

East Hampton Airport Phase I Noise Analysis Interim Report

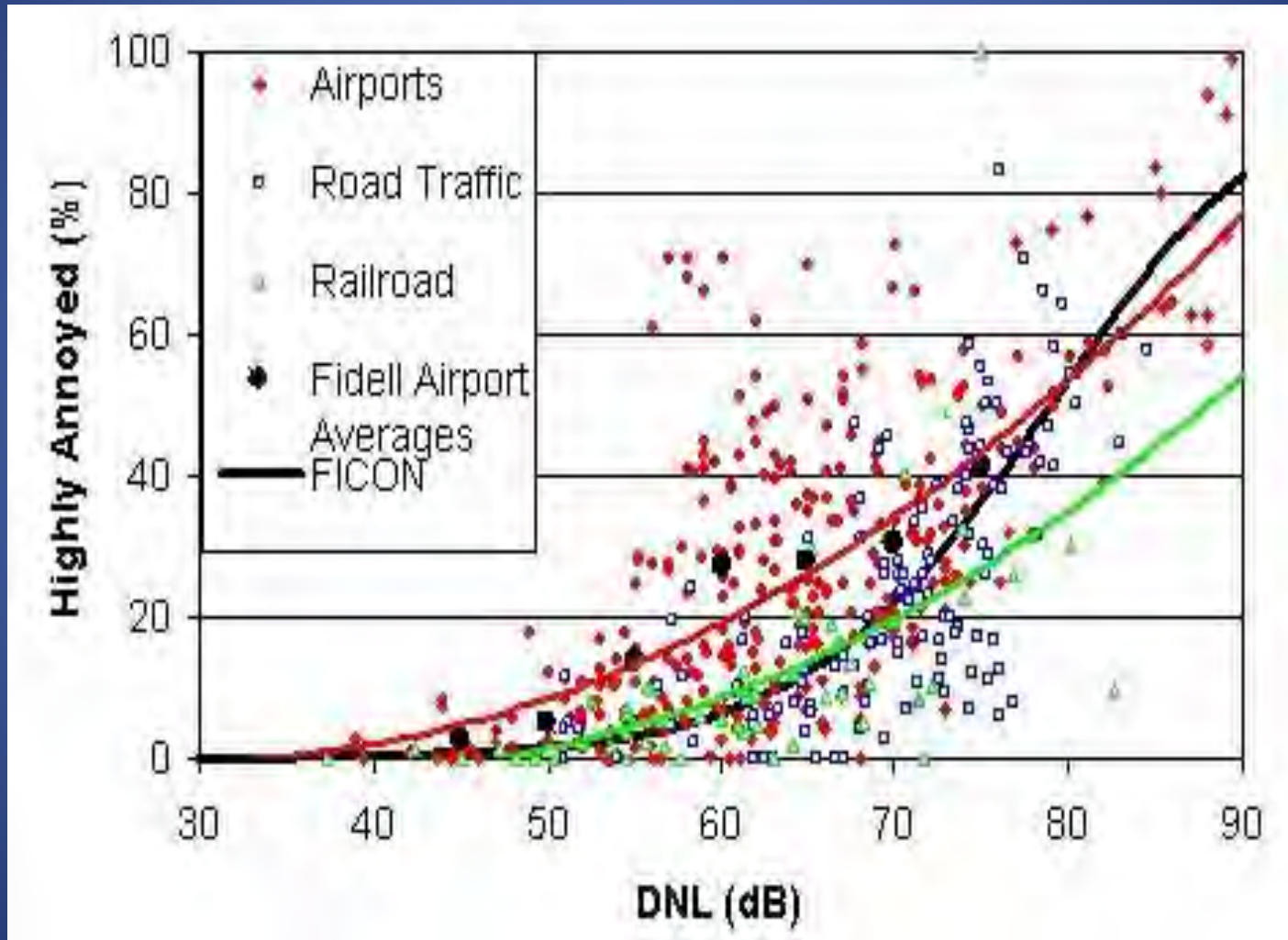


October 30, 2014

Prepared by
Young Environmental Sciences
and Noise Pollution Clearinghouse

Airport Noise and Annoyance

Annoyance Varies Greatly



Source: Schomer, Lay Language paper for the Acoustical Society of America, Biases Introduced by the Fitting of Functions to Attitudinal Survey Data

2004 FAA Report to Congress

Nonmilitary Helicopter Urban Noise Study

“In general, there are a number of possible explanations for **heightened community response to helicopter noise**. The possible explanations, which are not mutually exclusive, include the following:

- A subsection of the population may be more sensitive to the **low-frequency helicopter noise** than is the majority of the population;
- **A-weighting is possibly not the most appropriate metric** with which to assess helicopter noise because A-weighting attenuates the low-frequency noise component;
- **Noise-induced building vibration and rattle** has been shown to significantly increase noise annoyance and helicopter sound is rich in low-frequency content;
- There is some evidence that suggests helicopter noise is **slightly more annoying** than fixed-wing aircraft noise at the same sound exposure level;
- Helicopter noise may be more noticeable because of its periodic **impulsive** characteristic;
- There is the possible phenomena of “virtual noise” in which a set of **non-acoustical factors**, such as bias (a personal judgment that the helicopter does not need to fly here) and fear (of crashes/injury/death), greatly enhances people’s negative attitudes; and
- The way helicopters are operated can influence reactions, i.e., stationary hover and flexible **low altitude flight capability**. “

2004 FAA Report to Congress

Nonmilitary Helicopter Urban Noise Study

Example of heightened reaction to Helicopter Noise:

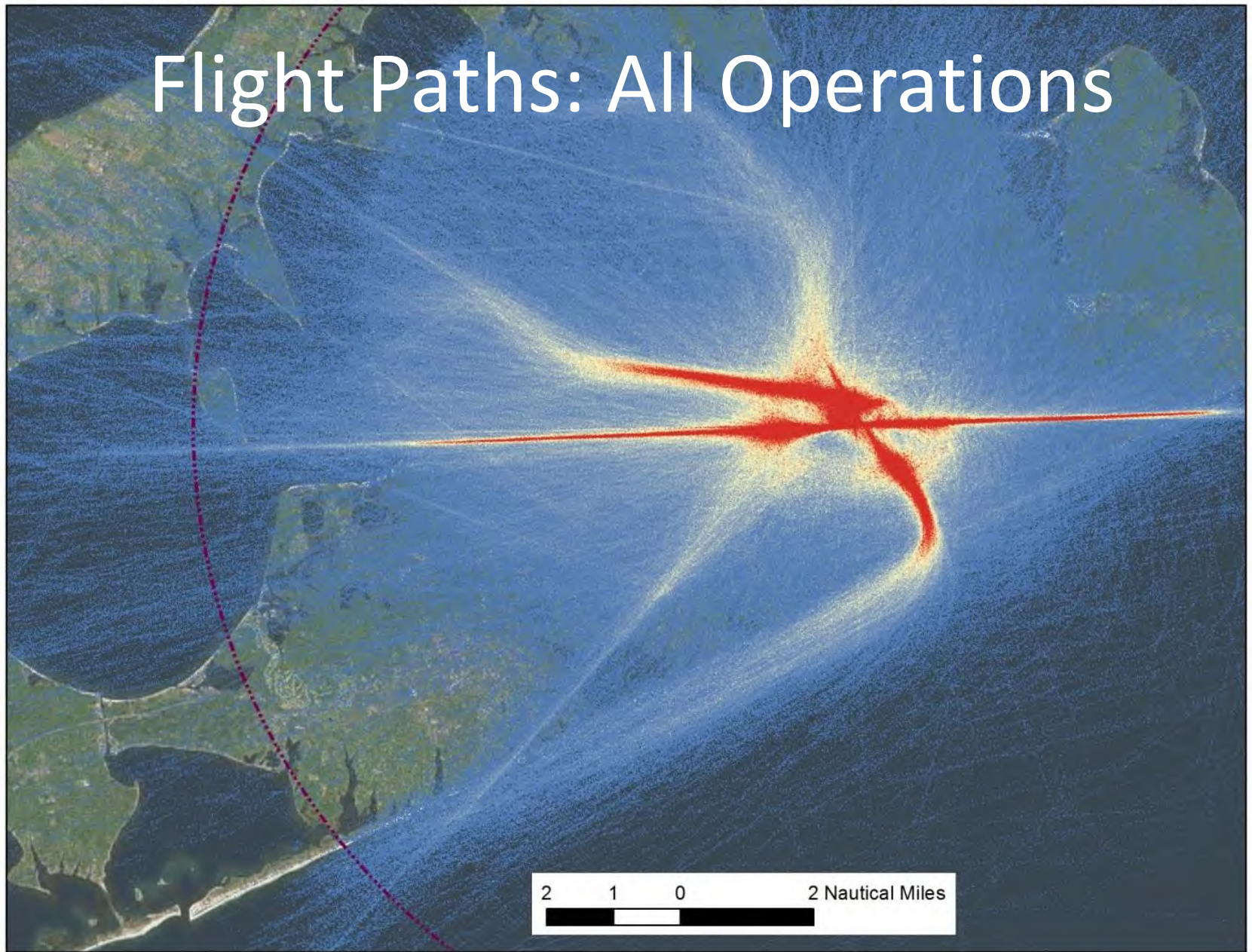
“In the community of Lower Feltham, the contribution of fixed- and rotary-wing aircraft to the overall noise exposure was **about equal**. However, the percentages of **people who considered helicopters more disturbing than fixed-wing aircraft were 2 to 2.5 times as large** as the percentages that considered helicopters less disturbing. In the communities of Esher and Epsom, where the numbers of helicopters and a fixed-wing aircraft were **about equal**, the disturbance due to **helicopter noise was 2.5 times as large as that due to fixed-wing aircraft noise**. People were more annoyed by the helicopters even though, on average, the **fixed-wing aircraft were 5.0 dB louder.**”

Google Earth Demo

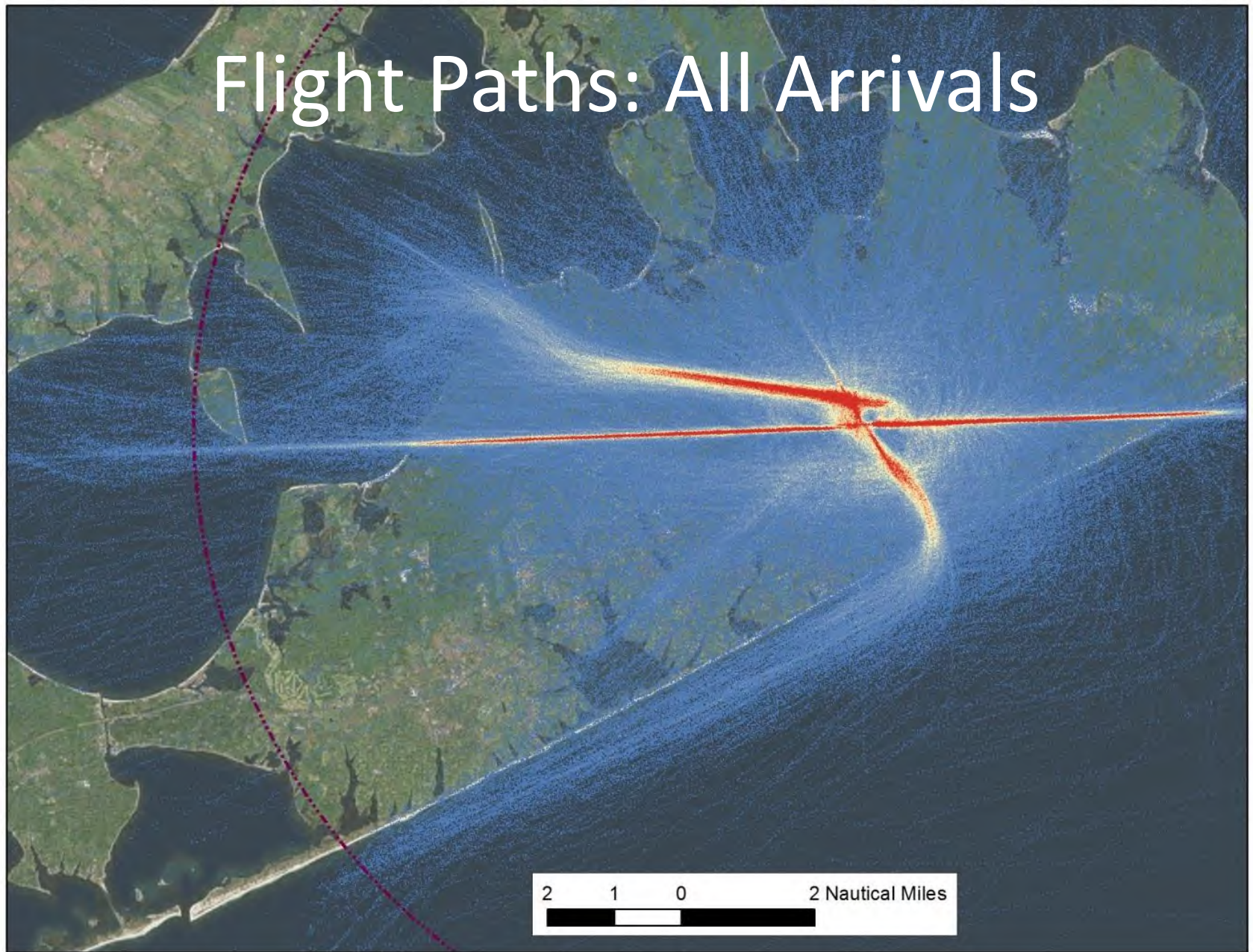


Flight paths from 2013 AirScene data

Flight Paths: All Operations

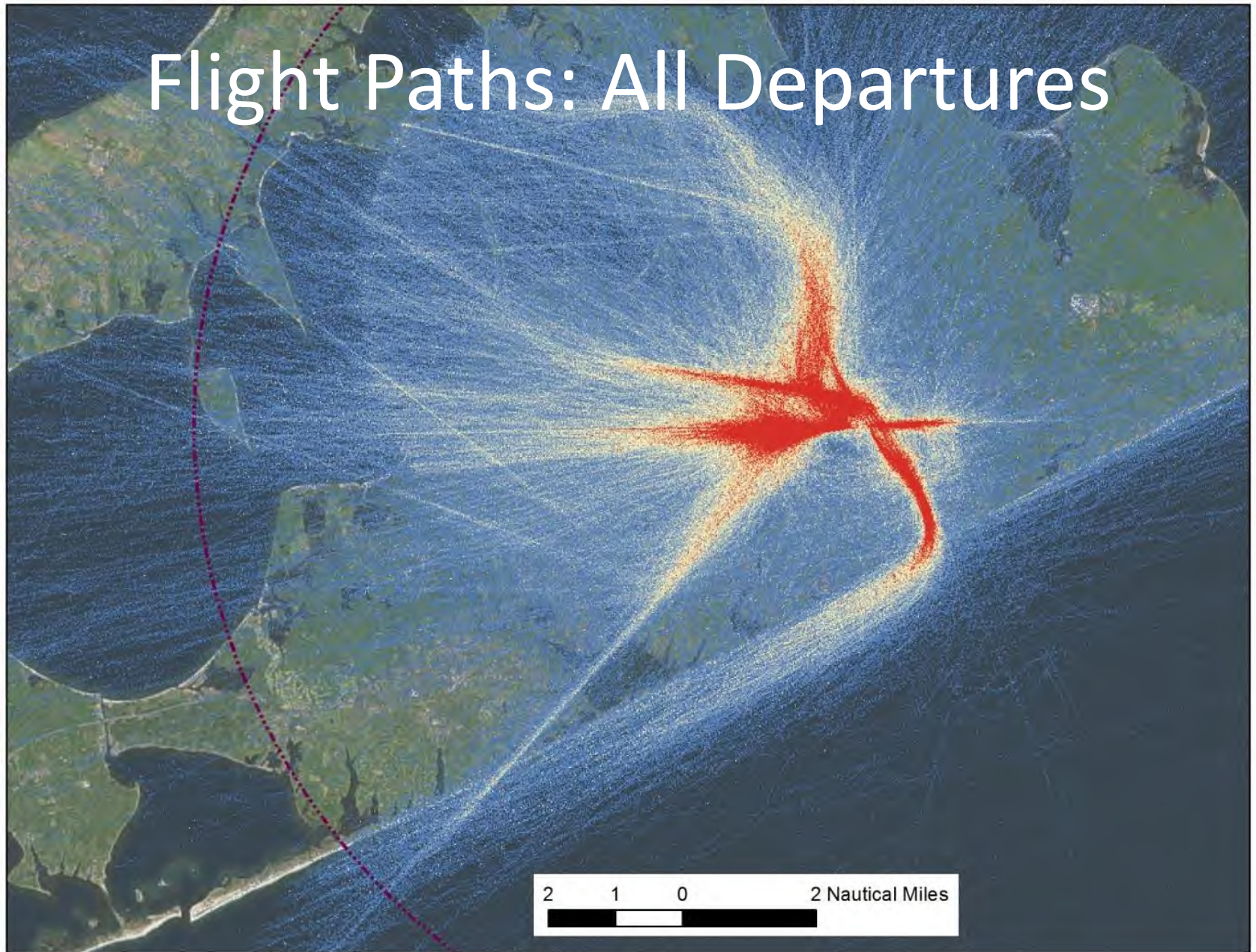


Flight Paths: All Arrivals

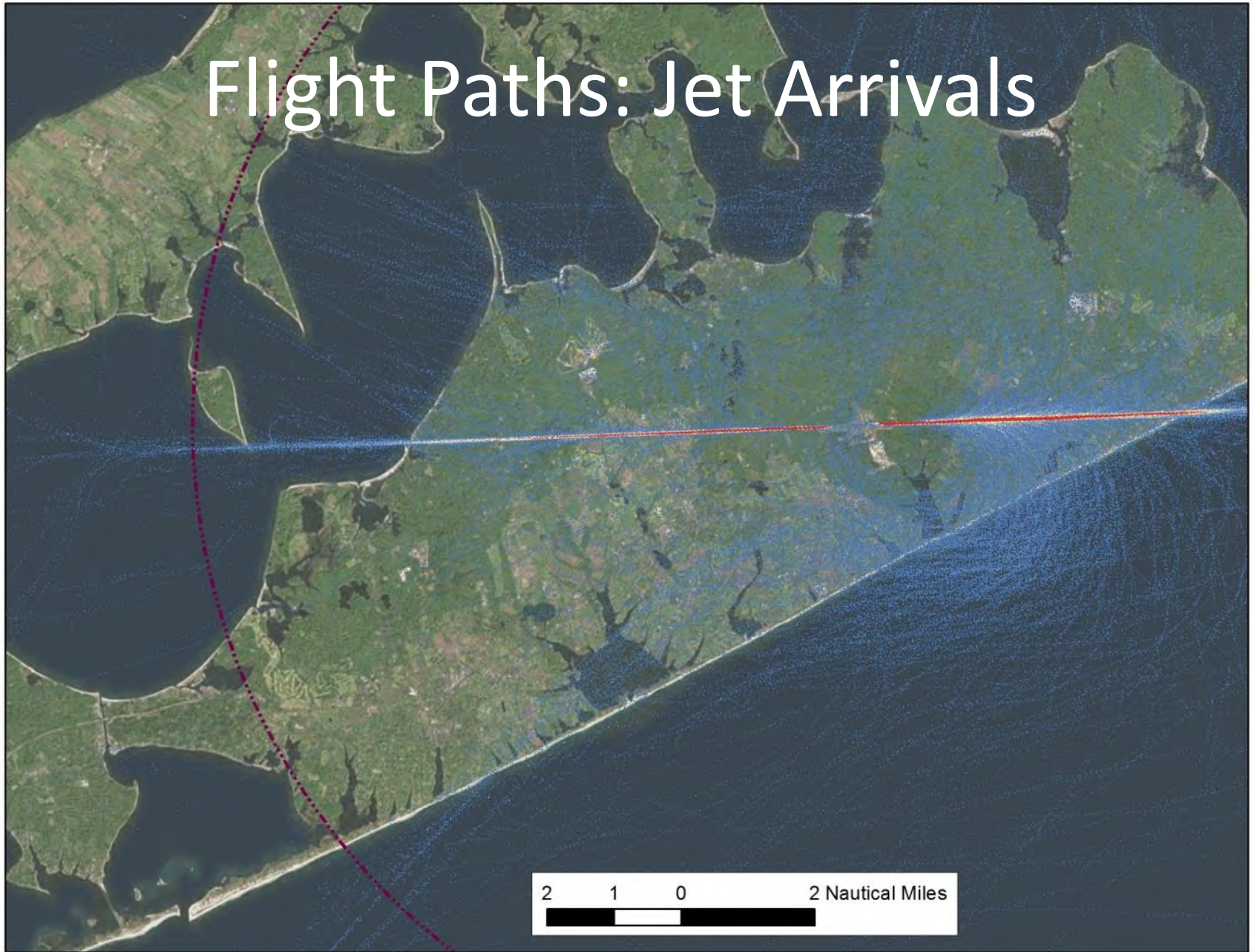


Flight paths from 2013 AirScene data

Flight Paths: All Departures

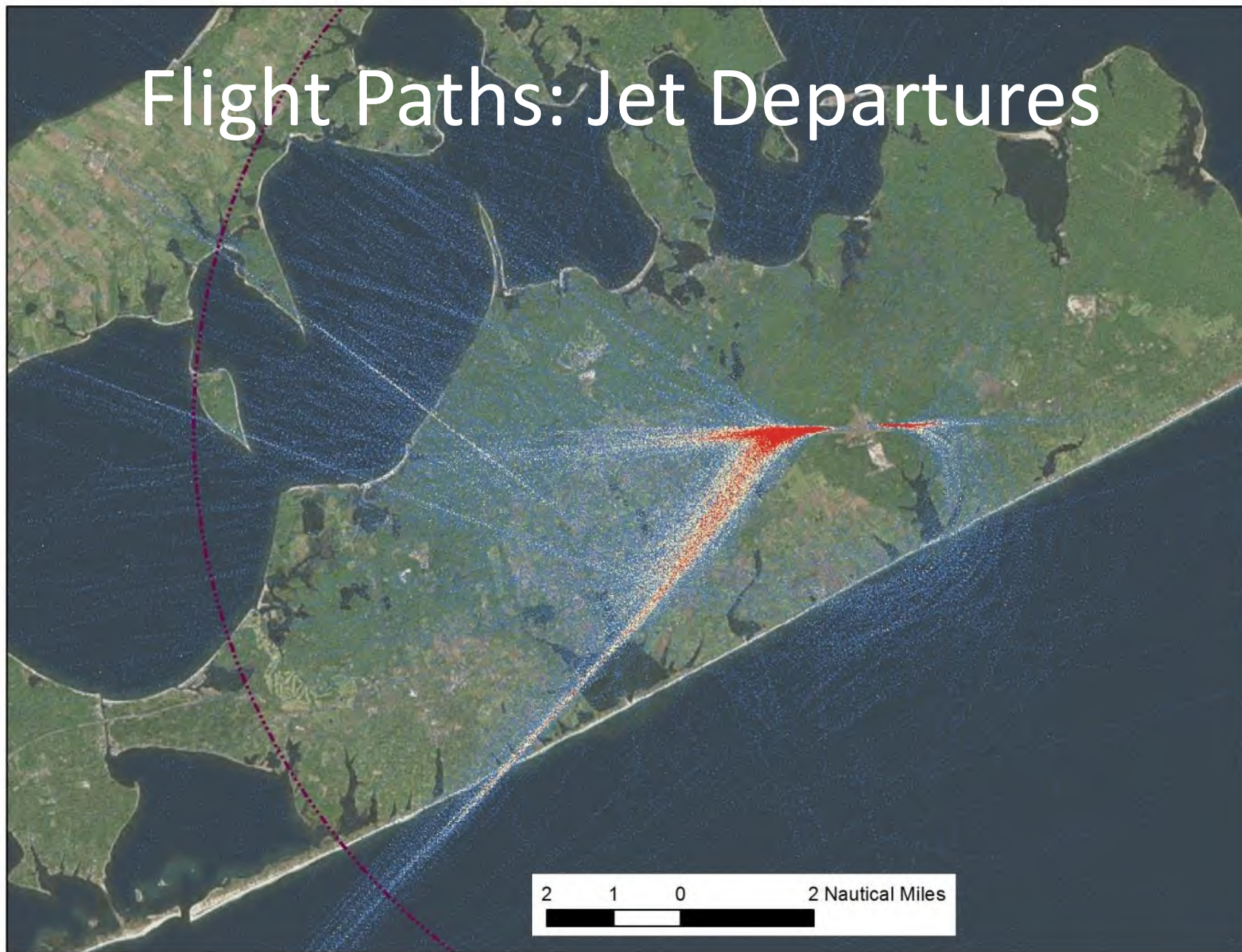


Flight Paths: Jet Arrivals



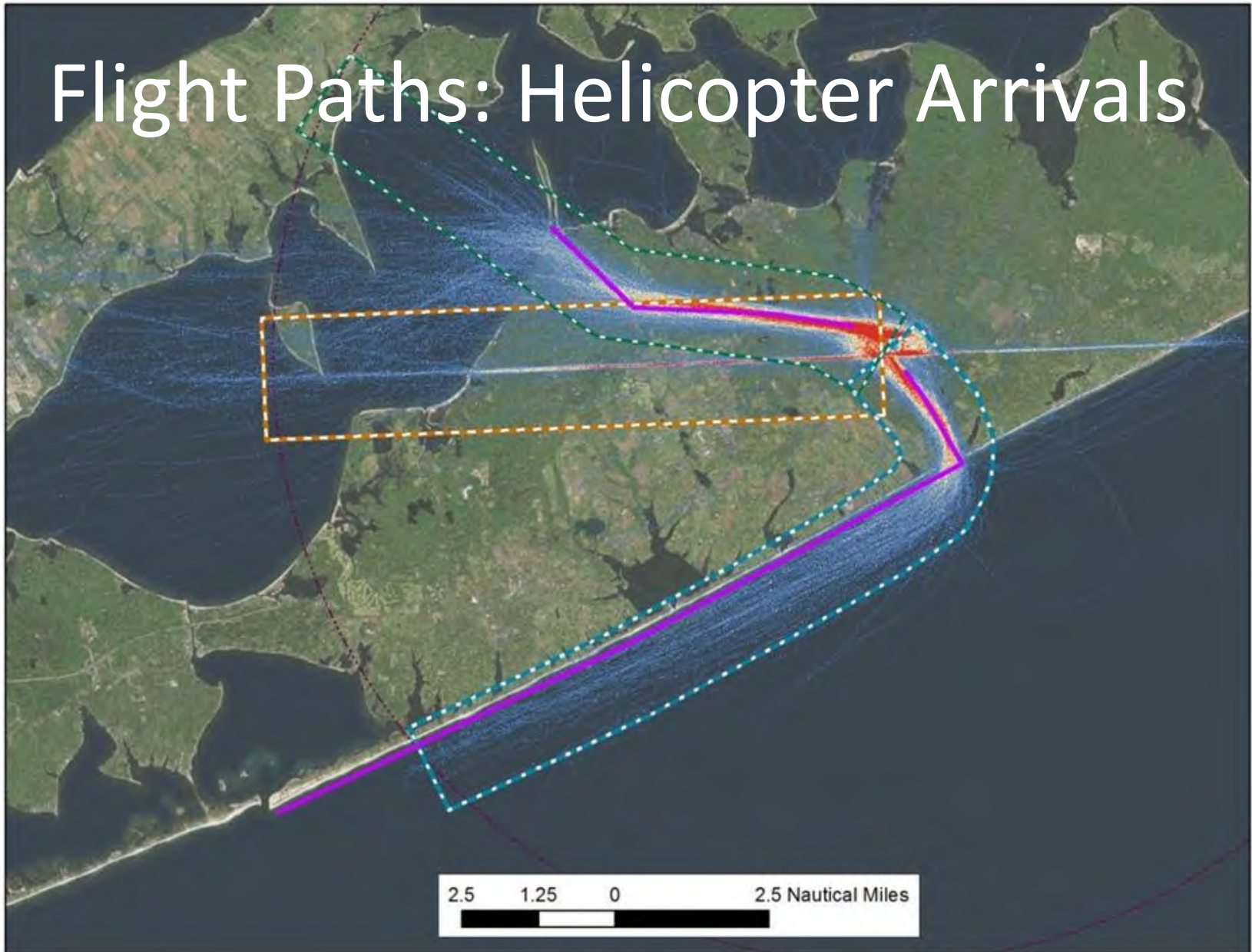
Sample of 1,480 operations from 2013 AirScene data

Flight Paths: Jet Departures



Sample of 1,507 operations from 2013 AirScene data

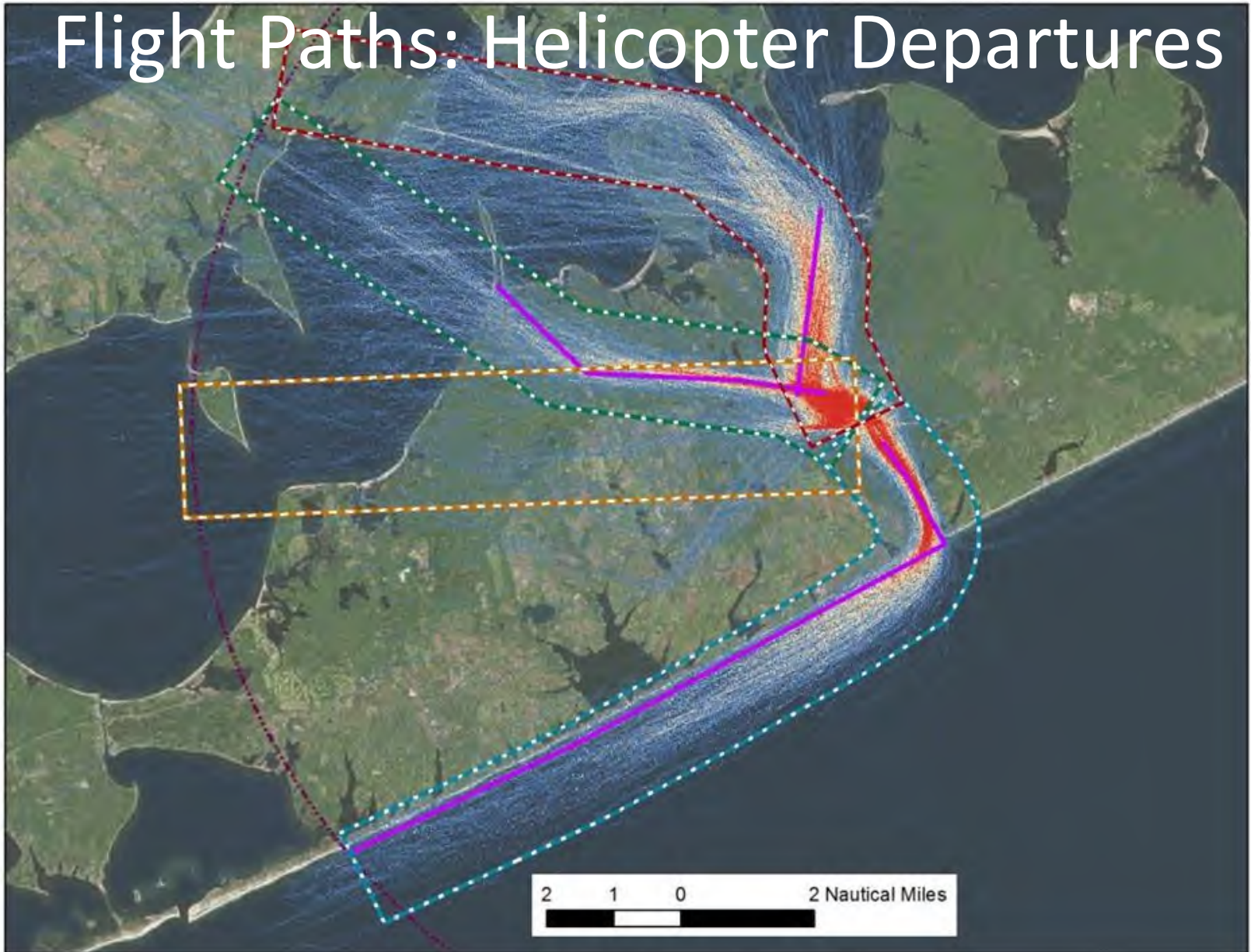
Flight Paths: Helicopter Arrivals



Sample of 1,830 operations from 2013 AirScene data

*Routes recommended in the Voluntary Noise Procedures are shown in boxes

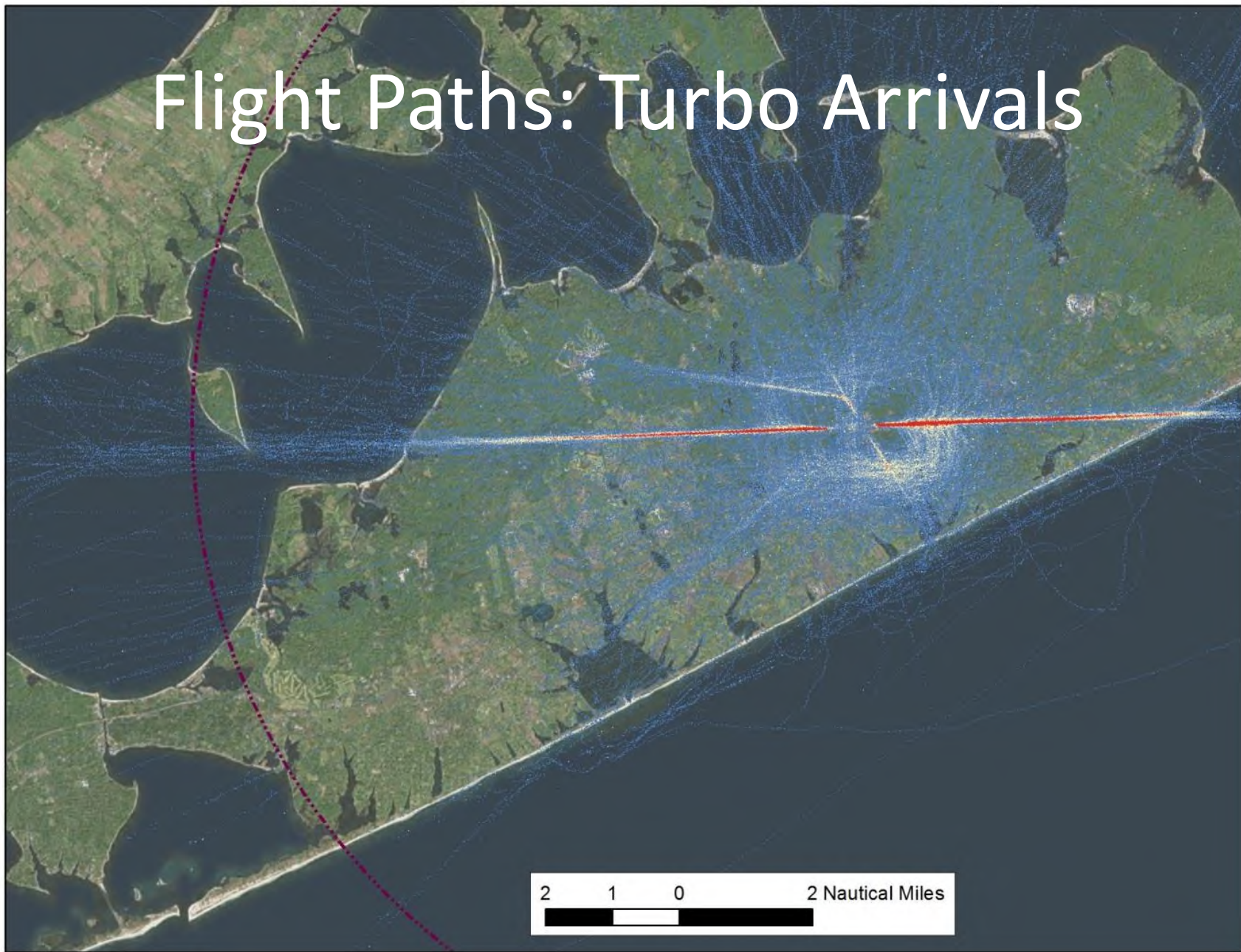
Flight Paths: Helicopter Departures



Sample of 2,080 operations from 2013 AirScene data

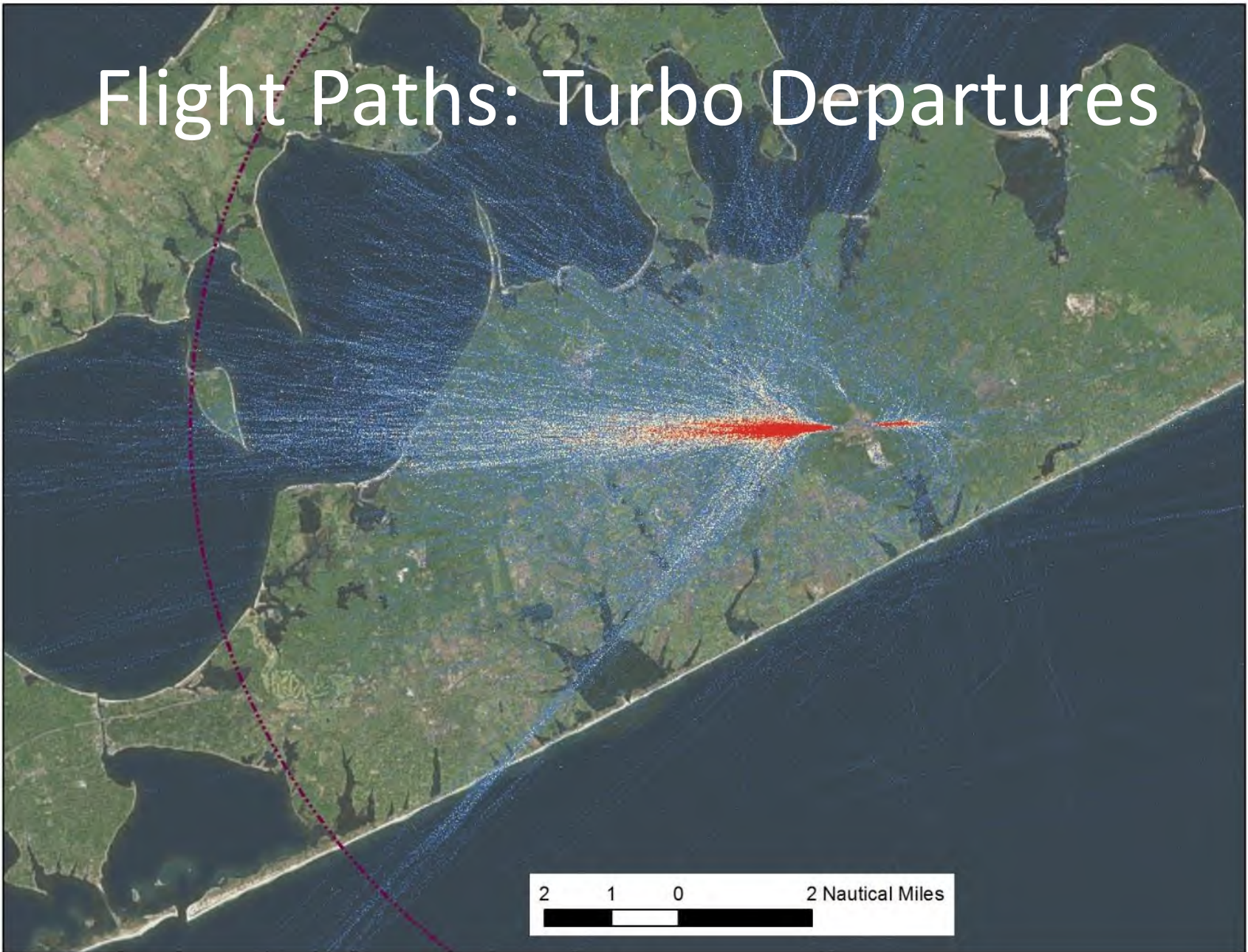
*Routes recommended in the Voluntary Noise Procedures are shown in boxes

Flight Paths: Turbo Arrivals



Sample of 1,115 operations from 2013 AirScene data

Flight Paths: Turbo Departures



Sample of 1,244 operations from 2013 AirScene data

Flight Paths: Piston Arrivals



Sample of 1,553 operations from 2013 AirScene data

Flight Paths: Piston Departures



Sample of 1,622 operations from 2013 AirScene data

Helicopter Compliance with Voluntary Noise Abatement Procedures



Town of East Hampton Airport
200 Daniel's Hole Road
Wainscott, NY 11975
631.537.1130

2013 Noise Abatement

The following Helicopter Noise Abatement Procedures have been developed in collaboration with the FAA's East Hampton Control Tower, the Eastern Region Helicopter Council, the Multi-Town Helicopter Noise Advisory Committee, the East Hampton Town Board and local pilots and are strongly recommended for helicopter operations at EHAM.

This 2013 Noise Abatement Plan is comprised of three separate routes: Flyover Route for arrivals from the Northwest, Sierra Route for arrivals and departures from the South and Echo Route for departures to the North. It also includes 20% higher cruise altitudes (3000 ft. minimum vs. 2500 ft. minimum) and more precise flight path and designated waypoints.

ARRIVALS

Northwest:

Arrive from the west proceed to the base of TESSUP'S MECK (N40.59.44 W072.02.09), proceed to CLAY BLD (N40.58.25 W072.20.25), and then to LOTS (N40.58.14 W072.17.54), then over the power lines to the airport. Approach Jetport North at or above 3000 ft. MSL.

Sierra:

Arrive from the South fly along the south shore to SECR673N (N40.55.15 W072.13.25.5) at or above 2000 feet MSL. Proceed over Georgian Pond to the airport above the traffic pattern descending south of the airport building. ITD Extended wing with proper attitude and 7000 ft. AGL for light aircraft and 7000 ft. AGL for Jet.

DEPARTURES

Echo:

Depart heading northwest over the power lines 1 NM to Town Line Road (N40.58.02.0 W072.16.16.5). Turn right and proceed 2.8 NM to Barcelona Point (N41.00.47.5 W072.15.44.3) climbing to an altitude of or above 3000 feet MSL as soon as possible using max performance climb.

Sierra:

Depart South by climbing above the traffic pattern north of the airport and then proceed over Georgian Pond to the south shore at or above 2000 ft. MSL.

PLEASE NOTE:

Pathways depicted on the map are for illustration only and may not conform precisely to coordinates.

The Control Tower will advise pilots of traffic conflicts on each of the voluntary helicopter routes.

East Hampton Airport has a voluntary curfew in place from 2300 to 0700 daily. Operations during these hours should be for extreme circumstances and emergencies.

Ramp Operations

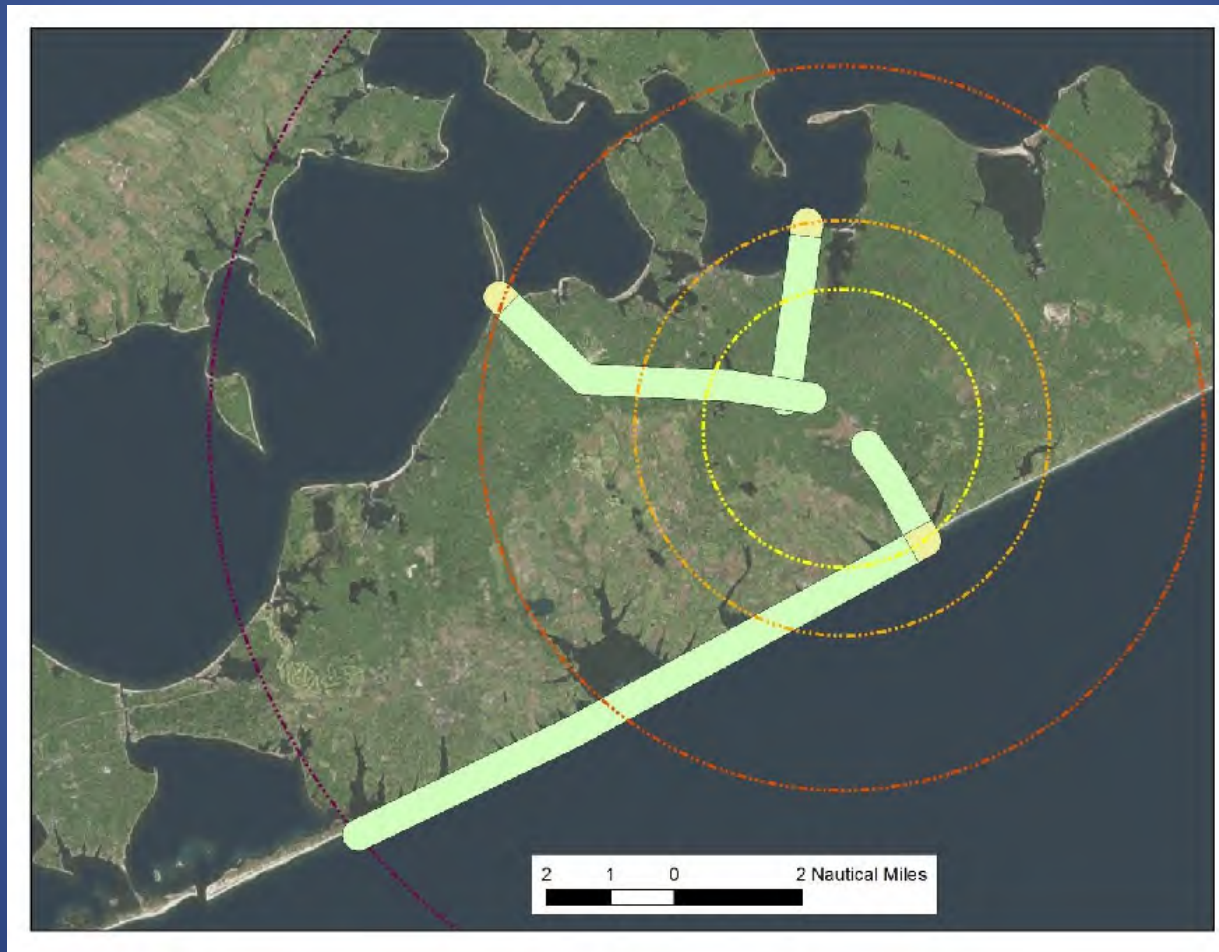
All arrivals and departures to HHO should be to and from active runways or parallel taxiways so as not to interfere with fixed wing traffic. Approaches and departures directly to and from the **Terminal Ramp** area are **prohibited**.

No part of a helicopter, **including rotor tips**, is to come closer than **100 feet** to the Terminal building. Parking spot 1 in front of the Terminal Building is reserved for fixed wing aircraft only.

Boarding and deplaning a helicopter with the rotors turning is considered unsafe and should be avoided. Use of a rotor brake, if installed is encouraged.

Operating rotors for an extended period of time on the ramp is discouraged. **More than Five (5) minutes is considered excessive.** Your cooperation with this limit is for noise

2013 Helicopter Compliance with Voluntary Noise Abatement Procedures



Depicts a half-mile wide track for each Voluntary Noise Abatement Helicopter Procedure

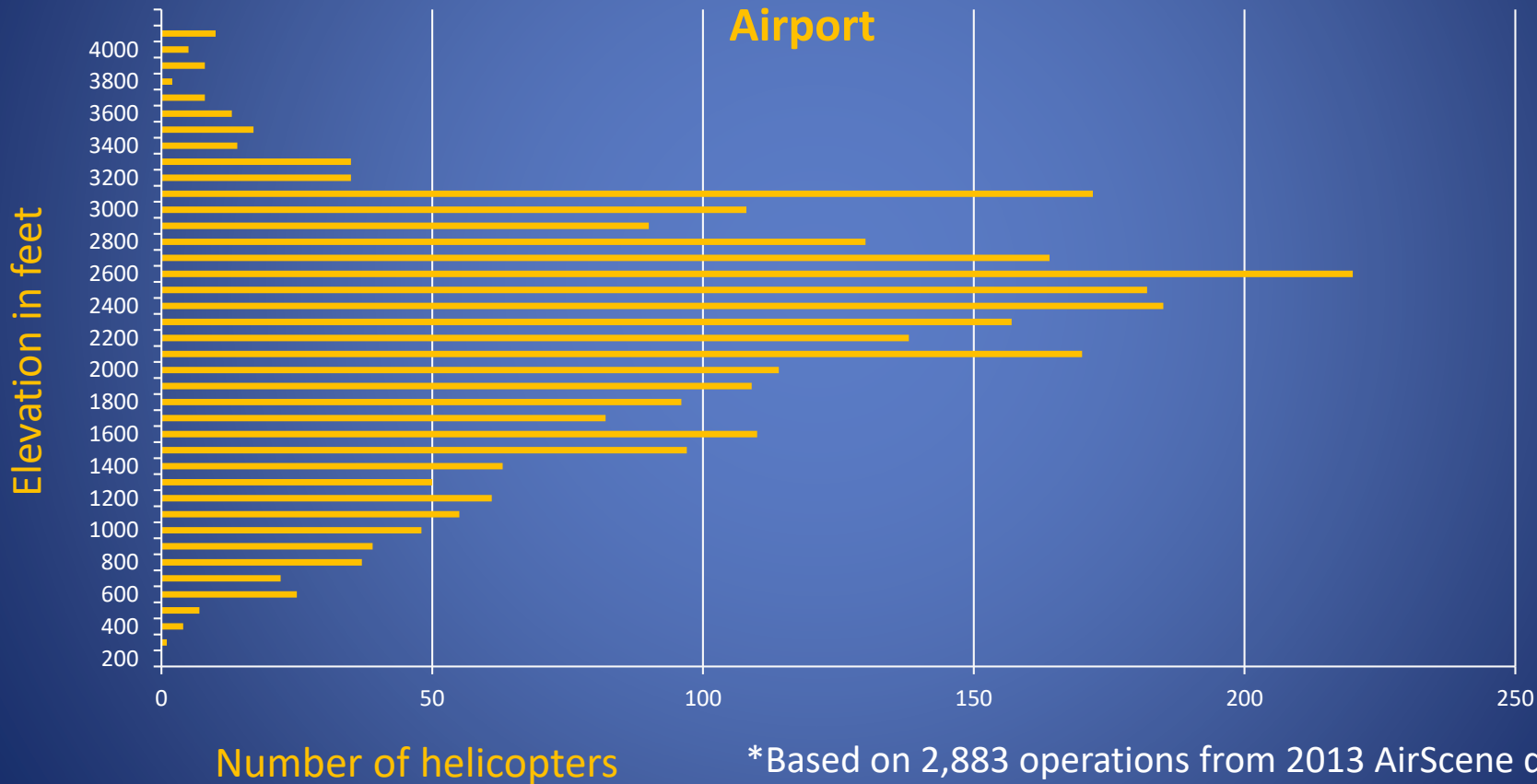
2013 Helicopter Compliance with Voluntary Noise Abatement Procedures

Flight Path	Arrival or Departure	Compliance with Voluntary Noise Abatement Procedures
Barcelona/Echo	D	3.9%
Georgica/Sierra	A	37.7%
Georgica/Sierra	D	29.7%
Jessups Neck/ November	A	5.4%
Jessups Neck/ November	D	1.9%
Totals	A/D	15.3%

Based on a sample of 3,910 known operations from 2013 AirScene data

How High are the Helicopters?

Altitudes of Helicopter Flights at 4 Nautical Miles from Airport

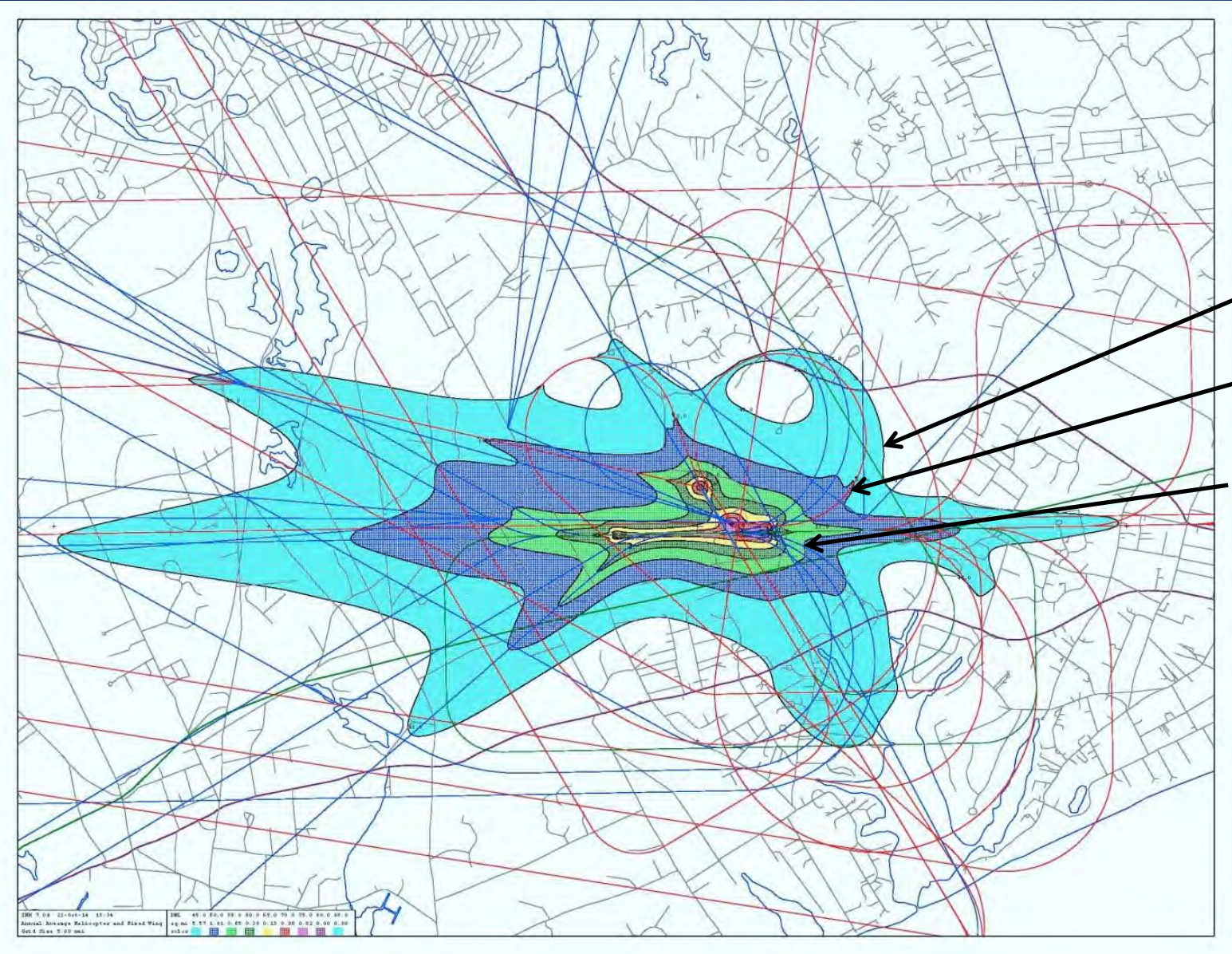


*Based on 2,883 operations from 2013 AirScene data
 **Elevation/altitude rounded to nearest 100 feet
 ***4,100 foot category includes all operations 4,100 feet and above

Ways To Measure Noise and Noise Impacts

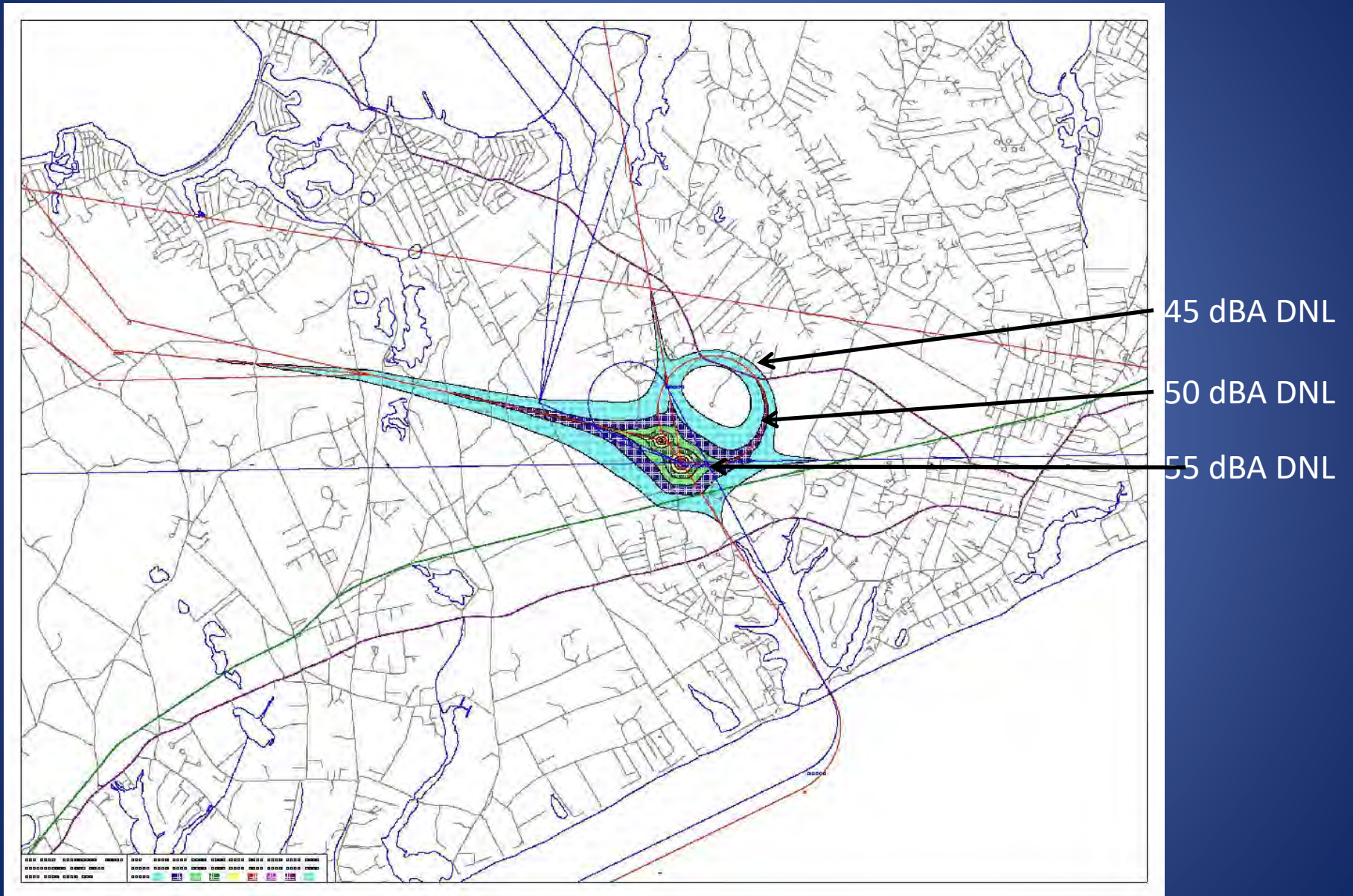
- The decibel comes in lots of flavors
 - Maximum noise level (Lmax)
 - Day-night annual average (DNL)
 - Counted events above a threshold level
 - “A” vs “C” weighting
 - Sound Exposure Level (SEL)
- Complaints
- Community reaction

2013 Annual Average Noise: All Traffic

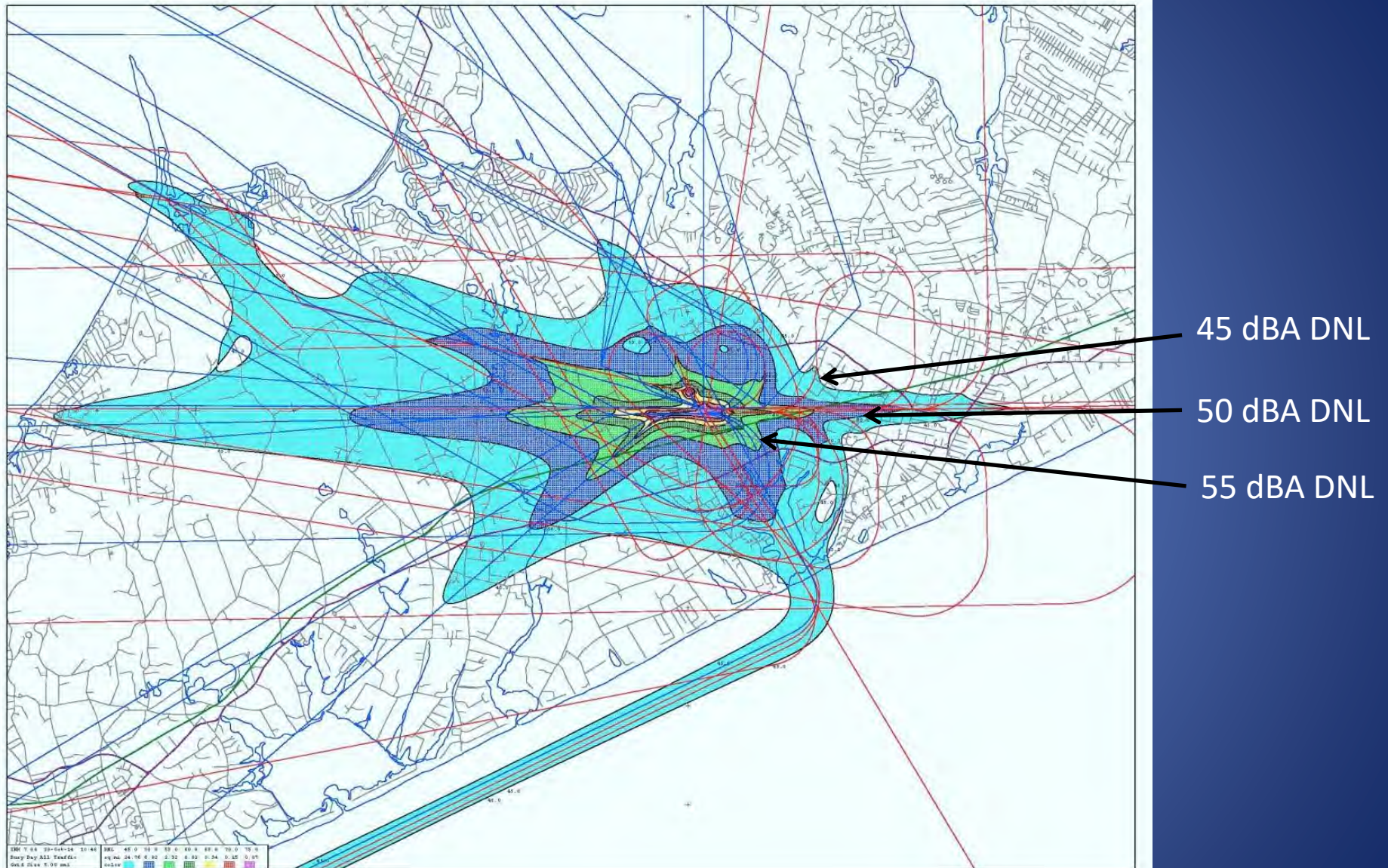


FAA Integrated Noise Model Output

2013 Annual Average Noise: All Helicopters



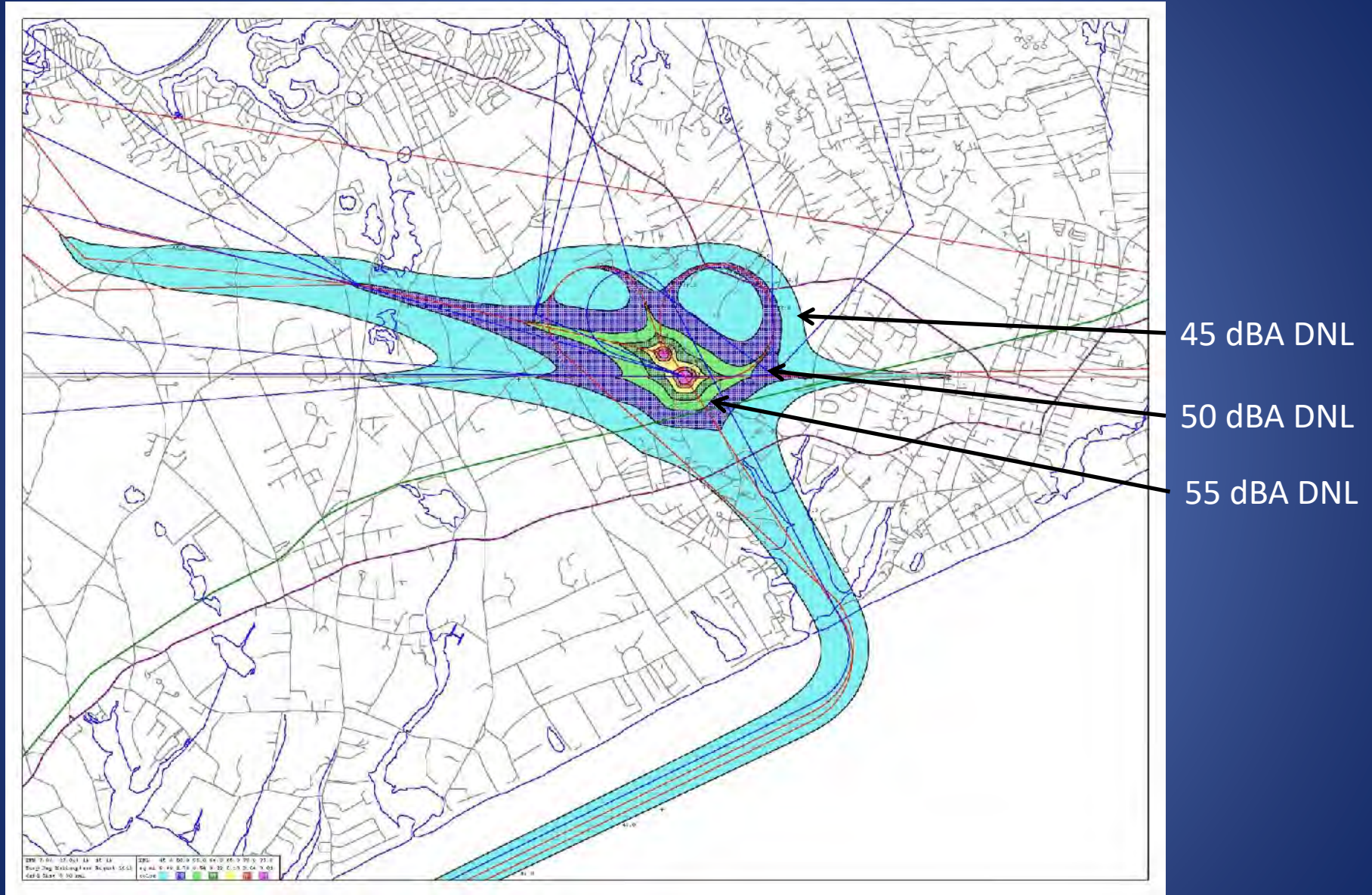
2013 Average Busiest Day Noise: All Traffic



FAA Integrated Noise Model Output

*Average busiest day defined as the average number of daily operations between August 23-26, 2013

2013 Average Busiest Day Noise: All Helicopters



FAA Integrated Noise Model Output

*Average busiest day defined as the average number of daily operations between August 23-26, 2013

Noise Criteria from Chapter 185-3 of the Code of the Town of East Hampton

- 7 AM to 7 PM
 - No noise > 65 dBA (residential)
 - No noise > 70 dBA (commercial)
- 7 PM to 7 AM
 - No noise > 50 dBA (residential)
 - No noise > 55 dBA (commercial)

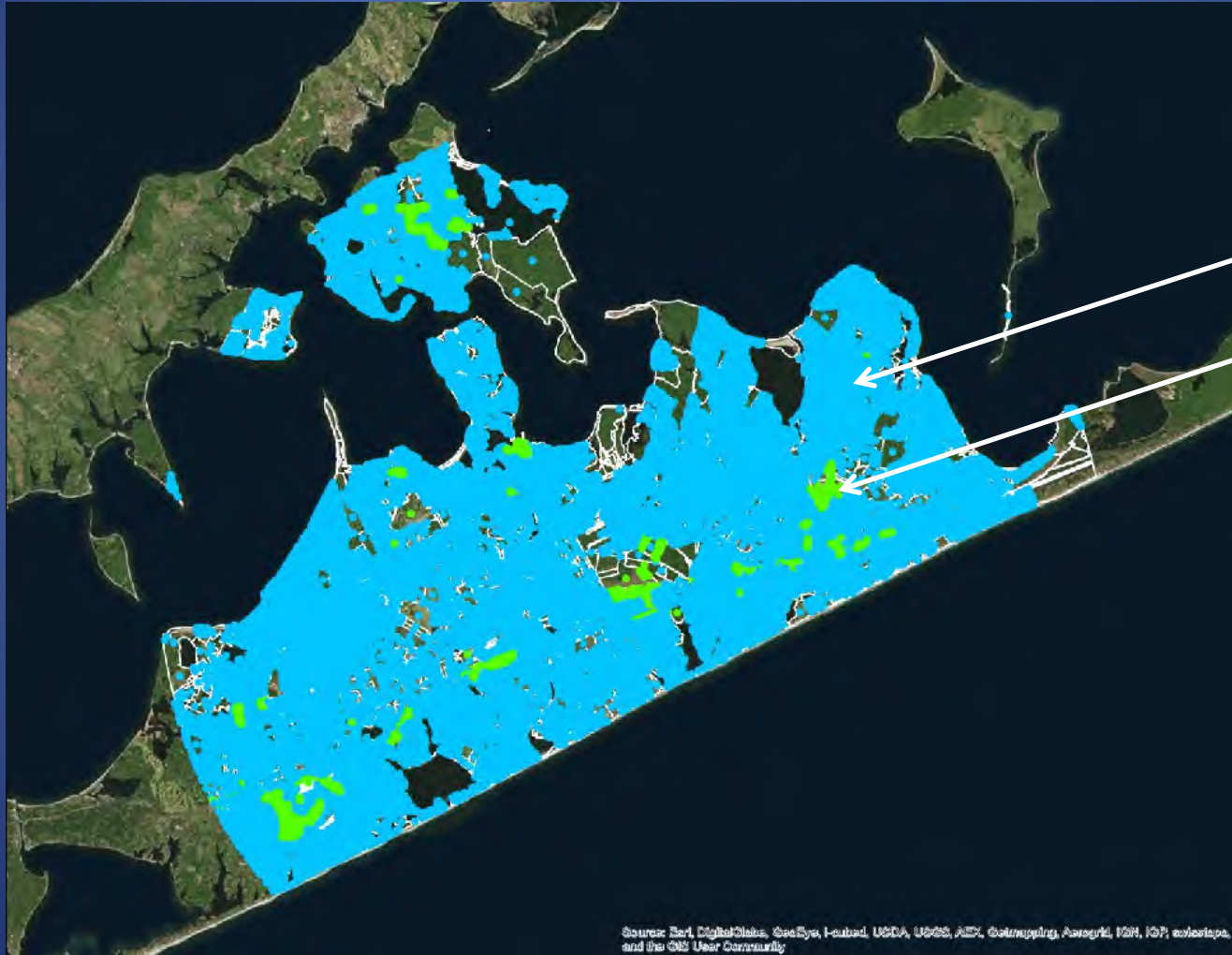
Measuring “Exceedances”

- Identified each property parcel in a 10-mile radius from the Airport
- Used the 2013 Annual Average INM Modeling
 - The INM model calculates **L_{max}** at each parcel for each flight (*i.e.*, maximum sound level)
- Applied the Town Code standards to determine the number of “exceedances”
 - (*i.e.*, the number of times each parcel experienced a noise impact above the Town’s limits)
- Post modeling processing
 - Counted events and sorted by various criteria

Parcel Map Within 10 miles From East Hampton Airport



Residential and Commercial Parcels Within 10 Miles



Data from local zoning regulations

Results

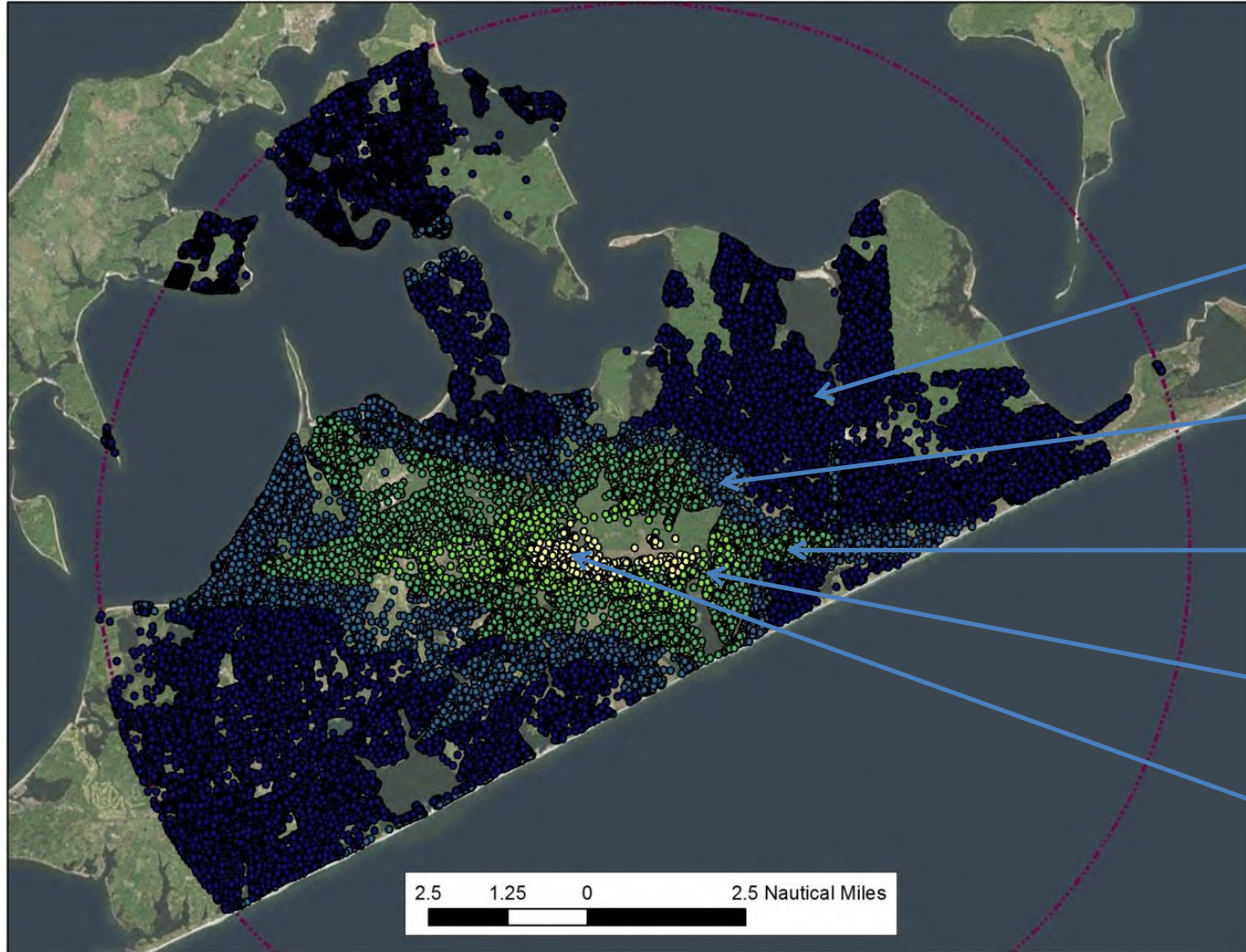
- Number of times properties within 10 miles of the airport were affected by aircraft noise above the Town Code levels in 2013:
 - 15.1 million times during the evening and nighttime
 - 16.7 million times during the daytime
 - 31.8 million total

Exceedances Per Type of Operation

- Wide range of results:

Aircraft		Type of Operation	Average Number of Violations/Operation (2013)
Jet	Highest Impact	Departure to the left off of Runway 10	3,319
	Lowest Impact	Arrival on Runway 10	885
Turbo	Highest Impact	Arrival on Runway 28	3,193
	Lowest Impact	Departure to the right off of Runway 28	1,315
Heli-copter	Highest Impact	Departure following Runway 28	2,370
	Lowest Impact	Departure on Barcelona Route	734
Piston	Highest Impact	Departure off of Runway 10	2,156
	Lowest Impact	Arrival on Runway 34	154

2013 Total Yearly Exceedances per Parcel



>0-500
(Dark Blue)

500-1,500
(Light Blue)

1,500-4,000
(Dark Green)

4,000-7,500
(Light Green)

7,500-16,989
(Yellow)

2.5 1.25 0 2.5 Nautical Miles

Conclusions

- Every flight exceeds the Town's noise criteria somewhere
- Community response explained by:
 - Noise level
 - Quiet background
 - Impulsive noise
 - Low frequency noise
 - Noise induced rattle
 - Frequency and number of events
- While FAA relies exclusively on noise energy (dB) and average (DNL), there are many ways to measure noise and impacts:
 - Annual average
 - Busy day
 - Above a threshold
 - Lmax, SEL and C-weighting
 - Peak times (*e.g.*, Summer)
 - Complaints
- The Town should consider what metrics might best express the Town's noise problem.