Welcome!

John F. Kennedy International Airport
Title 14 Code of Federal Regulations Part 150 Study
Public Information Workshop #1

June 17, 2015

John F. Kennedy International 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**

John F. Kennedy International 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

John F. Kennedy International 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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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

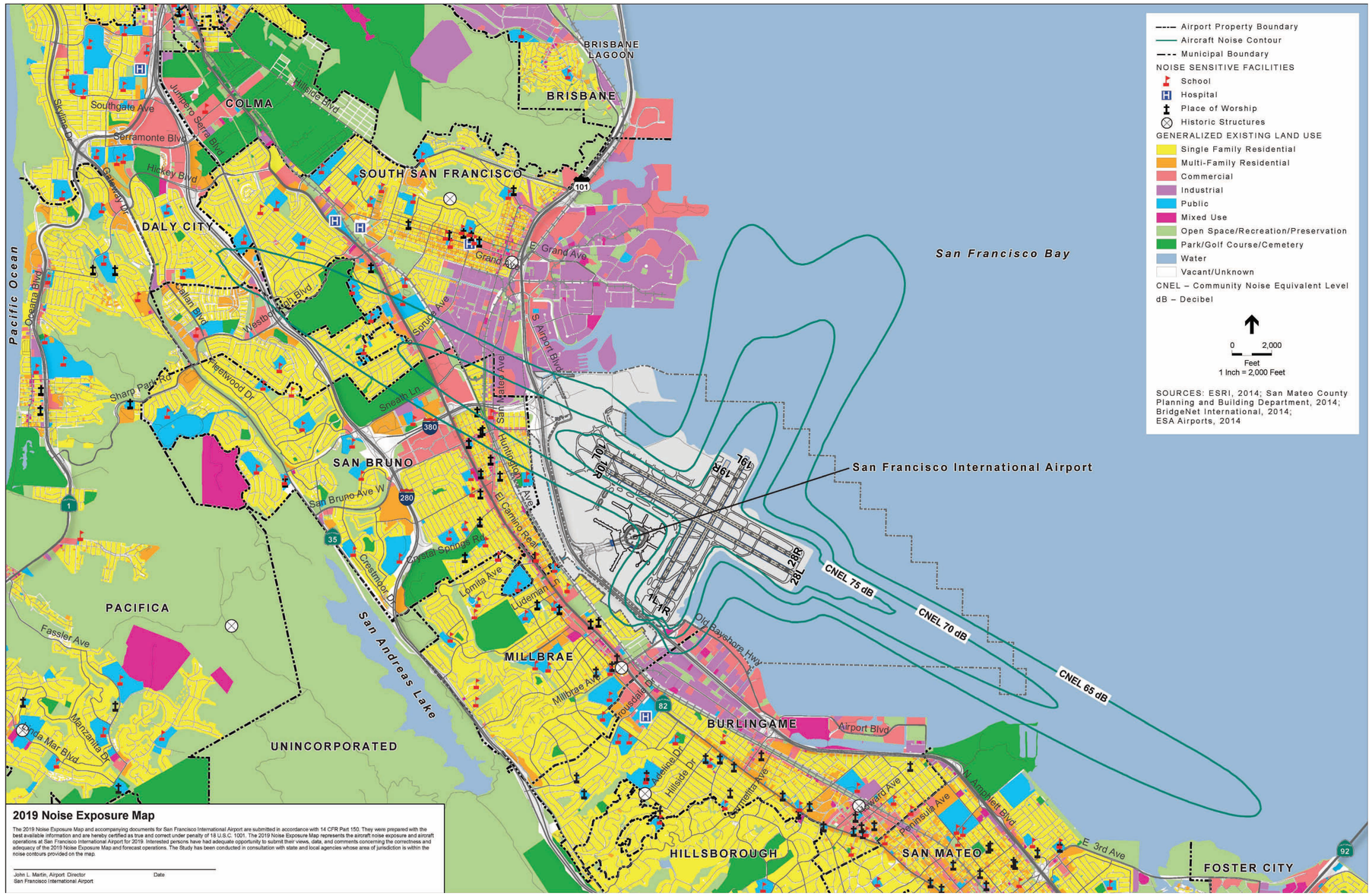
Source: http://www.faa.gov/airports/environmental/airport_noise/part_150/funding/

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

John F. Kennedy International 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

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 JFK**
  - 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

John F. Kennedy International 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 JFK

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

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

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

John F. Kennedy International 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)

John F. Kennedy International 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

John F. Kennedy International 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**

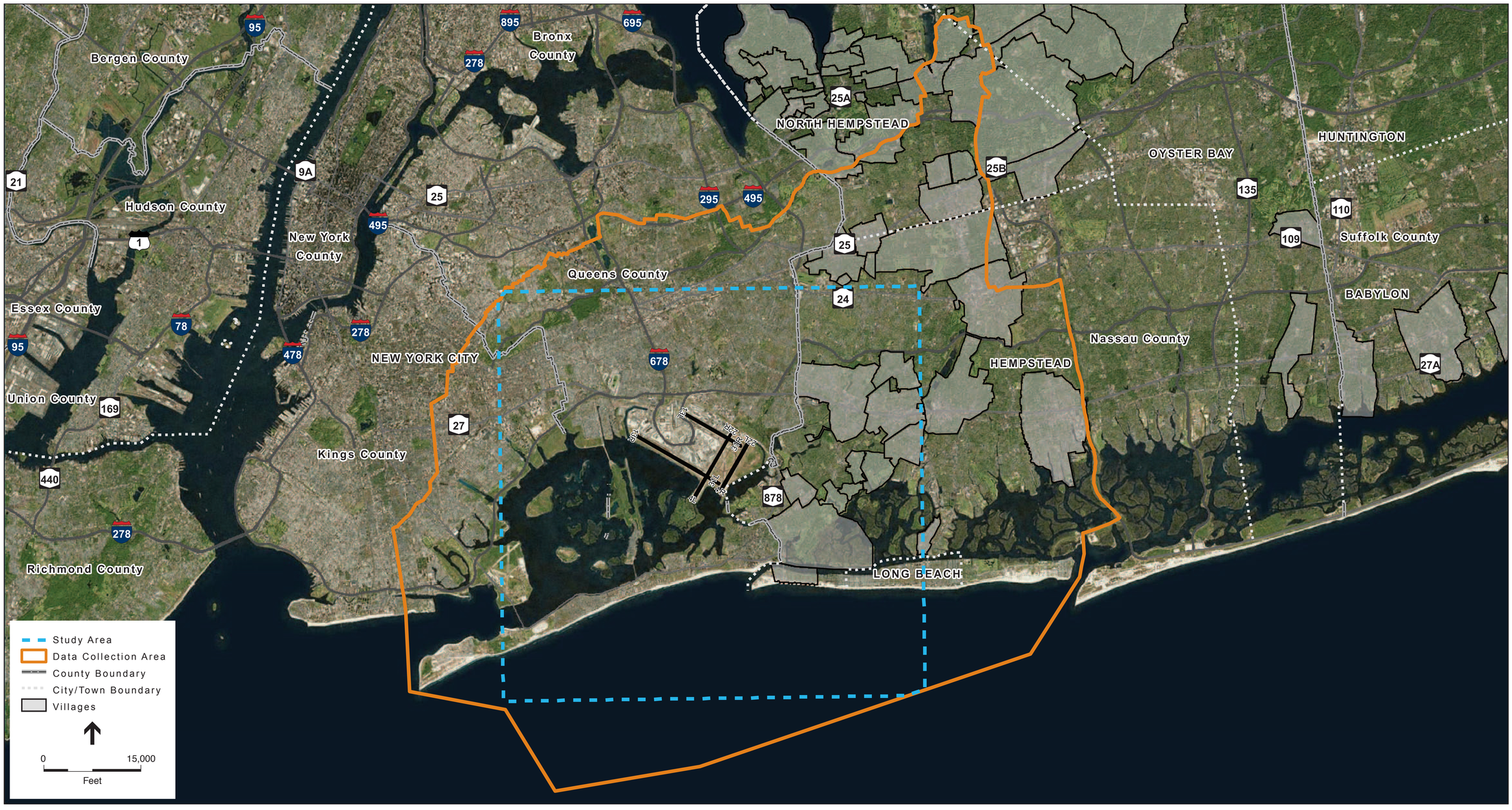
- **The ESA Study Team will consider completed and ongoing planning and environmental studies to ensure noise modeling assumptions are reflective of existing conditions and anticipated conditions in 2021**

  – Runway safety area improvements and Runway 13L-31R closure

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

John F. Kennedy International Airport
14 CFR Part 150 Study

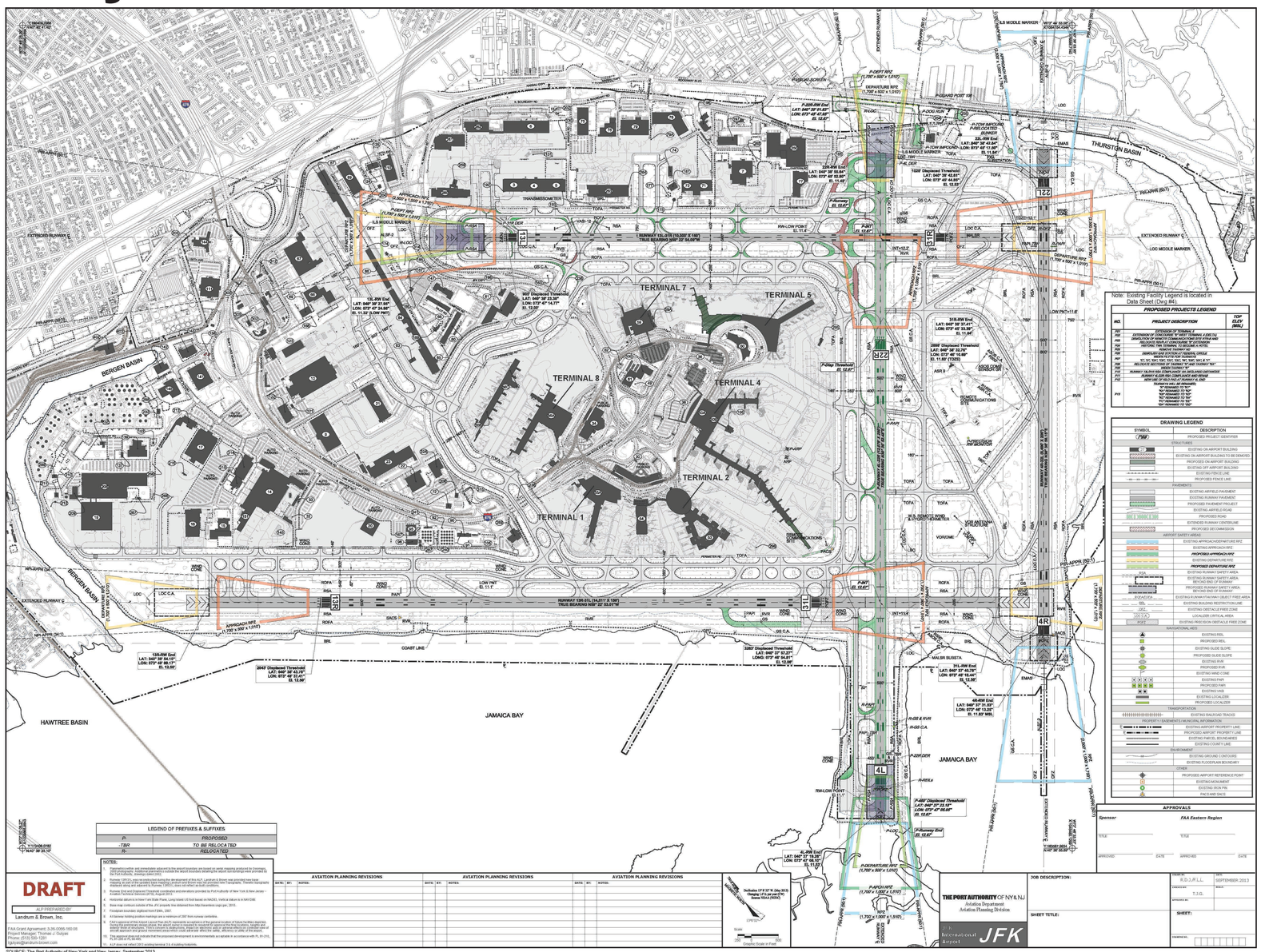
Study Area



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

John F. Kennedy International Airport
14 CFR Part 150 Study

Airport Layout Plan



ESA Study Team

THE PORT AUTHORITY OF NY & NJ

John F. Kennedy International Airport
14 CFR Part 150 Study

Existing Airport Facilities

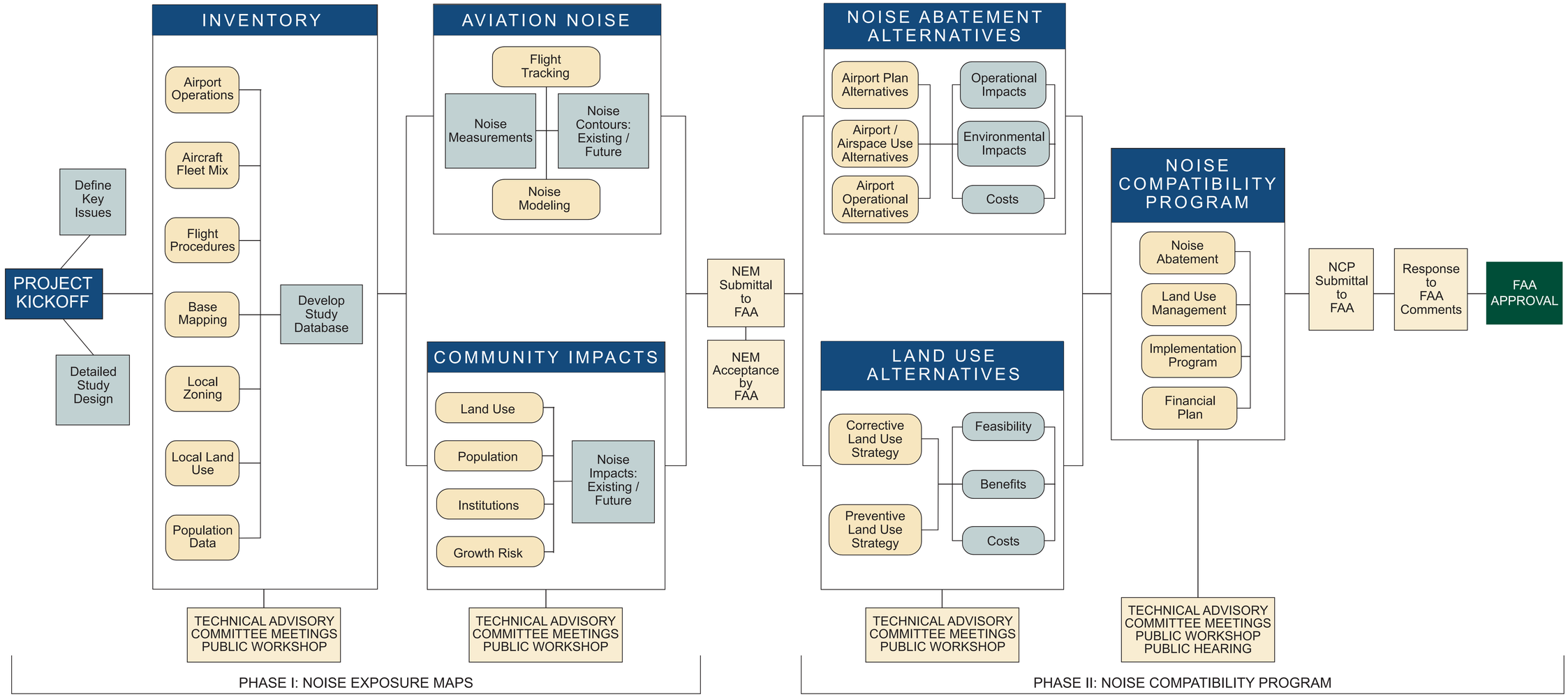


ESA Study Team

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John F. Kennedy International Airport
14 CFR Part 150 Study

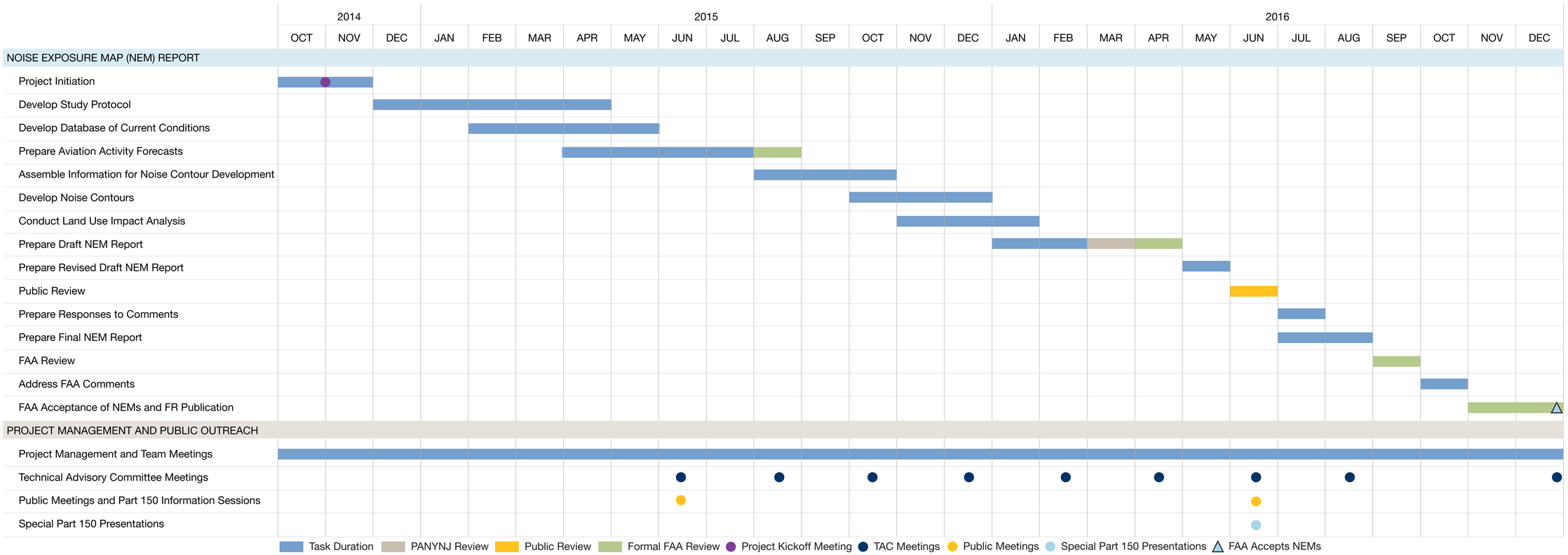
Generalized 14 CFR Part 150 Study Process



John F. Kennedy International Airport
14 CFR Part 150 Study

Project Schedule

Project Schedule – Noise Exposure Map Report
14 CFR FAR Part 150 Study for John F. Kennedy International Airport
Updated: June 3, 2015



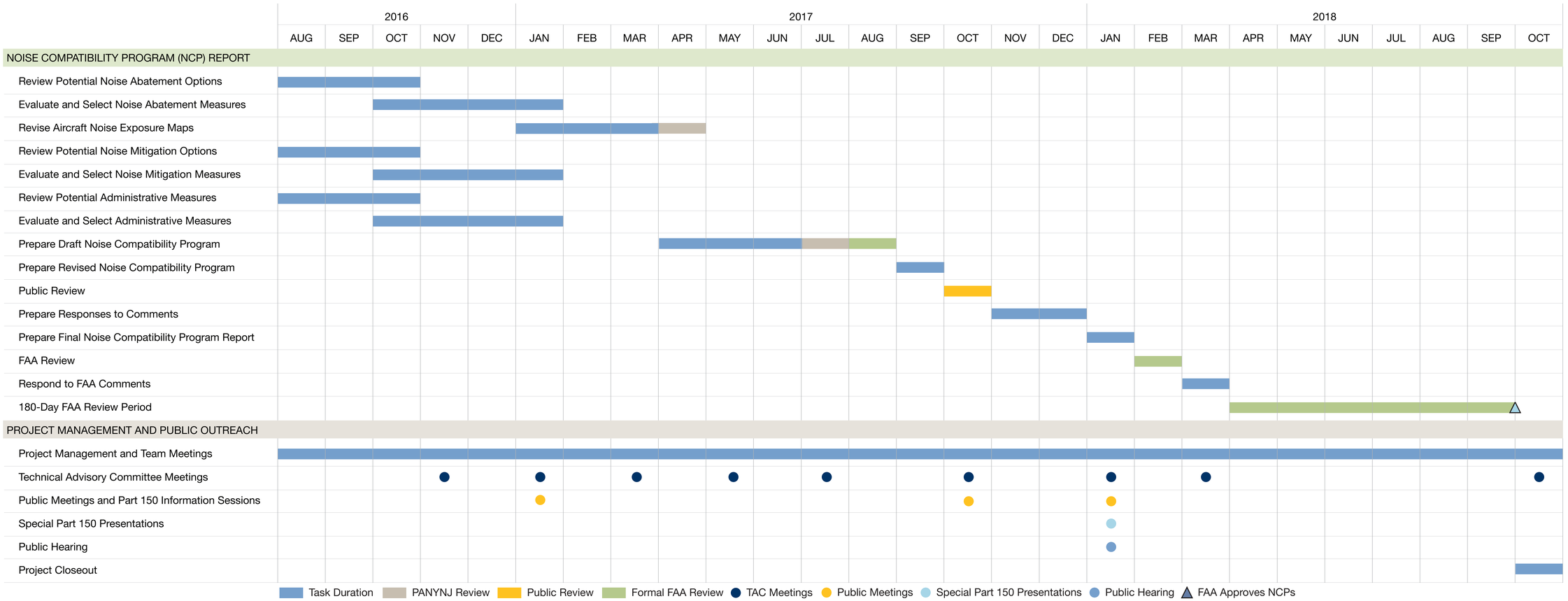
ESA Study Team

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John F. Kennedy International Airport
14 CFR Part 150 Study

Project Schedule

Project Schedule – Noise Compatibility Program Report
14 CFR Part 150 Study for John F. Kennedy International Airport
Updated: June 3, 2015



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

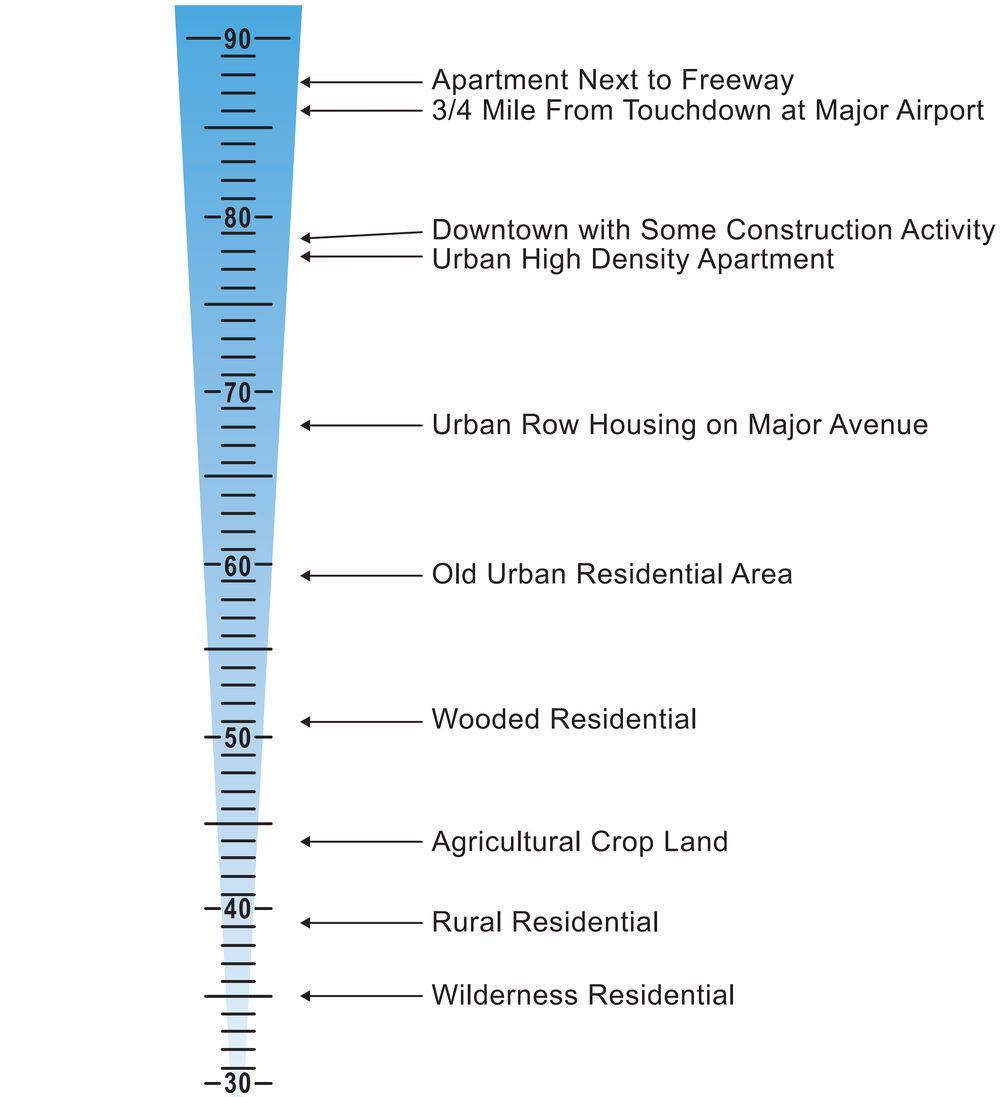
- **Average annual day aircraft noise exposure is calculated over a broad area and then depicted using contour lines of equal noise levels**

John F. Kennedy International 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

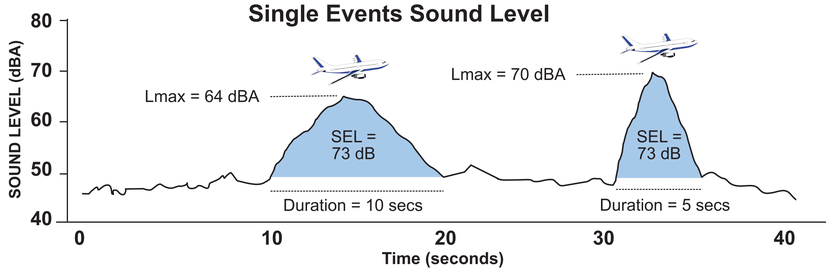


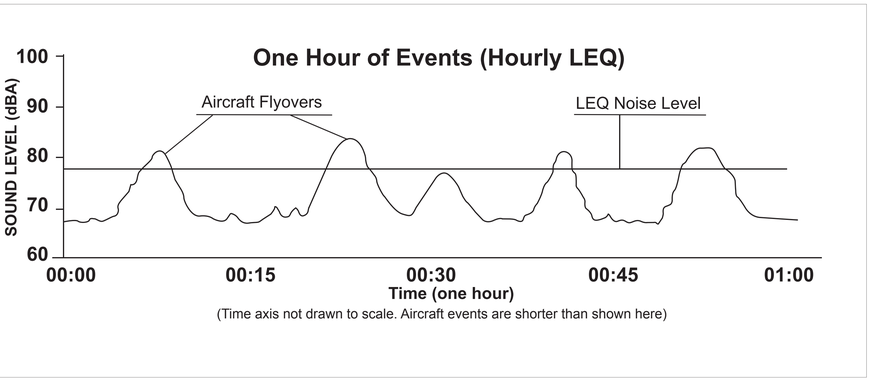
ESA Study Team

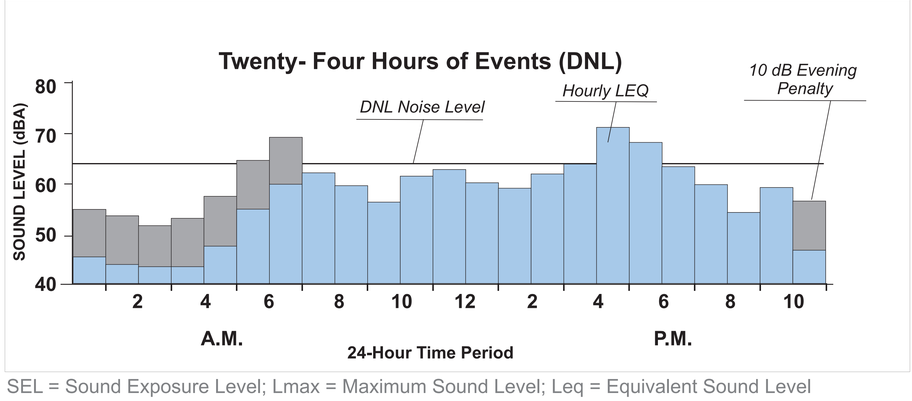
THE PORT AUTHORITY OF NY & NJ

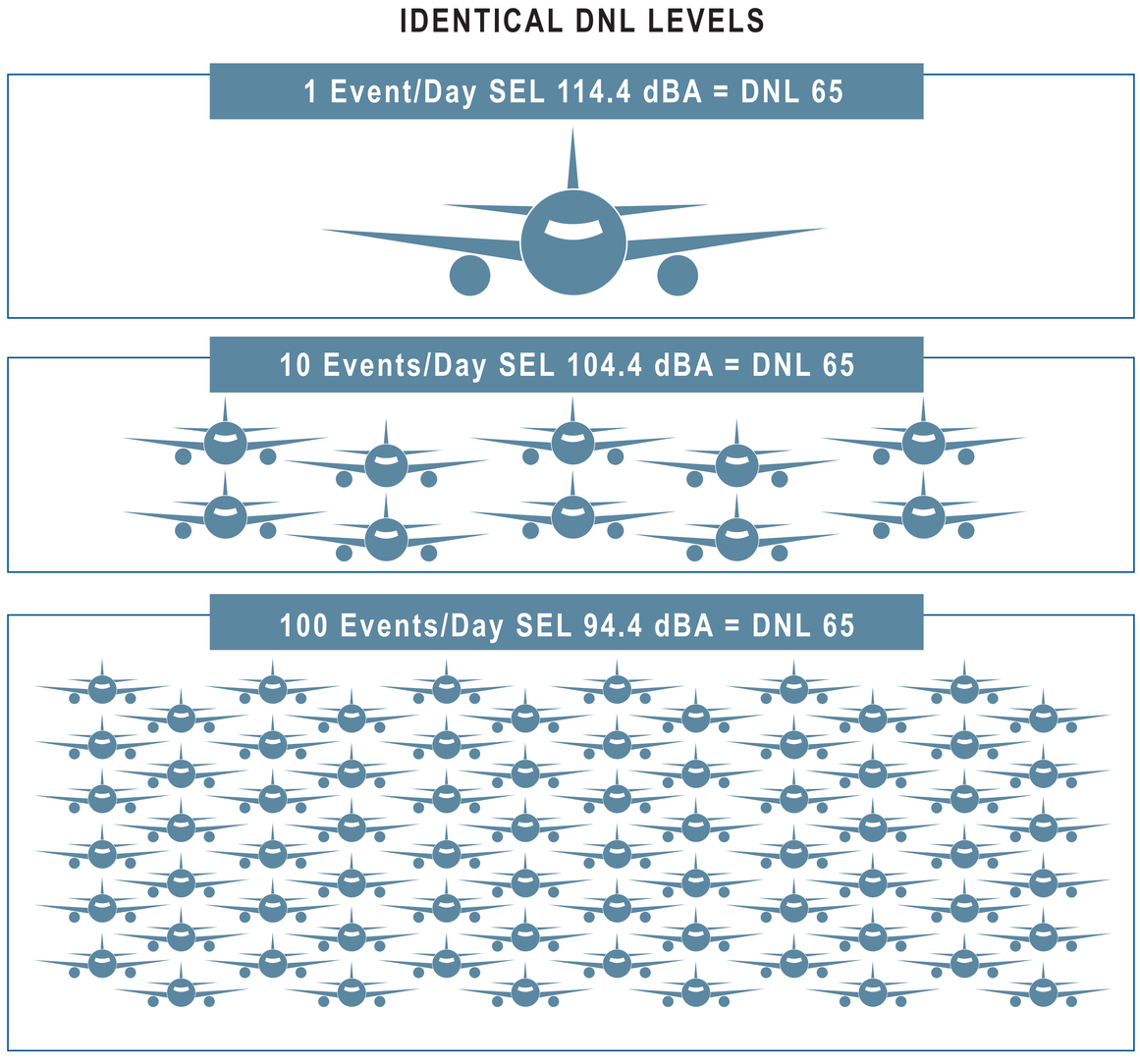
John F. Kennedy International Airport
14 CFR Part 150 Study

Airport Noise Levels









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

John F. Kennedy International Airport
14 CFR Part 150 Study

Facts and Figures

John F. Kennedy International Airport
Summarized Timeline

2013
JFK surpassed 50 million annual passengers

2008
Emirates Airline A380 lands at JFK, first regularly scheduled arrival of A380 to US

2007
The world's largest passenger aircraft, the A380, touches down on US Soil

2004
Port Authority and City of New York Conclude Agreement ensuring operation of JFK through 2050

2000
Celebrated one-billionth passenger

1964
Beatles arrived in the US and had a press conference in the former International Arrivals Building

1963
Airport rededicated to John F. Kennedy International Airport

1948
Commercial Flights begin flying in/out of newly opened New York International Airport

1947
Port Authority of New York and New Jersey begins operating the airport

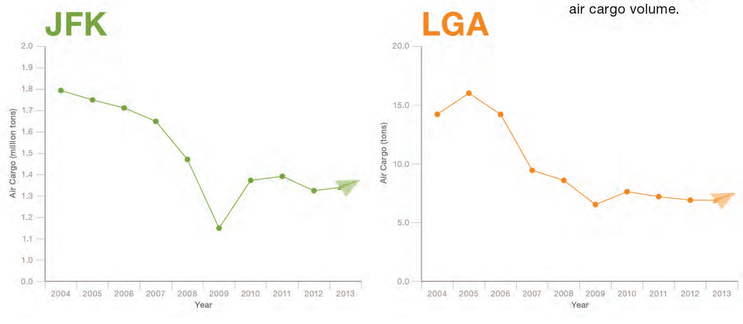
1942
Construction for New International Airport Begins on site of Idewild Golf Course in Queens

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



Air cargo levels over recent years

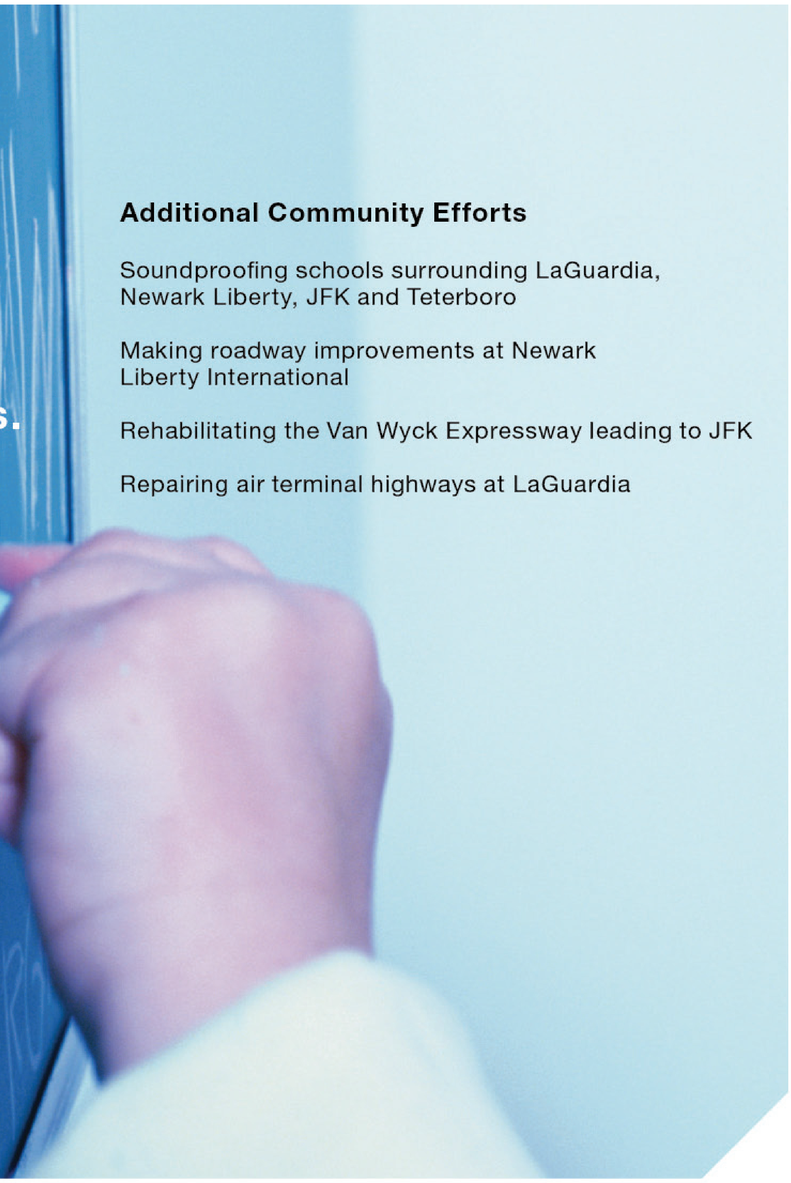
Per 2014 Budget:
Port Authority airports handled **16.4%** of US air cargo volume.



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 – JFK

Key#	School	City
1	Cedarhurst #5 (Elementary School)	Cedarhurst
2	Lawrence High School	Cedarhurst
3	Lawrence Middle School	Lawrence
4	Lawrence Public School #4	Inwood
5	Our Lady of Grace	Howard Beach
6	PS 104Q	Far Rockaway
7	PS 138Q	Rosedale
8	PS 181Q	Sprinfield Gardens
9	PS 183Q	Far Rockaway
10	PS 38Q	Rosedale
11	PS 42Q	Arverne
12	St. Clare	Rosedale
13	St. Rose of Lima	Rockaway Beach
14	Yeshiva Darchei Torah	Far Rockaway
16	HebrewAcad.ofFiveTowns&Rock.	Cedarhurst
17	Lawrence No. 2	Inwood
18	PS 146Q	Howard Beach
19	IS 180Q	Rockaway Park
20	PS 195Q	Rosedale
21	PS 198Q	Arverne
22	St. Joachim	Cedarhurst
23	St. Pius X	Rosedale
24	Tapeniu School for Girls	Far Rockaway

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

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
  - Adrian Jones, JFK Technical Director

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

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

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14 CFR Part 150 Study

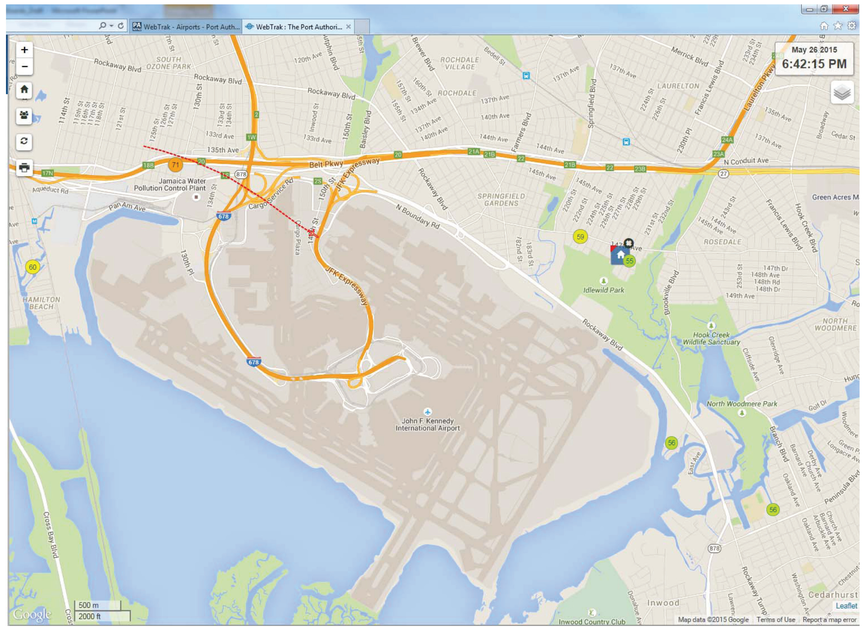
WebTrak – Flight Tracking and Noise Information System

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

- **Specific information regarding flights at John F. Kennedy International Airport (JFK) including aircraft type, altitude, and operation type (arrival or departure)**

- **Noise levels at noise monitors located near JFK 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!

John F. Kennedy International Airport
Title 14 Code of Federal Regulations Part 150 Study
Public Information Workshop

Nassau County Community College

October 29, 2015

John F. Kennedy International Airport
14 CFR Part 150 Study

Overview of 14 CFR Part 150

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- Allows for the adoption of appropriate local land use standards for land use compatibility planning purposes

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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.

ESA Study Team

THE PORT AUTHORITY OF NY & NJ

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

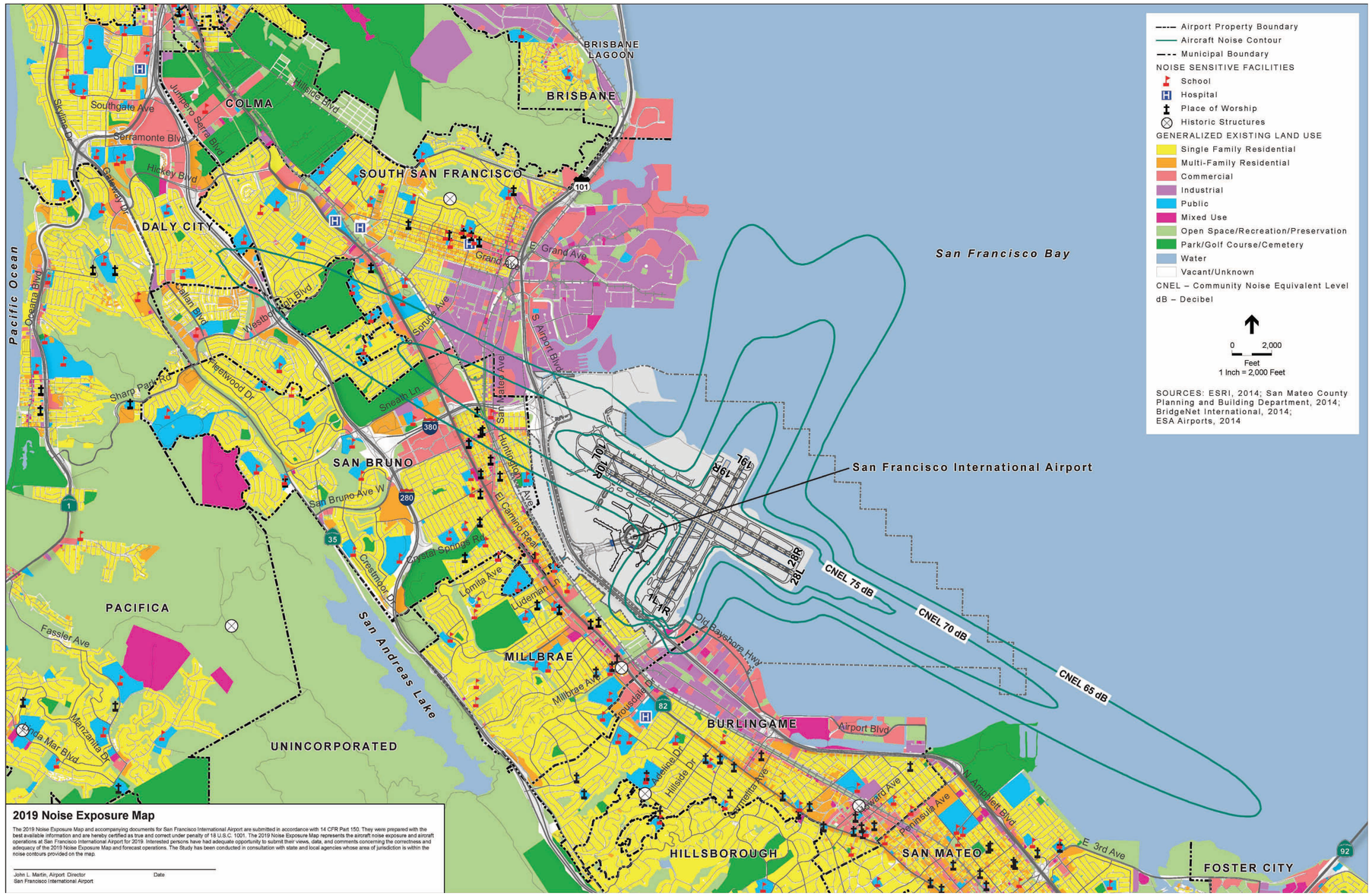
Source: http://www.faa.gov/airports/environmental/airport_noise/part_150/funding/

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

John F. Kennedy International Airport
14 CFR Part 150 Study

Sample Noise Exposure Map



Source: http://www.sfopart150study.com

ESA Study Team

THE PORT AUTHORITY OF NY & NJ

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

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 JFK**
  - 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

John F. Kennedy International 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 JFK

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

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

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

ESA Study Team

THE PORT AUTHORITY OF NY & NJ

John F. Kennedy International 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)

John F. Kennedy International 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

John F. Kennedy International 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**

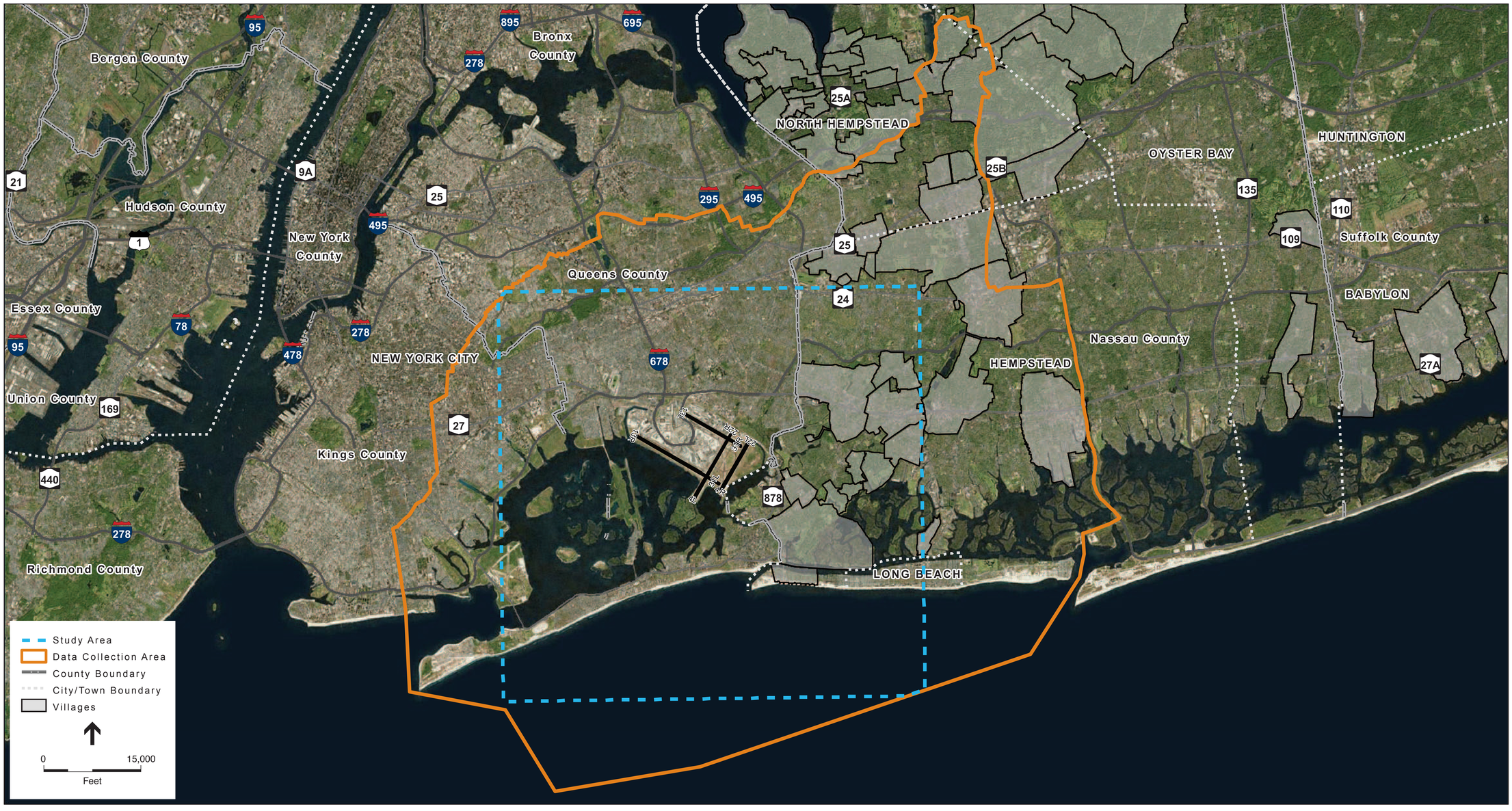
- **The ESA Study Team will consider completed and ongoing planning and environmental studies to ensure noise modeling assumptions are reflective of existing conditions and anticipated conditions in 2021**

  – Runway safety area improvements and Runway 13L-31R closure

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

John F. Kennedy International Airport
14 CFR Part 150 Study

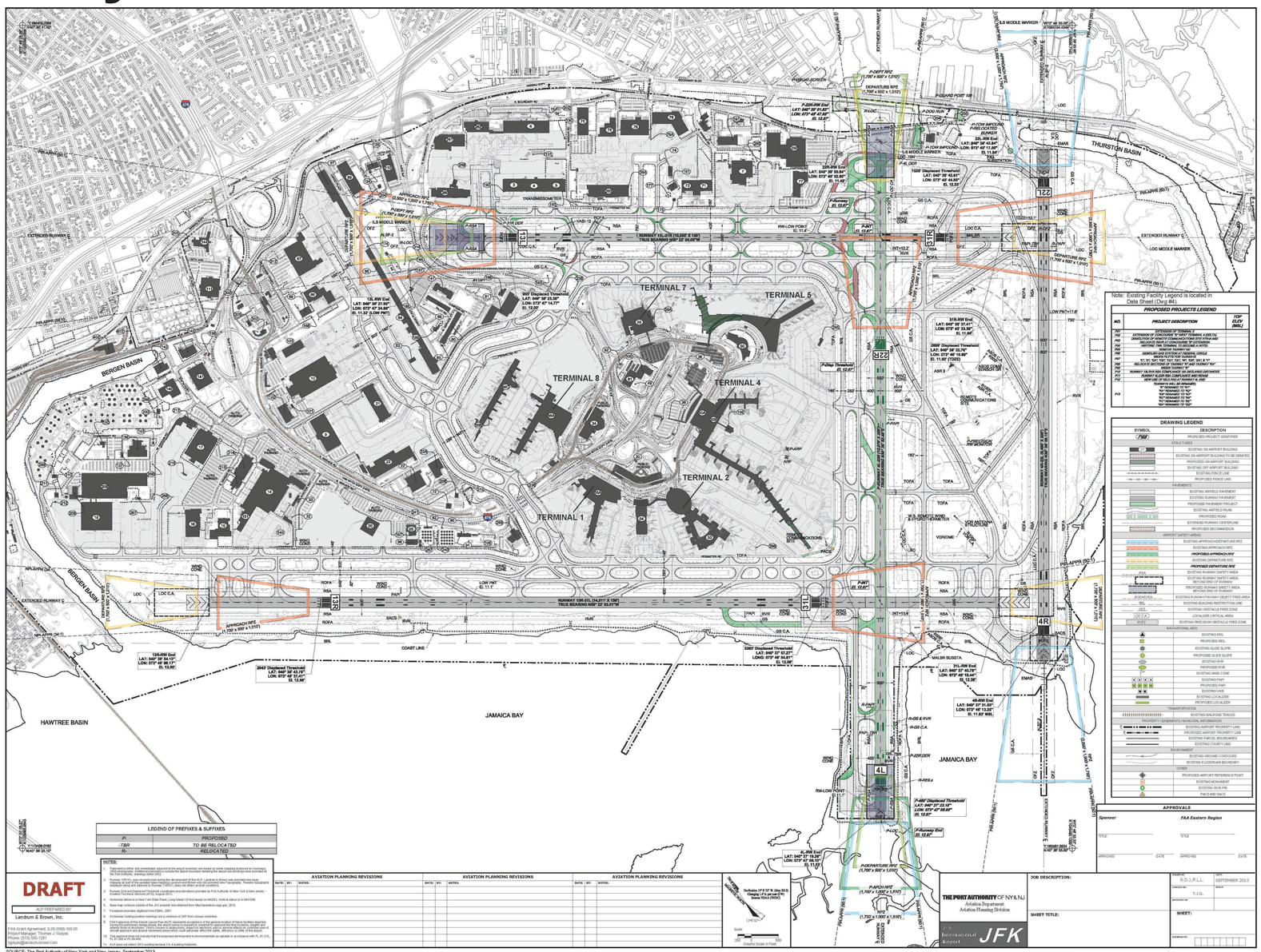
Study Area



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

John F. Kennedy International Airport
14 CFR Part 150 Study

Airport Layout Plan



ESA Study Team

THE PORT AUTHORITY OF NY & NJ

John F. Kennedy International Airport
14 CFR Part 150 Study

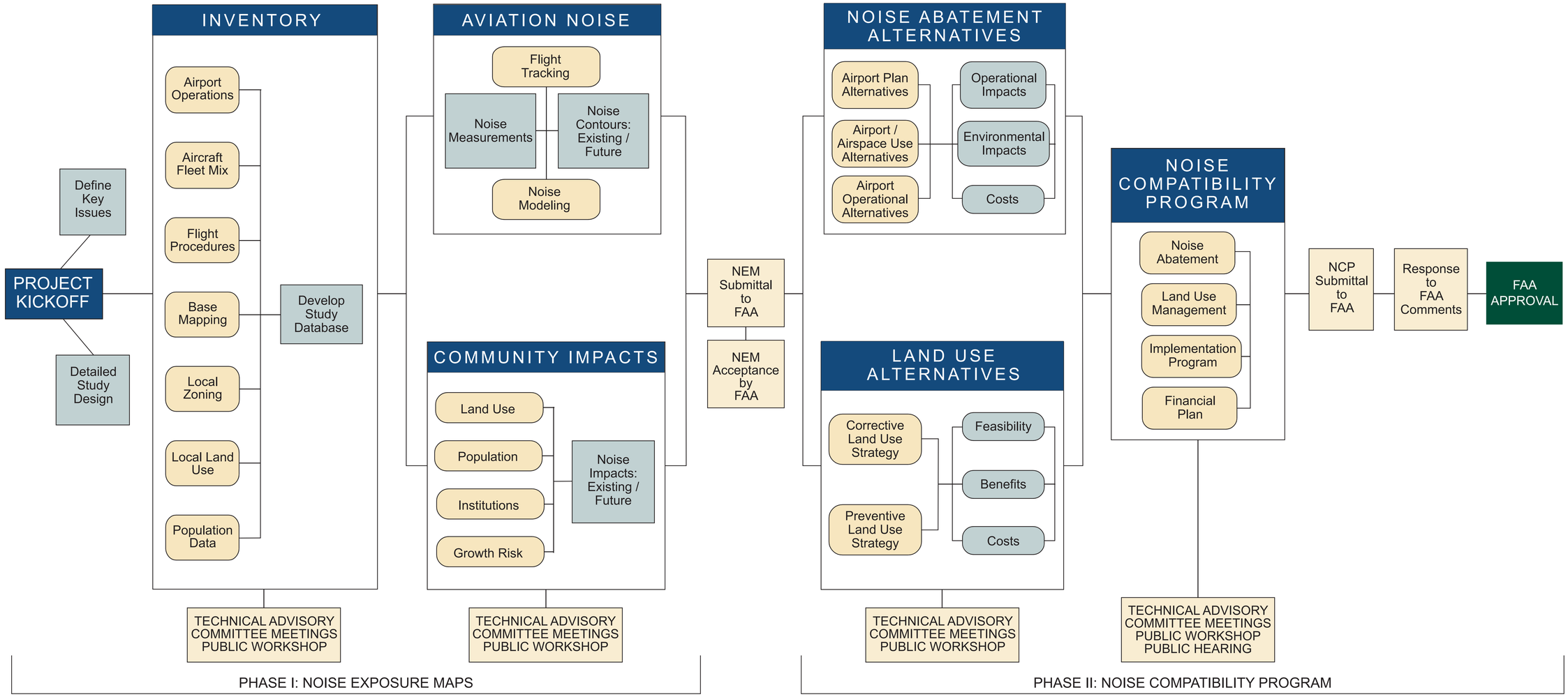
Existing Airport Facilities



SOURCE: ESA, 2015

John F. Kennedy International Airport
14 CFR Part 150 Study

Generalized 14 CFR Part 150 Study Process



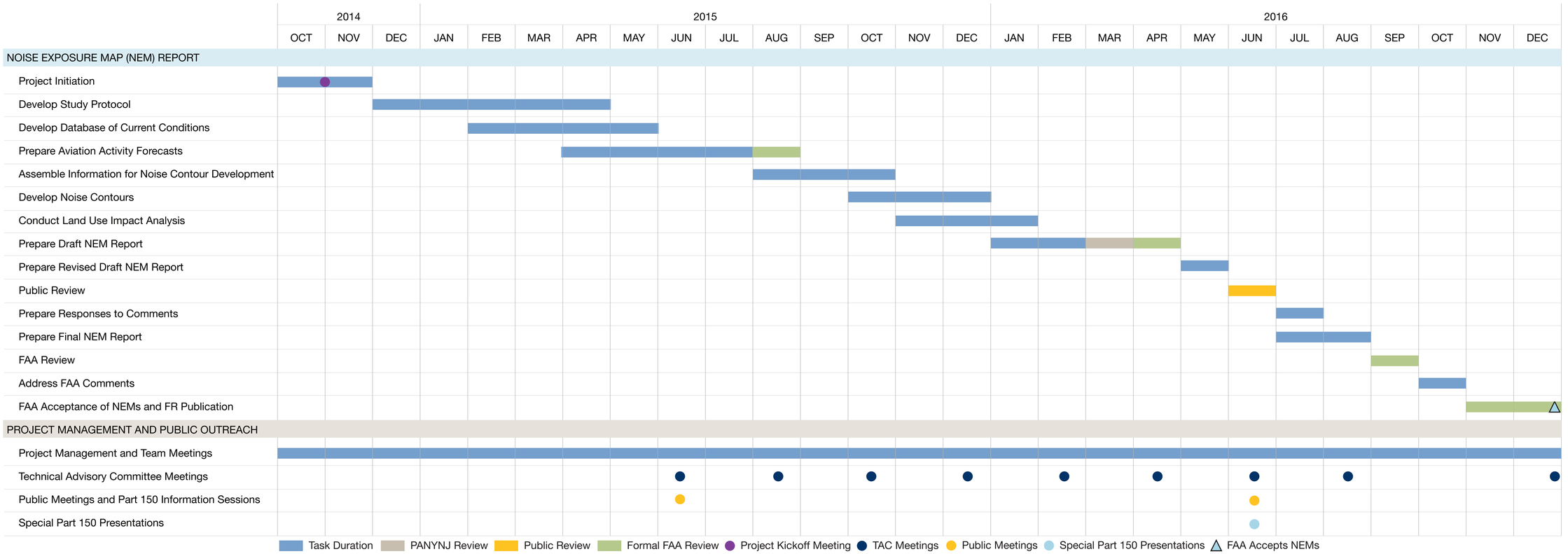
ESA Study Team

THE PORT AUTHORITY OF NY & NJ

John F. Kennedy International Airport
14 CFR Part 150 Study

Project Schedule

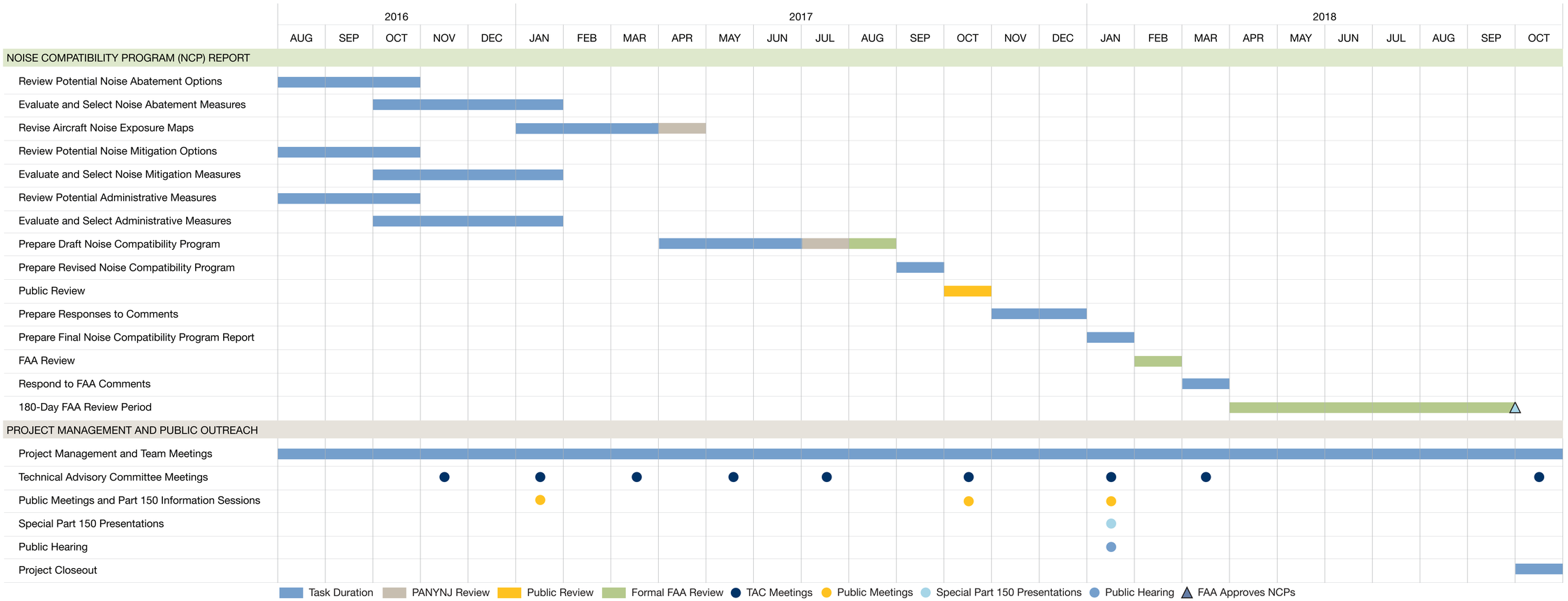
Project Schedule – Noise Exposure Map Report
14 CFR FAR Part 150 Study for John F. Kennedy International Airport
Updated: June 3, 2015



John F. Kennedy International Airport
14 CFR Part 150 Study

Project Schedule

Project Schedule – Noise Compatibility Program Report
14 CFR Part 150 Study for John F. Kennedy International Airport
Updated: June 3, 2015



ESA Study Team

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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

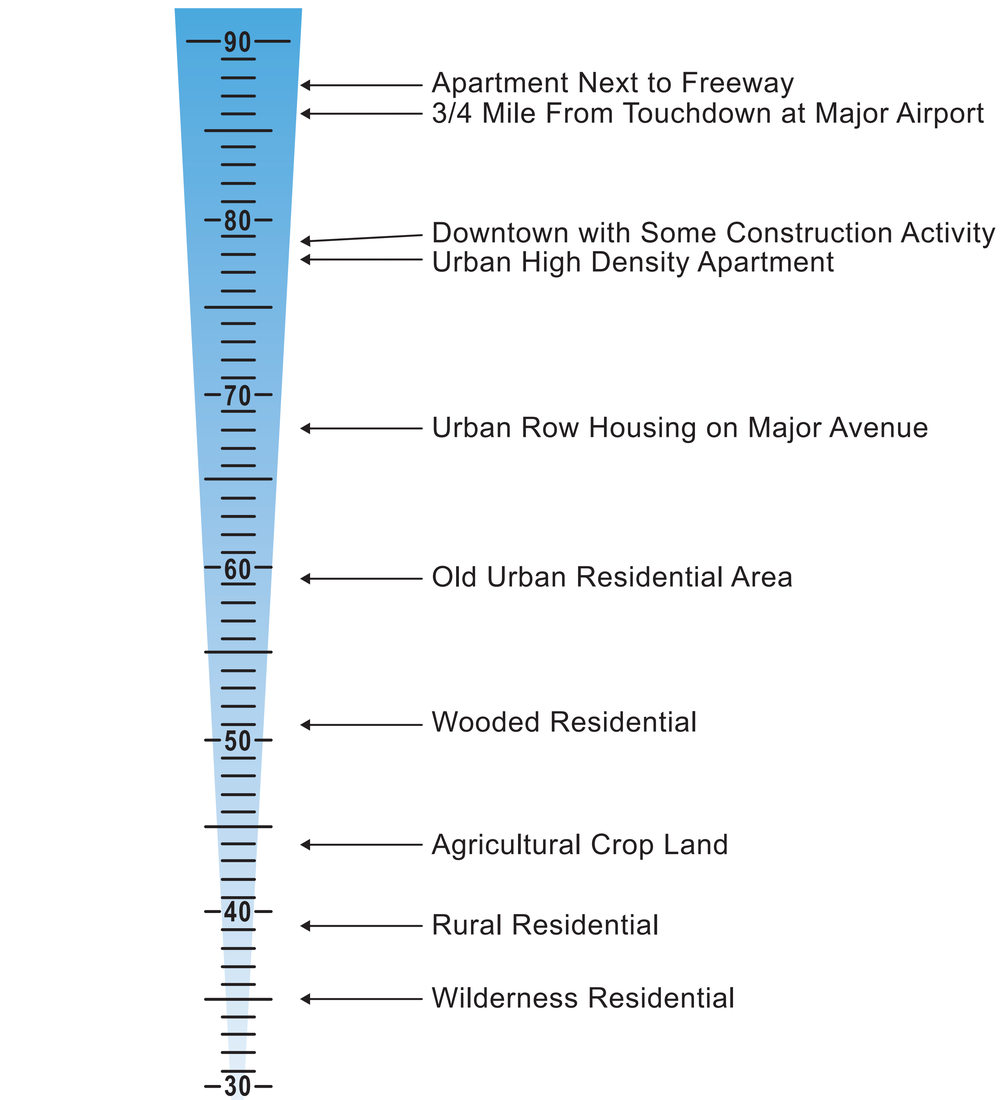
- **Average annual day aircraft noise exposure is calculated over a broad area and then depicted using contour lines of equal noise levels**

John F. Kennedy International 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

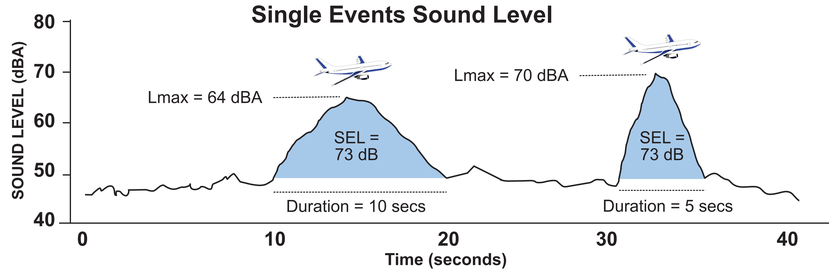


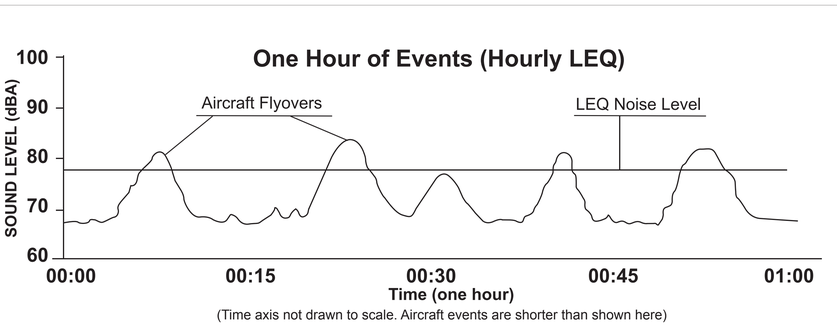
ESA Study Team

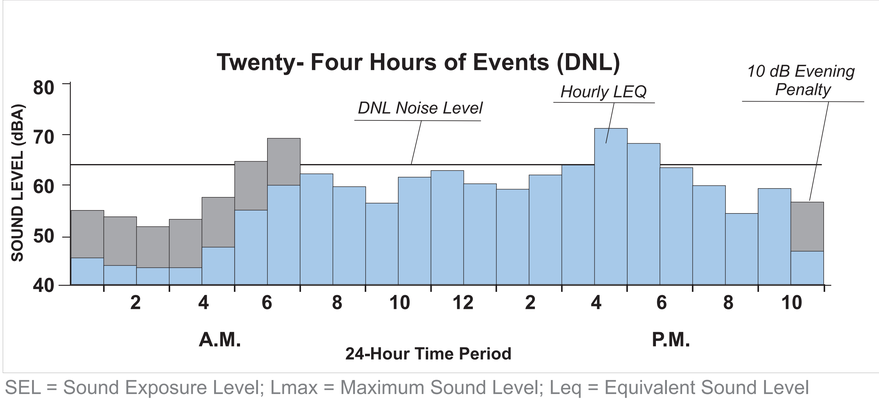
THE PORT AUTHORITY OF NY & NJ

John F. Kennedy International Airport
14 CFR Part 150 Study

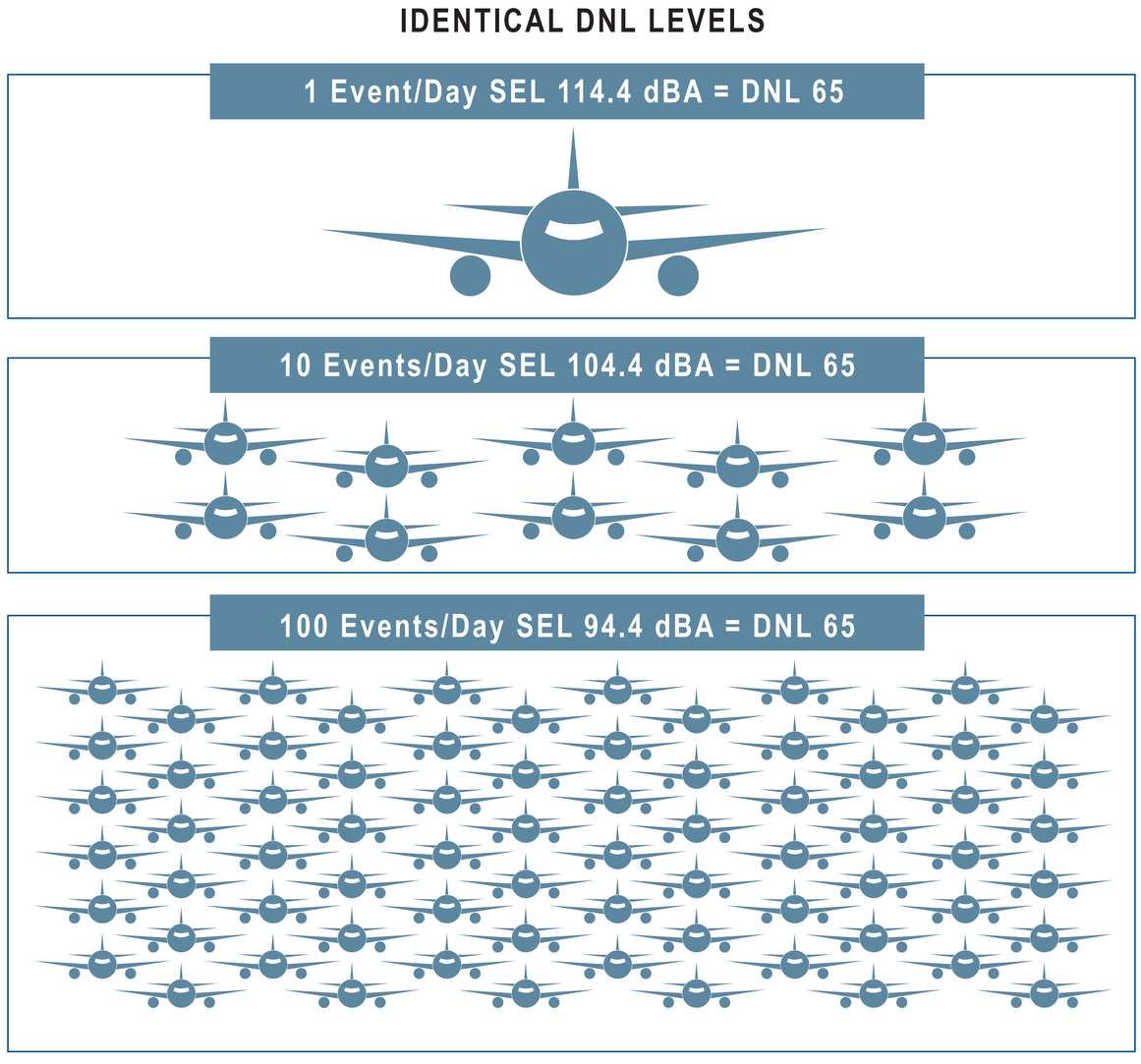
Airport Noise Levels







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



John F. Kennedy International Airport
14 CFR Part 150 Study

Facts and Figures

John F. Kennedy International Airport
Summarized Timeline

2013
JFK surpassed 50 million annual passengers

2008
Emirates Airline A380 lands at JFK, first regularly scheduled arrival of A380 to US

2007
The world's largest passenger aircraft, the A380, touches down on US Soil

2004
Port Authority and City of New York Conclude Agreement ensuring operation of JFK through 2050

2000
Celebrated one-billionth passenger

1964
Beatles arrived in the US and had a press conference in the former International Arrivals Building

1963
Airport rededicated to John F. Kennedy International Airport

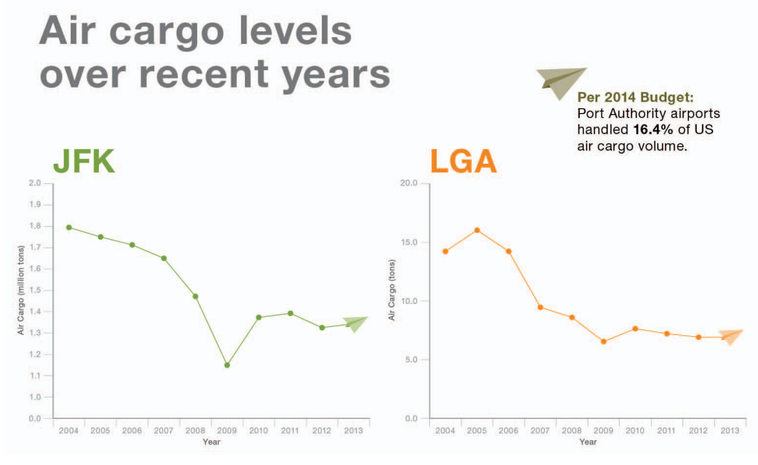
1948
Commercial Flights begin flying in/out of newly opened New York International Airport

1947
Port Authority of New York and New Jersey begins operating the airport

1942
Construction for New International Airport Begins on site of Idewild Golf Course in Queens

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





John F. Kennedy International 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 – JFK

Key#	School	City
1	Cedarhurst #5 (Elementary School)	Cedarhurst
2	Lawrence High School	Cedarhurst
3	Lawrence Middle School	Lawrence
4	Lawrence Public School #4	Inwood
5	Our Lady of Grace	Howard Beach
6	PS 104Q	Far Rockaway
7	PS 138Q	Rosedale
8	PS 181Q	Sprinfield Gardens
9	PS 183Q	Far Rockaway
10	PS 38Q	Rosedale
11	PS 42Q	Arverne
12	St. Clare	Rosedale
13	St. Rose of Lima	Rockaway Beach
14	Yeshiva Darchei Torah	Far Rockaway
16	HebrewAcad.ofFiveTowns&Rock.	Cedarhurst
17	Lawrence No. 2	Inwood
18	PS 146Q	Howard Beach
19	IS 180Q	Rockaway Park
20	PS 195Q	Rosedale
21	PS 198Q	Arverne
22	St. Joachim	Cedarhurst
23	St. Pius X	Rosedale
24	Tapeniu School for Girls	Far Rockaway

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

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
  - Adrian Jones, JFK Technical Director

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

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

John F. Kennedy International Airport
14 CFR Part 150 Study

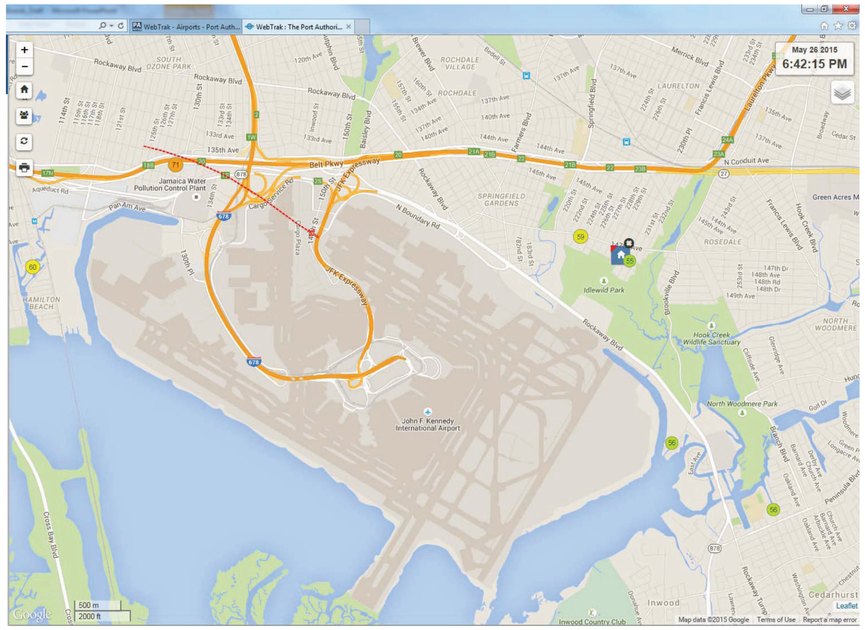
WebTrak – Flight Tracking and Noise Information System

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

- **Specific information regarding flights at John F. Kennedy International Airport (JFK) including aircraft type, altitude, and operation type (arrival or departure)**

- **Noise levels at noise monitors located near JFK 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

JFK Technical Advisory Committee Membership

Port Authority of New York & New Jersey	Federal Aviation Administration
NY Airport Community Roundtable (NYACR)	Eastern Queen Alliance
Delta Airlines	Jet Blue
United Airlines	NY Airport Liaison
American Airlines Cargo/KAAMCO	Shelt Air
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!

John F. Kennedy International Airport
Title 14 Code of Federal Regulations Part 150 Study
Public Information Workshop #2

Queens, NY: November 2, 2016

Nassau County, NY: November 3, 2016

STATION 1

Overview of 14 CFR Part 150

John F. Kennedy International 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
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)	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
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.

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Notes:
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(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)

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 John F. Kennedy International Airport (JFK)**

  - 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

JFK Technical Advisory Committee Membership

Port Authority	Sheltair
NY Community Aviation Roundtable (NYCAR)	Aviation Development Council
Eastern Queens Alliance	NYC Economic Development Corp
Town-Village Aircraft Safety & Noise Abatement Committee (TVASNAC)	Queens Chamber of Commerce
Town of North Hempstead / QuietSkies.net	Queens Borough President
Delta Airlines	NYC Department of City Planning
JetBlue	Nassau County Planning
NY Airport Liaison	Town of North Hempstead (Planning)
United Airlines	NYC Department of Environmental Protection
American Airlines Cargo / KAAMCO	Federal Aviation Administration (FAA)

John F. Kennedy International 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 JFK 14 CFR Part 150 Study reports

- The Port Authority submitted preliminary draft JFK noise exposure maps to the FAA in August 2016 and released draft JFK noise exposure maps to the public in October 2016

- The Port Authority will submit final JFK 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

John F. Kennedy International 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 JFK to the FAA in mid-2018**

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

John F. Kennedy International 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

John F. Kennedy International 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**

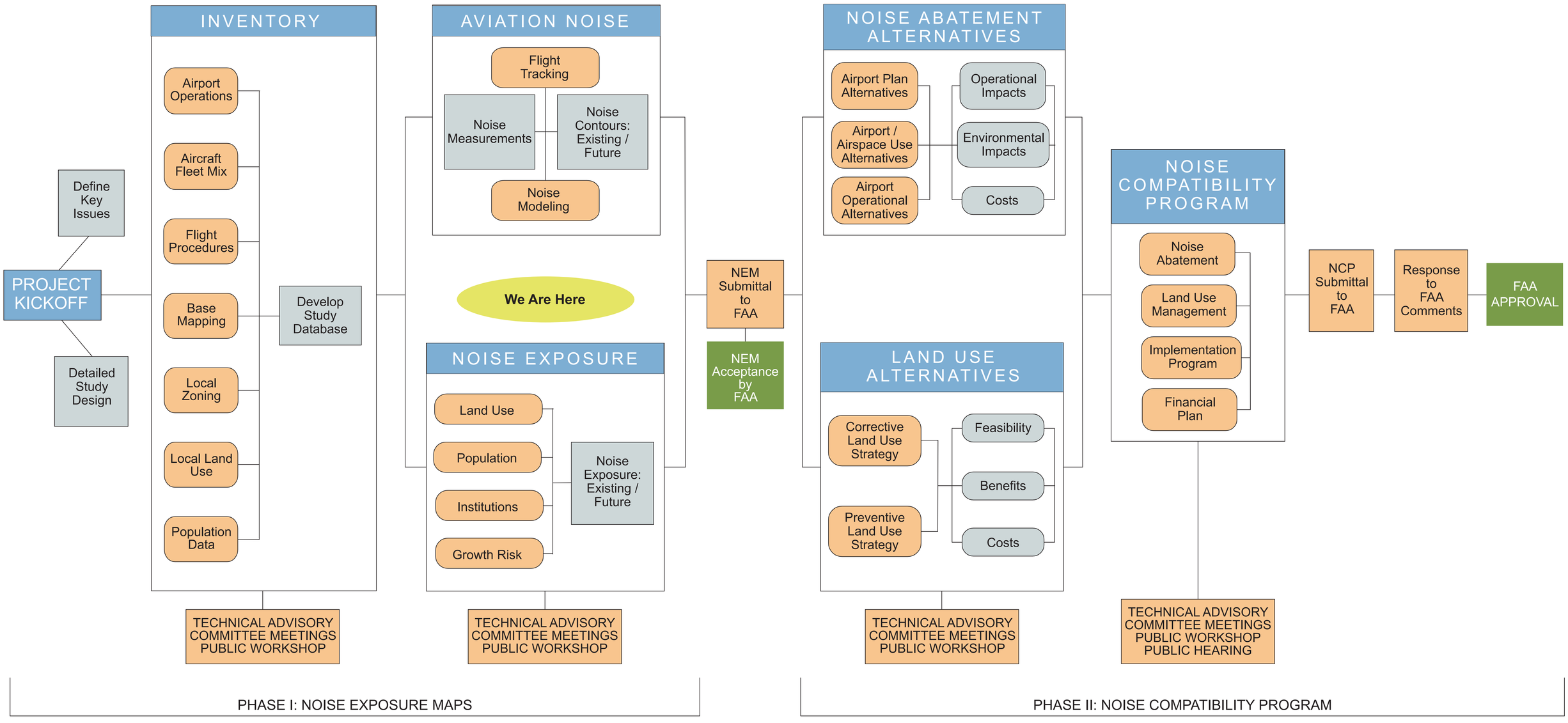
- **Completed planning and environmental studies were reviewed to ensure the noise modeling assumptions are reflective of existing conditions and anticipated conditions in 2021**

  – No projects in the Port Authority's *Capital Plan Summary 2014-2023* would have a substantial effect on aviation activity, runway use, and/or flight patterns at JFK in 2021

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

John F. Kennedy International Airport
14 CFR Part 150 Study

Generalized 14 CFR Part 150 Study Process



ESA Study Team

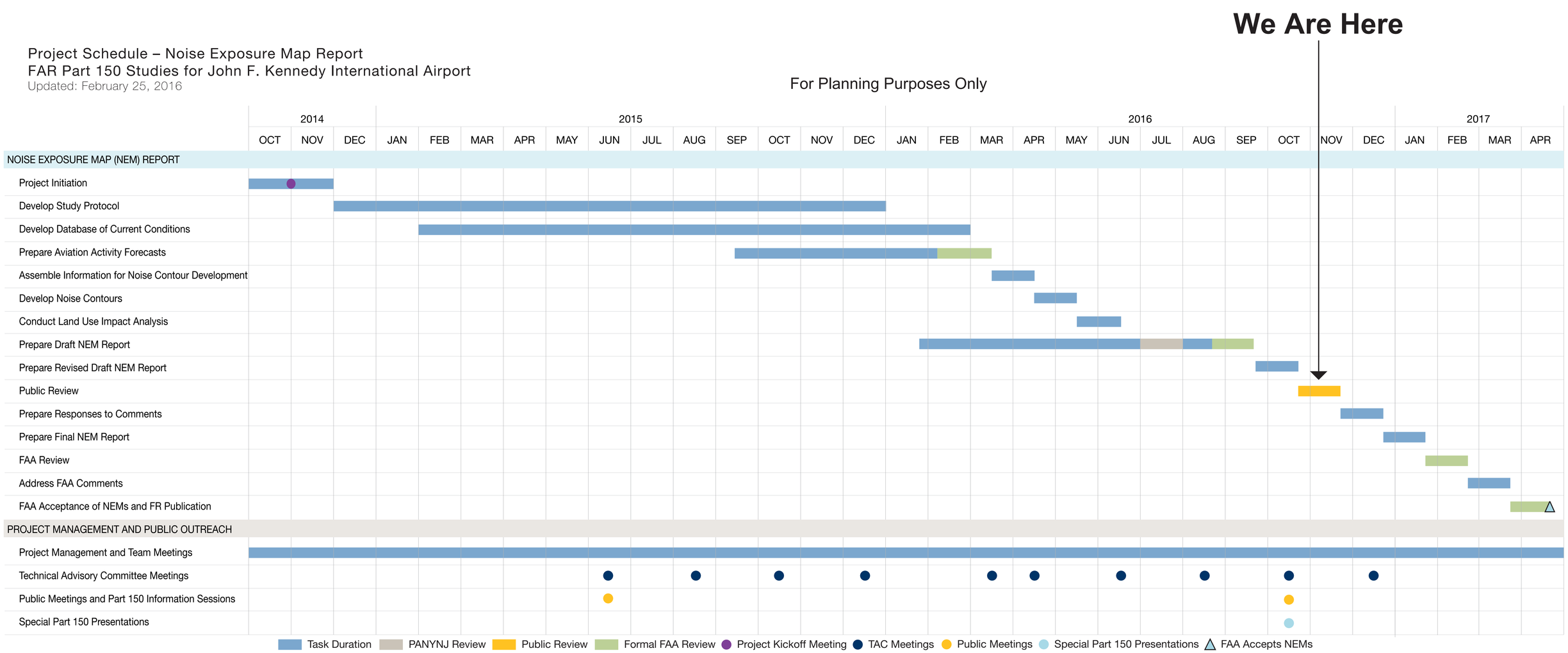
THE PORT AUTHORITY OF NY & NJ

STATION 3

Project Schedule

John F. Kennedy International Airport
14 CFR Part 150 Study

Project Schedule

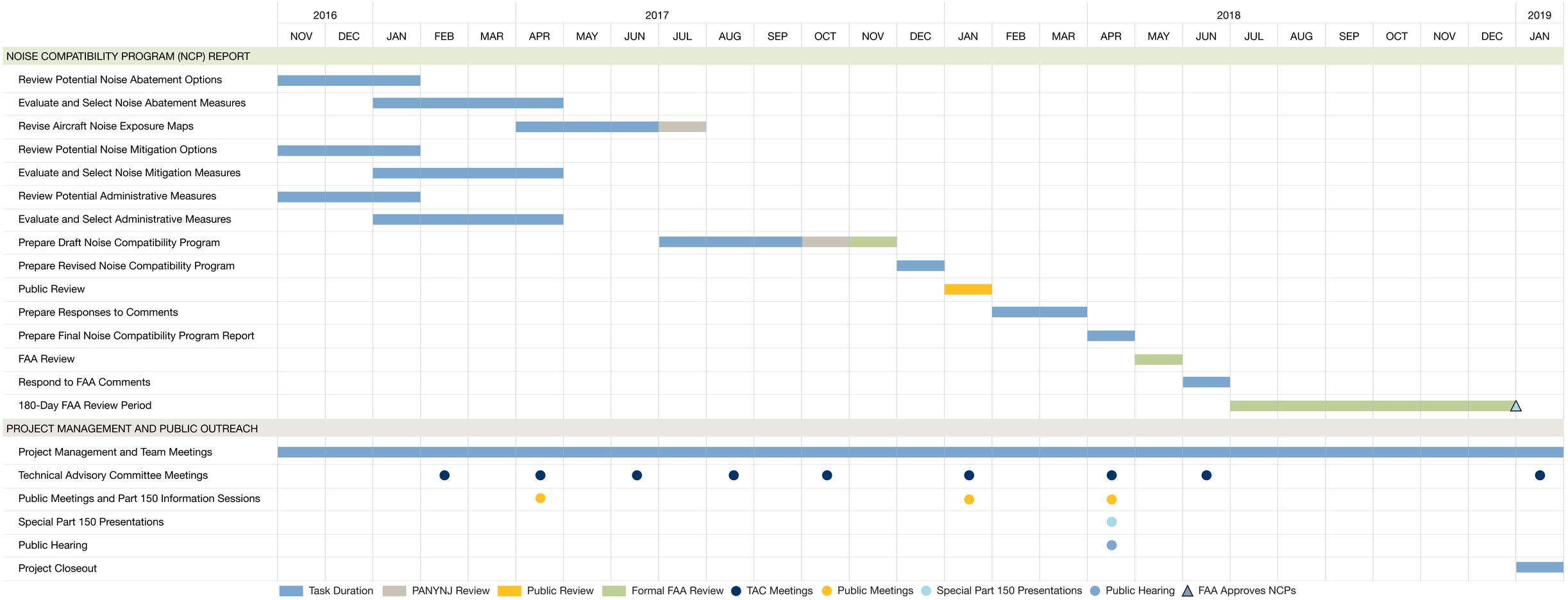


John F. Kennedy International Airport
14 CFR Part 150 Study

Project Schedule

Project Schedule – Noise Compatibility Program Report
14 CFR Part 150 Study for John F. Kennedy International Airport
Updated: February 25, 2016

For Planning Purposes Only



STATION 4

Noise Metrics Overview

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

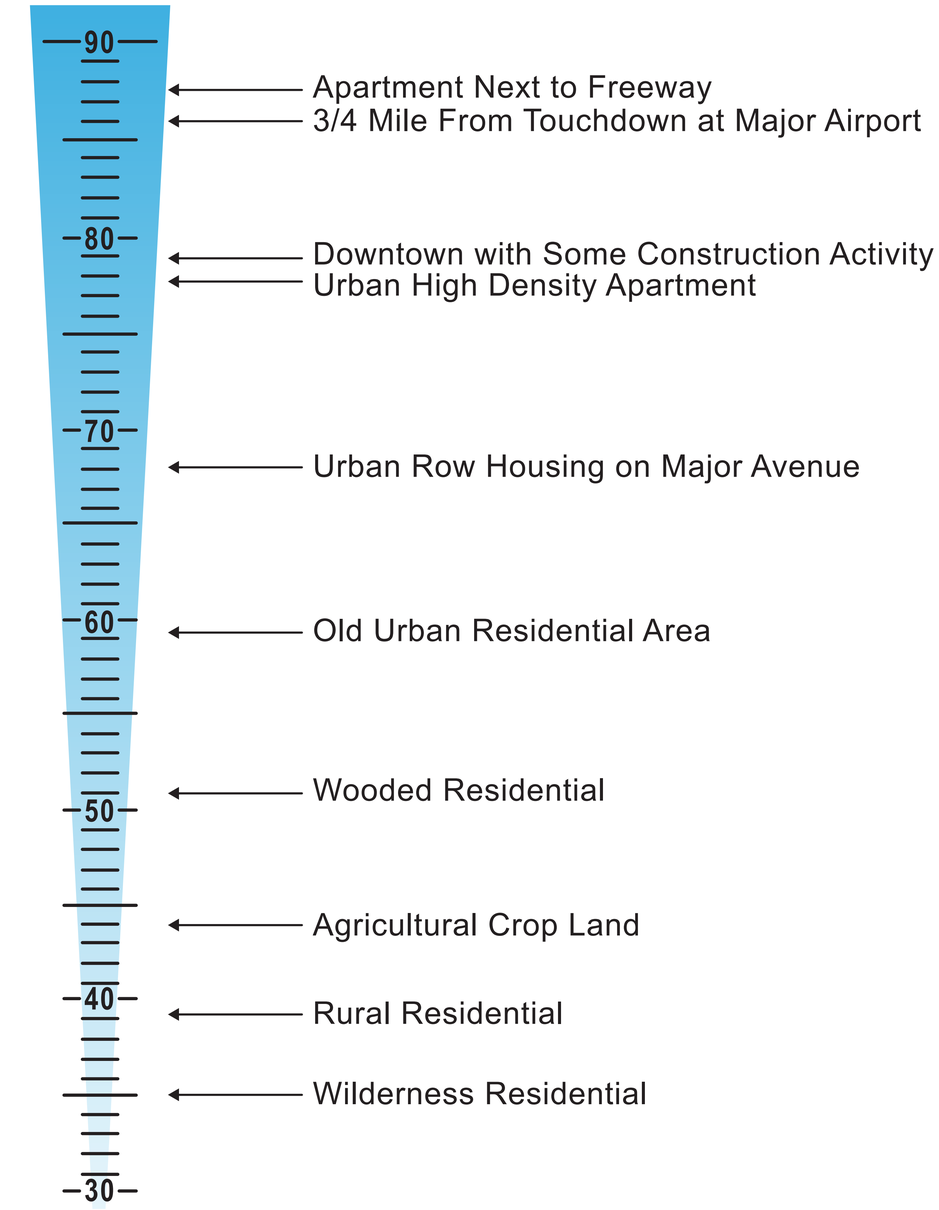
- **Average Annual Day aircraft noise exposure is calculated over a broad area and then depicted using contour lines of equal noise levels**

John F. Kennedy International Airport
14 CFR Part 150 Study

The Decibel Scale

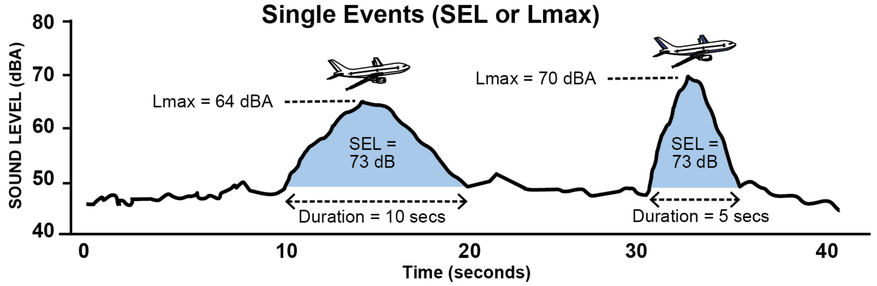
NORMAL NUMBERS	DECIBELS	COMMON SOUNDS
100,000,000,000,000	140	Jet Engine at 150 - 300 Feet
10,000,000,000,000	130	Threshold of Pain
1,000,000,000,000	120	Night Club
100,000,000,000	110	
10,000,000,000	100	Pneumatic Hammer at 6 Feet
1,000,000,000	90	
100,000,000	80	Vacuum Cleaner
10,000,000	70	
1,000,000	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	

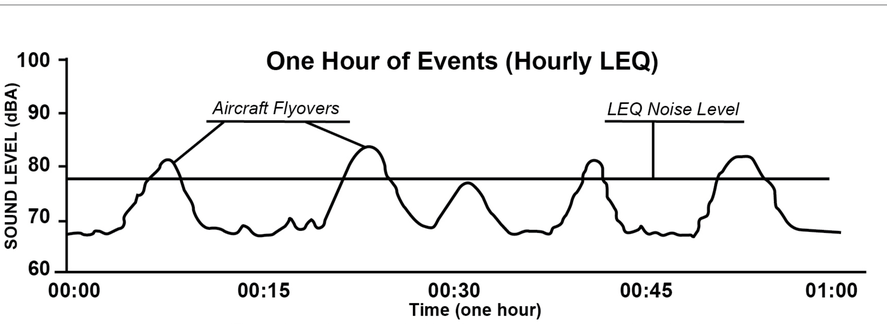
Sample DNL Values

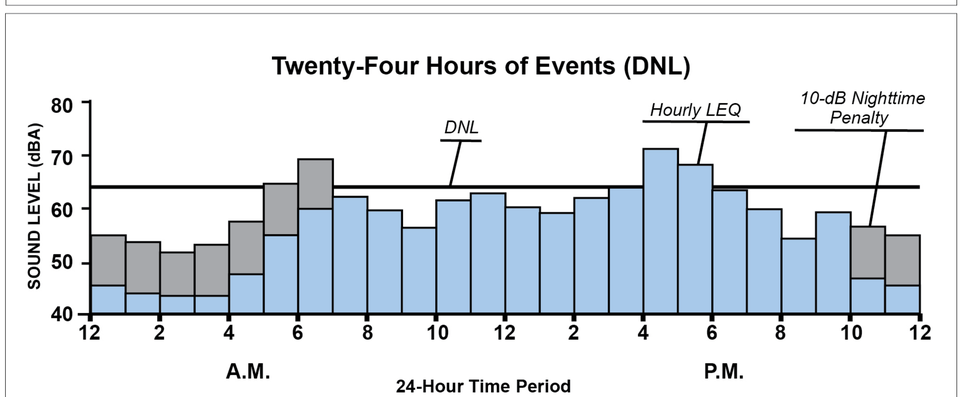


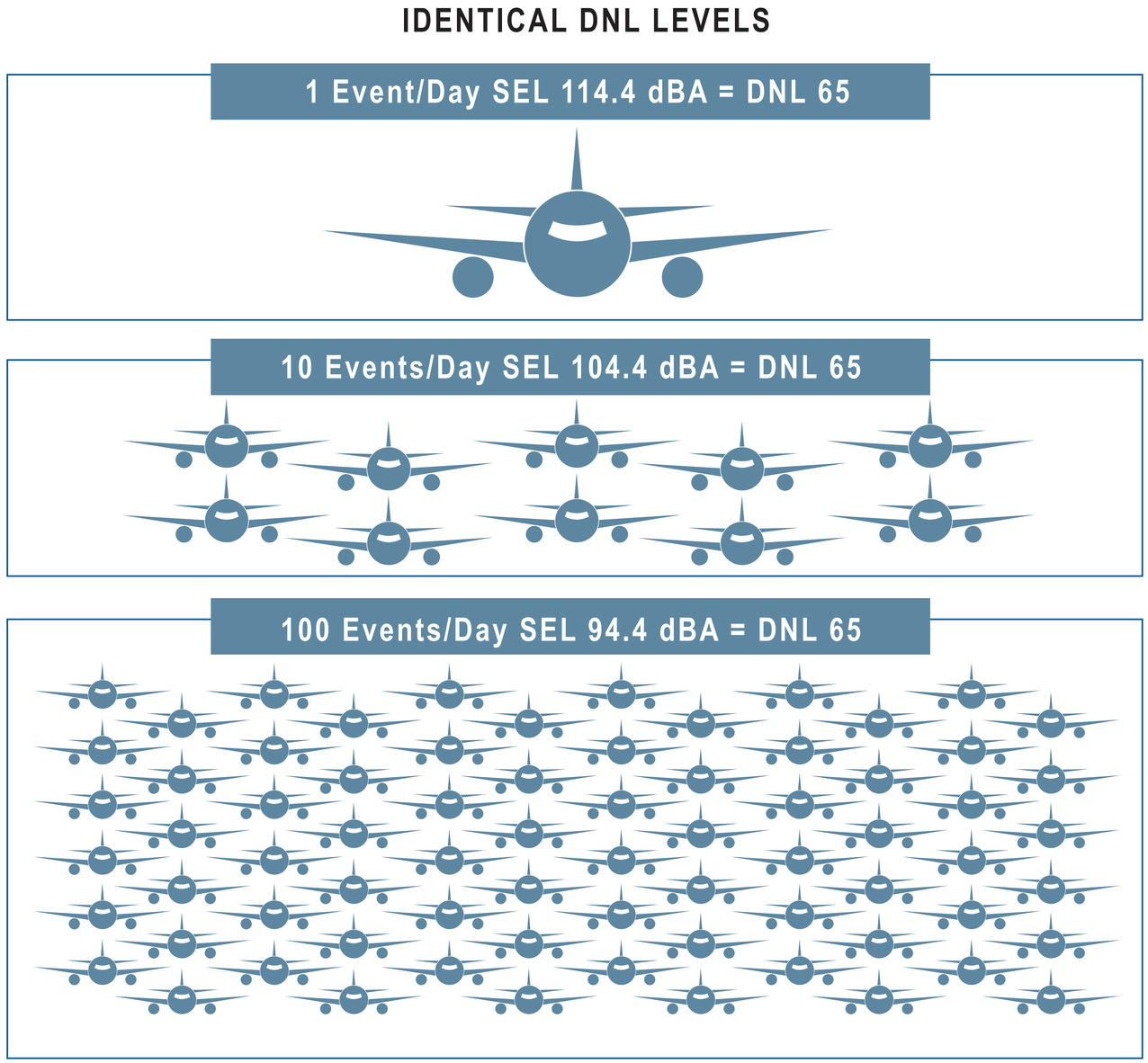
John F. Kennedy International Airport
14 CFR Part 150 Study

Aircraft Noise Levels





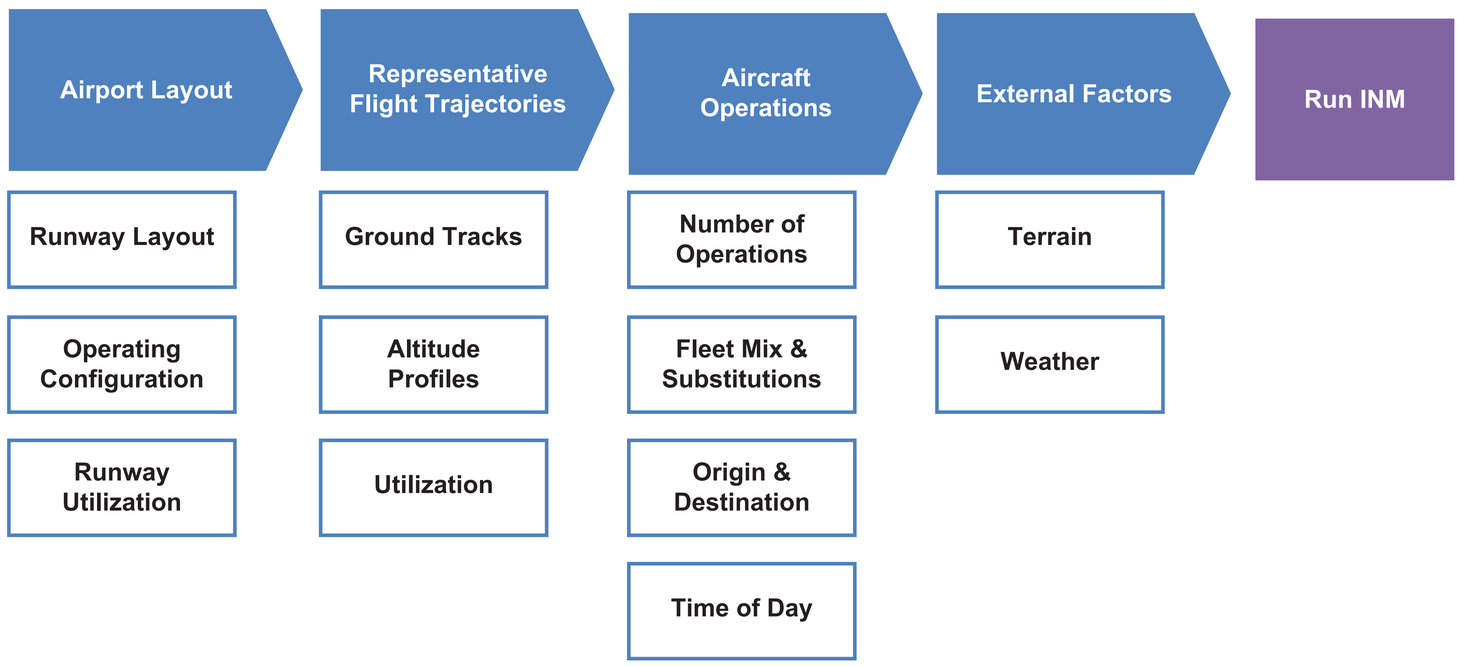




The Integrated Noise Model (INM)

- 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 (Board 1 of 2)

Aircraft Category	Aircraft Type	INM Aircraft Type	2016 Annual Operations	2021 Annual Operations
Widebody	Airbus A330-200	A330-301 (sub for A332)	5,935	6,393
		A330-343 (sub for A332)	2,044	2,202
	Airbus A330-300	A330-301	6,752	7,273
		A330-343	6,000	6,463
	Airbus A330-800neo	A330-343 (sub for A330-800neo)	-	1,638
	Airbus A330-900neo	A330-343 (sub for A330-900neo)	-	2,048
	Airbus A340-200	A340-211	76	-
	Airbus A340-300	A340-211 (sub for A343)	414	287
	Airbus A340-500	A340-642 (sub for A345)	1,143	791
	Airbus A340-600	A340-642	2,364	1,733
	Airbus A350-900	777200 (sub for A350-900)	-	2,586
	Airbus A350-1000	777200 (sub for A350-900)	-	1,679
	Airbus A380-800	A380-841	1,701	2,049
		A380-861	4,927	5,933
	Boeing 747-400	74720B (sub for B744)	5,641	4,792
		747400	2,506	2,128
	Boeing 747-800	7478	631	697
	Boeing 767-200	767CF6	352	-
		767JT9	49	-

NOTE: One operation is equivalent to one arrival/landing or one departure/takeoff.
SOURCES: "Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, July 16, 2015; "Additional Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, February 11, 2016; "Additional Proposed INM 7.0d Aircraft Type Substitution," Environmental Science Associates, April 5, 2016; John F. Kennedy International Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033 (JFK NEM Forecast), April 2016.

2016 and 2021 Aircraft Operations Levels

Widebody (Board 2 of 2); Regional Jet

Aircraft Category	Aircraft Type	INM Aircraft Type	2016 Annual Operations	2021 Annual Operations
Widebody	Boeing 767-300ER	767300 (sub for B763ER)	5,561	4,082
		767400 (sub for B763ER)	12,999	9,544
	Boeing 767-400	767400	3,787	3,638
	Boeing 777-200	777200	963	1,032
		777300 (sub for B772)	343	368
	Boeing 777-200ER	777200 (sub for B772ER)	7,930	8,500
	Boeing 777-300	777300	220	220
		7773ER (sub for B773)	2,127	2,127
	Boeing 777-300ER	7773ER	16,552	18,814
	Boeing 777X	7773ER (sub for 777X)	-	1,752
	Boeing 787-8	7878R	6,111	6,747
	Boeing 787-9	7878R (sub for 787-9)	611	1,228
	Boeing 787-10	7878R (sub for 787-10)	-	1,931
		Widebody Total	97,739	108,675
Regional Jet	Canadair Regional Jet 200	CL601	1,237	-
	Canadair Regional Jet 700	CRJ9-ER (sub for CRJ7)	7,791	7,113
	Canadair Regional Jet 900	CRJ9-ER	29,923	35,524
	Embraer 175	EMB175	4,139	4,985
	Embraer RJ140	EMB145	3,086	-
	Embraer RJ145	EMB14L	21,210	13,179
		Regional Jet Total	67,386	60,801

NOTE: One operation is equivalent to one arrival/landing or one departure/takeoff.
SOURCES: "Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, July 16, 2015; "Additional Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, February 11, 2016; "Additional Proposed INM 7.0d Aircraft Type Substitution," Environmental Science Associates, April 5, 2016; John F. Kennedy International Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033 (JFK NEM Forecast), April 2016.

2016 and 2021 Aircraft Operations Levels

Narrowbody

Aircraft Category	Aircraft Type	INM Aircraft Type	2016 Annual Operations	2021 Annual Operations
Narrowbody	Airbus A318	A319-131 (sub for A318)	994	994
	Airbus A319	A319-131	1,226	1,042
		A320-211 (sub for A319)	5,659	4,810
	Airbus A320	A320-211	9,680	9,019
		A320-232	68,494	63,814
	Airbus A320neo	A320-232 (sub for A320neo)	-	3,405
	Airbus A321	A321-232	37,351	37,012
	Airbus A321neo	A321-232 (sub for A321neo)	-	4,505
	Boeing 717-200	717200	9,194	9,194
	Boeing 737-300	737300	362	-
	Boeing 737-600	737700 (sub for B736)	22	-
	Boeing 737-700	737700	593	593
	Boeing 737-800	737800	54,983	53,122
	Boeing 737-900	737800 (sub for B739)	2,609	7,261
	Boeing 737 MAX 7	737700 (sub for 737 MAX 7)	-	2,158
	Boeing 737 MAX 8	737800 (sub for 737 MAX 8)	-	3,022
	Boeing 737 MAX 9	737800 (sub for 737 MAX 9)	-	2,015
	Boeing 757-200	757PW	21,973	18,845
		757RR	9,301	7,977
	Boeing 757-300	757300	947	695
	Boeing/Douglas MD-88	MD83 (sub for MD88)	8,802	2,543
	Embraer 190	EMB190	32,200	32,200
		Narrowbody Total	264,390	264,226

NOTE: One operation is equivalent to one arrival/landing or one departure/takeoff.
SOURCES: "Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, July 16, 2015; "Additional Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, February 11, 2016; "Additional Proposed INM 7.0d Aircraft Type Substitution," Environmental Science Associates, April 5, 2016; John F. Kennedy International Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033 (JFK NEM Forecast), April 2016.

2016 and 2021 Aircraft Operations Levels

General Aviation (Board 1 of 3)

Aircraft Category	Aircraft Type	INM Aircraft Type	2016 Annual Operations	2021 Annual Operations
General Aviation	Business Jet	CIT3	31	32
		CL600	436	448
		CL601	547	562
		CNA500	86	89
		CNA510	23	23
		CNA525C	294	302
		CNA55B	229	235
		CNA560E	268	275
		CNA560U	95	97
		CNA560XL	680	699
		CNA680	266	274
		CNA750	290	298
		ECLIPSE500	17	17
		FAL20	34	35
		GIV	449	461
		GV	360	370
		IA1125	43	44
		LEAR35	1,305	1,342
		MU3001	387	398

NOTE: One operation is equivalent to one arrival/landing or one departure/takeoff.
SOURCES: "Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, July 16, 2015; "Additional Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, February 11, 2016; "Additional Proposed INM 7.0d Aircraft Type Substitution," Environmental Science Associates, April 5, 2016; John F. Kennedy International Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033 (JFK NEM Forecast), April 2016.

2016 and 2021 Aircraft Operations Levels

General Aviation (Board 2 of 3)

Aircraft Category	Aircraft Type	INM Aircraft Type	2016 Annual Operations	2021 Annual Operations
General Aviation	Helicopter	A109	81	84
		B206B3	752	773
		B206L	60	62
		B407	271	279
		B429	41	42
		B430	141	145
		MD600N	26	27
		R44	64	66
		S76	585	601
		SA330J	82	85
		SA350D	275	283
		SA355F	170	175
		SA365N	44	45
	Turboprop	1900D	5	4
		CNA208	141	136
		CNA441	221	213
		DHC830	20	19
		DO228	187	181
		DO328	26	25
		SD330	9	9

NOTE: One operation is equivalent to one arrival/landing or one departure/takeoff.
SOURCES: "Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, July 16, 2015; "Additional Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, February 11, 2016; "Additional Proposed INM 7.0d Aircraft Type Substitution," Environmental Science Associates, April 5, 2016; John F. Kennedy International Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033 (JFK NEM Forecast), April 2016.

2016 and 2021 Aircraft Operations Levels

General Aviation (Board 3 of 3)

Aircraft Category	Aircraft Type	INM Aircraft Type	2016 Annual Operations	2021 Annual Operations
General Aviation	Piston	BEC58P	211	184
		CNA172	49	43
		CNA182	15	13
		CNA206	19	16
		GASEPV	188	164
		PA28	30	26
		PA31	41	36
	Narrowbody	737700	7	7
		737800	17	17
		A319-131	16	16
		A320-211	12	12
		A320-232	59	60
		A321-232	23	24
	Widebody	7878R	3	3
		A310-304	6	6
		A330-301	10	10
		A330-343	27	28
		A340-211	15	16
		General Aviation Total	9,789	9,936

NOTE: One operation is equivalent to one arrival/landing or one departure/takeoff.
SOURCES: "Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, July 16, 2015; "Additional Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, February 11, 2016; "Additional Proposed INM 7.0d Aircraft Type Substitution," Environmental Science Associates, April 5, 2016; John F. Kennedy International Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033 (JFK NEM Forecast), April 2016.

2016 and 2021 Aircraft Operations Levels

Cargo (Board 1 of 2)

Aircraft Category	Aircraft Type	INM Aircraft Type	2016 Annual Operations	2021 Annual Operations
Cargo Widebody	Boeing 767-400	767400	1,630	2,231
	Douglas DC10-10	DC1010	953	270
	Boeing 747-8	7478	1,382	2,448
	Boeing 747-200	747200	91	108
		74720B	986	1,177
	McDonnell Douglas MD11	MD11GE	905	1,387
		MD11PW	277	425
	Boeing 777-300ER	7773ER	1,153	2,218
	Boeing 767-200	767CF6	562	541
	Airbus A300-200	A300B4-203	429	663
	Boeing 747-400	747400	467	878
	Boeing 767-300	767300	200	149
	Airbus A300-600	A300-622R	248	419
	Douglas DC10-30	DC1030	76	41
	Boeing 777-200	777200	172	568
		Cargo Widebody Total	9,531	13,523
Cargo Narrowbody	Boeing 757-200	757PW	1,475	1,568
		757RR	359	381
	Boeing 737-400	737400	50	58
	Boeing 737-300	737300	23	24
	Boeing 727-200	727EM2	4	-
	McDonnell Douglas MD80/83	MD83	19	54
		Cargo Narrowbody Total	1,930	2,085

NOTE: One operation is equivalent to one arrival/landing or one departure/takeoff.
SOURCES: "Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, July 16, 2015; "Additional Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, February 11, 2016; "Additional Proposed INM 7.0d Aircraft Type Substitution," Environmental Science Associates, April 5, 2016; John F. Kennedy International Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033 (JFK NEM Forecast), April 2016.

2016 and 2021 Aircraft Operations Levels

Cargo (Board 2 of 2)

Aircraft Category	Aircraft Type	INM Aircraft Type	2016 Annual Operations	2021 Annual Operations
Cargo Turboprop	Beech 1900	1900D	508	509
	Cessna C208	CNA208	160	174
	ATR 72	DO328 (sub for ATR72)	51	62
	Shorts SD330	SD330	4	-
	Cessna C441	CNA441	4	-
		Cargo Turboprop Total	727	745

NOTE: One operation is equivalent to one arrival/landing or one departure/takeoff.
SOURCES: "Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, July 16, 2015; "Additional Proposed INM 7.0d Aircraft Type Substitutions," Environmental Science Associates, February 11, 2016; "Additional Proposed INM 7.0d Aircraft Type Substitution," Environmental Science Associates, April 5, 2016; John F. Kennedy International Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033 (JFK NEM Forecast), April 2016.

Operations Percentages by Day and Night

Study Year	Arrivals		Departures	
	Day	Night	Day	Night
2016	79.66%	20.34%	83.26%	16.74%
2021	80.26%	19.74%	83.53%	16.47%

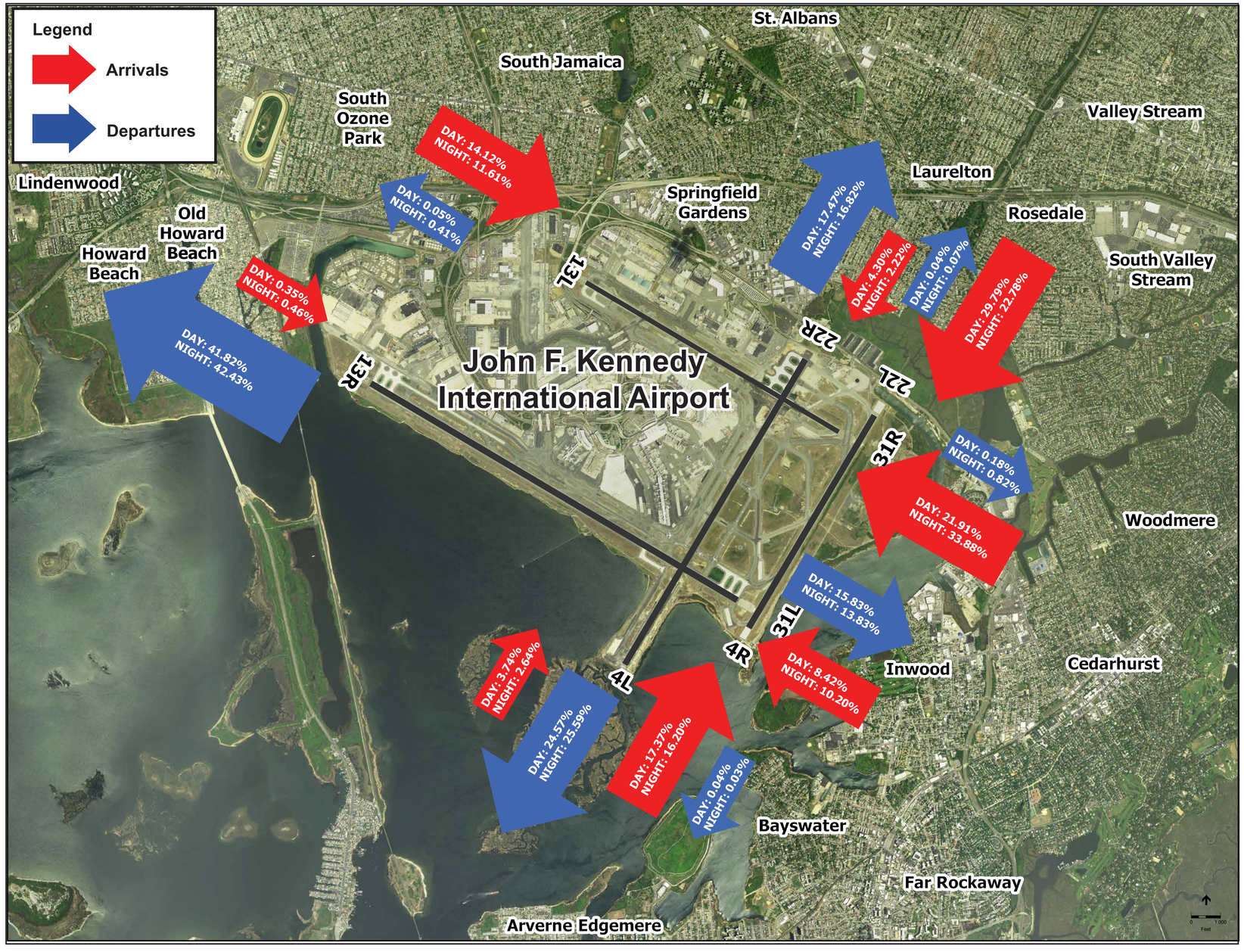
NOTE: One operation is equivalent to one arrival/landing or one departure/takeoff. Values may not equal 100 percent due to rounding.
SOURCE: John F. Kennedy International Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033 (JFK NEM Forecast), April 2016; Environmental Science Associates, 2016.

Total Annual Operations

2016 Annual Operations	2021 Annual Operations
451,492	459,991

John F. Kennedy International Airport
14 CFR Part 150 Study

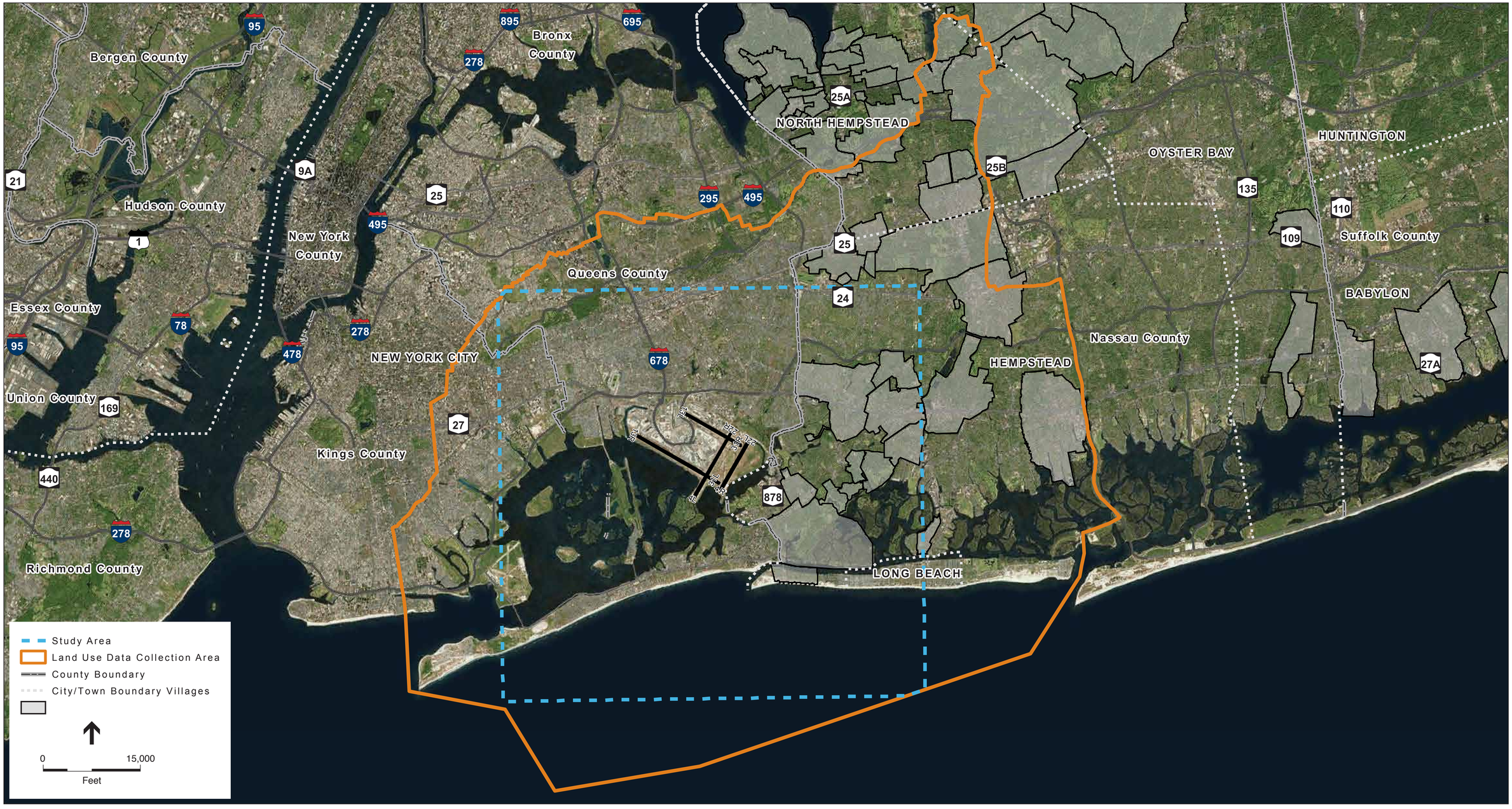
2016 and 2021 INM Runway Use



NOTE: Does not include helicopter operations. Values may not add to 100% due to rounding. Runway utilization values represent calendar year 2014. Day: 7:00 A.M. to 10:00 P.M. Night: 10:00 P.M. to 7:00 A.M. SOURCE: Environmental Science Associates, 2016; Port Authority of New York and New Jersey, ANOMS data for calendar year 2014.

John F. Kennedy International Airport
14 CFR Part 150 Study

Study Area



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

ESA Study Team

THE PORT AUTHORITY OF NY & NJ

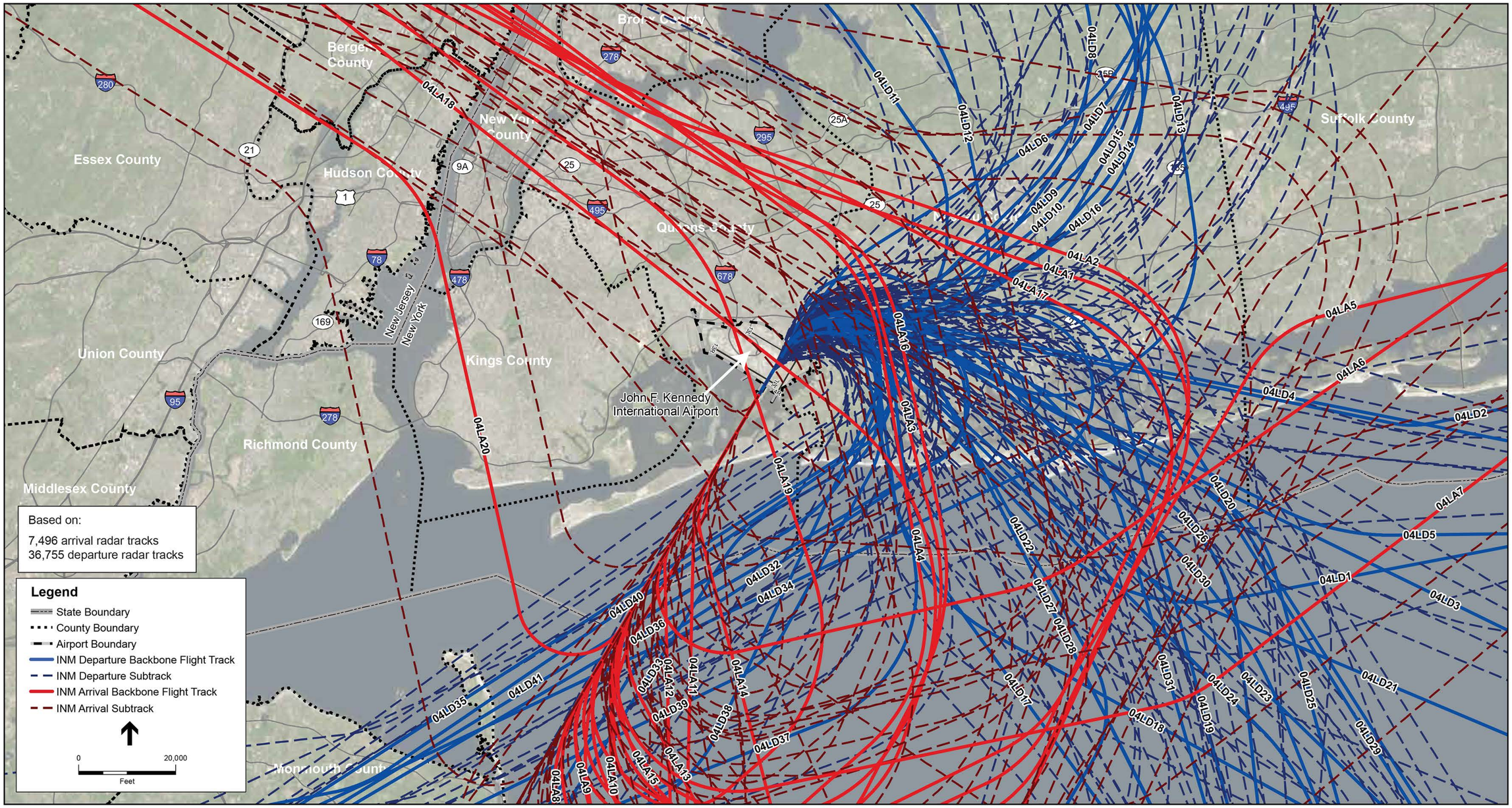
Development of INM Flight Tracks

- **Calendar year 2014 radar flight track and flight identification data were obtained from the Port Authority's ANOMS system**
  - Arrival tracks – 211,959
  - Departure tracks – 212,276

- **The radar data was analyzed to determine flight corridors of air traffic to and from JFK; 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 JFK 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 JFK in comparison with INM standard data

John F. Kennedy International Airport
14 CFR Part 150 Study

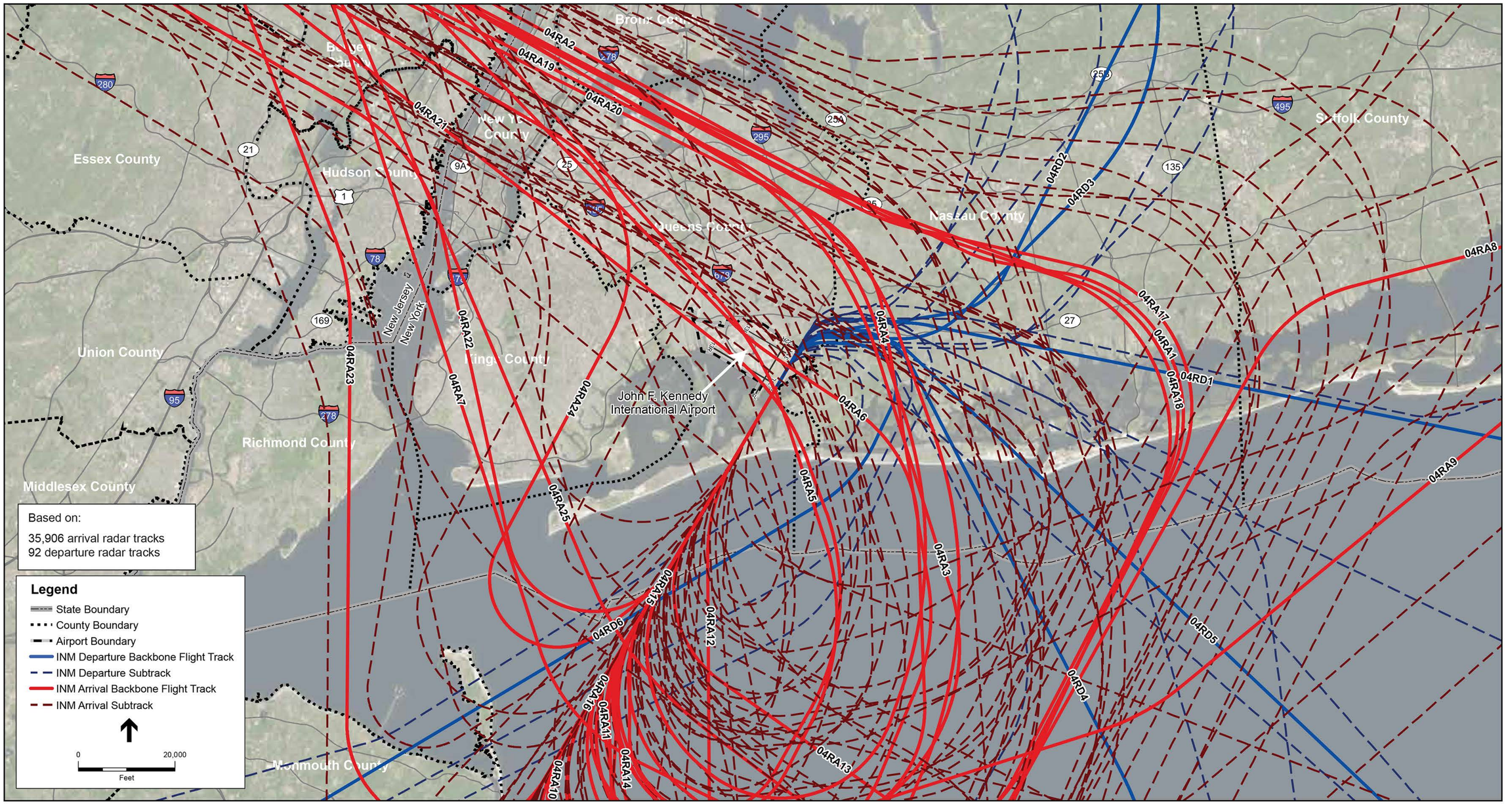
2016 and 2021 INM Flight Tracks: Runway 4L



SOURCE: Environmental Science Associates, 2016; INM 7.0d; World Imagery (aerial).
NOTE: INM - Integrated Noise Model.

John F. Kennedy International Airport
14 CFR Part 150 Study

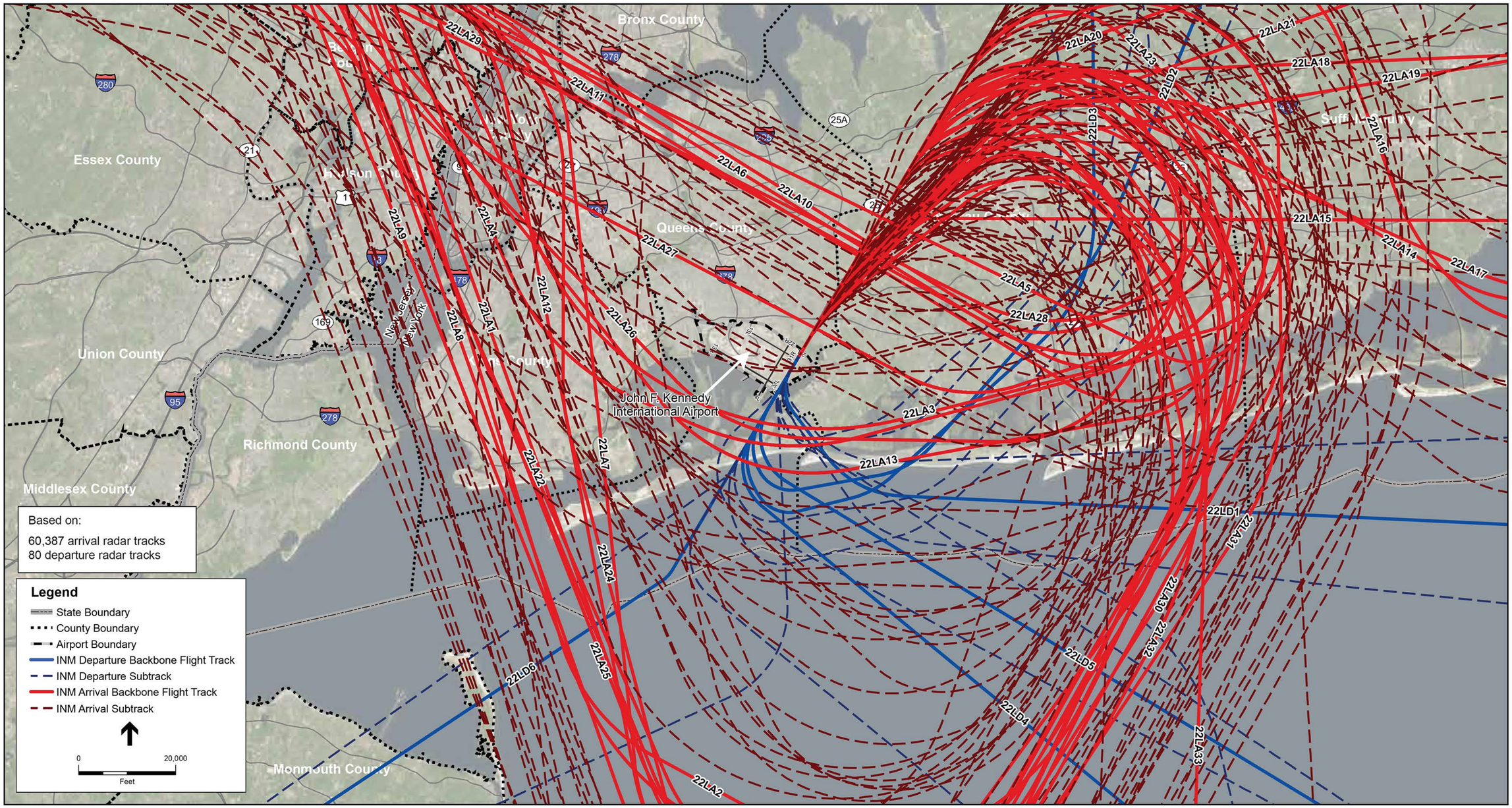
2016 and 2021 INM Flight Tracks: Runway 4R



SOURCE: Environmental Science Associates, 2016; INM 7.0d; World Imagery (aerial).
NOTE: INM - Integrated Noise Model.

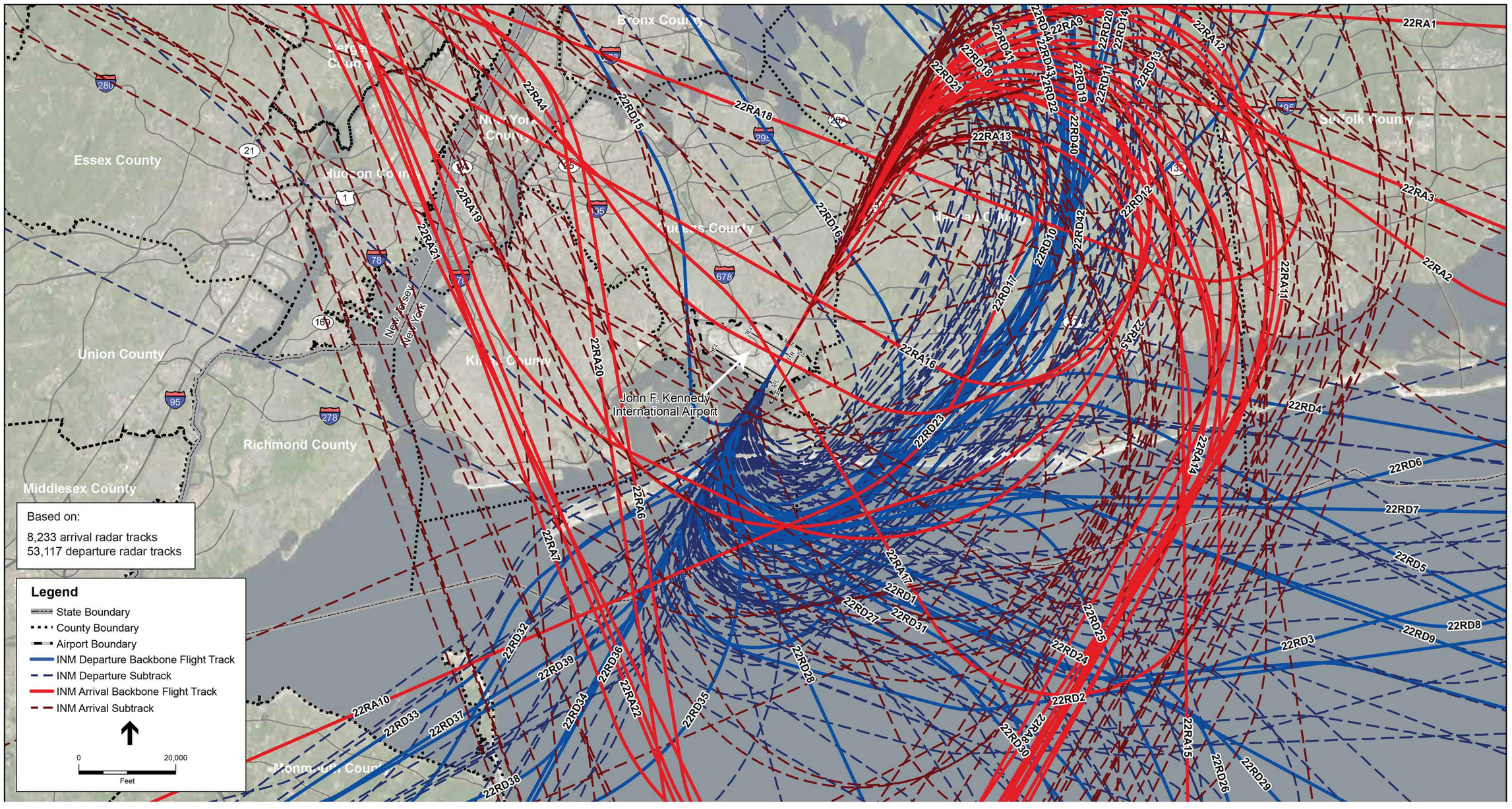
John F. Kennedy International Airport
14 CFR Part 150 Study

2016 and 2021 INM Flight Tracks: Runway 22L



SOURCE: Environmental Science Associates, 2016; INM 7.0d; World Imagery (aerial).
NOTE: INM - Integrated Noise Model.

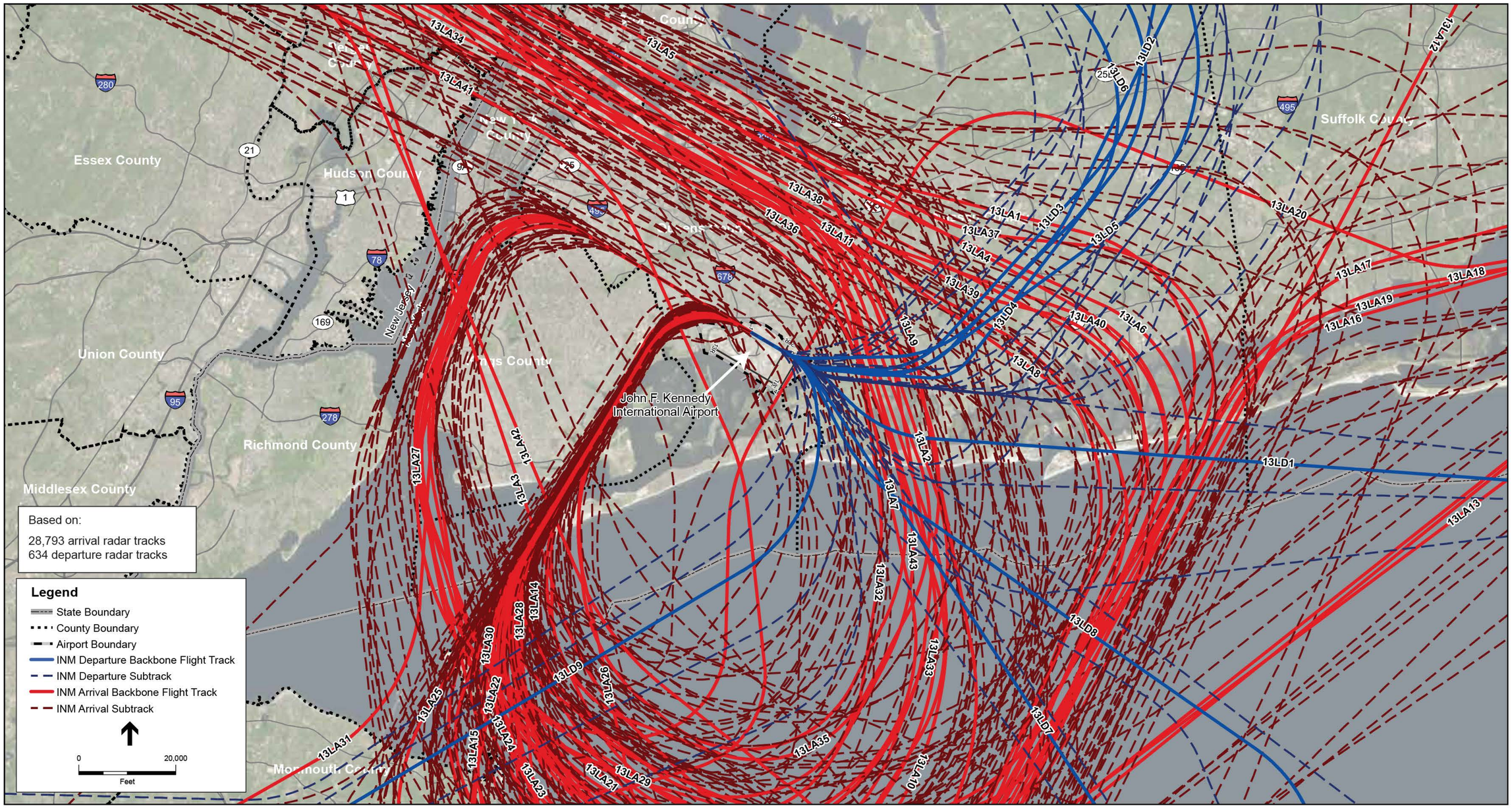
2016 and 2021 INM Flight Tracks: Runway 22R



SOURCE: Environmental Science Associates, 2016; INM 7.0d; World Imagery (aerial).
NOTE: INM - Integrated Noise Model.

John F. Kennedy International Airport
14 CFR Part 150 Study

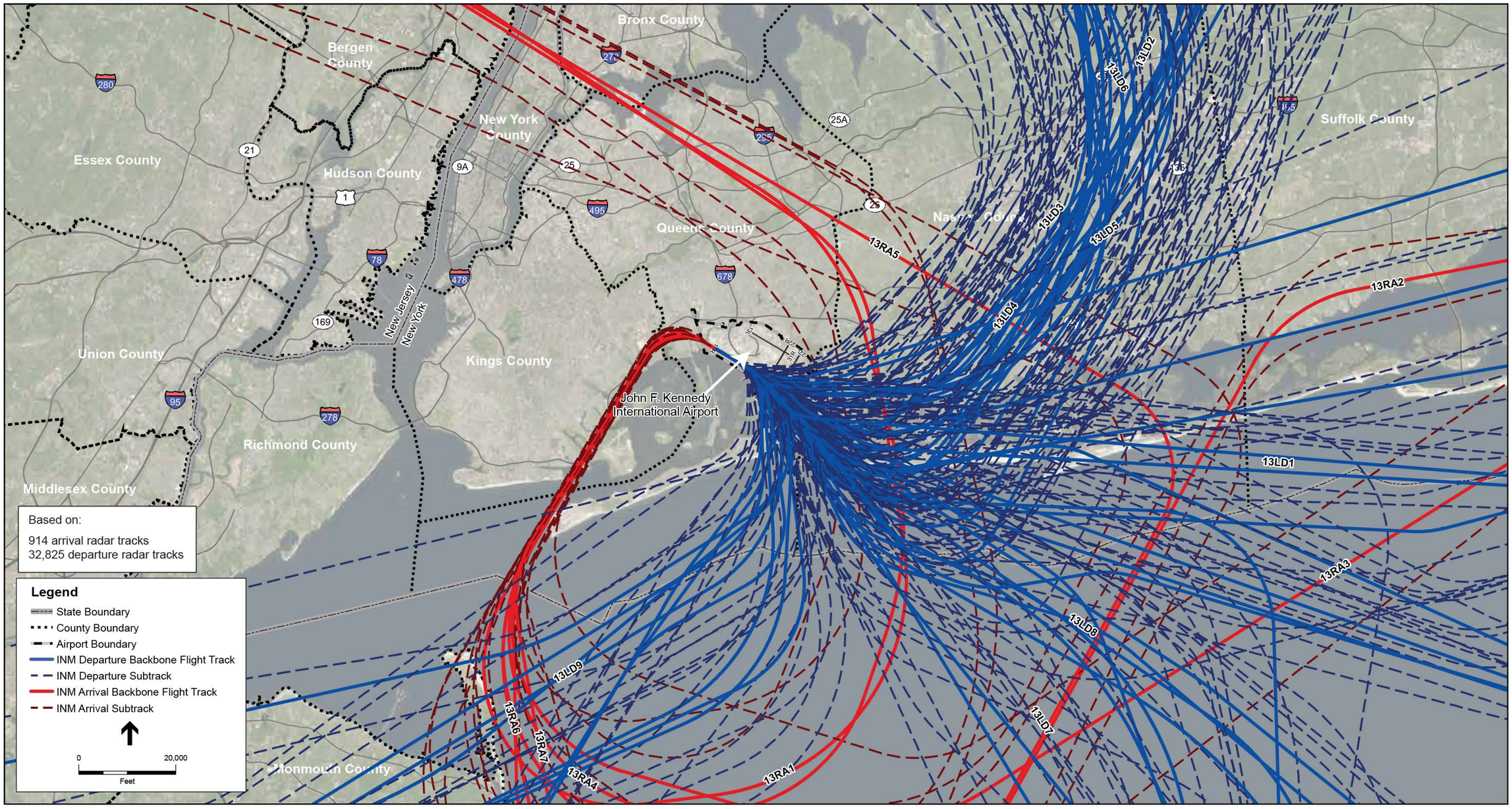
2016 and 2021 INM Flight Tracks: Runway 13L



SOURCE: Environmental Science Associates, 2016; INM 7.0d; World Imagery (aerial).
NOTE: INM - Integrated Noise Model.

John F. Kennedy International Airport
14 CFR Part 150 Study

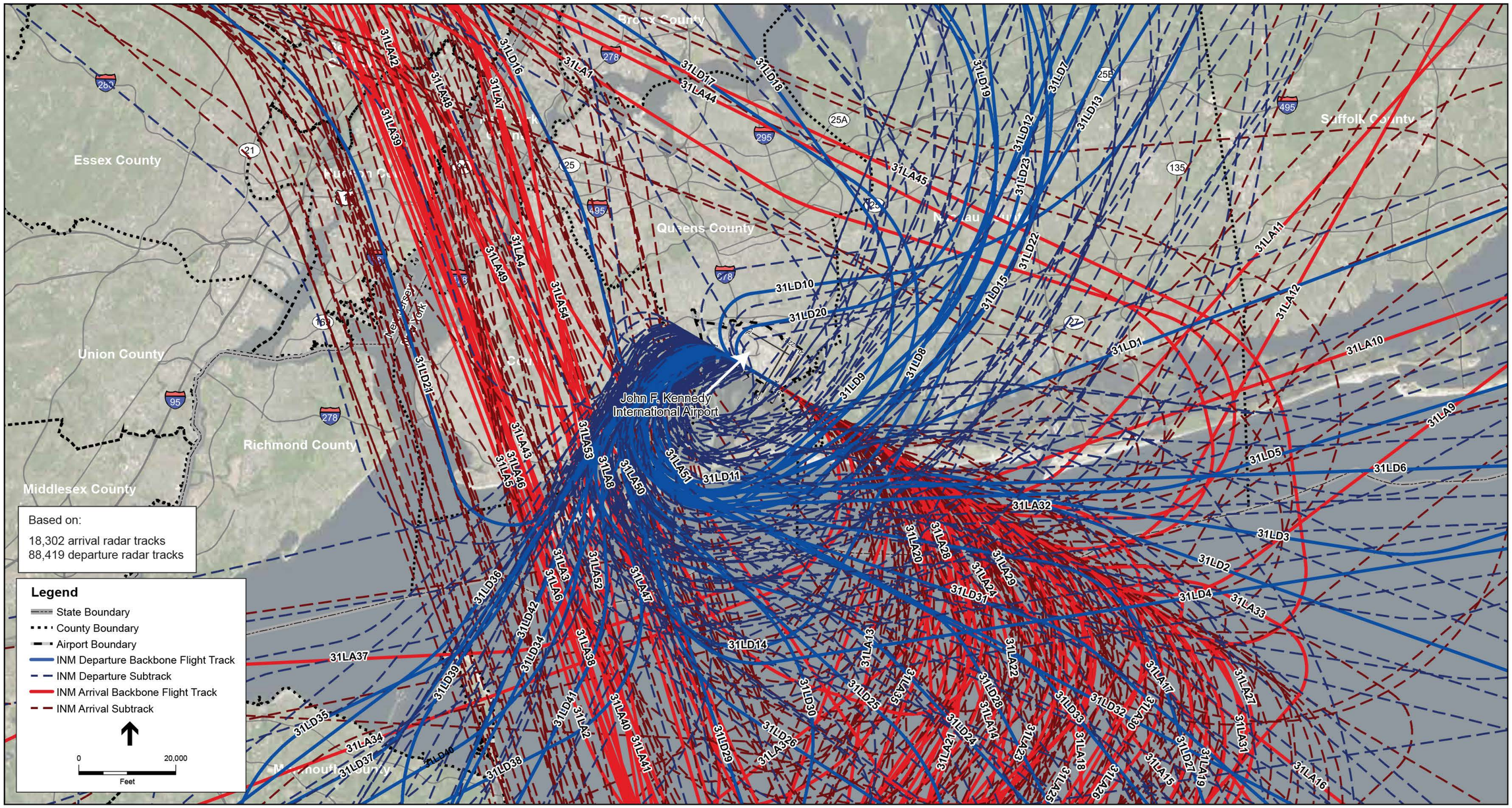
2016 and 2021 INM Flight Tracks: Runway 13R



SOURCE: Environmental Science Associates, 2016; INM 7.0d; World Imagery (aerial).
NOTE: INM - Integrated Noise Model.

John F. Kennedy International Airport
14 CFR Part 150 Study

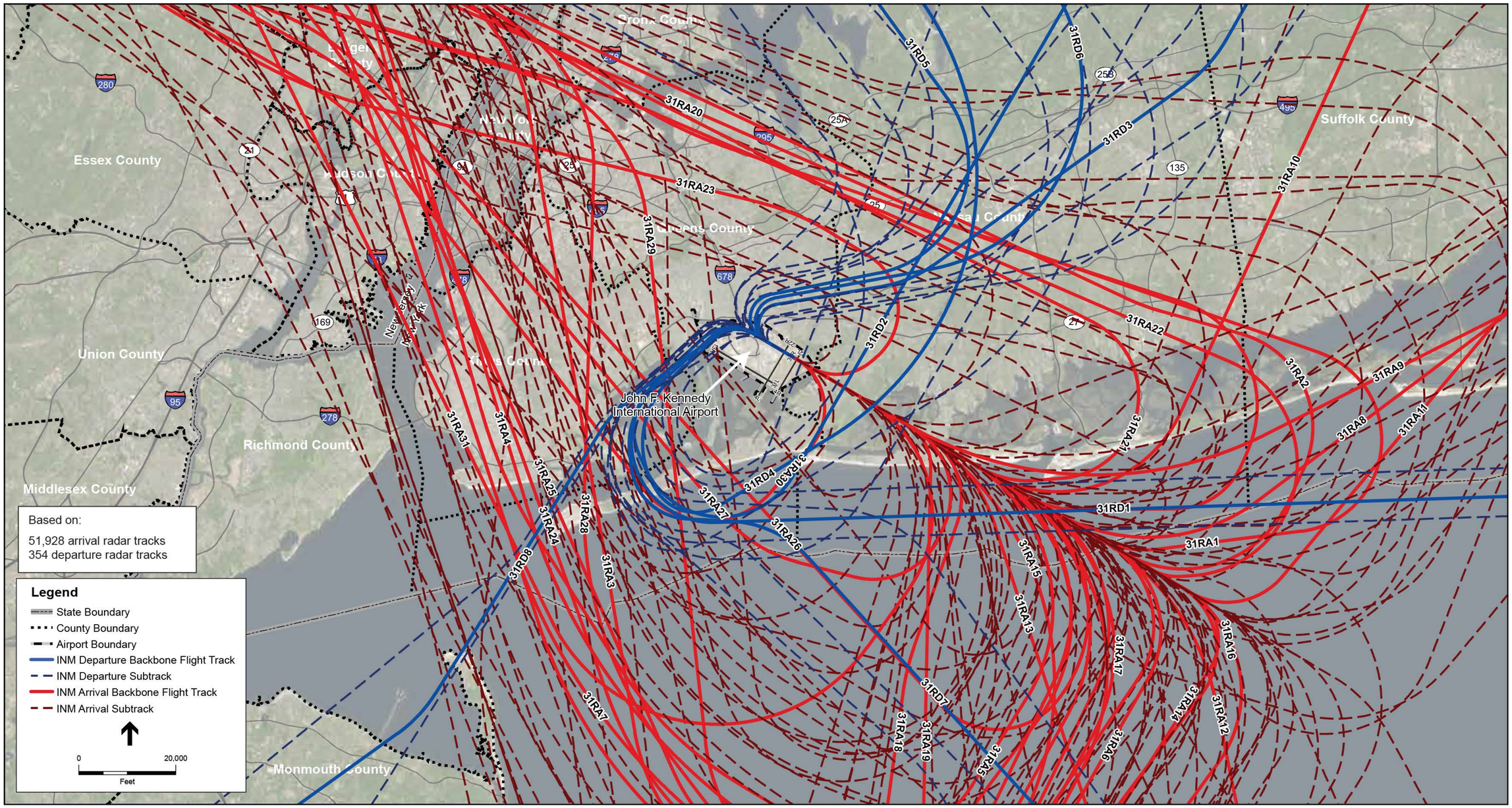
2016 and 2021 INM Flight Tracks: Runway 31L



SOURCE: Environmental Science Associates, 2016; INM 7.0d; World Imagery (aerial).
NOTE: INM - Integrated Noise Model.

John F. Kennedy International Airport
14 CFR Part 150 Study

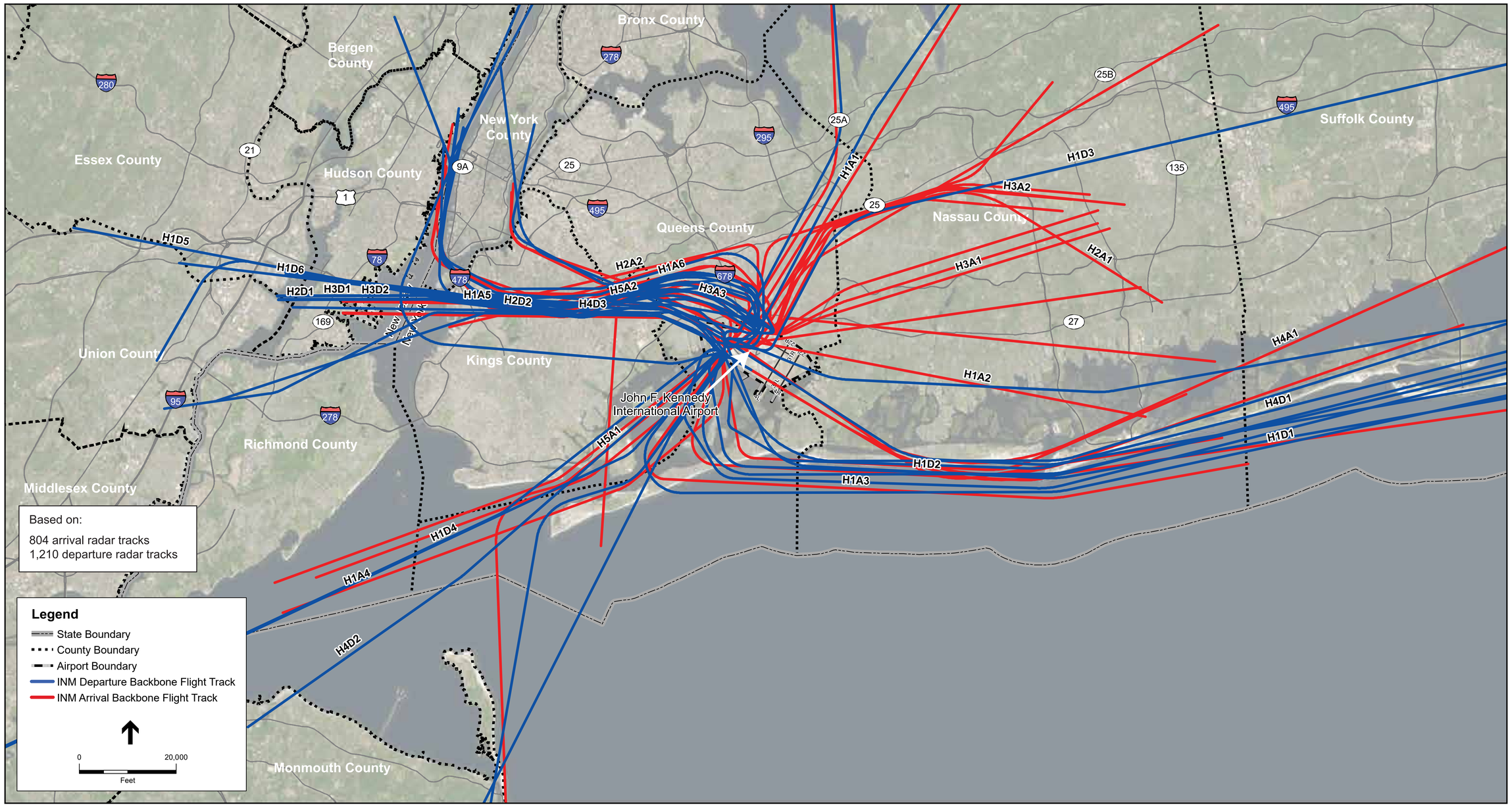
2016 and 2021 INM Flight Tracks: Runway 31R



SOURCE: Environmental Science Associates, 2016; INM 7.0d; World Imagery (aerial).
NOTE: INM - Integrated Noise Model.

John F. Kennedy International Airport
14 CFR Part 150 Study

2016 and 2021 INM Helicopter Flight Tracks



SOURCE: Environmental Science Associates, 2016; INM 7.0d; World Imagery (aerial).
NOTE: INM - Integrated Noise Model.

STATION 6

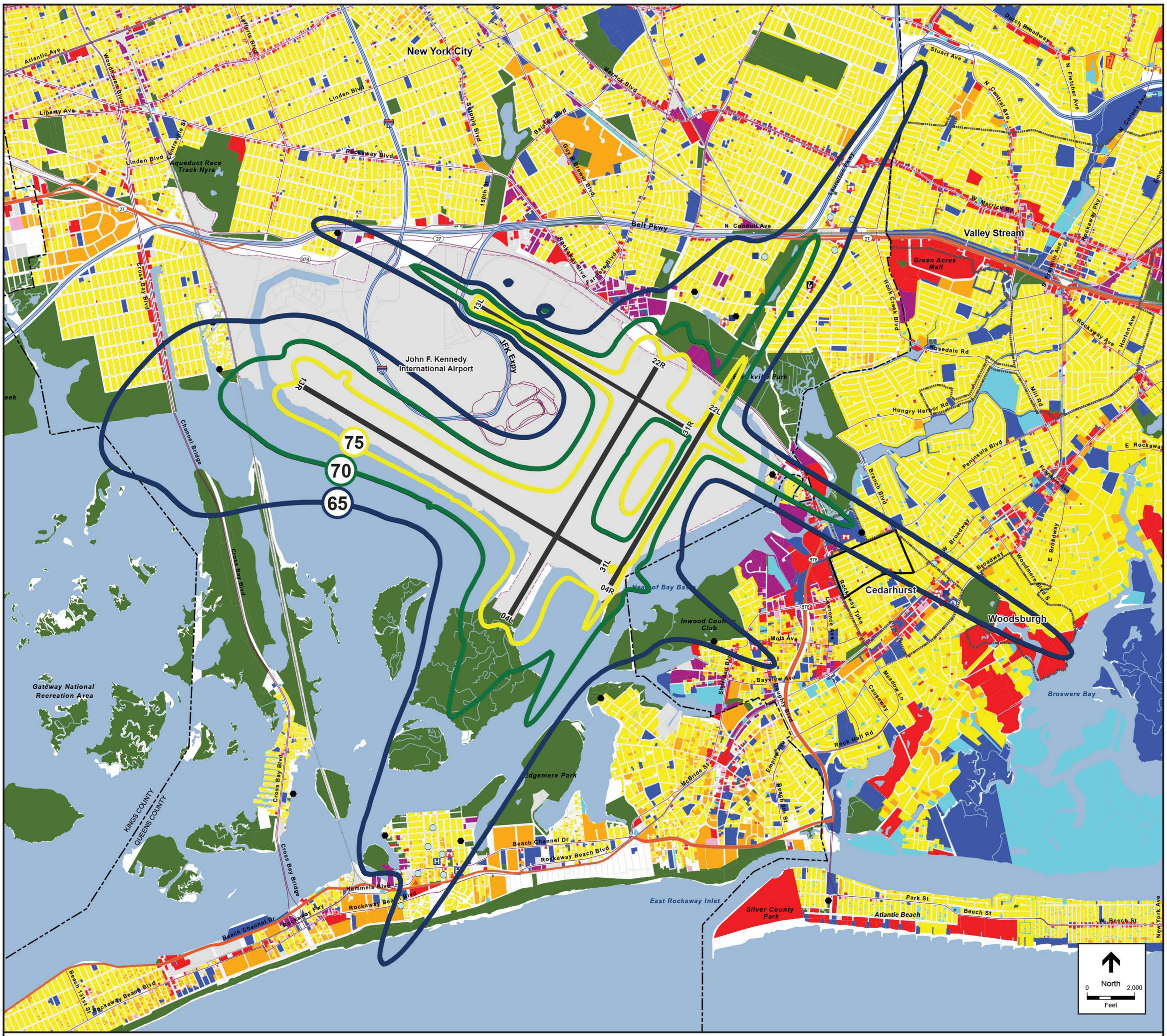
2016 and 2021 Noise Exposure Contours

John F. Kennedy International 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
- Major Highways
- Highways
- Major Roads
- Local Traffic
- County Boundary
- Village Boundary
- Library/Cultural Institution
- School
- School (Sound Insulated)
- Noise Monitor
- Day Care/Assisted Living
- Hospital
- Health Care (Residential)
- Place of Worship
- Historic Landmark
- Historic District
- **DNL Contours**
- DNL 65
- DNL 70
- DNL 75

Land Use

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

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.

NOTE: NYC Department of City Planning; Nassau County Planning Department; and planning departments of the Villages of Cedarhurst Woodsburgh, and Valley Stream are the sole land use agencies for the land within the 2016 DNL 65 contour.

NOTE: Eight schools within the DNL 65 dBA have been previously sound insulated.

Contour	Area (Square Miles)
	2016
65 - 70	8.5
70 - 75	3.0
75+	2.4

ESA Study Team

THE PORT AUTHORITY OF NY & NJ

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[2]	Day Care	Library
2016									
DNL 65-70	5,421.3	12,752	35,875	18	12	8	3	16	1
DNL 70-75	1,939.6	740	2,175	0	0	0	0	0	0
DNL 75+	1,553.8	0	0	0	0	0	0	0	0
Total	**8,914.7**	**13,492**	**38,050**	**18**	**12**	**8**	**3**	**16**	**1**

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] Eight of the twelve schools were included in the School Soundproofing Program, and are compatible with DNL 65 and higher.

[2] Five schools and places of worship are historic sites, but not included here to avoid double counting.

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	705.8	43.3	-	**749.1**	**10,764**	**32,145**
Multi-Family Residential	48.9	0.5	-	**49.4**	**2,644**	**5,672**
Mixed Residential and Commercial	5.8	0.5	-	**6.3**	**84**	**233**
Commercial and Office	110.6	7.3	-	**117.9**	-	-
Industrial and Manufacturing	64.5	23.5	0.1	**88.1**	-	-
Transportation, Right of Way, Parking and Utilities	621.0	59.9	43.6	**724.5**	-	-
Public Facilities and Institutions	69.3	4.0	-	**73.3**	-	-
Open Space, Cemeteries, and Outdoor Recreation	1,027.5	305.8	49.1	**1,382.4**	-	-
Vacant	63.2	18.6	7.8	**89.6**	-	-
Airport Property	937.7	879.8	1,373.6	**3,191.1**	-	-
Water (Off Airport Property)	1,767.0	596.4	79.6	2,443.0	-	-
Total	**5,421.3**	**1,939.6**	**1,553.8**	**8,914.7**	**13,492**	**38,050**

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

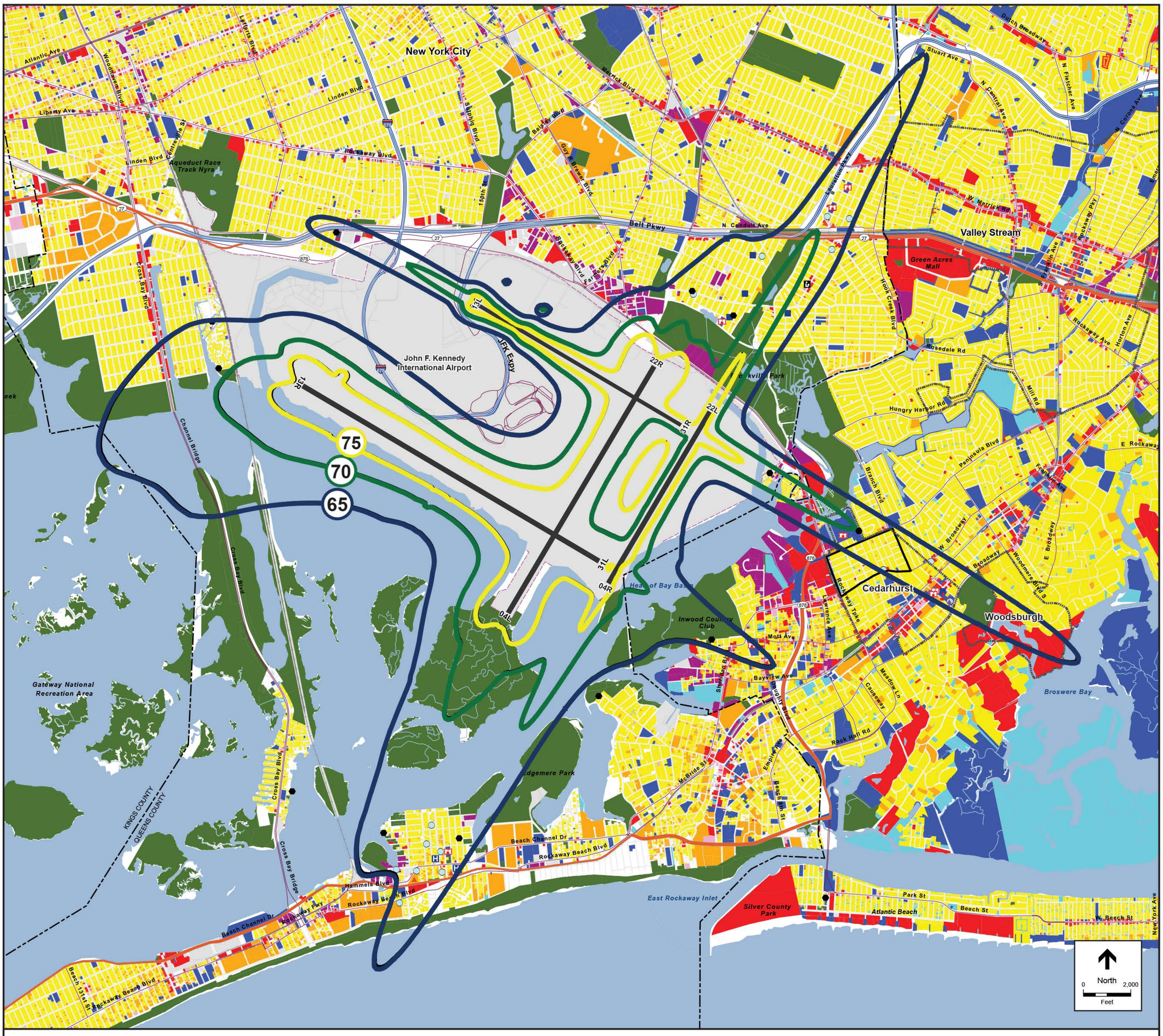
SOURCE: Planning Technology, Inc. and Environmental Science Associates, 2016.

John F. Kennedy International Airport
14 CFR Part 150 Study

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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
- Major Highways
- Highways
- Major Roads
- Local Traffic
- County Boundary
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- Library/Cultural Institution
- School
- School (Sound Insulated)
- Noise Monitor
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- **DNL Contours**
- DNL 65
- DNL 70
- DNL 75

Land Use

- Single and Two-Family Residential
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- Mixed Residential and Commercial
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- Industrial and Manufacturing
- Transportation, Right of Way, Parking and Utilities
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- Unclassified

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.

NOTE: NYC Department of City Planning; Nassau County Planning Department; and planning departments of the Villages of Cedarhurst Woodsburgh, and Valley Stream are the sole land use agencies for the land within the 2021 DNL 65 contour.

NOTE: Eight schools within the DNL 65 dBA have been previously sound insulated.

Contour	Area (Square Miles)
	2021
65 - 70	8.6
70 - 75	3.1
75+	2.5

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[1]	Hospitals and Residential Healthcare	Historic Resources[2]	Day Care	Library
2021									
DNL 65-70	5,503.3	13,059	36,812	19	12	8	3	17	1
DNL 70-75	1,994.2	766	2,262	0	0	0	0	0	0
DNL 75+	1,606.9	0	0	0	0	0	0	0	0
Total	**9,104.4**	**13,825**	**39,074**	**19**	**12**	**8**	**3**	**17**	**1**

NOTE: The household and population estimates provided above were developed using census block 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] Eight of the twelve schools were included in the School Soundproofing Program, and are compatible with DNL 65 and higher.

[2] Five schools and places of worship are historic sites, but not included here to avoid double counting.

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	733.2	44.9	-	**778.1**	**11,088**	**33,143**
Multi-Family Residential	51.0	0.5	-	**51.5**	**2,653**	**5,698**
Mixed Residential and Commercial	6.1	0.5	-	**6.6**	**84**	**233**
Commercial and Office	119.2	7.9	-	**127.1**	-	-
Industrial and Manufacturing	65.2	26.2	0.3	**91.7**	-	-
Transportation, Right of Way, Parking and Utilities	639.1	63.6	44.8	**747.5**	-	-
Public Facilities and Institutions	69.1	6.8	-	**75.9**	-	-
Open Space, Cemeteries, and Outdoor Recreation	1,030.8	325.2	52.4	**1,408.4**	-	-
Vacant	64.5	18.9	8.6	**92.0**	-	-
Airport Property	944.9	884.3	1,408.9	**3,238.1**	-	-
Water (Off Airport Property)	1,780.2	615.4	91.9	**2,487.5**	-	-
Total	**5,503.3**	**1,994.2**	**1,606.9**	**9,104.4**	**13,825**	**39,074**

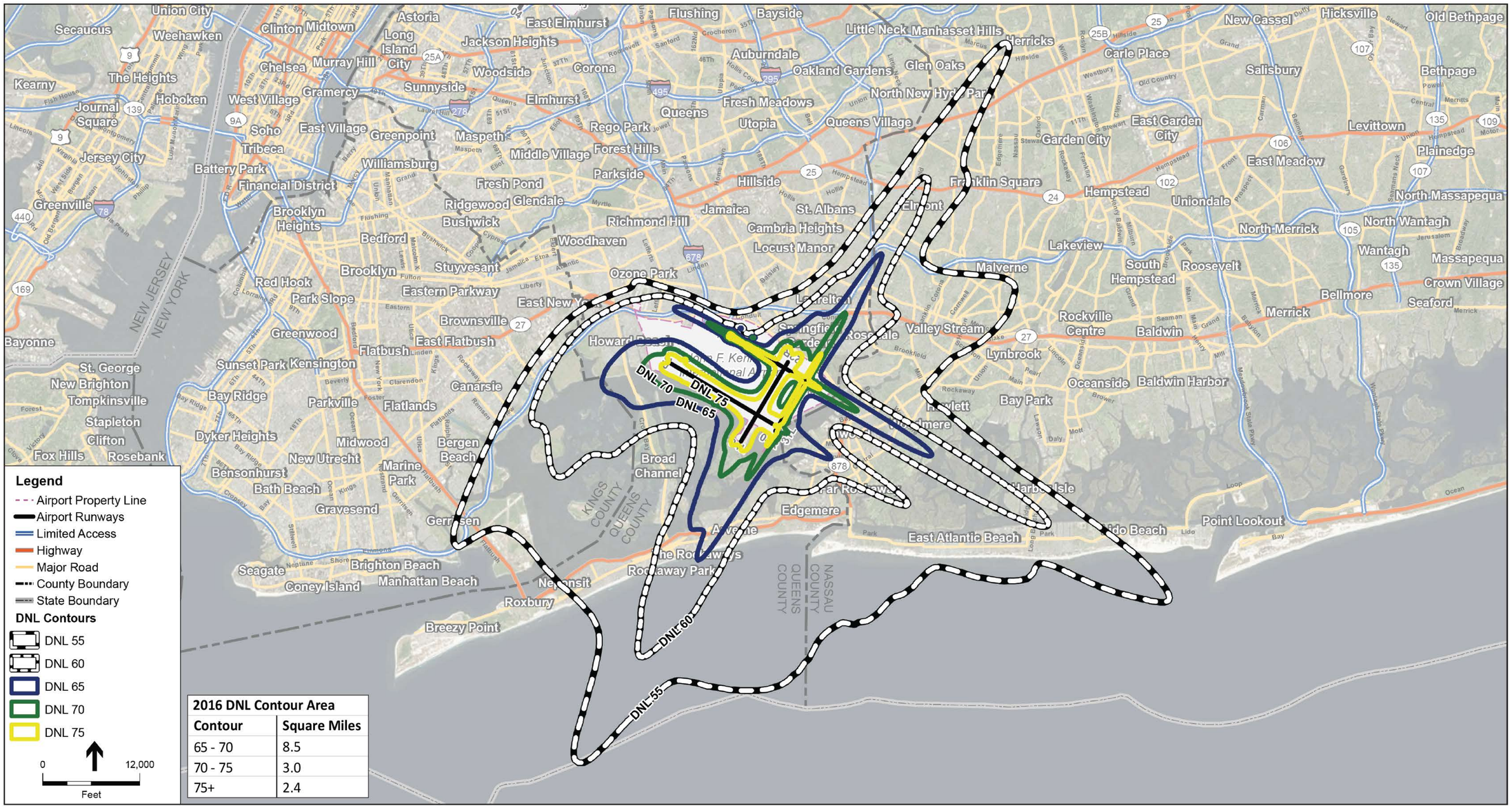
NOTE: Numbers may not add up, due to rounding.
SOURCE: Planning Technology, Inc. and Environmental Science Associates, 2016.

John F. Kennedy International Airport
14 CFR Part 150 Study

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2016 DNL 55 and 60 Contours

FOR INFORMATIONAL PURPOSES ONLY



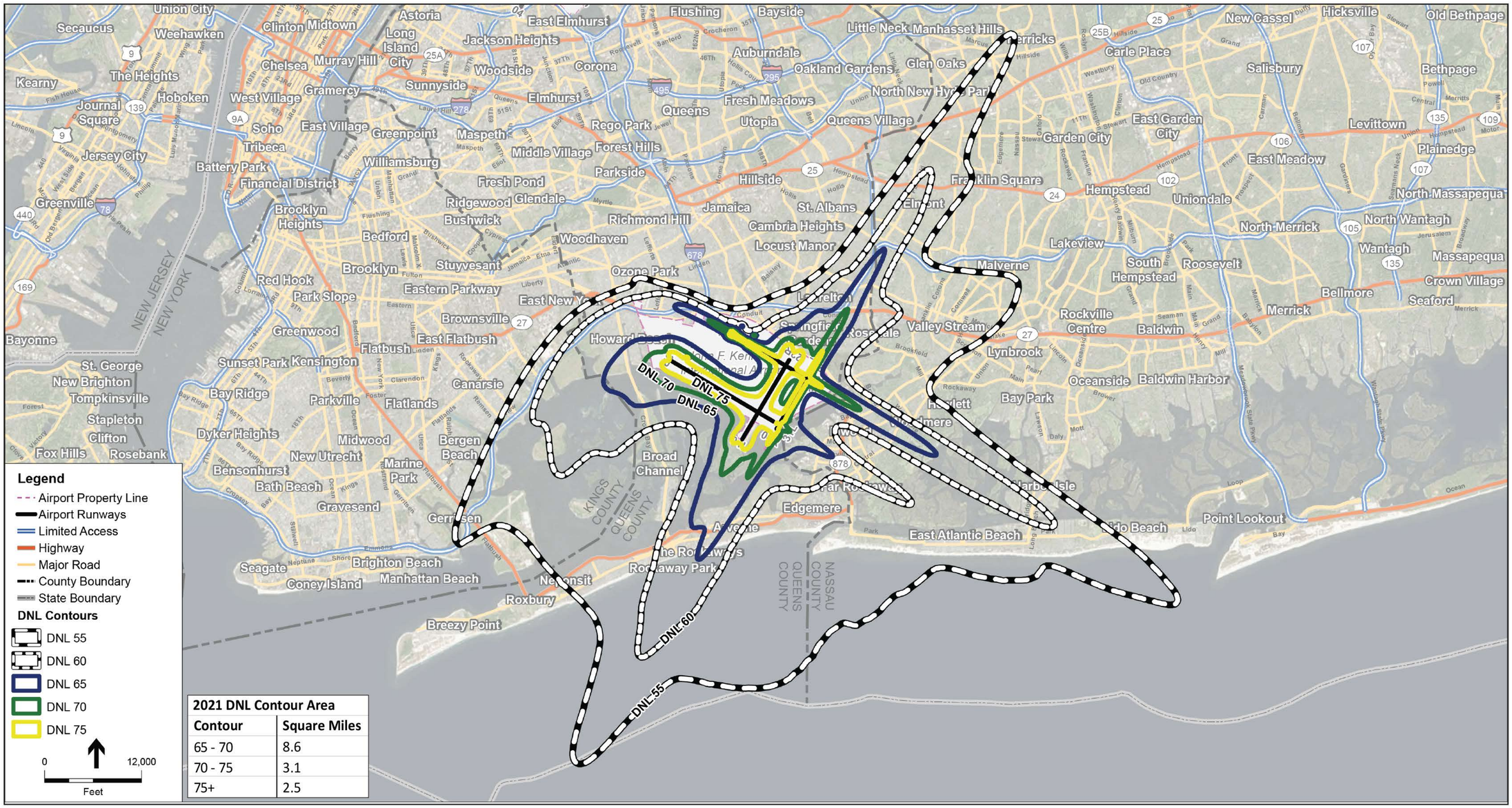
SOURCE: New York City Department of City Planning, MapPLUTO 15V1- Tax lot/land use geographic information database, March 2015 - June 2015; Nassau County Department of Public Works Planning Division; Property classification and geographic information database, September 2015; INM 7.0d; Environmental Science Associates, 2016; ESRI Mapping Services.

John F. Kennedy International Airport
14 CFR Part 150 Study

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2021 DNL 55 and 60 Contours

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STATION 7

Port Authority and Airport Activities

John F. Kennedy International Airport
14 CFR Part 150 Study

Facts and Figures

John F. Kennedy International Airport
Summarized Timeline

2013
JFK surpassed 50 million annual passengers

2008
Emirates Airline A380 lands at JFK, first regularly scheduled arrival of A380 to US

2007
The world's largest passenger aircraft, the A380, touches down on US soil

2004
Port Authority and City of New York conclude agreement ensuring operation of JFK through 2050

2000
Celebrated one-billionth passenger

1964
Beatles arrive in the US and hold a press conference in the former International Arrivals Building

1963
Airport rededicated to John F. Kennedy International Airport

1948
Commercial flights begin flying into/out of newly opened New York International Airport

1947
Port Authority of New York and New Jersey begins operating the airport

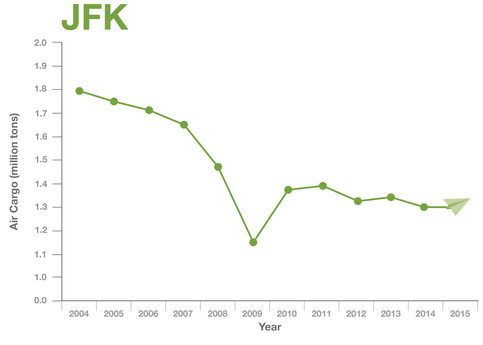
1942
Construction for new international airport begins on site of Idlewild Golf Course in Queens

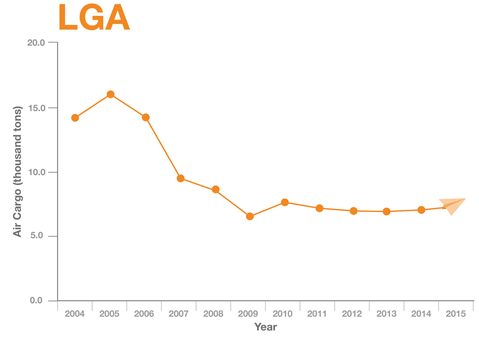
Source: Port Authority of New York and New Jersey, 2015 and 2016



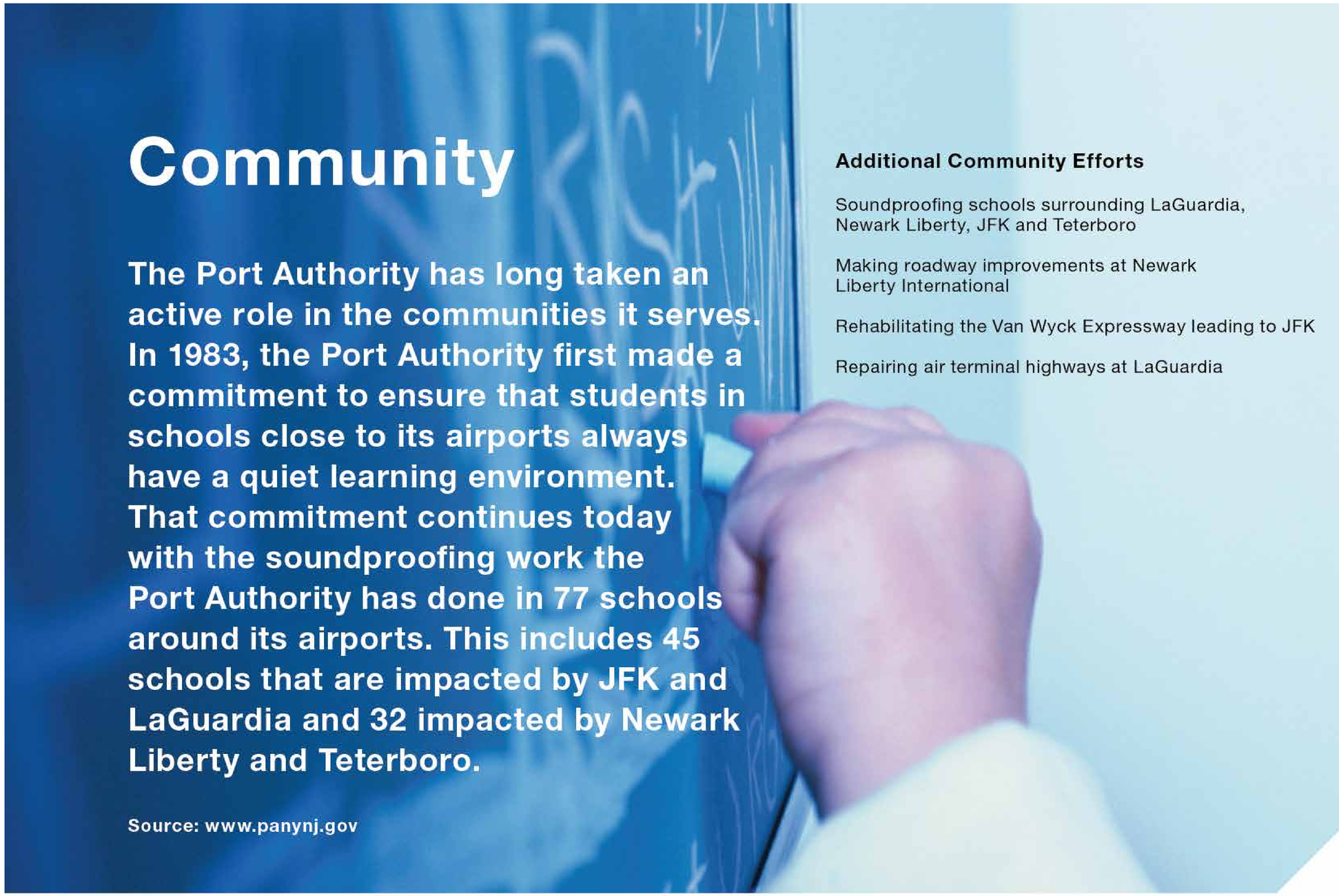
Air cargo levels over recent years

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





John F. Kennedy International Airport
14 CFR Part 150 Study



School Sound Proofing Program – JFK

	School	City
1	Lawrence Public School #5	Cedarhurst
2	Lawrence High School	Cedarhurst
3	Lawrence Middle School	Lawrence
4	Lawrence Public School #4	Inwood
5	Our Lady of Grace (Ave Maria Catholic Academy)	Howard Beach
6	PS 104Q	Far Rockaway
7	PS 138Q	Rosedale
8	PS 181 Brookfield	Springfield Gardens
9	PS 183Q	Far Rockaway
10	PS 38 Rosedale	Rosedale
11	PS/MS 42 R. Vernam	Arverne
12	St. Clare Catholic Academy	Rosedale
13	St. Rose of Lima	Rockaway Beach
14	Yeshiva Darchei Torah	Far Rockaway
15	Hebrew Academy of Five Towns & Rockaway	Lawrence
16	Lawrence Public School #2	Inwood
17	PS 146Q	Howard Beach
18	IS/MS 180Q (Now Scholars Academy)	Rockaway Park
19	PS 195Q	Rosedale
20	PS 198Q (Now Goldie Maple Academy)	Arverne
21	St. Joachim School	Cedarhurst
22	St. Pius X (Now Success Academy – Rosedale)	Rosedale
23	Tapeinu School for Girls (Now Challenge Preparatory Charter School)	Far Rockaway

- **23 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**
- **8 of the 12 schools within the 2016 and 2021 DNL 65 contours have been soundproofed previously as part of the Port Authority School Soundproofing Program**
- **The four schools within the 2016 and 2021 DNL 65 contours that have not been soundproofed include:**
  - PS 124 Osmond A. Church
  - Rosedale Child Development Center
  - Kulanu Academy
  - Temple Beth El Religious School

John F. Kennedy International 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
  - Adrian Jones, JFK Technical Director

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

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

WORKSHOP DISPLAY

WebTrak

John F. Kennedy International Airport
14 CFR Part 150 Study

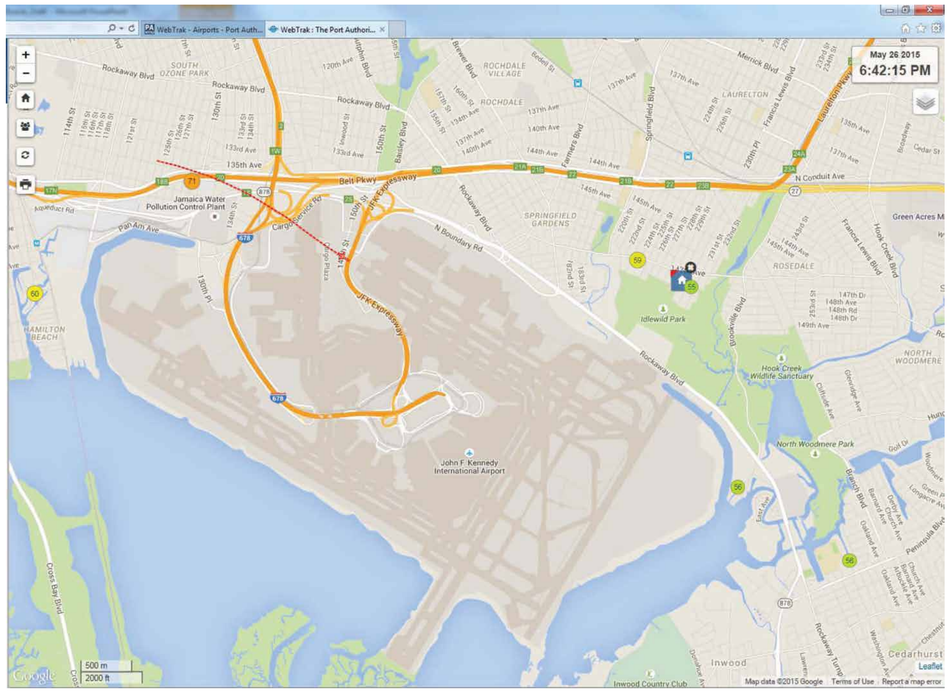
WebTrak – Flight Tracking and Noise Information System

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

- **Specific information regarding flights at John F. Kennedy International Airport, including aircraft type, altitude, and operation type (arrival or departure)**

- **Noise levels at noise monitors located near JFK are shown in WebTrak and represent the actual sound level at 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!

John F. Kennedy International Airport
Title 14 Code of Federal Regulations Part 150 Study
Public Information Workshop
September 29, 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

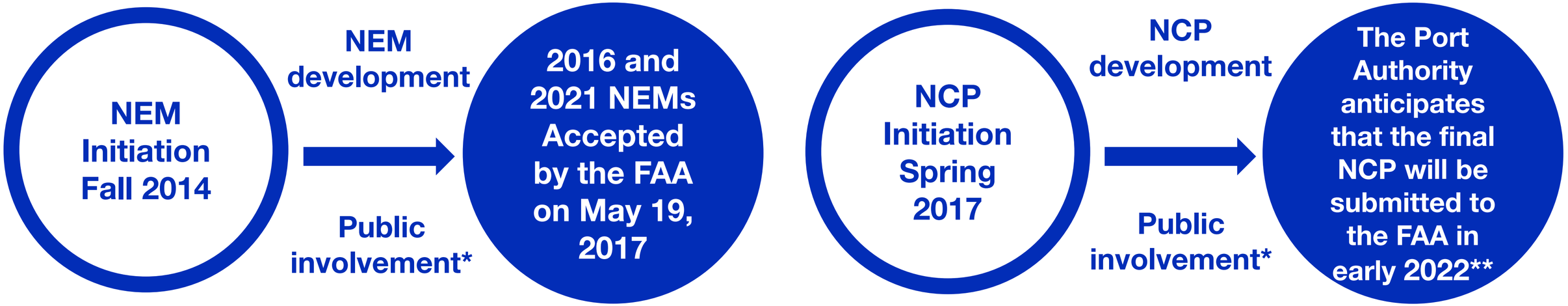
- Limited authority to adopt local restrictions on aircraft operations
- Responsible for airport capital improvement projects and infrastructure

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

JFK 14 CFR Part 150 Study Timeline



*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 two NEMs depicting Existing Conditions (2016) and Future Conditions (2021). Each map depicts the DNL 65, 70, and 75 contours generated by different operational conditions at JFK.

2016

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

2021

Future Conditions (calendar year 2021) depicts aircraft noise exposure for five-year forecast conditions at JFK.

More information on the NEMs can be found in Chapter 1 of the JFK NCP.

Noise Abatement Measures

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

- NA-1: Implement "Tighten SKORR" Departure Procedure
- NA-2: Turn Runway 22L and 22R Departures to Heading 240 at Night
- NA-3: Reduce Runway 31L Intersection Departures at Night
- NA-4: Combine "Tighten SKORR" Departure Procedure with Reduce Runway 31L Intersection Departures at Night
- NA-5: Implement Noise Abatement Departure Procedures on a Voluntary Basis for Each Runway End
- NA-6: Implement Nighttime Optimized Profile Descent Procedures
- NA-7: Continue Existing Mandatory Departure Noise Limit and $250 Penalty

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.

More information on the noise abatement measures can be found in Chapter 2 of the JFK NCP.

Noise Abatement Strategies Considered, but Not Recommended for Inclusion in the JFK 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 2.3 of the JFK NCP for more information.

Land Use Measures

The Port Authority's JFK Part 150 Study resulted in **three land use (LU) measures** recommended for inclusion in the JFK 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 JFK 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 3 of the JFK NCP.

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



13,825 units are estimated to be eligible for either sound insulation or stand-alone positive ventilation systems:
766 units in the DNL 70 – 75 range, and
13,059 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 approximately $1.2 billion 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 August 4, 2008

See Section 3.2 of the JFK NCP for more information.

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

- Acquire Noncompatible Residential Parcels
- Implement Sound Attenuation for New Development
- Acquire Avigation Easements
- Implement Rezoning of Land Uses
- Establish Transferable Development Rights
- Provide Voluntary Incentives to Property Owners to Install Noise Mitigation
- Provide Purchase Assurances for Properties in the DNL 65 Contour
- Install Insulation Bubbles/Closures over Parks/Outdoor Space
- Provide Sound Insulation to All Properties within Certain Noise Contours
- Place a Moratorium on Development, Growth, and Expansion of JFK Until Noise Mitigation Measures Have Been Implemented
- Establish Property Disclosure Laws

See Section 3.4 and Appendix G of the JFK NCP for more information.

Program Management Measures

The Port Authority's JFK Part 150 Study resulted in **12 existing and new program management (PM) measures** recommended for inclusion in the JFK 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 4 of the JFK 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”

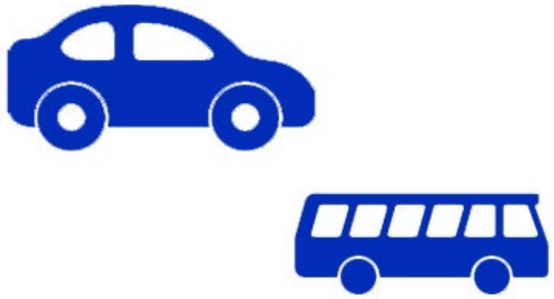
Consistent with Part 150 requirements, the Port Authority will evaluate any changes in the noise environment at JFK and notify the FAA whether the NEM continues to be a reasonable representation of current and/or forecast conditions at JFK or submit an updated NEM to the FAA for acceptance. The Port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

See Table 4-9 in Section 4.2 of the JFK NCP for more information.

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



Add More Noise Monitors Throughout Queens and Nassau County



Consider Improved Ground Transportation Access to Stewart International Airport to Balance Activity



Multiple Suggestions of Aircraft Technology Changes

See Section 4.3 and Appendix G of the JFK NCP for more information.

Next Steps







Review and respond to comments received on the Draft JFK NCP

Submit the Final JFK NCP to FAA

FAA 180-day review of the Final JFK NCP

Submitting Comments on the JFK 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.



John F. Kennedy International Airport
Recommended Land Use Measures

Land Use Measure 1 – Sound-Insulate Eligible Dwelling Units



13,825 units are estimated to be eligible for either sound insulation or stand-alone positive ventilation systems: 766 units in the DNL 70 – 75 range, and 13,059 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 approximately $1.2 billion 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 August 4, 2008

See Section 3.2 of the JFK NCP for more information.

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



42 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 approximately $127 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

Facility Type	Number
Place of Worship	19
Day Care Facilities	17
School	4
Library	1
Non-residential historic structure	1

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

See Section 3.2 of the JFK 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 that 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 3.3 of the JFK 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 3.3 of the JFK NCP for more information.

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

- Acquire Noncompatible Residential Parcels
- Implement Sound Attenuation for New Development
- Acquire Avigation Easements
- Implement Rezoning of Land Uses
- Establish Transferable Development Rights
- Provide Voluntary Incentives to Property Owners to Install Noise Mitigation
- Provide Purchase Assurances for Properties in the DNL 65 Contour
- Install Insulation Bubbles/Closures over Parks/Outdoor Space
- Provide Sound Insulation to All Properties within Certain Noise Contours
- Place a Moratorium on Development, Growth, and Expansion of JFK Until Noise Mitigation Measures Have Been Implemented
- Establish Property Disclosure Laws

See Section 3.4 and Appendix G of the JFK NCP for more information.



John F. Kennedy International Airport
Recommended Noise Abatement Measures

Noise Abatement Measure 1 – Implement “Tighten SKORR” Departure Procedure



Existing SKORR THREE and Proposed “Tighten SKORR” Notional Tracks - Example for Runway 31L

The “Tighten SKORR” departure procedure is proposed to reduce aircraft overflights of Howard Beach, Old Howard Beach, and Hamilton Beach (in Queens)

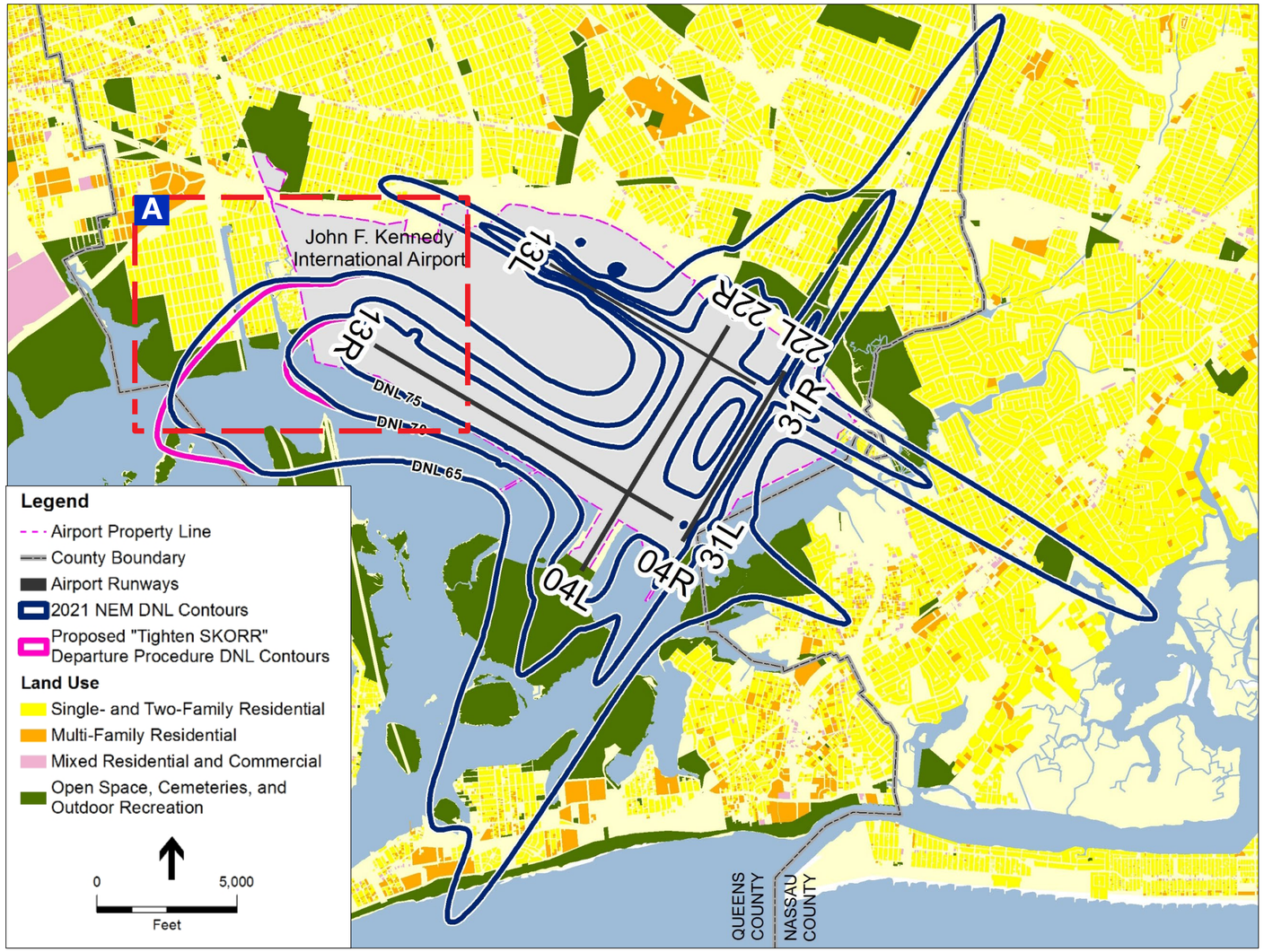
Moves SKORR waypoint to Jamaica Bay

Aircraft depart over the water rather than areas with residential land use

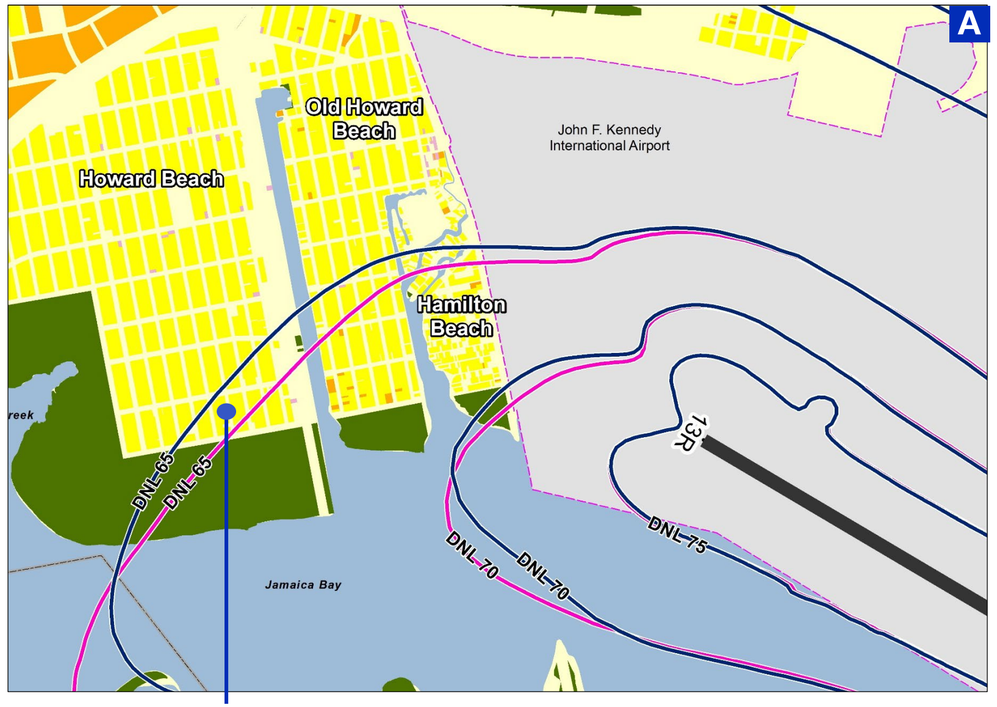
See Section 2.2 of the JFK NCP for more information.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

Noise Abatement Measure 1 – Implement “Tighten SKORR” Departure Procedure



DNL 65, 70, and 75 Contours - 2021 NEM and "Tighten SKORR" Departure Procedure



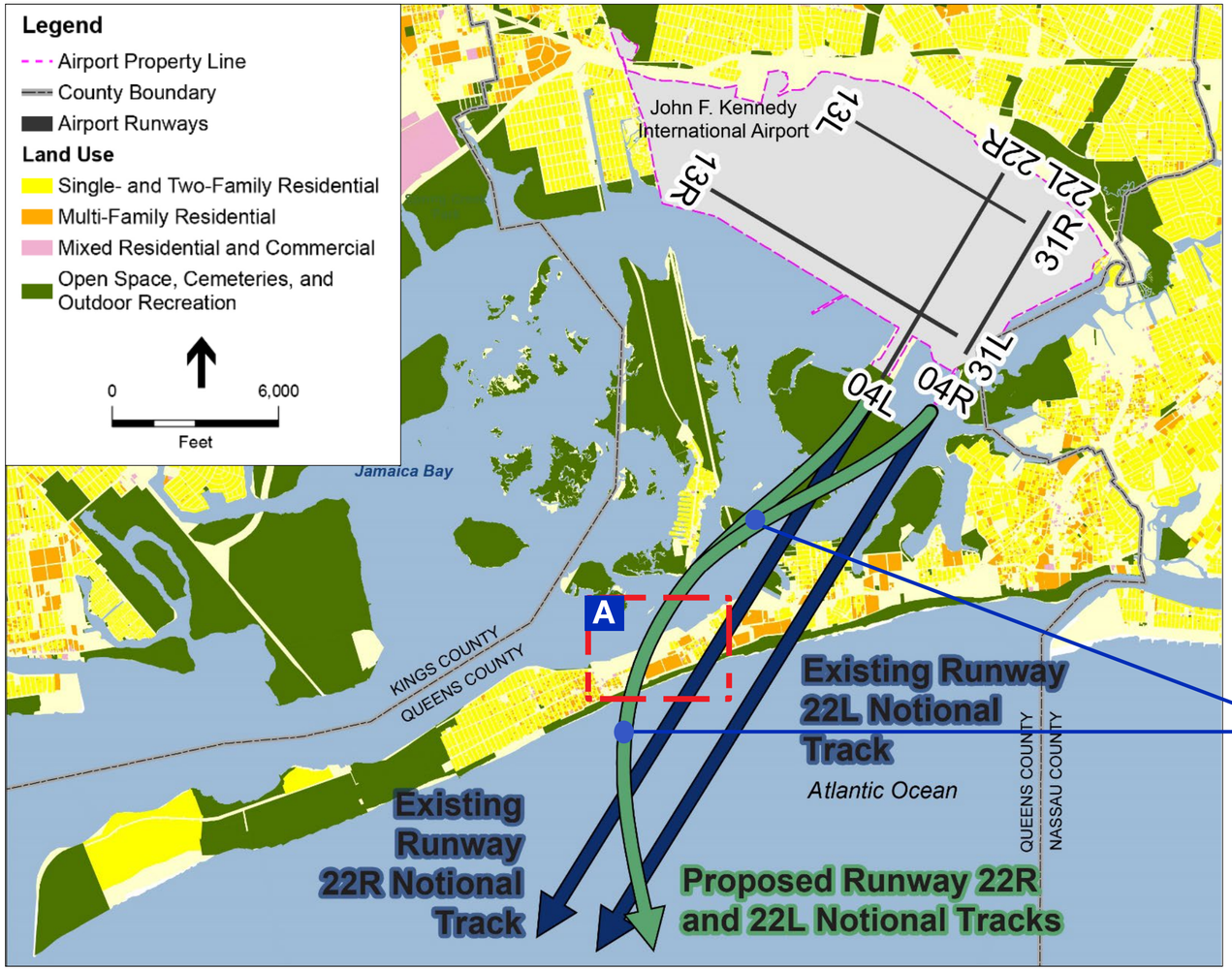
DNL 65, 70, and 75 Contours - 2021 NEM and "Tighten SKORR" Departure Procedure over Howard Beach, Old Howard Beach, and Hamilton Beach

Has the potential to remove 923 people and 351 dwelling units from the DNL 65 contour

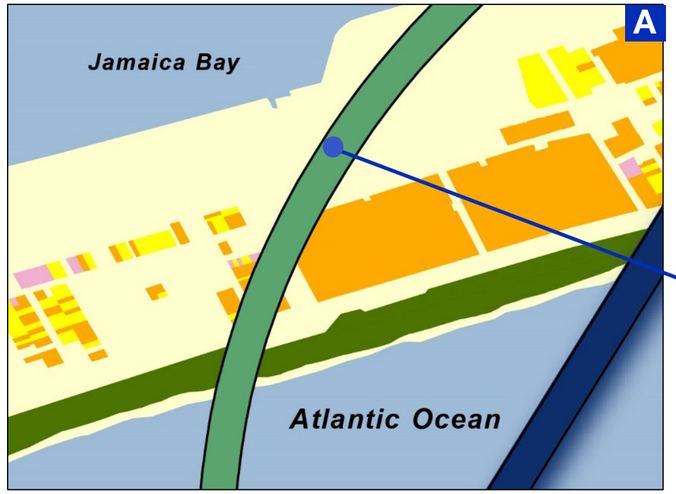
See Section 2.2 of the JFK NCP for more information.

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Noise Abatement Measure 2 – Turn Runway 22L and 22R Departures to Heading 240 at Night



Turn Runway 22L and 22R Departures to Heading 240 at Night



Turn Runway 22L and 22R Departures to Heading 240 at Night over The Rockaways

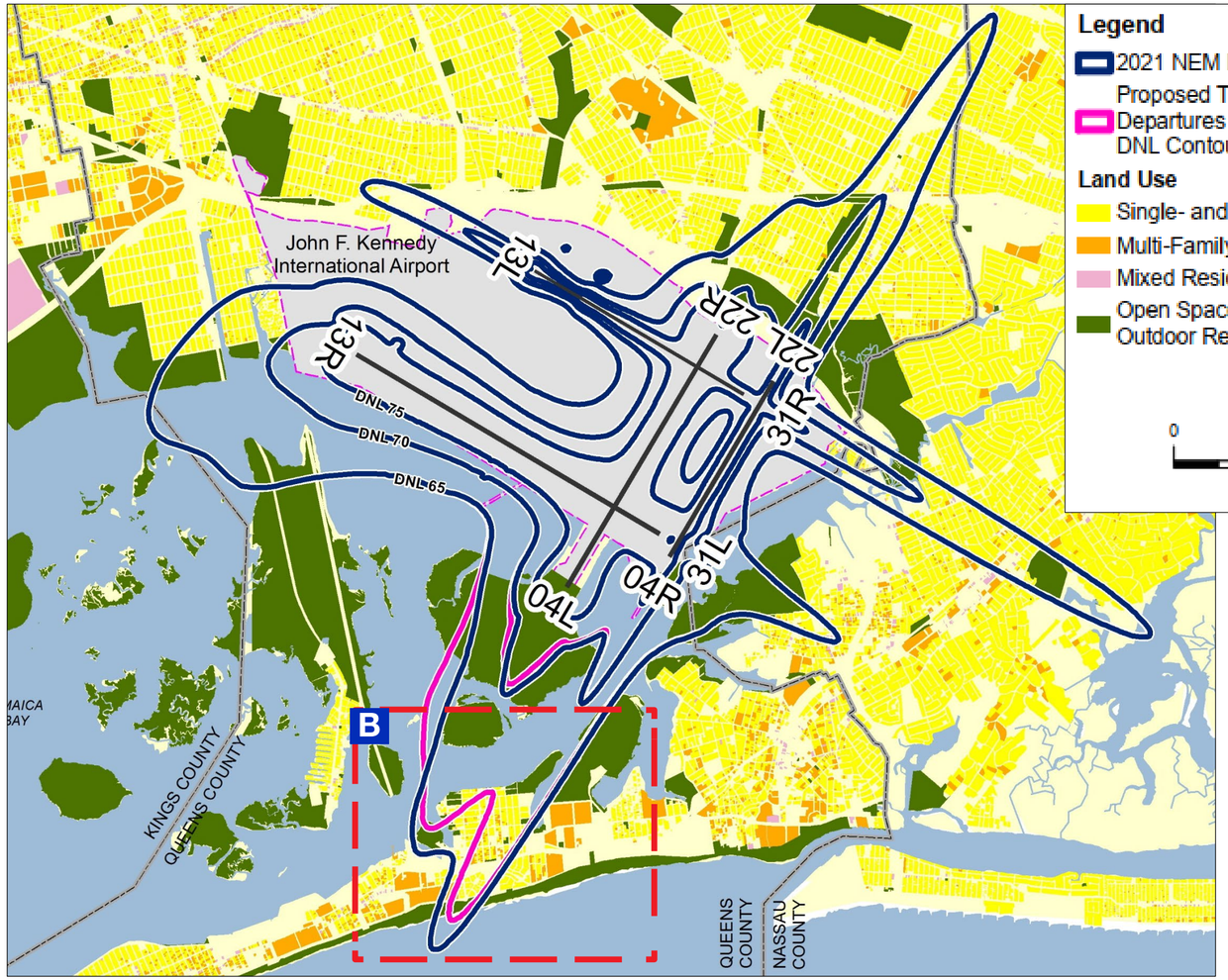
Proposed track flies over area with less residential land use

Aircraft departing from Runways 22L and 22R would make a right turn to magnetic heading 240 shortly after takeoff, then a left turn to overfly The Rockaways

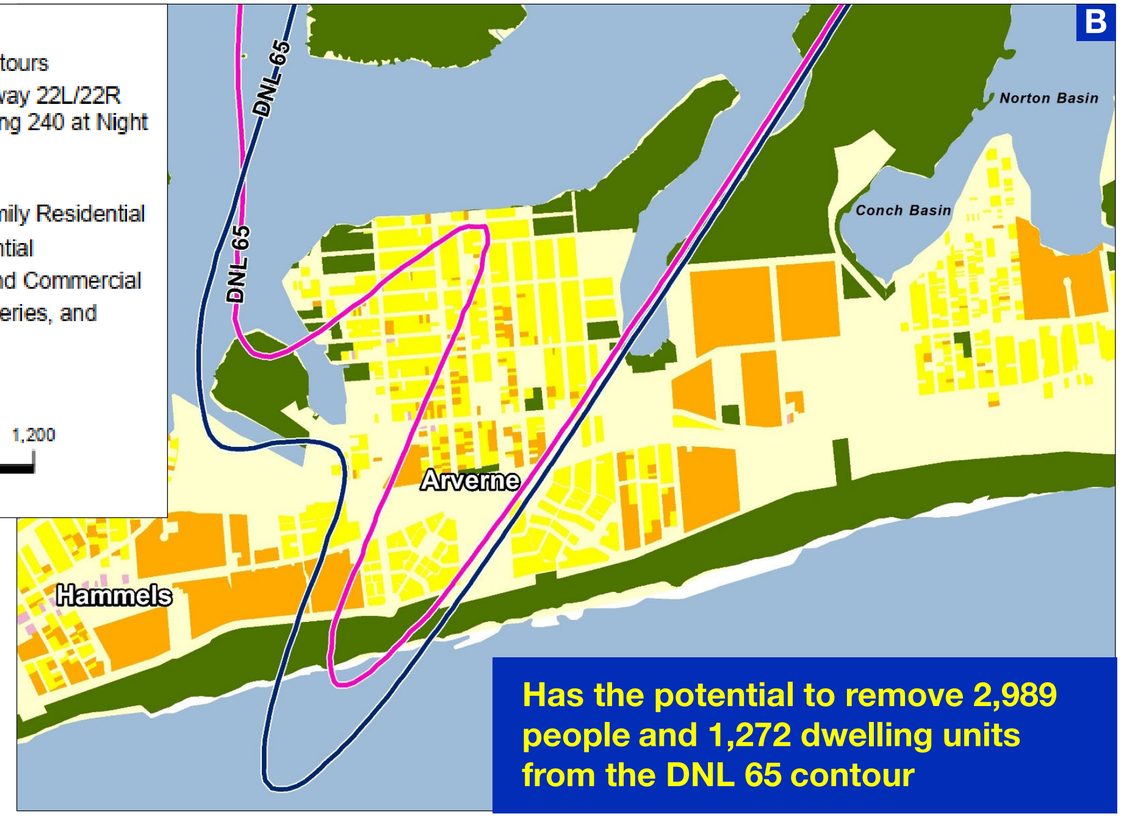
See Section 2.2 of the JFK NCP for more information.

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Noise Abatement Measure 2 – Turn Runway 22L and 22R Departures to Heading 240 at Night



DNL 65, 70, and 75 Contours - 2021 NEM and Turn Runway 22L/22R Departures to Heading 240 at Night

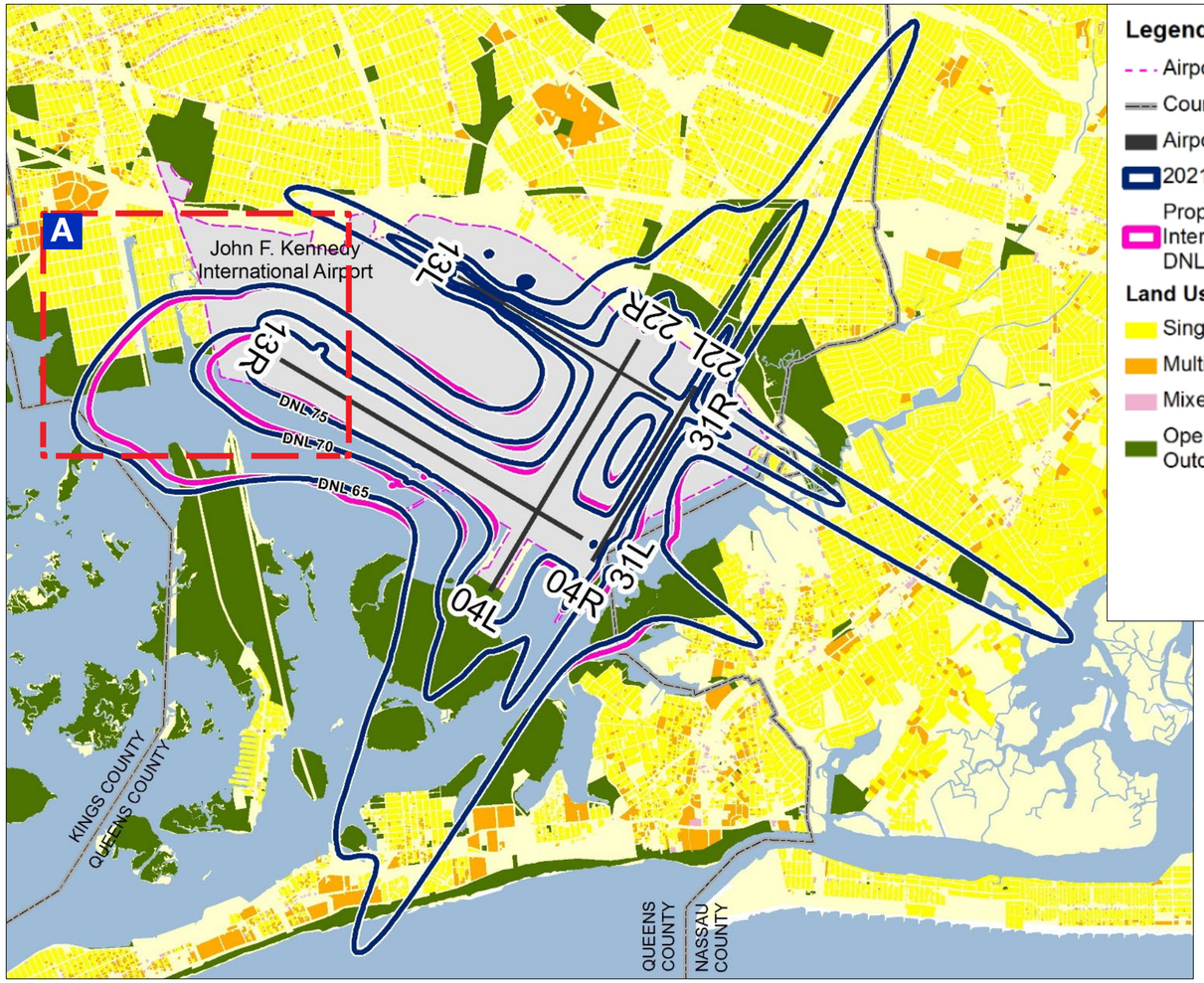


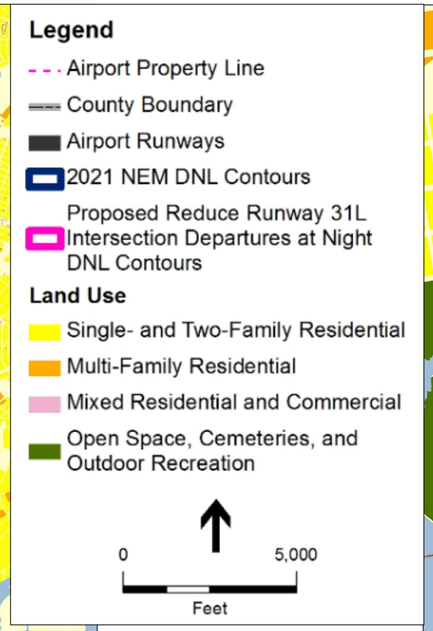
Has the potential to remove 2,989 people and 1,272 dwelling units from the DNL 65 contour

DNL 65, 70, and 75 Contours - 2021 NEM and Turn Runway 22L/22R Departures to Heading 240 at Night over Arverne and Hammels

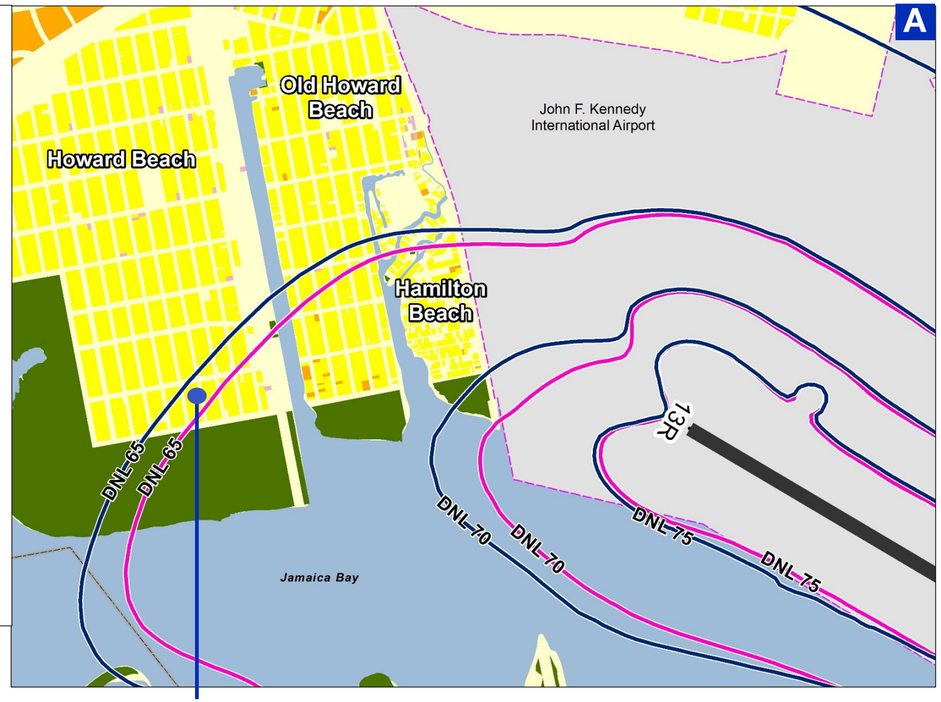
See Section 2.2 of the JFK NCP for more information.

Noise Abatement Measure 3 – Reduce Runway 31L Intersection Departures at Night





DNL 65, 70, and 75 Contours - 2021 NEM and Reduce Runway 31L Intersection Departures at Night

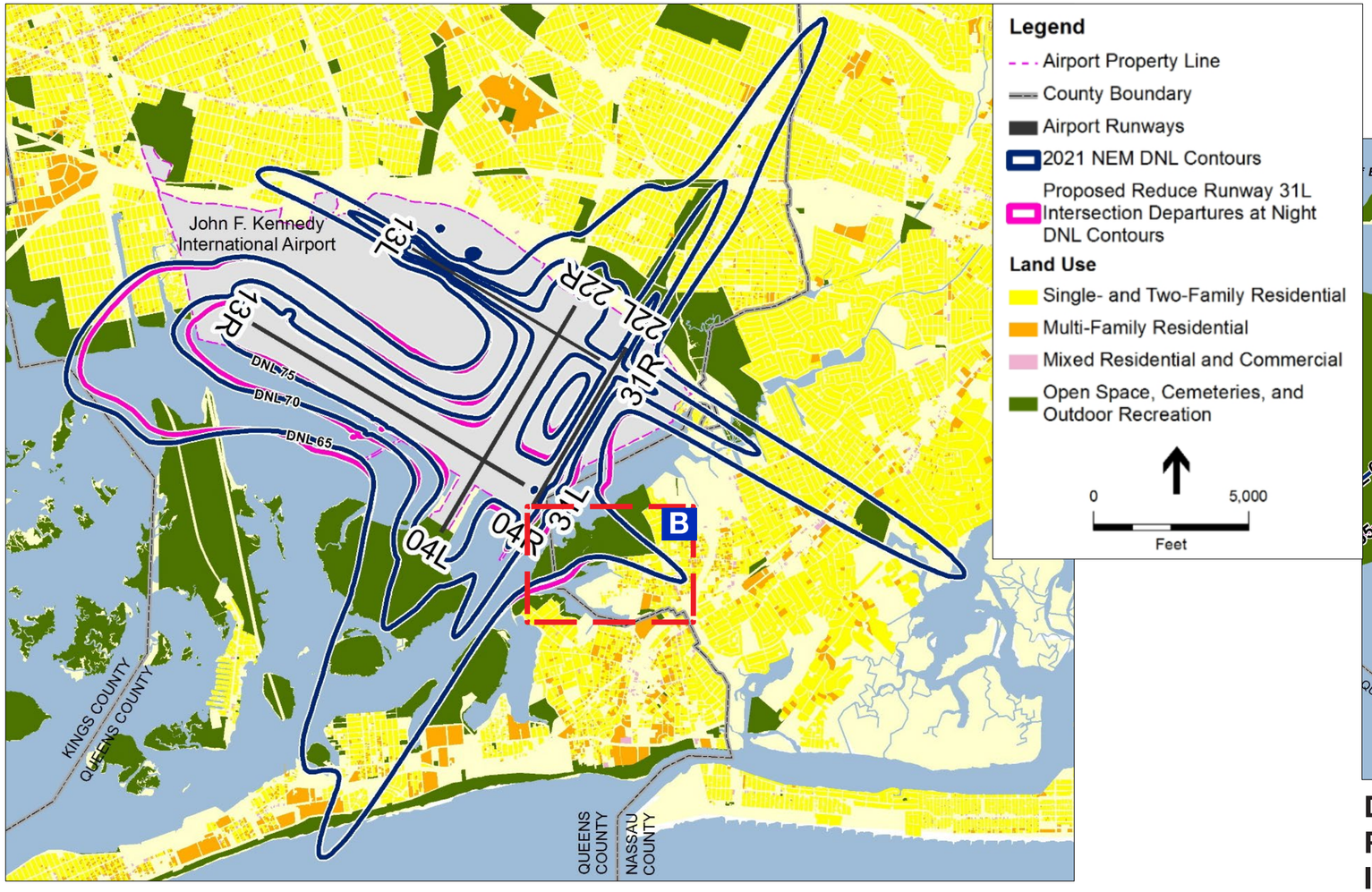


DNL 65, 70, and 75 Contours - 2021 NEM and Reduce Runway 31L Intersection Departures at Night over Howard Beach, Old Howard Beach, and Hamilton Beach

Has the potential to remove 689 people and 266 dwelling units from the DNL 65 contour in Queens

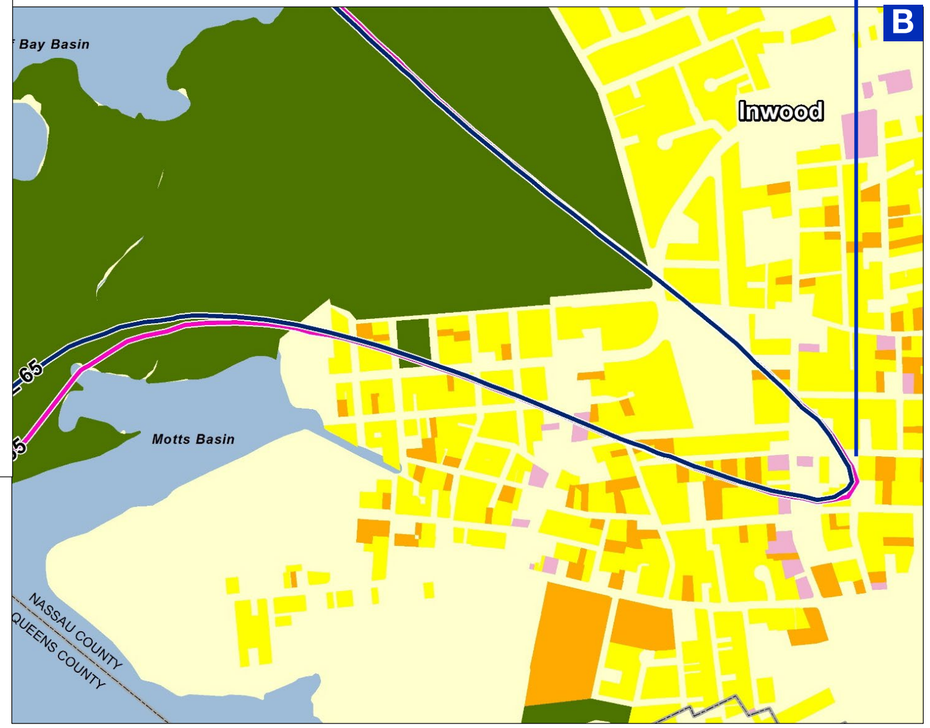
See Section 2.2 of the JFK NCP for more information.

Noise Abatement Measure 3 – Reduce Runway 31L Intersection Departures at Night (cont.)



DNL 65, 70, and 75 Contours - 2021 NEM and Reduce Runway 31L Intersection Departures at Night

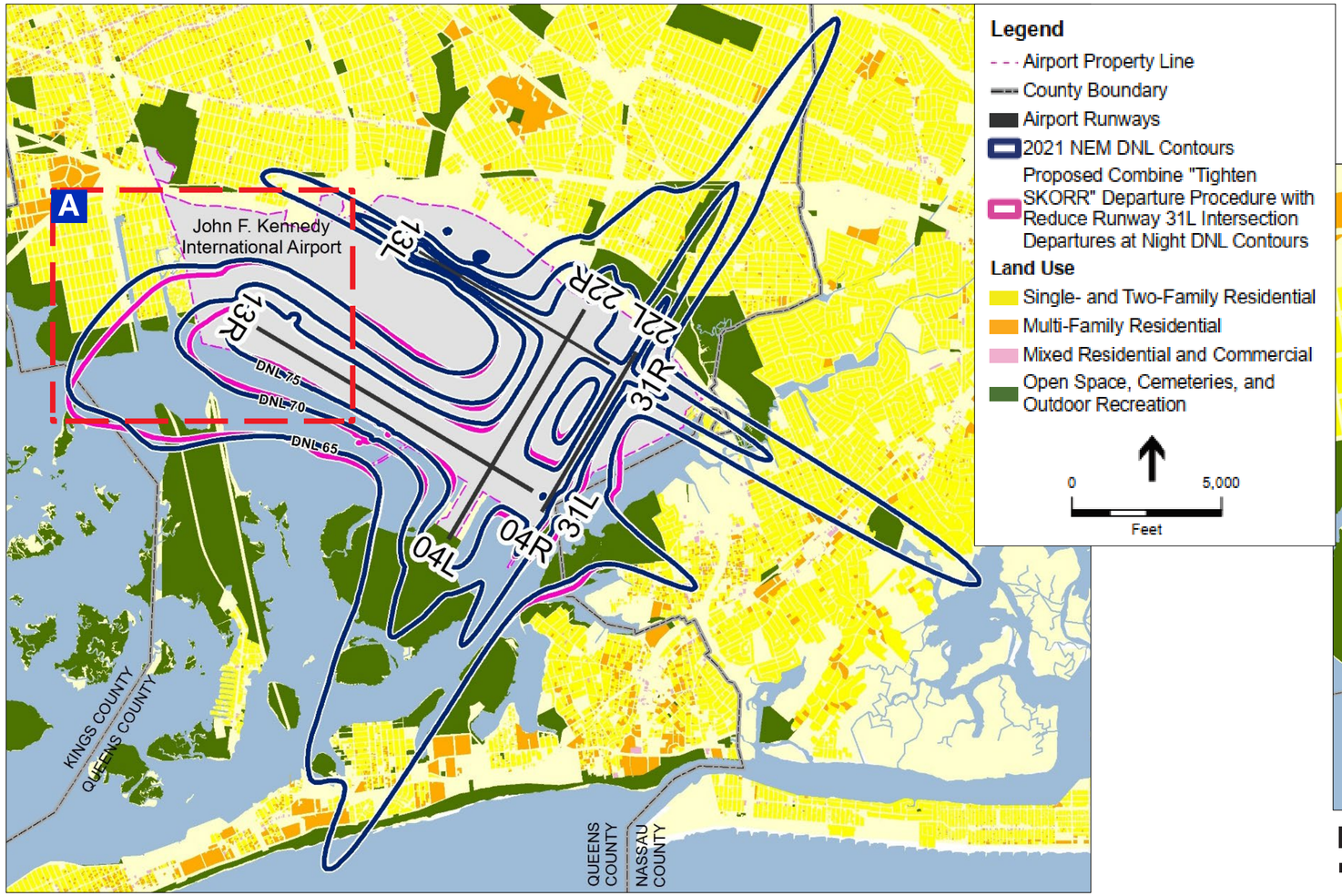
Has the potential to add 23 people and 7 dwelling units to the DNL 65 contour in Nassau County



DNL 65 and 70 Contours – 2021 NEM and Reduce Runway 31L Intersection Departures at Night over Inwood

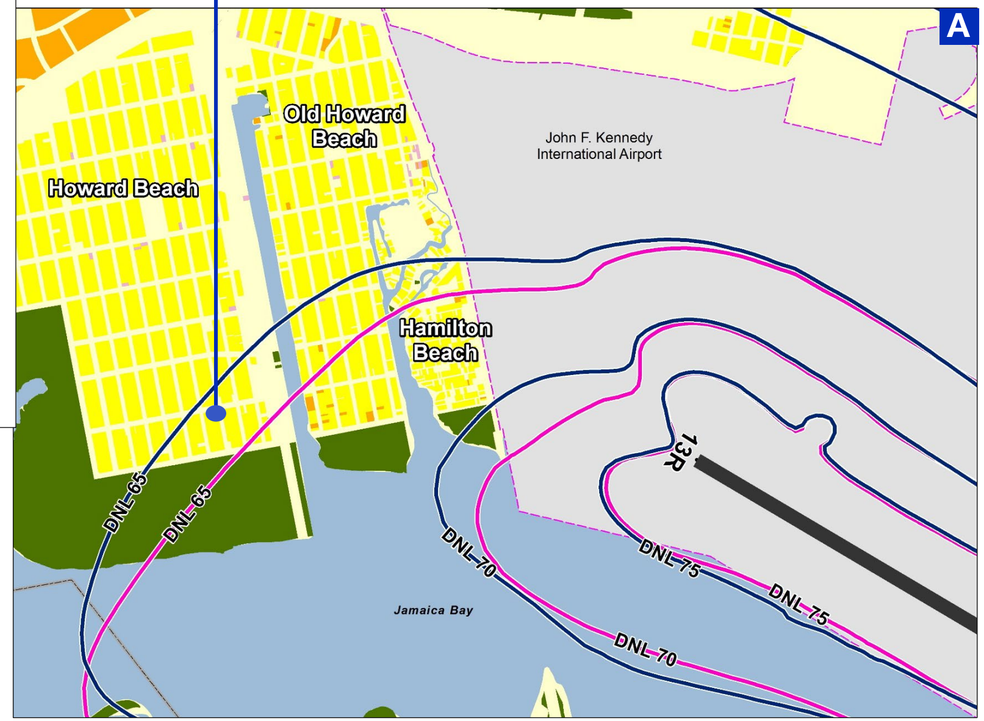
See Section 2.2 of the JFK NCP for more information.

Noise Abatement Measure 4 – Combine “Tighten SKORR” Departure Procedure with Reduce Runway 31L Intersection Departures at Night



DNL 65, 70, and 75 Contours - 2021 NEM and Combine "Tighten SKORR" with Reduce Runway 31L Intersection Departures at Night

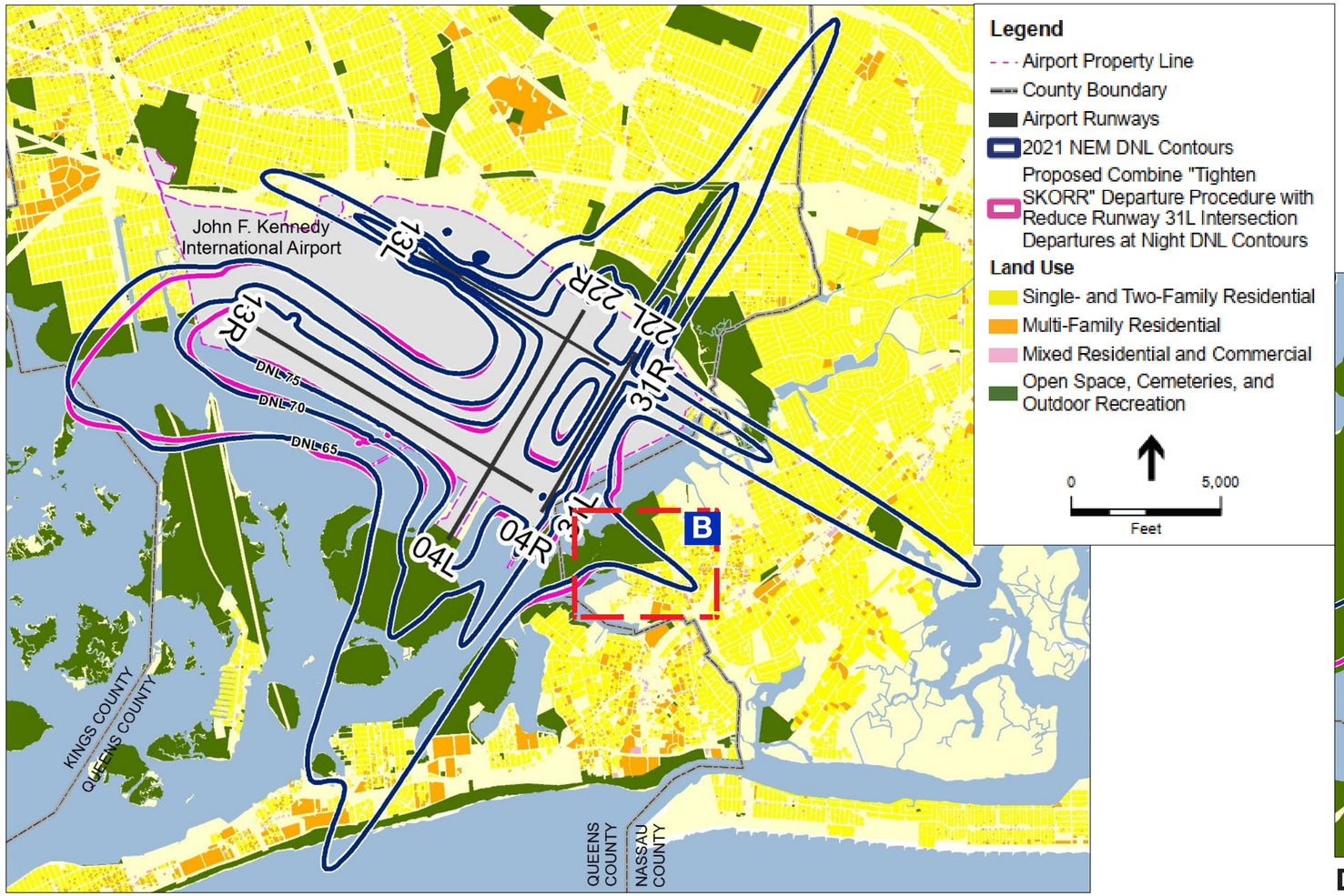
Has the potential to remove 1,517 people and 564 dwelling units from the DNL 65 contour in Queens



DNL 65, 70, and 75 Contours - 2021 NEM and Combine "Tighten SKORR" with Reduce Runway 31L Intersection Departures at Night over Howard Beach, Old Howard Beach, and Hamilton Beach

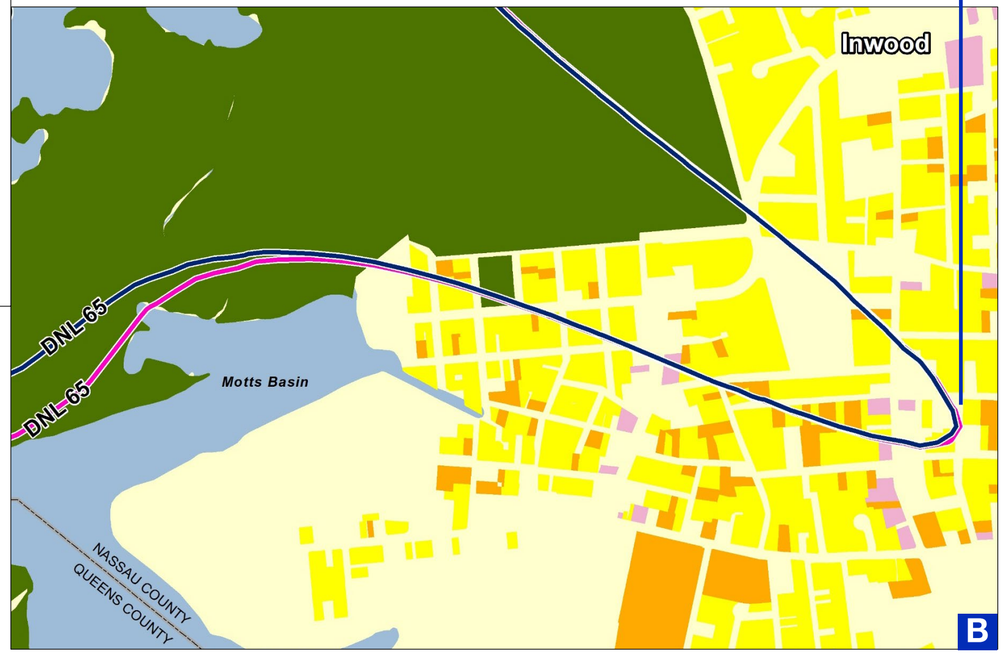
See Section 2.2 of the JFK NCP for more information.

Noise Abatement Measure 4 – Combine “Tighten SKORR” Departure Procedure with Reduce Runway 31L Intersection Departures at Night (cont.)



DNL 65, 70, and 75 Contours - 2021 NEM and Combine "Tighten SKORR" with Reduce Runway 31L Intersection Departures at Night

Has the potential to add 19 people and 5 dwelling units to the DNL 65 contour in Nassau County



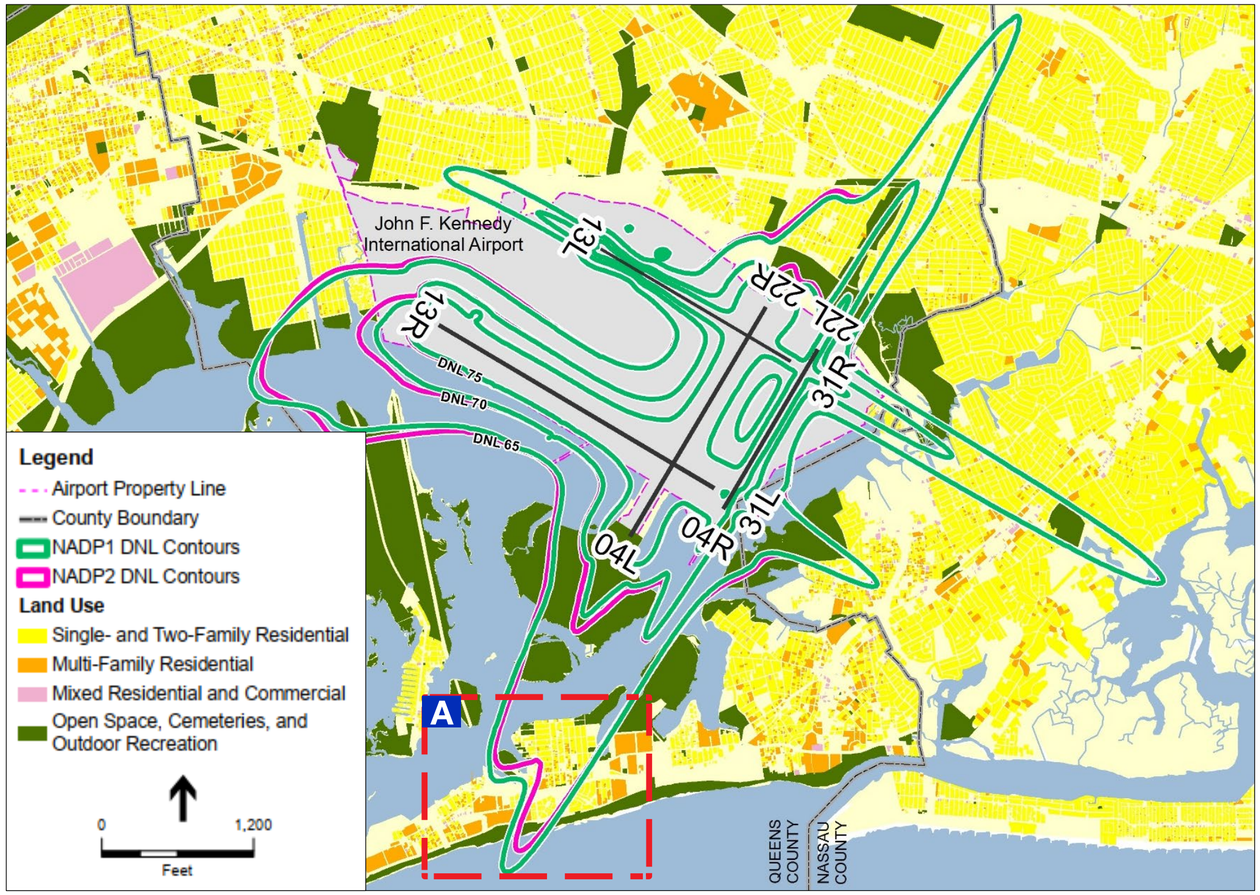
DNL 65 and 70 Contours - 2021 NEM and Combine "Tighten SKORR“ with Reduce Runway 31L Intersection Departures at Night over Inwood

See Section 2.2 of the JFK NCP for more information.

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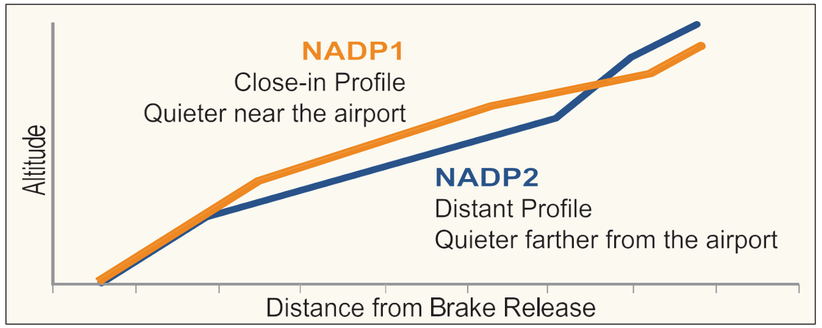
Noise Abatement Measure 5 – Implement Noise Abatement Departure Procedures on a Voluntary Basis for Each Runway End

DNL 65, 70, and 75 Contours - NADP1 and NADP2



DNL contours reflect the top nine aircraft types expected to operate at JFK in 2021 (approximately 76% of Airport operations) utilizing NADP1 and NADP2 Profiles

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



DNL 65, 70, and 75 Contours - NADP1 and NADP2 over Arverne and Hammels

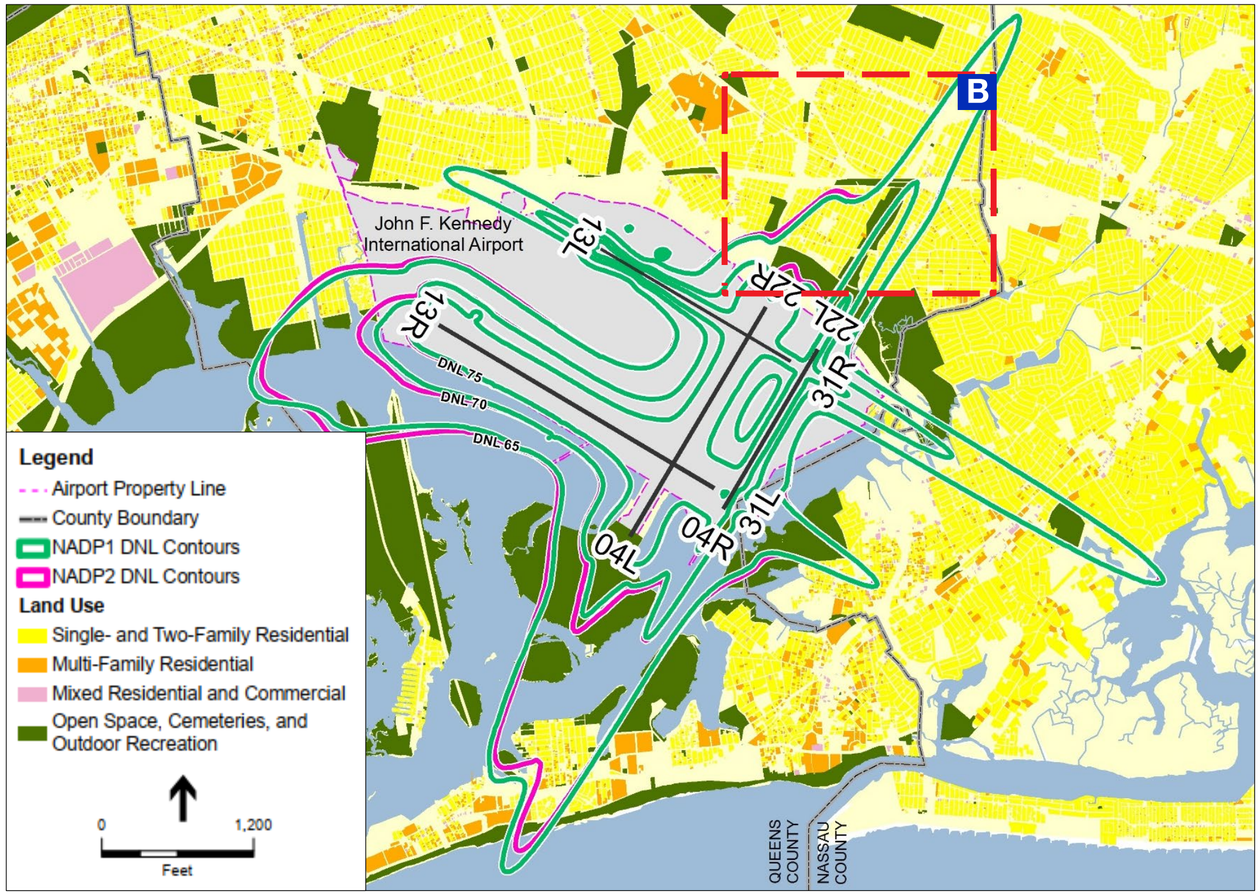


See Section 2.2 of the JFK NCP for more information.

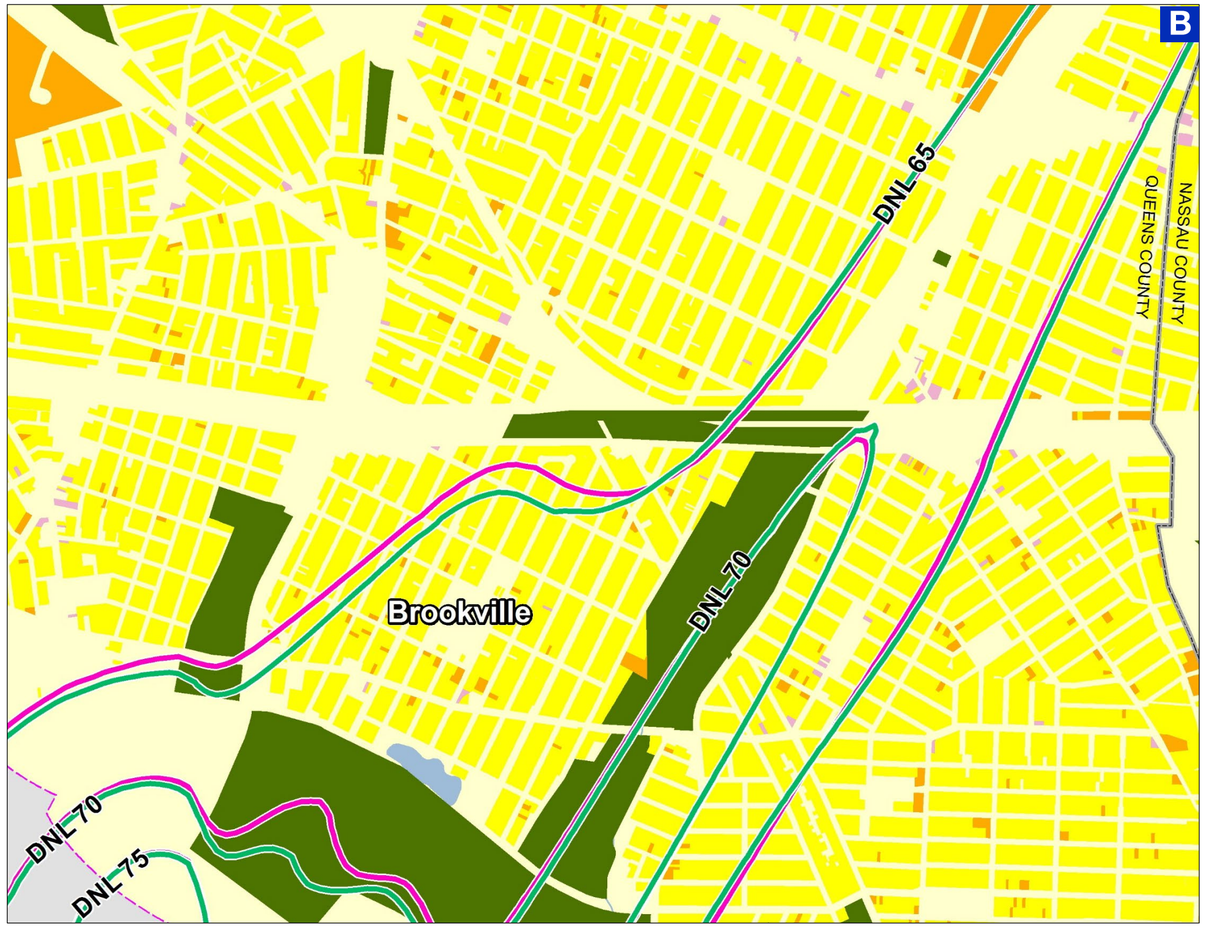
PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

Noise Abatement Measure 5 – Implement Noise Abatement Departure Procedures on a Voluntary Basis for Each Runway End (cont.)

DNL 65, 70, and 75 Contours - NADP1 and NADP2



DNL contours reflect the top nine aircraft types expected to operate at JFK in 2021 (approximately 76% of Airport operations) utilizing NADP1 and NADP2 Profiles



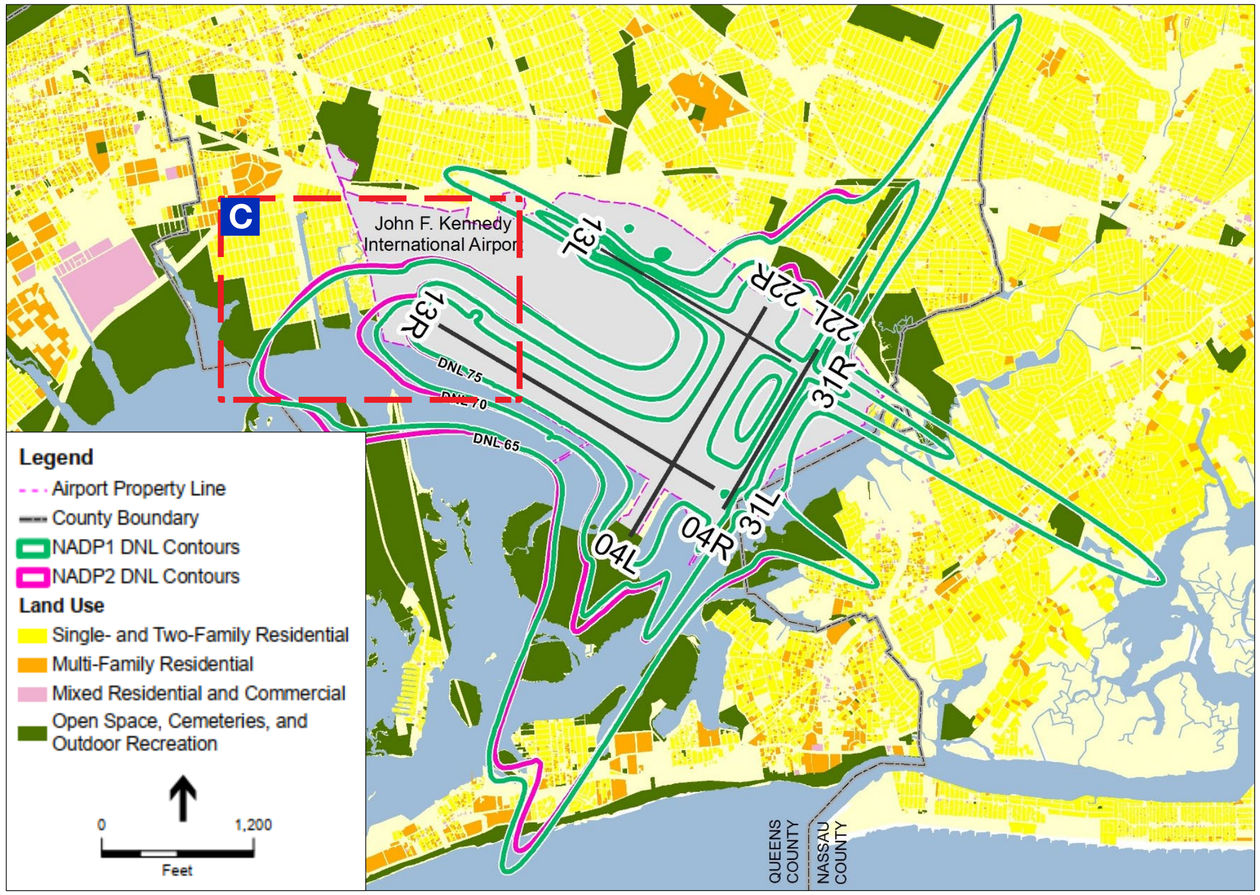
NADP1 and NADP2 DNL 65, 70, and 75 Contours over Brookville

See Section 2.2 of the JFK NCP for more information.

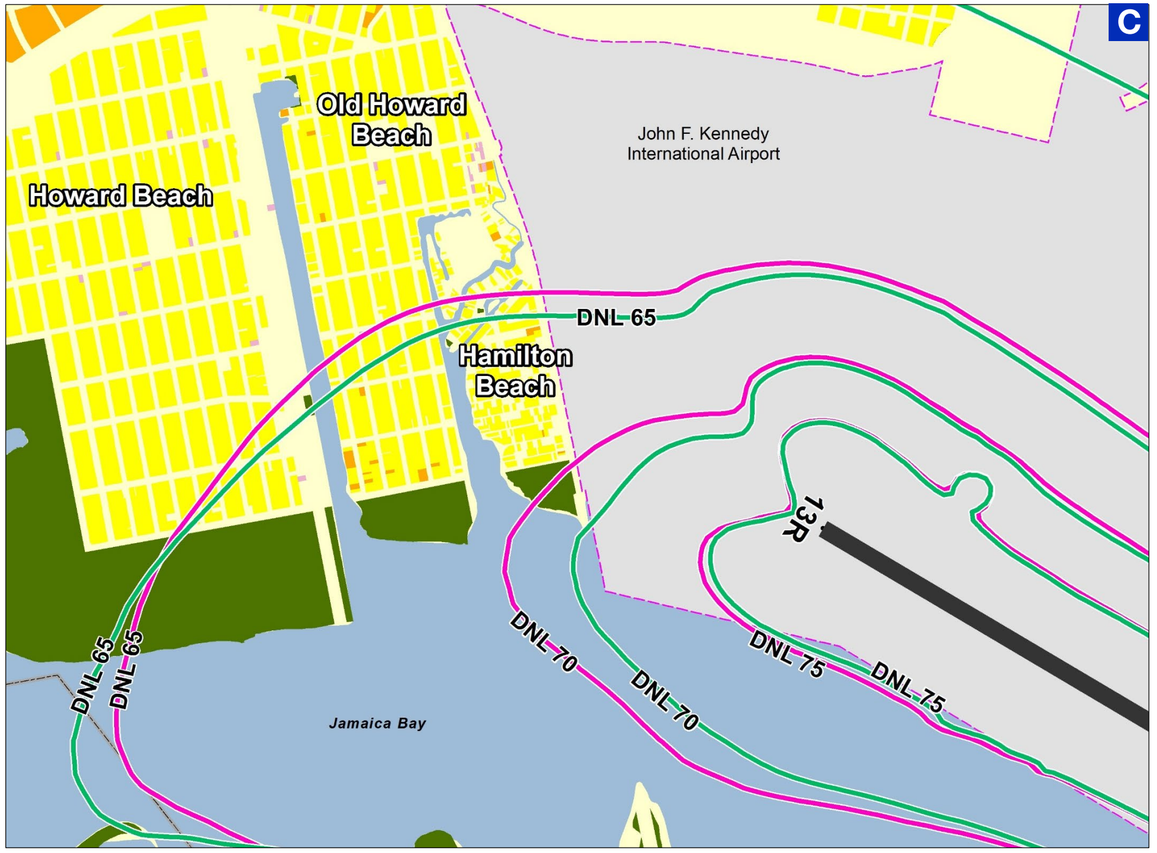
PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

Noise Abatement Measure 5 – Implement Noise Abatement Departure Procedures on a Voluntary Basis for Each Runway End (cont.)

DNL 65, 70, and 75 Contours - NADP1 and NADP2



DNL contours reflect the top nine aircraft types expected to operate at JFK in 2021 (approximately 76% of Airport operations) utilizing NADP1 and NADP2 Profiles



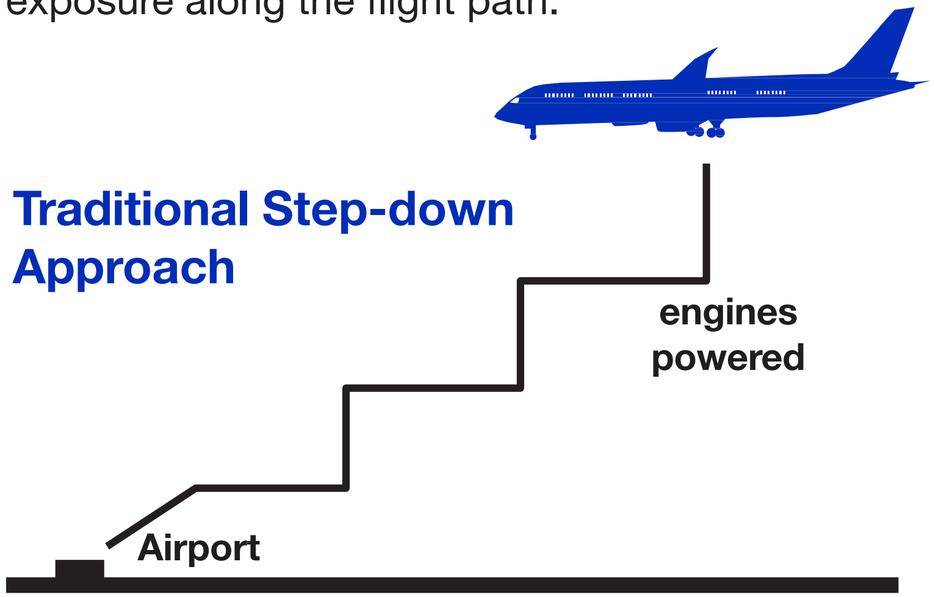
NADP1 and NADP2 DNL 65, 70, and 75 Contours over Howard Beach, Old Howard Beach, and Hamilton Beach

See Section 2.2 of the JFK NCP for more information.

Noise Abatement Measure 6 – Implement Nighttime Optimized Profile Decent Procedures

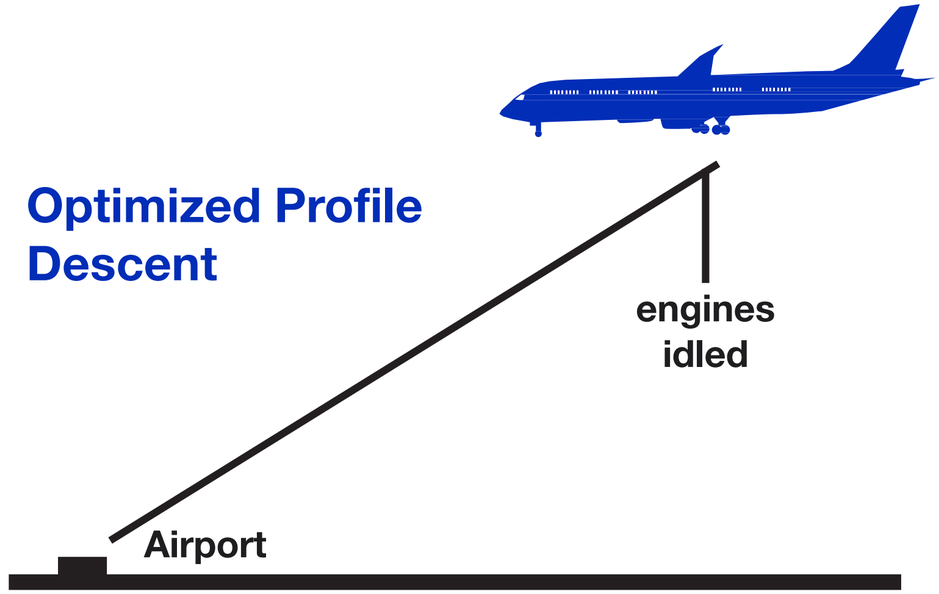
Step-Down

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 2.2 of the JFK NCP for more information.

Noise Abatement Measure 7 – Continue Existing Mandatory Departure Noise Limit and $250 Penalty



The Port Authority is recommending a continuation of the existing 112 PNdB noise limit on aircraft departing JFK. 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 2.2 of the JFK NCP for more information.

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

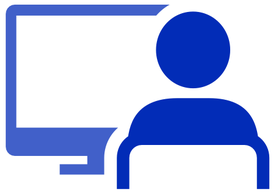
- Develop New or Modify Current Flight Tracks
- Modify Pilot Procedures for Operating Aircraft
- Perform Construction to Modify Airfield Layout or Add Noise Barriers
- Change Operating Frequencies by Modifying Runway Use or Imposing Operating Restrictions

See Section 2.3 of the JFK NCP for more information on the noise abatement strategies considered, but not recommended for inclusion.



John F. Kennedy International 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 JFK 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 4.1 of the JFK NCP for more information.

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 4-1 in Section 4.2 of the JFK 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 4-2 in Section 4.2 of the JFK NCP for more information.

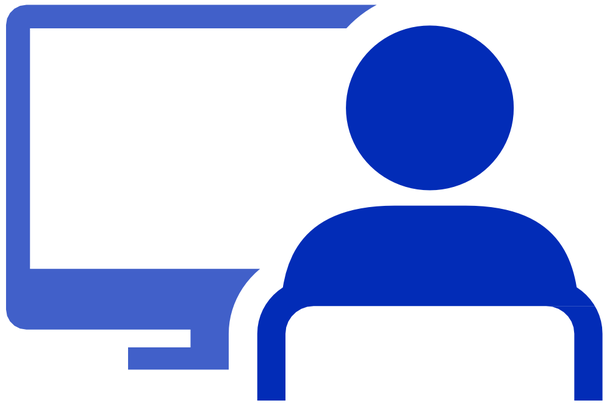
Program Management Measure 3 – Maintain Public Flight Tracking Portal

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 Port Authority's Noise Office.

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







Aircraft Locations



Noise Monitor Values

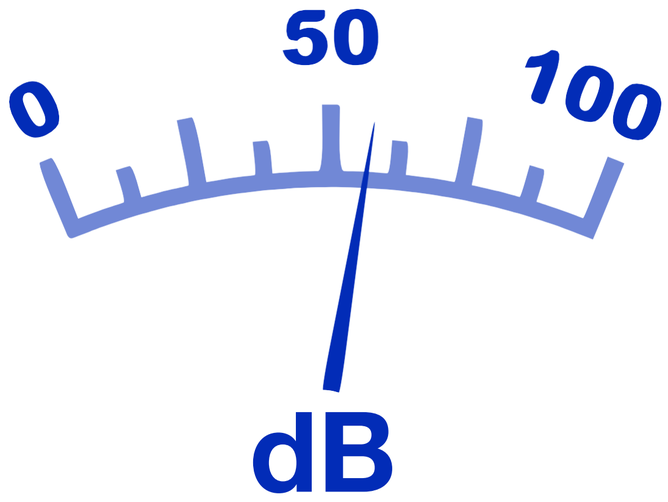


Runway Closures

See Table 4-3 in Section 4.2 of the JFK NCP for more information.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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.

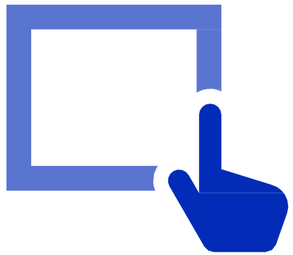
See Table 4-4 in Section 4.2 of the JFK NCP for more information.

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 4-5 in Section 4.2 of the JFK 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 JFK-related issues and meets on a regular basis to find ways to manage aircraft noise impacts.

See Table 4-6 in Section 4.2 of the JFK 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 4-7 in Section 4.2 of the JFK 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 JFK 2021 NEM 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 4-8 in Section 4.2 of the JFK 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 JFK and notify the FAA whether the NEM continues to be a reasonable representation of current and/or forecast conditions at JFK or submit an updated NEM to the FAA for acceptance. The Port Authority anticipates updating the NEMs when operations at JFK stabilize as the aviation sector continues to recover from the COVID-19 pandemic.

See Table 4-9 in Section 4.2 of the JFK 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 4-10 in Section 4.2 of the JFK 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.

JFK Noise Monitoring Data – April 2018 - 2019

Monthly Average - Aircraft DNL Values

Month	J13RP	J13LP	J22RP	J04BP	J31RP	J31LP	CEDAH	ATL65	FLPRK	ARV64	ROSED	JBRDCHNL	JBYSWTR	JMLVRN	JOLDBRK	JEHLS	JHB165AV	JCSVS	J132BH
Apr-18	65.5	73.3	67.8	70.9	67.1	66.6	69.3	57.9	61.6	67.3	66.8	60.7	62.0	58.2	51.7	55.0	69.4	58.5	54.9
May-18	65.8	71.7	69.3	72.7	65.6	67.0	67.9	57.9	62.0	68.6	69.2	62.4	61.1	60.4	52.1	54.9	68.1	59.4	52.9
Jun-18	68.6	71.9	69.2	71.5	68.8	66.5	68.0	61.4	62.2	68.6	67.6	62.6	62.2	58.6	51.5	54.7	68.6	58.3	53.5
Jul-18	69.4	71.4	69.8	68.2	68.4	66.0	67.9	61.2	64.0	67.2	64.4	64.1	61.4	54.3	53.5	57.0	67.6	55.2	56.2
Aug-18	68.4	73.1	69.1	70.0	67.0	68.2	69.7	59.5	63.2	68.4	64.9	62.1	60.7	57.8	53.9	56.4	69.8	57.3	54.5
Sep-18	68.2	70.6	67.4	72.0	69.6	67.4	67.4	60.6	61.2	69.6	68.6	61.1	63.5	60.2	53.5	54.4	69.2	60.4	52.6
Oct-18	66.1	74.4	68.2	69.8	60.5	69.9	70.6	55.8	62.8	68.5	66.5	61.8	58.7	57.4	53.2	56.5	71.4	57.3	56.4
Nov-18	64.9	74.9	66.6	71.9	61.5	67.8	71.2	54.3	59.6	68.8	69.0	60.0	60.2	59.8	50.3	52.4	70.7	60.2	55.6
Dec-18	66.1	75.2	65.1	69.9	66.7	68.1	71.6	57.4	59.7	66.4	66.5	60.1	61.2	57.3	50.9	53.3	71.2	58.0	56.4
Jan-19	65.1	74.8	65.1	68.6	64.4	66.5	71.4	55.8	60.4	66.7	66.0	59.0	59.9	56.0	51.5	53.8	69.8	57.4	54.3
Feb-19	65.0	73.4	65.2	71.6	61.3	65.8	69.6	55.1	58.9	67.5	68.7	58.5	60.4	59.7	49.4	51.7	69.4	59.9	53.0
Mar-19	64.7	71.5	68.2	71.1	64.2	64.5	67.9	56.0	61.7	68.9	67.8	62.0	61.3	58.4	51.2	54.3	68.1	59.0	53.1
Apr-19	64.4	48.1'	69.9	73.0	29.8'	65.3	49.6'	54.0	64.6	70.2	69.7	63.9	61.1	59.9	56.0	57.7	67.4	60.8	53.9

Note:
NA: Equipment malfunction
RM: Unit removed as requested by the homeowner
': Drop in DNL reading for the site due to closure of Runway 13L/31R

Color Scales:
70 or above
65 - 69.9
60.0 - 64.9
55.0 - 59.9
below 55

For informational purposes only

See Table 4-11 in Section 4.2 of the JFK 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.



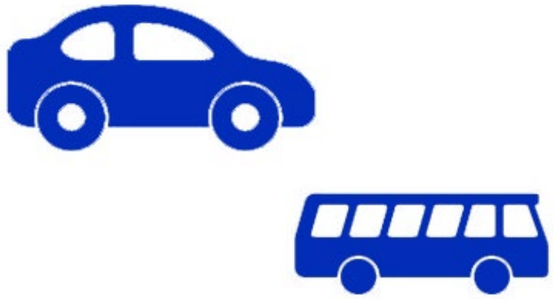
The Port Authority will work with the FAA to find opportunities that best ensure NextGen procedures, including dispersal headings, avoid increases in community noise exposure.

See Table 4-12 in Section 4.2 of the JFK NCP for more information.

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



Add More Noise Monitors Throughout Queens and Nassau County



Consider Improved Ground Transportation Access to Stewart International Airport to Balance Activity



Multiple Suggestions of Aircraft Technology Changes

See Section 4.3 and Appendix G of the JFK NCP for more information.