Groups	Subject Matter
July 19, 2017	Port Authority, Study Team	Presentation of the draft noise abatement measures as part of the NCP and an update on the schedule.

Table 5-9: Newsletters
Source: HMMH, 2019.

Date	Purpose
Summer 2017	Provided information on acceptance of the Final NEM by FAA and summaries of noise abatement, land use and programmatic strategies.
Winter 2017/2018	Provided an update on the NEM public process (Workshop and comment period) and introduced the major concepts to be evaluated in the NCP.

Study Website

The Port Authority established a Part 150 Study website that contains information related to all four of the Part 150 Studies: http://panynjpart150.com/. The Part 150 website includes various features and content to inform the public of the studies, including the following:

- Project schedule information and schedule updates
- Upcoming project meetings
- Project documents, including the Part 150 Study Protocol, TAC Meeting materials, Public Information Workshop materials, Draft NEM report and maps, the draft TEB NCP, and project newsletters
- Links to the FAA's Airport Noise Program and the Port Authority's WebTrak website;
- Frequently Asked Questions;
- Port Authority contact information
- Links to the Port Authority's other Part 150 Study websites
- A link for interested parties to join the TEB Part 150 mailing list to receive project updates and announcements.