



MEMORANDUM

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From: Jin Choi, Kimley-Horn and Associates, Inc.
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Date: June 15, 2026
Subject: Townsite 2 Data Center – Noise Analysis

Purpose

The purpose of this memorandum is to evaluate the noise impacts associated with operations of the proposed Townsite 2 (TS2) Project (Project), located in the Boulder City (City), Clark County, Nevada. This memorandum provides a planning-level preliminary noise analysis for the proposed data center.

Project Location

The Project site is located within the municipal boundaries of the City of Boulder City, Clark County, Nevada, approximately 15 miles southeast of the City of Las Vegas. The developed Boulder City area is located approximately three to five miles northeast of the Project site. Specifically, the site is situated immediately west of U.S. Route 95 and approximately 2,100 feet south of U.S. Route 93/Interstate 11, within the largely undeveloped Eldorado Valley area desert area that is characterized by utility-scale solar facilities and open land. The Project site lies north of the Eldorado Solar development area and west of the broader Eldorado Valley solar energy development area. In addition, the Desert Star 500-megawatt (MW) natural gas-fired power plant and associated transmission lines are located in the vicinity of the Project site.

Project Description

The proposed TS2 Data Center is a high-density, utility-scale digital infrastructure facility planned within the Eldorado Valley area of Boulder City, Nevada. The proposed Project includes a total electrical demand of approximately 167 MW and an estimated 133.6 MW of IT load capacity based on a Power Usage Effectiveness (PUE) of 1.25. Backup generation would be provided by 53 biodiesel¹-fired generators (52 primary units plus one redundant unit) with a

¹ Biodiesel is a renewable, biodegradable alternative to petroleum-based diesel fuel, manufactured from organic resources such as vegetable oils, animal fats, or recycled restaurant grease. Biodiesel can be used in most unmodified diesel engines.

combined standby capacity of approximately 172 MW, ensuring uninterrupted operations during grid outages.

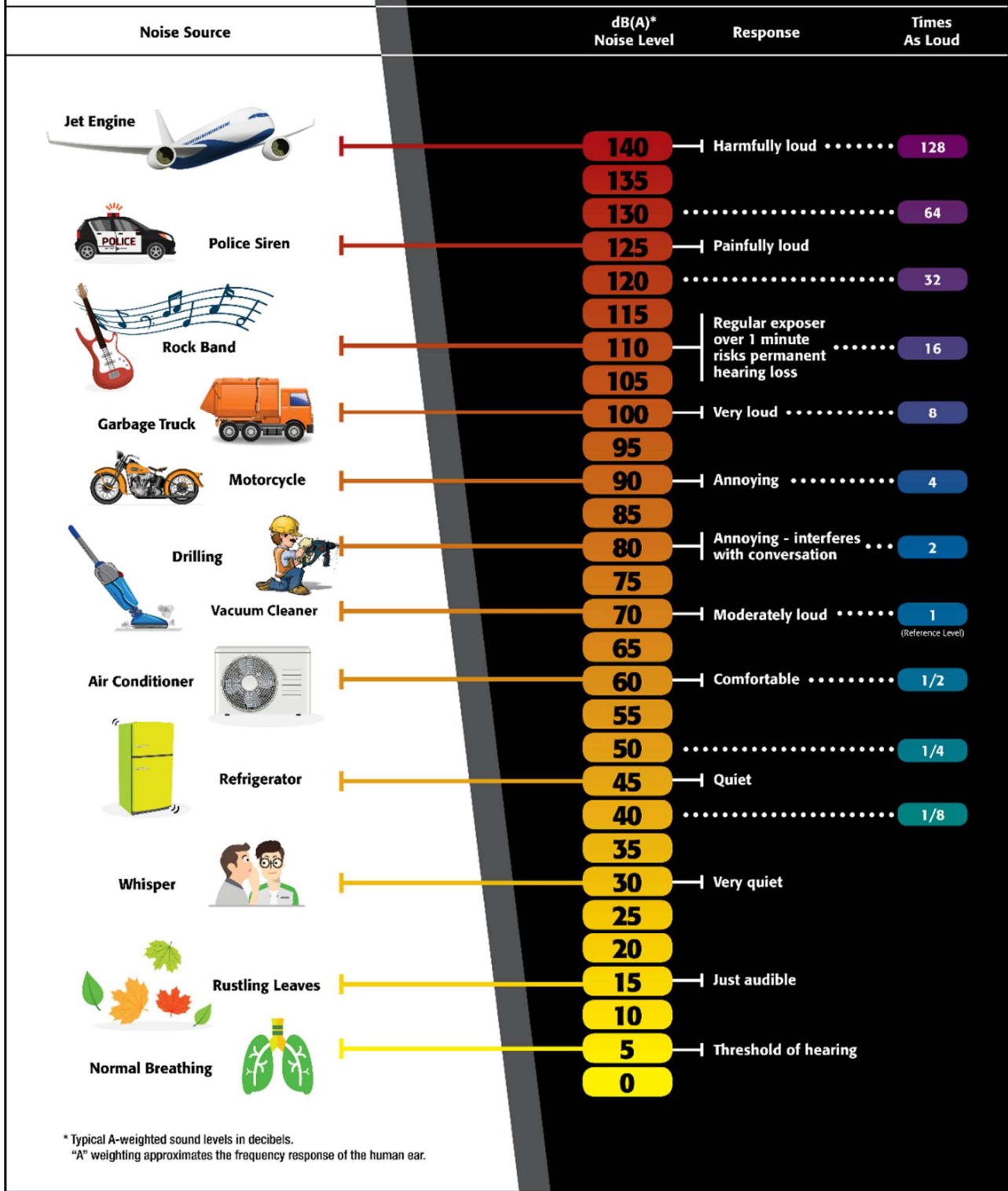
Data center cooling would be achieved using an advanced closed-loop, air-cooled (dry) system that incorporates direct-to-chip liquid cooling and dry cooling towers. The system is designed to reject the full 167 MW of thermal load to the atmosphere through sensible (non-evaporative) heat transfer. As a result, the data center portion of the facility would operate effectively with zero water consumption during normal operations, aside from negligible volumes of a purified water/propylene glycol solution required for periodic maintenance. Bathrooms and kitchens associated with the facility are anticipated to require approximately 2,000 gallons of water per day.

Noise Background

Sound is technically described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Since the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) provides this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. Noise, on the other hand, is typically defined as unwanted sound. A typical noise environment consists of a base of steady ambient noise that is the sum of various distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from traffic on a major highway.

Several rating scales have been developed to analyze the adverse effect of community noise on people. Since environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise as well as the time of day when the noise occurs. For example, the equivalent continuous sound level (L_{eq}) is the average acoustic energy content of noise for a stated period of time; thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. The Day-Night Sound level (L_{dn}) is a 24-hour average L_{eq} with a 10 dBA “weighting” added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The Community Noise Equivalent Level (CNEL) is a 24-hour average L_{eq} with a 10-dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. and an additional 5 dBA weighting during the hours of 7:00 p.m. to 10:00 p.m. to account for noise sensitivity in the evening and nighttime. As shown in [Figure 1: Common Noise Levels](#), most individuals are exposed to fairly high noise levels from various sources on a regular basis.

Common Environmental Noise Levels



* Typical A-weighted sound levels in decibels.
 "A" weighting approximates the frequency response of the human ear.

Figure 1: Common Noise Levels

To perceive sounds of greatly varying pressure levels, human hearing has a non-linear sensitivity to sound pressure exposure. Doubling the sound pressure results in a three decibel change in the noise level; however, variations of three decibels (3 dBA) or less are commonly considered “barely perceptible” to normal human hearing. A five decibel (5 dBA) change is more readily noticeable. A ten-fold increase in the sound pressure level correlates to a 10 decibel (10 dBA) noise level increase; however, it is judged by most people as only sounding “twice as loud”.

Regulatory Setting

Boulder City Municipal Code

The following sections of the Boulder City Municipal Code (BCMC) are applicable to the proposed Project:

7-6-3. General Prohibition.

It is unlawful to create or cause to be created a noise disturbance. For the avoidance of doubt, a person that has an agreement with another person to create noise that results in a noise disturbance pursuant to this Chapter has caused to be created a noise disturbance pursuant to this Section 7-6-3.

7-6-4. Maximum Permissible Sound Level.

Sound levels may be measured at or within the real property boundary of the receiving land use. The noise measurement shall be an A-weighted averaged (L_{eq}) for a minimum duration of fifteen minutes.

If the existing ambient noise level not including the source of the noise complained of exceeds the applicable sound level in Maximum Permissible Sound Level Table, the maximum permissible noise level shall be deemed to be 3 dB above the existing ambient noise level.

Table 1: Maximum Permissible Sound Level Table

Receiving Land Use	Time of Day	Maximum Permissible Sound Level (L_{eq})
Residential use, noise sensitive use	All times	70
Commercial or industrial use	Daytime	100
Commercial or industrial use	Nighttime	90

Source: City of Boulder City, *Boulder City, Nevada – Code of Ordinances*, Section 7-6-4 Maximum Permissible Sound Level.

7-6-5. Other Noise Disturbances.

- A. When a sound level meter is not available to measure the noise disturbance, a noise disturbance also includes any other sound which:
 - 1. Disturbs or annoys reasonable persons of normal sensitivities;
 - 2. Causes or tends to cause an adverse effect on the public health and welfare;
 - 3. Endangers or injures people; or
 - 4. Endangers or injures personal or real property.
- B. In determining whether a sound constitutes a noise disturbance under Subsection (A), all of the following factors shall be considered:
 - 1. The sound level of the objectionable noise, if available.
 - 2. The sound level of the ambient noise, if available.
 - 3. The proximity of the noise to residential areas or transient lodging facilities.
 - 4. The nature and land use of the area within which the noise emanates.
 - 5. The density of the inhabitation of the area within which the noise emanates.
 - 6. The nature and land use of the area within which the noise complaint originates.
 - 7. The density of the inhabitation of the area within which the noise complaint originates.
 - 8. The duration of the noise and its tonal, information or musical content.
 - 9. Whether the noise is continuous, recurrent, or intermittent.
 - 10. Whether the noise is produced by a commercial or noncommercial activity.

7-6-6. Exemptions

The following types of emissions of sound are not subject to the noise disturbance restrictions of this Chapter:

- A. Emergency Noises.
 - 1. Nighttime construction or repair of streets, highways or bridges that is performed by or on behalf of the City, Clark County or the State, if the public welfare and convenience renders it impracticable to perform such work during the day.
 - 2. The emission of sound to alert persons to the existence of an emergency.
- C. Construction, Maintenance and Common Residential Noise
 - 1. Construction or demolition work specifically approved by the City pursuant to permit or contract during the hours of 5:00 a.m. and 8:00p.m. during the months of May through September, and during the hours of 6:00a.m. and 7:00p.m. during the months of October through April.
 - 2. Landscape maintenance work approved by the City pursuant to permit or contract during the hours of 4:30 a.m. until 7:00p.m.

For the purpose of this analysis, the BCMC determined that maximum permissible sound levels at the property boundary of receiving land uses are 70 dBA for residential and other noise-

sensitive uses and 90 dBA for commercial or industrial uses. Therefore, this analysis uses a noise threshold of 70 dBA at the property line for residential and noise-sensitive uses and 90 dBA for commercial and industrial use to evaluate Project noise impacts.

Existing Setting

The Project site is impacted by various noise sources. Mobile sources of noise, including traffic along Interstate 11 to the north and U.S. Route 95 to the east, are the most common and prominent sources of noise in the Project area. The primary sources of stationary noise near the Project site include cooling fans and a humming transformer associated with the solar plant to the south and east, as well as the gravel pit to the northwest, with ongoing operations such as material excavation, processing, and on-site equipment activity.

Noise Receptors

Noise exposure standards and guidelines for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Places of worship, libraries, educational facilities, hospitals, residences or uses containing sleeping quarters are treated as the most sensitive to noise intrusion and therefore have more stringent noise exposure targets than do other uses, such as manufacturing or agricultural uses that are not subject to impacts such as sleep disturbance. Noise receptors nearest to the Project site are shown in [Table 2: Noise Receptors](#) and [Figure 2: Receptor Locations and Surrounding Land Uses](#).

Table 2: Noise Receptors

Receptor Description	Distance and Direction from the Project
Townsite Solar 1 Solar Plant	130 feet to the south and east
Boulder Creek Golf Club	13,000 feet to the northeast
Mobile homes	14,000 feet to the northeast
Student Housing	14,125 feet to the northwest
Single-family residential	14,260 feet to the northwest
School	14,455 feet to the northwest
School	16,728 feet to the northwest
Single-family residential	17,933 feet to the east

Source: Google Earth, 2026.

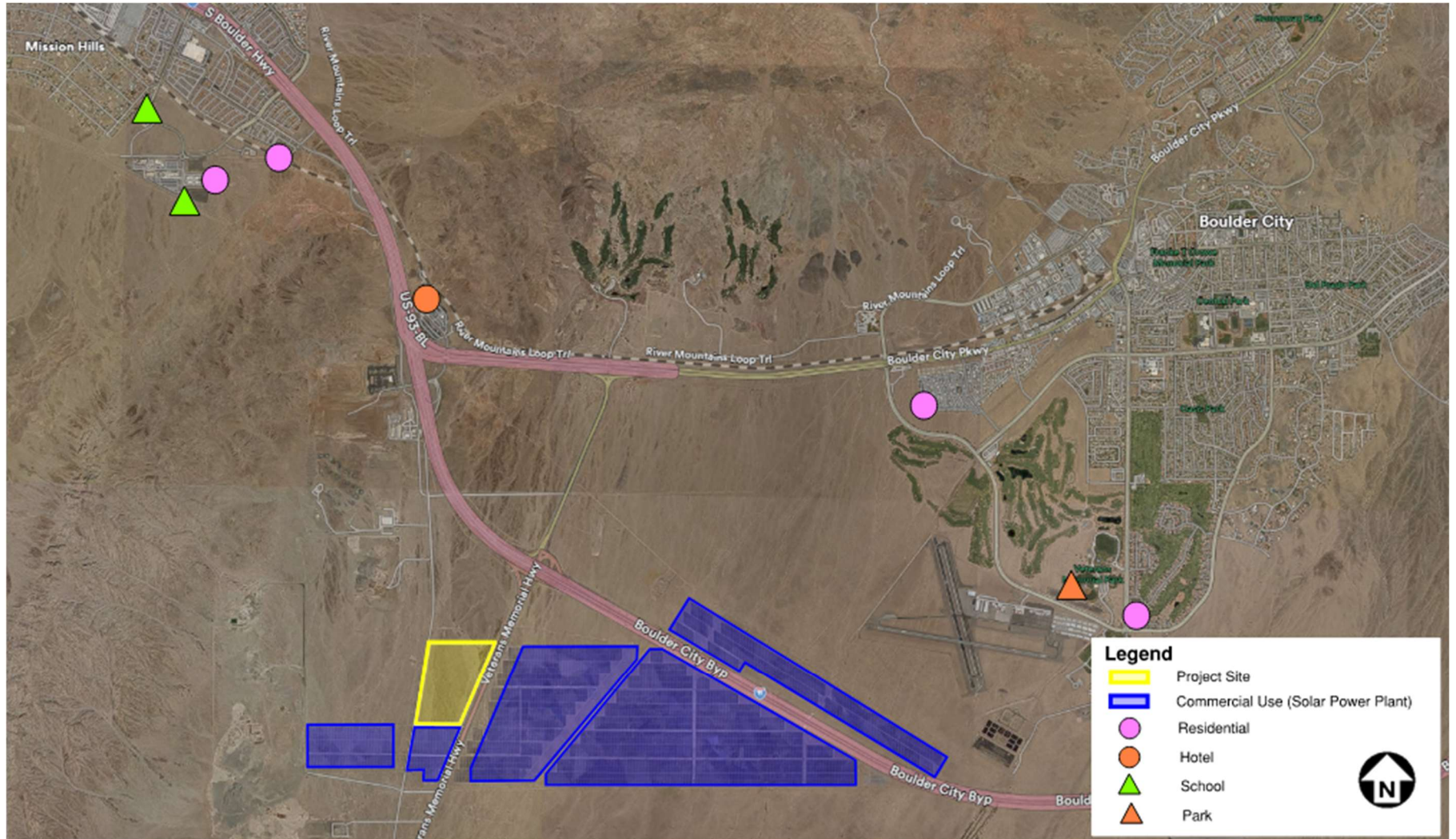


Figure 2: Receptor Locations and Surrounding Land Uses

Methodology

Operational noise levels are calculated by identifying mechanical equipment expected to operate at the Project site and assigning reference noise levels to each equipment type. Individual equipment noise levels were logarithmically summed to account for the decibel scale and combined sound level from multiple sources operating simultaneously. Sound propagation is calculated assuming flat terrain between the Project site and the nearest sensitive receptors. Although elevation differences exist between the Project site and receptor locations, this assumption provides a conservative estimate of potential operational noise levels, as it does not account for additional attenuation or shielding that may occur due to intervening topography.

Mechanical Equipment

Implementation of the Project would create new sources of noise in the Project vicinity. The major noise sources associated with the Project that would potentially impact existing and future nearby sensitive receptors include the operation of mechanical equipment (i.e., chillers, coolers, generators, rooftop air handling unit (AHU), transformers, and inverters) operating at the Project site. For this analysis, noise levels from all sources were calculated from the Project property line to the sensitive receptor property line. Each stationary source is discussed in more detail below.

The reference noise levels for mechanical equipment to be used at the Project site are provided below:

- Indoor Chillers: 101 dBA at 1 meter. This equipment would run continuously to provide cooling for the servers and related electronic equipment in the building. A total of 85 indoor chillers were calculated. The mechanical chillers would be installed within enclosed building areas, and the building envelope would provide substantial noise attenuation, thereby reducing their contribution to exterior noise levels. Concrete walls provide substantial sound attenuation due to their high mass and stiffness. Published acoustic data indicates that typical concrete wall assemblies provide sound transmission loss on the order of approximately 45 to 55 dB. Transmission loss increases with wall mass and sound frequency, consistent with the acoustic mass law.
- Dry Cooling Towers: 28 dBA at 10 meters. This equipment would run continuously to provide cooling for the servers and related electronic equipment in the Data Center Buildings. A total of 70 dry coolers were calculated.
- Emergency Biodiesel-Fired Backup Generators: 80 dBA at 50 feet. This equipment would be on standby to provide emergency backup power for continuous operation in the event of a power failure. Individual generators will also be tested and cycled for short durations throughout the year to ensure proper operation when needed. A total of 53 emergency backup generators were calculated.

- *Rooftop AHU*: 52 dBA at 50 feet. The AHU provides support in cooling and is equipped with a fan-driven air-to-water heat exchanger that transfers heat to a cooling fluid, which is subsequently pumped to the fluid-cooler. A total of 40 AHUs were calculated.
- *Substation Transformer*: 75 dBA at 6 feet. This equipment would run continuously to provide electrical power to the buildings.
- *Substation Inverter*: 57.1 dBA at 50 feet. This equipment would run continuously to provide electrical power to the buildings.

Operational Analysis Scenarios

As previously mentioned in the Project Description, the proposed data center would include 53 biodiesel-fired generators. The data center emergency backup generators would provide power when the main power source fails, such as during a power outage or another disruption. The emergency backup generators would only operate during a power loss event or intermittently during periodic testing and maintenance. Thus, operational noise levels were calculated and evaluated for the following operating conditions:

- *Normal Conditions*. Under normal conditions all chillers, substation transformer and inverter, and AHUs would be running simultaneously, and no generators would be running.
- *Emergency Conditions*. Under emergency conditions all chillers, AHUs, and generators would be running simultaneously until utility power is restored. Emergency conditions are not planned events and would be rare.

Impact Analysis

Normal Conditions

As mentioned above, for the purpose of this analysis, the BCMC determined that maximum permissible sound levels at the property boundary of receiving land uses are 70 dBA for residential and other noise-sensitive uses and 90 dBA for commercial or industrial uses.² The combined noise level under normal conditions for all sources except for generators would be 77.8 dBA at 50 feet. As shown in [Table 3: Project Operational Noise Levels – Normal Conditions](#), the highest Project generated noise levels would be 29.5 dBA and would not exceed the City's 70 dBA noise standard for residential and other noise sensitive uses. Project generated noise levels

² Ambient measurements were not available, and the analysis conservatively applies the base 70/90 dBA standards without use of the ambient+3 dBA adjustment allowed in the BCMC Section 7-6-4.

at the nearest resident would be 28.9 dBA. As shown in [Figure 1](#), 29.5 dBA is equivalent to a whisper and would not be discernable among typical ambient levels.

The highest Project generated noise levels at the nearest commercial use, located approximately 130 feet to the south and east, would be 69.5 dBA and would not exceed the City’s 90 dBA noise standard for commercial or industrial uses. Project-generated operational levels would comply with the City’s maximum permissible sound levels for commercial and industrial uses. Noise contours associated with normal operations are depicted in [Figure 3: Operational Noise contours - Normal Conditions](#).

Table 3: Project Operational Noise Levels – Normal Conditions

Receptor Location/ Land Use	Noise Source	Reference Level (dBA)	Reference Distance (feet)	Distance to Receptor (feet) ¹	Combined Noise Level at Receptor (dBA) ²	City’s Noise Standard	Exceeds City’s Noise Standard?
Boulder Creek Golf Club	Chillers (Indoors) ³	101	3.28	13,000	29.5	70	No
	Dry Cooling Towers	28	32.8				
	Rooftop AHU	52	50				
	Substation Transformer	75	6				
	Substation Inverter	57.1	50				
Northeast/ Mobile Homes	Chillers (Indoors) ³	101	3.28	14,000	28.9	70	No
	Dry Cooling Towers	28	32.8				
	Rooftop AHU	52	50				
	Substation Transformer	75	6				
	Substation Inverter	57.1	50				
Northwest/ School	Chillers (Indoors) ³	101	3.28	14,455	28.6	70	No
	Dry Cooling Towers	28	32.8				
	Rooftop AHU	52	50				
	Substation Transformer	75	6				
	Substation Inverter	57.1	50				
South and East/ Commercial	Chillers (Indoors) ³	101	3.28	130	69.5	90	No
	Dry Cooling Towers	28	32.8				
	Rooftop AHU	52	50				
	Substation Transformer	75	6				
	Substation Inverter	57.1	50				

1. The distance is from the location of the Project property line to the receptor property line.
2. Calculated using the inverse square law formula for sound attenuation: $dBA_2 = dBA_1 + 20 \log(d_1/d_2)$ Where: dBA_2 = estimated noise level at receptor; dBA_1 = reference noise level; d_1 = reference distance; d_2 = receptor location distance.
3. Chillers would be installed within enclosed building areas, and the building envelope would attenuate noise levels by approximately 45 dB substantial noise attenuation, thereby reducing their contribution to exterior noise levels.

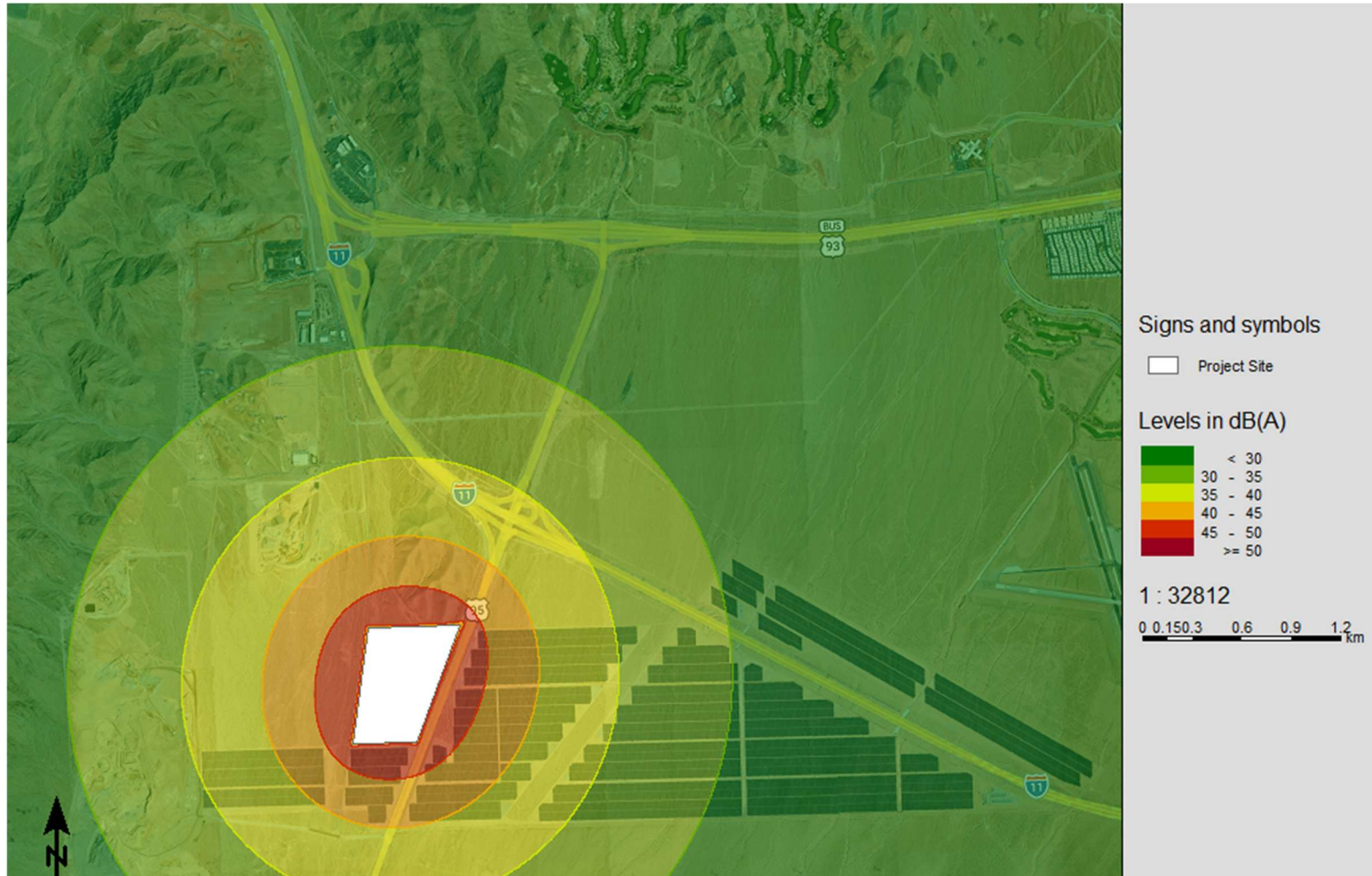


Figure 3: Operational Noise contours - Normal Conditions



Emergency Conditions

The combined noise level under emergency conditions for all sources including would be 89.5 dBA at 50 feet. As shown in Table 4: Project Operational Noise Levels – Emergency Conditions, the highest Project generated noise levels would be 41.0 dBA and would not exceed the City’s 70 dBA noise standard for residential and other noise sensitive uses. Project generated noise levels at the nearest resident would be 40.6 dBA. Noise contours associated with emergency conditions are depicted in Figure 4: Operational Noise Contours – Emergency Conditions.

The highest Project generated noise levels at the nearest commercial use, located approximately 130 feet to the south and east, would be 81.2 dBA and would not exceed the City’s 90 dBA noise standard for commercial or industrial uses. As Project-generated operational levels during emergency conditions would comply with the City’s maximum permissible sound levels for commercial and industrial uses, noise reduction measures are not necessary. It is noted that emergency conditions would be rare and would result in all emergency backup generators running until power is restored. The operational calculation conservatively assumes that all on-site noise-generating equipment would operate simultaneously at the property line of Project site. Equipment would be spatially operating throughout the Project site, and not all equipment would operate concurrently. Therefore, calculated noise levels represent a worst-case scenario and actual Project operations are expected to generate lower noise levels.

Table 4: Project Operational Noise Levels – Emergency Conditions

Receptor Location/ Land Use	Noise Source	Reference Level (dBA)	Reference Distance (feet)	Distance to Receptor (feet) ¹	Combined Noise at Receptor (dBA)	City’s Noise Standard	Exceeds City’s Noise Standard?
Boulder Creek Golf Club	Backup Generators	80	50	13,000	41.0	70	No
	Chillers (Indoors) ³	101	3.28				
	Dry Cooling Towers	28	32.8				
	Rooftop AHU	52	50				
	Substation Transformer	75	6				
	Substation Inverter	57.1	50				
Northeast/ Mobile Homes	Backup Generators	80	50	14,000	40.6	70	No
	Chillers (Indoors) ³	101	3.28				
	Dry Cooling Towers	28	32.8				
	Rooftop AHU	52	50				
	Substation Transformer	75	6				
	Substation Inverter	57.1	50				

Receptor Location/ Land Use	Noise Source	Reference Level (dBA)	Reference Distance (feet)	Distance to Receptor (feet) ¹	Combined Noise at Receptor (dBA)	City's Noise Standard	Exceeds City's Noise Standard?
Northwest/ School	Backup Generators	80	50	14,455	40.3	70	No
	Chillers (Indoors) ³	101	3.28				
	Dry Cooling Towers	28	32.8				
	Rooftop AHU	52	50				
	Substation Transformer	75	6				
	Substation Inverter	57.1	50				
South and East/ Townsite Solar 1 Project	Backup Generators	80	50	130	81.2	90	No
	Chillers (Indoors) ³	101	3.28				
	Dry Cooling Towers	28	32.8				
	Rooftop AHU	52	50				
	Substation Transformer	75	6				
	Substation Inverter	57.1	50				

1. The distance is from the location of the Project property line to the receptor property line.
2. Calculated using the inverse square law formula for sound attenuation: $dBA_2 = dBA_1 + 20 \log(d_1/d_2)$ Where: dBA_2 = estimated noise level at receptor; dBA_1 = reference noise level; d_1 = reference distance; d_2 = receptor location distance.
3. Chillers would be installed within enclosed building areas, and the building envelope would attenuate noise levels by approximately 45 dB substantial noise attenuation, thereby reducing their contribution to exterior noise levels.

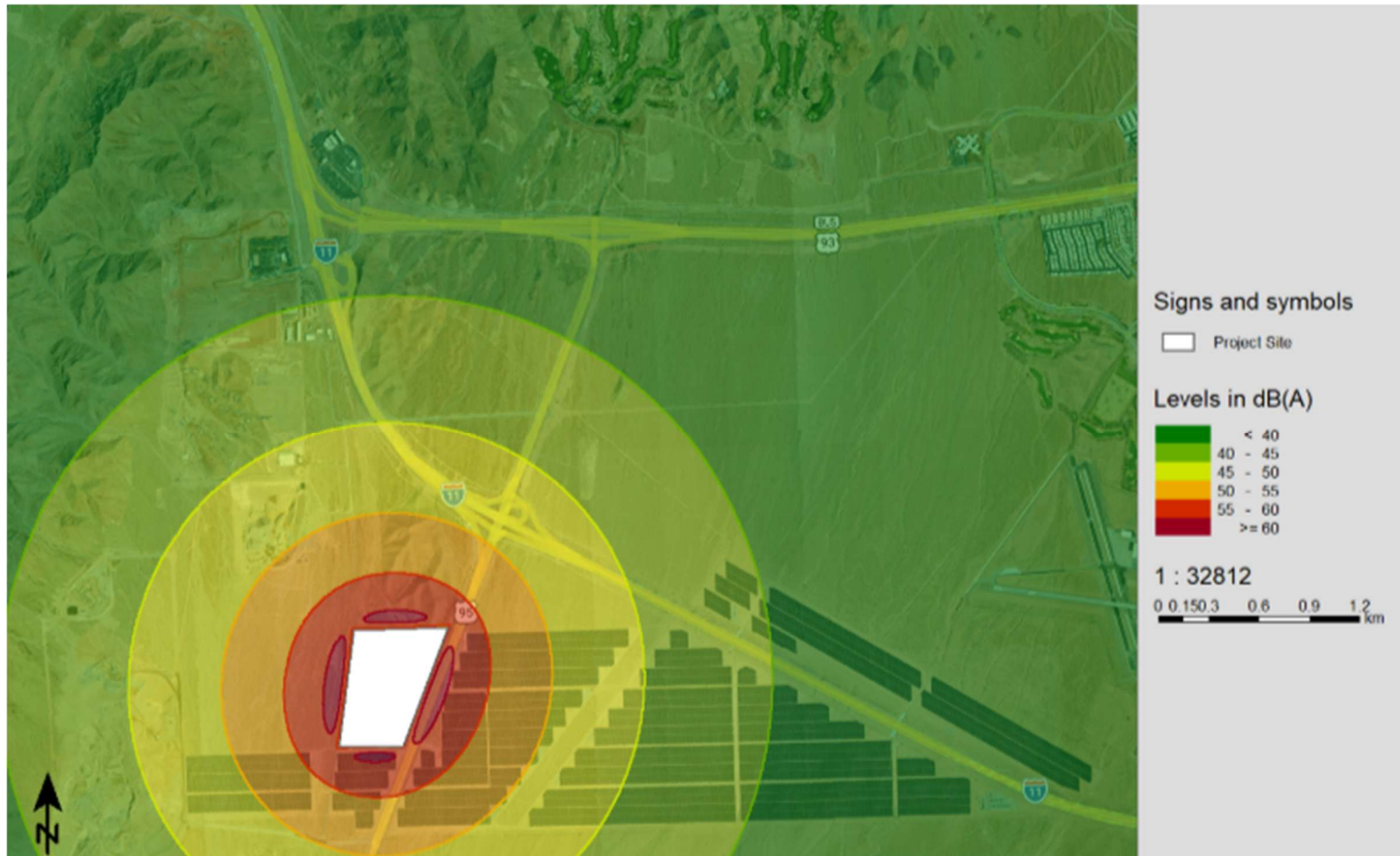


Figure 4: Operational Noise contours - Emergency Conditions

Conclusion

The Project would not exceed the City's maximum permissible sound levels at residential, other noise-sensitive, or commercial and industrial uses under normal operating conditions. The Project would also remain below the City's sound limits at residential and other noise-sensitive uses under infrequent emergency situations. The Project would also not exceed the City's 90 dBA noise standard for commercial and industrial uses during typical or emergency situations. As the Project's operational noise levels are conservatively calculated, noise reduction measures, such as acoustical enclosures or noise barriers surrounding generators, would further reduce levels below the City's noise standards.

Disclaimer

This report is based on publicly accessed data sources obtained through desktop research. No site visits or agency consultations were conducted. The noise calculations presented herein are preliminary in nature and are intended solely for planning-level evaluation and general feasibility assessment. These estimates are based on representative or standard noise and generalized operating assumptions, rather than on Project-specific equipment specifications or manufacturer-certified noise data.

The Project design, including generator specifications, control technologies, operating profiles, and equipment layout, has not yet been fully defined. As such, the noise calculations do not reflect final design conditions and may change as additional Project details become available.

Accordingly, these calculations should not be relied upon to demonstrate compliance with applicable regulatory noise standards, nor should they be interpreted as final or enforceable acoustical analysis. A comprehensive acoustical study may be required following finalization of Project design and equipment selection. Such analysis should be based on site-specific parameters, manufacturer-provided equipment specifications, and applicable regulatory guidance, and would be subject to review and approval by the appropriate authority.