September 5, 2019

Todd Hybels
Next Green Wave LLC
1275 West Elm Avenue
Coalinga, CA 93210
thybels@gmail.com

Subject: Next Green Wave Generator Noise Analysis – City of Coalinga, California

Dear Mr. Hybels,

Saxelby Acoustics has completed our review of the proposed backup generator associated with the project. **Figure 1** shows the location of the generator with respect to the project site plan.

REGULATORY CONTEXT

FEDERAL

There are no federal regulations related to noise that apply to the Proposed Project.

STATE

There are no state regulations related to noise that apply to the Proposed Project.

LOCAL

City of Coalinga Municipal Code

It is the understanding of Saxelby Acoustics that the City of Coalinga municipal code limits noise exposure from a stationary source received by a commercial-use building to 65 dB(A) L_{eq} at the property line.

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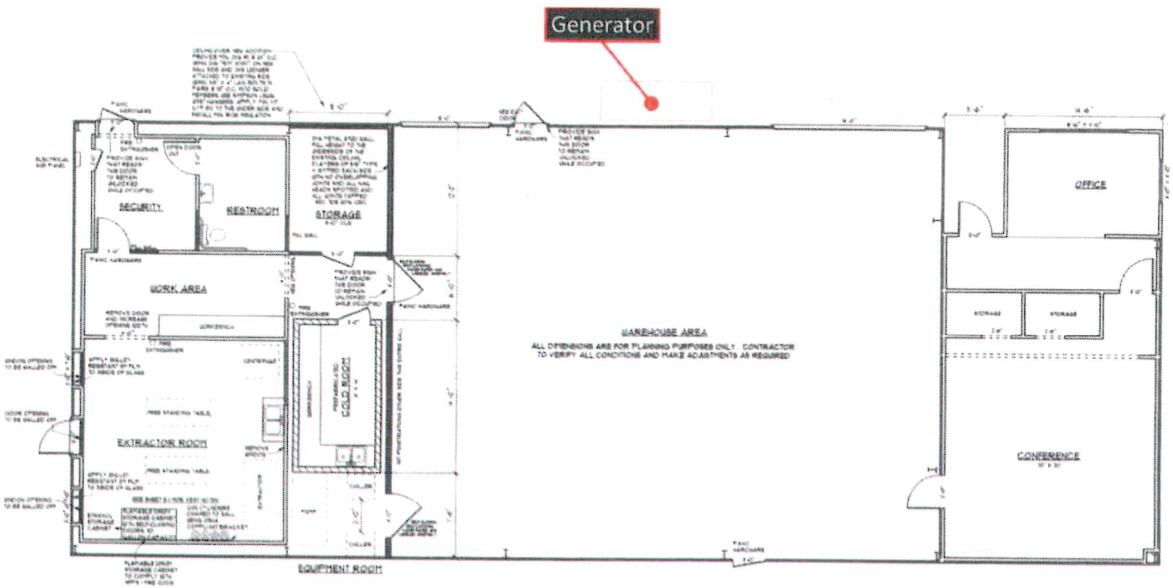

Next Green Wave Coalinga Generator

City of Coalinga, California

Figure 1

Project Site Plan

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PROJECT NOISE GENERATION

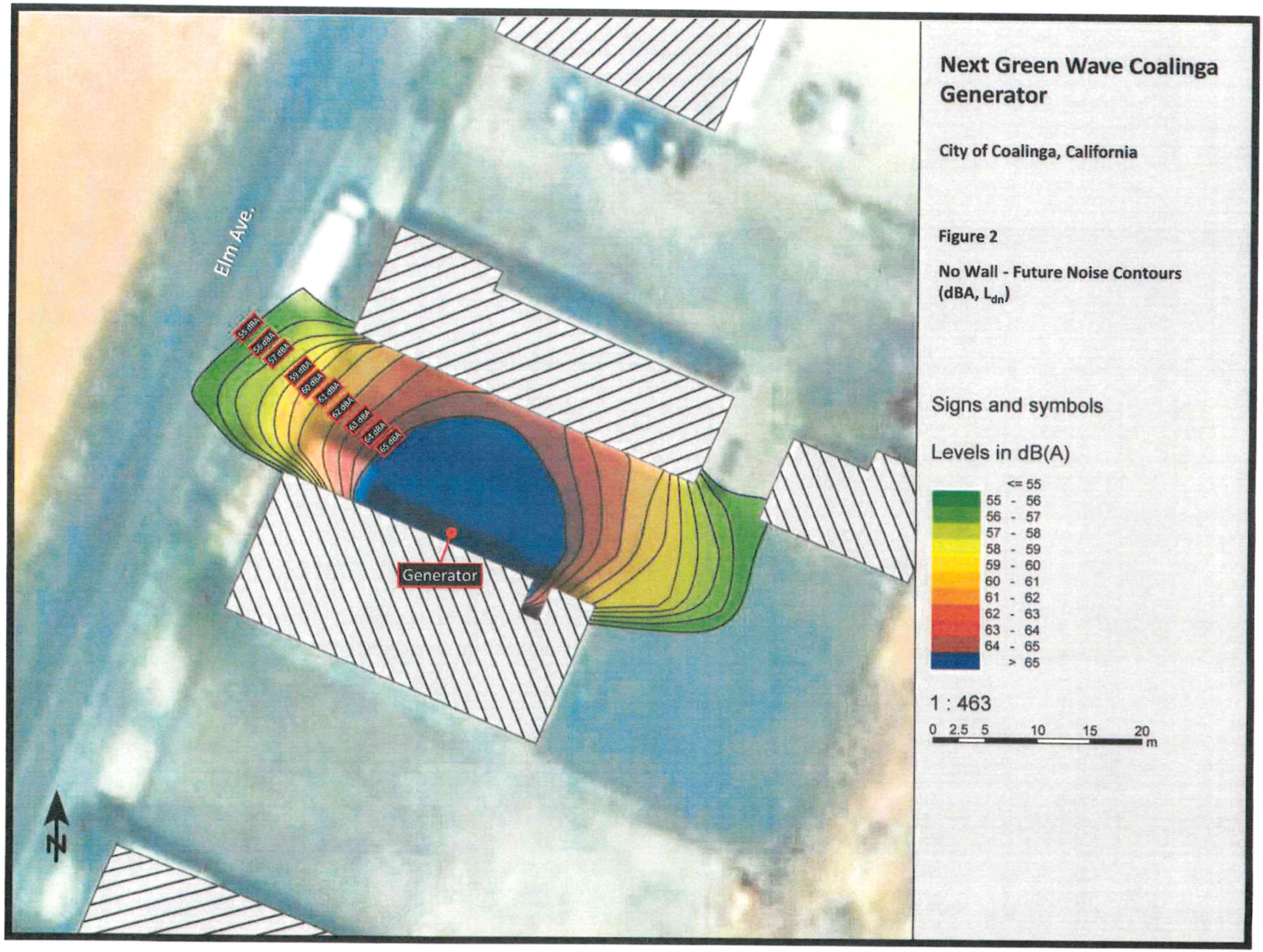
Backup Generator

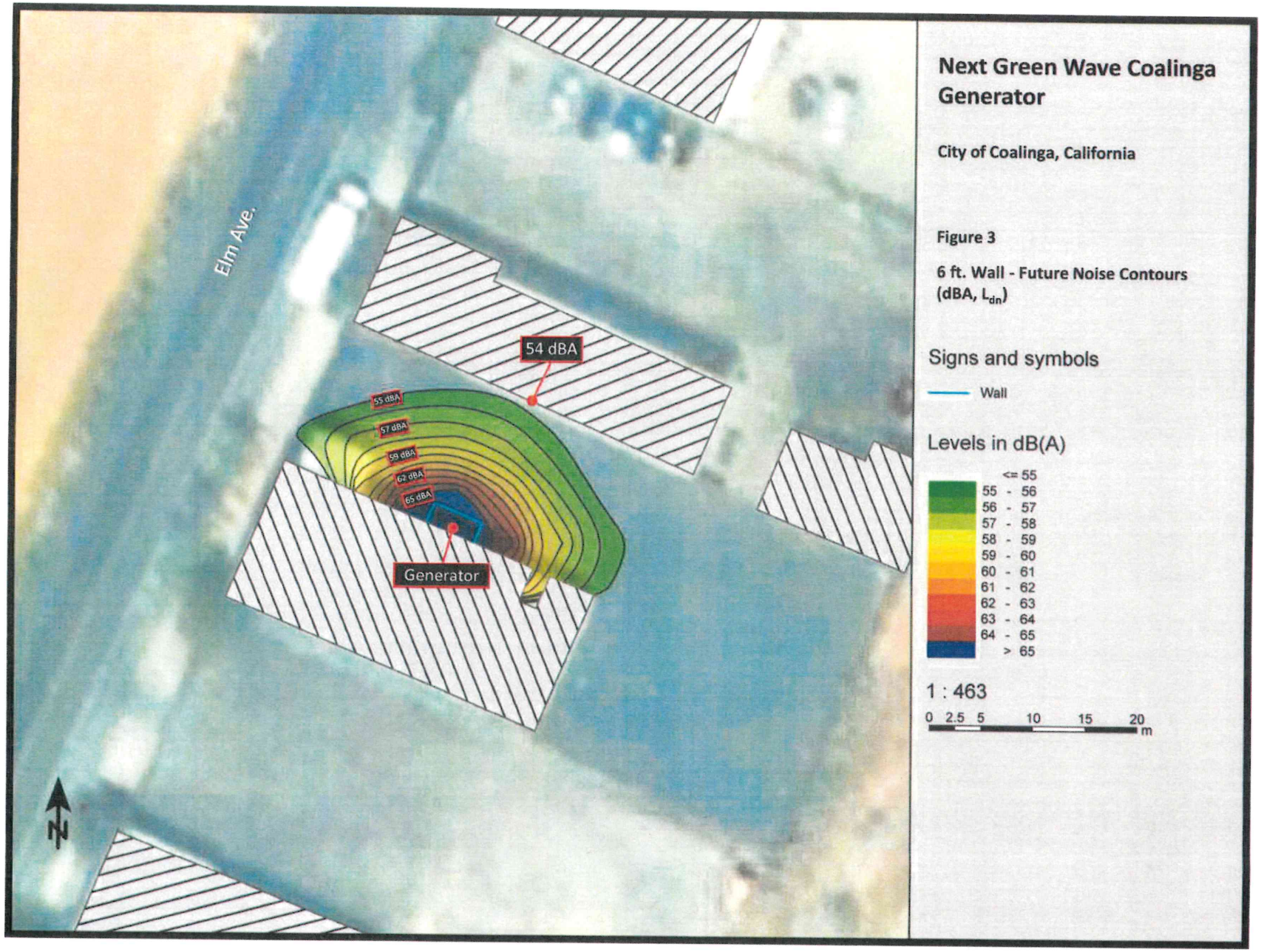
The proposed generator is an MQ Power WhisperWatt 125 kVA model DCA125SSI generator. According to MQ Power sound ratings, the generator produces 68 dB(A) at 23 feet under rated power.

Based upon the project site plan, the generator would be located approximately 40 feet from the nearest property line to the northeast. At this distance, the unshielded generator would produce a noise level of approximately 64 dB(A) L_{eq} at the property line. Therefore, the proposed backup generator is predicted to comply with the City of Coalinga 65 dB L_{eq} exterior noise level standard at the nearest parcel to the northeast. **Figure 2** shows noise contours from the generator without a sound attenuating barrier.

Additional noise control can be achieved by utilizing a sound-attenuating barrier. Saxelby Acoustics modeled a six-foot-tall sound attenuating barrier using SoundPLAN. The barrier was modeled with a minimum distance of three feet between each wall and the generator to account for a potential manufacturer-recommended clearance. Please reference manufacturer specifications for appropriate minimum clearances.

The addition of a barrier is predicted to reduce noise levels at the northeastern property line by an additional 10 dB(A) L_{eq}, resulting in a sound power level of 54 dB(A) L_{eq}. **Figure 3** shows noise contours after the addition of a six-foot sound barrier. Therefore, the addition of a barrier will also comply with the city of Coalinga noise level standards.


Next Green Wave Coalinga Generator
City of Coalinga, California
Figure 2
No Wall - Future Noise Contours (dBA, L_{dn})
Elm Ave.
55 dBA
56 dBA
57 dBA
59 dBA
60 dBA
61 dBA
62 dBA
63 dBA
64 dBA
65 dBA
Generator
N
Signs and symbols
Levels in dB(A)
<= 55
55 - 56
56 - 57
57 - 58
58 - 59
59 - 60
60 - 61
61 - 62
62 - 63
63 - 64
64 - 65
> 65
1 : 463
0 2.5 5 10 15 20
m


Elm Ave.
54 dBA
55 dBA
57 dBA
59 dBA
62 dBA
65 dBA
Generator
N
Next Green Wave Coalinga Generator
City of Coalinga, California
Figure 3
6 ft. Wall - Future Noise Contours (dBA, L_{dn})
Signs and symbols
Wall
Levels in dB(A)
<= 55
55 - 56
56 - 57
57 - 58
58 - 59
59 - 60
60 - 61
61 - 62
62 - 63
63 - 64
64 - 65
> 65
1 : 463
0 2.5 5 10 15 20
m

CONCLUSIONS

The proposed backup generator is predicted to comply with the City of Coalinga 65 dB(A) L_{eq} daytime noise level standard. Additional noise reduction to a level of 54 dB(A) L_{eq} or less at the property line can be achieved by the addition of a six-foot-tall sound barrier enclosing the generator.

If you or the City of Coalinga staff have any questions, please contact me at (916) 760-8821 or Luke@SaxNoise.com.

Sincerely,

Saxelby Acoustics LLC

Luke Saxelby, INCE Bd. Cert.
Principal Consultant
Board Certified, Institute of Noise Control Engineering

Appendix A: Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
ASTC	Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by +5 dBA and nighttime hours weighted by +10 dBA.
DNL	See definition of Ldn.
IIC	Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
NIC	Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation.
NNIC	Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation.
Noise	Unwanted sound.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
RT60	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
SPC	Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

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