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Charles M. Salter ASSOCIATES INC.

Redondo Beach Energy Project
Preliminary Staff Assessment Workshop

Community Noise Issues

Jeremy L. Decker, PE

May 20, 2015

Introduction

- Charles M. Salter Associates
  - 40 years of Acoustical Consulting
  - Team of more than 55 people
  - Involved in more than 900 projects per year worldwide

- Jeremy L. Decker, PE
  - Principal Consultant
  - 10 years of experience
  - Registered Professional Engineer in California

Overview

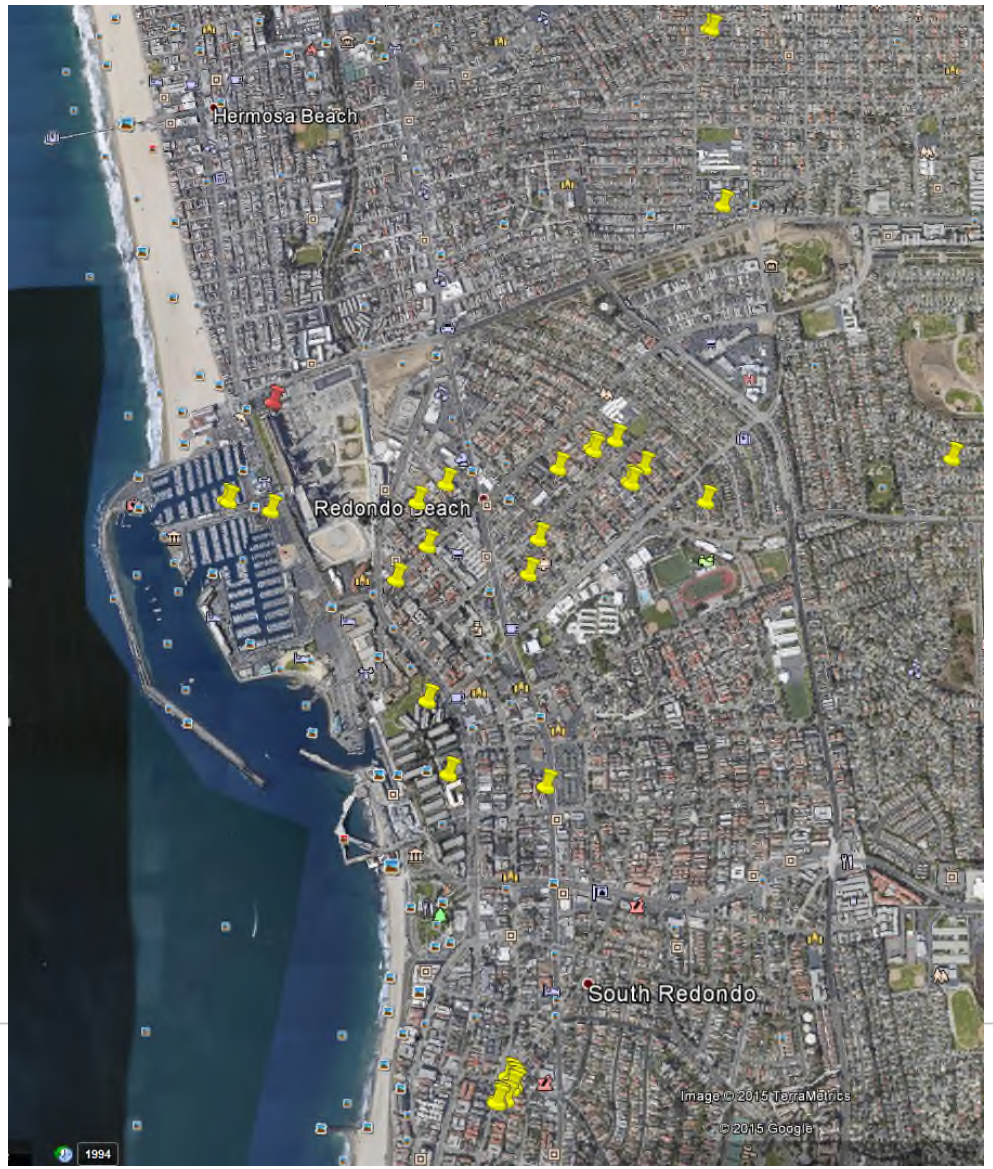
1. The RBEP Noise Study is not adequate to assess the potentially significant noise impact.
2. The proposed Conditions of Certification are not an appropriate solution to the potentially significant noise impact.
3. The RBEP Noise Study should be subject to peer review.
4. The City should consider amending its noise ordinance to specifically address power plant noise impacts.

1A: Existing Noise Complaints

- Noise complaints are not acknowledged.
- No community survey was conducted to assemble feedback from community.

- An effort should be made to understand the nature of the noise complaints. These complaints are a significant factor in the assessment of noise impact. The results should provide direction for the rest of the study.

1A: Small Sample of Noise Complaints



- Only includes complaints submitted to the City's website during a limited period.
- Does not include complaints from City of Hermosa residents.
- Does not include complaints made to police or to SCE/AES directly.

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1B: Strategic Noise Measurements

- No measurements were conducted at previously impacted homes.

- Measurements should be conducted at these homes where complaints occur, indoors and at night, if that is the complaint.
- Both ambient and power plant noise levels should be clearly identified for comparison.

1B: Strategic Noise Measurements

surface where possible. However, in those cases where another elevation is deemed appropriate, the latter shall be utilized. If the noise complaint is related to interior noise levels, interior noise measurements shall be made within the affected residential unit or within the commercial or industrial structure, and the alleged violations shall be plotted against the standards set forth in Article 4 of this chapter. The measurement shall be

Redondo Beach Muni. Code Section 4-24.201

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1C: Existing Power Plant Noise

- No measurements were conducted to specifically identify existing power plant noise.
- There was no direct comparison of predicted to existing power plant noise.

- Existing noise must be documented for the assessment of future impact.
  - If noise levels are expected to go up, clearly additional mitigation is needed.
  - If noise levels are claimed to go down, the information should be made available for public review and confirmation that the impact will be eliminated.

1D: Tonal Noise and dBA

- The noise spectrum of existing power plant noise was not measured.
- Potential tonal noise was not calculated.

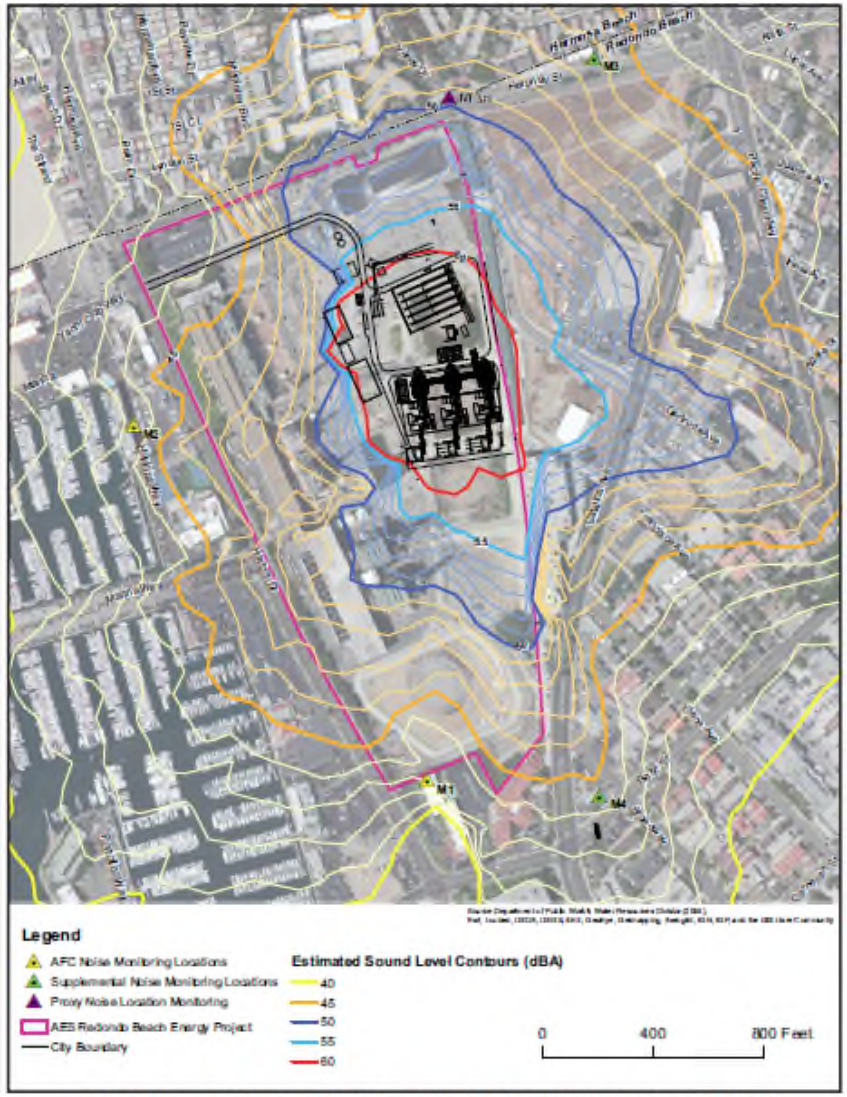
- One-third octave band noise levels should be measured to determine if tonal noise is currently a source of complaints.
- Expected tonal noise should be studied, by calculation or by measurements of a similar facility.

1E: Technical Analysis Review

- Details of the environmental noise technical analysis were not made available for public review.

- The technical analysis that is the basis of the impact study should undergo a public independent peer review.
  - Measurement results
  - Analysis/Calculations
  - Details of necessary mitigation

1E: Technical Analysis Review



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: Figure DR 72-1

Staff Report, Page 4.7-40

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2A: Criteria and Factor of Safety

- Condition of Certification NOISE-4 allows noise to exceed ambient conditions with no "factor of safety."

- Due to the sensitivity and response of the community to power plant noise the criteria should be revised to address past complaints.

- Due to the unique juxtaposition of a power plant surrounded by sensitive land-uses, eliminating all noise impacts should be considered.

2B: Mitigation Approach

- Condition of Certification NOISE-4 essentially takes a "wait-and-see" approach to noise reduction.

- The technical analysis should produce noise mitigation measures that are necessary to meet the criteria.
- In the design phase, a detailed noise mitigation plan should be required to confirm the necessary mitigation.

2B: Mitigation Approach

As the first step, the applicant has outlined design measures to control and mitigate noise generated by operational elements of the project. Using a computer-generated noise model,[18] the applicant has modeled operating conditions that include mitigation measures designed to control plant noise (RBEP 2012a, § 5.7.3.3.3). They include:

- Partially enclosed combustion turbine generators and HRSGs
- Acoustical building for steam turbine generator
- Enhanced stack silencing
- Larger and lower noise ACC fans
- Lagging or enclosing of the ACC ductwork
- Low-noise transformers and/or noise barriers around transformers
- Acoustical boiler feed pump enclosures
- Lagging of high-noise piping
- Steam vent silencers
- Low noise valves
- Large noise barriers, i.e., relocated Whaling Wall
- Acoustical gas pressure enclosures

2C: Detailed Tonal Analysis

- NOISE-4 addresses tonal noise as a significant factor, but includes no mitigation measure requirements to address it.

- The proposed design-phase detailed mitigation analysis should include one-third octave band calculations of power plant noise to confirm the necessary mitigation to eliminate an impact from tonal noise.

2D: Design/Const. Phase Peer Review

- NOISE-4 allows for mitigation to be implemented post-construction and operation after the project causes a significant impact.

- The incorporation of necessary mitigation measures during the design and construction phases should undergo a public and independent peer review to confirm that necessary mitigation is incorporated into the initial power plant construction.

3A: Pile Driving Criteria Error

- The pile driving vibration significance threshold is set at the accepted threshold of perception at 65 VdB. However, the mitigation criterion in NOISE-8 is incorrectly translated to 0.2 inch/second (or approx. 94 VdB), which is a typical criterion for building damage.

- The mitigation criterion should be corrected to be 65 VdB.

3A: Pile Driving Criteria Error

Table 12-3. Construction Vibration Damage Criteria[11]		
Building Category	**PPV (in/sec)**	**Approximate L_v†**
I. Reinforced-concrete, steel or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90
† RMS velocity in decibels (VdB) re 1 micro-inch/second		

excerpt from FTA Report FTA-VA-90-1003-06

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3B: Redondo Beach Code Error

- In the LORS section, the interior noise limits of the Redondo Beach Municipal Code are not included, nor are they addressed in the noise study.

- This local noise standard should be addressed per CEQA guidelines. Interior noise criteria should be studied and addressed in the required mitigation.

3B: Redondo Beach Code Error

Receiving Land Use Category	Time Interval	Allowable Interior Noise Level (dBA)
Residential	10:00 p.m. to 7:00 a.m.	40
	7:00 a.m. to 10:00 p.m.	45
School	7:00 a.m. to 10:00 p.m.	45
Hospital and designated quiet areas	Any time	40

Redondo Beach Muni. Code Section 4-24.401

3C: Ambient Noise Error

- "Ambient noise" was assessed at Locations M1 and M2 from 23-31 August 2011. The available data[1] show that the existing power plant was in operation from 23-30 August, leaving only about 1.5 days data with no power plant noise. As a result "ambient noise" is overestimated in the noise study report by 2 to 5 dB.

- Ambient noise data, which is the basis of evaluation of noise impact in this study, should be reevaluated to avoid contamination from the existing power plant.
- The noise impact criteria should be revised accordingly.

[1]Ambient noise data measured by the applicant at Locations M1 and M2 are available in Appendix 5.7A of the Project Application for Certification.

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3C: Ambient Noise Error

Noise Table 2
Sensitive Receptor Summary[4]

1 Receptor	2 Description	3 L_{eq} Daytime Average dBA	4 L_{eq} Nighttime Average dBA	5 L_{90} Nighttime Lowest 4-hr Avg. dBA
M1	Best Western Motel W. Beryl & Harbor Dr.	58	57	56
M2	3-Story Residential Harbor Drive & Herondo Street	60	57	55

Table 5.7A-2
Noise Monitoring Site M2 - Apartments West of 6th
Redondo Beach Energy Project

Date & Time	Total Plant Output (MW)	Leq	L10	L50	L90
8/30/11 3:00 AM	0	51	53	51	50
8/30/11 4:00 AM	0	51	53	51	50
8/30/11 5:00 AM	0	52	54	51	50
8/30/11 6:00 AM	0	55	57	53	51
8/30/11 10:00 PM	0	54	56	53	51
8/30/11 11:00 PM	0	53	55	52	51
8/31/11 12:00 AM	0	52	54	51	50
8/31/11 1:00 AM	0	52	53	51	50
8/31/11 2:00 AM	0	52	52	51	50
8/31/11 3:00 AM	0	51	52	51	50
8/31/11 4:00 AM	0	52	53	52	51
8/31/11 5:00 AM	0	53	55	52	50
8/31/11 6:00 AM	0	55	58	53	51

Excerpts from Staff Report and Project AFC Appendix

Summary Point #1

- The environmental noise impact analysis should be made complete by:
  - Assessing existing noise
  - Evaluating complaints
  - Predicting tonal noise

Summary Point #2

- The Conditions of Certification should be overhauled as follows:
  - Criteria should be revised, as appropriate, based on the revised impact analysis.
  - Specific noise mitigation should be incorporated, per the technical analysis.
  - Mitigation should be confirmed by a detailed noise mitigation plan developed in the design phase.

Summary Point #3

- The errors we found should be corrected. Then, independent peer reviews should be conducted at two benchmarks:
  - As part of the environmental noise impact technical analysis (i.e., now).
  - During the design/construction phases with review of a detailed noise mitigation plan.

Summary Point #4

- The City should amend its Noise Ordinance.
  - California Government Code mandates that each City have a General Plan with a Noise Element that must "*identify and appraise noise problems in the community*" and "*include implementation measures and possible solutions that address existing and foreseeable noise problems*" (Section 650302 Parts F.1 & F.4).
  - In the California Noise Element Guidelines, Cities are directed to "*adopt and apply a community noise ordinance for the resolution of noise complaints*."
  - The existing Redondo Beach Noise Ordinance does not address the unique nature of power plan noise. We recommend that the City amend the Noise Ordinance to ensure that the proposed power plant noise does not create an acoustical impact.

Questions?

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