Status of Part 161 Study
for
Los Angeles International Airport

LAX Community Noise Roundtable Meeting

April 13, 2011

The Proposed Noise Rule

"Establish a partial curfew at Los Angeles International Airport (LAX) that would prohibit the easterly departure of all aircraft, with certain exemptions, between the hours of 12:00 midnight to 6:30 a.m. when the airport is in Over Ocean Operations, or when it remains in Westerly Operations during these hours"

Normal West Flow Operation --

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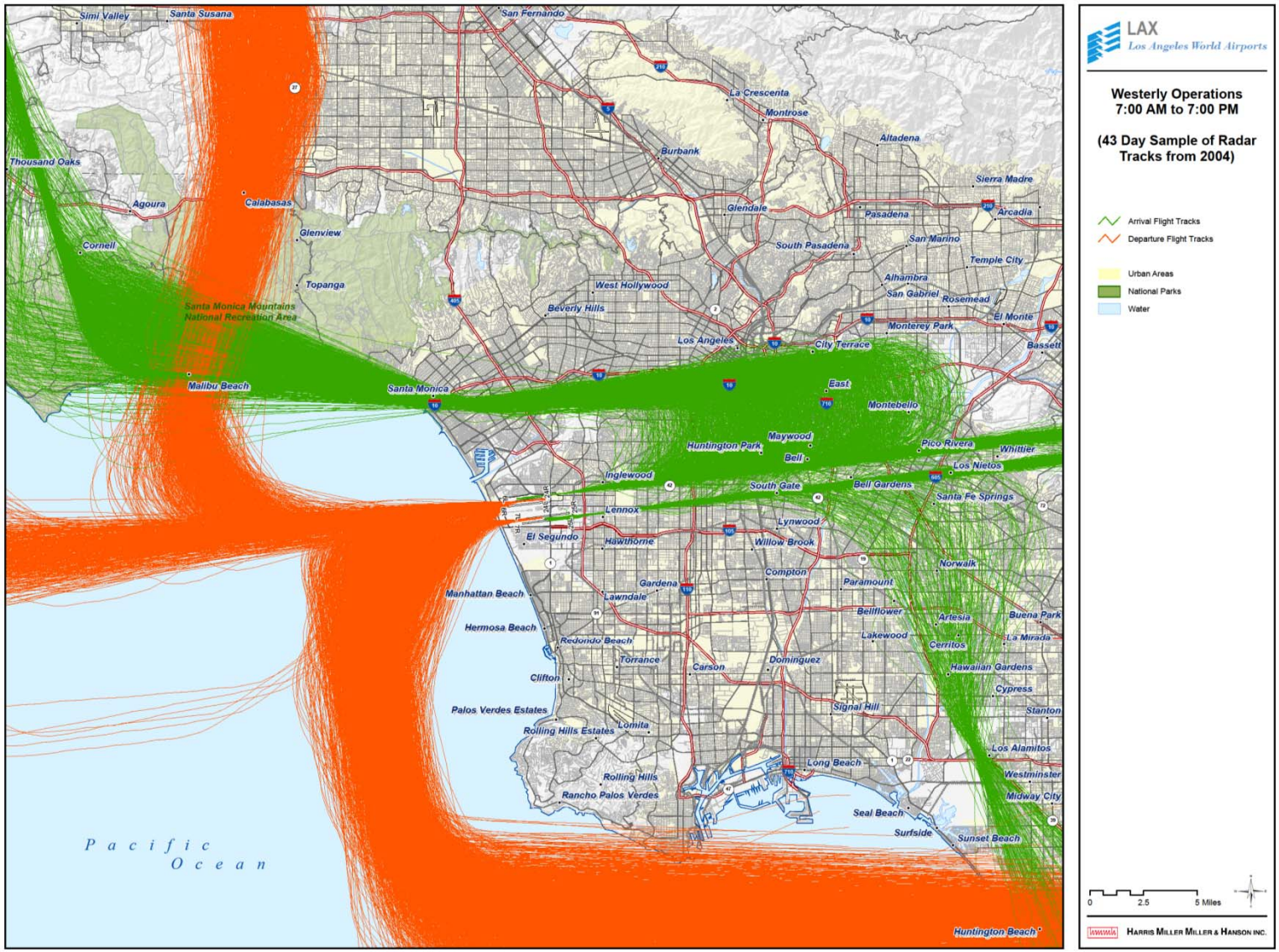

Normal East Flow Operation

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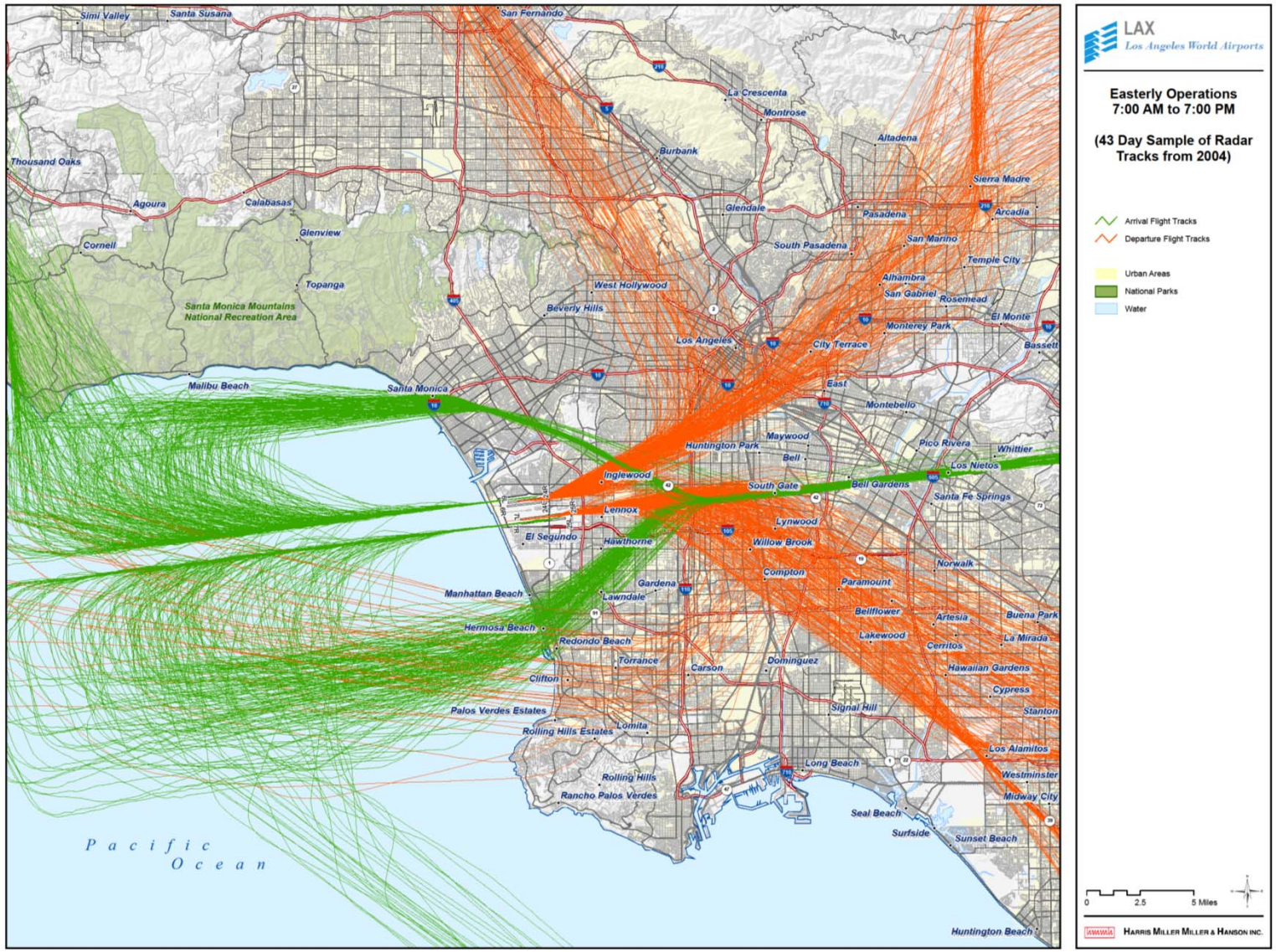

Late-Night Over Ocean Operation

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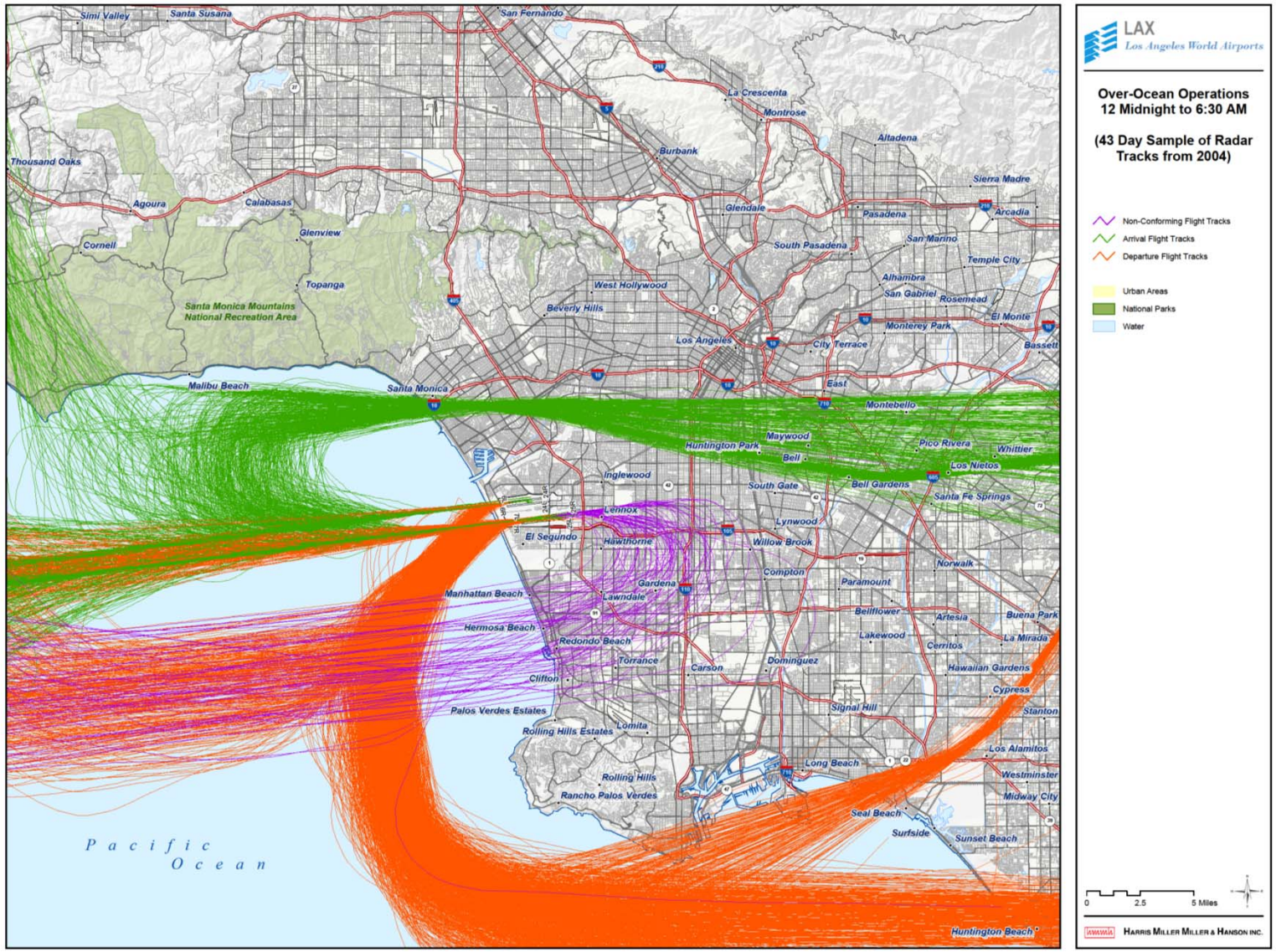


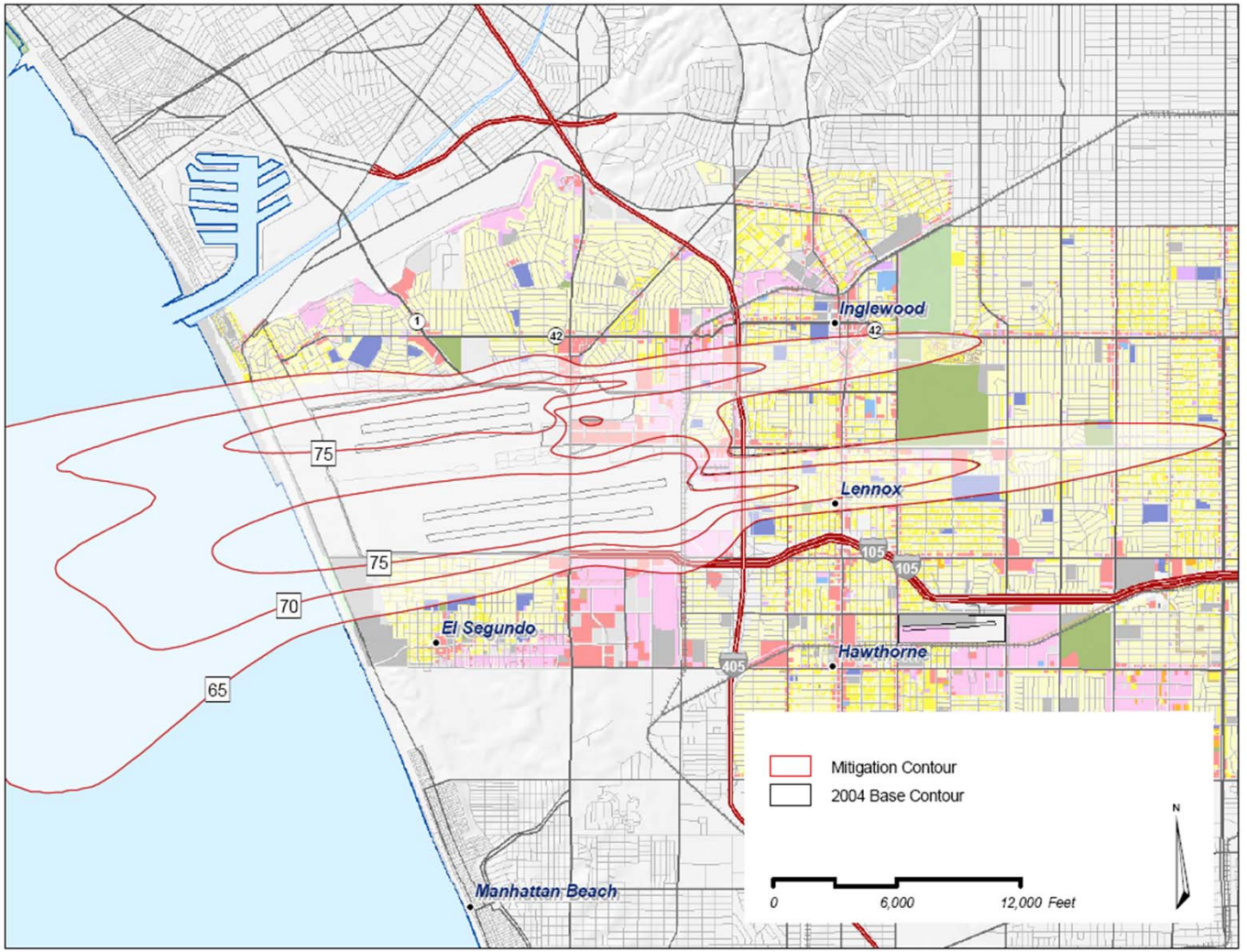
Original Technical Approach

- Develop baseline CNEL contours for 2004
- Develop forecast CNEL contours without restriction for:
  - 2008 (planned year of submission)
  - 2013 (5-years after implementation)
- Use standard INM (v.6.1) for all operations except non-conforming flights
- For non-conforming flights, model each aircraft individually with the intent of focusing on their noise:
  - Actual radar tracks and climb profiles
  - Heavy takeoff weights
  - Reduced lift during turns
  - Elimination of standard 8-kt headwind component

Original Technical Approach, continued

- Re-run CNEL scenarios *with* the proposed restriction, eliminating all non-conforming flights
- Show improvement in number of people exposed
- Supplement exposure results with:
  - Single-event analysis to estimate sleep disturbance
  - Environmental justice argument to justify benefits
- Estimate potential responses by airlines:
  - Cancel a flight
  - Off-load cargo or passengers
  - Reschedule outside OOO hours
- Determine benefit/cost ratio

Changes in 65 dB CNEL for 2004 Operations with and without Non-Conforming Flights



Changes in 65 dB CNEL for 2004 Operations with and without Non-Conforming Flights

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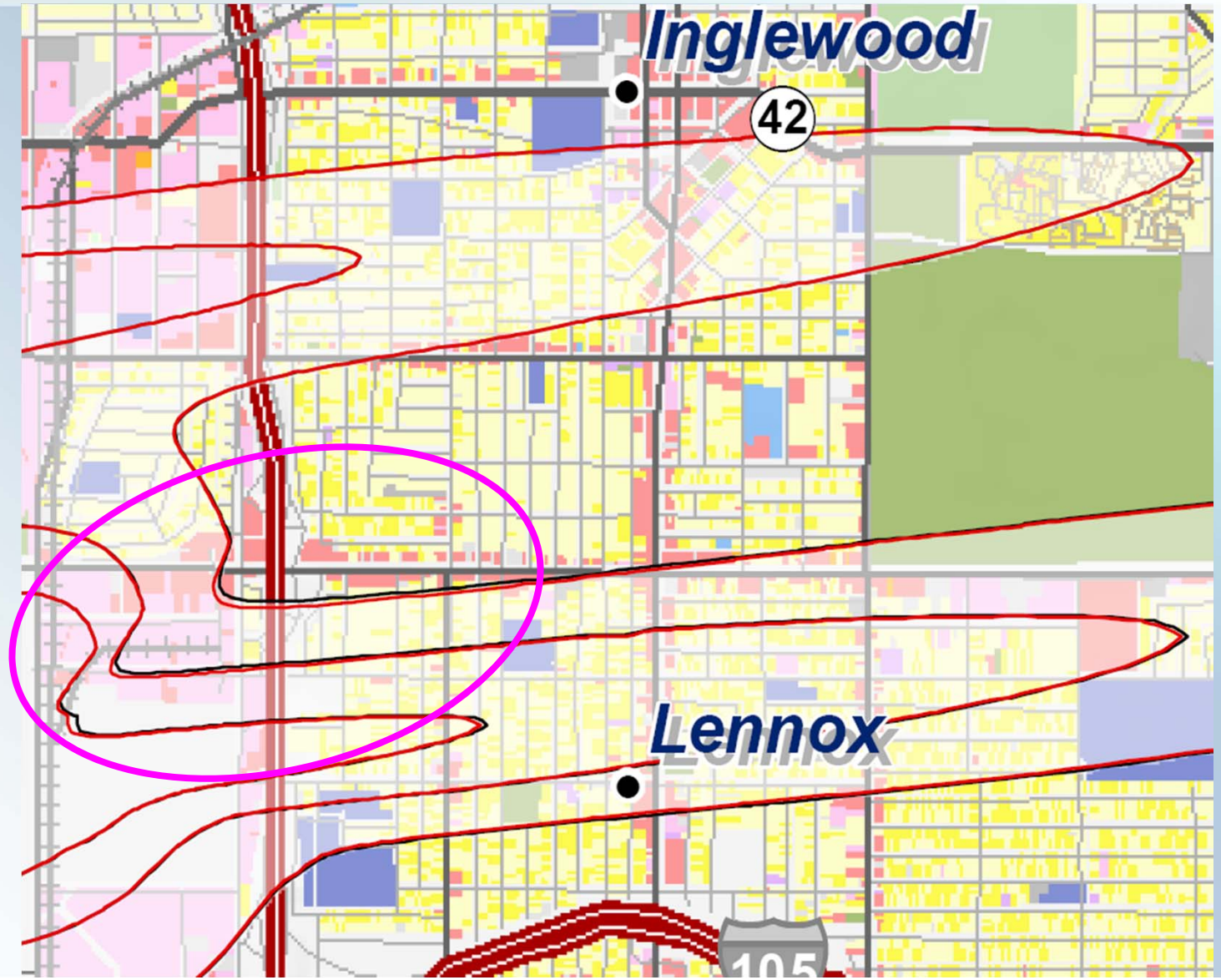


Improvements in Exposed Population and Housing

LAX Part 161 Analysis:
Effects of 2004 Contour Differences on Population and Housing Units

2004 Basecase Contour Impacts		
	Population 2000	***Housing Units***
65-70 CNEL	46685	16277
70-75 CNEL	18296	5058
>75 CNEL	1404	420

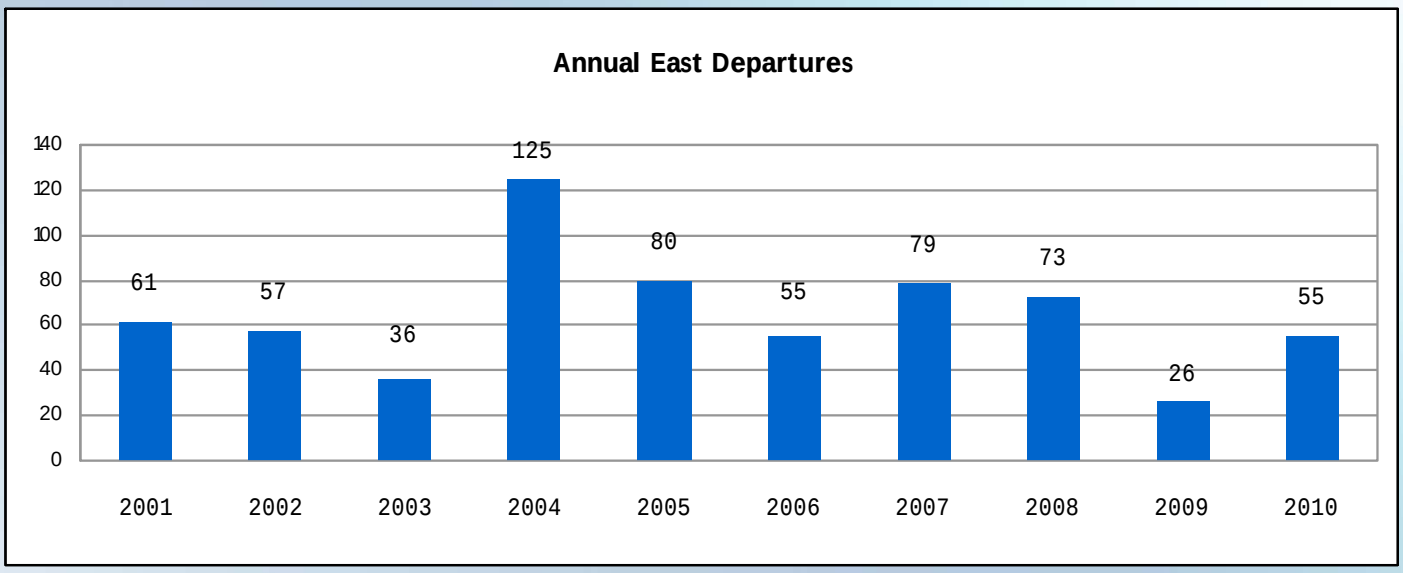
Mitigation Contour Impacts (125 Non-Conforming Flights moved to West Flow)		
	Population 2000	***Housing Units***
65-70 CNEL	46411	16195
70-75 CNEL	17976	4971
>75 CNEL	1332	401

Improvements		
	Population 2000	***Housing Units***
65-70 CNEL	274	82
70-75 CNEL	320	87
>75 CNEL	72	19

What Did These Preliminary Results Suggest?

- Areas within the CNEL 65 contour that benefit from the proposed rule might be mitigated through sound insulation
- The benefit/cost ratio would likely be small
- Added justification for the proposed rule should utilize supplemental analyses:
  - Sleep disturbance using LAX Master Plan approach or new ANSI Standard S12.9-2008
  - Environmental justice
- *We still needed an approved forecast other than Alternative D from the Master Plan to comply with Part 161 and justify the proposed rule*

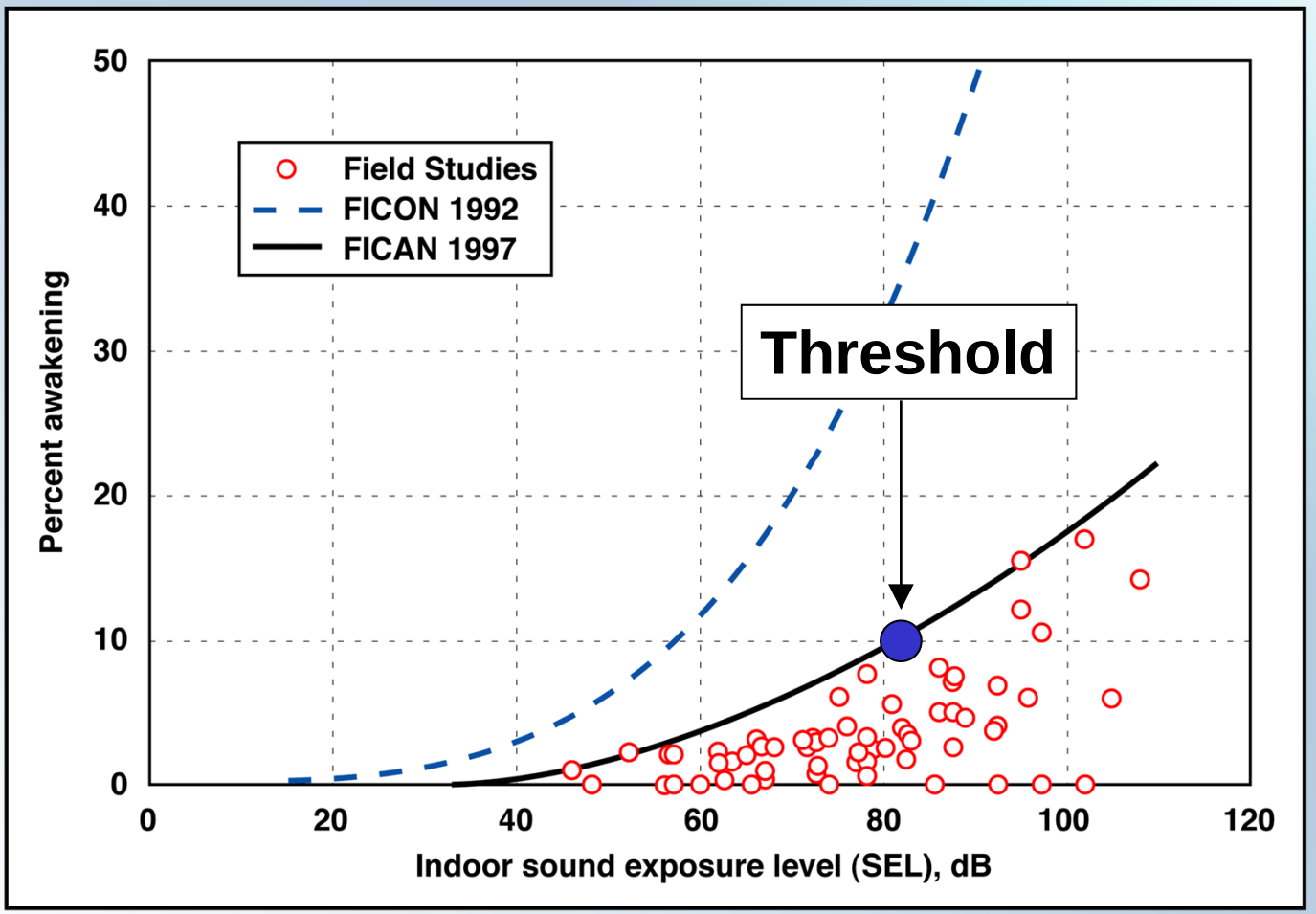
In the Meantime, Operations and Noise Change



- Non-conforming flights varied with changing weather
- Baseline CNEL contours were updated twice, anticipating new submittal years of 2009, then 2010
- Sleep disturbance and EJ were tested for supporting evidence

Awakenings: LAX Master Plan Method

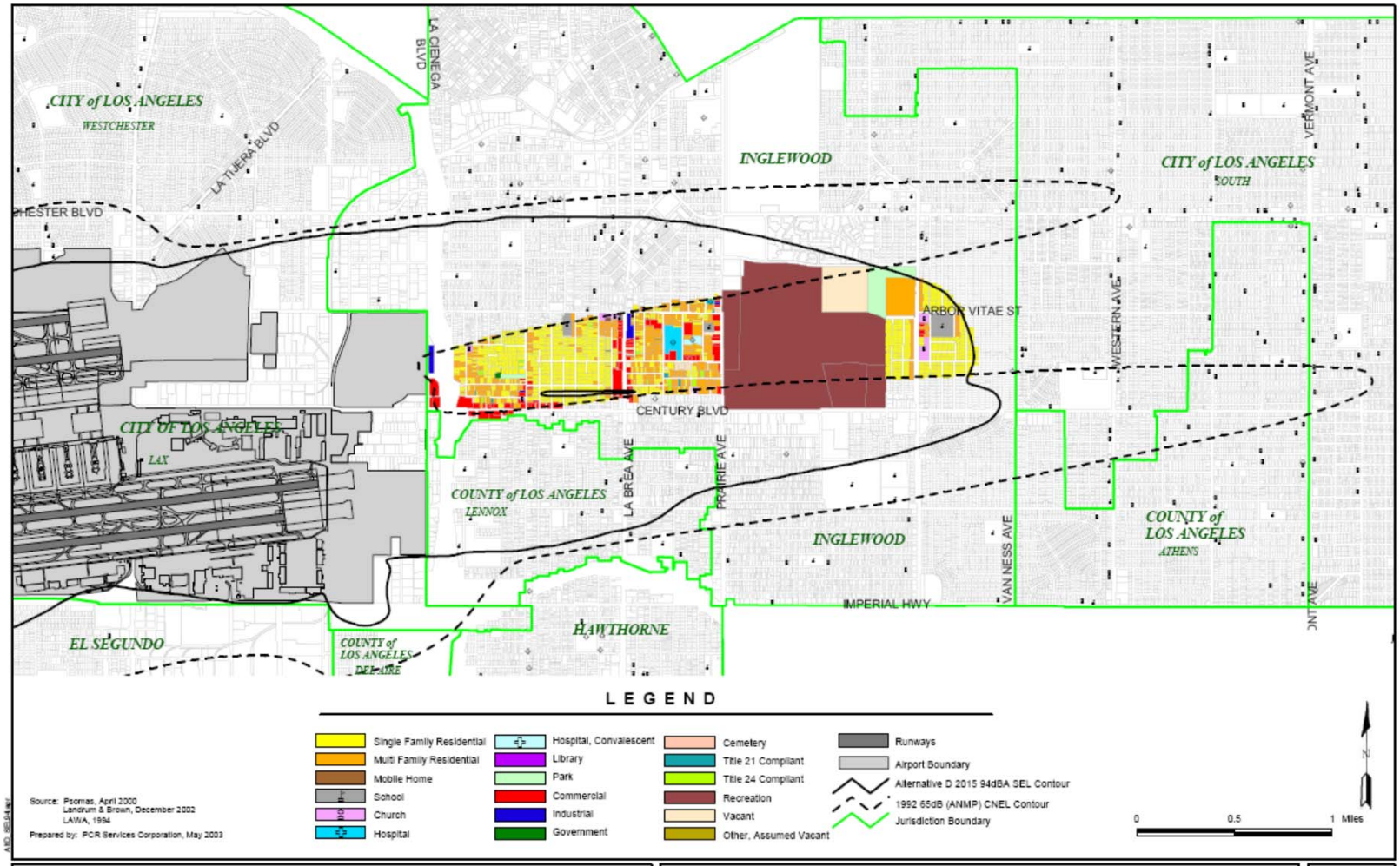
- Source of the 94 dB SEL outdoor threshold (81 dB indoors)



Awakenings: LAX Master Plan Method

- Threshold of significance:
  - Dwellings are exposed, at an average frequency of at least once every 10 days, to an exterior nighttime SEL sufficient to awaken 10 percent of their inhabitants, assuming windows remain open
- Implementation:
  - Count everyone inside the 94 dB SEL contour (equivalent to 81 dB indoors)

Awakenings: LAX Master Plan Method

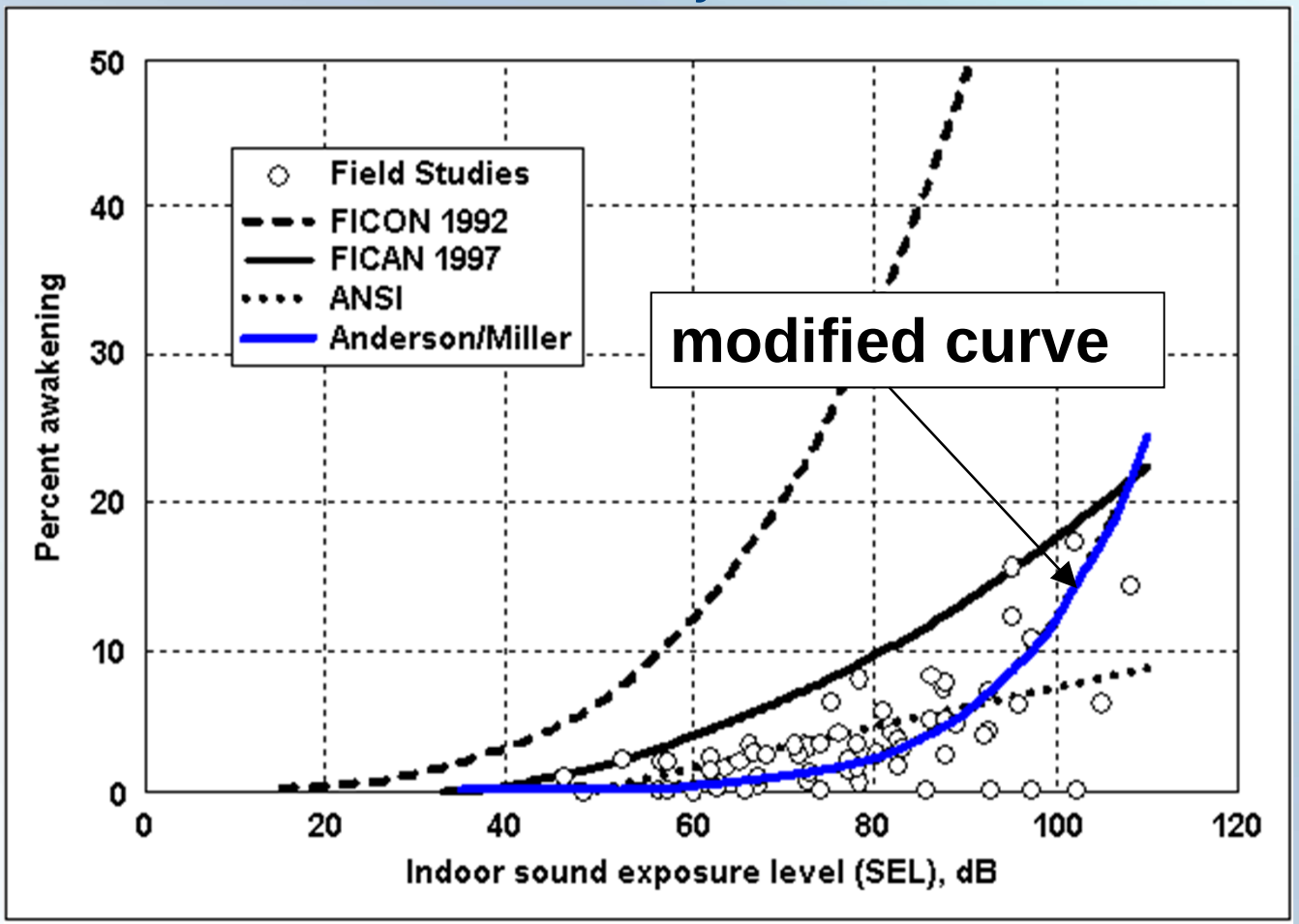


Awakenings: Part 161 Method

- Threshold of significance:
  - Dwellings are exposed to exterior nighttime Sound Exposure Levels (SELs) sufficient to awaken their inhabitants, assuming windows remain open
- Implementation:
  - Add up chances of awakening over all aircraft SELs, accounting for:
    - Number of aircraft per night
    - Timing of events during the night
    - Distribution of people's sensitivities to aircraft awakening

Awakenings: Part 161 Method

- Source of the dose-response curve:
  - 2006 Anderson/Miller analysis



LAX Environmental Justice Evaluation

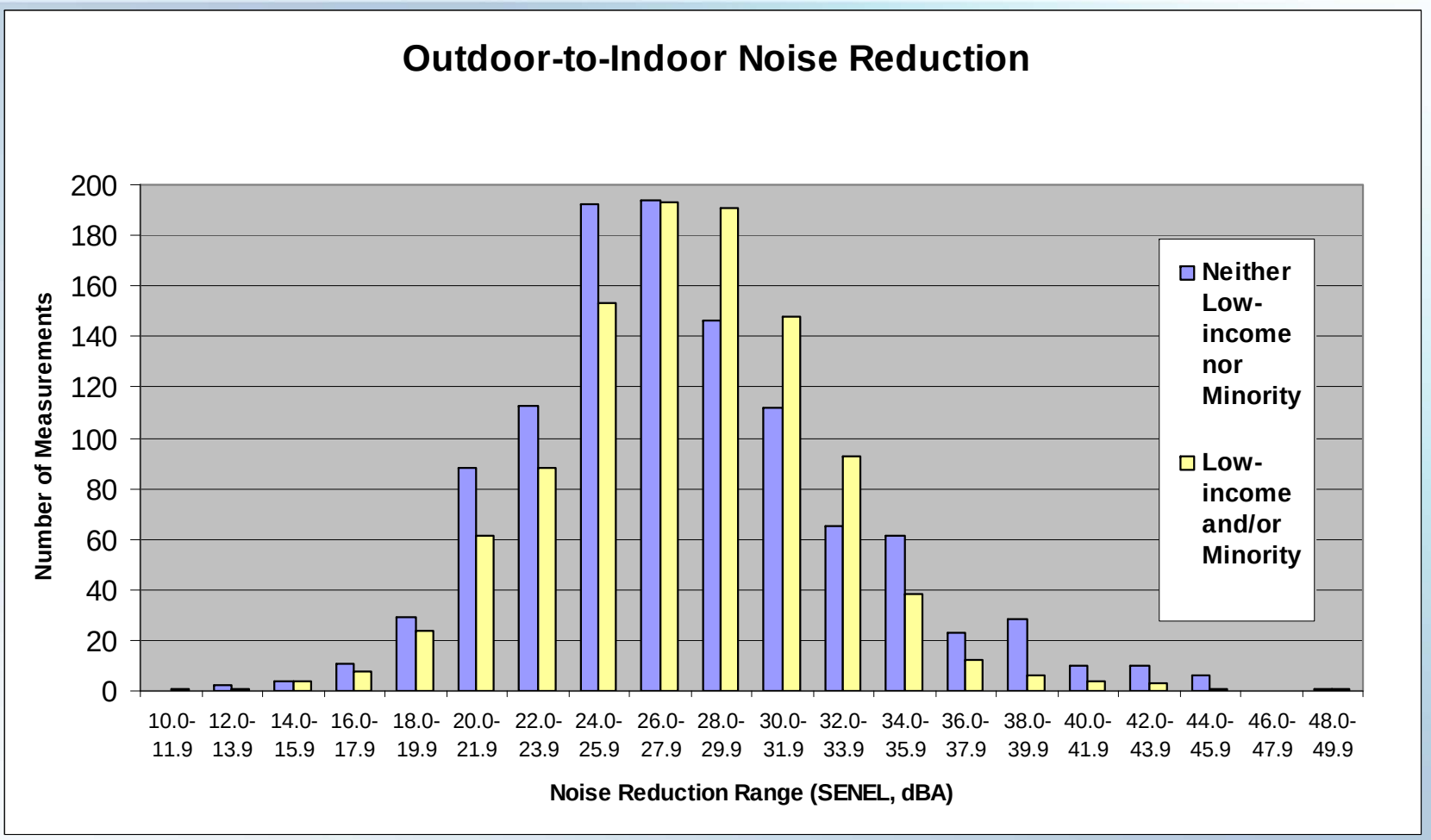
- Obtained pre-insulation data from LAX Residential Sound Insulation Program

- 2,125 rooms in 592 residences
  - City of Los Angeles (780)
  - County of Los Angeles (94)
  - El Segundo (585)
  - Inglewood (666)

LAX Environmental Justice Evaluation

- Does noise reduction differ between EJ and non-EJ neighborhoods?
  - Geo-referenced all measurement sites
  - Correlated with census data (consistent with Master Plan methodology)
  - Minority defined as >50% of census tract
  - Low-income defined as >18% below poverty level

Comparison of EJ and Non-EJ Residences



LAX Environmental Justice Evaluation

- No significant difference in median noise reduction
  - Minority and/or low-income
    - Median = 27.8 dBA
    - Standard Deviation = 4.4 dB
  - Neither minority or low-income
    - Median = 27.0 dBA
    - Standard Deviation = 5.3 dB
- EJ argument will have to depend on basic demographics

LAX Part 161 Next Steps

- Get latest radar and operations data to reflect new submittal date of 2012
- Coordinate with the SPAS study team to prepare a detailed forecast of 2017 operations
- Utilize the technical approach outlined earlier to produce a final assessment of existing and future noise benefits of the proposed rule
- Meet with carriers to determine reasons for non-conformance and likely responses to the proposed rule
- Determine costs
- Draft final rule
- Develop documentation, hold public hearing, and submit to FAA