E-Coustic Solutions

NOISE CONTROL ● SOUND MEASUREMENT ● CONSULTATION
COMMUNITY ● INDUSTRIAL ● RESIDENTIAL ● OFFICE ● CLASSROOM ● HIPPA ORAL PRIVACY
P.O BOX 1129, OKEMOS, MI, 48805
RICKJAMES@E-COUSTIC.COM FAX: (866) 461-4103

RICHARD R. JAMES
PRINCIPAL
TEL: 517-507-5067

Comments on Soitec Solar Acoustical Assessment Reports for Tierra Del Sol and Rugged Solar Related to Proposed Energy Storage Facility

January 15, 2015

INTRODUCTION

The following comments and opinions are in regards to acoustical impact statements/reports submitted since the project proposed to install an energy storage facility at the Rugged Solar site. The focus of the comments is on the information or lack of information provided in those reports about sound emissions from the energy storage facility, especially the HVAC components. These comments are submitted on behalf of the Backcountry Against Dumps and Donna Tisdale (collectively "Conservation Groups").

QUALIFICATIONS

I am the Owner and Principal Consultant for E-Coustic Solutions, of Okemos, Michigan (P.O. Box 1129, Okemos MI 48805). I have been a practicing acoustical engineer for 40 years. I have been actively involved with the Institute of Noise Control Engineers (INCE) since I started my career in the early 1970s and have Full Member status in the Institute. My clients include many large manufacturing firms, such as, General Motors, Ford, Goodyear Tire & Rubber, and others who have operations involving both community noise and worker noise exposure. In addition, I have worked for many small companies and private individuals. My academic credentials include appointments as Adjunct Professor and Instructor to the Speech and Communication Science Departments at Michigan State University (through 2014) and Central Michigan University.

I have previously submitted reviews of EIS documents for several renewable energy projects in California including: Ocotillo Wind Energy Facility, Avalon Wind Energy Project, East County Substation/Tule Wind/Energia Sierra Juarez Gen-Tie Projects, and the Shu'Luuk Wind Project. I have also submitted a review of the Soitec Solar Development Project in a letter dated March 3, 2014 to the San Diego County Planning and Development Services Dept. on the topic of the Soitec Solar Development Draft Program Environmental Impact Report. This review extends my initial comments to cover the proposed energy storage facility.

DOCUMENTATION

The opinions and conclusions are based on my review of the following acoustical reports related to this project since 2013.

Table of Documentation Reviewed

#	Document or Publication	Date
1	Appendix_2.6-1 Acoustical Assessment Report, Tierra del Sol Solar Farm Project	Sept. 2013
2	Appendix 2.6 2 Acoustical Assessment Report, Rugged Solar LLC Project	Dec. 2013
3	Appendix_9.0-3 Technical Memorandum, Infrasound and Low Frequency Noise, Tracker Motor and Fenceline Noise Measurements at Newberry Springs Solar Facility	Aug. 20, 2014
4	AIS 3 Addendum Acoustical assessment for Rugged Solar Project LLC	Sept. 2014
5	AIS.0 - Additional Information Statement for the Soitec Solar Development Program Section 3.4 Noise	Dec. 2014

DEFICIENCIES

DEFICIENCY 1-INADEQUATE INFORMATION TO PROPERLY CHARACTERIZE NOISE IMPACT ON ADJACENT PROPERTIES

Of the five documents listed in the table above only #4 and #5 address the noise emissions from the proposed energy storage facility. "AIS 3 Addendum Acoustical assessment for Rugged Solar Project LLC" and "AIS.0 - Additional Information Statement for the Soitec Solar Development Program, Section 3.4 Noise" provide a discussion about the potential for the HVAC cooling systems to cause noise exceedances and propose mitigation through two methods. Document 4, AIS 3 presents a revised model that includes the energy storage facility noise emissions comparing the mitigation methods. Earlier documents (#1 and #2) do not address the storage facility.

The deficiency is that the audible sounds from the HVAC cooling systems are characterized only by dBA sound levels. There is no discussion of low frequency or infrasound emissions, whether tonal or broadband. Further, no detailed spectral information is provided for the audible frequency range that would permit independent confirmation that the HVAC units do not produce tones or beat frequencies from the interaction of 160 similar HVAC units. The model is overly simplistic and uses input data that is not supported by any provided references.

The characteristics of 160 HVAC units in operation at the same time have the potential of tones at low or infrasonic frequencies due to constructive and destructive interference that could be higher and more annoying than what is emitted from a single HVAC model.

DEFICIENCY 2-NEW DOCUMENTS DO NOT ADDRESS THE 40 DB CNEL THAT IS APPROPRIATE FOR THE PROPOSED FACILITY

Review of the same documents as in Deficiency 1 shows that the predicted sound levels along the project boundaries will be 40 dBA or higher. Applying the normalization factors in the CNEL procedure to account for a community with low residual sound levels and no prior experience with the noise results in a limit of 45 dBA CNEL not 60 dBA CNEL. The new reports do not address CNEL in any way, and older reports use a limit of 60 dBA CNEL which is appropriate for more sub-urban and urban communities, not a small desert community.

There is evidence in the tables of project noise levels at the property lines (Tables AIS-2 and AIS-3) that the proposed energy storage facility may result in noise exceeding the properly normalized CNEL. For a more detailed explanation, see my March 3, 2014 letter to the San Diego County Planning and Development Services Dept. on the topic of the Soitec Solar Development Draft Program Environmental Impact Report.

DEFICIENCY 3-INFRA AND LOW FREQUENCY SOUND FROM ENERGY STORAGE FACILITY ARE NOT KNOWN.

As noted in Deficiency 1, the AIS-0 and AIS-3 documents do not address the potential for infra (0-20Hz) and low frequency (20 to 200Hz) emissions from the HVAC units or any other noise sources related to the storage facility. A separate study (#3, Appendix_9.0-3 Technical Memorandum, Infrasound and Low Frequency Noise, Tracker Motor and Fenceline Noise Measurements at Newberry Springs Solar Facility) was reviewed that reported on an infrasound/low frequency study but there is no indication that any of the energy storage facility noise sources were operating at the test location.

This study has several flaws related to test protocols. Measuring infrasound using an outdoor test location is extremely difficult. This is primarily a result of the test equipment microphones responding to almost any air movement in a manner that produces false high readings. The summary table of dBG readings at selected test sites implies that the dBG values are lower near an operating solar facility than they are at a test location located distant from such noise sources. The report notes that wind speeds at the ambient test site were 5mph. Winds at that speed will produce false positive (higher) sound measurements due to the microphone responding to the wind movement in spite of any type of windscreen, including the large oversized wind screens. The reported dBG level of 68 for the ambient test site is contaminated with artifact and is not a reliable measurement. Based on my own experience in measuring infrasound at numerous locations I have found that if there is even a 1 meter per second wind at the microphone there will be artifacts in the lowest frequency ranges of infrasound. Ambient infrasound measurements reported in my studies and in the work of others shows that infrasound levels in the range of 40 to 50 dB are representative of rural communities without active infrasound noise sources. Thus, the test results for the inverters and other noise sources studied may all have some component of artifact in their readings.

The conclusion in the report that the ambient infrasound levels are 7 to 14 dB higher than at the test facility is not correct. The differences are primarily an artifact of measurements taken with winds sufficient to introduce errors in the measurements of ambient and likely, to a lesser degree, errors in the measurements near the test facility. Thus the conclusion that the contribution from the inverters and other noise sources at the test site are negligible when compared to the ambient ILFN is not supported by the data presented in the report.

The infrasound study report states that other countries use 85 dBG as a limit for acceptability using Denmark and Australia as examples. Denmark does not use 85 dBG for either industrial or wind turbine noise. The EPA has a method that sums the sound pressure levels from 10Hz to 160Hz after applying a weighting filter similar to dBA. This is called the LpA,LF limit. If the sum exceeds 20 dB either outside or inside a residence then the noise source exceeds the permitted limits. Australia has a mix of noise regulations that limit noise sources. Most, if not all, of those regional regulations are dBA limits. This author is in close contact with several Australian acousticians and is not aware of any regulations that limit infrasound and especially any that limit infrasound to 85 dBG.

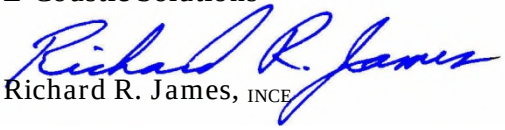
CONCLUSION

The late addition of a 160 MW battery storage facility covering roughly 7 acres is of major concern given the limited attention to noise. Only one report even considered audible noise and then, without spectral details and by assuming no interaction between HVAC units. The impact of the proposed storage facility has not been defined with sufficient precision to permit a proper evaluation of how it affects people and wildlife in the community.

The EIR fails to address noise impacts inside the project (including Tule Creek floodplain and wildlife corridor) and at adjacent receptors including wildlife habitat within and adjacent to the McCain Valley Conservation and Wildlife Management area which is designated critical habitat for species such as the Peninsular Big Horn Sheep.

There is a need for further noise studies to address the issues raised in this review before the proposed energy storage facility is granted permits to build or operate.

Sincerely,
E-Coustic Solutions



Richard R. James, INCE