Welcome!

LaGuardia Airport
Title 14 Code of Federal Regulations Part 150 Study
Public Information Workshop

Nassau County Community College

October 29, 2015

LaGuardia Airport
14 CFR Part 150 Study

Overview of 14 CFR Part 150

- **Why conduct a 14 CFR Part 150 noise study?**
  - Determine existing and future noise conditions in the vicinity of an airport
  - Evaluate the feasibility of possible flight procedure/land use changes
  - Educate communities on the Federal process and what ***can and cannot*** be done to address aircraft noise concerns
  - Submit locally-endorsed recommendations to the FAA regarding noise reduction measures
- **14 CFR Part 150 studies are voluntary**
- **14 CFR Part 150 studies must adhere to 14 CFR Part 150 guidelines to be considered and accepted by the FAA**

LaGuardia Airport
14 CFR Part 150 Study

Overview of 14 CFR Part 150

- Table 1 in Appendix A of 14 CFR Part 150 provides noise and land use compatibility guidelines
- Deems levels below 65 dB DNL to be compatible with all land uses
- Allows for the adoption of appropriate local land use standards for land use compatibility planning purposes

ESA Study Team

THE PORT AUTHORITY OF NY & NJ

LaGuardia Airport
14 CFR Part 150 Study

Overview of 14 CFR Part 150

Table 1 – 14 CFR Part 150 Land Use Compatibility Guidelines

Land Use	Yearly Day-Night Noise Level (DNL) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)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	30	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

Numbers in parentheses refer to notes.

* 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.

Key to Table 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 dB must be incorporated into design and construction of structure.

Notes

(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 dB to 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB 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 dB 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 dB 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 dB 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 that 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.

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LaGuardia Airport
14 CFR Part 150 Study

Overview of 14 CFR Part 150

- A noise set-aside of the Airport Improvement Program (AIP) funding has been established to fund local noise mitigation programs and planning

- Airport sponsors (e.g., the Port Authority) are also permitted to fund noise mitigation programs with the proceeds from Passenger Facility Charges (PFCs)

- Unlike AIP grants, airport proprietors may use PFC funds for noise mitigation without an FAA-approved Part 150 NCP, as long as the airport's noise exposure maps have been prepared under the procedures specified in 14 CFR Part 150

Overview of 14 CFR Part 150

- **Total airports participating in the program: 275***
- **Total Airport Improvement Program Funds (FY 2013)**
  - For preparing FAR Part 150 Studies: $107,481,763
  - For FAR Part 150 implementation: $5,913,081,104
- **Total Passenger Facility Charge Funds (FY 2013)**
  - For preparing FAR Part 150 Studies: $12,499,788
  - For FAR Part 150 implementation: $3,417,815,896

* Figure does not include airports operated by the Port Authority

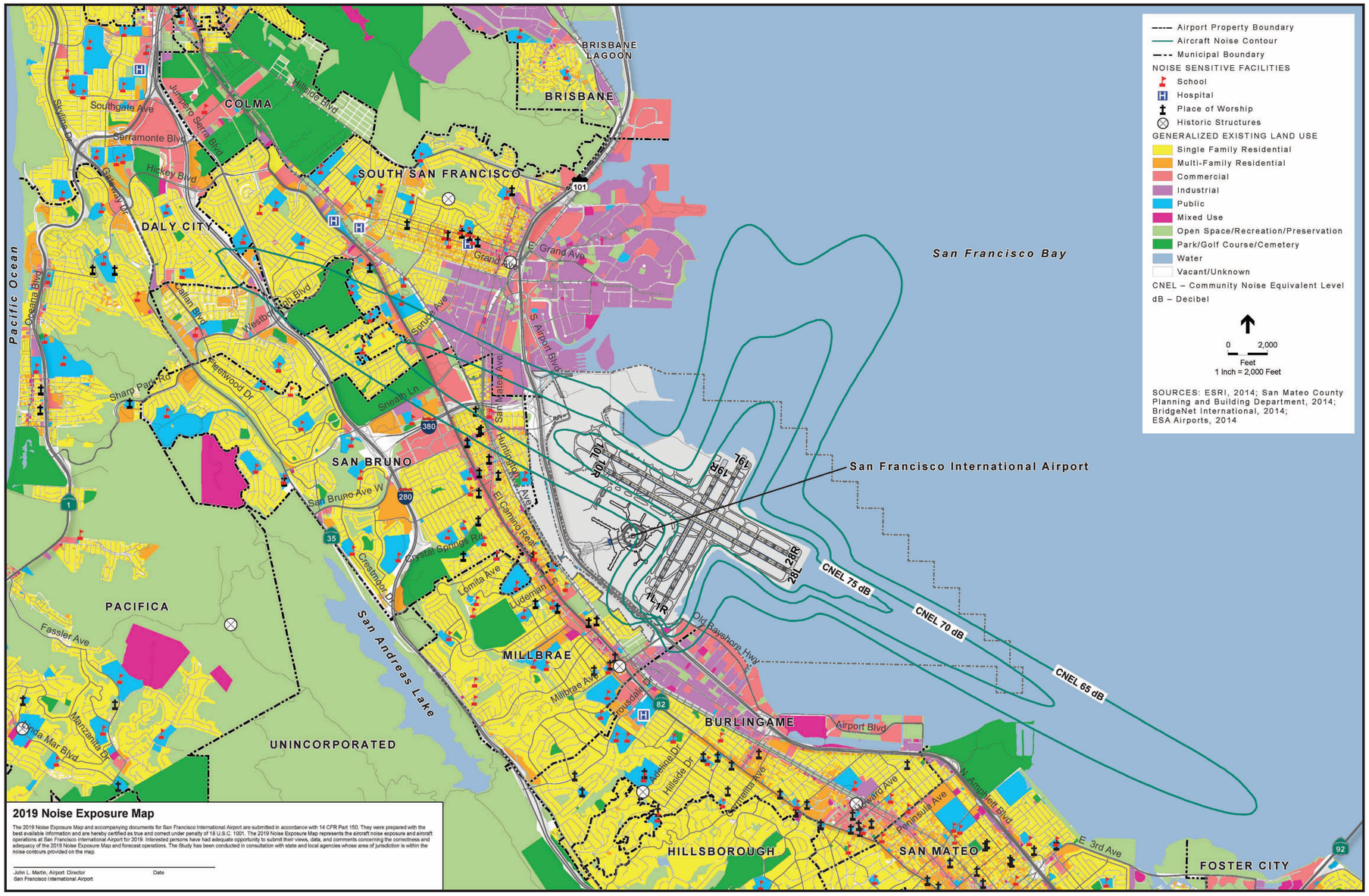
Source: http://www.faa.gov/airports/environmental/airport_noise/part_150/funding/

14 CFR Part 150 Terminology

- **Noise Exposure Contours**
  - A noise exposure contour identifies areas of equal noise exposure around an airport. Noise exposure contours are similar to contours on topographic maps which show areas of equal elevation
- **Noise Exposure Maps**
  - A noise exposure map is a map showing noise exposure contour lines (or footprints) which identify areas of specific noise levels around an airport. NEMs also include a graphic depiction of geo graphical features and land uses that surround an airport
- **Noise Compatibility Programs**
  - A noise compatibility program report includes descriptions and a detailed evaluation of noise abatement and noise mitigation options applicable to an airport

LaGuardia Airport
14 CFR Part 150 Study

Sample Noise Exposure Map



Source: http://www.sfopart150study.com

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14 CFR Part 150 Terminology

- **Noise Abatement Options** are intended to reduce actual aircraft noise levels in noise-sensitive areas by either reducing aircraft noise at the source by using quieter aircraft, shielding noise sensitive areas, or by instituting operational measures, such as changes in aircraft flight tracks or in approach or departure flight profiles

- **Noise Mitigation Options** are intended to reduce the effects of aircraft noise on the receiver. Noise mitigation strategies may include outright property acquisition, acoustical treatment/soundproofing programs, purchase of avigation easements, and land use control measures

LaGuardia Airport
14 CFR Part 150 Study

Regulatory Framework

- **Federal law** sets aircraft noise standards, prescribes operating rules, establishes the compatibility planning process, and limits the airport proprietor's ability to restrict aircraft operations

- **State law** sets forth compatibility planning guidelines and noise standards but aircraft are exempt

- **Local noise ordinances** set noise standards and provide for compatible land use planning but aircraft are exempt

FEDERAL LAW PREEMPTS STATE AND LOCAL REGULATIONS

Who Can Regulate Airport Noise?

- **Federal Aviation Administration**
  - Controls aircraft while in flight
  - Responsible for controlling noise at its source (i.e., aircraft engines)
  - Certifies aircraft and pilots

- **Airport Proprietors/The Port Authority**
  - Very limited authority to adopt local restrictions
  - Responsible for capital improvement projects and infrastructure

- **Local Governments and States**
  - Promote compatible land use through zoning
  - Require real estate disclosure
  - Mandate sound-insulating building materials

Roles and Responsibilities

- **Three core organizations involved in aircraft operations at LGA**
  - Federal Aviation Administration (FAA)
    - Directs the safe movement of aircraft in the air and on the ground
  - The Port Authority
    - Manages the airport, improves and maintains airport facilities
    - Has no control over where aircraft fly
  - Pilots
    - Pilot in command has ultimate responsibility for the safe operation of his/her aircraft

LaGuardia Airport
14 CFR Part 150 Study

Project Overview

- The Port Authority of New York & New Jersey (Port Authority) has initiated a Title 14 Code of Federal Regulations Part 150 (14 CFR Part 150) Study for LaGuardia Airport (LGA)

- Environmental Science Associates (ESA) has been selected by the Port Authority to prepare the LGA 14 CFR Part 150 Study report

- The Port Authority anticipates submitting noise exposure maps (NEMs) for LGA to the Federal Aviation Administration (FAA) in the Fall of 2016

- The Port Authority anticipates submitting a noise compatibility program (NCP) for LGA to the FAA in the Spring of 2018

LaGuardia Airport
14 CFR Part 150 Study

Project Overview

- The Port Authority has embarked on its first ever 14 CFR Part 150 Studies for its airports in New York and New Jersey

- An airport's future year noise exposure map is typically used to determine eligibility for federal funding of noise mitigation programs

- In partnership with the FAA, the Port Authority is currently implementing aircraft noise abatement programs and numerous noise mitigation programs, including school soundproofing, relying on information from the Aircraft Noise and Operations Management System (ANOMS)

LaGuardia Airport
14 CFR Part 150 Study

Project Overview

- **The NEM and NCP reports must be prepared in accordance with the guidance provided in 14 CFR Part 150**

- **14 CFR Part 150 includes detailed guidance and a checklist of the items that must be included in the 14 CFR Part 150 NEM and NCP reports**

- **The NEM report must include aircraft noise exposure contours for the year of submission and a future year (typically five years in the future)**

  – The ESA Study Team will produce NEMs for 2016 and 2021

LaGuardia Airport
14 CFR Part 150 Study

Project Overview

- **The ESA Study Team will develop an aircraft operations and fleet mix forecast for FAA's review and approval**

- **The ESA Study Team will consider completed and ongoing planning and environmental studies to ensure noise modeling assumptions are reflective of existing conditions and anticipated conditions in 2021**

  – Runway safety area improvements and central terminal building

- **The 2021 NEM must be based on "reasonably foreseeable" assumptions regarding future operations at LGA**

LaGuardia Airport
14 CFR Part 150 Study

Study Area

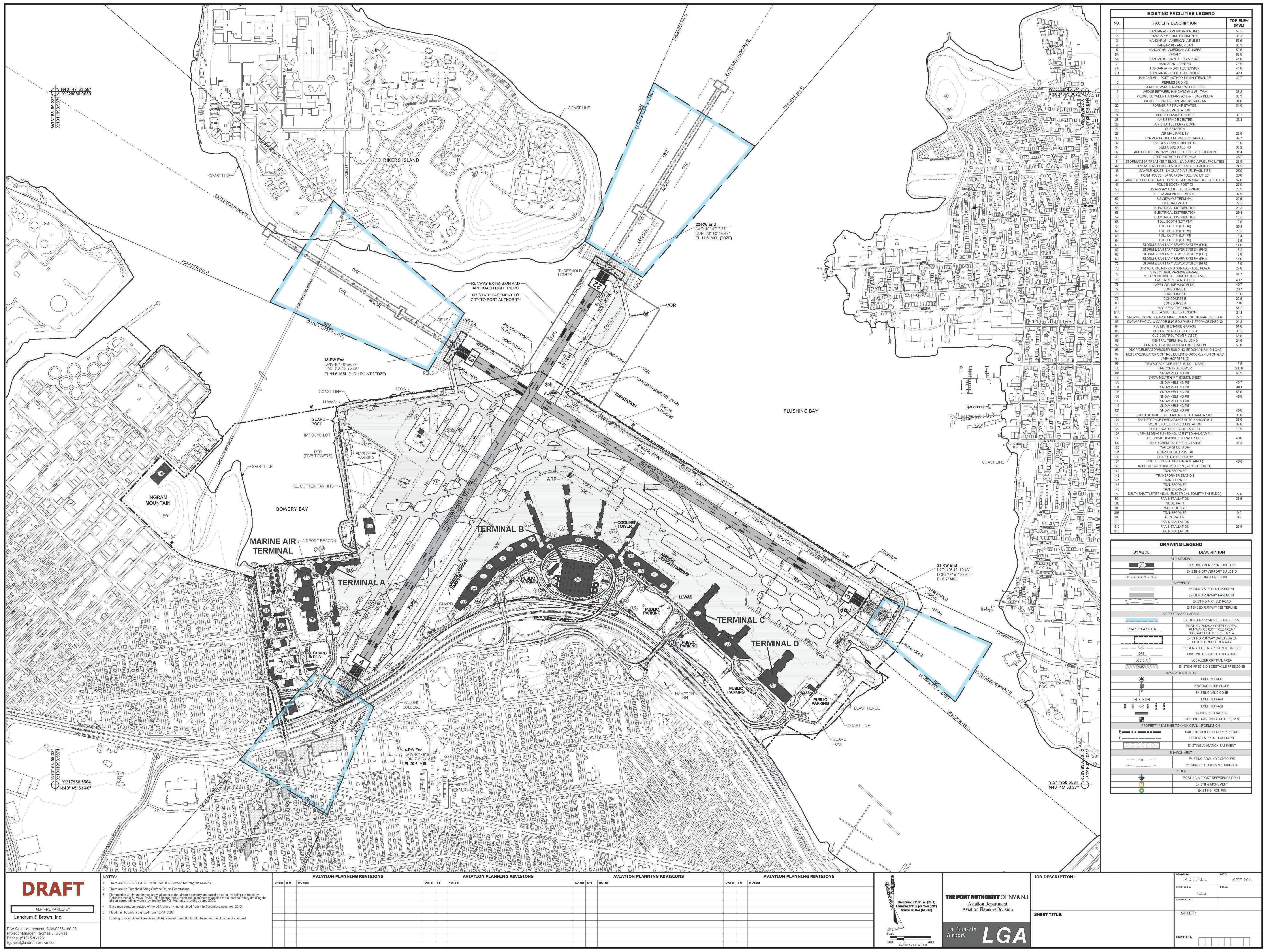
SOURCE: Earth Star Geographics, 1999; Port Authority of New York and New Jersey (PANYNJ), 2014; ESA Airports, 2015

ESA Study Team

THE PORT AUTHORITY OF NY & NJ

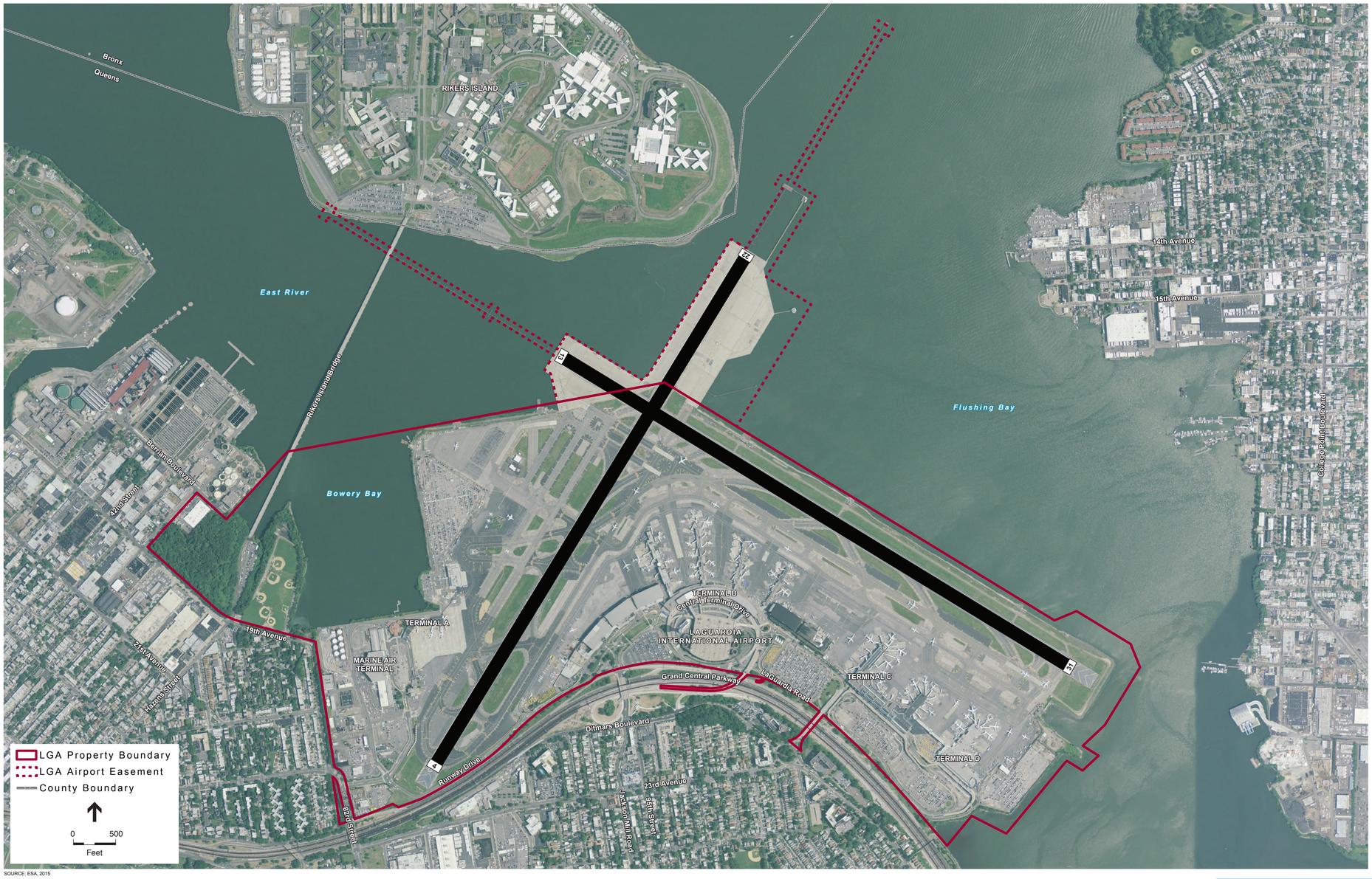
LaGuardia Airport
14 CFR Part 150 Study

Airport Layout Plan



LaGuardia Airport
14 CFR Part 150 Study

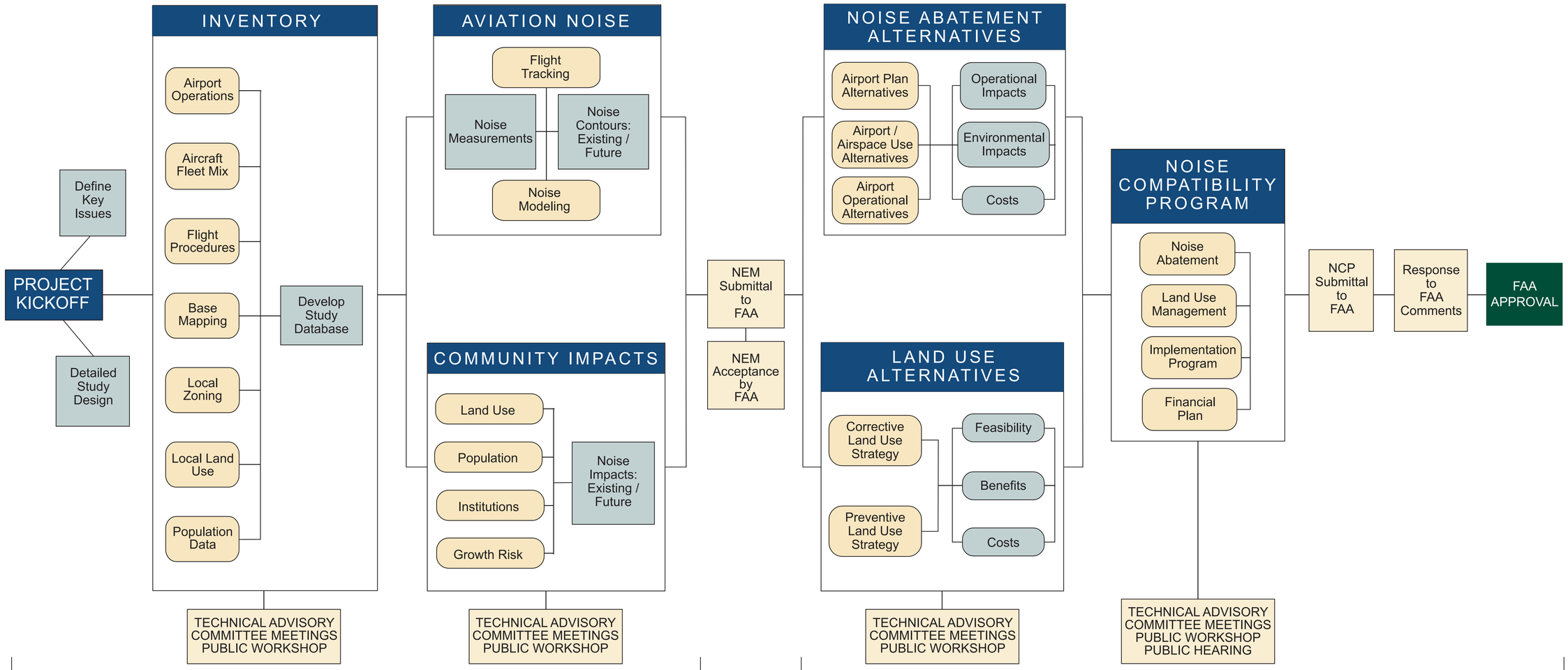
Existing Airport Facilities



SOURCE: ESA, 2015

LaGuardia Airport
14 CFR Part 150 Study

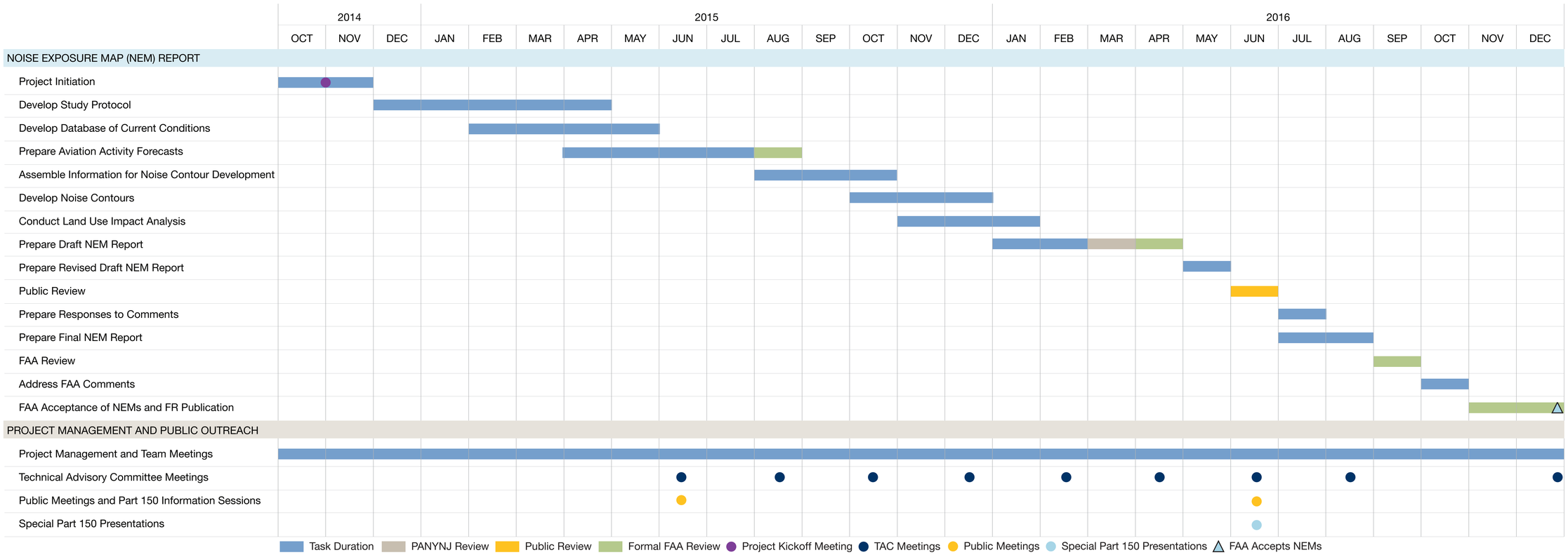
Generalized 14 CFR Part 150 Study Process



LaGuardia Airport
14 CFR Part 150 Study

Project Schedule

Project Schedule – Noise Exposure Map Report
14 CFR FAR Part 150 Study for LaGuardia Airport
Updated: June 3, 2015



ESA Study Team

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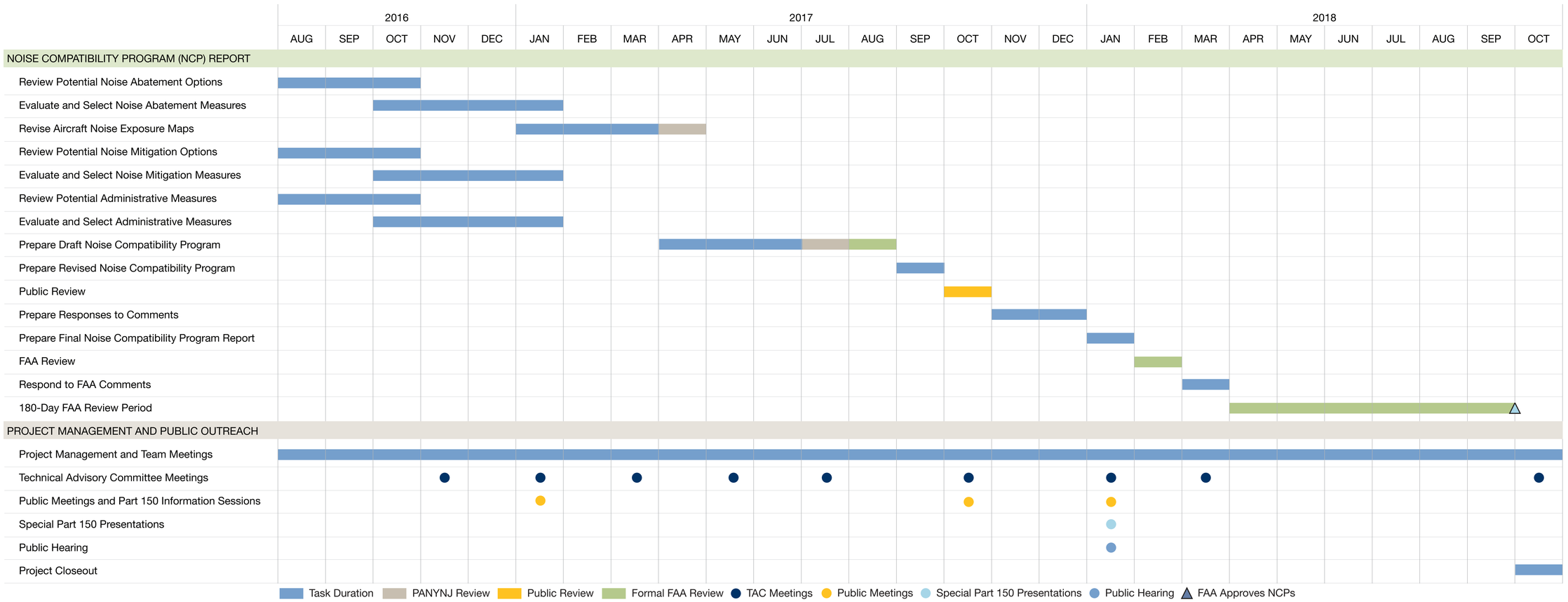
LaGuardia Airport
14 CFR Part 150 Study

Project Schedule

Project Schedule – Noise Compatibility Program Report
14 CFR Part 150 Study for LaGuardia Airport
Updated: June 3, 2015



LaGuardia Airport
14 CFR Part 150 Study

Day-Night Average Sound Level (DNL)

- 24-hour time weighted energy average noise level based on A-weighted decibels (dBA)
- Noise occurring between 10 p.m. and 7 a.m. is penalized by 10 dB
- Penalty was selected to account for the higher sensitivity to noise during nighttime hours
- Penalty also accounts for the expected further decrease in background levels that typically occur in the nighttime
- FAA specifies use of DNL for airport noise assessment

Day-Night Average Sound Level (DNL)

- **Annual Cumulative Aircraft Event Noise**

- **The Amount of Noise Exposure is determined by:**
  Aircraft types
  - Number of average annual day operations
  - Nighttime weighting (1 nighttime operation = 10 daytime operations)

- **The Noise Exposure Distribution is determined by:**
  - Runway configuration and use
  - Flight track locations
  - Flight track use

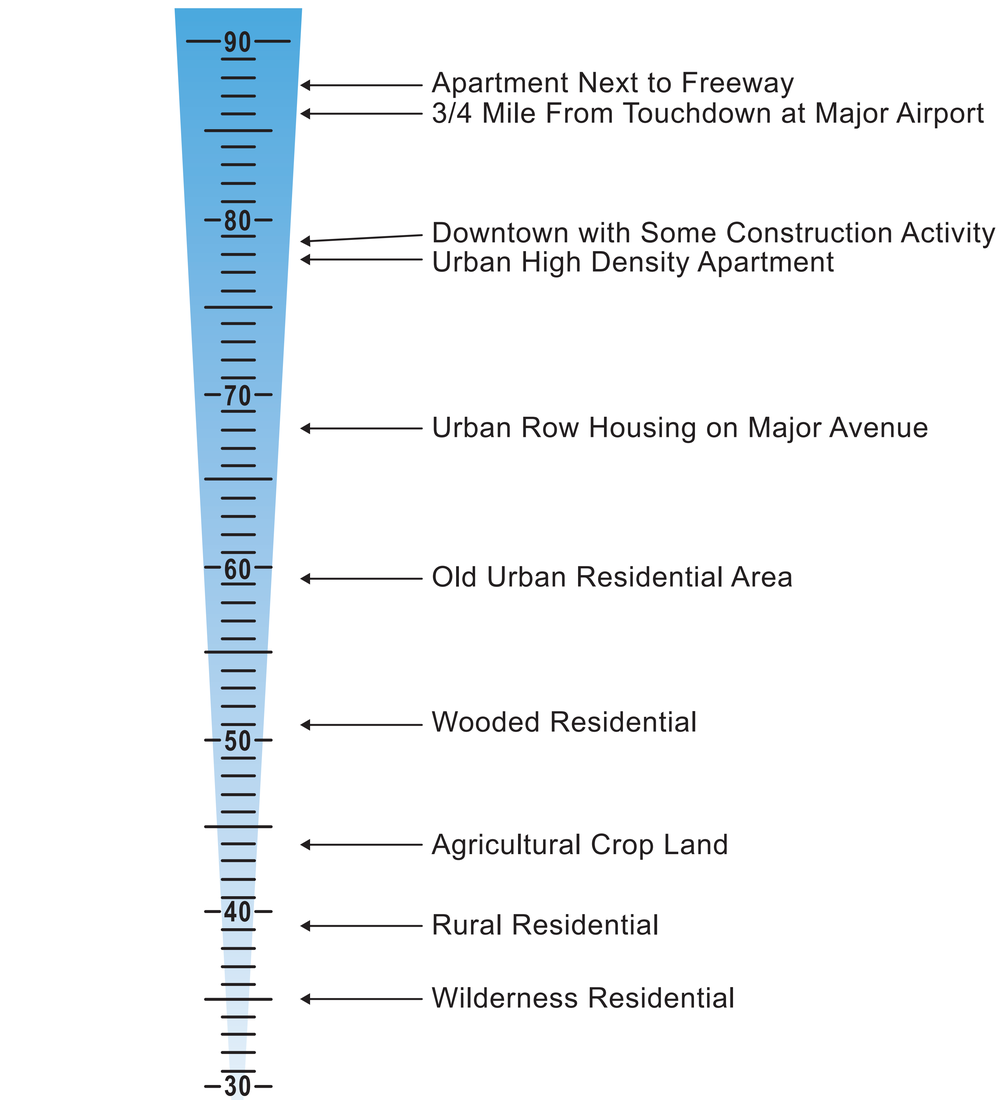
- **Average annual day aircraft noise exposure is calculated over a broad area and then depicted using contour lines of equal noise levels**

LaGuardia Airport
14 CFR Part 150 Study

The Decibel Scale

NORMAL NUMBERS	DECIBELS	COMMON SOUNDS
100,000,000,000,000	140	Near Jet Engine
10,000,000,000,000	130	Threshold of Pain
1,000,000,000,000	120	Night Club
100,000,000,000	110	
10,000,000,000	100	Pneumatic Hammer at 6 Feet
1,000,000,000	90	
100,000,000	80	Vacuum Cleaner
10,000,000	70	
1,000,000	60	Normal Speech
100,000	50	
10,000	40	Quiet Residential neighborhood
1,000	30	
100	20	Whisper
10	10	
1	0	Threshold of Hearing
0.1	-10	
0.01	-20	

Sample DNL Values



ESA Study Team

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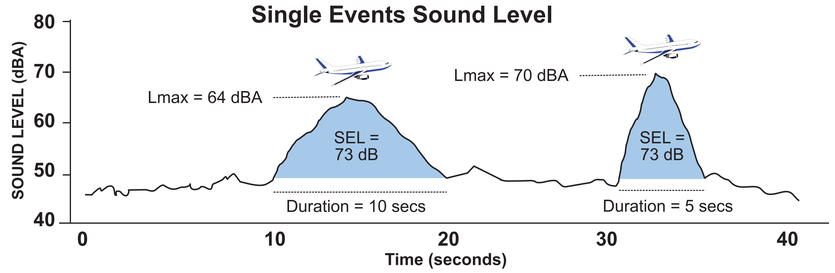
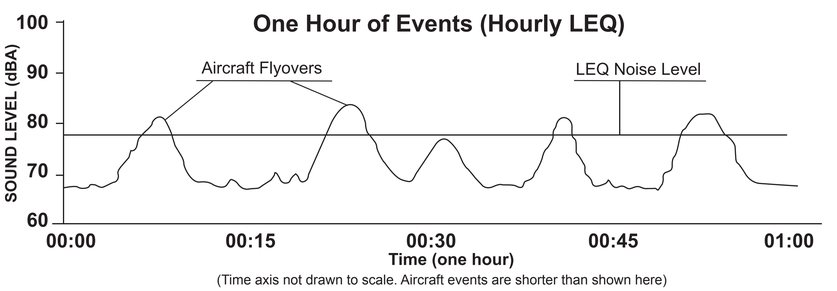
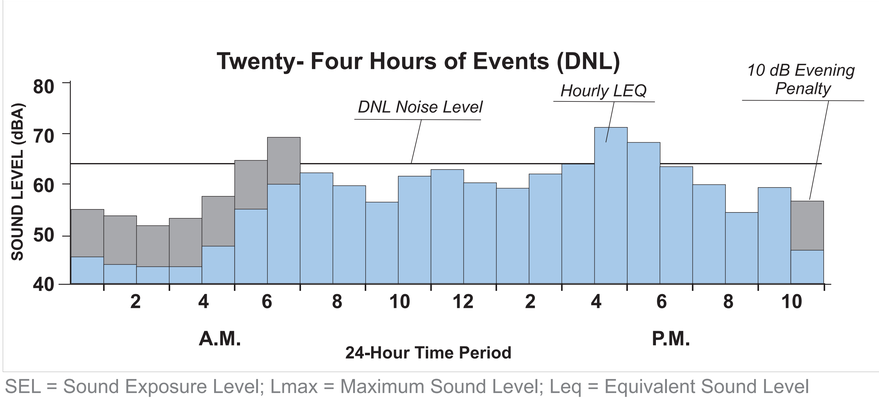
LaGuardia Airport
14 CFR Part 150 Study

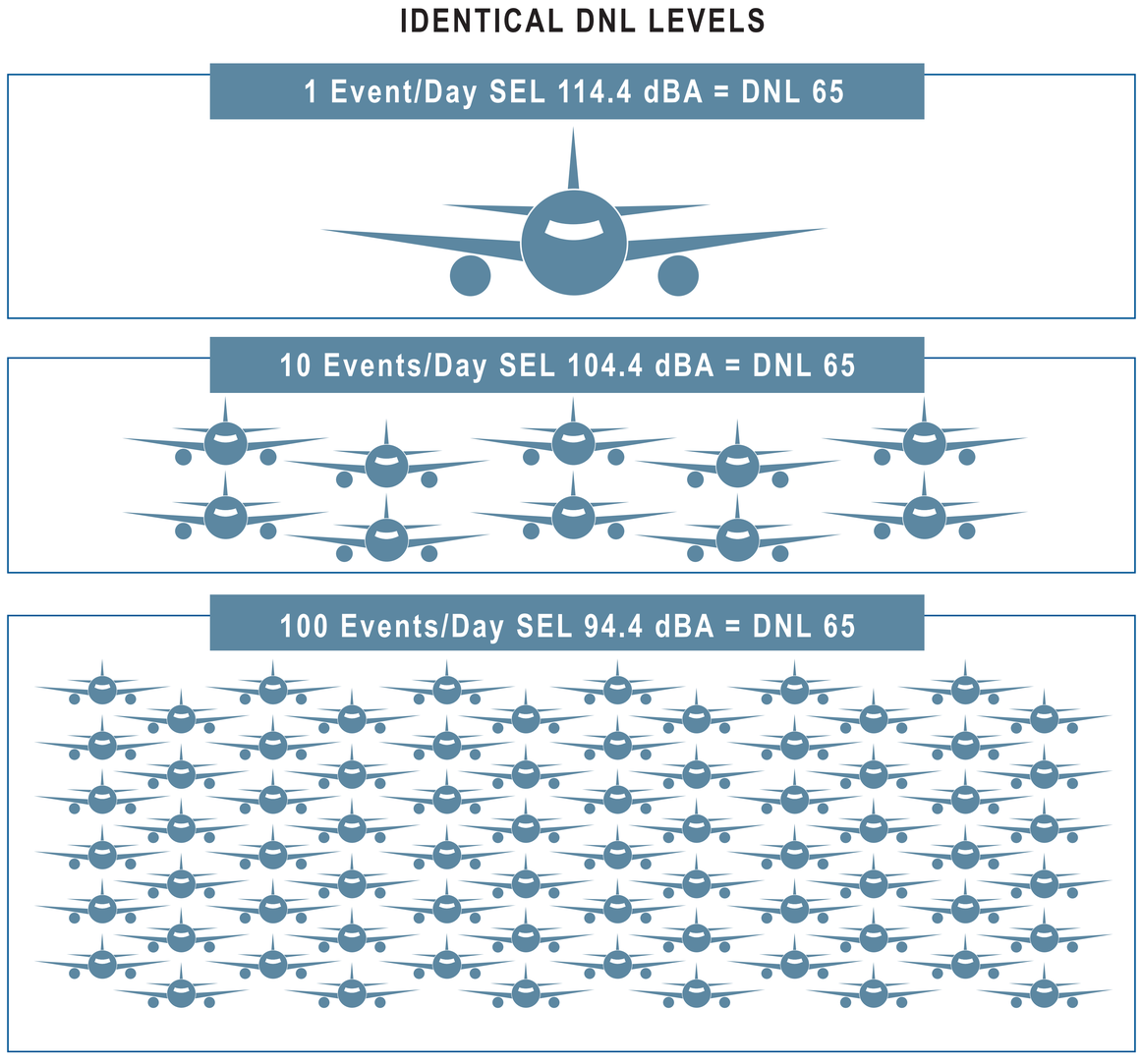
Aircraft Noise Levels







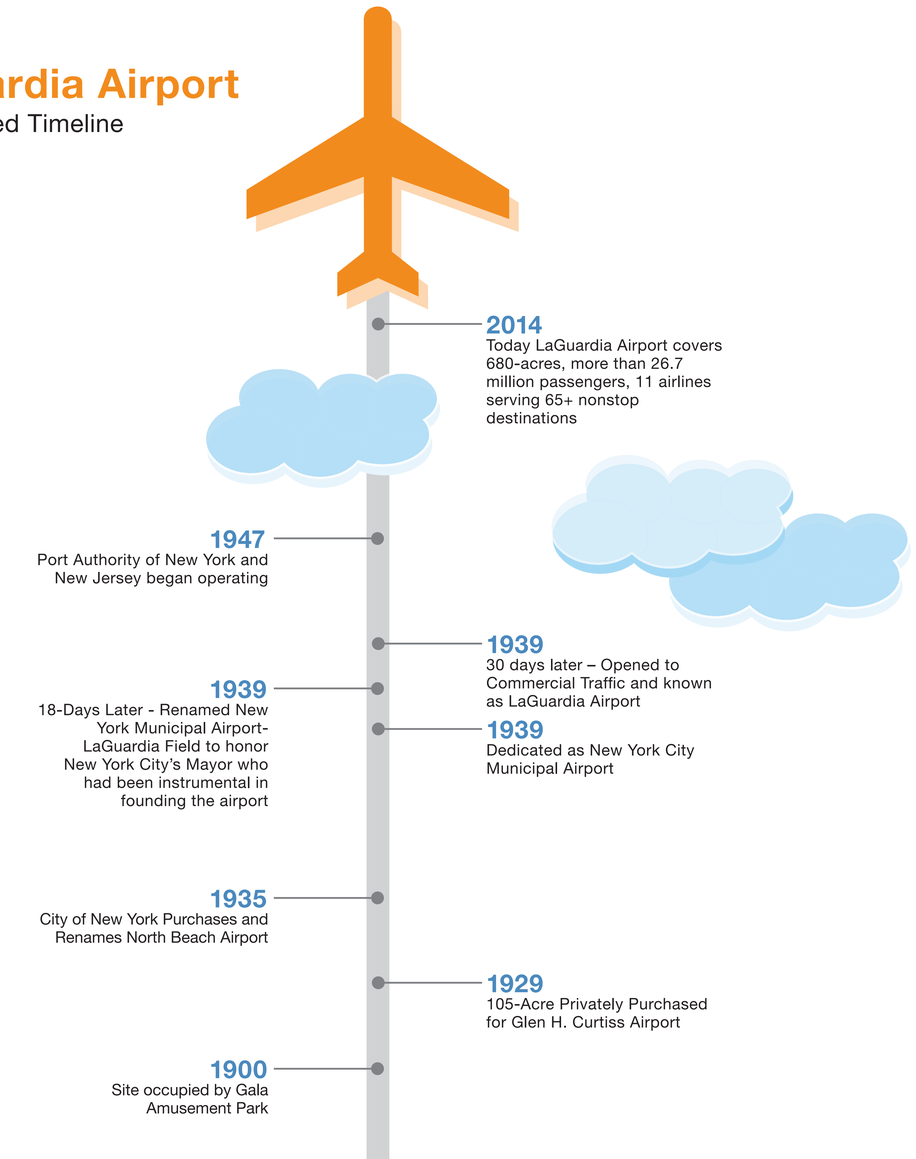
SEL = Sound Exposure Level; Lmax = Maximum Sound Level; Leq = Equivalent Sound Level



LaGuardia Airport
14 CFR Part 150 Study

Facts and Figures

LaGuardia Airport
Summarized Timeline



2014
Today LaGuardia Airport covers 680-acres, more than 26.7 million passengers, 11 airlines serving 65+ nonstop destinations

1947
Port Authority of New York and New Jersey began operating

1939
30 days later – Opened to Commercial Traffic and known as LaGuardia Airport

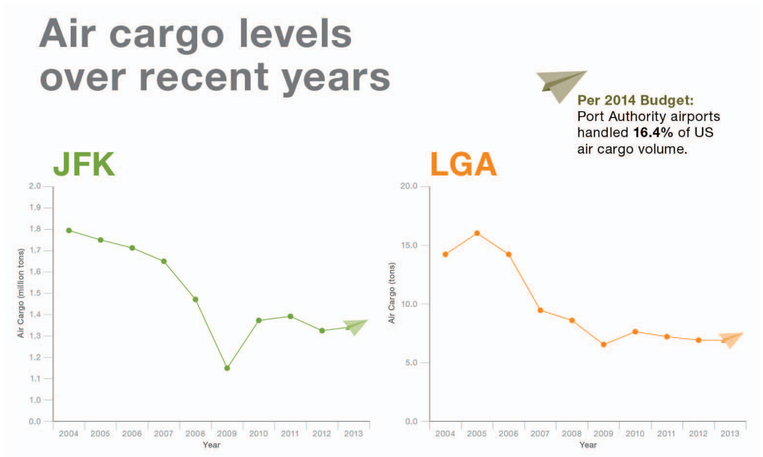
1939
18-Days Later - Renamed New York Municipal Airport-LaGuardia Field to honor New York City's Mayor who had been instrumental in founding the airport

1939
Dedicated as New York City Municipal Airport

1935
City of New York Purchases and Renames North Beach Airport

1929
105-Acre Privately Purchased for Glen H. Curtiss Airport

1900
Site occupied by Gala Amusement Park



Source: Port Authority of New York and New Jersey, 2015

LaGuardia Airport
14 CFR Part 150 Study

Community

The Port Authority has long taken an active role in the communities it serves. In 1983, the Port Authority first made a commitment to ensure that students in schools close to its airports always have a quiet learning environment. That commitment continues today with the soundproofing work the Port Authority has done in 77 schools around its airports. This includes 45 schools that are impacted by JFK and LaGuardia and 32 impacted by Newark Liberty and Teterboro.

Source: www.panynj.gov

Additional Community Efforts

Soundproofing schools surrounding LaGuardia, Newark Liberty, JFK and Teterboro

Making roadway improvements at Newark Liberty International

Rehabilitating the Van Wyck Expressway leading to JFK

Repairing air terminal highways at LaGuardia

School Sound Proofing Program – LGA

Key#	School	City
1	IS 52X	Bronx
2	Our Lady of Fatima	Jackson Heights
3	PS 120Q	Flushing
4	PS 143Q	Corona
5	PS 161X	Bronx
6	PS 165Q	Flushing
7	PS 219Q	Flushing
8	PS 62X	Bronx
9	St. Ann	Flushing
10	St.Sebastian	Woodside
11	College of Aeronautics (Vaughn)	Flushing
12	John Bowne HS	Flushing
13	Lexington School for Deaf	Jackson Heights
14	Msgr. McClancy Memorial HS	East Elmhurst
15	PS 146B	Bronx
16	PS 5X	Bronx
17	Samuel Gompers Vocat. School	Bronx
18	St. Anselm	Bronx
19	St. Athanasius	Bronx
20	St. Michael	Flushing
21	St. Pius V (Elementary)	Bronx

Port Authority of New York and New Jersey

Port of New York/New Jersey

1921

Founded in 1921, the Port Authority of New York and New Jersey builds, operates, and maintains many of the most important transportation and trade infrastructure assets in the country.

+$23 billion
in annual wages

$80 billion in regional economic activity

By 2030, the number of passengers using our airports annually will soar to 150 million. To prepare, the Port Authority's 2012 capital investment in its airports exceeded $300 million with $900 million of capital projects in the pipeline.

The Port Authority of NY & NJ
2012 Annual Report

The Port Authority is a linchpin in the regional economy, annually moving millions of people, and millions of tons of cargo on its network of aviation, rail, surface transportation, and seaport facilities. Port Authority airports handled 10% of the US aviation passenger traffic and 16.4% of US air cargo volume.

The Port Authority of NY & NJ
2014 Budget

Supports more than
550,000
regional jobs

LaGuardia Airport
14 CFR Part 150 Study

Project Contacts and Website

- **Port Authority of New York and New Jersey**
  - Kelly Mitchell, Project Manager
  - Adeel Yousuf, Noise Office Manager

- **ESA Study Team**
  - Steve Alverson, Project Director
  - Peter Byrne, Deputy Project Director
  - Michael Arnold, LGA Technical Director

- **Website:** http://www.panynj.gov/airports/aircraft-noise- information.html

- **E-Mail:** NYPart150@panynj.gov

LaGuardia Airport
14 CFR Part 150 Study

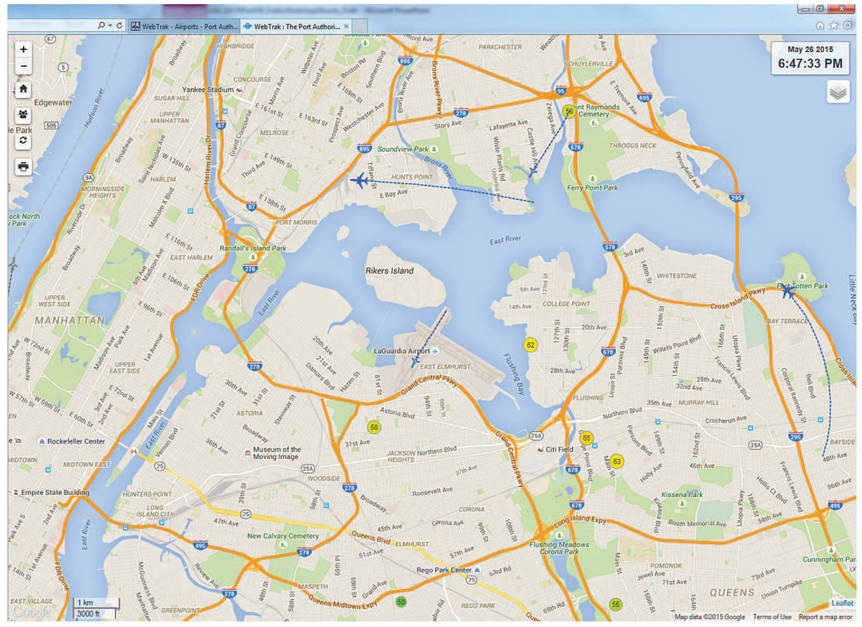
WebTrak – Flight Tracking and Noise Information System

- **WebTrak displays air traffic patterns within the New York Metropolitan area**

- **Specific information regarding flights at LaGuardia Airport (LGA) including aircraft type, altitude, and operation type (arrival or departure)**

- **Noise levels at noise monitors located near LGA are shown in WebTrak and represent the actual sound level at that those locations at a specific time**

https://www.panynj.gov/airports/webtrak.html



Color	Noise Level
	< 45dB
	45dB
	50dB
	55dB
	60dB
	65dB
	70dB
	75dB
	80dB
	85dB
	90dB
	> 90dB

LaGuardia Airport
14 CFR Part 150 Study

LGA Technical Advisory Committee Membership

Port Authority of New York & New Jersey	Federal Aviation Administration
NY Airport Community Roundtable (NYACR)	NY Airport Liaison
Delta Airlines	United Airlines
Shelt Air	Market Place Development
Aviation Development Council	NYC Economic Development Corp
Queens Chamber of Commerce	Queens Borough President
Town of Hempstead	Town of North Hempstead
NYC Department of City Planning	Nassau County Planning
QuietSkies.net	NYC Department of Environmental Protection
NYC and Company	Town of North Hempstead (Planning)

Welcome!

LaGuardia Airport
Title 14 Code of Federal Regulations Part 150 Study
Public Information Workshop #2

September 29, 2016

STATION 1

Overview of 14 CFR Part 150

LaGuardia Airport
14 CFR Part 150 Study

Overview of 14 CFR Part 150

- **Title 14 Code of Federal Regulations Part 150 - Airport Noise Compatibility Planning (14 CFR Part 150) provides a collaborative process for addressing aircraft noise concerns**

- **Why conduct a 14 CFR Part 150 noise study?**
  - Determine existing and future noise conditions in the vicinity of an airport
  - Evaluate the feasibility of possible operational/land use measures to reduce noise exposure
  - Educate communities on the Federal process and what ***can and cannot*** be done to address aircraft noise concerns
  - Submit locally-endorsed recommendations to the Federal Aviation Administration (FAA) regarding noise reduction measures

- **14 CFR Part 150 studies are voluntary**

- **14 CFR Part 150 studies must adhere to 14 CFR Part 150 guidelines to be considered and accepted by the FAA**

Overview of 14 CFR Part 150

- Table 1 in Appendix A of 14 CFR Part 150 provides noise and land use compatibility guidelines
- Deems levels below Day-Night Average Sound Level (DNL) 65 dBA to be compatible with all land uses
- Table 1 guidelines can aid the adoption of appropriate local land use standards for land use compatibility planning purposes

Overview of 14 CFR Part 150

Land Use Compatibility Guidelines (14 CFR Part 150, Appenix A, Table 1)

Land Use	Yearly Day-Night Noise Level (DNL) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
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Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums and concert halls	Y	25	30	N	N	N
Government 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	30	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

Numbers in parenthesis refer to notes.

* 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.

Key to Table
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 dB must be incorporated into design and construction of structure.

Notes:
(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 dB to 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10, or 15 dB 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 dB 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 normal noise level is low.
(3) Measures to achieve NLR of 30 dB 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 normal noise level is low.
(4) Measures to achieve NLR of 35 dB 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 normal noise level is low.
(5) Land use compatible provided that special sound reinforcement systems are installed.
(6) Residential buildings require an NLR of 25 dB.
(7) Residential buildings require an NLR of 30 dB.
(8) Residential buildings not permitted.

SOURCE: Title 14 Code of Federal Regulations Part 150, “Airport Noise Compatibility Planning.”

14 CFR Part 150 Terminology

- **Noise Exposure Contours**
  - A noise exposure contour identifies areas of equal noise exposure around an airport. Noise exposure contours are similar to contours on topographic maps which show areas of equal elevation

- **Noise Exposure Maps (NEMs)**
  - A noise exposure map is a map showing noise exposure contour lines which identify areas of specific noise levels around an airport. NEMs also include a graphic depiction of geographical features and land uses that surround an airport

- **Noise Compatibility Program (NCP)**
  - A noise compatibility program report includes descriptions and a detailed evaluation of noise abatement and noise mitigation options applicable to an airport

STATION 2

Regulatory Framework, Project Overview, and Part 150 Technical Advisory Committee (TAC)

LaGuardia Airport
14 CFR Part 150 Study

Regulatory Framework

- **Federal law** sets aircraft noise standards, prescribes operating rules, establishes the compatibility planning process, and limits the airport proprietor's ability to restrict aircraft operations

- **State law** sets forth compatibility planning guidelines and noise standards, but aircraft are exempt

- **Local noise ordinances** set noise standards and provide for compatible land use planning, but aircraft are exempt

FEDERAL LAW PREEMPTS STATE AND LOCAL REGULATIONS ON AIRCRAFT NOISE

Who Can Regulate Aircraft Noise?

- **Federal Aviation Administration**
  - Controls aircraft while in flight
  - Responsible for controlling noise at its source (i.e., aircraft engine noise standards)
  - Certifies aircraft and pilots

- **Airport Proprietors/The Port Authority**
  - Very limited authority to adopt local regulations
  - Responsible for capital improvement projects and infrastructure

- **Local Governments and States**
  - Promote compatible land use through zoning
  - Require real estate disclosure
  - Mandate sound-insulating building materials

Roles and Responsibilities

- **Three key stakeholders involved in aircraft operations at LaGuardia Airport (LGA)**

  - Federal Aviation Administration
    - Directs the safe movement of aircraft in the air and on the ground

  - The Port Authority
    - Manages the airport, improves and maintains airport facilities
    - Has no control over where aircraft fly

  - Pilots
    - Pilot in command has ultimate responsibility for the safe operation of his/her aircraft

LaGuardia Airport
14 CFR Part 150 Study

LGA Technical Advisory Committee Membership

Port Authority of New York & New Jersey	NY Airport Liaison
NY Community Airport Roundtable (NYCAR)	United Airlines
Delta Airlines	Market Place Development
Sheltair	NYC Economic Development Corp
Aviation Development Council	Queens Borough President
Queens Chamber of Commerce	Town of North Hempstead/Quietskies.net
NYC Department of City Planning	Nassau County Planning
Federal Aviation Administration	NYC Department of Environmental Protection
Town of North Hempstead (Planning)	

LaGuardia Airport
14 CFR Part 150 Study

Project Overview

- The Port Authority has embarked on its first ever 14 CFR Part 150 Studies for John F. Kennedy International, LaGuardia, Newark Liberty International, and Teterboro airports

- Environmental Science Associates (ESA) has been selected by the Port Authority to prepare the LGA 14 CFR Part 150 Study report

- The Port Authority submitted preliminary draft LGA noise exposure maps to the FAA in July 2016 and released draft LGA noise exposure maps to the public in September 2016

- The Port Authority will submit final LGA noise exposure maps to the FAA at the end of 2016, for FAA's review and acceptance in spring 2017

ESA Study Team

THE PORT AUTHORITY OF NY & NJ

LaGuardia Airport
14 CFR Part 150 Study

Project Overview

- **The Port Authority's Airport Noise and Operations Management System (ANOMS) provided detailed information on aircraft operations for the Part 150 Studies**

- **An airport's future year noise exposure map is used as a basis for determining potential benefits of noise compatibility program measures**
  - The presence of a property within the future year DNL 65 contour is just one of several factors that are evaluated to determine eligibility for noise mitigation

- **The Port Authority anticipates submitting a noise compatibility program for LGA to the FAA in mid-2018**

- **Eligibility for noise mitigation is evaluated during the development and implementation of the noise compatibility program**

LaGuardia Airport
14 CFR Part 150 Study

Project Overview

- **14 CFR Part 150 includes detailed guidance and a checklist of the items that must be included in the 14 CFR Part 150 Study NEM and NCP reports**

- **The NEM and NCP reports must be prepared in accordance with the guidance provided in 14 CFR Part 150**

- **The NEM report must include aircraft noise exposure contours for the year of submission and a future year (typically five years in the future)**

  – The ESA Study Team has produced draft NEMs for 2016 and 2021

LaGuardia Airport
14 CFR Part 150 Study

Project Overview

- **An aircraft operations forecast, fleet mix forecast, and user-defined flight profiles were developed for the 14 CFR Part 150 Study; all were approved by the FAA**

- **Completed planning and environmental studies were reviewed to ensure the noise modeling assumptions are reflective of existing conditions and anticipated conditions in 2021**

  – Environmental studies were completed for the Port Authority's runway safety area improvements and Central Terminal Building projects; these studies were reviewed during the LGA Part 150 Study

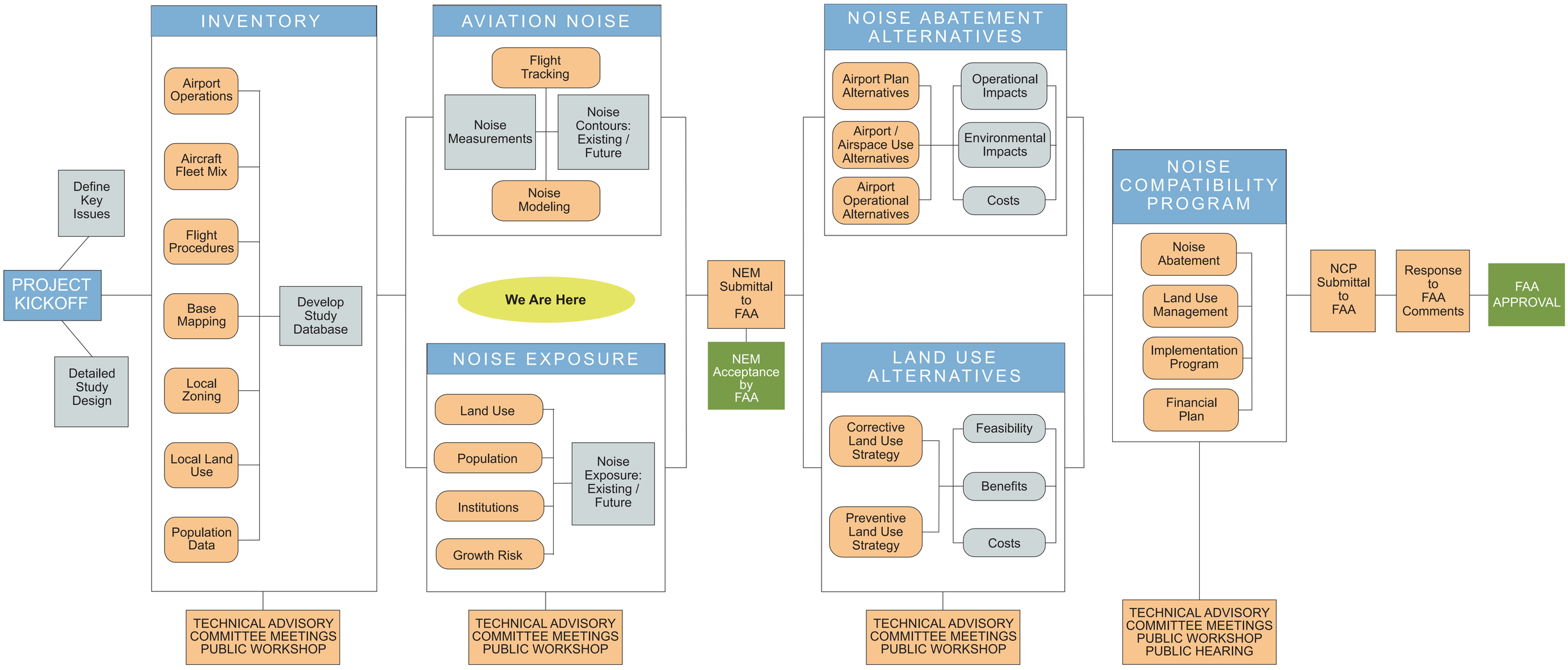
- **The 2021 NEM is based on "reasonably foreseeable" assumptions regarding future operations at LGA**

STATION 3

Project Schedule

LaGuardia Airport
14 CFR Part 150 Study

Generalized 14 CFR Part 150 Study Process



ESA Study Team

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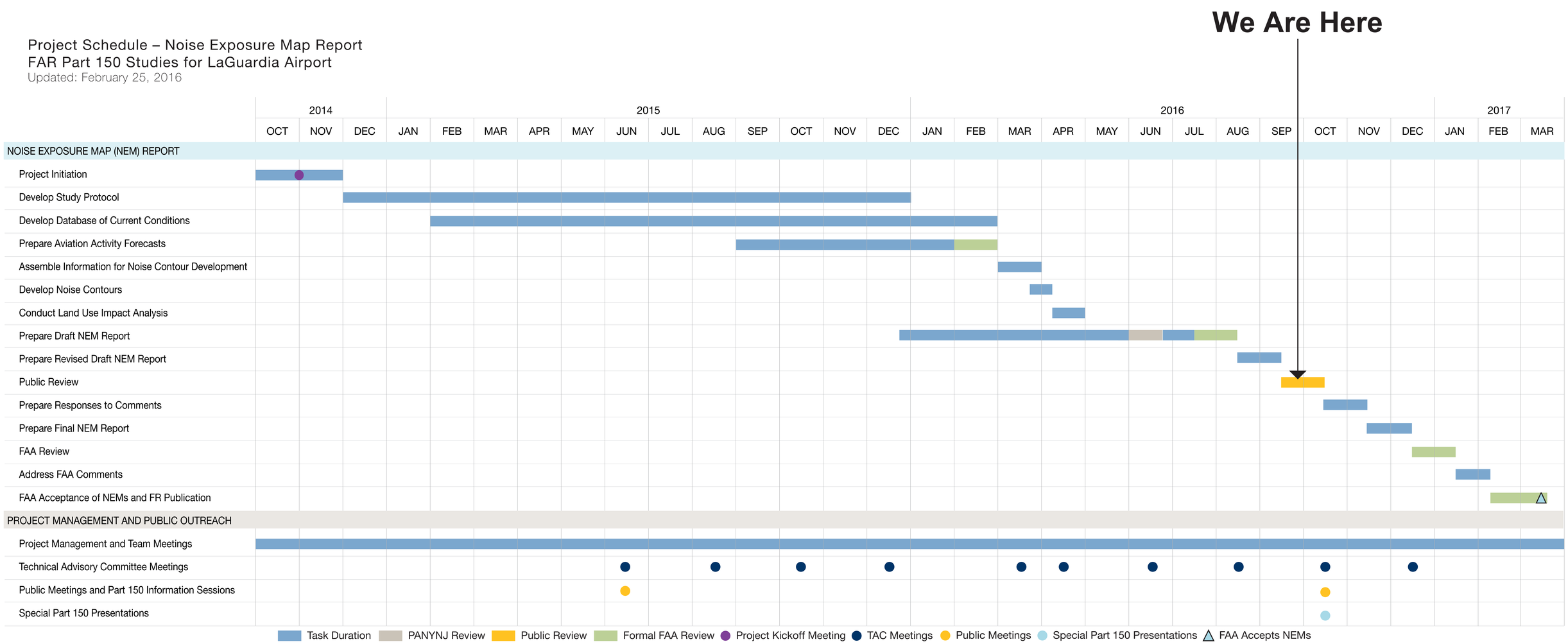
LaGuardia Airport
14 CFR Part 150 Study

Project Schedule



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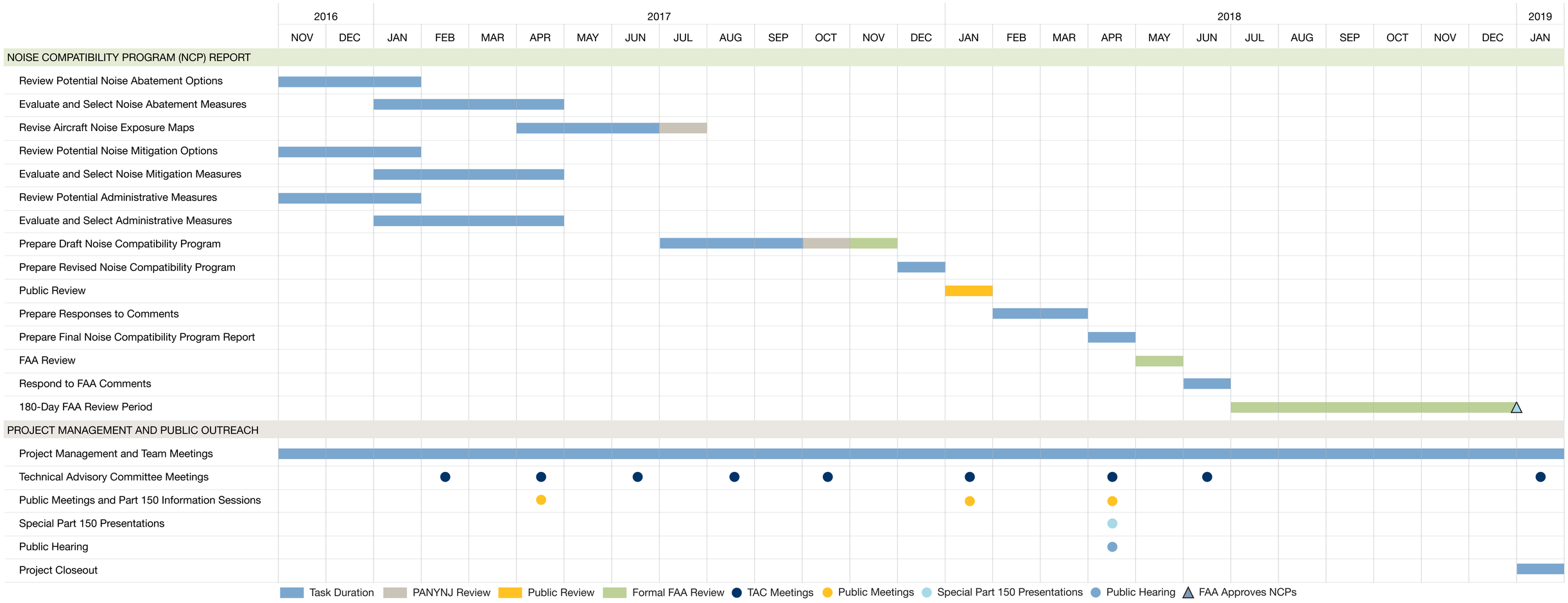
LaGuardia Airport
14 CFR Part 150 Study

Project Schedule

Project Schedule – Noise Compatibility Program Report
14 CFR Part 150 Study for LaGuardia Airport
Updated: February 25, 2016

For Planning Purposes Only



STATION 4

Noise Metrics Overview

LaGuardia Airport
14 CFR Part 150 Study

Day-Night Average Sound Level (DNL)

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

- **Noise occurring between 10 P.M. and 7 A.M. is penalized by 10 dB**
  - Penalty accounts for the higher sensitivity to noise during nighttime hours
  - Penalty also accounts for the expected further decrease in background levels that typically occurs in the nighttime

- **FAA specifies use of DNL for airport noise assessment**

Day-Night Average Sound Level (DNL)

- **Annual cumulative aircraft event noise**

- **The amount of noise exposure is determined by:**
  - Aircraft types
  - Number of Average Annual Day operations
  - Nighttime penalty of 10 dB

- **The noise exposure distribution is determined by:**
  - Runway configuration and use
  - Flight track locations
  - Flight track use

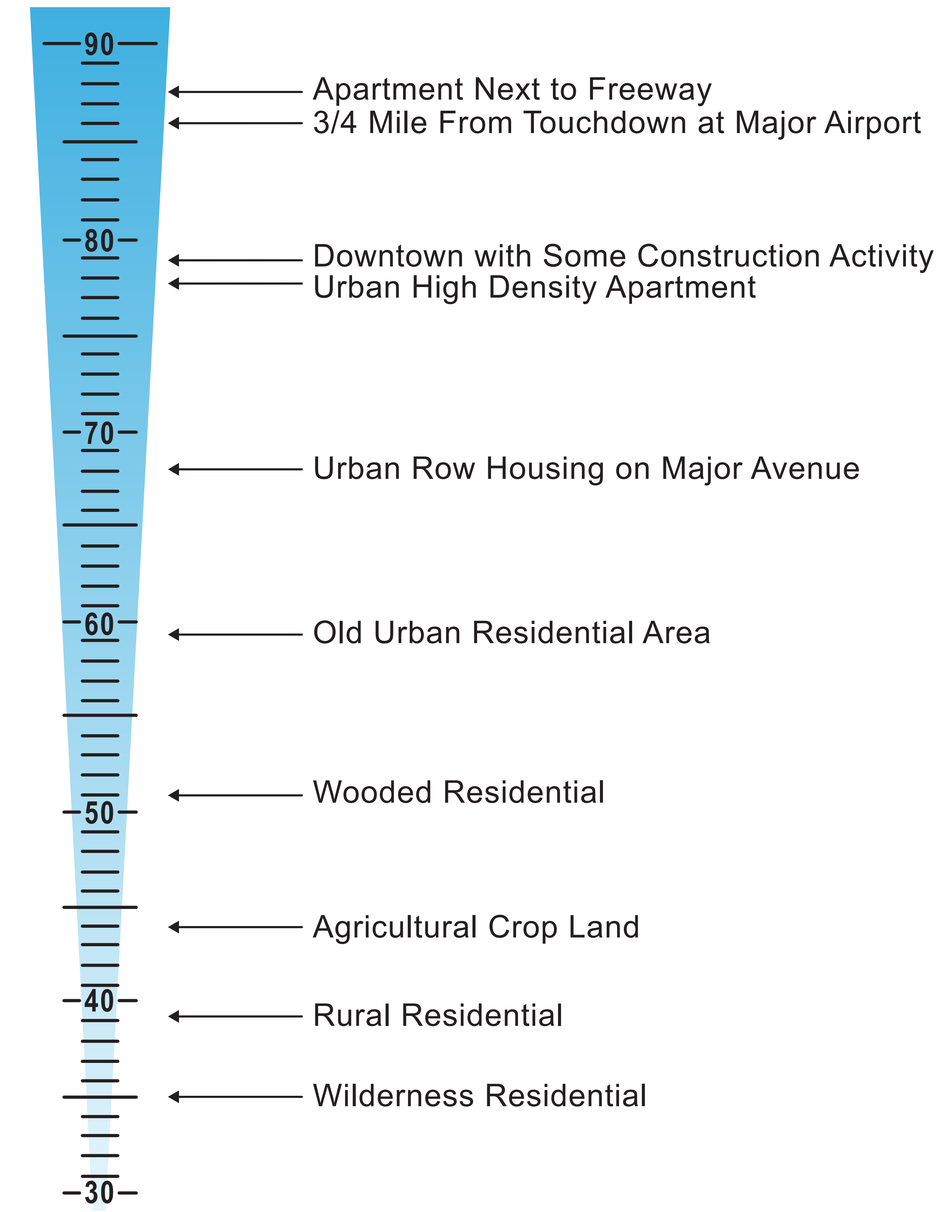
- **Average Annual Day aircraft noise exposure is calculated over a broad area and then depicted using contour lines of equal noise levels**

LaGuardia Airport
14 CFR Part 150 Study

The Decibel Scale

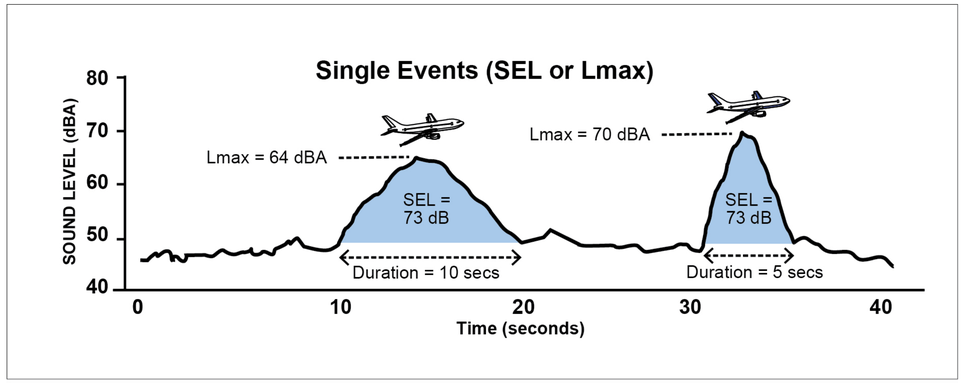
NORMAL NUMBERS	DECIBELS	COMMON SOUNDS
100,000,000,000,000	140	Jet Engine at 150 - 300 Feet
10,000,000,000,000	130	Threshold of Pain
1,000,000,000,000	120	Night Club
100,000,000,000	110	
10,000,000,000	100	Pneumatic Hammer at 6 Feet
1,000,000,000	90	
100,000,000	80	Vacuum Cleaner
10,000,000	70	
1,000,000	60	Normal Speech
100,000	50	
10,000	40	Quiet Residential neighborhood
1,000	30	
100	20	Whisper
10	10	
1	0	Threshold of Hearing
0.1	-10	
0.01	-20	

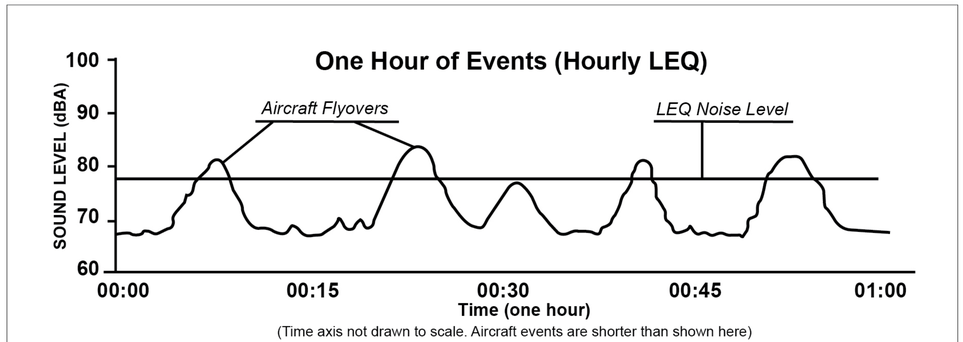
Sample DNL Values



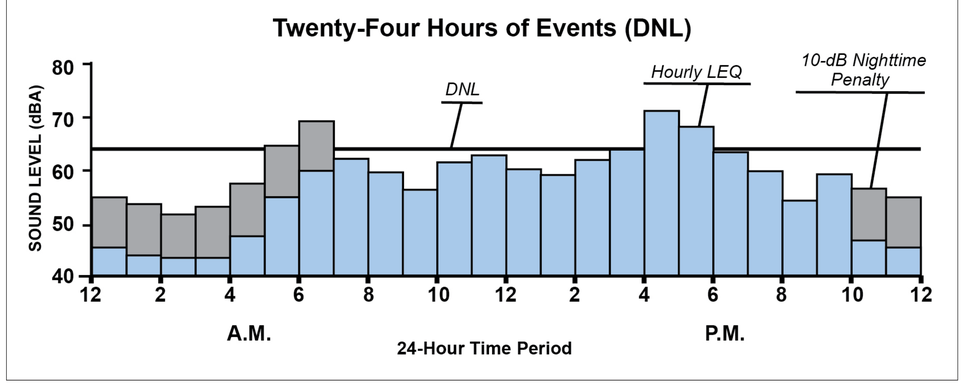
LaGuardia Airport
14 CFR Part 150 Study

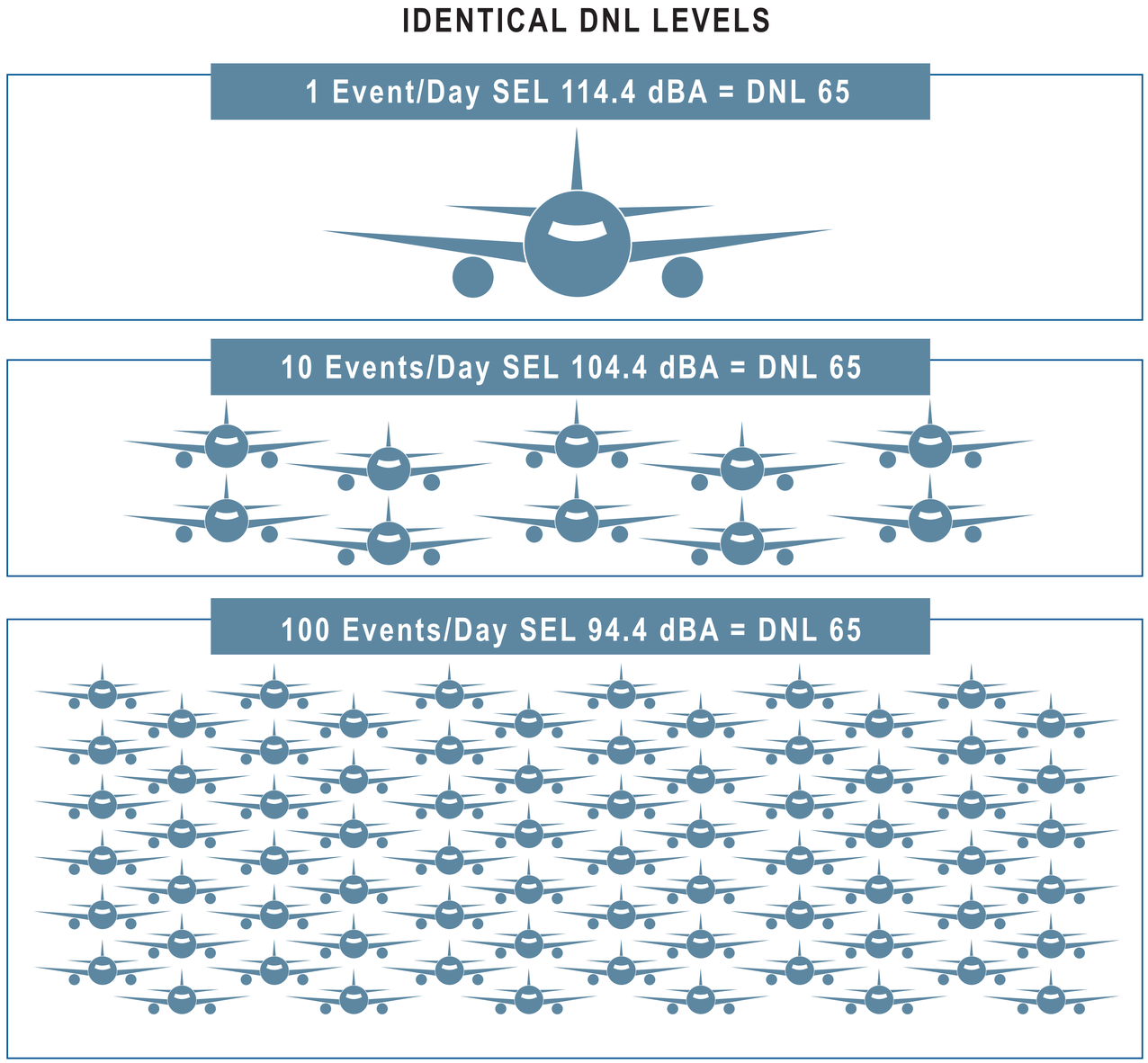
Aircraft Noise Levels





(Time axis not drawn to scale. Aircraft events are shorter than shown here)

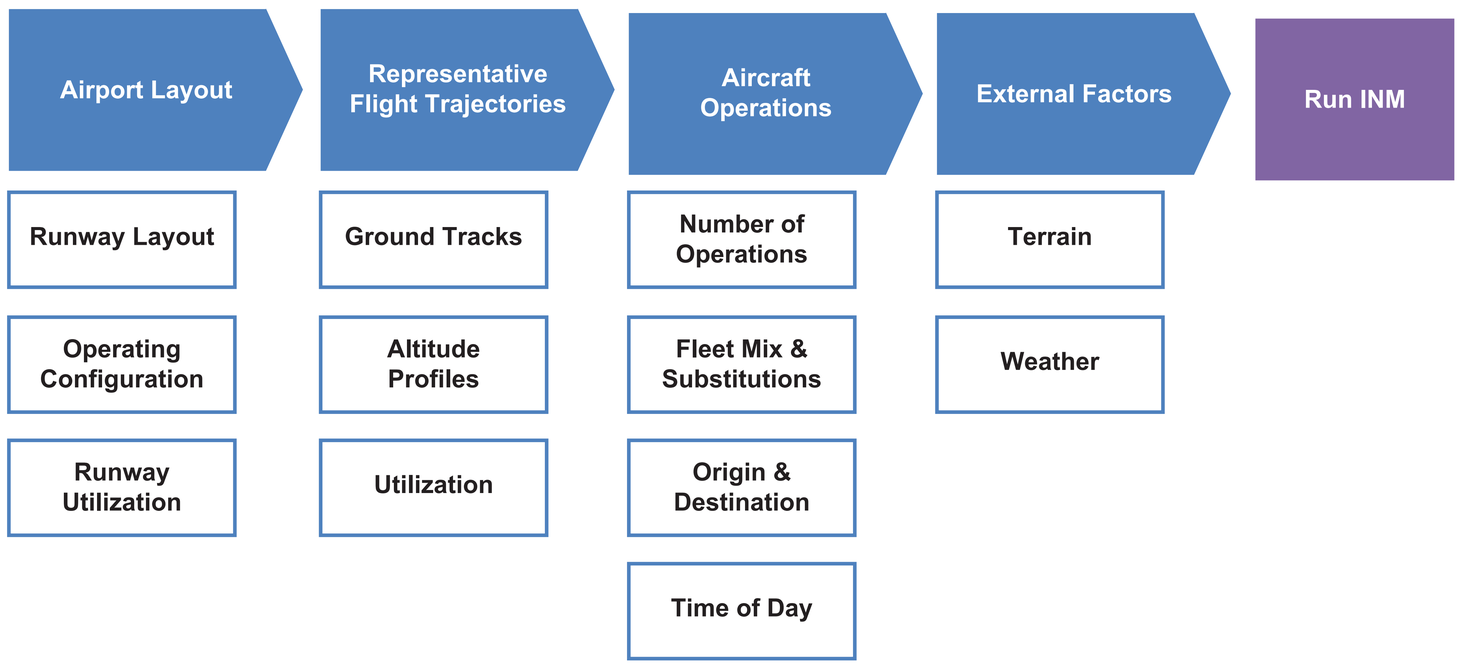




The Integrated Noise Model (INM)

- The INM was designed to depict the cumulative 24-hour noise exposure for the average annual day at an airport
- Primary area of focus for modeling is the DNL 65 contour
- 14 CFR Part 150 requires the use of modeling to create noise contours

INM Inputs and Process



Why Would Modeled Noise Levels Differ from Measurements?

- **The measurements contain less than a full year of data, which:**
  - Results in a mismatch between operations, runway use, flight track use, fleet mix, etc. contained in the noise model inputs, which are based on an entire year of data

- **Measured aircraft DNL values may be contaminated by non-aircraft noise events (e.g., roadway/street noise, lawn mowers, etc.) occurring at the time of measurement, which:**
  - Artificially increases the measured aircraft DNL values

- **In accordance with 14 CFR Part 150, the measured noise levels are not used to calibrate the INM aircraft noise database**

STATION 5

Contour Development Data

2016 and 2021 Aircraft Operations Levels

Widebody, Narrowbody, and Regional Jet

Aircraft Category	Aircraft Type	INM Aircraft Type	2016 Annual Operations	2021 Annual Operations
Widebody	Boeing 767-300	767400	30	30
		Widebody Total	30	30
Narrowbody	Boeing 757-200	757PW	553	576
		757RR	23	24
	Boeing 737-800 / 900	737800	35,756	37,923
	Boeing 737-600 / 700	737700	28,177	28,828
	Boeing 717-200	717200	17,094	20,530
	Airbus A321 / A321neo	A321-232	6,476	8,554
	Airbus A320 / A320neo	A320-211	21,259	24,279
		A320-232	25,690	27,338
	Airbus A319	A319-131	2,909	3,622
	MD-88	MD83	16,972	7,132
	MD-90	MD9025	982	1,134
		MD9028	4,714	5,445
	Embraer 190	EMB190	25,196	24,713
		Narrowbody Total	185,801	190,098
Regional Jet	Canadair RJ 700 / 900	CRJ9-ER	92,492	103,812
	Canadair RJ 200	CL601	12,899	-
	Embraer 175	EMB175	31,604	48,192
	Embraer 170	EMB170	23,918	38,000
	Embraer RJ145	EMB14L	18,100	-
	Embraer RJ140	EMB145	6,818	-
		Regional Jet Total	185,831	190,004

NOTE: An aircraft operation is equivalent to one arrival/landing or one departure/takeoff.
SOURCE: LaGuardia Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033. Port Authority of New York and New Jersey. March 23, 2016. Adapted by Environmental Science Associates, 2016.

2016 and 2021 Aircraft Operations Levels

General Aviation

Aircraft Category	Aircraft Type	INM Aircraft Type	2016 Annual Operations	2021 Annual Operations
General Aviation	Business Jet	CL600	872	875
		CNA525C	93	93
		CNA55B	100	100
		CNA560E	272	274
		CNA560XL	772	775
		CNA680	412	413
		CNA750	759	762
		F10062	162	162
		GIV	736	738
		GV	1,052	1,056
		LEAR35	614	616
		MU3001	554	556
	Turboprop	CNA208	196	185
		CNA441	52	49
	Helicopter	B407	106	106
		S76	106	106
		SA355F	184	186
	Piston	GASEPV	60	50
		General Aviation Total	7,102	7,102

NOTE: An aircraft operation is equivalent to one arrival/landing or one departure/takeoff.
SOURCE: LaGuardia Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033. Port Authority of New York and New Jersey. March 23, 2016. Adapted by Environmental Science Associates, 2016.

Operations Percentages by Day and Night

Study Year	Arrivals		Departures	
	Day	Night	Day	Night
2016	90.93%	9.07%	91.82%	8.18%
2021	91.49%	8.51%	91.76%	8.24%

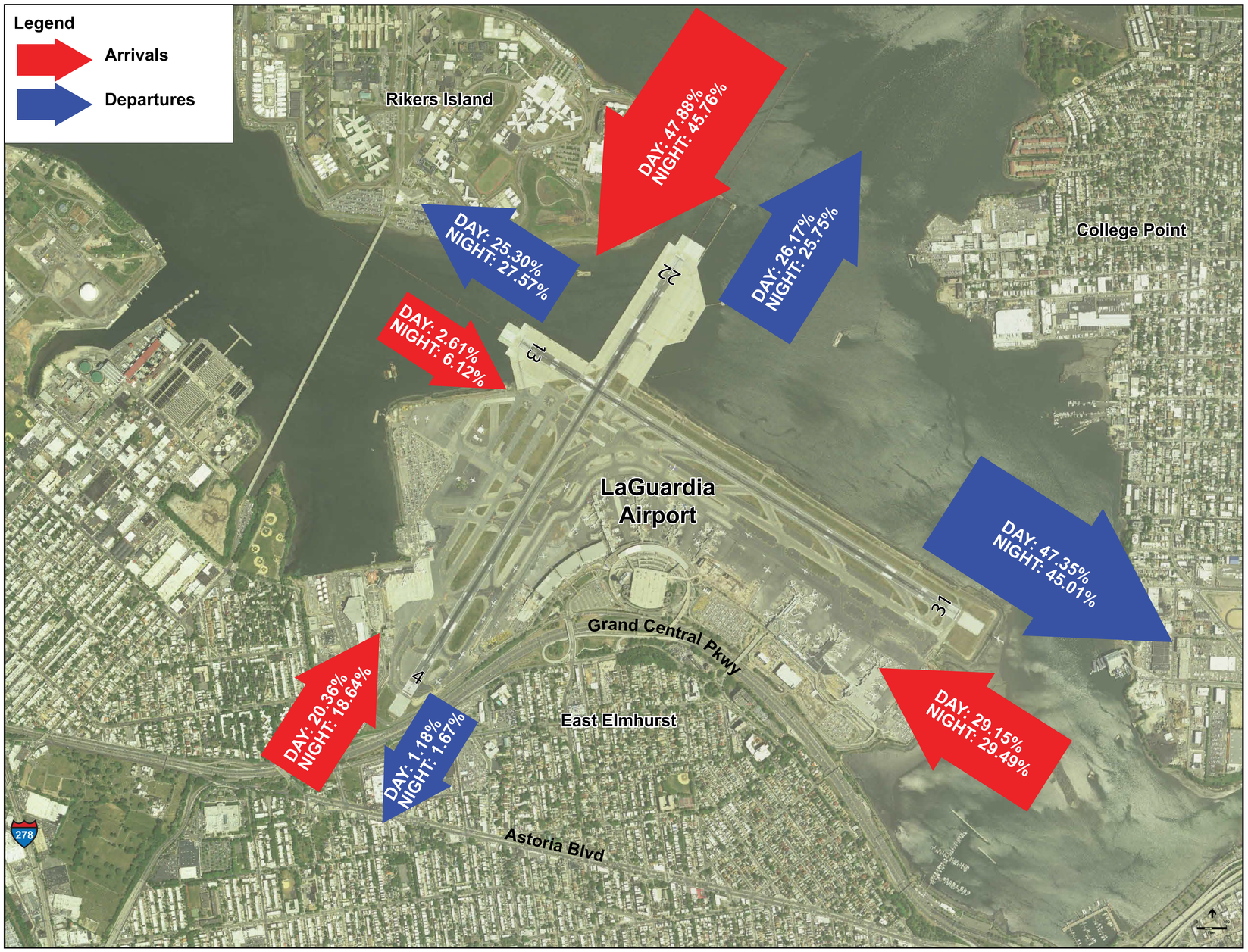
SOURCE: LaGuardia Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033. Port Authority of New York and New Jersey. March 23, 2016. Adapted by KB Environmental Sciences, Inc. and ESA, 2016.

Total Annual Operations

2016 Annual Operations	2021 Annual Operations
378,764	387,234

LaGuardia Airport
14 CFR Part 150 Study

2016 and 2021 Runway Use



NOTE: Does not include helicopter operations. Values may not add to 100 percent due to rounding. Runway utilization values represent calendar year 2014.
SOURCE: KB Environmental Sciences, Inc., 2016; Port Authority of New York and New Jersey, ANOMS data for calendar year 2014.

LaGuardia Airport
14 CFR Part 150 Study

Study Area

SOURCE: Earth Star Geographics, 1999; Port Authority of New York and New Jersey (PANYNJ), 2014; Environmental Science Associates, 2015

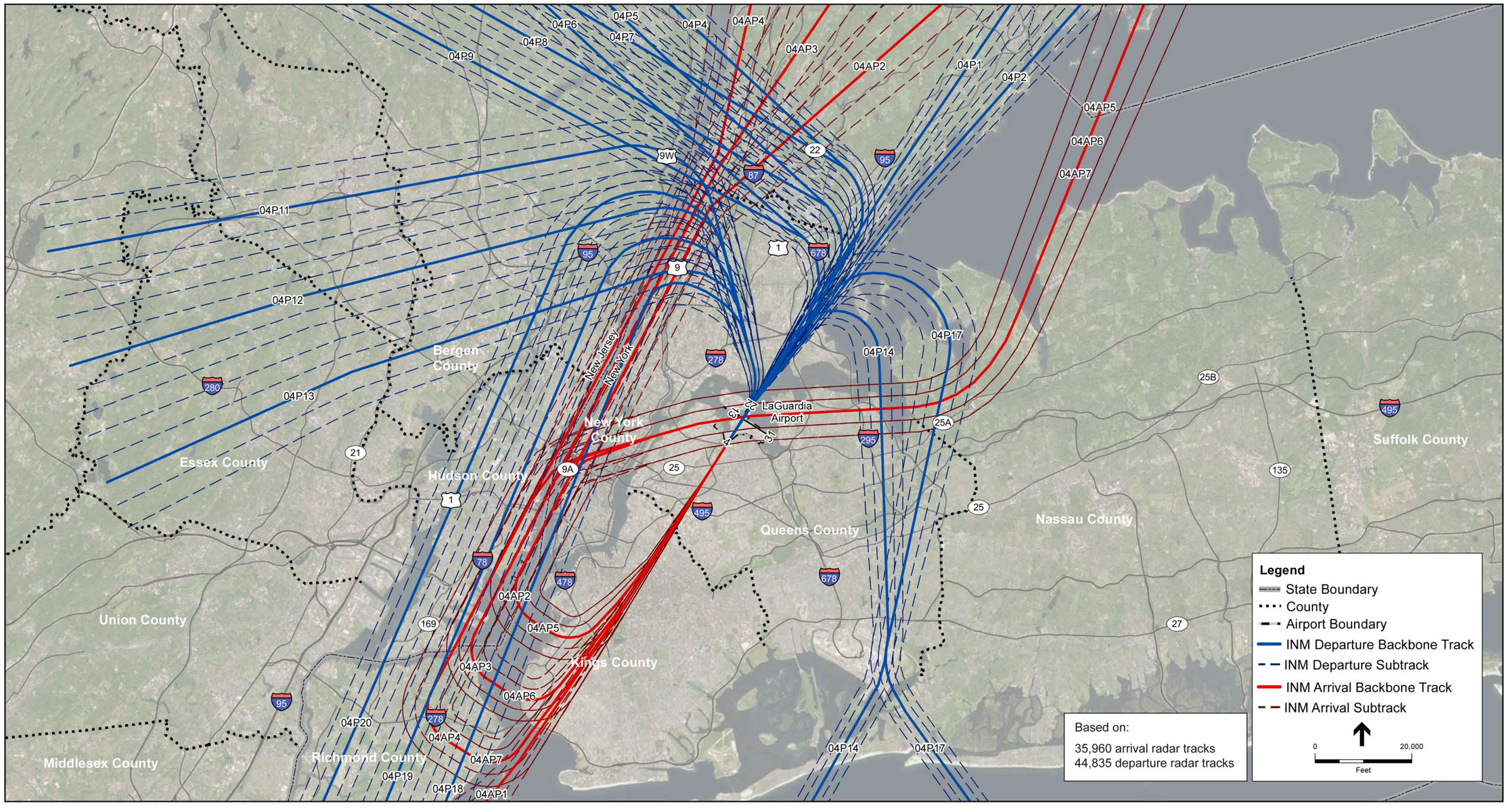
Development of INM Flight Tracks

- **Calendar year 2014 radar flight track and flight identification data were obtained from the Port Authority's ANOMS system**
  - Arrival tracks – 176,137
  - Departure tracks – 175,974

- **The radar data was analyzed to determine flight corridors of air traffic to and from LGA; the centers of these corridors were represented as "backbone" INM flight tracks**
- **Radar data was also analyzed to determine geographic variations of flights within these corridors; the variations were represented as INM "subtracks"**
- **Altitude profiles of common aircraft types operating at LGA were analyzed to create user-defined flight profiles, which were reviewed by several airlines and approved by the FAA**
  - These user-defined profiles more closely represent aircraft operations to and from LGA in comparison with INM standard data

LaGuardia Airport
14 CFR Part 150 Study

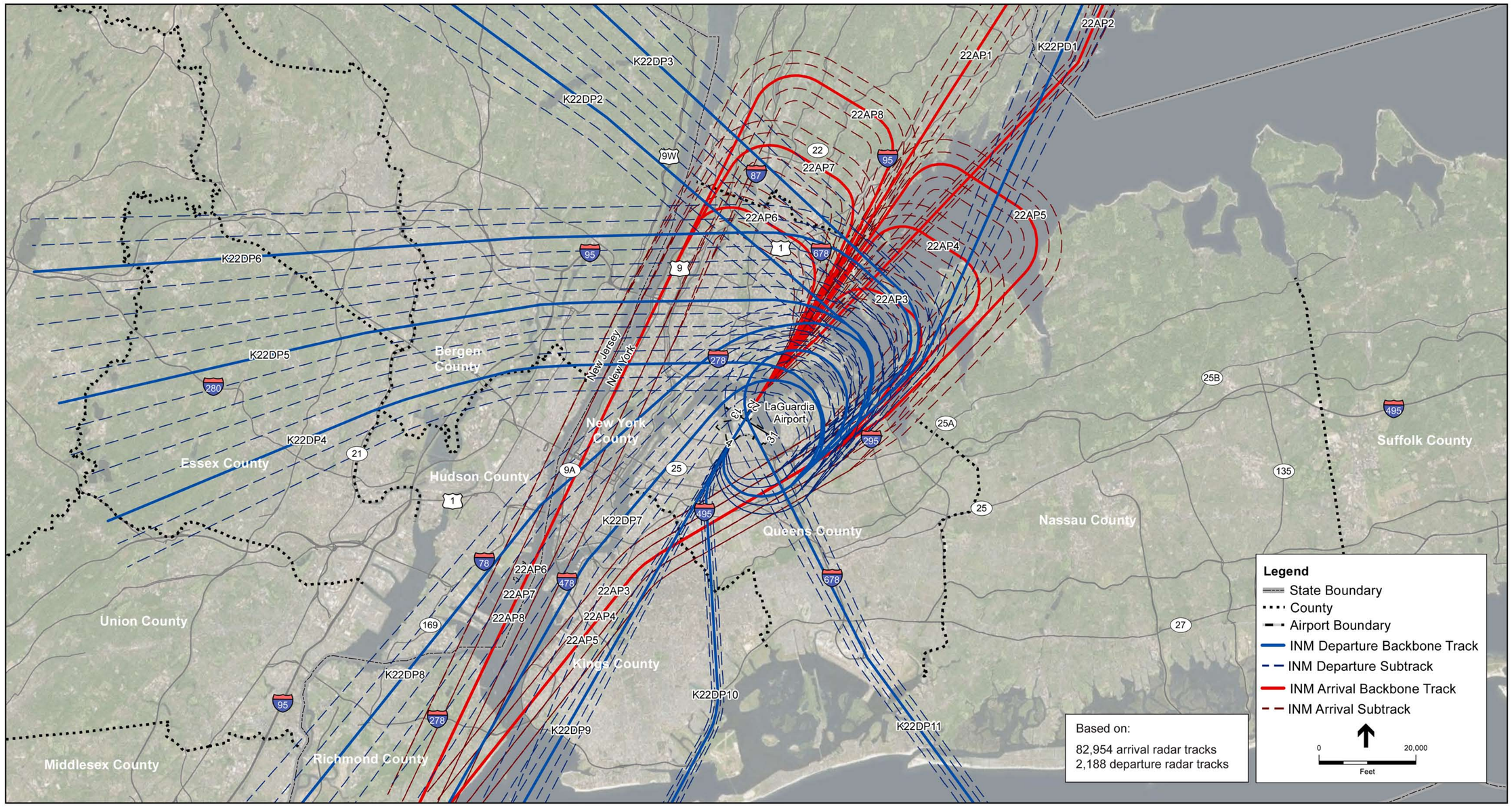
2016 and 2021 INM Flight Tracks: Runway 4



SOURCE: NAIP, 2013; KB Environmental Sciences, Inc., 2016.
NOTE: INM - Integrated Noise Model.

LaGuardia Airport
14 CFR Part 150 Study

2016 and 2021 INM Flight Tracks: Runway 22



SOURCE: NAIP, 2013; KB Environmental Sciences, Inc., 2016.
NOTE: INM - Integrated Noise Model.

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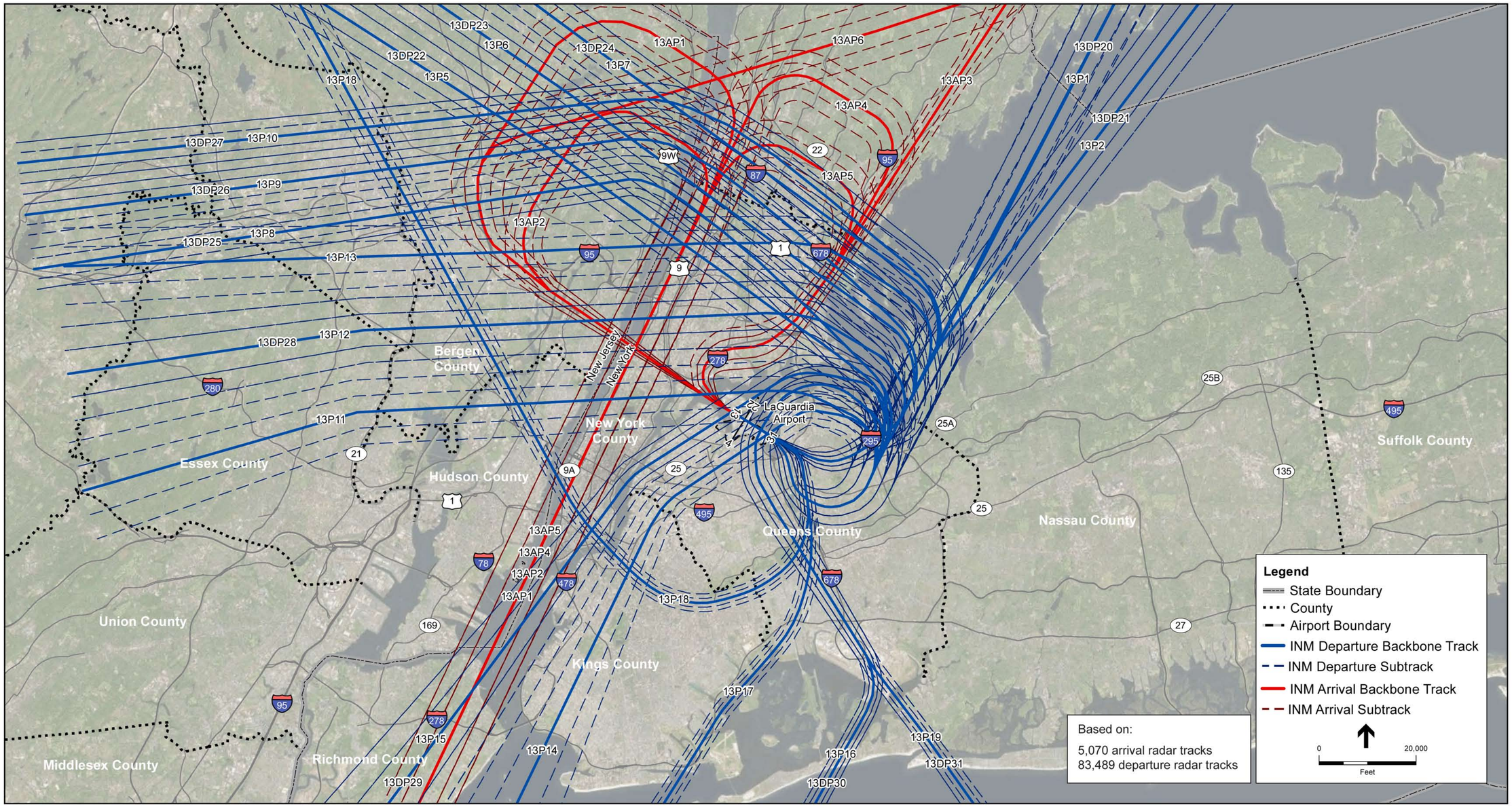
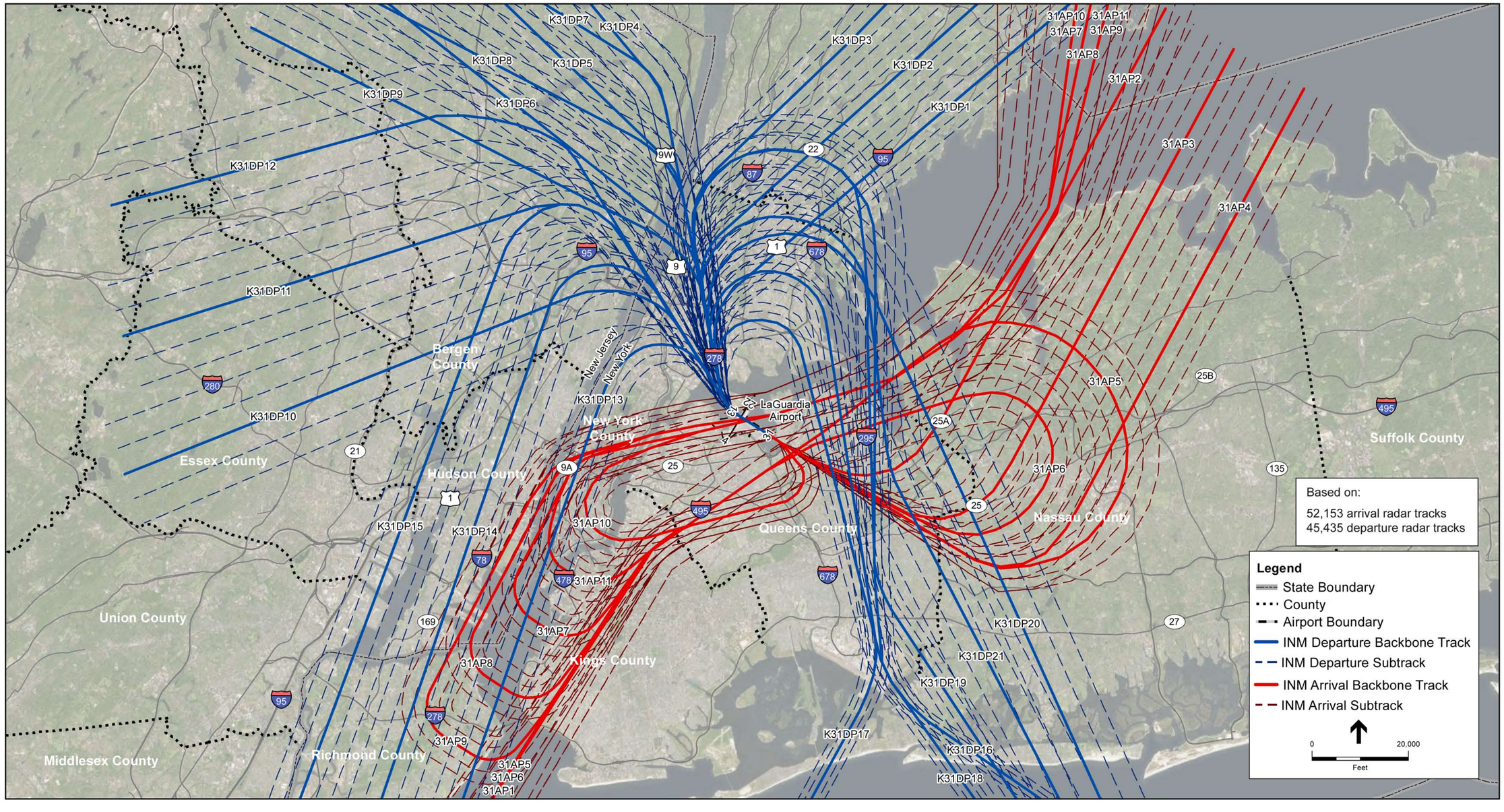
2016 and 2021 INM Flight Tracks: Runway 13



SOURCE: NAIP, 2013; KB Environmental Sciences, Inc., 2016.
NOTE: INM - Integrated Noise Model.

LaGuardia Airport
14 CFR Part 150 Study

2016 and 2021 INM Flight Tracks: Runway 31



SOURCE: NAIP, 2013; KB Environmental Sciences, Inc., 2016.
NOTE: INM - Integrated Noise Model.

STATION 6

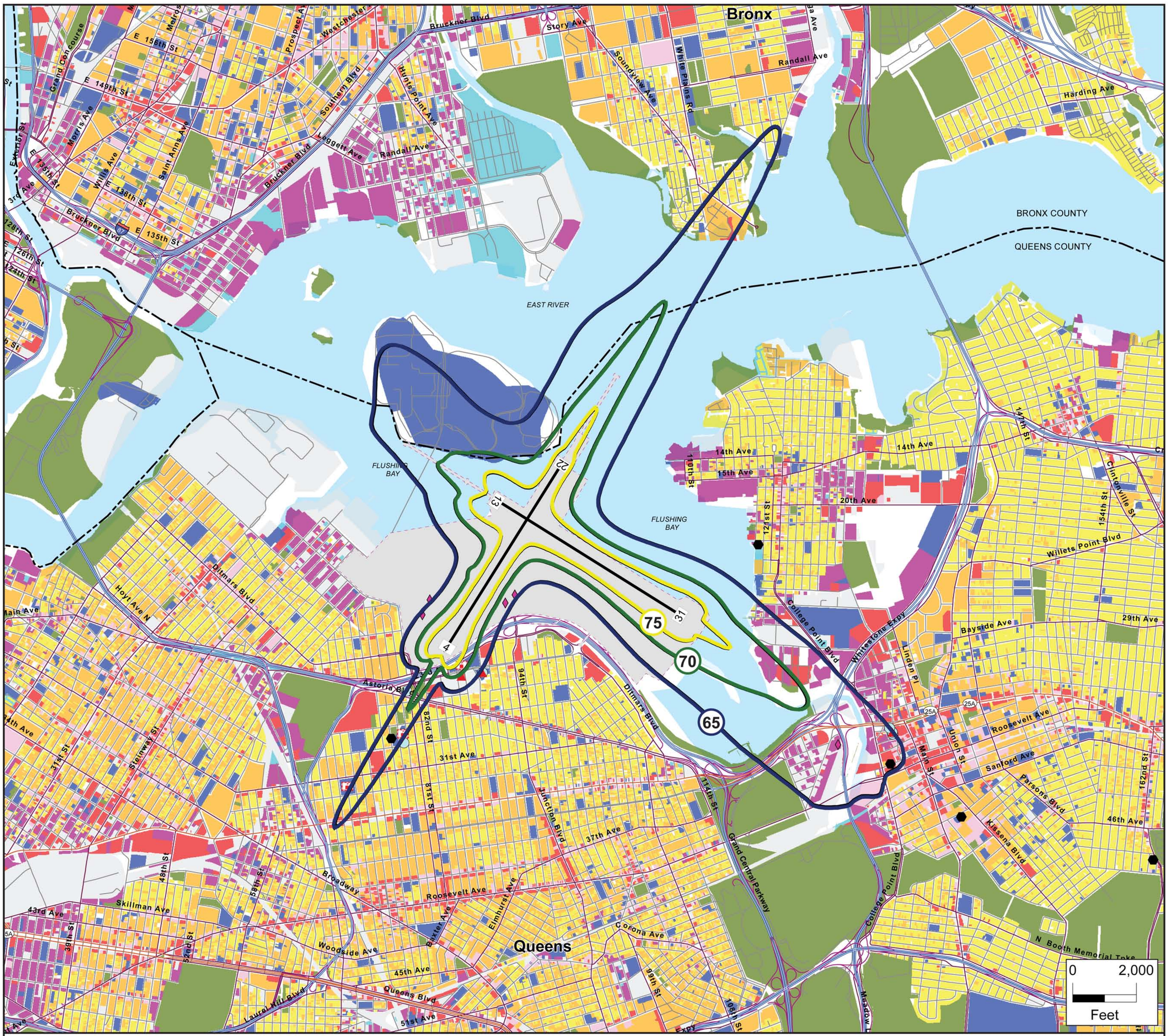
2016 and 2021 Noise Exposure Contours

LaGuardia Airport
14 CFR Part 150 Study

DRAFT - Subject to Change

2016 DNL 65, 70, and 75 Contours

The draft DNL contours provided on this map are for informational purposes only and do not represent a commitment by the Port Authority to provide noise mitigation. Further analysis is required prior to determining the eligibility of individual parcels for noise mitigation treatment.



Legend

- Airport Property Line
- Runway
- Limited Access Highway
- Highway
- Major Roadway
- Local Street
- County Boundary
- City Boundary
- Noise Monitor
- Place of Worship
- School
- Historic Structure
- Day Care/Assisted Living
- DNL Contour

Existing Land Uses

- Single and Two Family Residential
- Multi-Family Residential
- Mixed Residential and Commercial
- Commercial and Office
- Industrial and Manufacturing
- Transportation, Parking and Utilities
- Public Facilities and Institutions
- Unclassified
- Vacant Land
- Open Space, Cemeteries and Outdoor Recreation

SOURCE: New York City Department of City Planning, MapPLUTO 15V1-Tax lot/land use geographic information database, March 2015-June 2015 (adapted by ESA); Nassau County Department of Public Works Planning Division; Property classification and geographic information database, September 2015; ESRI Mapping Services; Environmental Science Associates, 2016; Planning Technology, Inc. 2016; KB Environmental Sciences, Inc., 2016.

Note: NYC Department of City Planning is sole land use agency for all areas within the DNL 65 dBA contour.

Note: All schools within the DNL 65 dBA have been previously sound insulated.

North

Contour	Area (Square Miles) 2016
65 - 70	2.5
70 - 75	0.8
75+	0.5

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Noise Exposure Within the 2016 DNL 65, 70, and 75 Contours

Noise Level	Total Area (Acres)	Households	Population	Places of Worship	Schools[1]	Hospitals and Residential Healthcare	Historic Resources	Day Care
2016								
DNL 65-70	1,579.3	3,655	9,787	7	2	0	5	2
DNL 70-75	517.4	2	6	0	1	0	0	1
DNL 75+	339.1	0	0	0	0	0	0	0
Total	**2,435.8**	**3,657**	**9,793**	**7**	**3**	**0**	**5**	**3**

NOTE: The household and population estimates provided above were developed using census block-level demographic data from the 2010 Decennial Census and New York City housing data. This approach provided an average number of persons per household for each individual census block, which accounted for changes in land use, housing types, and residential density within the different areas in the DNL 65 and higher contours.

[1] These schools were included in the School Soundproofing Program, and are compatible with DNL 65+ (see Section 2.6.1).

SOURCE: Planning Technology, Inc. and Environmental Science Associates, 2016.

Land Use Category	Land Uses Exposed to DNL 65 and Higher (acres)				Households	Population
	DNL 65-70	DNL 70-75	DNL 75+	Total		
Single and Two Family Residential	37.6	0.0*	0.0	37.6	1,129	3,312
Multi-Family Residential	34.7	0.0	0.0	34.7	1,715	4,370
Mixed Residential and Commercial	13.1	0.0	0.0	13.1	813	2,111
Commercial and Office	39.9	3.4	0.0	43.3	-	-
Industrial and Manufacturing	60.4	13.3	0.0	73.7	-	-
Transportation, Right of Way, Parking and Utilities	227.4	13.6	5.2	246.4	-	-
Public Facilities and Institutions	223.3	10.5	0.2	234.0	-	-
Open Space, Cemeteries, and Outdoor Recreation	31.3	4.3	0.0	35.6	-	-
Vacant	30.0	6.6	0.0	36.6	-	-
Airport Property	172.6	152.5	278.2	603.3	-	-
Water (Off Airport Property)	709.0	313.2	55.6	1,077.8	-	-
Total	**1,579.3**	**517.4**	**339.1**	**2,435.8**	**3,657**	**9,793**

NOTE: Numbers may not add up, due to rounding.

*Single and Two Family Residential uses are within the DNL 70-75 contour. The total acres is <0.0 and does not appear in the table due to rounding.

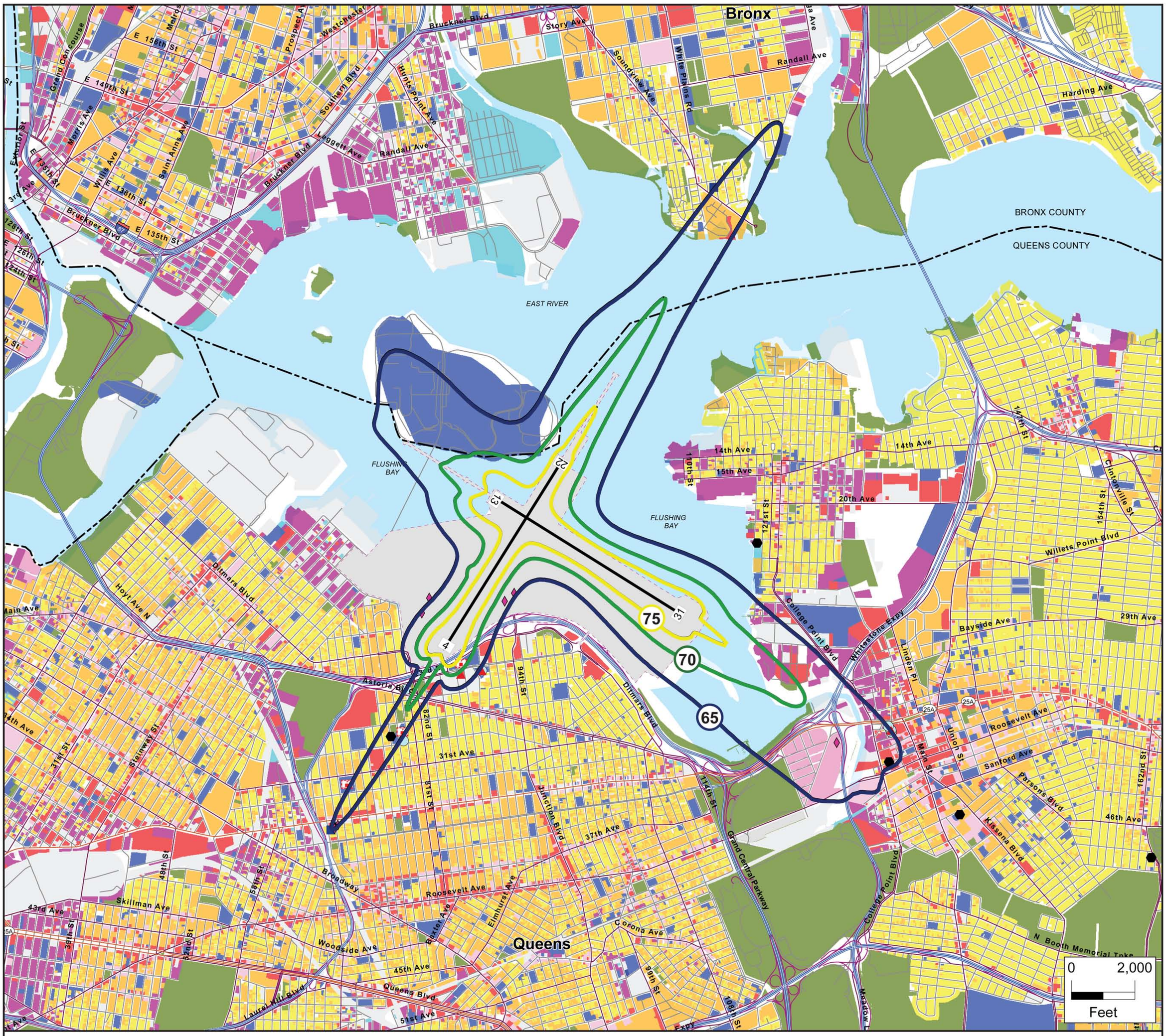
SOURCE: Planning Technology, Inc. and Environmental Science Associates, 2016.

LaGuardia Airport
14 CFR Part 150 Study

DRAFT - Subject to Change

2021 DNL 65, 70, and 75 Contours

The draft DNL contours provided on this map are for informational purposes only and do not represent a commitment by the Port Authority to provide noise mitigation. Further analysis is required prior to determining the eligibility of individual parcels for noise mitigation treatment.



Legend

- Airport Property Line
- Runway
- Limited Access Highway
- Highway
- Major Roadway
- Local Street
- County Boundary
- City Boundary
- Noise Monitor
- Place of Worship
- School
- Historic Structure
- Day Care/Assisted Living
- Hospitals/Health Care Residential
- DNL Contour

Future Land Uses

- Single and Two Family Residential
- Multi-Family Residential
- Mixed Residential and Commercial
- Commercial and Office
- Industrial and Manufacturing
- Transportation, Parking and Utilities
- Public Facilities and Institutions
- Unclassified
- Vacant Land
- Open Space, Cemeteries and Outdoor Recreation

SOURCE: New York City Department of City Planning, MapPLUTO 15V1-Tax lot/land use geographic information database, March 2015-June 2015 (adapted by ESA); Nassau County Department of Public Works Planning Division; Property classification and geographic information database, September 2015; ESRI Mapping Services; Environmental Science Associates, 2016; Planning Technology, Inc. 2016; KB Environmental Sciences, Inc., 2016.

Note: NYC Department of City Planning is sole land use agency for all areas within the DNL 65 dBA contour.

Note: All schools within the DNL 65 dBA have been previously sound insulated.

North

Contour	Area (Square Miles) 2021
65 - 70	2.4
70 - 75	0.8
75+	0.5

ESA Study Team

THE PORT AUTHORITY OF NY & NJ

Noise Exposure Within the 2021 DNL 65, 70, and 75 Contours

Noise Level	Total Area (Acres)	Households	Population	Places of Worship	Schools	Hospitals and Residential Healthcare	Historic Resources	Day Care
2021								
DNL 65-70	1,554.7	3,802	10,255	7	2	2	13	2
DNL 70-75	502.5	4	12	0	1	0	0	1
DNL 75+	332.2	0	0	0	0	0	0	0
Total	**2,389.4**	**3,806**	**10,267**	**7**	**3**	**2**	**13**	**3**

NOTES:
1. The household and population estimates provided above were developed using census block demographic data from the 2010 Decennial Census and New York City data. This approach provided an average number of persons per household for each individual census block, which accounted for changes in land use, housing types, and residential density within the different areas in the DNL 65 and higher contours.
2. Because the timing and extent of planned residential development within the DNL 65 contour is uncertain, the household and population estimates in this table do not include potential housing units associated with the Willets Point Development Plan and construction of additional housing units at the Sky View Parc condominium complex.
3. These schools were included in the School Soundproofing Program, and are compatible with DNL 65+ (see Section 2.6.1).

SOURCE: Planning Technology, Inc. and Environmental Science Associates, 2016.

Land Use Category	Land Uses Exposed to DNL 65 and Higher (acres)				Households	Population
	DNL 65-70	DNL 70-75	DNL 75+	Total		
Single and Two Family Residential	40.4	0.0*	0.0	40.4	1,207	3,556
Multi-Family Residential	35.2	0.0	0.0	35.2	1,739	4,436
Mixed Residential and Commercial	6.5	0.0	0.0	6.5	860	2,275
Commercial and Office	40.2	3.0	0.0	43.2	-	-
Industrial and Manufacturing	59.4	12.4	0.0	71.8	-	-
Transportation, Right of Way, Parking and Utilities	222.7	13.8	5.0	241.5	-	-
Public Facilities and Institutions	212.8	8.4	0.1	221.3	-	-
Open Space, Cemeteries, and Outdoor Recreation	33.0	4.7	0.0	37.7	-	-
Vacant	29.6	6.0	0.0	35.6	-	-
Airport Property	172.2	152.3	274.9	599.4	-	-
Water (Off Airport Property)	702.7	301.9	52.2	1,056.8	-	-
Total	**1,554.7**	**502.5**	**332.2**	**2,389.4**	**3,806**	**10,267**

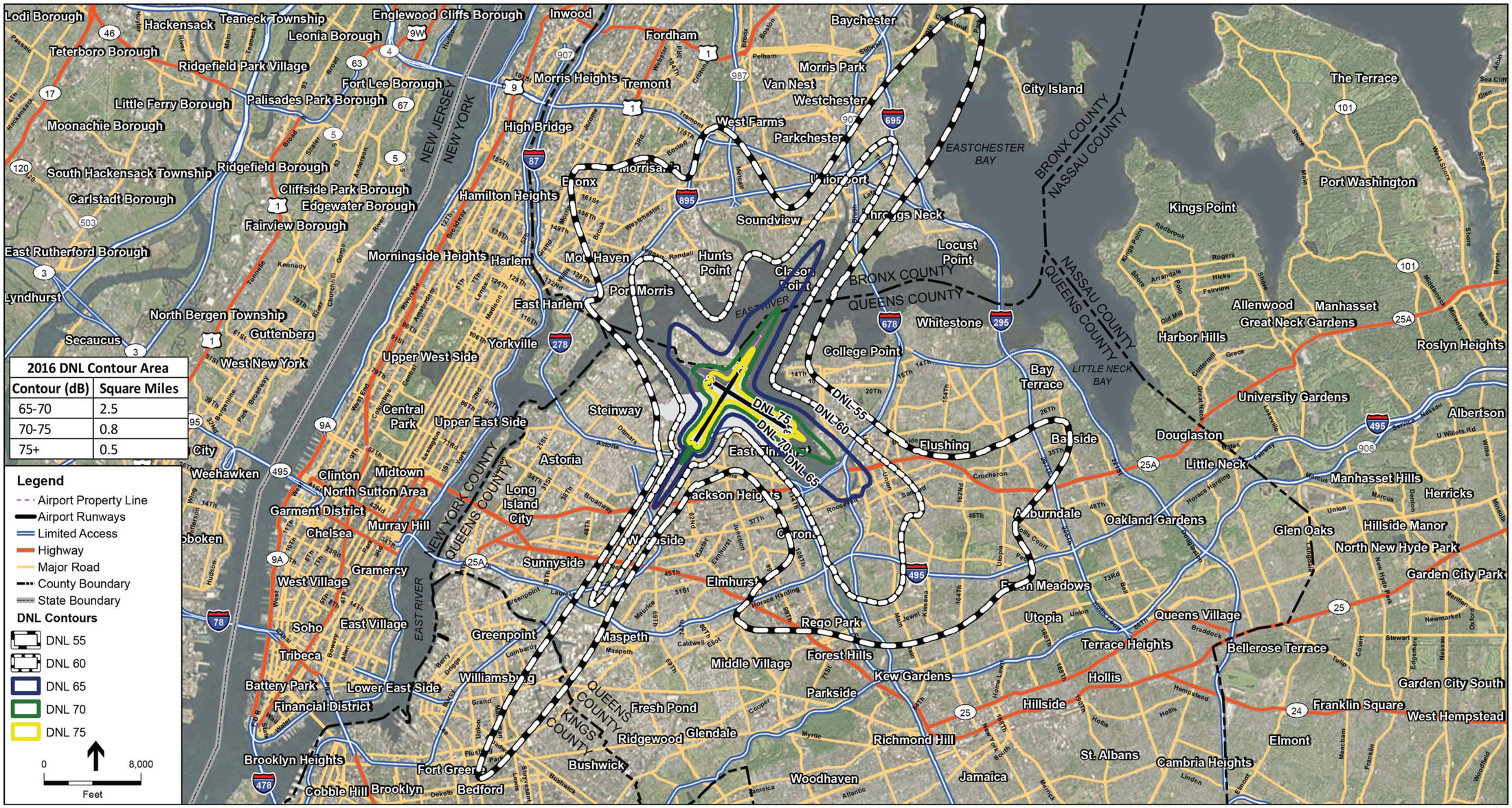
NOTE: Numbers may not add up, due to rounding.
*Single and Two Family Residential uses are within the DNL 70-75 contour. The total acres is <0.0 and does not appear in the table due to rounding.
SOURCE: Planning Technology, Inc. and Environmental Science Associates, 2016.

LaGuardia Airport
14 CFR Part 150 Study

DRAFT - Subject to Change

2016 DNL 55 and 60 Contours

FOR INFORMATIONAL PURPOSES ONLY



2016 DNL Contour Area	
Contour (dB)	Square Miles
65-70	2.5
70-75	0.8
75+	0.5

Legend

- Airport Property Line
- Airport Runways
- Limited Access
- Highway
- Major Road
- County Boundary
- State Boundary

DNL Contours

- DNL 55
- DNL 60
- DNL 65
- DNL 70
- DNL 75

0 — 8,000 Feet

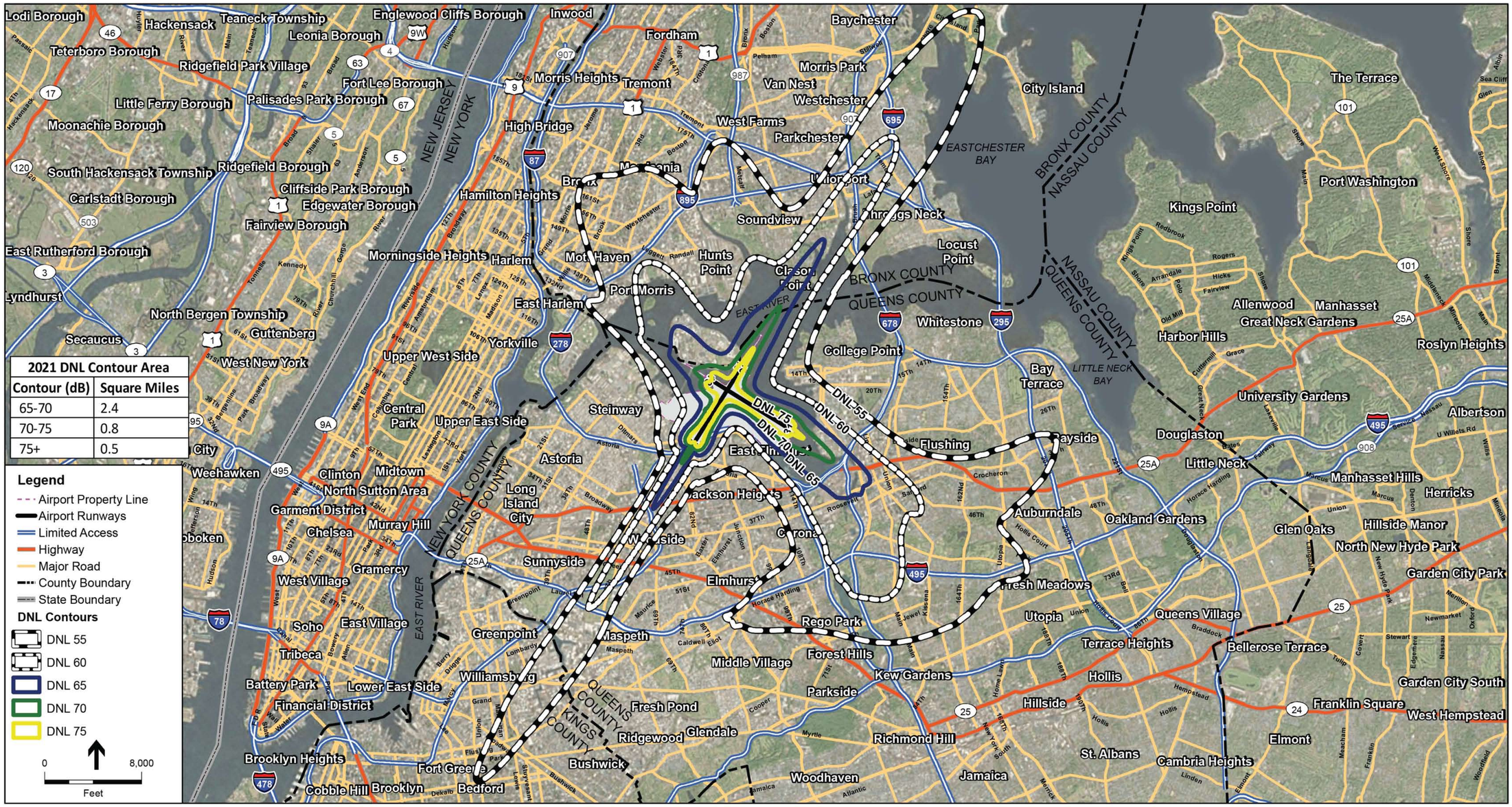
SOURCE: ESA and KB Environmental Sciences, Inc., 2016; INM 7.0d; ESRI Mapping Services.

LaGuardia Airport
14 CFR Part 150 Study

DRAFT - Subject to Change

2021 DNL 55 and 60 Contours

FOR INFORMATIONAL PURPOSES ONLY



SOURCE: ESA and KB Environmental Sciences, Inc., 2016; INM 7.0d; ESRI Mapping Services.

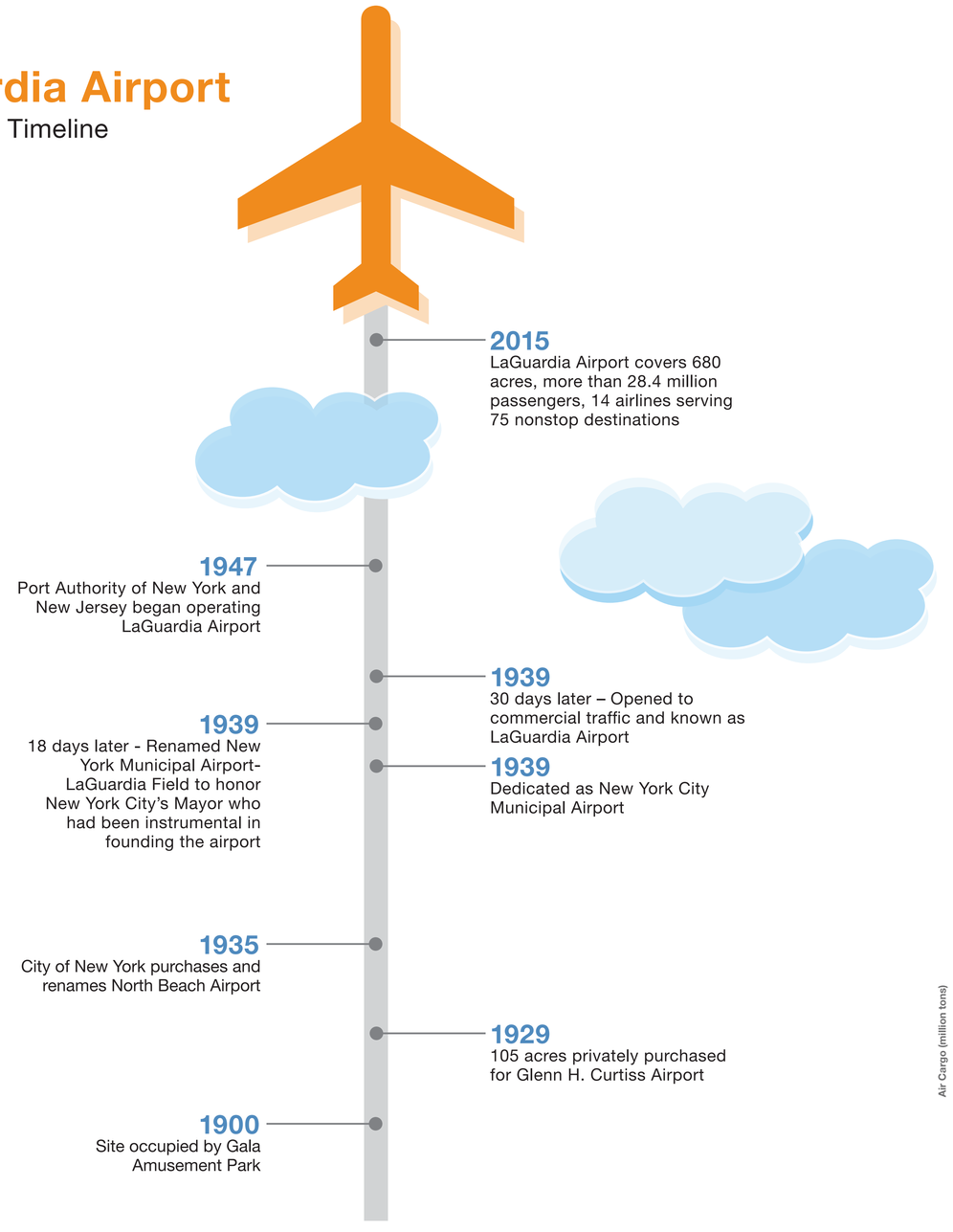
STATION 7

Port Authority and Airport Activities

LaGuardia Airport
14 CFR Part 150 Study

Facts and Figures

LaGuardia Airport
Summarized Timeline



2015
LaGuardia Airport covers 680 acres, more than 28.4 million passengers, 14 airlines serving 75 nonstop destinations

1947
Port Authority of New York and New Jersey began operating LaGuardia Airport

1939
30 days later – Opened to commercial traffic and known as LaGuardia Airport

1939
18 days later - Renamed New York Municipal Airport-LaGuardia Field to honor New York City's Mayor who had been instrumental in founding the airport

1939
Dedicated as New York City Municipal Airport

1935
City of New York purchases and renames North Beach Airport

1929
105 acres privately purchased for Glenn H. Curtiss Airport

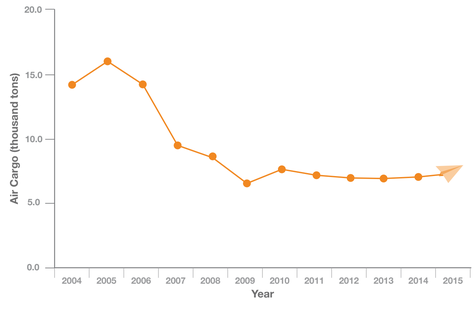
1900
Site occupied by Gala Amusement Park

Air cargo levels over recent years

Per 2015 Budget:
Port Authority airports handled **16.5%** of US air cargo volume.

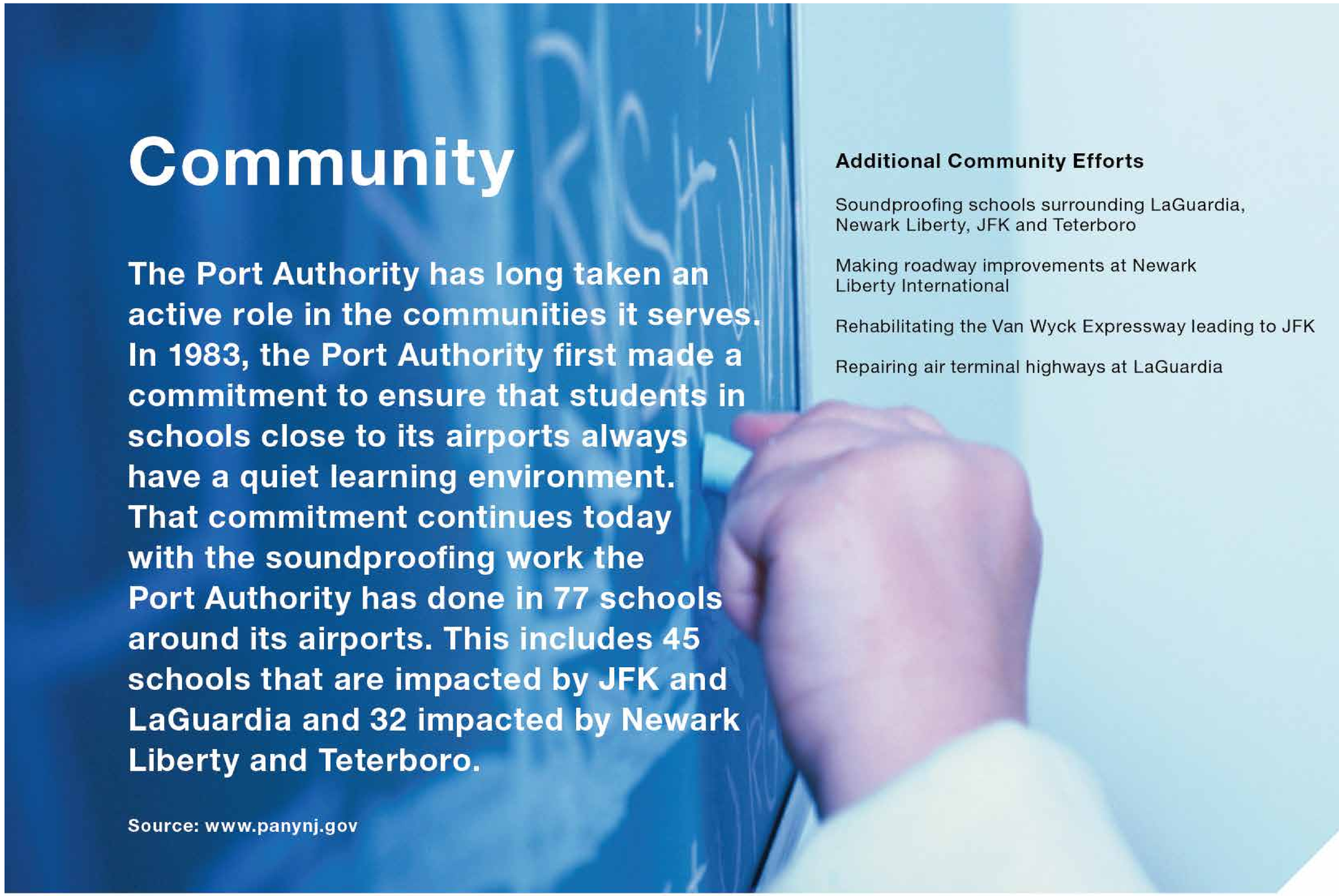
JFK

LGA



Source: Port Authority of New York and New Jersey, 2015 and 2016

LaGuardia Airport
14 CFR Part 150 Study



LaGuardia Airport
14 CFR Part 150 Study

School Sound Proofing Program – LGA

School	City
IS 52X	Bronx
Our Lady of Fatima	Jackson Heights
PS 120Q	Flushing
PS 143Q	Corona
PS 161X	Bronx
PS 165Q	Flushing
PS 219Q	Flushing
PS 62X	Bronx
St. Ann	Flushing
St.Sebastian	Woodside
College of Aeronautics (Vaughn)	Flushing
John Bowne HS	Flushing
Lexington School for Deaf	Jackson Heights
Msgr. McClancy Memorial HS	East Elmhurst
PS 146B	Bronx
PS 5X	Bronx
Samuel Gompers Vocat. School	Bronx
St. Anselm	Bronx
St. Athanasius	Bronx
St. Michael	Flushing
St. Pius V (Elementary)	Bronx

- **All of these schools have been soundproofed previously as part of the Port Authority School Soundproofing Program**

- **The schools highlighted in yellow are within the 2016 and 2021 DNL 65 contours**

- **All schools within the 2016 and 2021 DNL 65 contours have been soundproofed previously as part of the Port Authority School Soundproofing Program**

LaGuardia Airport
14 CFR Part 150 Study

Port Authority of New York and New Jersey

1921

Founded in 1921, the Port Authority of New York and New Jersey builds, operates, and maintains many of the most important transportation and trade infrastructure assets in the country.

+$23 billion
in annual wages

$80 billion in regional economic activity

By 2030, the number of passengers using our airports annually will soar to 150 million. To prepare, the Port Authority's 2012 capital investment in its airports exceeded $300 million with $900 million of capital projects in the pipeline.

The Port Authority of NY & NJ
2012 Annual Report

The Port Authority is a linchpin in the regional economy, annually moving millions of people, and millions of tons of cargo on its network of aviation, rail, surface transportation, and seaport facilities. Port Authority airports handled **10%** of the US aviation passenger traffic and **16.4%** of US air cargo volume.

The Port Authority of NY & NJ
2014 Budget

Supports more than
550,000
regional jobs

ESA Study Team

THE PORT AUTHORITY OF NY & NJ

Project Contacts and Website

- **Port Authority of New York and New Jersey**
  - Kelly Mitchell, Project Manager
  - Adeel Yousuf, Noise Office Manager

- **ESA Study Team**
  - Steve Alverson, Project Director
  - Peter Byrne, Deputy Project Director
  - Michael Arnold, LGA Technical Director

- **Website:** http://www.panynj.gov/airports/aircraft-noise-information.html

- **E-Mail:** NYPart150@panynj.gov

MONITOR 2

WebTrak

LaGuardia Airport
14 CFR Part 150 Study

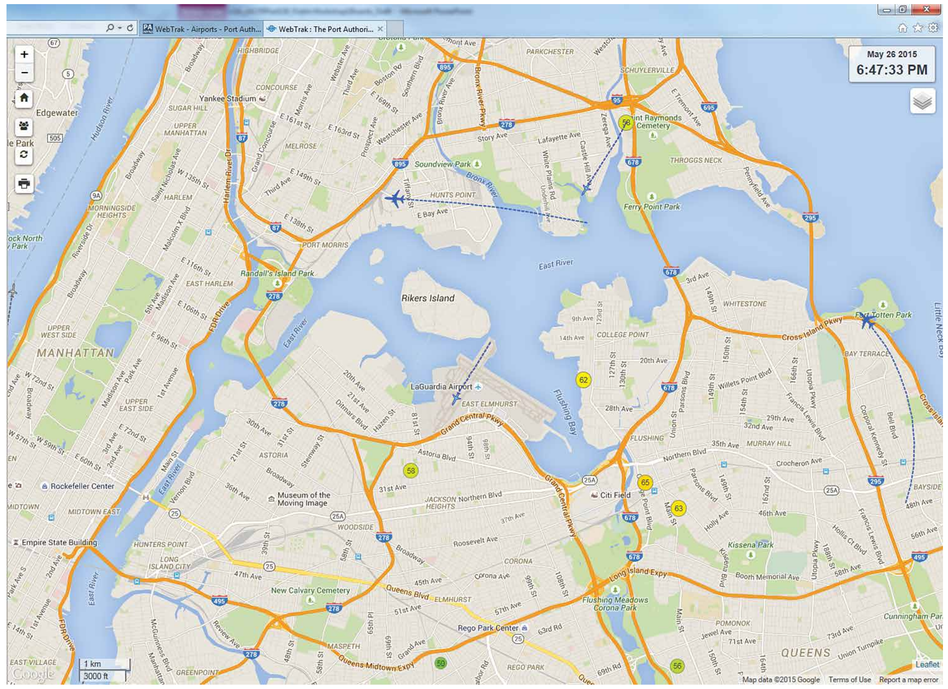
WebTrak – Flight Tracking and Noise Information System

- **WebTrak displays air traffic patterns within the New York Metropolitan area**

- **Specific information regarding flights at LaGuardia Airport including aircraft type, altitude, and operation type (arrival or departure)**

- **Noise levels at noise monitors located near LGA are shown in WebTrak and represent the actual sound level at that those locations at a specific time**

https://www.panynj.gov/airports/webtrak.html



Color	Noise Level
	< 45dB
	45dB
	50dB
	55dB
	60dB
	65dB
	70dB
	75dB
	80dB
	85dB
	90dB
	> 90dB

Welcome!

LaGuardia Airport
Title 14 Code of Federal Regulations Part 150 Study
Public Information Workshop
October 5, 2021

What is a 14 CFR Part 150 Study?

- Established in 1985, Title 14 of the Code of Federal Regulations, Part 150 (14 CFR Part 150) provides a process for airport operators to reduce noise exposure in areas affected by aircraft operations.
- 14 CFR Part 150 is a voluntary process airport operators implement to identify existing noise exposure and to develop strategies for reducing noise impacts.
- 14 CFR Part 150 specifies requirements for preparing airport Noise Exposure Maps (NEMs) and Noise Compatibility Programs (NCPs) to identify noise exposure and programs to reduce noncompatible land uses.
- 14 CFR Part 150 requires that members of the public and key stakeholders be afforded the opportunity “to submit their views, data, and comments on the formulation and adequacy” of an NCP prior to submitting that NCP to the Federal Aviation Administration (FAA).

What Does a 14 CFR Part 150 Study Do?

- Evaluates the feasibility of possible flight procedure/land use changes.
- Educates communities on the federal process and what can and cannot be done to address aircraft noise concerns.
- Maps existing and predicted noise exposure in the vicinity of an airport.
- Includes airport sponsor-endorsed recommendations to the FAA regarding noise reduction measures.
- Brings stakeholders together to improve the compatibility between airports and their surrounding communities.
- Identifies actions an airport operator can take to abate and/or mitigate noise impacts to noncompatible land uses within the Day-Night Average Sound Level (DNL) 65 contour.

What Does a 14 CFR Part 150 Study Do?

A 14 CFR Part 150 Study typically results in an NEM Report and an NCP.

NEMs are Day-Night Average Sound Level (DNL) contours presented over base maps and are the fundamental components of existing and forecast conditions NEMs. They clearly identify an airport's present and future noise patterns and the land uses which are not compatible with those noise patterns.

DNL contours represent aircraft noise exposure (in decibels) for existing and future (at least five years) conditions. 14 CFR Part 150 requires documentation of the DNL 65, 70, and 75 contours.

Base maps depict an airport's layout, local land use control jurisdictions, major land use categories, noise-sensitive "receptors" and other information required by 14 CFR Part 150.

An **NCP** contains recommended noise control strategies that have been selected by an airport operator as measures for possible implementation, subject to FAA review and approval.

Noise abatement strategies address noise at the source to lessen the impact on noncompatible land uses. Examples include changes in aircraft flight tracks and runway use to reduce noise impacts.

Noise mitigation strategies address noise at the receiver. Examples include sound insulation and controls on future land development.

The Basics of Airport Noise

Physics of Noise

- DNL, or Day-Night Average Sound Level, is a cumulative noise metric that accumulates sound energy of multiple aircraft noise events occurring over a 24-hour period.
- Nighttime sound events (10:00:00 P.M. to 6:59:59 A.M.) are given an additional weighting of 10 dB to reflect the increased human sensitivity to noise at night.
- Aircraft noise exposure is calculated over a broad area and then depicted using contour lines of equal noise levels.
- The FAA has set DNL 65 as the threshold of compatible noise exposure for noise sensitive land uses such as homes, schools, and places of worship.

The Basics of Airport Noise (cont.)

Noise Management/Regulation

Federal Aviation Administration

- Controls aircraft while in flight
- Responsible for controlling noise at its source (i.e., aircraft engine noise standards)
- Certifies aircraft and pilots

State and Local Governments

- Promote compatible land use through zoning
- May require real estate disclosure
- May mandate sound-insulating building materials

Airport Sponsors

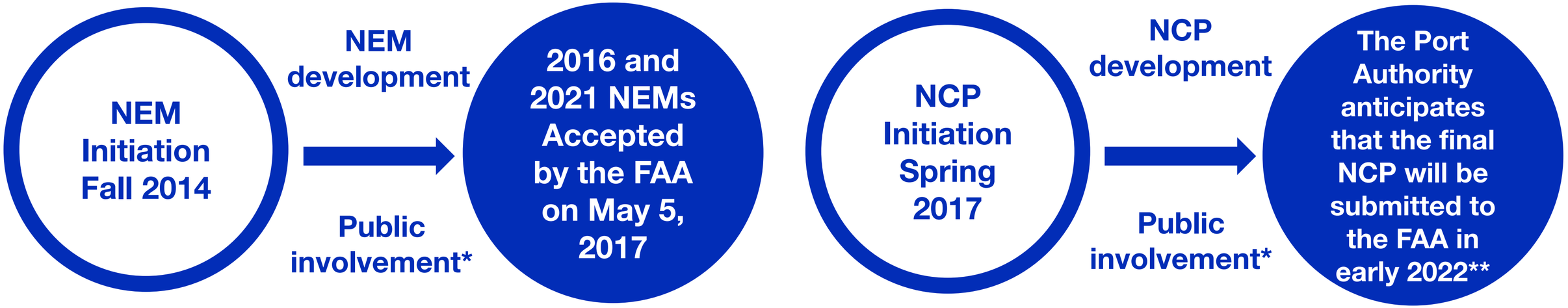
- Limited authority to adopt local restrictions on aircraft operations
- Responsible for airport capital improvement projects and infrastructure

Noise Stakeholders

14 CFR Part 150 requires a robust engagement process with a wide variety of airport-related stakeholders, including:

- The airport operator
- The FAA
- Aircraft operators
- Representative of local communities affected by aircraft noise
- Local planning agencies
- The general public

LGA 14 CFR Part 150 Study Timeline



Although the 2021 NEM was accepted by the FAA in 2017, it has since been updated (the 2021 Revised NEM) to reflect the removal of Delta Air Lines' MD-88 aircraft from operations at LGA.

*Public involvement included participation by public agencies, planning agencies, aeronautical users, the general public, and the Technical Advisory Committee (TAC).

**Date is tentative and subject to change.

Noise Exposure Maps

The Port Authority's Part 150 Study resulted in the development of a 2016 NEM depicting Existing Conditions and **three sets of NEMs** for 2021. Each NEM depicts the DNL 65, 70, and 75 contours generated by different operational conditions at LGA.

2016

Existing Conditions (calendar year 2016) NEM depicts existing aircraft noise exposure and noncompatible land uses in the vicinity of the Airport.

2021

1. The 2021 **FAA-Accepted** NEM was developed prior to the announced removal of MD-88 aircraft from LGA by Delta Air Lines and reflect the continued operation of these aircraft.
2. The 2021 **Revised** NEM reflects the baseline for comparison in the NCP and includes the removal of MD-88 aircraft from operations at LGA and their replacement with Airbus A319, A320, and A321 aircraft.
3. The 2021 **With Program** NEM reflects both the removal of MD-88 aircraft and replacement with Airbus aircraft and the FAA's implementation of Noise Abatement Measure 1* in May 2020.

* Modify NTHNS and GLDMN Runway 13 RNAV SIDs to Direct Aircraft Away from Flushing, New York

More information on the NEMs can be found in Chapter 1, Chapter 2, and Section 3.4 of the LGA NCP.

Noise Abatement Measures

The Port Authority's LGA Part 150 Study resulted in **eight noise abatement (NA) measures** recommended for inclusion in the LGA NCP.

- NA-1: Modify NTHNS and GLDMN Runway 13 RNAV SIDs to Direct Aircraft Away from Flushing, New York*
- NA-2: Create New Runway 13 Departure Procedure with an Immediate Left Turn over Compatible Land Uses
- NA-3: Implement Offset Approach to Runway 22 to Reduce Noise Exposure over Clason Point*
- NA-4: Reduce Runway 4 Departure Noise over Clason Point
- NA-5: Reduce Runway 13 Departures at Night
- NA-6: Implement Noise Abatement Departure Profiles on a Voluntary Basis for Runways 4 and 13
- NA-7: Implement Nighttime Optimized Profile Descent Procedures
- NA-8: Continue Existing Mandatory Departure Noise Limit

Within 12 months of the FAA's Record of Approval (ROA) for the NCP, the Port Authority will request that the FAA develop the new recommended noise abatement measures.

* Procedures have already been approved and implemented by FAA.

More information on the noise abatement measures can be found in Chapter 3 of the LGA NCP.

Noise Abatement Strategies Considered, but Not Recommended for Inclusion in the LGA NCP

- Develop New or Modify Current Flight Tracks
- Modify Pilot Procedures for Operating Aircraft
- Perform Construction to Modify Airfield Layout or Add Noise Barriers
- Change Operating Frequencies by Modifying Runway Use or Imposing Operating Restrictions

See Section 3.3 of the LGA NCP for more information.

Land Use Measures

The Port Authority's LGA Part 150 Study resulted in **three land use (LU) measures** recommended for inclusion in the LGA NCP.

LU-1: Sound-Insulate Eligible Dwelling Units[1]

LU-2: Sound-Insulate Eligible Non-Residential Noise-Sensitive Structures

LU-3: Include Aircraft Noise in Real Estate Disclosures[2]

[1] The Port Authority will seek to request federal financial assistance to set up a sound insulation program for LGA when economic conditions recover following the COVID-19 pandemic and after any updates of the NEMs, if necessary. Eligible dwelling units within the DNL 70 – 75 contour range would be sound-insulated first.

[2] The decision whether to pursue such a policy is an issue for government entities to decide. However, should any state and/or local governments wish to evaluate this preventive land use measure, the Port Authority would be available to assist in any such evaluation.

More information on the land use measures can be found in Chapter 4 of the LGA NCP.

Residential Sound Insulation (RSI) Program
(Land Use Measure 1 – Sound-Insulate Eligible Dwelling Units)

3,524 units are estimated to be eligible for either sound insulation or stand-alone positive ventilation systems: 7 units in the DNL 70 – 75 range, and 3,517 units in the DNL 65 – 70 range

Depending on availability of FAA funding and construction schedules, may take many years to complete

Preliminary cost estimate of $191 million in 2018 dollars*

An avigation easement (or right of overflight in the airspace above a particular property) will be required

* Based on an NCP measures cost analysis performed in 2018.

RSI Program Eligibility

Basic Requirements

- Be in the 2021 DNL 65 contour
- Interior noise greater than DNL 45 in habitable rooms

Factors Affecting Eligibility

- Previous homeowner treatments
- Ambient noise levels
- Compliance with building codes
- Must have been constructed prior to April 9, 2014

See Section 4.2 of the LGA NCP for more information.

Land Use Strategies Considered, but Not Recommended for Inclusion in the LGA NCP

- Acquire Noncompatible Residential Parcels
- Establish Transferable Development Rights
- Implement Sound Attenuation for New Development
- Provide Purchase Assurances for Properties in the DNL 65 Contour
- Acquire Avigation Easements
- Add a Notice on Deeds
- Implement Rezoning of Land Uses

See Section 4.4 and Appendix G of the LGA NCP for more information.

Program Management Measures

The Port Authority's LGA Part 150 Study resulted in **12 existing and new program management (PM) measures** recommended for inclusion in the LGA NCP.

- PM-1: Maintain Noise Office*
- PM-2: Maintain Noise and Operations Management System*
- PM-3: Maintain Public Flight Tracking Portal*
- PM-4: Maintain Noise Complaint Management System*
- PM-5: Maintain Noise Office Website*
- PM-6: Continue Community Outreach Activities*
- PM-7: Establish and Manage a Fly Quiet Program
- PM-8: Make Aircraft Noise Contours Available in a Geographic Information System (GIS)
- PM-9: Update the Noise Exposure Map
- PM-10: Update the Noise Compatibility Program
- PM-11: Post Monthly Color-Coded DNL Values on Port Authority Website
- PM-12: The Port Authority to Coordinate with FAA on Development and Implementation of NextGen Procedures

The Port Authority will attempt to initiate development of the Fly Quiet Program within one year of the FAA's ROA of the NCP.

* Existing program management measures.

More information on the program management measures can be found in Chapter 5 of the LGA NCP.

Noise Exposure Map Update
(Program Management Measure 9 – Update the Noise Exposure Map (NEM))

NEMs must accurately reflect existing and reasonably projected airport operating conditions and should be reevaluated about every five years.

In order to maintain FAA funding, 14 CFR Part 150 requires the Port Authority to update the NEMs when there is a change in airport operations that creates either a:

"substantial, new noncompatible use"

OR

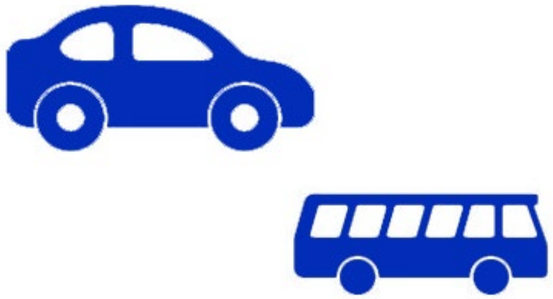
"significant reduction in noise over existing noncompatible uses"

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

See Table 5-9 in Section 5.2 of the LGA NCP for more information.

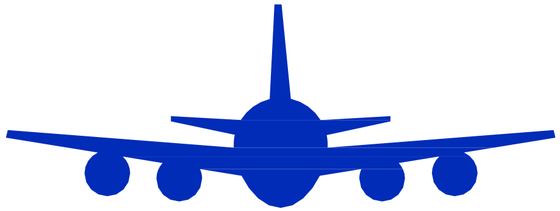
Program Management Strategies Considered, but Not Recommended for Inclusion in the LGA NCP

Add More Noise Monitors Throughout Queens and Increase Noise Monitor Analysis Capabilities



Consider Other Measures Such as High-Speed Rail from New York to Islip and Newburgh Airports

Multiple Suggestions of Aircraft Technology Changes



Provide Noise-Related Training to Pilots Operating at LGA

See Section 5.3 and Appendix G of the LGA NCP for more information.

Next Steps

Review and respond to comments received on the Draft LGA NCP

Submit the Final LGA NCP to FAA

FAA 180-day review of the Final LGA NCP

Submitting Comments on the LGA Noise Compatibility Program

Written comments on the Draft NCP should be sent to:

The Port Authority of New York and New Jersey
4 World Trade Center
150 Greenwich Street
18th Floor
New York, NY 10007
Attn: Kelly Mitchell

In addition, comments may be emailed to:

NYPART150@panynj.gov

All comments must be postmarked by October 15, 2021.

LaGuardia Airport
Recommended Land Use Measures

Land Use Measure 1 – Sound-Insulate Eligible Dwelling Units

3,524 units are estimated to be eligible for either sound insulation or stand-alone positive ventilation systems: 7 units in the DNL 70 – 75 range, and 3,517 units in the DNL 65 – 70 range

Depending on availability of FAA funding and construction schedules, may take many years to complete

Preliminary cost estimate of $191 million in 2018 dollars*

An avigation easement (or right of overflight in the airspace above a particular property) will be required

* Based on an NCP measures cost analysis performed in 2018.

Residential Sound Insulation Program Eligibility

Basic Requirements

- Be in the 2021 DNL 65 contour
- Interior noise greater than DNL 45 in habitable rooms

Factors Affecting Eligibility

- Previous homeowner treatments
- Ambient noise levels
- Compliance with building codes
- Must have been constructed prior to April 9, 2014

See Section 4.2 of the LGA NCP for more information.

Land Use Measure 2 – Sound-Insulate Eligible Non-Residential Noise-Sensitive Structures

6 structures are estimated to be eligible for either sound insulation or stand-alone positive ventilation systems. None are in the DNL 70 – 75 range. All are in the DNL 65 – 70 range.

Preliminary cost estimate of $86 million in 2018 dollars*

Non-residential noise-sensitive structures have similar treatment program eligibility requirements as residential structures (see Land Use Measure 1) and must also be reviewed for temporary vs. permanent noise-sensitive use

Name	Facility Type
Idara Tableegh Ul-Islam	Place of Worship
Roman Catholic Church Our Lady of Fatima Convent	Place of Worship
Our Lady Of Fatima Roman Catholic Church	Place of Worship
The Korean Church of Queens	Place of Worship
Grace Day Care Center, Inc.	Day Care-Assisted Living
Metro Family Residence	Day Care-Assisted Living

* Based on an NCP measures cost analysis performed in 2018.

See Section 4.2 of the LGA NCP for more information.

Land Use Measure 3 – Include Aircraft Noise in Real Estate Disclosures

Real estate disclosures are intended to make buyers aware of issues that may negatively affect the value, use, and enjoyment of a property.

Airport-related disclosures generally require potential buyers be informed of proximity to an airport, potential for aircraft noise, and information about the noise, prior to purchase.

Disclosures can be employed in highly noise-impacted areas or in more broadly defined areas around an airport.

Local land use agencies in only three states require airport-related disclosures—New York does not.

See Section 4.3 of the LGA NCP for more information.

Land Use Measure 3 – Include Aircraft Noise in Real Estate Disclosures (cont.)

Benefits

- Proactively informs buyers before signing contracts
- Protects sellers from future legal liabilities
- Protects airports from legal actions
- Informs local realty community

Challenges

- Does not reduce noise
- May not be supported by realty community and sellers
- Requires legislative amendments
- Policy must be enforced community-wide

New York's 2002 Property Condition Disclosure Act may provide some precedent, but it does not specifically address aircraft noise. The decision whether to pursue such a policy is an issue for government entities to decide. However, should any state and/or local governments wish to evaluate this preventive land use measure, the Port Authority would be available to assist in any such evaluation.

See Section 4.3 of the LGA NCP for more information.

Land Use Strategies Considered, but Not Recommended for Inclusion in the LGA NCP

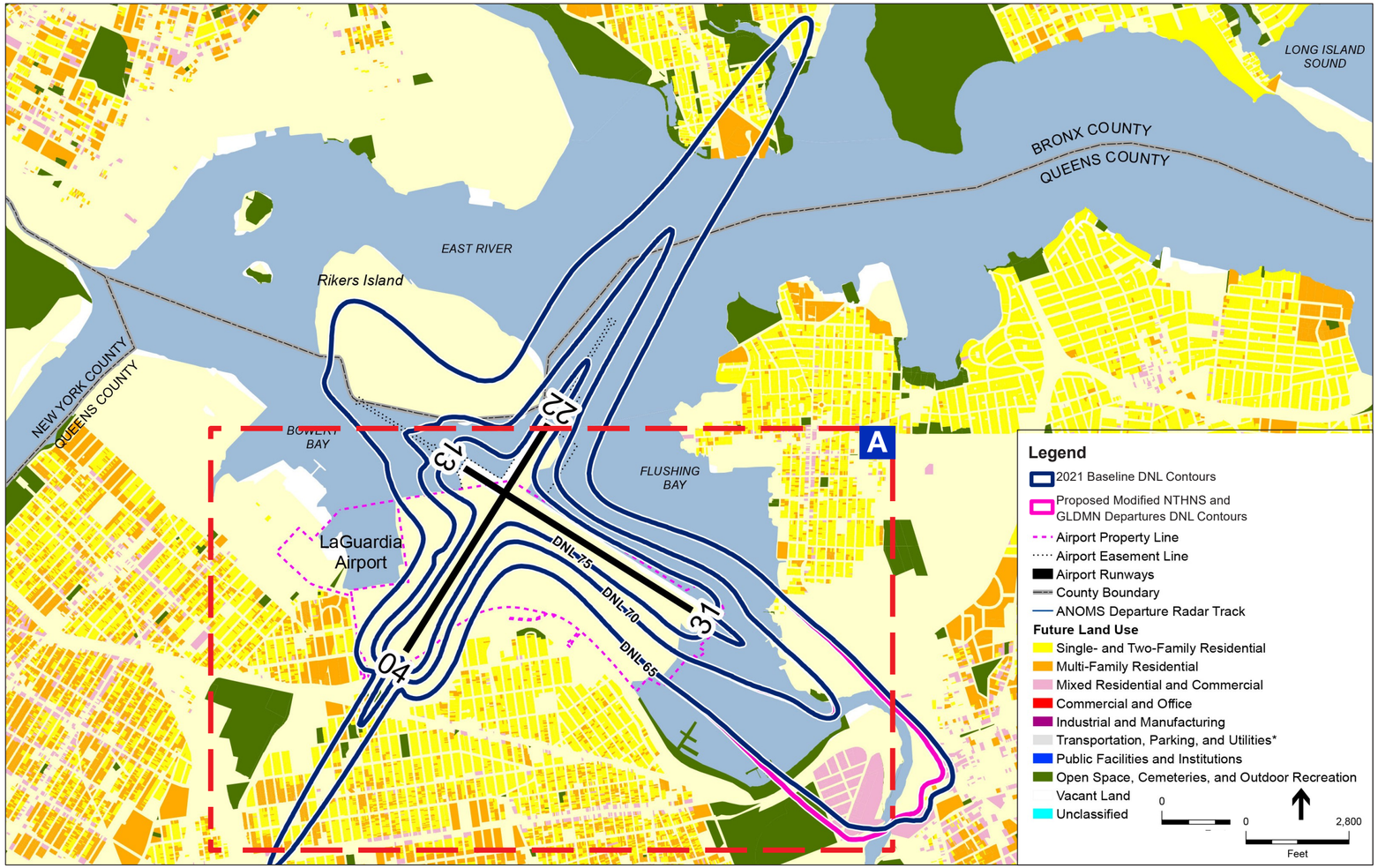
- Acquire Noncompatible Residential Parcels
- Establish Transferable Development Rights
- Implement Sound Attenuation for New Development
- Provide Purchase Assurances for Properties in the DNL 65 Contour
- Acquire Avigation Easements
- Add a Notice on Deeds
- Implement Rezoning of Land Uses

See Section 4.4 and Appendix G of the LGA NCP for more information.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

LaGuardia Airport
Recommended Noise Abatement Measures

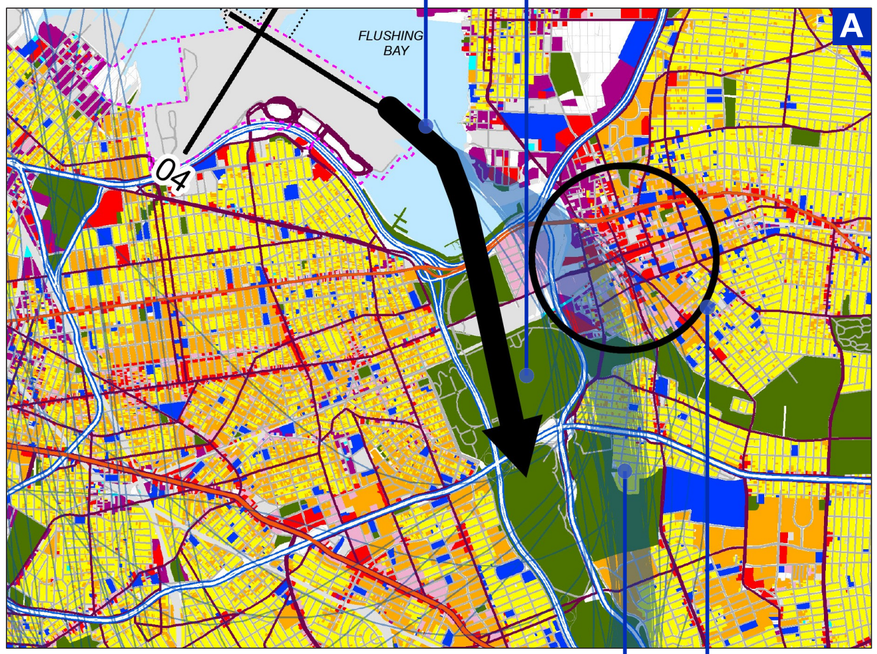
Noise Abatement Measure 1 – Modify NTHNS and GLDMN Runway 13 RNAV SIDs to Direct Aircraft Away from Flushing, New York



2021 Baseline NEM and New Runway 13 Departure Procedure DNL 65, 70, and 75 Contours

Proposed earlier departure turn to the south

Flushing Meadows Corona Park



Conceptual New Runway 13 Departure Procedure

Flushing

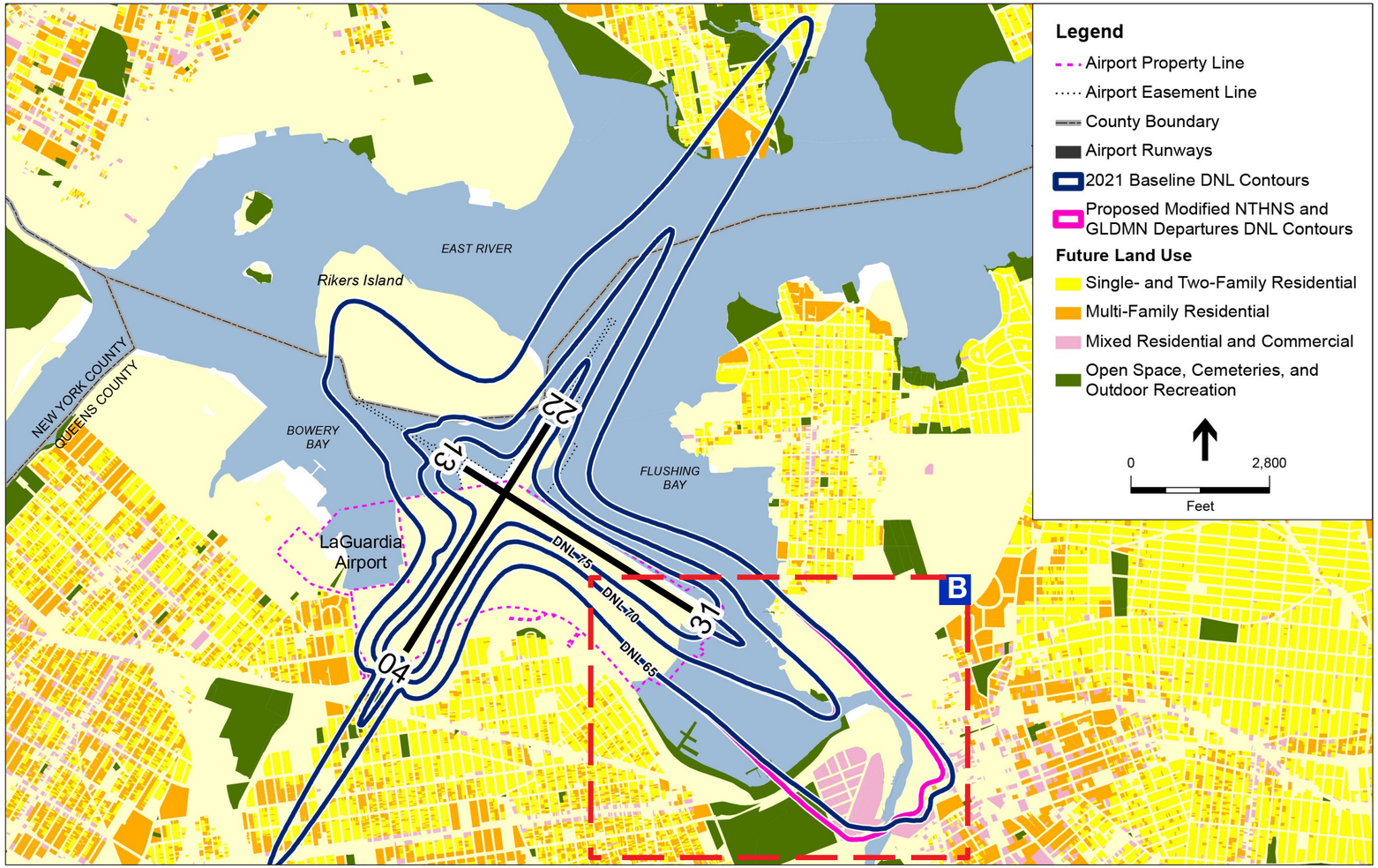
Calendar year 2014 radar flight tracks of NTHNS and GLDMN departures

RNAV = Area Navigation; SID = Standard Instrument Departure

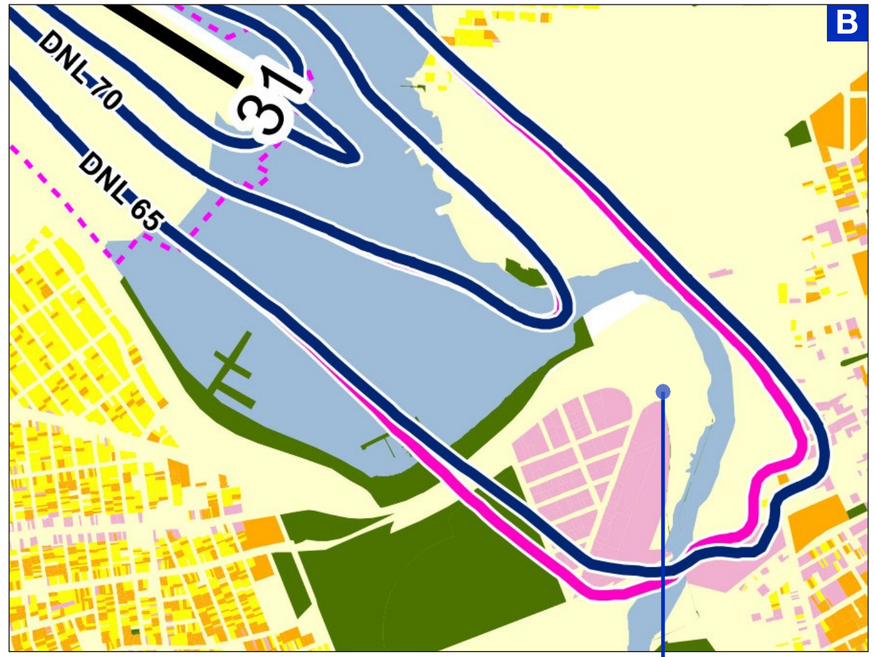
See Section 3.2 of the LGA NCP for more information.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

Noise Abatement Measure 1 – Modify NTHNS and GLDMN Runway 13 RNAV SIDs to Direct Aircraft Away from Flushing, New York



2021 Baseline NEM and New Runway 13 Departure Procedure DNL 65, 70, and 75 Contours



2021 Baseline NEM and New Runway 13 Departure Procedure DNL 65, 70, and 75 Contours over Flushing

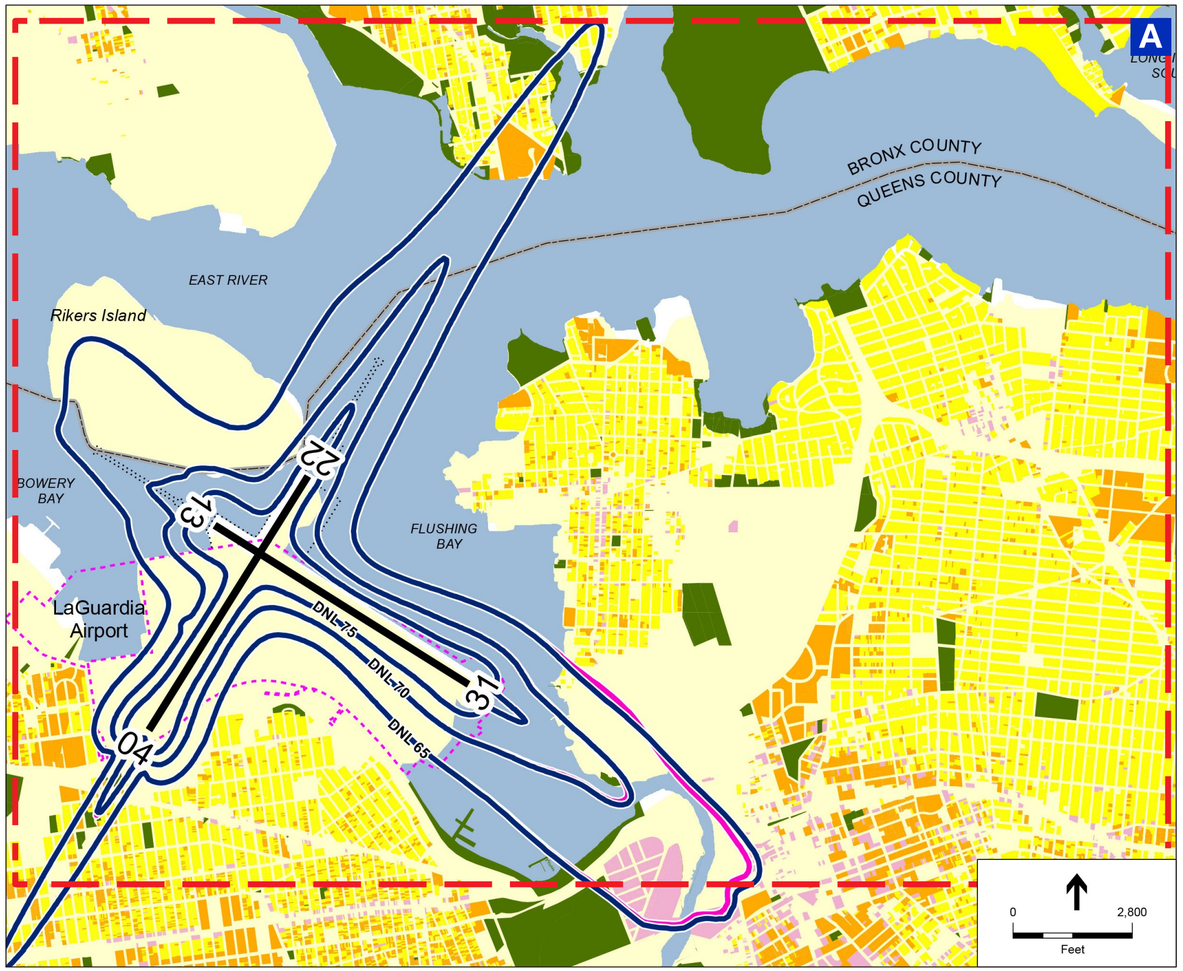
Has the potential to remove 750 people and 266 dwelling units from the DNL 65 contour

RNAV = Area Navigation; SID = Standard Instrument Departure

See Section 3.2 of the LGA NCP for more information.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

Noise Abatement Measure 2 – Create New Runway 13 Departure Procedure with an Immediate Left Turn over Compatible Land Uses



2021 Baseline NEM and New Runway 13 Departure Procedure DNL 65, 70, and 75 Contours

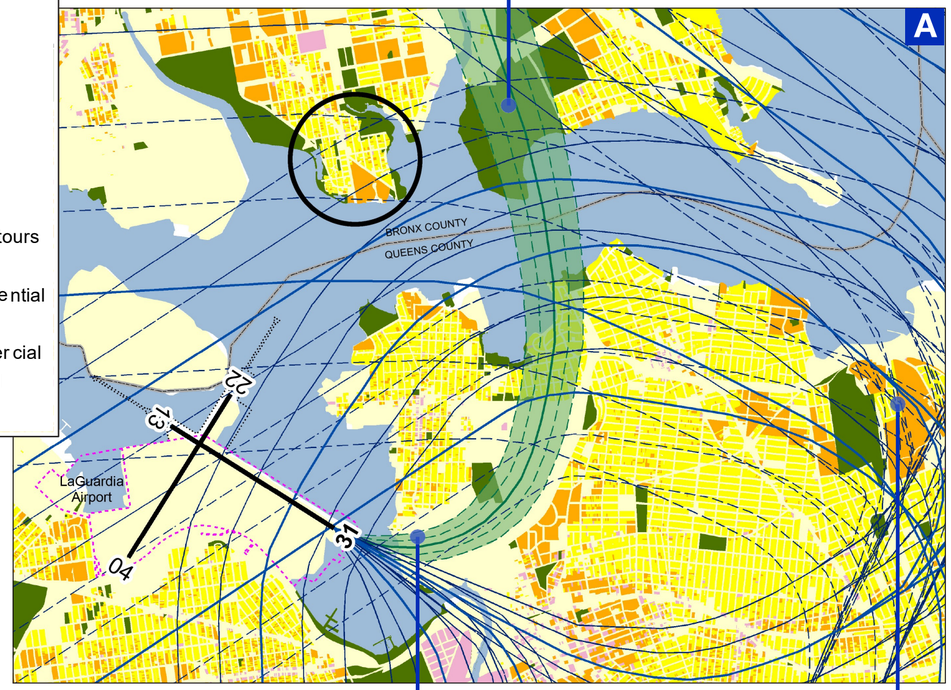
Legend

- Departure Backbone Track
- Departure Sub-Track
- Airport Property Line
- Airport Easement Line
- County Boundary
- Airport Runways
- 2021 Baseline DNL Contours
- Proposed New Runway 13 Departure Procedure with an Immediate Left Turn DNL Contours

Future Land Use

- Single- and Two-Family Residential
- Multi-Family Residential
- Mixed Residential and Commercial
- Open Space, Cemeteries, and Outdoor Recreation

Aircraft altitudes range from 2,000 to 4,000 feet



Conceptual New Runway 13 Departure Procedure

Proposed early departure turn to the north

Calendar year 2014 Runway 13 departure flight tracks

See Section 3.2 of the LGA NCP for more information.

PORT AUTHORITY NY NJ
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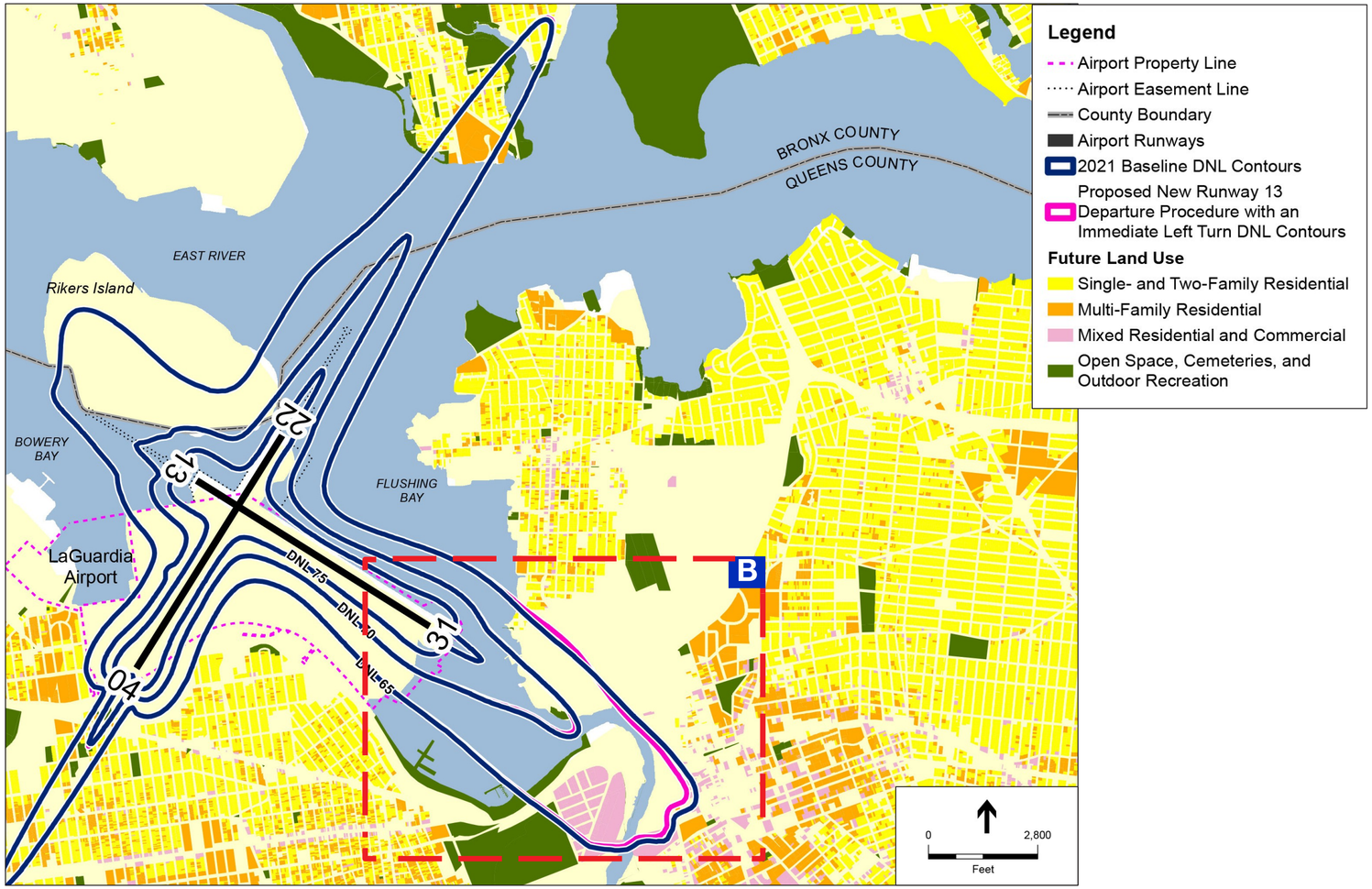
Noise Abatement Measure 2 – Create New Runway 13 Departure Procedure with an Immediate Left Turn over Compatible Land Uses



2021 Baseline NEM and New Runway 13 Departure Procedure DNL 65, 70, and 75 Contours

2021 Baseline NEM and New Runway 13 Departure Procedure DNL 65, 70, and 75 Contours over Flushing

See Section 3.2 of the LGA NCP for more information.

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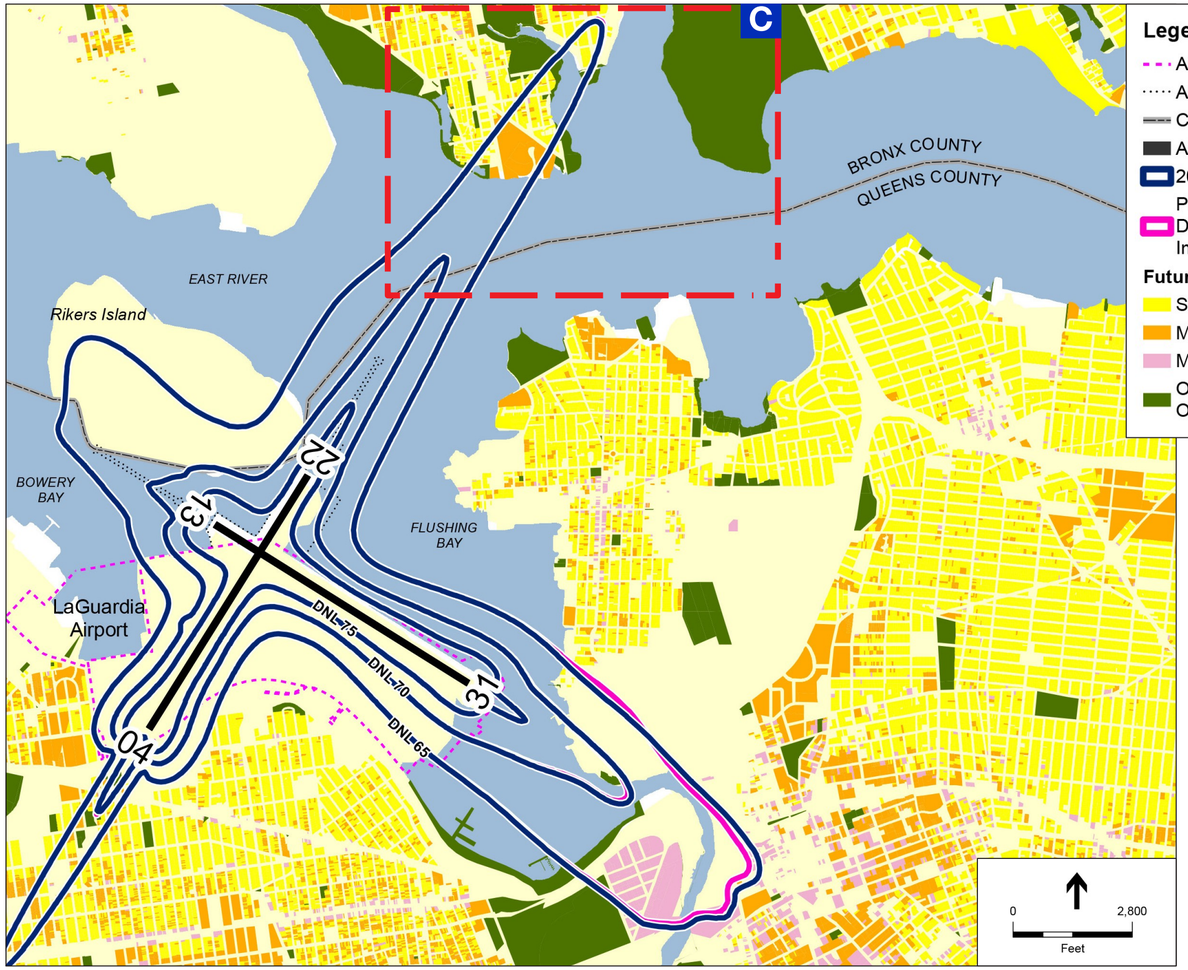
Noise Abatement Measure 2 – Create New Runway 13 Departure Procedure with an Immediate Left Turn over Compatible Land Uses



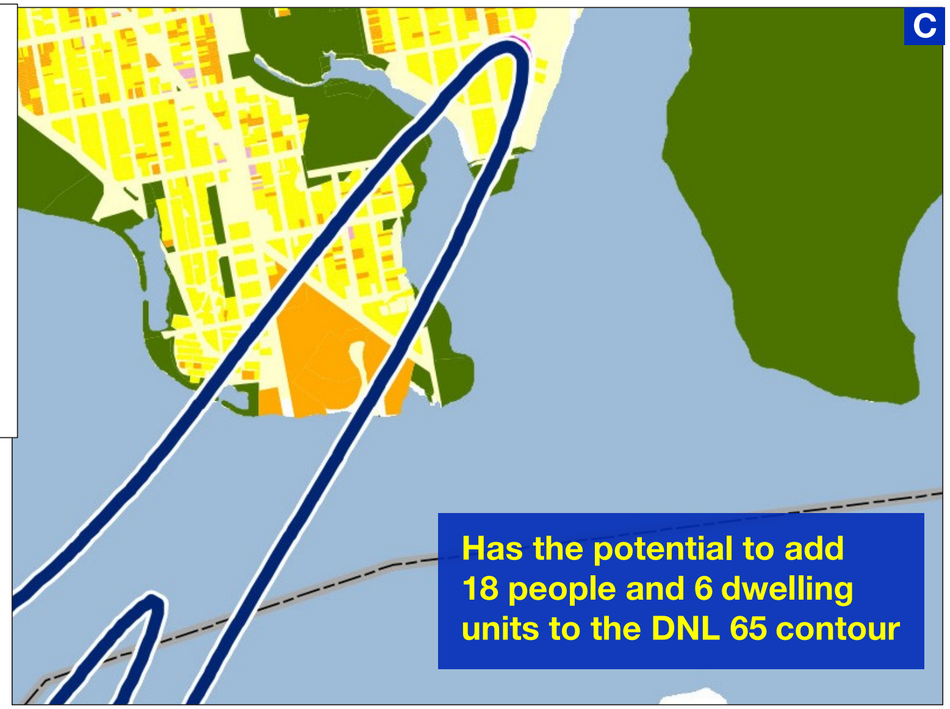
2021 Baseline NEM and New Runway 13 Departure Procedure DNL 65, 70, and 75 Contours

Legend

- Airport Property Line
- Airport Easement Line
- County Boundary
- Airport Runways
- 2021 Baseline DNL Contours
- Proposed New Runway 13 Departure Procedure with an Immediate Left Turn DNL Contours

Future Land Use

- Single- and Two-Family Residential
- Multi-Family Residential
- Mixed Residential and Commercial
- Open Space, Cemeteries, and Outdoor Recreation



2021 Baseline NEM and New Runway 13 Departure Procedure DNL 65, 70, and 75 Contours over Clason Point and Castle Hill

See Section 3.2 of the LGA NCP for more information.

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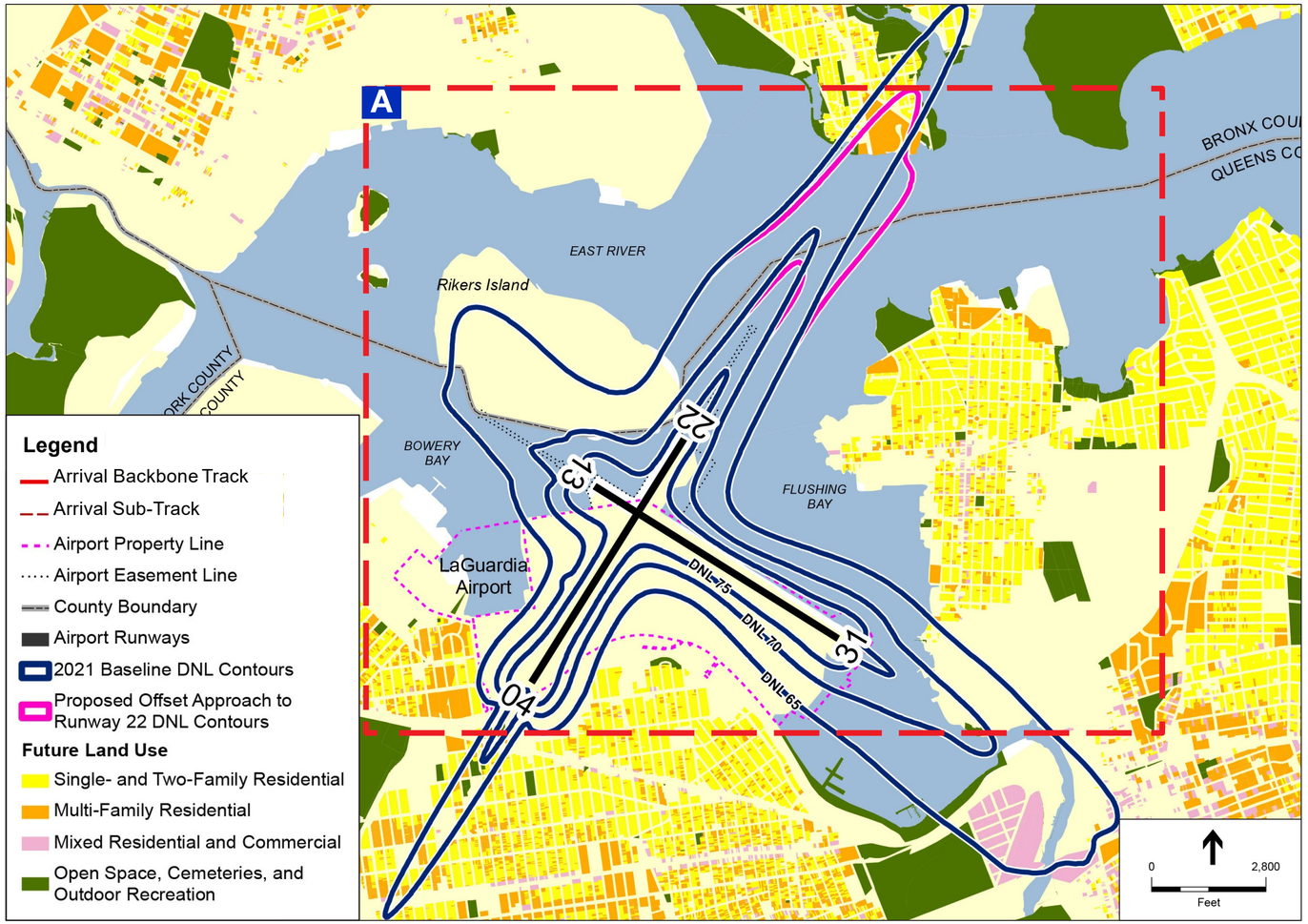
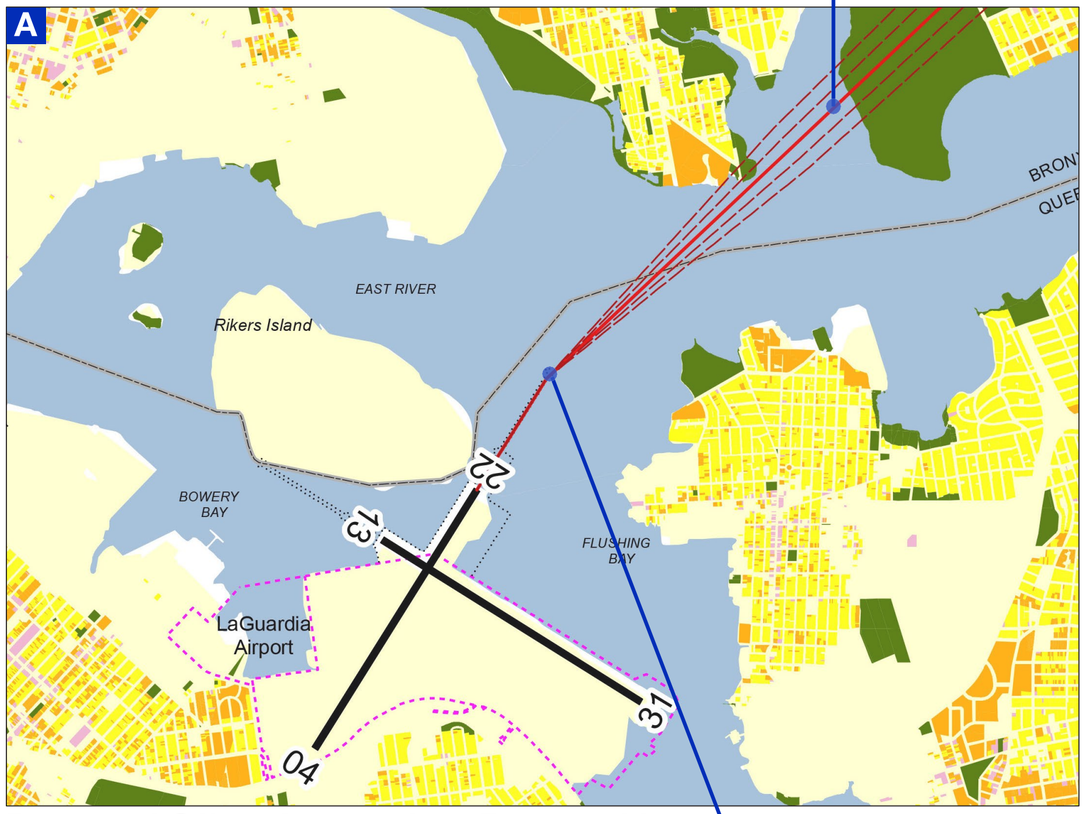
Noise Abatement Measure 3 – Implement Offset Approach to Runway 22 to Reduce Noise Exposure over Clason Point



2021 Baseline NEM and Offset Approach to Runway 22 DNL 65, 70, and 75 Contours

Offset RNAV approach track of 239° magnetic heading until intercept with extended centerline of Runway 22



Proposed Offset Approach to Runway 22

Extended centerline of Runway 22 magnetic heading 224°

See Section 3.2 of the LGA NCP for more information.

PORT AUTHORITY NY NJ
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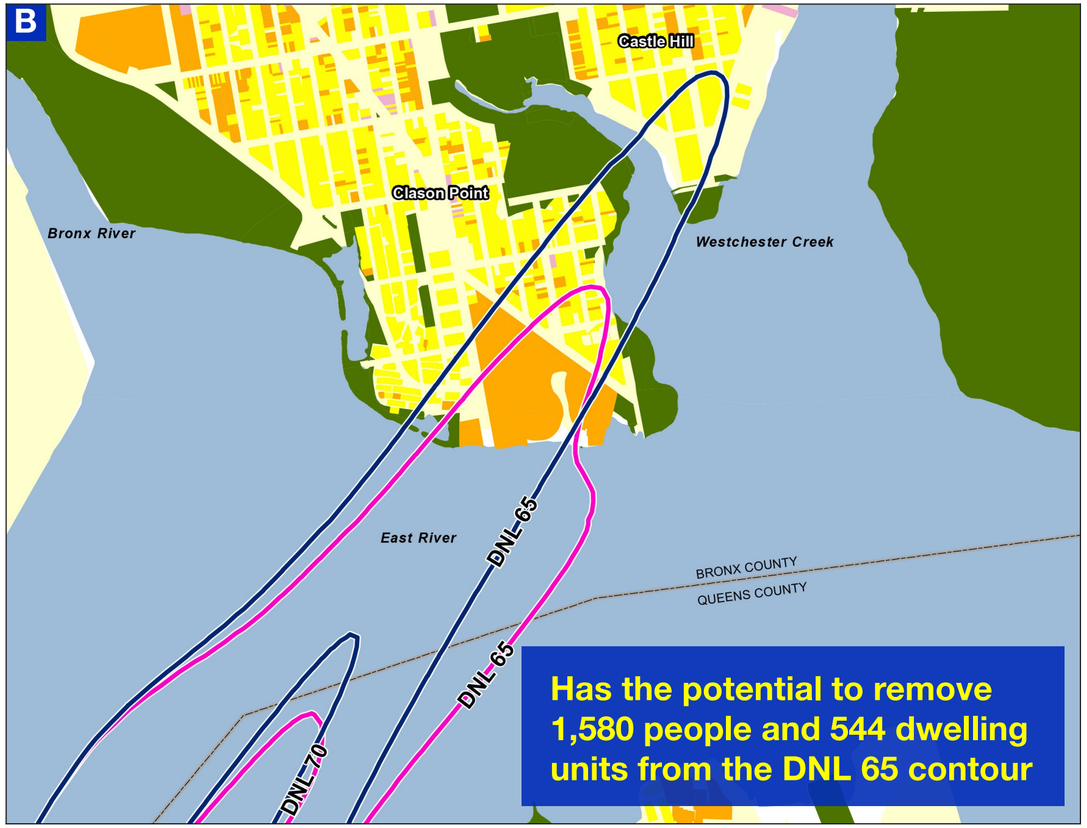
Noise Abatement Measure 3 – Implement Offset Approach to Runway 22 to Reduce Noise Exposure over Clason Point

2021 Baseline NEM and Offset Approach to Runway 22 DNL 65, 70, and 75 Contours



2021 Baseline NEM and Proposed Offset Approach to Runway 22 DNL 65, 70, and 75 Contours over Clason Point and Castle Hill

See Section 3.2 of the LGA NCP for more information.

PORT AUTHORITY NY NJ
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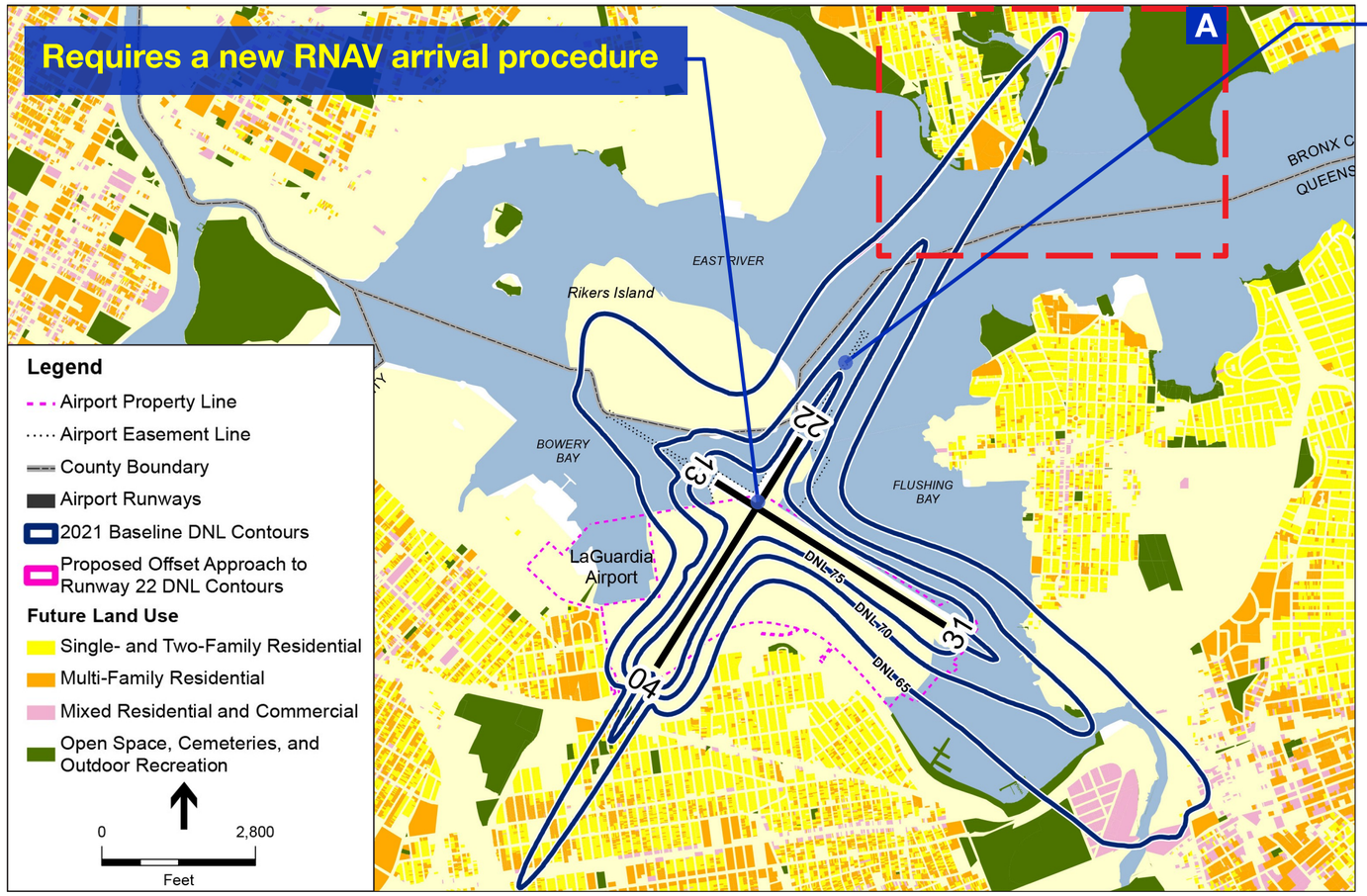
Noise Abatement Measure 4 - Reduce Runway 4 Departure Noise over Clason Point



2021 Baseline NEM and Modified Runway 4 Departure Heading DNL 65, 70, and 75 Contours

Approximately 2.5% of heading 040° daytime and nighttime departures were reassigned to the 055° heading

2021 Baseline NEM and Modified Runway 4 Departure Heading DNL 65, 70, and 75 Contours over Clason Point

See Section 3.2 of the LGA NCP for more information.

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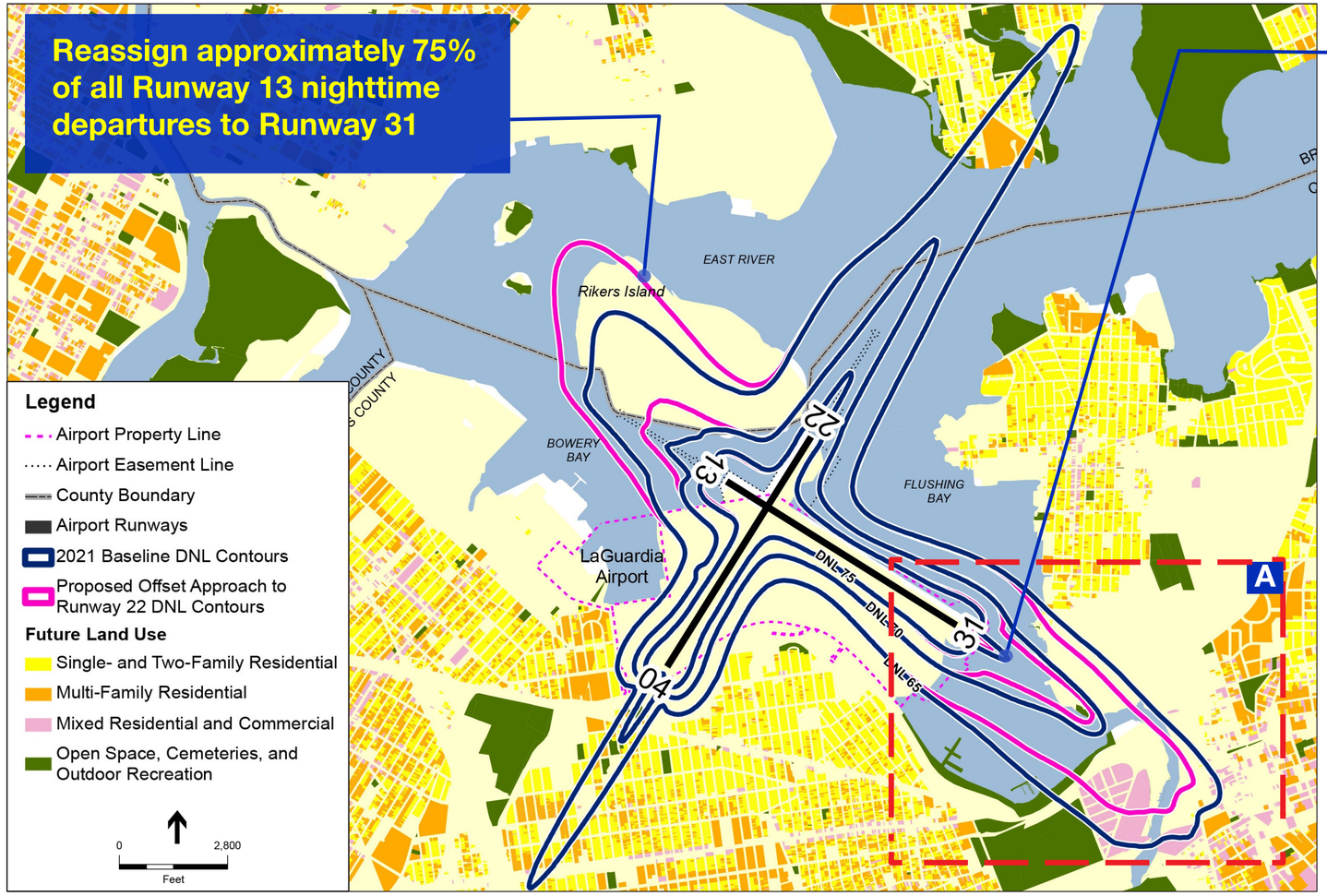
Noise Abatement Measure 5 – Reduce Runway 13 Departures at Night

Reassign approximately 75% of all Runway 13 nighttime departures to Runway 31



2021 Baseline NEM and Reduced Runway 13 Night Departures DNL 65, 70, and 75 Contours

Not all Runway 13 nighttime departures can be eliminated due to wind/weather patterns that support aircraft safety and performance

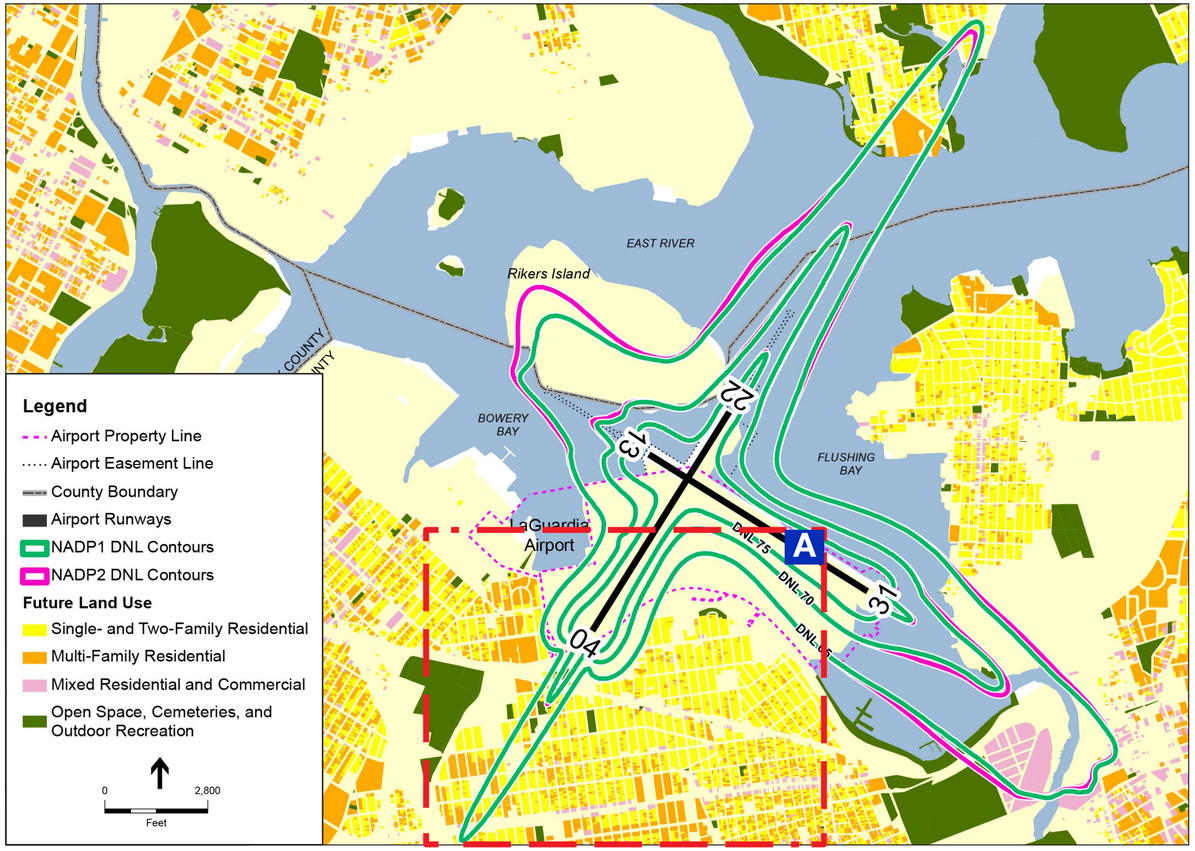
Has the potential to remove 2,062 people and 730 dwelling units from the DNL 65 contour

2021 Baseline NEM and Reduced Runway 13 Night Departures DNL 65, 70, and 75 Contours over Flushing

See Section 3.2 of the LGA NCP for more information.

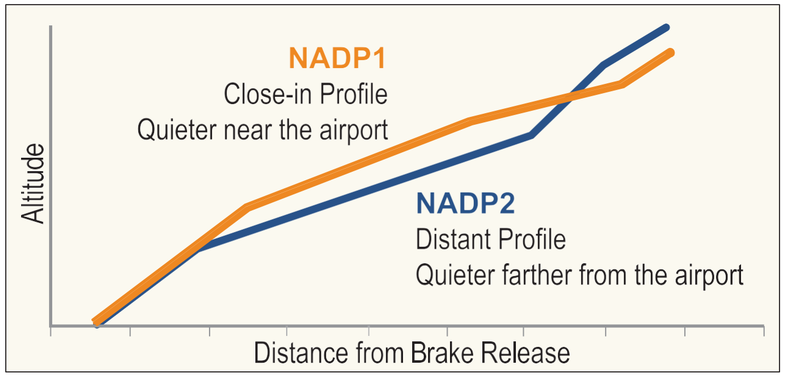
Noise Abatement Measure 6 – Implement Noise Abatement Departure Profiles (NADPs) on a Voluntary Basis for Runways 4 and 13

NADP1 and NADP2 DNL 65, 70, and 75 Contours



DNL contours reflect the top nine aircraft types expected to operate at LGA in 2021 (approximately 90% of all Airport departures) utilizing NADP1 and NADP2 Profiles

Altitude vs. Distance Profiles for Typical NADP1 and NADP2 Departure Profiles



NADP1 and NADP2 DNL 65, 70, and 75 Contours over Jackson Heights and Ditmars Steinway

See Section 3.2 of the LGA NCP for more information.

PORT AUTHORITY NY NJ
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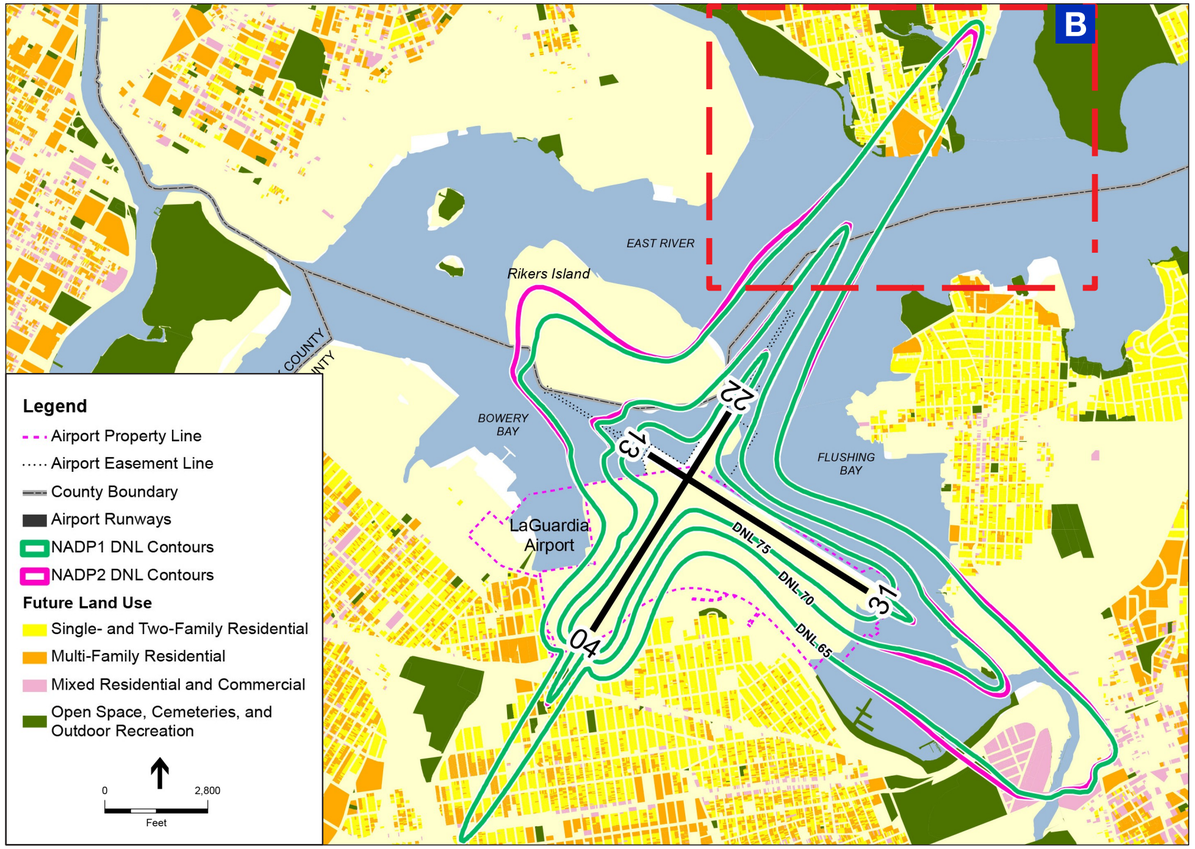
Noise Abatement Measure 6 – Implement Noise Abatement Departure Profiles (NADPs) on a Voluntary Basis for Runways 4 and 13

NADP1 and NADP2 DNL 65, 70, and 75 Contours



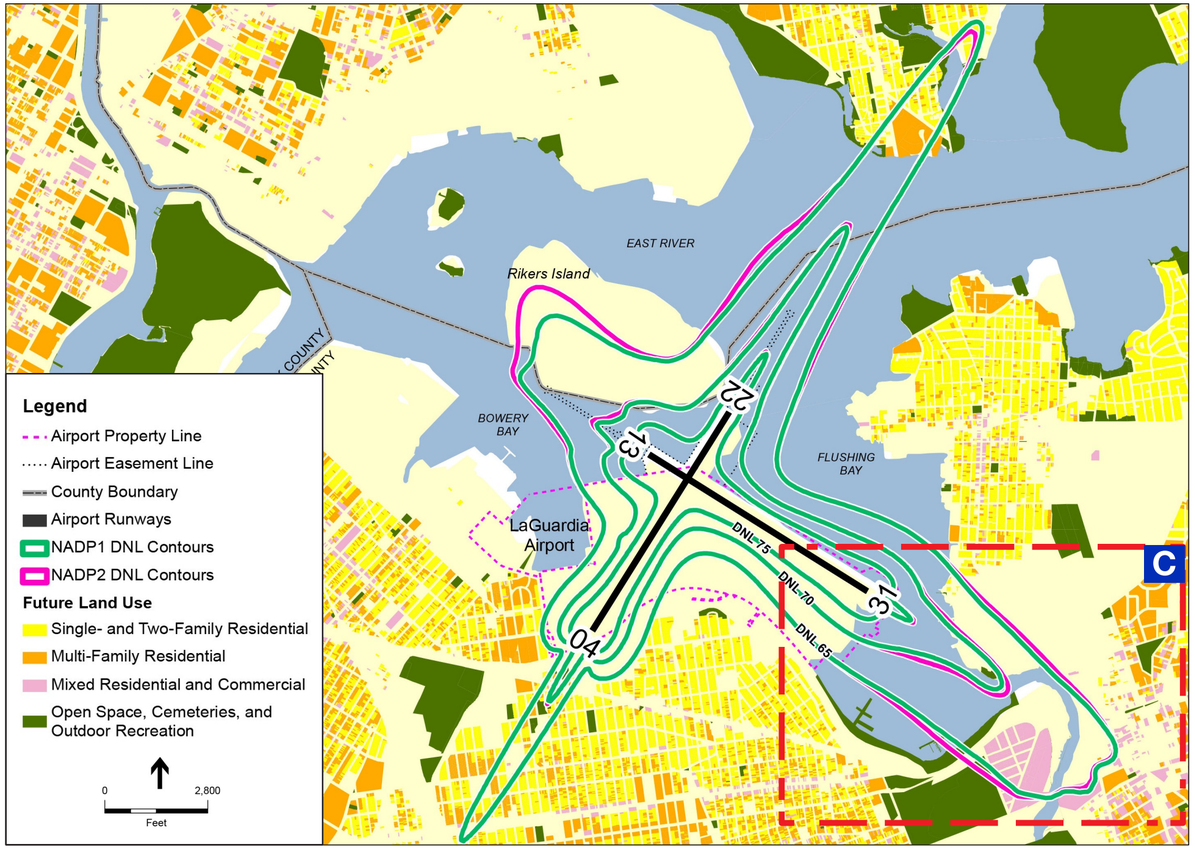
DNL contours reflect the top nine aircraft types expected to operate at LGA in 2021 (approximately 90% of all Airport departures) utilizing NADP1 and NADP2 Profiles

NADP1 and NADP2 DNL 65, 70, and 75 Contours over Clason Point and Castle Hill

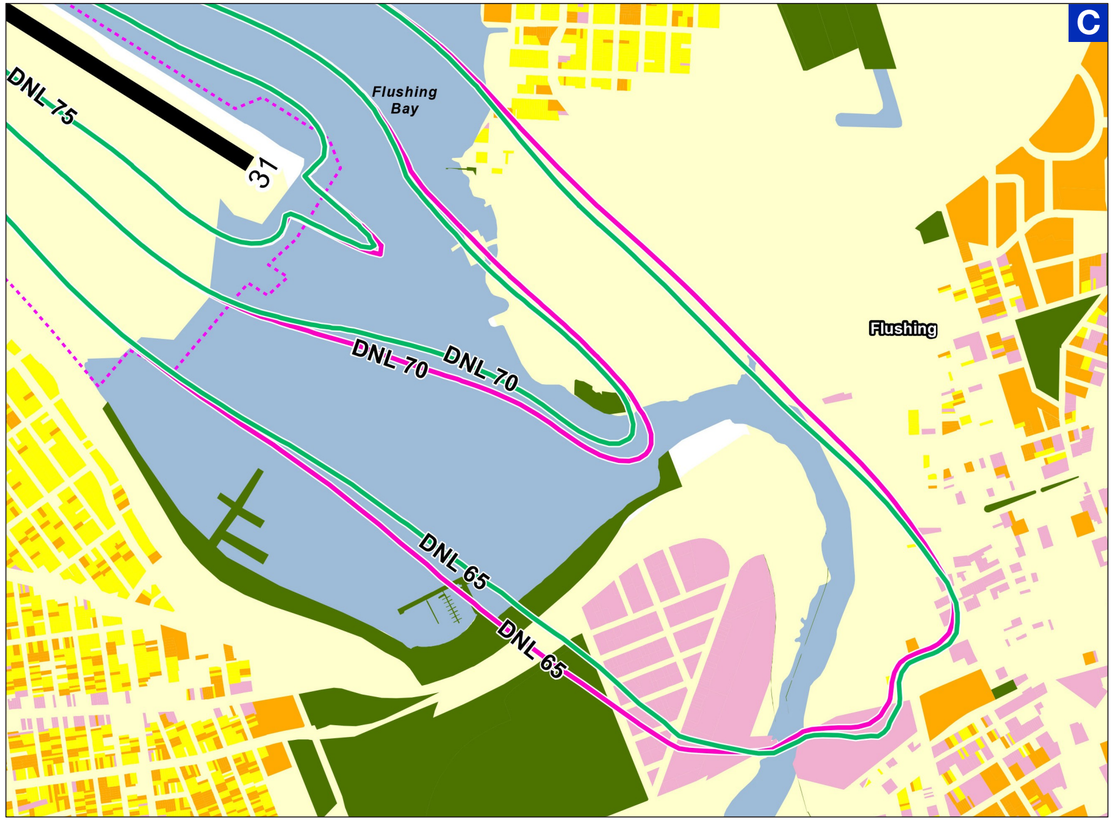
See Section 3.2 of the LGA NCP for more information.

Noise Abatement Measure 6 – Implement Noise Abatement Departure Profiles (NADPs) on a Voluntary Basis for Runways 4 and 13

NADP1 and NADP2 DNL 65, 70, and 75 Contours



DNL contours reflect the top nine aircraft types expected to operate at LGA in 2021 (approximately 90% of all Airport departures) utilizing NADP1 and NADP2 Profiles



NADP1 and NADP2 DNL 65, 70, and 75 Contours over Flushing

See Section 3.2 of the LGA NCP for more information.

PORT AUTHORITY NY NJ
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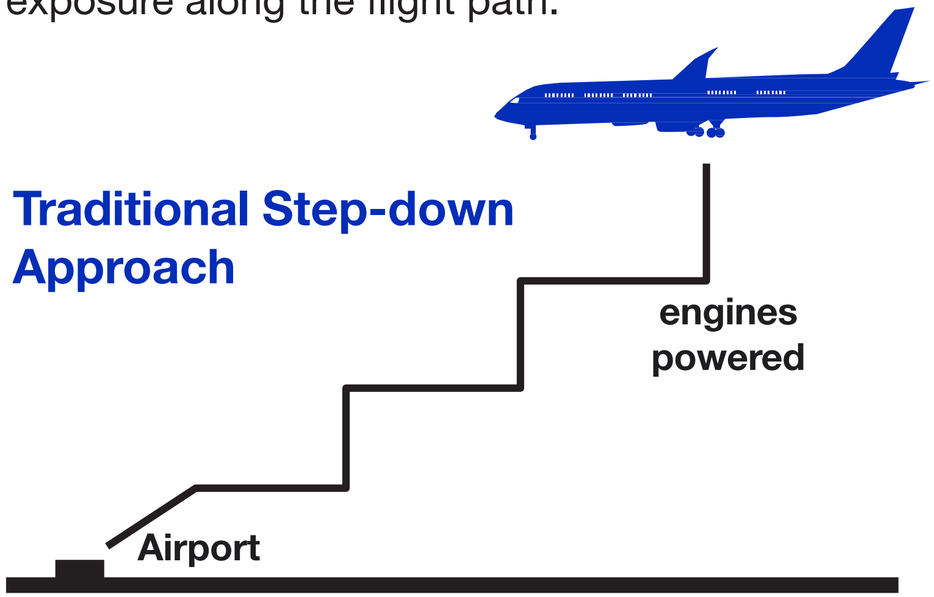
Noise Abatement Measure 7 – Implement Nighttime Optimized Profile Decent Procedures

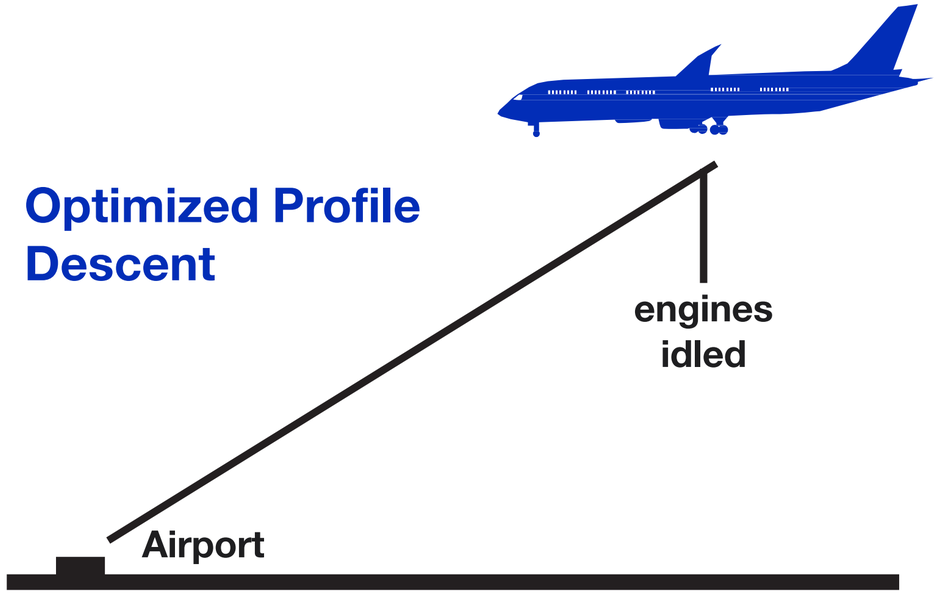
Step-Down

During approach into an airport, aircraft will often reduce speed and altitude in a continuous series of “step-downs”, which usually requires high engine thrust settings and results in increased noise exposure along the flight path.



OPD

By adopting Optimized Profile Descent (OPD) arrival profiles, aircraft can reduce noise by using minimal thrust settings along a constant descent path angle and strategically managing flaps and landing gear.



- OPD procedures are best suited for nighttime, when local airspace is not as congested
- OPD procedures typically only help reduce noise exposure in areas outside of the DNL 65 contour

See Section 3.2 of the LGA NCP for more information.

Noise Abatement Measure 8 – Continue Existing Mandatory Departure Noise Limit

The Port Authority is recommending a continuation of the existing 112 PNdB noise limit on aircraft departing LGA. The 112 PNdB noise limit was originally established in 1959 by the Port Authority, prior to the Airport Noise and Capacity Act of 1990, and has led to the development of quieter jet engine technology, noise abatement procedures, including power cutbacks, and noise abatement flight tracks.

See Section 3.2 of the LGA NCP for more information.

Noise Abatement Strategies Considered, but Not Recommended for Inclusion in the LGA NCP

- Develop New or Modify Current Flight Tracks
- Modify Pilot Procedures for Operating Aircraft
- Perform Construction to Modify Airfield Layout or Add Noise Barriers
- Change Operating Frequencies by Modifying Runway Use or Imposing Operating Restrictions

See Section 3.3 of the LGA NCP for more information on the noise abatement strategies considered, but not recommended for inclusion.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

LaGuardia Airport
Noise Exposure Maps

Noise Exposure Maps (NEMs)

The Port Authority's Part 150 Study resulted in the development of three sets of NEMs for 2021, which depict the DNL 65, 70, and 75 contours generated by different operational conditions at LGA.

The 2021 **FAA-Accepted** NEM was developed prior to the announced removal of MD-88 aircraft from LGA by Delta Air Lines and reflect the continued operation of these aircraft.

The 2021 **Revised** NEM reflects the baseline for comparison in the NCP and includes the removal of MD-88 aircraft from operations at LGA and their replacement with Airbus A319, A320, and A321 aircraft.

The 2021 **With Program** NEM reflects the removal of MD-88 aircraft, their replacement with Airbus aircraft, and the FAA's implementation of Noise Abatement Measure 1 in May 2020, which involves the modification of the NTHNS and GLDMN Runway 13 SIDs to direct aircraft away from Flushing, New York.

SID = Standard Instrument Departure

The Integrated Noise Model (INM), an FAA-approved, industry-accepted tool for determining the cumulative effect of aircraft noise exposure around airports, was used to develop the 2021 FAA-Accepted, Revised, and With Program DNL 65, 70, and 75 contours.

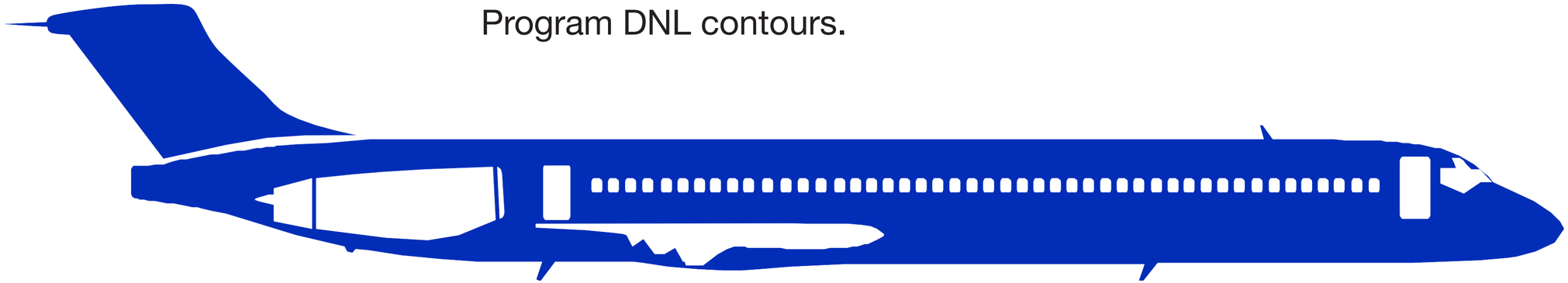
More information on the INM and the NEMs can be found in Section 1.5 and Chapter 2 of the LGA NCP.

Retirement of Delta Air Lines MD-88 Aircraft

Delta Air Lines announced that it would cease MD-88 operations at LGA on March 2, 2017 and use the Airbus A319, A320, and A321 aircraft in their place.

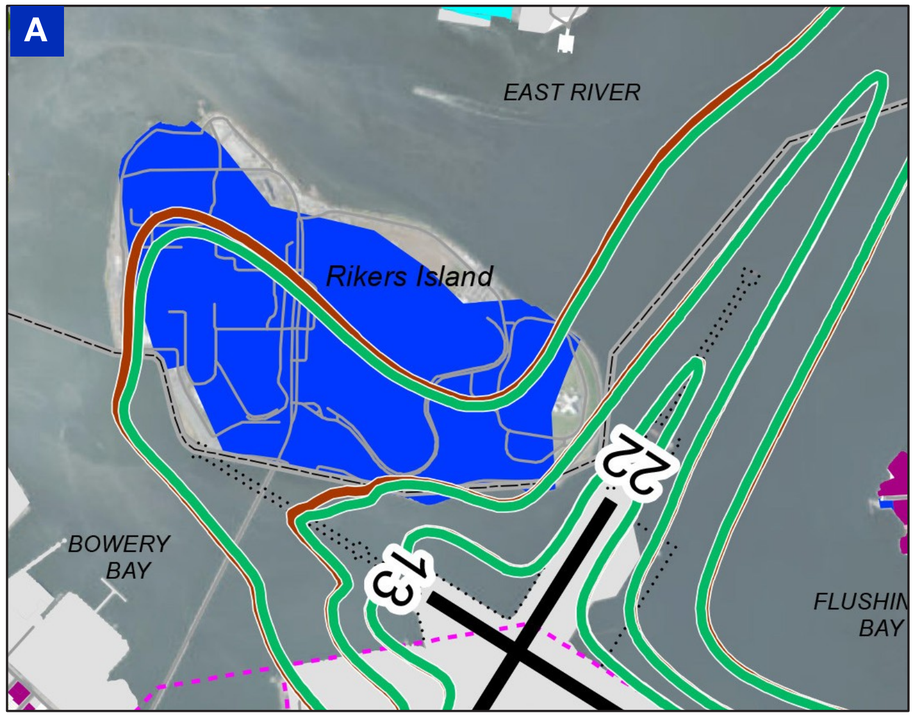
The 2021 FAA-Accepted DNL 65, 70, and 75 contours reflected the noise exposure of MD-88 operations. Therefore, the Port Authority informed the FAA that it would update the 2021 contours to incorporate the removal of MD-88 aircraft, which is reflected in both the 2021 Revised and 2021 With Program DNL contours.

For purposes of developing the DNL contours, 66% of the 7,132 annual MD-88 operations were replaced by modeled A320-211 aircraft (representing both the A319 and A320 in the noise model), with the remaining 34% replaced by modeled A321-232 aircraft.



Additional information regarding the removal of MD-88 aircraft from LGA operations can be found in Section 2.2 of the LGA NCP.

2021 FAA-Accepted and Revised DNL 65, 70, and 75 Contours



Legend

- Airport Property Line
- Airport Easement Line
- Airport Runways
- County Boundary
- Limited-Access Highway
- Highway
- Major Roadway
- Local Street

DNL Contours

- 2021 Revised Contours
- 2021 FAA-Accepted Contours

Future Land Use

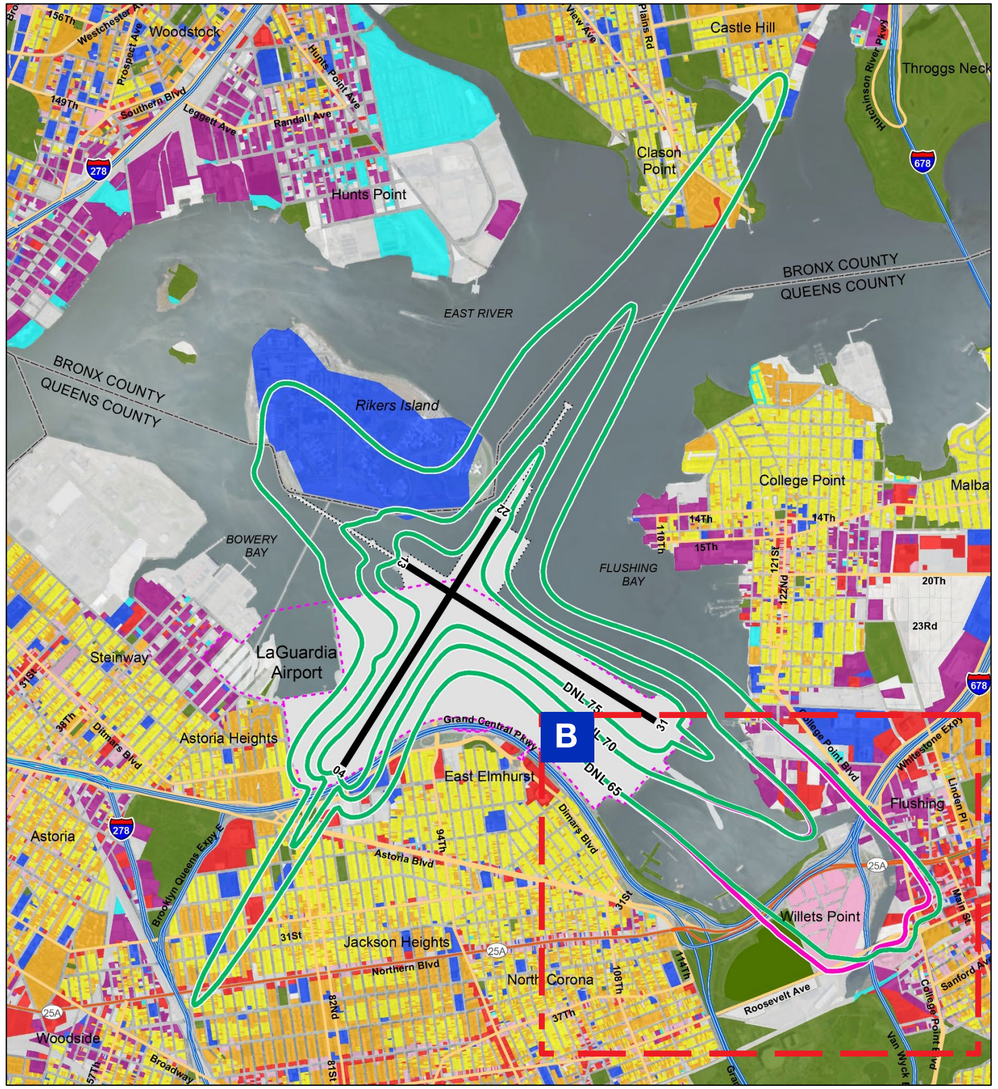
- Single- and Two-Family Residential
- Multi-Family Residential
- Mixed Residential and Commercial
- Commercial and Office
- Industrial and Manufacturing
- Transportation, Parking, and Utilities*
- Public Facilities and Institutions
- Open Space, Cemeteries, and Outdoor Recreation
- Vacant Land
- Unclassified

*The PLUTO Transportation land use designations on LGA were updated to reflect new airport facilities that were constructed during the LGA Redevelopment Project.

More information on the 2021 FAA-accepted and Revised noise contours can be found in Section 2.3 of the LGA NCP.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

2021 Revised and With Program DNL 65, 70, and 75 Contours



Legend

- Airport Property Line
- Airport Easement Line
- Airport Runways
- County Boundary
- Limited-Access Highway
- Highway
- Major Roadway

DNL Contours

- 2021 Revised Contours
- 2021 With Program Contours

Future Land Use

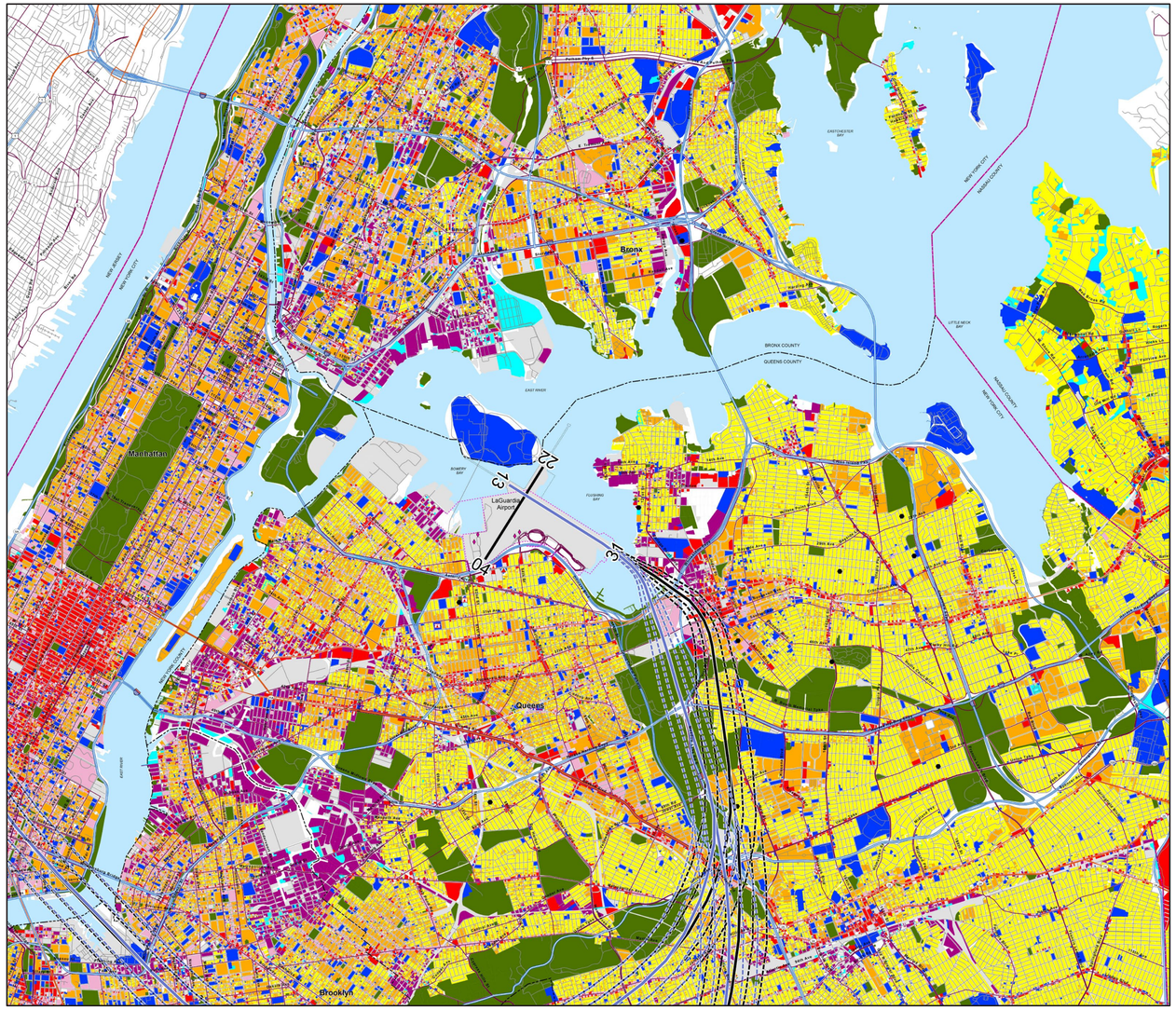
- Single- and Two-Family Residential
- Multi-Family Residential
- Mixed Residential and Commercial
- Commercial and Office
- Industrial and Manufacturing
- Transportation, Parking, and Utilities
- Public Facilities and Institutions
- Open Space, Cemeteries, and Outdoor Recreation
- Vacant Land
- Unclassified

A total of 750 people and 266 dwelling units may potentially be removed from the 2021 With Program DNL 65 contour.

*The PLUTO Transportation land use designations on LGA were updated to reflect new airport facilities that were constructed during the LGA Redevelopment Project.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

2021 Revised and With Program INM Flight Tracks – NTHNS and GLDMN Departures



Legend

- Airport Property Line
- Airport Easement Line
- Runway
- Limited-Access Highway
- Highway
- Major Roadway
- Local Street
- County Boundary
- City Boundary
- Noise Monitor
- Place of Worship
- School
- Historic Structure
- Day Care/Assisted Living
- Health Care Facility
- 2021 With Program INM Flight Tracks
- 2021 Revised INM Flight Tracks

Future Land Use

- Single- and Two-Family Residential
- Multi-Family Residential
- Mixed Residential and Commercial
- Commercial and Office
- Industrial and Manufacturing
- Transportation, Parking, and Utilities*
- Public Facilities and Institutions
- Open Space, Cemeteries, and Outdoor Recreation
- Vacant Land
- Unclassified

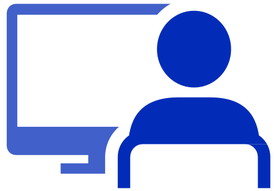
* The PLUTO Transportation land use designations on LGA were updated to reflect new airport facilities that were constructed during the LGA Redevelopment Project.

2021 With Program INM flight tracks reflect a modification of the existing NTHNS and GLDMN Runway 13 RNAV departure procedures to facilitate earlier turns to the south to route more aircraft away from Flushing, NY.

RNAV = Area Navigation

LaGuardia Airport
Recommended Program Management Measures

Pre-existing Program Management Measures



Maintain Noise Office

Noise Office manages the noise programs for LGA, JFK, EWR, and TEB.

Maintain Noise Complaint Management System

Noise complaint management system (named PlaneNoise®) collects and manages noise complaint information from each of the Port Authority's airports.

Maintain Public Flight Tracking Portal

Public flight tracking portal (named WebTrak) shows aircraft movements within the New York metropolitan area.

Maintain Noise and Operations Management System

Noise and Operations Management System (NOMS) collects noise monitoring data in the vicinity of LGA using permanent and portable noise monitors.

Maintain Noise Office Website

Noise Office website provides links to web pages describing various noise management programs.

Continue Community Outreach Activities

Community outreach with the FAA and representatives of airport communities helps address noise issues at LGA, JFK, EWR, and TEB.

See Section 5.1 of the LGA NCP for more information.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

Program Management Measure 1 – Maintain Noise Office

The Port Authority Noise Office is a vital link between the Port Authority and the surrounding communities regarding aircraft-related noise concerns.

The Noise Office's primary responsibilities include:

- Receiving and responding to aircraft noise complaints from the public.
- Interfacing with stakeholder representatives, noise-impacted communities, and airport users.

Once this NCP has been approved by the FAA, the Noise Office will also be responsible for implementing the FAA-approved NCP measures and monitoring adherence to the implemented noise abatement measures.

See Table 5-1 in Section 5.2 of the LGA NCP for more information.

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

The Port Authority installed its first noise monitoring system in 1959.

Automated flight tracking capabilities were added in 1992 and the most recent NOMS was installed in 2013.

The NOMS will be vital to investigating noise complaints and ensuring adherence with the noise abatement measures recommended in this NCP.

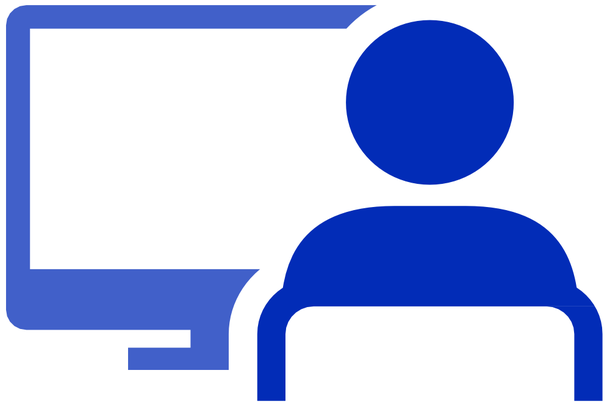
The NOMS stores historical noise and flight track data that can be used to identify trends and patterns in aircraft activity.

See Table 5-2 in Section 5.2 of the LGA NCP for more information.

Program Management Measure 3 – Maintain Public Flight Tracking Portal

The Port Authority's public flight tracking portal, named WebTrak, is an internet-based system that allows the public to view aircraft movements over the New York City metropolitan area.

WebTrak provides an interface with the NOMS and is a key communication and education tool used by the Noise Office.



WebTrak provides both near real-time and historical data relating to:

Aircraft Locations

Noise Monitor Values

Runway Closures

See Table 5-3 in Section 5.2 of the LGA NCP for more information.

PORT AUTHORITY NY NJ
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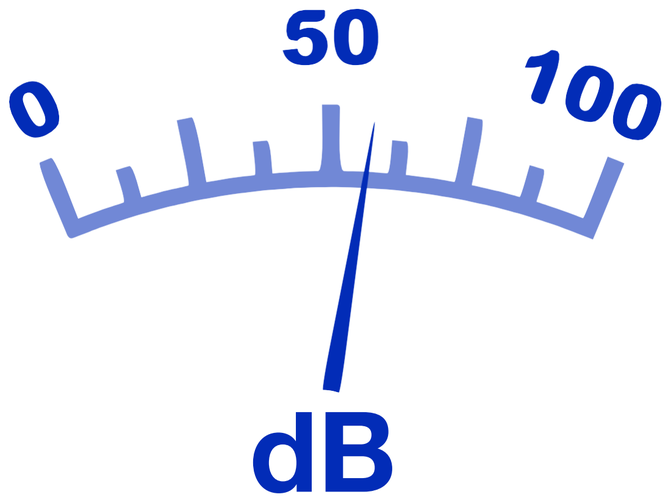
Program Management Measure 4 – Maintain Noise Complaint Management System



Established in 2012, the Port Authority's noise complaint management system is used to collect and manage noise complaint information.

Noise complaints are submitted to the Noise Office either through the internet or voicemail and then entered into the management system.

The management system helps to efficiently verify the accuracy of noise complaints and supports associated analysis and mapping.

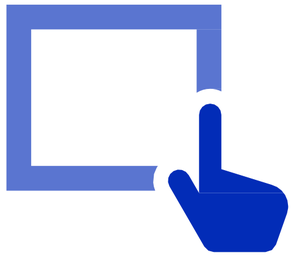
The Port Authority provides noise complaint reports to the FAA on a monthly basis.

See Table 5-4 in Section 5.2 of the LGA NCP for more information.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

Program Management Measure 5 – Maintain Noise Office Website

The Port Authority's Noise Office website serves as a single point of entry to webpages describing the Port Authority's various noise management programs.



The Noise Office website provides links to:

- **Submitting a noise complaint**
- **Public flight tracking**
- **Noise monitoring data**
- **Noise reports**
- **Materials related to airport community Roundtable meetings**
- **All of the Port Authority's 14 CFR Part 150 studies**

See Table 5-5 in Section 5.2 of the LGA NCP for more information.

Program Management Measure 6 – Continue Community Outreach Activities

The Port Authority established the New York Community Aviation Roundtable (NYCAR) in 2014 to support and maintain meaningful dialogue regarding LGA and JFK airports with the FAA, local communities, and other aviation stakeholders.

NYCAR has a subcommittee that exclusively focuses on LGA-related issues and meets on a regular basis to find ways to manage aircraft noise impacts.

See Table 5-6 in Section 5.2 of the LGA NCP for more information.

Program Management Measure 7 – Establish and Manage a Fly Quiet Program

What is it?

A voluntary collaborative program that encourages the use of noise abatement procedures and preferential runways.

Who's involved?

The Port Authority, FAA air traffic controllers, and aircraft operators.

How does it work?

Develop and implement a Fly Quiet awareness/ education campaign for pilots that includes brochures, signs, etc.

What's required?

Stakeholders meet periodically to continually evaluate the effectiveness of Fly Quiet Program elements.

Who's responsible?

The Port Authority would implement and manage the program and the Noise Office publishes Fly Quiet Program adherence and noise monitoring reports.

The existing departure noise limit of 112 PNdB would continue to be enforced through the Fly Quiet Program.

See Table 5-7 in Section 5.2 of the LGA NCP for more information.

Program Management Measure 8 – Make Aircraft Noise Contours Available in a Geographic Information System (GIS)

This measure would provide public access to a downloadable Google Earth, or other readily useable, file that depicts the LGA 2021 With Program DNL 65, 70, and 75 contours.

The Port Authority's Noise Office website could also host a noise map that includes downloadable GIS layers for easy viewing.

See Table 5-8 in Section 5.2 of the LGA NCP for more information.

Program Management Measure 9 – Update the Noise Exposure Map (NEM)

NEMs must accurately reflect existing and reasonably projected airport operating conditions and should be reevaluated about every five years.

In order to maintain FAA funding, 14 CFR Part 150 requires the Port Authority to update the NEMs when there is a change in airport operations that creates either a:

“substantial, new noncompatible use”

OR

“significant reduction in noise over existing noncompatible uses”

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

See Table 5-9 in Section 5.2 of the LGA NCP for more information.

Program Management Measure 10 – Update the Noise Compatibility Program (NCP)

14 CFR Part 150 requires that NCPs must include a provision for “revising the program if made necessary by revision of the noise exposure map”.

The NCP does not need to be updated every time the NEMs are updated, but should be if a significant change is identified that results in a revision to the NEMs.

Examples of changes include a large addition of noncompatible land use or new elements required to achieve land use compatibility.

The Port Authority anticipates updating the NCP only when additional measures and/or modified measures are required to reduce noncompatible land use.

See Table 5-10 in Section 5.2 of the LGA NCP for more information.

Program Management Measure 11 – Post Monthly Color-Coded DNL Values on Port Authority Website

The Port Authority currently publishes noise monitoring reports with color-coded values to help stakeholders easily understand the Airport's noise environment and also enhance awareness and decision-making regarding aircraft noise.

The noise monitoring reports provide monthly DNL values for each noise monitor that are assigned different colors based on which ranges the values fall into, such as DNL 60.0 to 64.9, DNL 65.0 to 69.9, etc.

This measure has already been implemented by the Port Authority.

LGA Noise Monitoring Data – April 2019 – 2020

Monthly Average - Aircraft DNL Values

Month	L13_P	L22_P	KEWHI	SCNLN	LFRNKLN	LCLGPT	L192FM	L78STJH	L162ST	L36AV
Apr-19	66.6*	69.8	NA	65.9	65.1	63.2	54.4	55.9		
May-19	66.2*	68.3	59.5	66.3	64.7	63.9	51.6	51.5		
Jun-19	65.1*	NA	57.3	65.7	63.3	61.9	50.9	46.9		
Jul-19	65.8*	NA	57.6	65.6	63.0	61.9	NA	46.9		
Aug-19	67.1*	NA	57.5	65.5	65.9	62.8	51.8	47.8	59.8	
Sep-19	64.3*	72.0	56.9	64.9	64.0	61.5	51.6	58.5	58.4	
Oct-19	64.3*	73.8	59.6	64.6	63.1	62.6	54.8	53.2	56.8	54.7
Nov-19	63.2*	68.6	55.2	64.8	61.7	60.0	52.7	55.7	54.1	51.9
Dec-19	62.3*	72.2	56.6	64.5	60.9	61.3	55.0	54.7	54.9	52.6
Jan-20	63.3*	67.3	55.3	64.4	61.5	60.8	54.5	44.3	53.9	51.8
Feb-20	63.3*	69.5	56.4	64.9	61.6	61.6	54.2	48.1	55.1	53.4
Mar-20	60.2*	69.1	56.4	63.0	57.7	60.5	50.2	43.4	51.9	50.3
Apr-20	53.4	58.1	45.7	50.8	54.6	50.2	41.9	37.7	44.2	41.1

For informational purposes only

See Table 5-11 in Section 5.2 of the LGA NCP for more information.

Program Management Measure 12 – The Port Authority to Coordinate with the FAA on Development and Implementation of NextGen Procedures

FAA's NextGen program is a comprehensive overhaul of the National Airspace System to ensure that flying is safe, secure, and efficient—a key technology is Performance Based Navigation (PBN), which uses satellites (i.e., GPS) to route aircraft along very precise flight paths.

PBN procedures are often so precise that flight tracks become highly concentrated in very narrow corridors, thus increasing noise exposure levels directly underneath these flight paths.

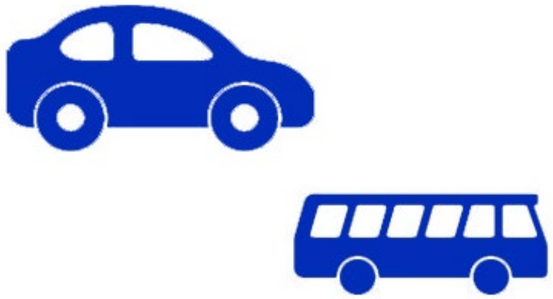
The Port Authority is a member of the NextGen Advisory Committee, which studies the implementation of NextGen across the National Airspace System.

The Port Authority will work with the FAA to find opportunities that best ensure NextGen procedures, including dispersal headings, avoid increases in community noise exposure.

See Table 5-12 in Section 5.2 of the LGA NCP for more information.

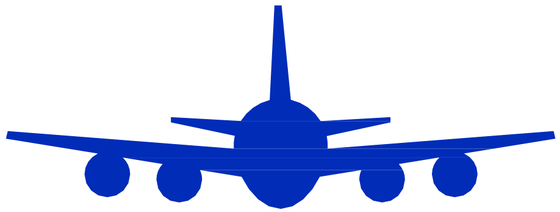
Program Management Strategies Considered, but Not Recommended for Inclusion in the LGA NCP

Add More Noise Monitors Throughout Queens and Increase Noise Monitor Analysis Capabilities



Consider Other Measures Such as High-Speed Rail from New York to Islip and Newburgh Airports

Multiple Suggestions of Aircraft Technology Changes



Provide Noise-Related Training to Pilots Operating at LGA

See Section 5.3 and Appendix G of the LGA NCP for more information.