An Appropriate Construction Noise Impact Criterion?

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Background

- Large-Scale Construction Projects In New York City
- Noise Impacts Caused by Construction Activities
- No Standardized Criteria for Construction Noise
- Construction Noise Assessment Procedure by City Environmental Quality Review (CEQR) Methodology
- Baseline Leq(1) ≥ 62 dBA + 3 dBA – Noise Criterion
- An Appropriate Noise Criterion?

Yankee Stadium Redevelopment

Atlantic Yards Development

First Avenue Properties Development

Columbia University Manhattanville Academic Mixed Use Development

Construction Noise Analyses

- **Construction Operation Restrictions**
  - **Construction equipment must meet both EPA noise emission standards and new City Noise Code**
  - **Weekdays between 7:00 am and 6:00 pm**
  - **Alternative noise mitigation plan (July 1, 2007)**
- **CEQR Impact Criteria**
  - **Baseline Leq(1) ≤ 60 dBA + 5 dBA**
  - **Baseline Leq(1) = 61 dBA + 4 dBA**
  - **Baseline Leq(1) ≥ 62 dBA + 3 dBA**
- **Impact Definition**
  - **Construction noise levels exceed the CEQR Criteria for a long period of time (two-year or longer)**

Noise Criteria (Residential)

No Standardized Federal Criteria for Construction Noise!

Sources	Descriptor	Absolute Level	Substantial Increase
HUD	Ldn	65 dBA	
FTA	Leq(8)	80/70 dBA (Day/Night)	
FHWA	Leq(1)	67 dBA	
NYDOT	Leq	85 dBA for NYC	
NJDOT	Leq(1)		Baseline + 10 dBA
California DOT	Leq(1)		Baseline + 12 dBA
Connecticut DOT	L10(1)		Baseline + 15 dBA
NYSDEC	Leq(1)		Baseline + 6 dBA
New York City CEQR	Leq(1)		Baseline + 3 dBA (if Baseline ≥62 dBA)

FHWA Roadway Construction Noise Model User's Guide

Lot-Line Construction Noise Criteria Limits A-weighted in dB, RMS slow						
Noise Receptor Locations and Land-Uses	**Daytime (7 AM - 6 PM)**		**Evening (6 PM - 10 PM)**		**Nighttime (10 PM - 7 AM)**	
	L_{10}	**L_{max}**	**L_{10}**	**L_{max}**	**L_{10}**	**L_{max}**
Noise-Sensitive Locations: (Residences, Institutions, Hotels, etc.)	75 or Baseline + 5 (whichever is louder)	85 90 (impact)	Baseline + 5	85	Baseline + 5 > (if Baseline <70) >Baseline + 3 (if Baseline 70)	80
Commercial Areas: (Businesses, Offices, Stores, etc.)	80 or Baseline + 5	None	None	None	None	None
Industrial Areas: (Factories, Plants, etc.)	85 or Baseline + 5	None	None	None	None	None

Average Ability to Perceive Changes in Noise Levels

Change (dBA)	Human Perception of Sound
2-3	Barely perceptible
5	Readily noticeable
10	A doubling or halving of the loudness of sound
20	A "dramatic change"
40	Difference between a faintly audible sound and a very loud sound

Source: Bolt Beranek and Neuman, Inc., *Fundamentals and Abatement of Highway Traffic Noise*, Report No. PB-222-703. Prepared for Federal Highway Administration, June 1973.

Community Response to Increases in Noise Levels

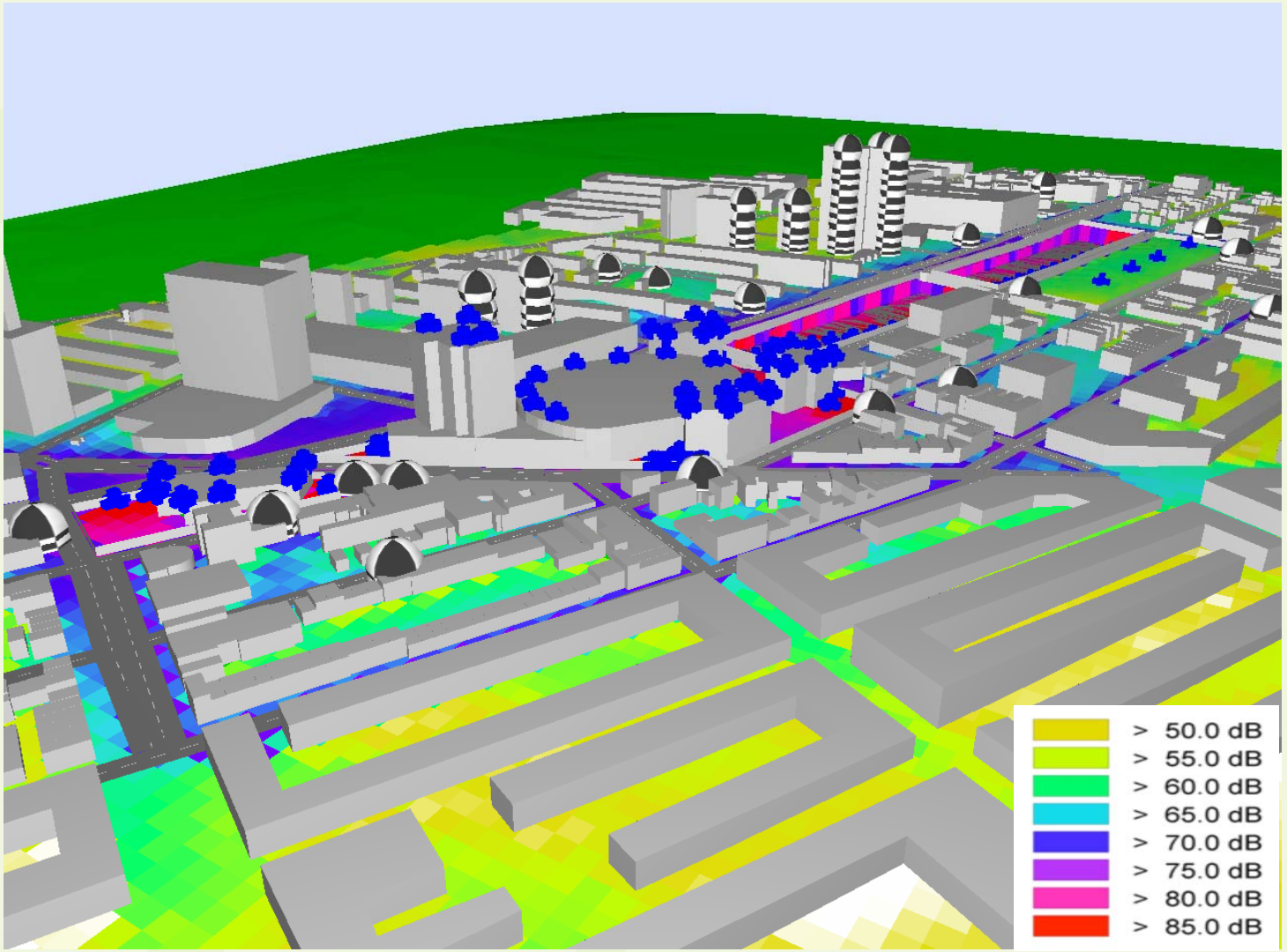
Change (dBA)	Category	Description
0	None	No observed reaction
5	Little	Sporadic complaints
10	Medium	Widespread complaints
15	Strong	Threats of community action
20	Very Strong	Vigorous community action

Source: Bolt Beranek and Neuman, Inc., *Fundamentals and Abatement of Highway Traffic Noise*, Report No. PB-222-703. Prepared for Federal Highway Administration, June 1973.

Noise Assessment Procedure

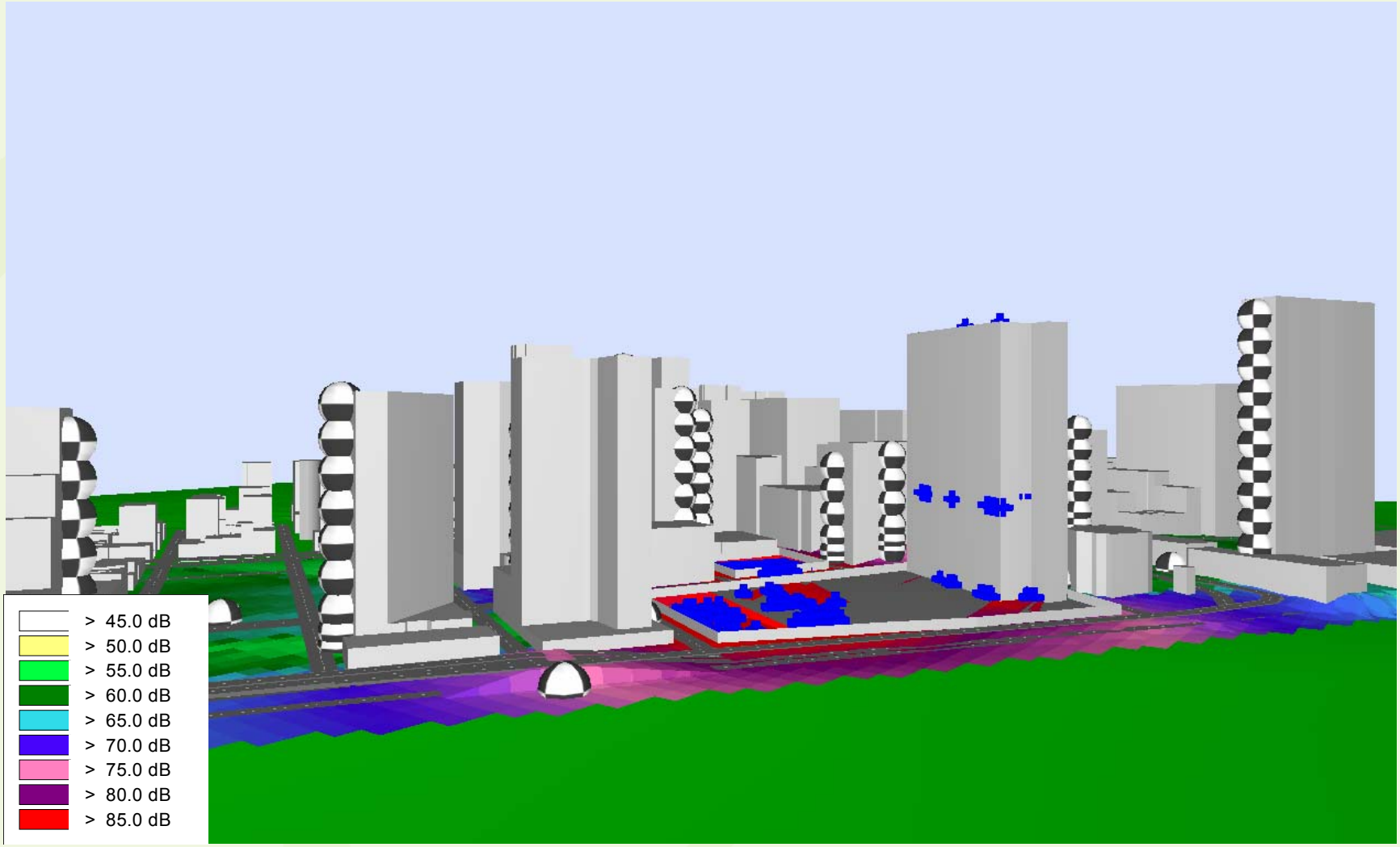
- Determine sensitive receptor locations within the adjacent study area where the maximum construction noise levels would be likely to occur
- Measure the existing ambient noise levels at the selected receptor locations
- Determine worst case Leq(1) at noise receptors due to construction activities
- Use appropriate mathematical models to predict construction noise levels
- Determine noise impacts using the CEQR criteria
- Provide mitigation measures if any noise impacts would occur

Construction Noise Analysis Results



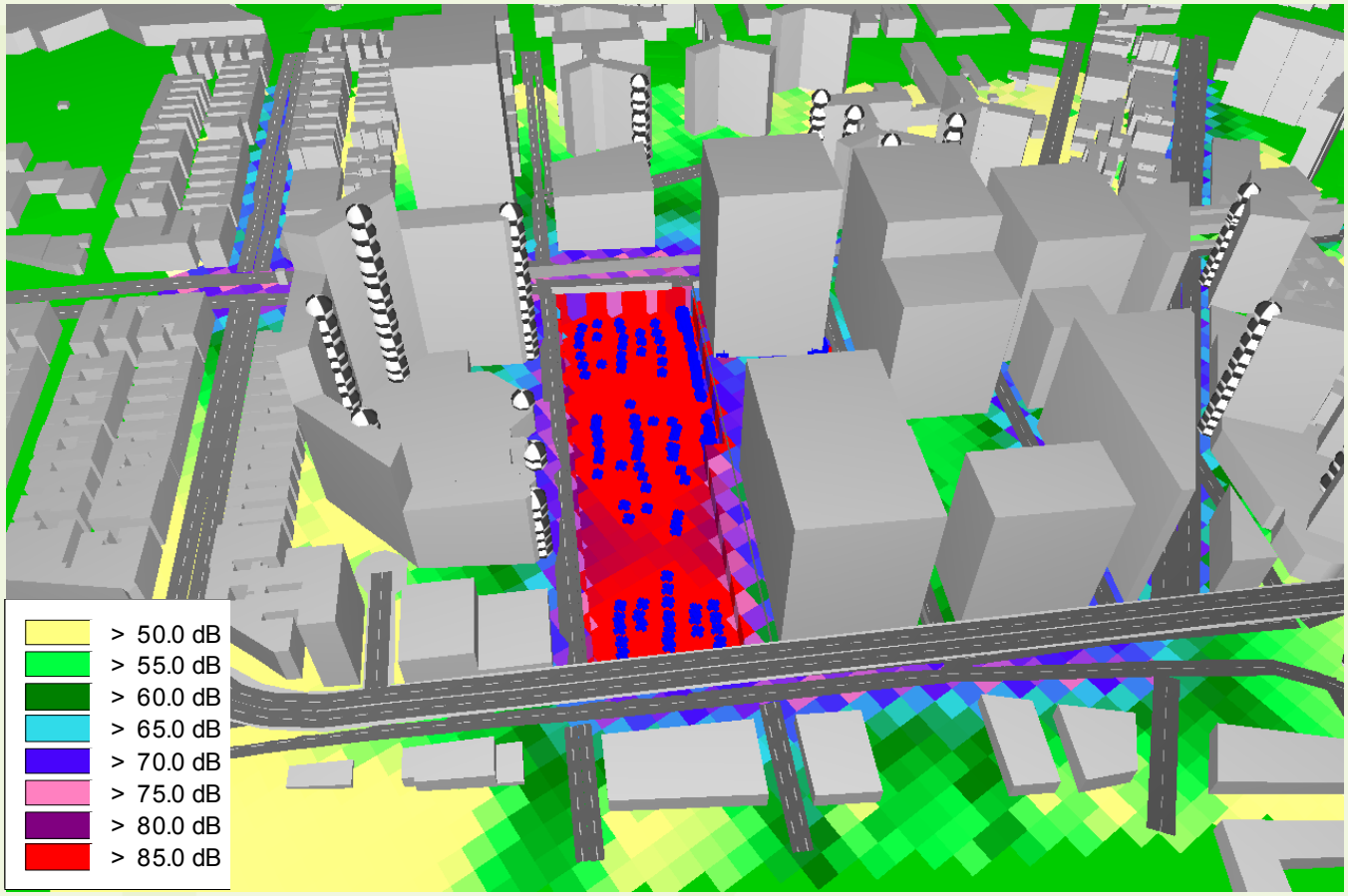
Atlantic Yards Arena

Construction Noise Analysis Results



First Avenue Properties

Construction Noise Analysis Results



Columbia Manhattanville

Findings

- Construction noise is one of significant environmental concerns
- Noise impacts would be unavoidable based on the CEQR criteria even with mitigation measures
- Change of 3 dBA or lower is Barely perceptible
- Change of 5 dBA or higher is readily noticeable
- Compared to Federal and State noise criteria, the CEQR noise impact criteria is quite stringent
- Change of 5 dBA represents a conservative impact threshold
- A proposed construction noise criterion – Baseline + 5 dBA