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December 4, 2023

Melanie A. Bachman, Esq.
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **PETITION NO. 1442 - SR Litchfield, LLC petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed construction, maintenance and operation of a 19.8-megawatt AC solar photovoltaic electric generating facility on 6 contiguous parcels located both east and west of Wilson Road south of the intersection with Litchfield Town Farm Road in Litchfield, Connecticut, and both east and west of Rossi Road, south of the intersection with Highland Avenue in Torrington, Connecticut, and associated electrical interconnection.**

Partial D&M Plan III – Responses to Council Interrogatory No. 9

Dear Ms. Bachman:

SR Litchfield, LLC ("SRL") hereby submits its supplemental response to the Connecticut Siting Council's ("Council") Interrogatory No. 9, along with Attachment D, issued November 7, 2023 in connection with SRL's Partial Development and Maintenance Plan III. An original and fifteen (15) copies of the written response and Attachment D are enclosed

If you have any questions or need any additional information regarding this Project, please feel free to contact me.

Sincerely,

Jonathan H. Schaefer

Copy to (via email): Dominick J. Thomas, Esq. (djt@cohen-thomas.com)

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

SR LITCHFIELD, LLC PETITION FOR DECLARATORY RULING, PURSUANT TO CONNECTICUT GENERAL STATUTES §4-176 AND §16-50k, FOR THE PROPOSED CONSTRUCTION, MAINTENANCE AND OPERATION OF A 19.8-MEGAWATT AC SOLAR PHOTOVOLTAIC ELECTRIC GENERATING FACILITY ON 6 CONTIGUOUS PARCELS LOCATED BOTH EAST AND WEST OF WILSON ROAD SOUTH OF THE INTERSECTION WITH LITCHFIELD TOWN FARM ROAD IN LITCHFIELD, CONNECTICUT, AND BOTH EAST AND WEST OF ROSSI ROAD, SOUTH OF THE INTERSECTION WITH HIGHLAND AVENUE IN TORRINGTON, CONNECTICUT, AND ASSOCIATED ELECTRICAL INTERCONNECTION	:	PETITION NO. 1442
	:	DECEMBER 4, 2023

RESPONSES OF SR LITCHFIELD, LLC
TO CONNECTICUT SITING COUNCIL INTERROGATORIES
PARTIAL DEVELOPMENT AND MANAGEMENT PLAN III

On November 7, 2023, the Connecticut Siting Council ("Council") issued interrogatories in connection with SR Litchfield, LLC's ("SRL") Partial Development and Management Plan II, relating to Petition No. 1442. Below is the Petitioners supplemental response to the Interrogatory No. 9:

Question No. 9

The Petition Noise Impact Assessment dated December 2, 2020 (Exhibit N), was based on a project design with 90 inverters. Electrical Site Plan G-001 indicates 170 inverters will be installed as part of a project re-design. Revise the Noise Impact Assessment to account for the project re-design. Will the project re-design meet DEEP Noise Control Regulations at the boundaries of the host parcels?

Response

An updated Noise Impact Assessment of the latest Project design was conducted on November 21, 2023. The preliminary results show that the latest Project design meets DEEP Noise Control Regulations at all nearby residences surrounding the Project. *See* **Attachment C**.

A final updated Noise Impact Assessment report supporting that conclusion is expected by December 7, 2023. SRL will submit a copy to the Council when it is received. If the Council elects to approve SRL's Phase III D&M Plan prior to that submission, then SRL would be pleased to have as a condition of approval the submission of the final updated Noise Impact Assessment report demonstrating compliance with the CT DEEP Noise Control regulations.

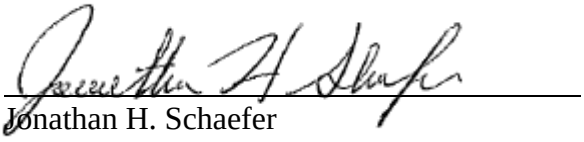
Supplemental Response

Urban Solution Group completed a Noise Impact Assessment for the current Project design. The final Noise Impact Assessment (December 4, 2023) confirms that the latest Project design meets DEEP Noise Control Regulations at all nearby residences surrounding the Project. *See* Attachment D.

CERTIFICATION

This is to certify that on the 4th day of December, 2023, a copy of the foregoing was sent, via electronic mail, to the following:

Dominick J. Thomas, Esq.
Cohen and Thomas
315 Main Street
Derby, CT 06418
(203) 735-9521
djt@cohen-thomas.com



Jonathan H. Schaefer

Noise Impact Assessment

Litchfield 19.8MW Solar Energy Facility
Litchfield County, CT

Prepared for:

Silicon Ranch Corporation
18475 W Colfax Ave. Suite 120
Golden, CO 80401

Prepared by:

Urban Solution Group, LLC
4230 Elati Street, Suite 200
Denver, CO 80216

December 4, 2023

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URBAN SOLUTION GROUP

Report Submitted to:
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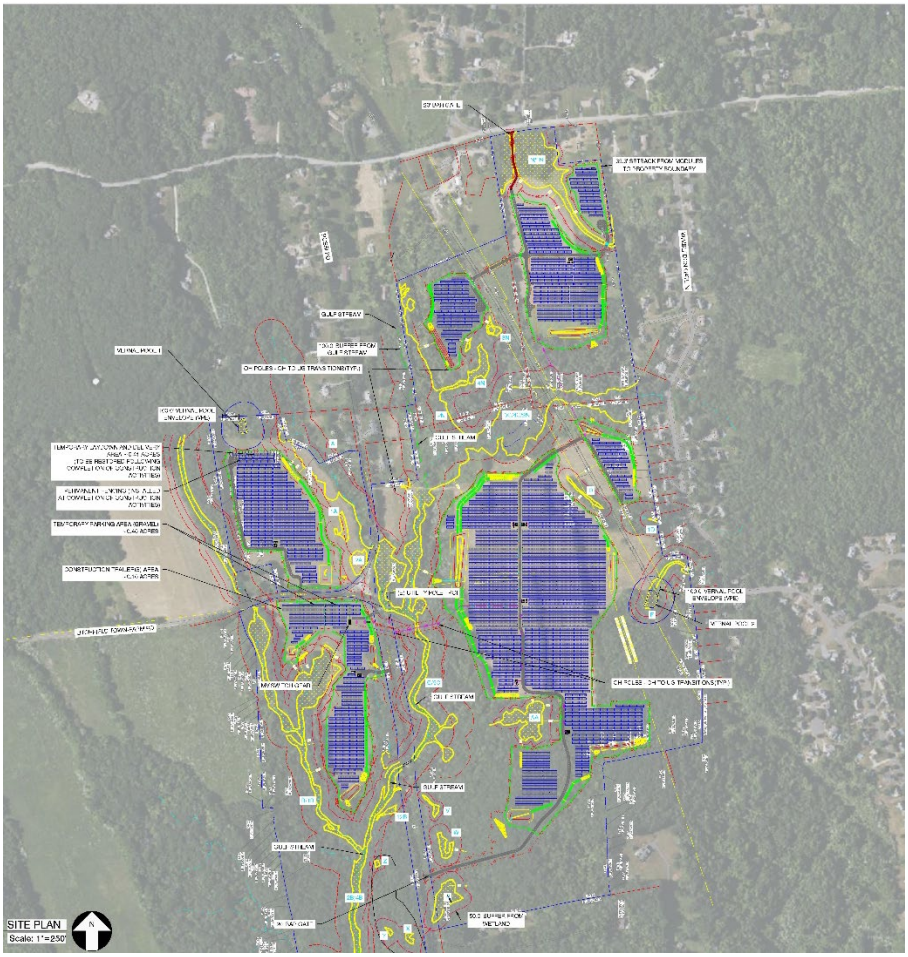
1. Executive Summary

Urban Solution Group, LLC (Urban) was commissioned to prepare a Noise Impact Assessment (NIA) report for the proposed Litchfield 19.8MW Solar Energy Facility (Litchfield Solar Facility) to be operated by Silicon Ranch Corporation (SRC). SRC is proposing to install ground-based solar panels accompanied by 170 power invertors and eight (8) transformers at the Litchfield Solar Facility located in Litchfield County, Connecticut. The purpose of this report was to assess the predicted environmental noise impact from the proposed operations on the surrounding environment. The results of this assessment will compare the predicted levels of the Litchfield Solar Facility to the permissible noise level limits allowed by the Connecticut Department of Energy and Environmental Protection (CTDEEP) for residential areas.

Location Coordinates:	41.794157°N, 73.168028°W
Regulation Noise Target:	CTDEEP – Zone A – Daytime dBA Limit

Figure 1. *Aerial View of the proposed Litchfield Solar Facility*



(Executive Summary Continued)

This assessment modeled 35 receivers representing the surrounding residences located around the proposed Litchfield Solar Facility. Sound sources are assumed to operate only during the day when electricity is produced by the solar panels. The results of the NIA indicate predicted noise levels for the proposed operations are expected to comply with the daytime permissible noise levels of 55 dBA for residential areas set by CTDEEP. Receiver R24 is expected to be the most impacted receiver with a predicted noise level of 45.2 dBA from the operations. Below is a summary of the results for all 35 receivers.

Predicted Sound Levels – SRC Litchfield Solar Facility

Receptor	Max Permissible Noise Level (dBA)	Predicted Noise Level (dBA)
R1	55.0	36.3
R2	55.0	33.9
R3	55.0	32.5
R4	55.0	33.4
R5	55.0	32.9
R6	55.0	31.7
R7	55.0	31.6
R8	55.0	30.4
R9	55.0	31.8
R10	55.0	34.0
R11	55.0	34.0
R12	55.0	30.7
R13	55.0	30.5
R14	55.0	30.5
R15	55.0	30.5
R16	55.0	31.5
R17	55.0	30.1
R18	55.0	27.2
R19	55.0	23.9
R20	55.0	26.0
R21	55.0	18.2
R22	55.0	21.2
R23	55.0	22.9
R24	55.0	45.2
R25	55.0	39.3
R26	55.0	37.8
R27	55.0	36.4
R28	55.0	38.5
R29	55.0	36.4
R30	55.0	34.5
R31	55.0	33.1
R32	55.0	32.1
R33	55.0	31.7
R34	55.0	32.8
R35	55.0	33.4

2. Regulations and Noise Standards Summary

The maximum permissible noise levels described in this report are governed by Connecticut Department of Energy and Environmental Protection Agency (CTDEEP) and are found in Connecticut General Statutes and Regulations of Connecticut State Agencies Sections 22a-69-1 through 22a-69-7.4. In Section 22a-69-3.5, for residential zones (Class A Zone), CTDEEP states, "No person in a Class A Noise Zone shall emit noise exceeding the levels stated" in Table 1.

Section 22a-69-3.5 outlines maximum permissible noise levels for each zone:

The below table provides the noise limits described in Sections 22a-69-3.5 and is provided for reference:

Table 1. *CTDEEP Zone and Designated Noise limits*

ZONE	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.)
Zone A	55 dB(A)	45 dB(A)

3. Methodology and Approach

All computer models and predicted noise levels generated for the assessment are developed with the commercial noise modeling software SoundPLAN 9.0. The ISO 9613-1 and 2 international standards are utilized in this software as they are widely accepted both internationally as well as in North America. The algorithms used in the commercial software package are based on methods and theory accepted in the environmental acoustics community. Both detailed equipment technical information and location specific topography, are used to generate comprehensive noise predictions that take into account environmental conditions, buildings, ground cover and barriers (natural, topographical, and otherwise). Note that actual field measurements may differ from modeled noise levels on any given day due to ever changing environmental factors and other noise sources in the study area not explicitly in the computer model. Table 2 below lists the conditions used in the model.

Table 2. *Conditions used in SoundPLAN 9.0 Software*

Parameter	Modeled Input and Description
Temperature	65°F
Topography	Included and modeled as is
Wind Velocity	2.2 to 11.2 mph – ISO 9613 uses a slight downwind condition from each noise source to each receiver.
Wind Direction	From the noise source to the receiver points
Relative Humidity	70%
Ground Absorption	Ranges from 0.0 for water bodies & major roadways up to 1.0 for thick grasslands

The solar facility is assumed to be operating only during the daytime period, since the facility will produce little to no energy during the nighttime period. During the nighttime, there is little to no irradiance, meaning the noise emitted by the equipment is significantly reduced. The predicted noise levels generated in this report are from daytime operations while the facility is producing maximum electrical power from the Litchfield Solar Facility. Pre-existing sound sources such as those from animals, weather, road traffic, and all other ambient sounds are not included in the noise model. Actual field measurements may vary from modeled noise levels due to environmental factors and other local ambient noise sources not explicitly included in the model.

The Sound Power Levels (SWL) used in the model were determined for the significant noise sources through manufacturer's data and theoretical calculations. The Litchfield Solar Facility will house 170 invertors and eight (8) transformers. SWLs for the 125 kW inverter were obtained from noise tests for the 125 kW inverter provided by the manufacturer. SWLs for the 3,900 kVA, 3,000 kVA, and 2,500 kVA transformers were calculated based on reference sound data for the transformers and methods used in the ANSI IEEE C57.12.90 standard. Table 3 below shows the calculated SWLs for the 3,900 kVA, 3,000 kVA, and 2,500 kVA transformers and the 125 kW inverter used in the model.

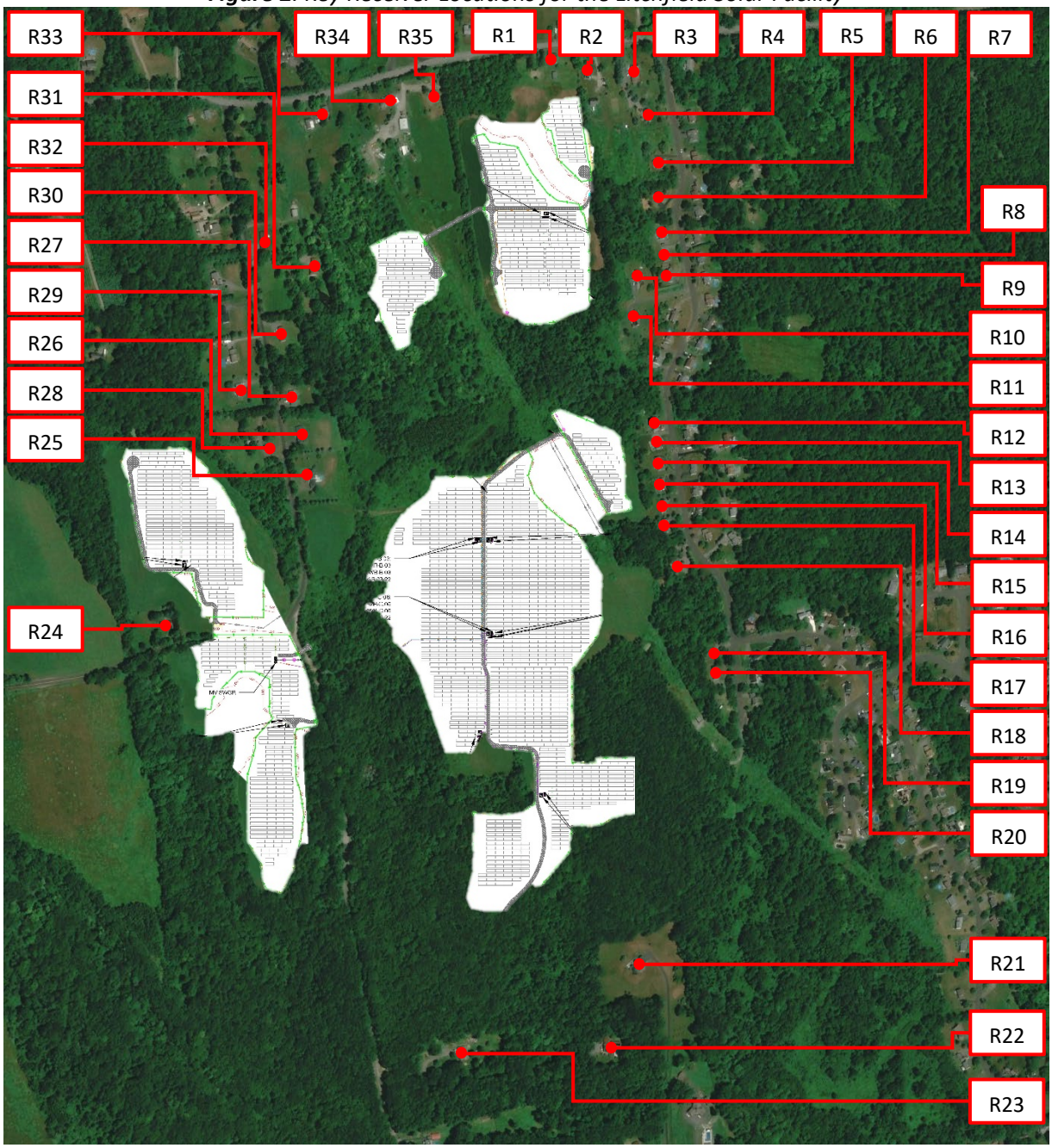
Table 3. *Source Octave Band Sound Power Levels (SWL)*

Source	Linear Octave Band Center Frequency (dB)									Overall (dBA)
	31.5	63	125	250	500	1000	2000	4000	8000	
125 kW Inverter	77.8	74.6	73.9	79.8	78.4	77.1	72.1	66.9	60.2	81.0
3900 kVA Transformer	65.3	71.3	73.3	68.3	68.3	62.3	57.3	52.3	45.3	68.7
3000 kVA Transformer	63.7	69.7	71.7	66.7	66.7	60.7	55.7	50.7	43.7	67.1
2500 kVA Transformer	62.6	68.6	70.6	65.6	65.6	59.6	54.6	49.6	42.6	66.0

4. Site Information

The proposed Litchfield Solar Facility will be located in a residential area near Torrington, CT. The coordinates for the location are 41.794157°N, 73.168028°W. Noise receptor points were located at 35 of the closest residences around the solar facility. Figure 2 below shows key receptor points and an aerial of the proposed Litchfield Solar Facility. Noise levels at these receptor points must be below 55 dBA noise levels. The white areas in the image below represent the areas where the solar panels will be placed along with noise emitting equipment.

***Figure 2**. Key Receiver Locations for the Litchfield Solar Facility*



5. Noise Modeling Results

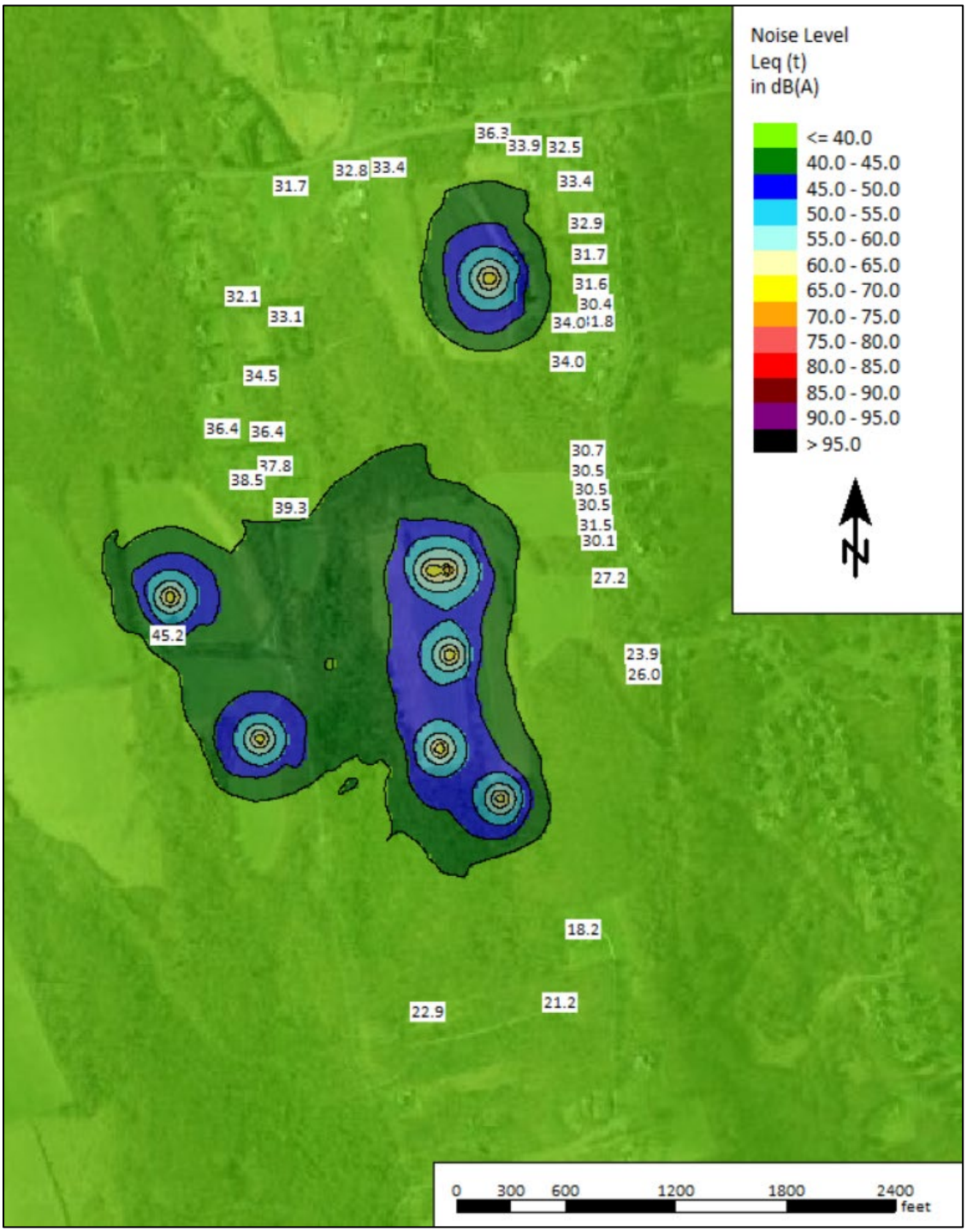
Predicted sound levels from the proposed Litchfield Solar Facility, when it's producing maximum electrical power, were calculated using SoundPLAN 9.0 software. Predicted noise levels for each receiver are listed in Table 4 on the following page. The receptor locations in the tables correspond to the locations identified in Figure 2. Predicted noise levels for nearby residences range from 18.2 dBA to 45.2 dBA, with all of the receivers predicted to be below the maximum permissible noise level of 55 dBA set by CTDEEP. Receiver R24 is expected to be the most impacted receiver, with a predicted noise level of 45.2 dBA. The predictive noise impact assessment demonstrates that noise mitigation measures are not required to achieve compliance.

The results of the noise modeling are shown as noise contour maps. Figure 3 shows the noise contour map results for the Litchfield Solar Facility. The contours are provided in 5 dB increments with the color scale indicating the sound level of each color. The predicted levels only include sound levels from the Litchfield Solar Facility and do not include ambient noise or noise contribution from other sources outside of the expected operations. Actual field measurements may vary from predicted levels due to varying noise sources outside of the solar facility.

Table 4. *Sound Levels from the SRC Litchfield Solar Facility during Maximum Electrical Power Output*

Receptor	Max Permissible Noise Level (dBA)	Predicted Noise Level (dBA)
R1	55.0	36.3
R2	55.0	33.9
R3	55.0	32.5
R4	55.0	33.4
R5	55.0	32.9
R6	55.0	31.7
R7	55.0	31.6
R8	55.0	30.4
R9	55.0	31.8
R10	55.0	34.0
R11	55.0	34.0
R12	55.0	30.7
R13	55.0	30.5
R14	55.0	30.5
R15	55.0	30.5
R16	55.0	31.5
R17	55.0	30.1
R18	55.0	27.2
R19	55.0	23.9
R20	55.0	26.0
R21	55.0	18.2
R22	55.0	21.2
R23	55.0	22.9
R24	55.0	45.2
R25	55.0	39.3
R26	55.0	37.8
R27	55.0	36.4
R28	55.0	38.5
R29	55.0	36.4
R30	55.0	34.5
R31	55.0	33.1
R32	55.0	32.1
R33	55.0	31.7
R34	55.0	32.8
R35	55.0	33.4

Figure 3. *Predicted Sound Levels of the Litchfield Solar Facility at Maximum Power Output*



6. Conclusion

The results of the noise impact assessment indicate that noise levels generated by the SRC's proposed Litchfield Solar Facility are predicted to comply with daytime permissible noise levels of 55 dBA for residential areas required by CTDEEP. Therefore, no noise mitigation is required at this facility during power generation operations.

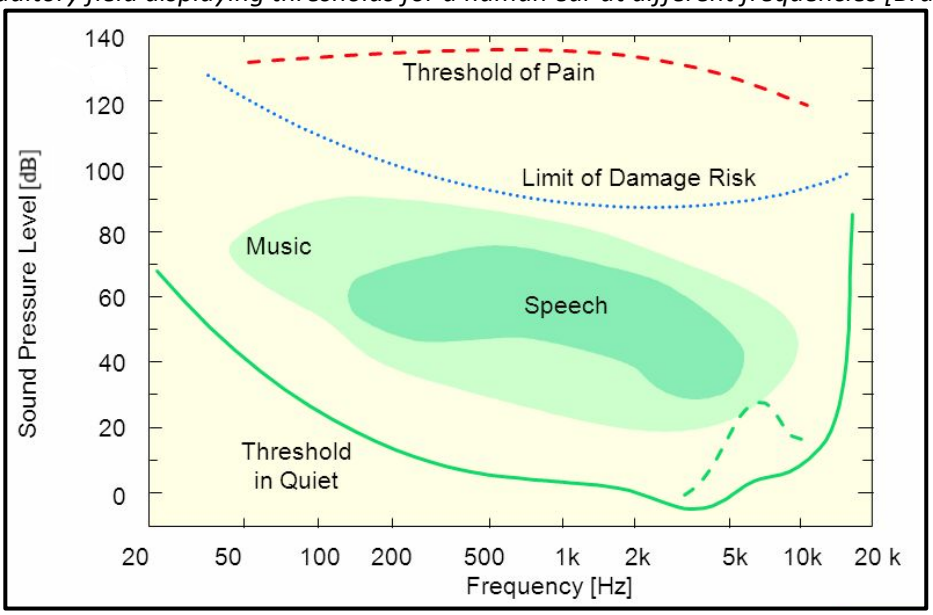
7. Notations

The services provided for this project were performed in accordance with generally accepted professional consulting services. No warranty, expressed or implied, is made or intended by rendition of these consulting services or by furnishing oral or written reports of the findings made. Urban Solution Group generated this report for the exclusive use of Silicon Ranch Corporation.

Appendix 1 – Sound Fundamentals

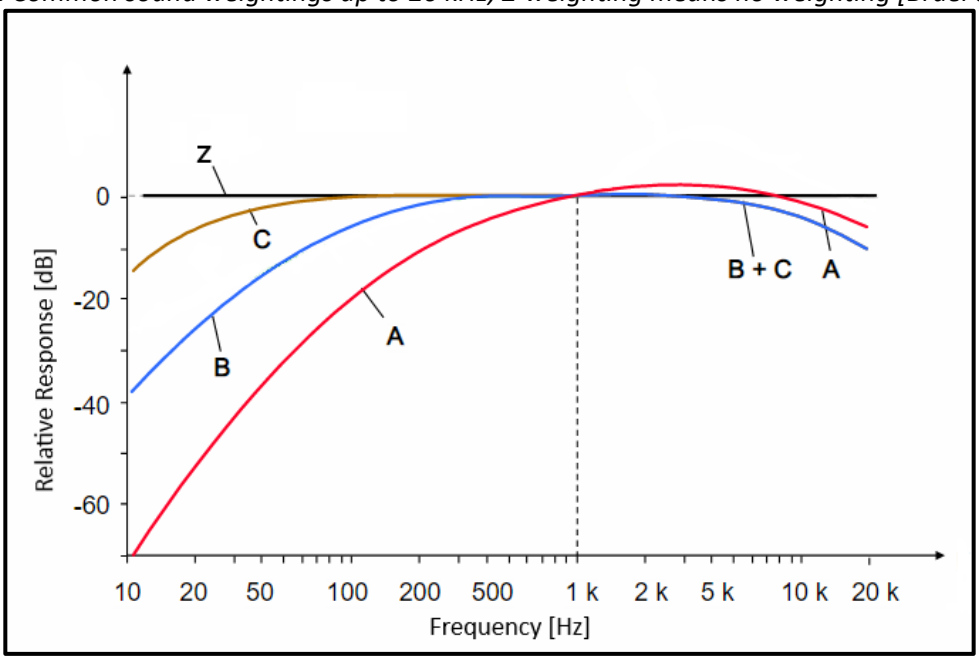
Sound is a series of vibrations transmitted through the air, or other medium, and can be heard when they are processed by the human ear. There are two important properties that describe sound; frequency and amplitude. Frequency is determined by the rate of movement and is measured in cycles per second, which is known as Hertz (Hz). A healthy human ear can hear 20 Hz – 20,000 Hz (Figure A). The sensation associated with frequency is commonly referred to as the pitch of a sound. High frequencies produce a higher pitch and vice versa. The amplitude of a sound is determined by the maximum displacement of air molecules produced by the vibrations. These displacements lead to pressure fluctuations in air, which are expressed in decibels (dB). Decibels are a logarithmic ratio of sound pressure over the standard threshold of hearing. The more energy a sound has, the larger the pressure fluctuations, resulting in a louder sound.

Figure A. *Auditory field displaying thresholds for a human ear at different frequencies [Bruel and Kjaer]*



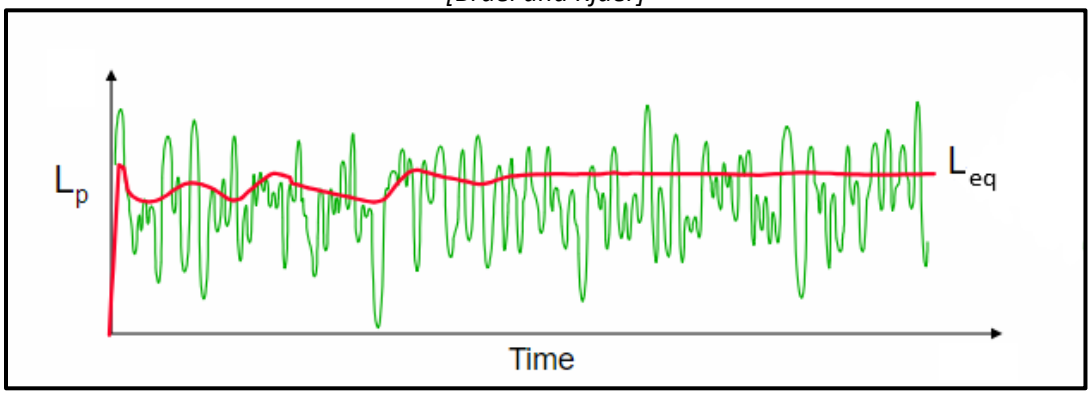
Frequency weightings are applied to measurements to provide a better match between measured results and human perception. Each weighting, in relation to their frequency components, allows for a consistent measurement of the different type of noise sources. A-weighted decibel sound pressure levels (dBA) are measurements recorded from a sound level meter measuring sounds similar to the response of the ear (Figure B). While C-weighted (dBC) measurements are for low-frequency components.

Figure B. *Common sound weightings up to 20 kHz, Z-weighting means no weighting [Bruel and Kjaer]*



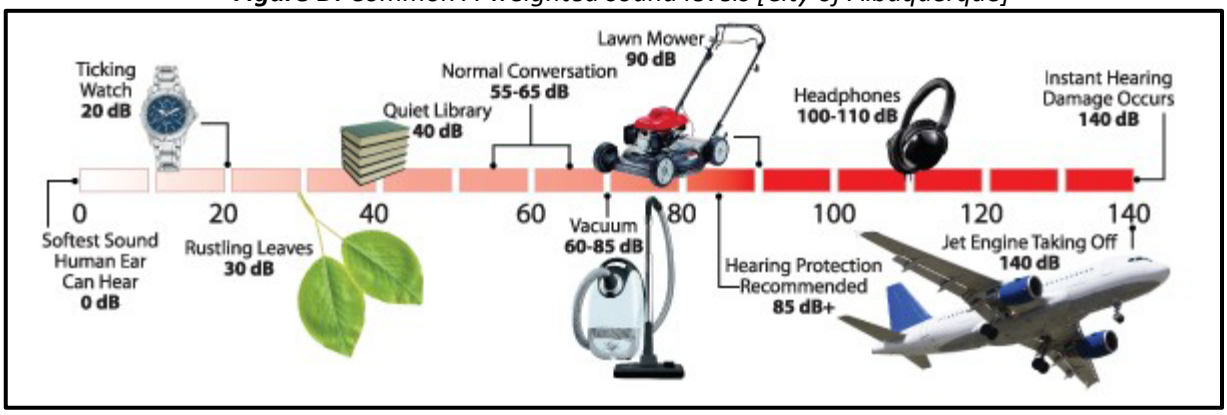
Each measurement has an exponential time factor. Slow time weighting is the most common for environmental noise measurements and will be used for these measurements. For recording over long periods of time, the sound level meter records each weighted decibel reading with an equivalent, or average, continuous sound level reading (Leq). Leq represents the same energy as the actual time varying sound signal (Figure C). LAeq refers to the equivalent continuous sound level for an A-weighted measurement.

Figure C. *Sound level recording displaying Leq, a steady-state sound level, over a noise measurement [Bruel and Kjaer]*



Environmental noise is a combination of various noise sources. These sources may include; vehicle traffic, aircraft flyovers, wind, weather disturbances, commercial or industrial activities, and other short-term events. These sources create “background noise”. Background noise varies throughout the day, generally following the cycle of human activity. Figure D presents typical A-weighted (dBA) sound levels for multiple sources of sound.

Figure D. *Common A-weighted sound levels [City of Albuquerque]*



Appendix 2 – Glossary

Ambient Noise
All noises that exist in an area and are not related to facility. Ambient noise includes sound from other industrial noise not subject to this directive, transportation sources, animals and nature.

Average Sound Level
See Energy Equivalent Sound Level.

A-weighted sound level
The sound level as measured on a sound level meter using a setting that emphasizes the middle frequency components similar to the frequency response of the human ear.

Calibration
A procedure used for the adjustment of a sound level meter using a reference source of a known sound pressure level and frequency. Calibration must take place before and after the sound level measurements.

Day Night Sound Level (Ldn)
Is the average noise level over a 24-hour period. The noise between the hours of 22:00 and 07:00 is artificially increased by 10 dB. The nighttime noise is weighted to consider the decrease in community background noise.

Daytime Average Sound Level
The time-averaged A-weighted sound level measured between the daytime hours, which are usually 7:00 am to 7:00 pm (7:00 am to 9:00 pm for Weld County Code).

Decibel (dB)
A unit of measure of sound pressure that compresses a large range of numbers into a more meaningful scale. The basic unit of measurement for sound levels.

dBA
The decibel (dB) sound pressure level filtered through the A filtering network to approximate human hearing response. See dB and A-weighted Sound Level.

Energy Equivalent Sound Level (L_{eq})
The Leq is a single-number average, sound level that represents cumulative acoustical energy as measured over a specified time interval.

Facility
Any operation used in exploration, processing, development and transportation of energy resources.

Frequency
The number of oscillations per second for a sound wave.

Impulse Noise
Unwanted, instantaneous sharp sounds that create sudden impulses of pressure similar to gunfire and explosions.

Noise Reduction
The difference in sound pressure level between two points

Ldn
See Day night sound level.

L_{eq}
See Energy Equivalent Sound Level.

Noise
Generally understood as unwanted sound.

Noise Impact Assessment (NIA)
Identifies the expected sound level emanating from operations and receptor points are placed in locations related to compliance. It also identifies what the permissible sound level is and how it was calculated.

Noise Reduction Coefficient (NRC)
A single number rating of the sound absorption properties for a material. An NRC value of zero indicates the material is purely reflective. An NRC value of one indicates perfect absorption.

Octave
A series of electronic filters separate sound into discrete frequency bands, making it possible to know how sound energy is distributed as a function of frequency. The octave band has a center frequency that is double the center frequency of the octave band preceding it.

Point Source
A source that radiates sound from a single point. Generally used to model equipment when looking at the sound impact over a large area.

Receiver
A person or piece of equipment that is affected by noise.

Sound
A series of vibrations transmitted through the air, or other medium, and can be heard when they are processed by the human ear.

Sound Level Meter (SLM)

An instrument that contains a microphone and filter used to measure sound levels, using standard frequency-weightings and exponentially weighted time averaging.

Sound Power Level

A physical measurement of the amount of power a sound source radiates into the surrounding air. It is the rate at which sound energy is emitted, or received, per unit time.

Sound Transmission Class (STC)

An integer rating that measures how well a barrier or building partition attenuates sound. Indicates how well a barrier is at stopping sound from transmitting through it.

1/3 Octave

The 1/3 octave band analysis provides a finer breakdown of sound distribution as a function of frequency.