

Preliminary Sound Study Findings

Project Steel Data Center Campus - Yorkville
Shiner Acoustics, LLC

Preliminary Sound Study Findings

Sound Study Overview



⊗ Noise Receivers ⊗ Sampling Locations

Measurements around the existing site near residences – 4 Locations

Background sound sources were identified and measured

Modeling to predict sound levels from future equipment

Outdoor chillers and emergency generators are expected to be new sources of noise

Summary of Background Sound Survey

- The soundscape was affected primarily by traffic

Location	Baseline Sound Level (L90, dB re 20µPa)		
	Lowest	Average	Highest
1	35	42	51
2	26	39	46
3	31	41	47
4	29	39	45



Local & State Ordinances

- Yorkville code limits sound levels at residential land uses
- Illinois code limits sound levels from commercial to residential land uses
- Both set day and night limits

Table 1. Yorkville Sound Level Limits

Time of Day	Receiving Property Land Use
	Residential
Daytime (7:00 a.m. - 10:00 p.m.)	60 dBA
Nighttime (10:00 p.m. - 7:00 a.m.)	50 dBA

Table 3. Illinois Noise Limits

	Sound Pressure Level (dB re 20 µPa)									
	Octave Band Center Frequency (Hz)									Awt*
	31.5	63	125	250	500	1k	2k	4k	8k	
Daytime (7:00 a.m. - 10:00 p.m.)	72	71	65	57	51	45	39	34	32	55
Nighttime (10:00 p.m. to 7:00 a.m.)	63	61	55	47	40	35	30	25	25	44

* A-weighted level provided for convenience; not limited by code



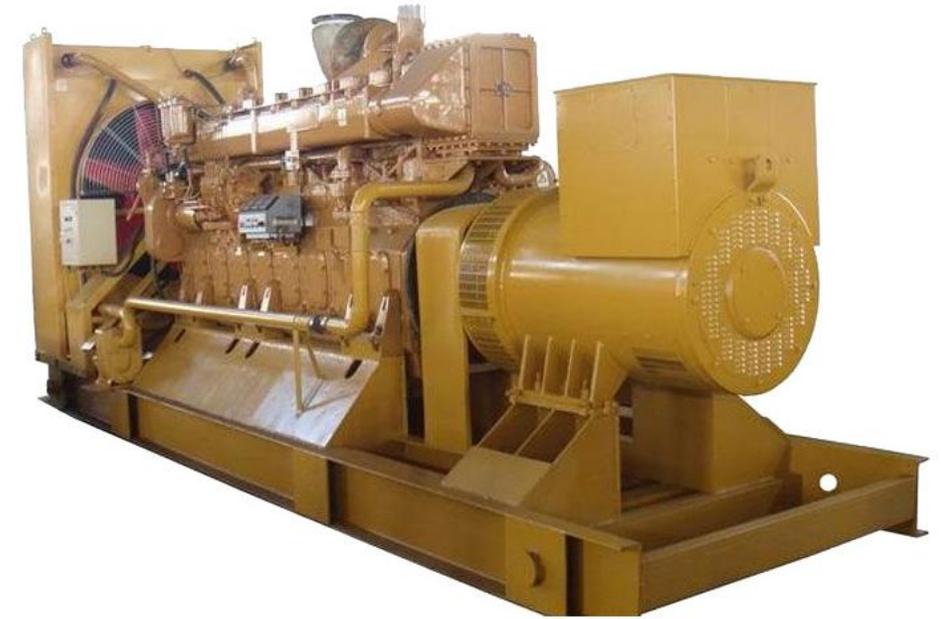
Modeling Assumptions

- 18 proposed buildings
- Each building will have:
 - 84 rooftop chillers, with 72 operating and 12 redundant
 - Chillers are available to meet several sound levels, from standard to ultra low noise
 - Chillers operate continuously during the day and night



Modeling Assumptions

- Each Building will have 44 Generators at Grade Level
- Emergency generators will have sound enclosures
- Enclosures are available to meet several sound levels
- Each generator will be operated for 30 minutes per month during the day



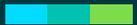
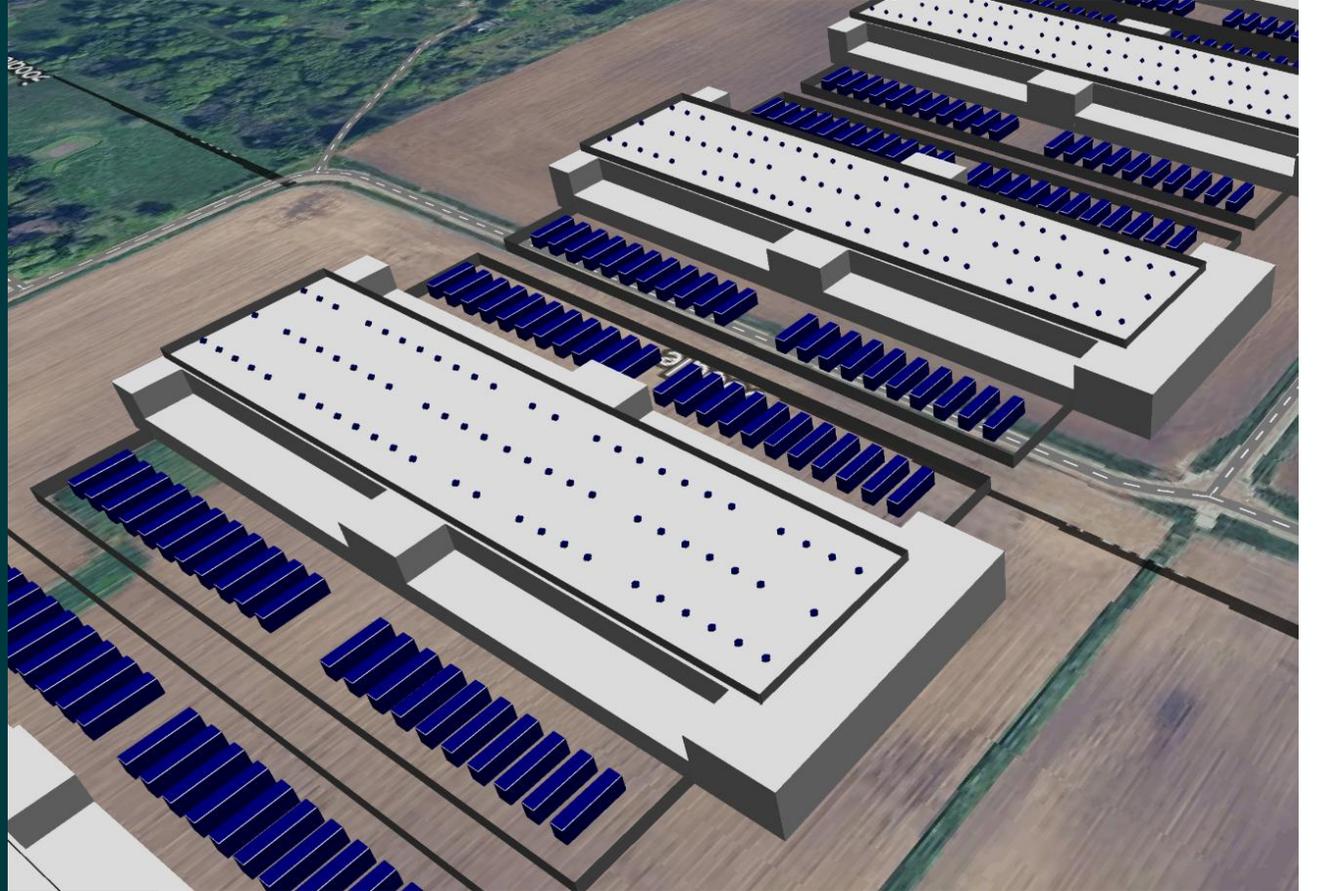
Model Assumptions

The facility will have other minor noise sources, which will be included in the final study:

- Rooftop units (RTUs) for ventilation
- Transformers located in each of three substations
- Any other equipment

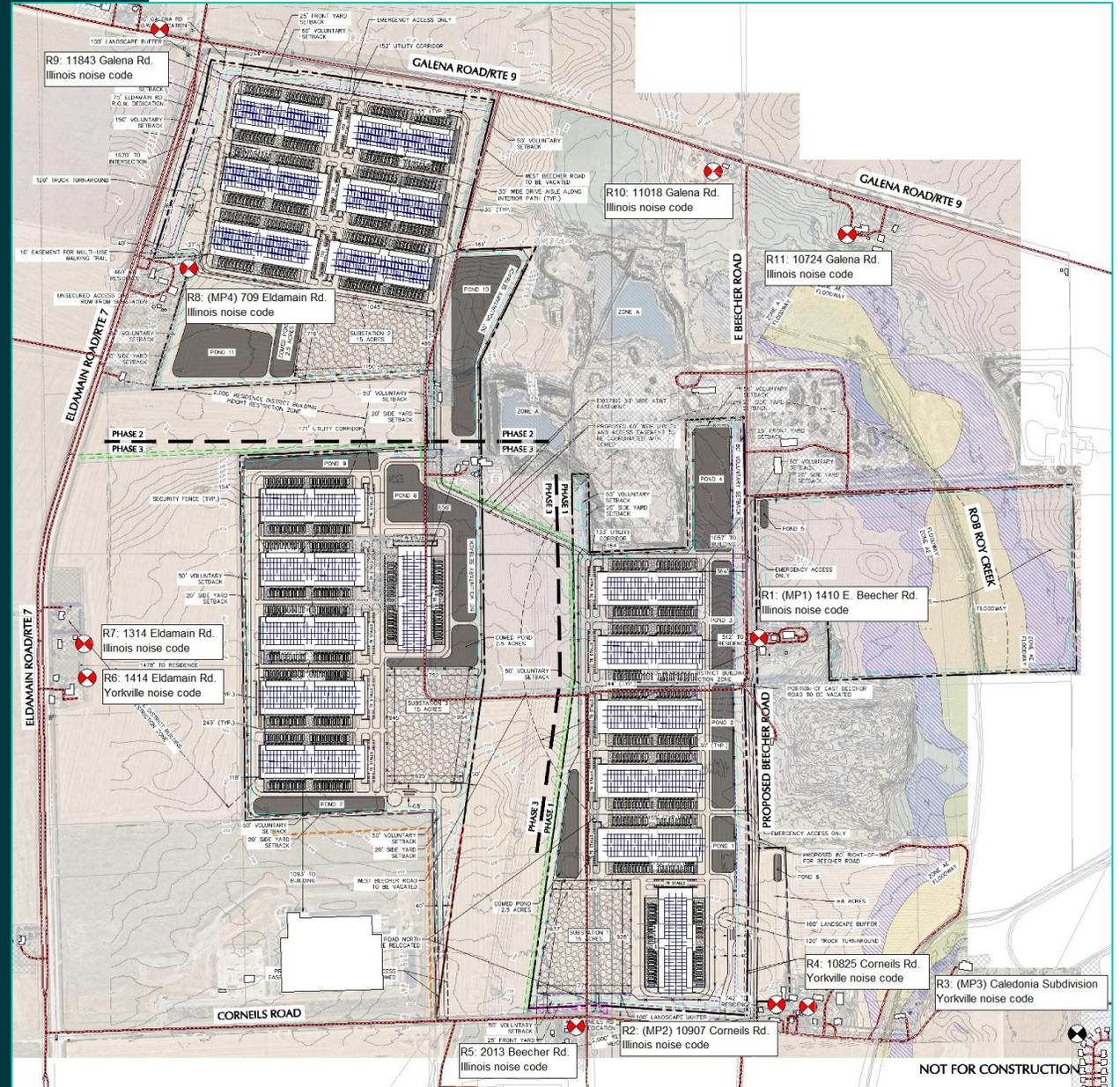
Acoustical Model

- Acoustical model of the facility includes:
 - Major sound sources, such as chillers
 - Obstacles, such as buildings and sound walls
 - Receivers



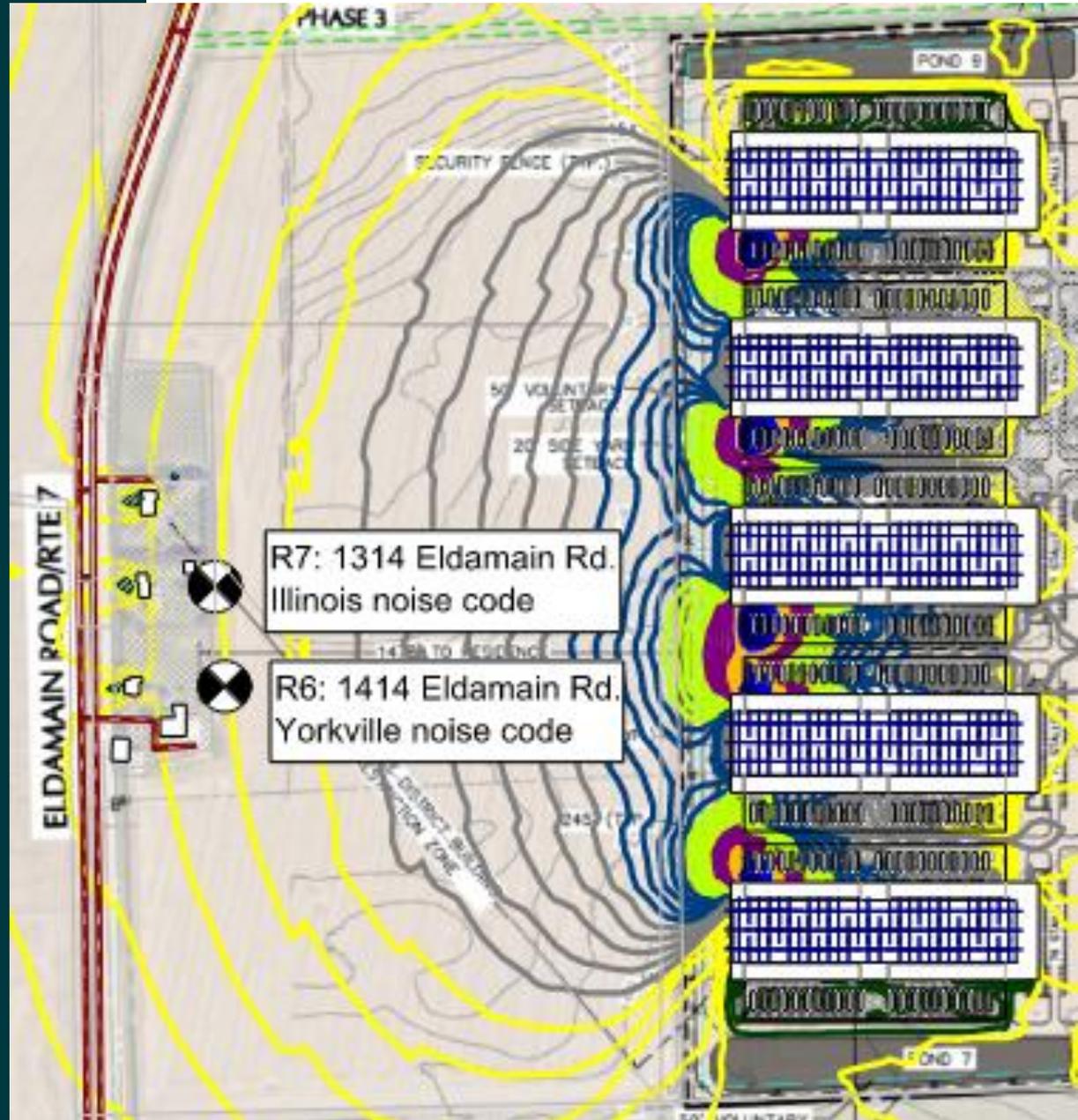
Acoustical Model

- Receivers: 11 residences surrounding the project
- 3 in Yorkville, 8 subject to Illinois noise code



Acoustical Model

- Acoustical model predicts sound levels



Preliminary Sound Study Findings

Modeling Results to Meet Yorkville and Illinois Codes

- Very low noise chillers
- Quieter generators
- Sound walls surrounding chillers and generators
- Complies with Yorkville & Illinois Code

Receiver	Jurisdiction	Sound Pressure Level (dB re 20 µPa), A-weighted	
		Day	Night
Yorkville noise code		60	50
Illinois noise code		55	44
R1: 1410 E. Beecher Rd.	Illinois	47	44
R2: 10907 Corneils Rd.	Illinois	44	42
R3: Caledonia	Yorkville	34	33
R4: 10825 Corneils Rd.	Yorkville	42	41
R5: 2013 Beecher Rd.	Illinois	44	42
R6: 1414 Eldamain Rd.	Yorkville	43	42
R7: 1314 Eldamain Rd.	Illinois	43	42
R8: 790 Eldamain Rd.	Illinois	49	43
R9: 11843 Galena Rd.	Illinois	43	42
R10: 11018 Galena Rd.	Illinois	40	39
R11: 10724 Galena Rd.	Illinois	37	36





Future Study Requirements & Commitments

- This is a preliminary study based on the current design and the findings will be used to adjust the final design.
- A final study will be produced once the design is finalized and specific equipment has been selected to demonstrate compliance.
 - Final study will include additional minor sources of noise such as RTUs and transformers



Questions? Thank You!

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