

## DOCKETED

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<b>Project Title:</b>	Redondo Beach Energy Project
<b>TN #:</b>	201245
<b>Document Title:</b>	BBR RBEP Noise Assessment and Request
<b>Description:</b>	Assess the shortcomings of the AES noise analysis, points out incomplete information on Redondo noise ordinances, and makes requested findings and actions of the CEC.
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<b>Organization:</b>	Building A Better Redondo
<b>Submitter Role:</b>	Intervenor
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## BBR Redondo Beach Generation Project Noise Assessment and Request

AES's noise assessment does not accurately or completely characterize the Redondo Beach noise ordinance. AES left out the interior noise ordinance in its entirety and neglected to submit an important element of the exterior noise ordinance. Both ordinances are included at the end of this submission in their entirety. AES claims: "The anticipated steady-state sound levels that incorporate design features for RBEP at M1 and M2 are less than 60dBA. 60dBA is not the standard, 40 dB is the correct limit for residential development and 55 dB is limit for office/retail uses. Therefore, the CEC and residents of Redondo cannot determine whether the new plant would violate local noise ordinances.

Table 5.7-12 in AES' Noise submission neglects a very important caveat in the Redondo noise ordinance:

*"Correction for character of sound. In the event the alleged offensive noise contains a steady audible tone, such as a whine, screech, or hum, or is a repetitive noise, such as hammering or riveting, the standard limits set forth in this section shall be reduced by five (5) dB."*

The noise from a running power plant is certainly "steady", therefore the allowable noise levels should properly be decremented 5dB. Also, AES incorrectly emphasizes a caveat in the Redondo noise ordinance related to where a measurement is performed, stating that the ordinance grants a 5dB increase at land use boundaries. But the CEC should note that measurement at the boundary of two properties is not the standard. The standard is defined at any place on the receiving property – "shall apply to all such property". Therefore, the CEC should require measurement away from the property line and/or ignore the 5dB credit AES claims. Thus the interpretation of Redondo Beach noise limits should be:

<b>Receiving Land Use</b>	<b>7 AM to 10 PM limit</b>	<b>10PM to 7AM limit</b>
Catalina Ave residential	50 dBA	45dBA
Salvation Army	50 dBA	45dBA
Best Western	60 dBA	55 dBA
Offices and retail uses east of property boundary	60 dBA	55dBA

Additionally, AES neglected to cite Redondo Beach Code 4-24.401 which is included in its entirety at the end of this document. For residential land uses this ordinance sets the maximum limit of 40 dB from 10PM to 7AM and at 45 dB from 7AM to 10PM in any dwelling "with the windows in their normal seasonal configuration". Because most homes in Redondo Beach do not have air conditioning, windows are usually open most of the year. The ordinance goes on to make allowances for time limited exceedances: any exceedance for more than five minutes in any hour; 5dB over the limit for more than one minute in an hour; or, 10dB over the limit for any period of time.

BBR has further concerns with the AES analysis. It does not appear topographical and environmental conditions were taken into account in the analysis.

The onshore prevailing winds and the frequent marine layer and inversion conditions tend to reflect noise back to the ground. *"A sound wave propagating in the direction of the wind will be bent downward."*<sup>4</sup> The impact of wind is shown in Figure 1.

Figure 2 demonstrates that overcast conditions cause sound to propagate laterally rather than directly away from the sound source.

<sup>1</sup> "Outdoor Sound Propagation"; J. S. Lamancusa, Pennsylvania State University, 20 Jul 09, Section 10.3.2

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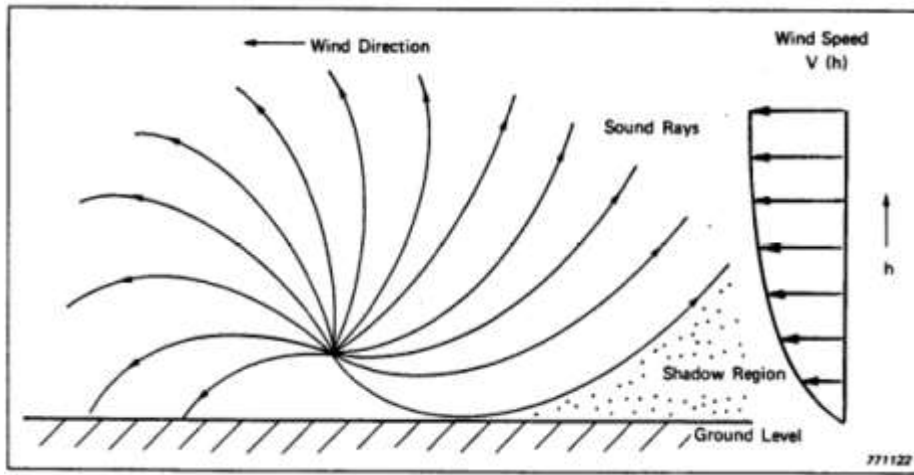


Figure 1: Impact of wind on sound propagation<sup>2</sup>

In addition to onshore winds, temperature inversions and marine layer are prevalent in Redondo Beach. In fact, the overcast conditions prevail so often in early late Spring and early Summer that the condition is referred to as "June Gloom".

*"Under conditions of temperature inversion (temperature increasing with increasing height), the sound waves will be refracted downwards, and therefore may be heard over larger distances."<sup>3</sup>*

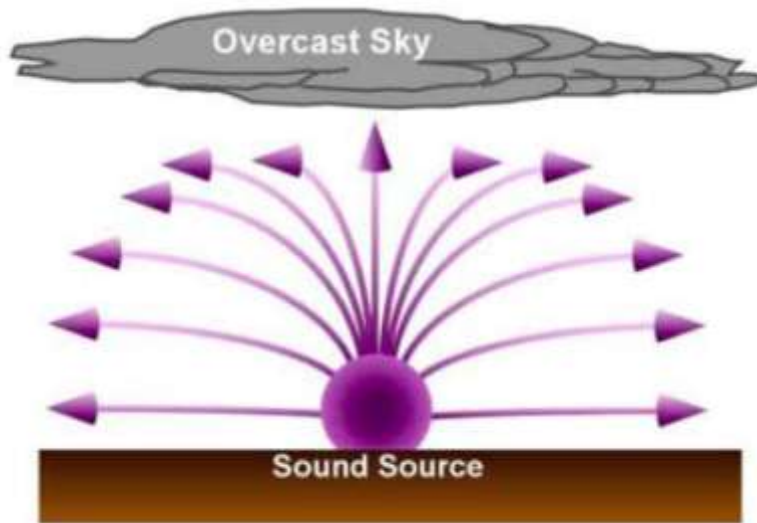


Figure 2: Impact of overcast conditions on sound propagation<sup>4</sup>

<sup>2</sup> "Outdoor Sound Propagation"; J. S. Lamancusa, Pennsylvania State University, 20 Jul 09, Section 10.3.2

<sup>3</sup> "Handbook for Acoustic Ecology"; Barry Truax, editor; Second Edition, 1999

<sup>4</sup> Kodiak Airport Environmental Impact Statement; Mestre Greve Associates, July 2009; Figure 2-2

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This combined with the rising topography inland drive the need for a more detailed modeling of the power plant generated noise. According to NGA terrain data the eastern boundary of the AES plant is between 7 and 12 feet above sea level. The terrain rises to 100 feet by Maria and 190<sup>th</sup> and to 200ft by Prospect and 190<sup>th</sup>.

*"Significant attenuation can be achieved by the use of solid barriers. **A barrier should be at least high enough to obscure the 'line of sight' between the noise source and receiver.** Barriers smaller than this may have a negative effect by elimination of the destructive interference phenomenon.... It should be remembered that a barrier's performance can be severely reduced by temperature and wind gradients."*<sup>5</sup>

While AES proposes a wall around their new plant, mainly for visual purposes, but it may provide some sound attenuation if designed properly. However, since the terrain rises so much above the site it would be both impractical and undesirable (from a visual impact perspective) to build a high enough wall to prevent "line of sight" from the plant to homes higher up in the surrounding terrain. Figure 3 demonstrates the issue.

Propagation of sound over terrain. Ground absorption and shielding may be present for buildings at the same elevation as the source. No shielding is present for buildings which can 'see' the source.

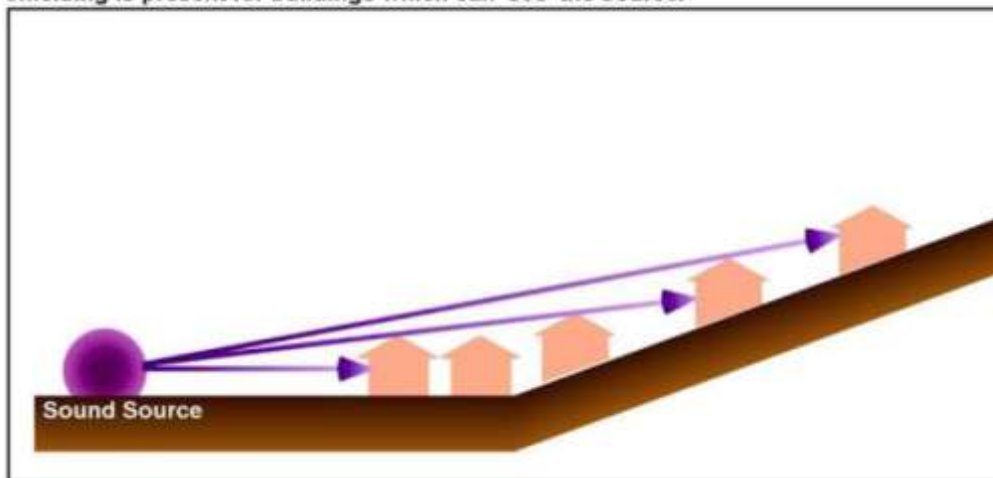


Figure 3: Impact of elevation on sound propagation<sup>6</sup>

Another concern is the amount of hardscape represented by development east and uphill of the power plant site. Urban canyons created along high density residential streets create the potential for hotspots of reflected noise due to resonance and soundwave superpositioning.

*"Smooth, hard surfaces will produce little absorption .... In a street, **multiple reflections from parallel building facades can result in considerable reverberation, and consequently reduced attenuation.** This is often referred to as the canyon effect."*<sup>7</sup>

The topographical, developmental and weather conditions of the AES Redondo site present significant and reasonable concerns with respect to noise and noise propagation. This area deserves very close

<sup>5</sup> "Handbook for Acoustic Ecology"; Barry Truax, editor; Second Edition, 1999

<sup>6</sup> Kodiak Airport Environmental Impact Statement; Mestre Greve Associates, July 2009; Figure 2-2

<sup>7</sup> "Handbook for Acoustic Ecology"; Barry Truax, editor; Second Edition, 1999

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scrutiny as the potential results are crucial to residents downwind, uphill, and in close proximity to the power plant site.

AES has a track record of regularly and flagrantly violating Redondo noise standards. A 2009 YouTube video posted by a resident entitled "AES power plant in Redondo Beach" demonstrates a typical steam release from the current plant: <http://www.youtube.com/watch?v=Yi9RkroYaCY>. **BBR has submitted to the CEC a resident video of a steam release on November 15<sup>th</sup>/16<sup>th</sup> that startled and woke up Redondo Beach and Hermosa Beach neighbors in the vicinity of the power plant.** In fact, AES had noise exceedances (loud steam venting) while they were collecting the data for this study and they neglected to report them or remedy them despite the data being recorded. Since taking over the power plant in 1998, AES has not remedied the plant's well known source of noise violation. Therefore, their statement that they will "take all feasible measures to reduce noise at its source" is simply not credible. And, AES' admission that audible tones are possible is disconcerting as it demonstrates they do not really know what the plant will produce. AES' proposed mitigation to noise limit violations is unsatisfactory.

### Based on the preceding discussion, BBR requests the CEC take the following actions:

1. **BBR concurs with the CEC's request for more monitoring stations.** The prevailing onshore winds and rising topography inland render the data from Apartments at King Harbor non-representative. Additionally, Apartments at King Harbor are subject to noise from the pumps of the SeaLab and the desalination test site, which is not representative of other uses surrounding and inland of the AES site.
2. Additionally, **BBR requests a much more detailed analysis** of the predicted noise distribution that models for the frequent and worst case environmental conditions as well as the topography and urban hardscape of the inland land uses.
3. The City of Redondo Beach does not have the equipment to collect this noise. **BBR requests the CEC require AES to provide the city with fixed and portable systems** to monitor AES noise generation and pay for an independent third party to monitor their noise.
4. And **BBR requests the CEC to require AES to define "feasible"** with respect to future reported violations and **hold AES to a much, much higher standard** than their current track record of blatant disregard for their impact on the community.

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### The actual text of the Redondo Beach noise ordinance follows:

#### 4-24.301 Maximum permissible sound levels by land use categories.

The noise standards for the various categories of land use districts identified shall be the higher of either the presumed or actual measured ambient and shall apply to all such property within a designated category as follows:

Receiving Land Use District Category	Time Period	Presumed Ambient Level (dBA)
Low Density	10:00 p.m. to 7:00 a.m.	45
Residential R-1-A, R-1, R-2, P-D-R, P-U-D Overlay	7:00 a.m. to 10:00 p.m.	50
Medium Density	10:00 p.m. to 7:00 a.m.	50
Residential R-3, R4, P-D-R, P-U-D Overlay	7:00 a.m. to 10:00 p.m.	55
High Density	10:00 p.m. to 7:00 a.m.	55
Residential R-5, R-6, P-D-R, P-U-D Overlay, C-I	7:00 a.m. to 10:00 p.m.	60
Commercial NSC,	10:00 p.m. to 7:00 a.m.	60
CSC, GC, P-D-C	7:00 a.m. to 10:00 p.m.	65
Industrial P-D-I	10:00 p.m. to 7:00 a.m.	60
	7:00 a.m. to 10:00 p.m.	65
Industrial P-I	10:00 p.m. to 7:00 a.m.	70
	7:00 a.m. to 10:00 p.m.	70

As indicated above, the presumed ambient levels in the Planned Development Residential (P-D-R) and the Planned Unit Development (P-U-D) Overlay land use districts are categorized so as to be consistent with the actual density of the development. The presumed ambient levels for the Planned Development (P-D) and the Civic Center (C-C) land use districts shall be consistent with those established for the lowest adjacent land use district.

(a) Correction for time characteristics. No person shall operate, or cause to be operated, any source of sound at any location within the City or allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person which causes the noise level when measured on any other property to exceed:

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(1) The noise standard of the receiving land use district for a cumulative period of more than thirty (30) minutes in any hour; or

(2) The noise standard of the receiving land use district plus five (5) dB for a cumulative period of more than fifteen (15) minutes in any hour; or

(3) The noise standard of the receiving land use district plus ten (10) dB for a cumulative period of more than five (5) minutes in any hour; or

(4) The noise standard of the receiving land use district plus fifteen (15) dB for a cumulative period of more than one minute in any hour; or

(5) The noise standard of the receiving land use district plus twenty (20) dB for any period of time.

(b) Levels exceeding the noise limit categories. If the measured ambient level exceeds that permissible as set forth in subsections (1), (2), (3), and (4) of subsection (a) of this section, the allowable noise exposure standard shall be increased in five (5) dB increments as appropriate to encompass or reflect such ambient noise level. In the event the ambient noise level exceeds the noise level set forth in subsection (5) of subsection (a) of this section, the maximum allowable noise level shall be increased to reflect the maximum ambient noise level.

(c) Correction for location of noise source. If the measurement location is on a boundary between two (2) different land use district categories, the noise level limit applicable to the lower land use district category, plus five (5) dB shall apply.

(d) Correction for ambient noise levels when alleged offending sources cannot be shut down. If possible, the ambient noise shall be measured at the same location along the property line utilized in subsection (a) of this section with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise shall be estimated by performing a measurement in the same general area of the source, but at a sufficient distance such that the offending noise from the source is inaudible. If the difference between the noise levels with the noise source operating and not operating, with the utilization of either of the above-described methods of measure-

ment, is six (6) dB or greater, then the noise measurement of the alleged source can be considered valid.

(e) Correction for character of sound. In the event the alleged offensive noise contains a steady audible tone, such as a whine, screech, or hum, or is a repetitive noise, such as hammering or riveting, the standard limits set forth in this section shall be reduced by five (5) dB.

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## The actual text of the Redondo Beach City Code pertaining to interior noise follows:

4-24.401 Maximum permissible interior dwelling sound levels.

The following noise standards for various categories of land use presented as follows, unless otherwise specifically indicated, shall apply to all such structures within a designated land use district category with the windows in their normal seasonal configuration:

<b>Receiving Land Use Category</b>	<b>Time Interval</b>	<b>Allowable Interior Noise Level (dBA)</b>
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

(a) Correction for time characteristics. No person shall operate, or cause to be operated, any source of sound at any location within the City or allow the creation of any noise which causes the noise level, when measured inside the receiving structure, to exceed:

(1) The noise standard for that land use district category as specified for a cumulative period of more than five (5) minutes in any hour; or

(2) The noise standard plus five (5) dB for a cumulative period of more than one minute in any hour; or

(3) The noise standard plus ten (10) dB for any period of time