

BESS Noise Assessment with Varying Zoning Uses at Adjacent Property Boundaries (Residential, Industrial, and a Church)

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Permitting of utility-scale Battery Energy Storage System (BESS) projects within noise-sensitive zoning areas may require a pre-construction noise assessment. Local jurisdictions may set forth acoustical criteria that can affect BESS design, construction, and operations. Measures to control noise from several equipment sources that include battery and storage segment electronics, fans, medium voltage transformers, and main (generator step up) transformers may be necessary.

Ormat Energy Storage and HDR present a project within the City of San Antonio, TX that has interesting noise control aspects where surrounding properties include residential, industrial, and church land-uses. We assess facility-related noise levels based on receiving zoning classifications to determine noise wall suitability.

Analysis Software: HDR modeled facility-generated noise emissions for normal operations using industry-accepted environmental acoustics software conforming to ISO 9613-2

- Calculates frequency-dependent noise levels from BESS equipment to surrounding receivers in the study area
- Study includes factors influencing sound propagation over distance:
Geometrical spreading, downwind conditions, ground surface absorption, temperature, relative humidity, and shielding from structures

Sound Sources: Battery and collector segments, main transformers

- BESS system generates sound pressure level of 67 dB at distance of 6.5 ft from components (transformer, inverter, and HVAC equipment)

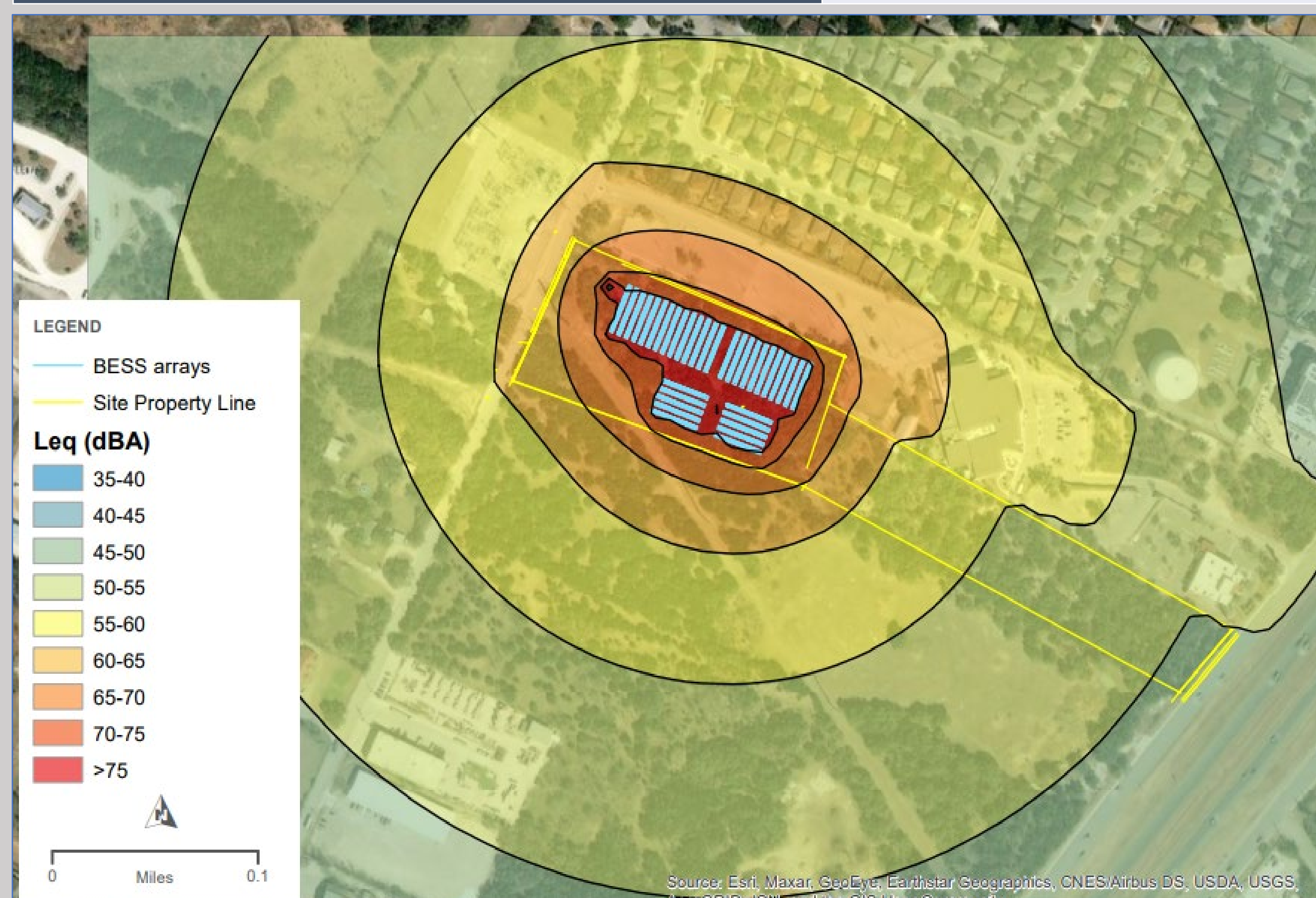
Noise Control Measure: Solid, impervious, 15-foot tall noise barrier

Sound Level Requirements:

Location	Daytime Limit (dBA Leq)	Nighttime Limit (dBA Leq)
Church Building (East)	63	56
Single-Family Residential Homes (North)		
Single-Family Residential Homes (West)		
Future Multi-Family Building (South)		

Unmitigated Noise (Before Noise Barrier):

Location	dBA Leq (5 ft above Ground)
Church Building (East)	61
Residential Homes (North)	64
Residential Homes (West)	56
Future Apartment Building (South)	71



Mitigated Noise (After Noise Barrier):

Location	dBA Leq (5 ft above Ground)
Church Building (East)	52
Residences (North)	54
Residences (West)	52
Future Apartment Building (South)	53

