CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833
Tel 916-920-0300
Fax 916-920-8463

June 26, 2013

469784.RB.DI

Ms. Patricia Kelly
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Redondo Beach Energy Project (12-AFC-03)
South Coast Air Quality Management District's Request for Information

Dear Ms. Kelly:

Attached please find the Redondo Beach Energy Project's Response to the South Coast Air Quality Management District (SCAQMD) June 7, 2013 request. This has also been provided to SCAQMD in response to requests for further information needed to complete the engineering evaluation of the RBEP.

One hard copy of the response letter and two CDs containing the air modeling files are provided. An electronic copy of the response letter has also been provided. Additional copies of the modeling files can be provided upon request.

If you have any questions about this matter, please contact me at (916) 286-0249 or Mr. Jerry Salamy at (916) 286-0207.

Sincerely,

CH2M HILL

Sarah Madams
AFC Project Manager

Attachment
cc: P. Kelly, CEC
S. O'Kane, AES
G. Wheatland, ESH
J. Salamy, CH2M HILL

(2013-06-25_TRNSMTL_LTR_SCAQMD)

AES Redondo Beach
690 N. Studebaker Road
Long Beach, CA 90803
tel 562 493 7891
fax 562 493 7320

June 26, 2013

Mr. Mohsen Nazemi, P.E.
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178

Subject: Redondo Beach Energy Project Permit Application (Facility ID# 115536)

Dear Mr. Nazemi:

AES Redondo Beach, LLC (AES) is submitting this letter in response to the South Coast Air Quality Management District's (AQMD) June 7, 2013 request for additional information needed to complete the evaluation of the Redondo Beach Energy Project (RBEP). This letter presents AES's responses to the requested information.

1) Cumulative 1-hour Nitrogen Dioxide (NO_2) Dispersion Modeling Assessment

> **The AQMD planning staff's review of the dispersion modeling provided for RBEP confirms the modeling indicates the project's NO_2 impacts will exceed the Federal 1-Hour NO_2 significant impact level (SIL) and, therefore, a cumulative impact assessment is needed.**

Response: Table AQMD-1 presents a summary of the predicted hourly and annual NO_2 impacts from RBEP operation as well as a comparison to the Class II SILs, Class II Prevention of Significant Deterioration (PSD) Class II Increment Standards, and the significant monitoring concentration levels. As shown, the maximum predicted annual NO_2 impacts from RBEP operation are below the Class II SIL, PSD Class II Increment Standard, and significant monitoring concentration. Therefore, additional analysis of annual impacts is not required. However, the maximum predicted 1-hour NO_2 impacts from RBEP operation exceed the Class II SIL, with a radius of impact with predicted concentrations greater than 7.52 micrograms per cubic meter ($\mu g/m^3$) of 0.9 kilometers (km) Therefore, the cumulative impacts of the RBEP and the competing sources were assessed for all receptors where RBEP exceeded the 1-hour NO_2 SIL. The analysis shown below in Table II demonstrates that the predicted RBEP cumulative impacts, including a representative background NO_2 concentration, are below the NAAQS.

TABLE AQMD-1
RBEP Predicted Impacts Compared to the PSD Air Quality Impact Standards

Averaging Period/ Pollutant	Maximum Predicted Impact ($\mu g/m^3$) [a]	Significant Impact Level ($\mu g/m^3$)	PSD Class II Increment Standard ($\mu g/m^3$)	Significant Monitoring Concentration ($\mu g/m^3$)
NO_2 (1-hour)	32.1	7.52 [b]	N/A	N/A
NO_2 (Annual)	0.32	1.0	25	14

[a] The maximum 1-hour and annual NO_2 concentrations include ambient NO_2 ratios of 0.80 (U.S. Environmental Protection Agency [EPA], 2011) and 0.75 (EPA, 2005), respectively.
[b] The SIL for 1-hour NO_2 is based on AQMD correspondence.
N/A = Not Applicable (i.e., no standard)

The AQMD identified one facility – the Exxon/Mobil refinery located in Torrance, California – within 10 km of RBEP for inclusion in the cumulative impact assessment. The Exxon/Mobil refinery (Facility ID 800089) includes 29 emission sources for which the AQMD provided stack locations, stack parameters, and 1-hour NO_2 emission rates as part of a public records request. Attachment 1 includes the completeness letter for this public records request.

The cumulative impacts of the RBEP and the competing sources were assessed for all receptors where RBEP exceeded the 1-hour NO_2 SIL. Table AQMD-2 presents a summary of the maximum predicted cumulative 1-hour NO_2 impacts from RBEP operation and competing sources as well as a comparison to the National Ambient Air Quality Standard (NAAQS). Table AQMD-2 shows that the predicted RBEP cumulative impacts, including a representative background NO_2 concentration, are below the NAAQS.

TABLE AQMD-2
RBEP and Competing Source Predicted 1-hour NO_2 Impacts Compared to the NAAQS

Pollutant	Averaging Time	Total Predicted Concentration ($\mu g/m^3$)	Federal Standard ($\mu g/m^3$)
NO_2	1-hour	125	188

[a] Total predicted concentration for the Federal 1-hour NO_2 standard is the maximum modeled concentration paired with the three-year average of 98th percentile season hour-of-day background concentrations, as provided by the AQMD.

A summary of the dispersion modeling input files for this analysis, as well as the modeling parameters used, are presented in Attachment 2. The AERMOD input and output files have been separately prepared and are included with this submission on compact disc.

References

U.S. Environmental Protection Agency (EPA). 2005. *Guideline on Air Quality Models*, 40 CFR 51, Appendix W. November.

U.S. Environmental Protection Agency (EPA). 2011. *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-Hour NO_2 National Ambient Air Quality Standard*. EPA Office of Air Quality Planning and Standards. March 1.

2) Visibility Analysis

Please provide a visibility analysis for Class II areas within 50 km of the project using the VISCREEN plume modeling program.

Response: As requested, a visibility analysis for Class II areas within 50 km of RBEP was performed using the VISCREEN plume modeling program per the procedures outlined in the *Workbook for Plume Visual Impact Screening and Analysis* (EPA, 1992), as further described in Attachment 3. Please note that Tier I and II assessments were conducted using Class I areas criteria, as no criteria exist for Class II areas. Therefore, the visibility assessment was conducted using overly conservative assumptions for Class II areas. However, even using the conservative approach, the modeled results from the visual assessment demonstrates that RBEP would not adversely affect visibility at nearby Class II Areas.

Table AQMD-3 summarizes the VISCREEN Tier I modeled results for each Class II area evaluated.[1] The maximum modeled values for color difference and contrast are presented for inside the area analyzed, regardless of the VISCREEN modeled lines of sight for the observer.

TABLE AQMD-3
RBEP Tier I VISCREEN Results

Class II Area	Minimum Distance	Maximum Distance	Variable	Sky	Terrain	Criteria [a]
Kenneth Hahn State Park	16.9	18.9	Color Difference	1.011	**2.79**	2.0
			Contrast	0.01	0.018	|0.05|
Will Rogers State Park and Topanga State Park	24.6	34.7	Color Difference	1.247	1.772	2.0
			Contrast	-0.013	0.013	|0.05|
Malibu Creek State Park and Malibu Lagoon State Park	33.2	43.6	Color Difference	0.911	1.208	2.0
			Contrast	0.009	0.011	|0.05|

Bold values exceed the Class I significant impact criteria.
[a] Levels of concern for Class I areas were used because no specific requirements or criteria exist for assessing Class II visibility impacts (Federal Land Managers' Air Quality Related Values Workgroup [FLAG], 2010).

As shown in Table AQMD-3, the results of the Tier I assessment demonstrate that the proposed RBEP would be below the significance criteria for both color difference and contrast at Will Rogers State Park, Topanga State Park, Malibu Creek State Park, and Malibu Lagoon State Park. The Tier I assessment, did however exceed the criteria for color difference at Kenneth Hahn State Park. As a result, a Tier II assessment was performed for the Kenneth Hahn State Park. The Tier II assessment results are summarized in Table AQMD-4.

[1] AQMD staff approved the Class II areas for evaluation via e-mail on June 20, 2013.

TABLE AQMD-4
RBEP Tier II VISCREEN Results

Class II Area	Minimum Distance	Maximum Distance	Wind Speed [a]	Stability [a]	Variable	Sky	Terrain	Criteria [b]
Kenneth Hahn State Park	16.9	18.9	5	E	Color Difference	0.114	0.327	2.0
					Contrast	0.001	0.002	|0.05|

[a] The Joint Frequency Distribution table used to calculate the wind speed and stability for the Tier II assessment is presented in Attachment 3.
[b] Levels of concern for Class I areas were used because no specific requirements or criteria exist for assessing Class II visibility impacts (FLAG, 2010).

The VISCREEN Tier II assessment for Kenneth Hahn State Park did not exceed the criteria for color difference or contrast. As the modeled results are below the conservative Class I area criteria for both color difference and contrast, RBEP would not adversely affect visibility at nearby Class II Areas. The VISCREEN input and output files, as well as the meteorological data used in this analysis, have been separately prepared and are included with this submission on compact disc.

References

Federal Land Managers' Air Quality Related Values Workgroup (FLAG). 2010. *Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report – Revised (2010)*. October.

U.S. Environmental Protection Agency (EPA). 1992. *Workbook for Plume Visual Impact Screening and Analysis* (EPA-454/R-92-023). October.

If you require further information, please don't hesitate contacting me at 562-493-7840.

Sincerely,

Stephen O'Kane
Manager
AES Redondo Beach, LLC
Attachments

cc: Sarah Madams/CH2M HILL
Jennifer Didlo/AES
Gregg Wheatland/ESH
Jerry Salamy/CH2M HILL
Patricia Kelly/CEC

Attachment 1
Redondo Beach Energy Project Public Records Request

Information Management
Public Records Unit

Direct Dial (909) 396-3700
Fax:(909) 396-3330

COMPLETION LETTER

June 19, 2013

JEFF SHAPIRO
CH2M HILL
150 SPEAR ST.# SUITE 750
SAN FRANCISCO, CA 94105

Ref.: CONTROL NO. 72953
Received 6/4/2013

Re: RECENT AB2588 (AIR TOXICS HOT SPOTS) & SUPPORTING HARP TRANSACTION & DISPERSION MODELING FILES (ID 800089).

After a thorough search of this agency's records, the following records were found:
RECENT AB2588 (AIR TOXICS HOT SPOTS) & SUPPORTING HARP TRANSACTION & DISPERSION MODELING FILES (ID 800089).

YOUR REQUESTED RECORDS WERE PROVIDED ELECTRONICALLY ON 06/19/2013

If you have any questions, please do not hesitate to contact me, Tuesday through Friday, **8:00 a.m**. to **4:30 p.m.**

Sincerely,

LISA RAMOS x3211
For Colleen Paine
Public Records Coordinator

:lr

Source Type	ID	X (m)	Y (m)	Elevation (m)	Emission Rate (lb/hr)	Release Height (m)	Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)
POINT	80008901	376802.8983	3746635.787	20	0.02	30.48	2.68	17.03	493.71
POINT	80008902	376790.8979	3746757.788	19.8	0.02	36.58	2.21	4.99	627.04
POINT	80008903	376806.8976	3746819.789	19	17.443	22.86	1.97	16.16	487.04
POINT	80008904	376796.8976	3746839.789	19	49.02	27.43	3.35	27.71	557.59
POINT	80008905	376669.8985	3746639.786	20	0.714	36.58	1.74	11.09	617.59
POINT	80008906	376690.8984	3746639.786	20	0.446	49.68	1.71	9.59	394.26
POINT	80008907	376621.8979	3746823.787	20	22.58	28.65	1.65	20	514.26
POINT	80008908	376613.8979	3746823.787	20	22.58	28.65	1.65	20	514.26
POINT	80008909	376943.8978	3746684.789	18	0.223	21.34	1.22	8.26	632.04
POINT	80008910	376943.8979	3746671.789	18	0.223	19.81	1.51	6.51	603.71
POINT	80008911	376798.8971	3746957.791	18	0.01	30.48	3.17	5.26	613.71
POINT	80008912	376797.8974	3746877.79	19	23	36.27	1.91	5.47	590.93
POINT	80008913	376786.8985	3746575.786	20	4.305	39.62	1.4	8.9	589.26
POINT	80008914	376786.8986	3746545.786	20	3.668	39.62	1.4	8.87	545.37
POINT	80008915	376785.8987	3746513.785	20	5.398	39.62	1.4	5.82	482.04
POINT	80008916	376785.8988	3746486.785	20.7	4.157	39.17	1.98	5.3	579.26
POINT	80008917	376784.8989	3746450.784	21	0.223	39.62	1.49	9.15	595.37
POINT	80008918	376784.8991	3746420.784	21	0.223	39.62	1.49	10.49	595.37
POINT	80008919	376532.8987	3746644.784	20	33.223	30.48	3.73	21.7	518.71
POINT	80008920	376426.8984	3746790.785	20	0.753	45.72	1.62	9.5	443.45
POINT	80008921	376279.8995	3746540.781	22	0.13	45.72	1.95	2.88	927.04
POINT	80008922	376475.8992	3746523.782	21	0.223	45.72	2.29	8.46	660.37
POINT	80008923	376717.8978	3746814.788	20	0.223	30.48	1.77	7.95	460.37
POINT	80008924	376729.8978	3746814.788	20	0.223	30.48	1.77	8.17	473.15
POINT	80008925	377999.7261	3746802.288	16.9	0.6	7.32	0.91	1.22	969.82
POINT	80008926	376746.8984	3746634.786	20	15.755	16.76	2.26	7.4	532.04
POINT	80008927	376797.8975	3746860.789	19	22	36.27	1.75	5.23	526.48
POINT	80008928	376192.9001	3746281.777	23	0.223	24.38	0.99	7.44	750.93
POINT	80008929	376214.7726	3746275.452	23	0.223	5.49	0.91	0.36	1088.71

Attachment 2
Redondo Beach Energy Project Cumulative Impact Assessment

Redondo Beach Energy Project
Attachment 2 Table 1
PSD SIL Modeling Parameters - Stack Parameters
June 2013

Point Sources

Scenario	Source ID	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)
1	Stack 1	371060	3746515	4.4	42.7	476	24.1	5.49
	Stack 2	371096	3746520	4.4	42.7	476	24.1	5.49
	Stack 3	371132	3746525	4.4	42.7	476	24.1	5.49
2	Stack 1	371060	3746515	4.4	42.7	479	24.1	5.49
	Stack 2	371096	3746520	4.4	42.7	479	24.1	5.49
	Stack 3	371132	3746525	4.4	42.7	479	24.1	5.49
3	Stack 1	371060	3746515	4.4	42.7	474	21.6	5.49
	Stack 2	371096	3746520	4.4	42.7	474	21.6	5.49
	Stack 3	371132	3746525	4.4	42.7	474	21.6	5.49
4	Stack 1	371060	3746515	4.4	42.7	469	19.1	5.49
	Stack 2	371096	3746520	4.4	42.7	469	19.1	5.49
	Stack 3	371132	3746525	4.4	42.7	469	19.1	5.49
5	Stack 1	371060	3746515	4.4	42.7	463	16.7	5.49
	Stack 2	371096	3746520	4.4	42.7	463	16.7	5.49
	Stack 3	371132	3746525	4.4	42.7	463	16.7	5.49
6	Stack 1	371060	3746515	4.4	42.7	475	22.8	5.49
	Stack 2	371096	3746520	4.4	42.7	475	22.8	5.49
	Stack 3	371132	3746525	4.4	42.7	475	22.8	5.49
7	Stack 1	371060	3746515	4.4	42.7	477	22.8	5.49
	Stack 2	371096	3746520	4.4	42.7	477	22.8	5.49
	Stack 3	371132	3746525	4.4	42.7	477	22.8	5.49
8	Stack 1	371060	3746515	4.4	42.7	472	20.4	5.49
	Stack 2	371096	3746520	4.4	42.7	472	20.4	5.49
	Stack 3	371132	3746525	4.4	42.7	472	20.4	5.49
9	Stack 1	371060	3746515	4.4	42.7	467	18.2	5.49
	Stack 2	371096	3746520	4.4	42.7	467	18.2	5.49
	Stack 3	371132	3746525	4.4	42.7	467	18.2	5.49
10	Stack 1	371060	3746515	4.4	42.7	462	16.0	5.49
	Stack 2	371096	3746520	4.4	42.7	462	16.0	5.49
	Stack 3	371132	3746525	4.4	42.7	462	16.0	5.49
11	Stack 1	371060	3746515	4.4	42.7	486	22.7	5.49
	Stack 2	371096	3746520	4.4	42.7	486	22.7	5.49
	Stack 3	371132	3746525	4.4	42.7	486	22.7	5.49
12	Stack 1	371060	3746515	4.4	42.7	481	22.3	5.49
	Stack 2	371096	3746520	4.4	42.7	481	22.3	5.49
	Stack 3	371132	3746525	4.4	42.7	481	22.3	5.49
13	Stack 1	371060	3746515	4.4	42.7	471	18.8	5.49
	Stack 2	371096	3746520	4.4	42.7	471	18.8	5.49
	Stack 3	371132	3746525	4.4	42.7	471	18.8	5.49
14	Stack 1	371060	3746515	4.4	42.7	467	17.0	5.49
	Stack 2	371096	3746520	4.4	42.7	467	17.0	5.49
	Stack 3	371132	3746525	4.4	42.7	467	17.0	5.49
15	Stack 1	371060	3746515	4.4	42.7	463	15.1	5.49
	Stack 2	371096	3746520	4.4	42.7	463	15.1	5.49
	Stack 3	371132	3746525	4.4	42.7	463	15.1	5.49

Redondo Beach Energy Project
Attachment 2 Table 2
PSD SIL Modeling Parameters - Emission Rates
June 2013

Per Turbine NO_2 Emission Rates

Exhaust	1-hr NO_2		Annual NO_2	
Scenario	(g/s)	(lb/hr)	(g/s)	(lb/hr)
Scenario 1	3.21	25.4	-	-
Scenario 2	3.21	25.4	-	-
Scenario 3	3.21	25.4	-	-
Scenario 4	3.21	25.4	-	-
Scenario 5	3.21	25.4	-	-
Scenario 6	3.21	25.4	-	-
Scenario 7	3.21	25.4	1.16	9.24
Scenario 8	3.21	25.4	1.08	8.55
Scenario 9	3.21	25.4	1.00	7.96
Scenario 10	3.21	25.4	0.94	7.43
Scenario 11	3.21	25.4	-	-
Scenario 12	3.21	25.4	-	-
Scenario 13	3.21	25.4	-	-
Scenario 14	3.21	25.4	-	-
Scenario 15	3.21	25.4	-	-

Redondo Beach Energy Project
Attachment 2 Table 3
PSD SIL and Competing Source Building Parameters for AERMOD Input
June 2013

Building Name	Number of Tiers	Tier Number	Base Elevation (m)	Tier Height (m)	Number of Corners	Corner 1 East (X) (m)	Corner 1 North (Y) (m)	Corner 2 East (X) (m)	Corner 2 North (Y) (m)	Corner 3 East (X) (m)	Corner 3 North (Y) (m)	Corner 4 East (X) (m)	Corner 4 North (Y) (m)	Corner 5 East (X) (m)	Corner 5 North (Y) (m)
offsite1	1	1	7.00	6.10	8	371099	3746803	371114	3746808	371121	3746790	371136	3746748	371136	3746731
offsite2	1	1	7.22	6.10	4	371125	3746705	371142	3746707	371177	3746474	371162	3746472		
offsite3	1	1	9.91	12.19	23	371178	3746442	371211	3746443	371211	3746431	371220	3746430	371226	3746361
STG	1	1	4.42	12.19	4	371105	3746567	371114	3746548	371133	3746557	371124	3746575		
acc	1	1	4.42	25.30	4	371033	3746607	371054	3746560	371110	3746585	371089	3746633		
Admin	1	1	4.42	5.79	4	370986	3746523	371004	3746484	371024	3746493	371006	3746531		
FGComp	1	1	4.42	7.62	4	370960	3746582	370975	3746547	370993	3746555	370978	3746589		
CTGBLDG	2	1	4.42	18.44	4	371038	3746510	371140	3746525	371150	3746460	371048	3746445		
CTGBLDG	*	2	*	25.45	4	371038	3746510	371140	3746525	371144	3746495	371043	3746481		
wail	1	1	4.42	27.13	8	371000	3746612	370958	3746580	371037	3746405	371071	3746410	371072	3746409
finfan	1	1	4.42	4.57	4	371078	3746564	371104	3746568	371106	3746553	371080	3746549		
Trans1	1	1	4.42	9.14	4	371049	3746430	371061	3746432	371064	3746417	371052	3746415		
Trans2	1	1	4.42	9.14	4	371085	3746436	371097	3746438	371100	3746423	371088	3746421		
Trans3	1	1	4.42	9.14	4	371121	3746442	371133	3746443	371135	3746428	371123	3746426		

Redondo Beach Energy Project
Attachment 2 Table 3
PSD SIL and Competing Source Building Parameters for AERMOD Input
June 2013

Building Name	Number of Tiers	Tier Number	Base Elevation (m)	Tier Height (m)	Number of Corners	Corner 6 East (X) (m)	Corner 6 North (Y) (m)	Corner 7 East (X) (m)	Corner 7 North (Y) (m)	Corner 8 East (X) (m)	Corner 8 North (Y) (m)	Corner 9 East (X) (m)	Corner 9 North (Y) (m)	Corner 10 East (X) (m)	Corner 10 North (Y) (m)
offsite1	1	1	7.00	6.10	8	371122	3746730	371120	3746746	371107	3746784				
offsite2	1	1	7.22	6.10	4										
offsite3	1	1	9.91	12.19	23	371212	3746360	371217	3746295	371207	3746295	371212	3746288	371215	3746282
STG	1	1	4.42	12.19	4										
acc	1	1	4.42	25.30	4										
Admin	1	1	4.42	5.79	4										
FGComp	1	1	4.42	7.62	4										
CTGBLDG	2	1	4.42	18.44	4										
CTGBLDG	*	2	*	25.45	4										
wail	1	1	4.42	27.13	8	371036	3746404	370956	3746580	370999	3746613				
finfan	1	1	4.42	4.57	4										
Trans1	1	1	4.42	9.14	4										
Trans2	1	1	4.42	9.14	4										
Trans3	1	1	4.42	9.14	4										

Redondo Beach Energy Project
Attachment 2 Table 3
PSD SIL and Competing Source Building Parameters for AERMOD Input
June 2013

Building Name	Number of Tiers	Tier Number	Base Elevation (m)	Tier Height (m)	Number of Corners	Corner 11 East (X) (m)	Corner 11 North (Y) (m)	Corner 12 East (X) (m)	Corner 12 North (Y) (m)	Corner 13 East (X) (m)	Corner 13 North (Y) (m)	Corner 14 East (X) (m)	Corner 14 North (Y) (m)	Corner 15 East (X) (m)	Corner 15 North (Y) (m)
offsite1	1	1	7.00	6.10	8										
offsite2	1	1	7.22	6.10	4										
offsite3	1	1	9.91	12.19	23	371216	3746275	371212	3746270	371207	3746264	371197	3746263	371190	3746265
STG	1	1	4.42	12.19	4										
acc	1	1	4.42	25.30	4										
Admin	1	1	4.42	5.79	4										
FGComp	1	1	4.42	7.62	4										
CTGBLDG	2	1	4.42	18.44	4										
CTGBLDG	*	2	*	25.45	4										
wail	1	1	4.42	27.13	8										
finfan	1	1	4.42	4.57	4										
Trans1	1	1	4.42	9.14	4										
Trans2	1	1	4.42	9.14	4										
Trans3	1	1	4.42	9.14	4										

Redondo Beach Energy Project
Attachment 2 Table 3
PSD SIL and Competing Source Building Parameters for AERMOD Input
June 2013

Building Name	Number of Tiers	Tier Number	Base Elevation (m)	Tier Height (m)	Number of Corners	Corner 16 East (X) (m)	Corner 16 North (Y) (m)	Corner 17 East (X) (m)	Corner 17 North (Y) (m)	Corner 18 East (X) (m)	Corner 18 North (Y) (m)	Corner 19 East (X) (m)	Corner 19 North (Y) (m)	Corner 20 East (X) (m)	Corner 20 North (Y) (m)
offsite1	1	1	7.00	6.10	8										
offsite2	1	1	7.22	6.10	4										
offsite3	1	1	9.91	12.19	23	371184	3746273	371184.72	3746281.1	371187.6	3746289.1	371187.6	3746293.1	371174.39	3746436.1
STG	1	1	4.42	12.19	4										
acc	1	1	4.42	25.30	4										
Admin	1	1	4.42	5.79	4										
FGComp	1	1	4.42	7.62	4										
CTGBLDG	2	1	4.42	18.44	4										
CTGBLDG	*	2	*	25.45	4										
wail	1	1	4.42	27.13	8										
finfan	1	1	4.42	4.57	4										
Trans1	1	1	4.42	9.14	4										
Trans2	1	1	4.42	9.14	4										
Trans3	1	1	4.42	9.14	4										

Redondo Beach Energy Project
Attachment 2 Table 3
PSD SIL and Competing Source Building Parameters for AERMOD Input
June 2013

Building Name	Number of Tiers	Tier Number	Base Elevation (m)	Tier Height (m)	Number of Corners	Corner 21 East (X) (m)	Corner 21 North (Y) (m)	Corner 22 East (X) (m)	Corner 22 North (Y) (m)	Corner 23 East (X) (m)	Corner 23 North (Y) (m)
offsite1	1	1	7.00	6.10	8						
offsite2	1	1	7.22	6.10	4						
offsite3	1	1	9.91	12.19	23	371178.41	3746437.3	371177.83	3746440.7	371177.83	3746440.7
STG	1	1	4.42	12.19	4						
acc	1	1	4.42	25.30	4						
Admin	1	1	4.42	5.79	4						
FGComp	1	1	4.42	7.62	4						
CTGBLDG	2	1	4.42	18.44	4						
CTGBLDG	*	2	*	25.45	4						
wail	1	1	4.42	27.13	8						
finfan	1	1	4.42	4.57	4						
Trans1	1	1	4.42	9.14	4						
Trans2	1	1	4.42	9.14	4						
Trans3	1	1	4.42	9.14	4						

Redondo Beach Energy Project
Attachment 2 Table 4
PSD SIL Modeling Results Summary
June 2013

Case 1: 33°F, 100% Load with Duct Burner Firing

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	15.4	-
2006	14.3	-
2007	13.4	-
2008	25.9	-
2009	12.3	-

Case 2: 33°F, 100% Load

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	Attachment 1 Table	-
2006	14.2	-
2007	13.4	-
2008	25.9	-
2009	12.3	-

Case 3: 33°F, 90% Load

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	17.4	-
2006	15.5	-
2007	15.7	-
2008	27.5	-
2009	13.6	-

Case 4: 33°F, 80% Load

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	20.0	-
2006	17.8	-
2007	17.8	-
2008	29.3	-
2009	17.2	-

Case 5: 33°F, 70% Load

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	22.9	-
2006	24.1	-
2007	20.1	-
2008	31.0	-
2009	20.3	-

Case 9: 63.3°F, 80% Load

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	21.1	0.30
2006	18.6	0.26
2007	18.4	0.27
2008	29.8	0.28
2009	17.8	0.29

Case 10: 63.3°F, 70% Load

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	24.7	0.32
2006	26.1	0.29
2007	22.9	0.29
2008	31.5	0.30
2009	20.8	0.31

Case 11: 106°F, 100% Load with Duct Burner Firing

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	15.9	-
2006	14.6	-
2007	13.8	-
2008	27.0	-
2009	12.6	-

Case 12: 106°F, 100% Load

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	16.6	-
2006	14.9	-
2007	14.1	-
2008	27.1	-
2009	12.9	-

Case 13: 106°F, 90% Load

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	20.1	-
2006	17.8	-
2007	17.9	-
2008	29.5	-
2009	17.4	-

Redondo Beach Energy Project
Attachment 2 Table 4
PSD SIL Modeling Results Summary
June 2013

Case 6: 63.3°F, 100% Load with Duct Burner Firing

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	16.5	-
2006	14.8	-
2007	14.0	-
2008	26.9	-
2009	12.9	-

Case 7: 63.3°F, 100% Load

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	16.5	0.27
2006	14.8	0.24
2007	14.0	0.25
2008	26.9	0.26
2009	12.9	0.26

Case 8: 63.3°F, 90% Load

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	18.4	0.28
2006	16.1	0.25
2007	16.2	0.26
2008	28.4	0.27
2009	14.6	0.28

Case 14: 106°F, 80% Load

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	22.3	-
2006	22.8	-
2007	19.2	-
2008	30.6	-
2009	18.5	-

Case 15: 106°F, 70% Load

Year	NO_2 (µg/m^3)	
	1-hr	Annual
2005	26.3	-
2006	27.6	-
2007	25.8	-
2008	**32.1**	-
2009	21.4	-

Redondo Beach Energy Project
Attachment 2 Table 5
PSD Competing Source Modeling Receptors
June 2013

Easting (X) (m)	Northing (Y) (m)	Elevation (Z) (m)	Controlling Hill Height (m)	2005 Modeled Impact (µg/m³)	2006 Modeled Impact (µg/m³)	2007 Modeled Impact (µg/m³)	2008 Modeled Impact (µg/m³)	2009 Modeled Impact (µg/m³)	Five-Year Average Impact (µg/m³)
370916	3746280	3.7	3.7	25.5	27.6	25.8	28.2	21.1	25.6
370927	3746257	3.7	3.7	26.3	25.6	25.1	28.7	21.4	25.4
370905	3746303	3.7	3.7	25.0	26.9	24.2	25.2	18.6	24.0
370939	3746234	3.9	3.9	24.9	24.1	22.7	26.7	19.8	23.6
370900	3746250	3.3	3.3	23.4	25.0	23.2	26.1	19.0	23.4
370900	3746300	3.6	3.6	24.8	26.2	23.4	24.3	17.9	23.3
371130	3746655	6.8	21.9	25.1	21.2	13.9	31.1	18.9	22.0
370900	3746200	3.8	3.8	22.3	21.0	20.7	24.4	17.4	21.2
370895	3746326	3.7	3.7	23.9	23.8	20.3	20.4	15.7	20.8
370950	3746211	4.1	4.1	21.8	22.0	19.1	22.9	16.8	20.5
370950	3746200	4.2	4.2	20.5	21.0	18.3	21.4	16.7	19.6
371134	3746627	6.7	21.9	25.1	14.1	13.4	32.1	12.0	19.3
370854	3746712	7.6	7.6	16.0	19.8	18.2	22.0	18.4	18.9
370881	3746723	7.6	7.6	15.4	18.7	15.9	26.2	18.0	18.8
370827	3746702	7.1	7.1	14.8	19.1	19.3	16.9	20.6	18.1
370850	3746200	0.0	0.0	18.9	19.9	17.7	19.7	13.4	17.9
370964	3746189	4.4	4.4	17.6	18.6	18.4	18.0	16.6	17.8
370850	3746250	1.1	1.1	21.1	20.0	16.7	17.5	13.4	17.7
370900	3746150	2.8	2.8	18.7	18.2	16.3	20.0	14.1	17.4
370850	3746750	7.9	7.9	13.6	17.8	13.9	24.4	16.6	17.2
370800	3746692	7.0	7.0	12.3	16.5	19.3	16.7	21.4	17.2
370800	3746700	6.9	6.9	12.5	17.0	19.0	15.7	20.9	17.0
370850	3746150	0.0	0.0	17.6	17.3	16.5	19.7	13.3	16.9
370884	3746350	3.8	3.8	20.0	21.7	14.8	14.7	11.6	16.6
370800	3746750	7.0	7.0	13.2	18.0	15.1	18.5	16.2	16.2
370908	3746733	7.6	7.6	12.9	16.3	9.8	26.4	15.4	16.2
370773	3746682	6.8	6.8	9.9	14.4	17.5	17.1	20.7	15.9
370950	3746150	4.1	4.1	14.7	15.8	16.7	15.0	15.6	15.5
370977	3746167	4.4	4.4	15.5	14.8	17.3	13.8	15.9	15.5
370850	3746300	2.8	2.8	19.9	19.0	13.5	13.1	11.5	15.4
371200	3746800	21.2	21.2	15.8	14.4	15.1	18.0	13.4	15.3
371150	3746650	7.9	21.9	18.8	12.3	10.6	24.2	10.7	15.3
371126	3746683	6.9	21.9	13.7	16.2	11.2	18.7	15.9	15.1
371200	3746750	18.6	21.8	15.8	13.3	14.5	18.8	13.2	15.1
370850	3746100	0.0	0.0	16.1	14.8	14.2	17.5	11.9	14.9
371121	3746728	7.2	21.9	13.8	16.1	11.6	18.5	14.6	14.9
371122	3746712	7.1	21.9	13.3	16.1	11.4	18.6	15.0	14.9
371120	3746744	7.2	21.9	14.1	15.9	11.6	18.2	14.0	14.8
370800	3746800	8.2	8.2	10.8	16.0	10.5	21.6	14.9	14.8
370900	3746750	7.8	7.8	12.2	15.3	8.2	23.6	14.3	14.7
370991	3746145	4.4	4.4	15.1	14.2	15.9	12.1	15.5	14.6
371113	3746761	7.0	21.9	14.7	15.4	11.5	17.8	13.4	14.6
370750	3746700	6.5	6.5	9.2	12.5	16.4	15.3	19.3	14.6
370746	3746672	6.5	6.5	7.1	16.0	14.5	16.0	19.0	14.5

Redondo Beach Energy Project
Attachment 2 Table 5
PSD Competing Source Modeling Receptors
June 2013

Easting (X) (m)	Northing (Y) (m)	Elevation (Z) (m)	Controlling Hill Height (m)	2005 Modeled Impact (µg/m³)	2006 Modeled Impact (µg/m³)	2007 Modeled Impact (µg/m³)	2008 Modeled Impact (µg/m³)	2009 Modeled Impact (µg/m³)	Five-Year Average Impact (µg/m³)
370756	3746647	6.4	6.4	6.0	18.6	13.0	16.2	18.6	14.5
371200	3746850	19.9	21.6	14.5	14.8	14.0	15.9	13.1	14.5
370800	3746150	0.0	0.0	16.4	16.5	14.0	15.4	10.2	14.5
370750	3746750	6.3	6.3	10.8	15.9	15.3	12.9	16.8	14.4
371250	3746850	20.8	20.8	14.9	13.6	13.9	16.2	12.7	14.3
371107	3746778	6.8	21.9	14.9	15.3	11.2	17.1	12.4	14.2
370750	3746650	6.3	6.3	5.8	18.2	12.7	15.8	18.3	14.2
370900	3746100	1.0	3.7	14.1	14.6	13.5	14.8	13.4	14.1
370750	3746800	6.7	6.7	10.9	16.2	11.9	17.0	14.4	14.1
370800	3746100	0.0	0.0	14.2	15.2	13.8	16.3	10.6	14.0
371250	3746800	20.3	20.3	15.0	12.9	13.4	15.0	13.5	14.0
370766	3746622	5.9	5.9	5.4	20.0	11.0	15.2	18.0	13.9
371150	3746700	8.7	21.9	14.4	13.8	11.5	17.0	12.6	13.9
371250	3746900	20.9	20.9	14.5	13.2	13.2	15.8	12.5	13.8
371150	3746800	11.3	21.9	13.7	15.4	12.9	15.3	11.9	13.8
371150	3746750	9.5	21.9	13.4	15.0	13.0	15.3	12.3	13.8
370850	3746800	9.1	9.1	11.4	14.5	7.1	22.4	13.5	13.8
371100	3746800	7.0	21.9	14.7	15.2	10.6	15.8	12.4	13.7
371098	3746803	7.0	21.9	14.7	15.1	10.5	15.5	12.6	13.7
371100	3746850	9.4	22.0	14.4	14.8	11.5	13.9	13.6	13.6
371200	3746900	19.8	19.8	13.5	14.9	12.9	13.9	12.8	13.6
370800	3746200	0.0	0.0	17.7	15.5	12.4	12.7	9.6	13.6
371150	3746850	13.3	21.9	14.0	15.4	12.1	14.7	11.6	13.6
371100	3746900	11.2	22.1	14.9	14.3	11.9	12.2	14.0	13.4
371150	3746900	17.3	21.9	14.4	14.9	12.3	14.0	11.4	13.4
371005	3746123	4.6	4.6	14.3	13.5	14.0	10.1	14.4	13.3
371200	3746950	19.6	22.0	13.6	14.4	12.6	12.9	12.7	13.2
370950	3746100	4.0	4.0	12.6	12.2	15.6	11.5	13.9	13.2
371100	3746950	13.4	22.1	14.7	13.6	12.0	11.4	13.9	13.1
371150	3746950	20.6	21.9	14.3	14.4	12.5	13.1	11.4	13.1
370797	3746547	4.7	4.7	9.9	15.2	8.5	13.6	18.2	13.1
370777	3746597	5.6	5.6	7.4	20.0	8.7	13.0	16.3	13.1
370800	3746050	0.0	0.0	14.0	12.7	12.5	15.6	10.2	13.0
371100	3747000	20.1	22.1	14.2	13.3	11.9	11.7	13.6	12.9
371250	3746750	19.5	19.5	13.2	11.8	13.7	13.0	12.9	12.9
370807	3746522	4.5	4.5	9.4	11.1	7.9	16.4	19.7	12.9
370850	3746050	0.0	0.0	13.5	13.2	12.2	14.3	10.9	12.8
371250	3746950	21.3	21.3	13.5	12.1	12.0	14.5	11.7	12.8
371200	3747000	19.6	19.6	13.4	13.9	12.1	11.7	12.1	12.6
371150	3747000	21.3	21.3	13.9	13.8	12.1	12.0	11.3	12.6
370787	3746572	5.1	5.1	9.1	18.4	8.0	12.4	15.1	12.6
371000	3746100	4.4	4.4	13.7	12.8	13.5	9.3	13.6	12.6
370700	3746750	5.7	5.7	8.4	12.5	14.3	11.3	16.0	12.5
371200	3746700	12.9	21.9	12.5	10.3	11.7	16.5	11.4	12.5

Redondo Beach Energy Project
Attachment 2 Table 5
PSD Competing Source Modeling Receptors
June 2013

Easting (X) (m)	Northing (Y) (m)	Elevation (Z) (m)	Controlling Hill Height (m)	2005 Modeled Impact (µg/m³)	2006 Modeled Impact (µg/m³)	2007 Modeled Impact (µg/m³)	2008 Modeled Impact (µg/m³)	2009 Modeled Impact (µg/m³)	Five-Year Average Impact (µg/m³)
370800	3746850	8.8	8.8	10.2	13.4	6.4	19.9	12.4	12.5
371071	3746793	5.5	21.9	13.0	13.5	10.5	12.7	12.5	12.4
370700	3746700	5.5	5.5	5.9	13.1	12.8	13.5	16.7	12.4
371100	3747050	21.9	21.9	13.4	12.7	11.4	11.6	12.9	12.4
370700	3746800	5.9	5.9	9.4	14.7	12.1	12.2	13.4	12.4
371019	3746101	4.6	4.6	14.3	12.3	12.4	9.4	13.3	12.3
370874	3746373	3.8	3.8	14.4	18.2	9.3	9.5	10.2	12.3
370700	3746850	5.9	5.9	9.3	14.5	9.4	15.5	12.7	12.3
370750	3746850	6.6	6.6	8.8	14.4	5.7	19.1	13.2	12.2
370819	3746496	4.4	4.4	9.7	9.8	6.4	16.5	18.6	12.2
371300	3746950	24.9	24.9	13.4	11.7	11.5	13.1	11.3	12.2
371300	3746800	22.4	22.4	12.4	11.5	13.1	12.0	11.8	12.2
371250	3747000	21.5	21.5	12.0	12.8	11.3	12.9	11.7	12.1
371300	3746850	22.7	22.7	12.8	11.8	12.4	11.3	12.2	12.1
371050	3746900	10.1	22.0	12.3	13.7	10.7	11.0	12.3	12.0
371200	3747050	19.4	19.4	12.9	13.2	11.6	10.8	11.6	12.0
370935	3746743	7.2	7.2	11.0	10.1	7.9	20.7	10.1	12.0
371050	3746950	10.8	22.1	12.4	13.6	10.2	11.4	12.3	12.0
371150	3747050	20.7	20.7	13.3	13.0	11.5	11.0	11.0	12.0
370750	3746050	0.0	0.0	12.4	13.4	11.6	13.4	8.4	11.9
371300	3746900	23.7	23.7	12.9	11.8	11.8	11.3	11.5	11.9
370800	3746500	4.4	4.4	9.2	9.3	6.1	16.0	18.6	11.8
370750	3746600	5.0	5.0	7.3	18.3	6.9	12.5	14.1	11.8
371300	3746750	21.9	21.9	12.1	11.7	12.3	11.4	11.5	11.8
371300	3747000	25.3	25.3	13.2	11.0	10.9	13.0	10.8	11.8
371250	3746700	21.8	21.8	11.8	11.4	12.2	11.9	11.4	11.8
370750	3746100	0.0	0.0	14.2	13.7	11.0	11.9	7.9	11.7
371100	3747100	21.9	21.9	12.4	11.9	10.8	11.3	12.1	11.7
370800	3746250	0.6	0.6	16.7	15.2	9.4	9.0	8.0	11.7
371050	3747000	12.6	22.1	12.1	13.0	9.6	11.3	12.0	11.6
370950	3746050	3.6	3.6	11.6	10.4	14.2	9.5	12.3	11.6
371050	3746850	6.6	21.9	11.8	13.1	10.9	10.0	12.1	11.6
371250	3747050	22.0	24.7	11.2	12.5	11.2	11.1	11.5	11.5
370900	3746050	0.0	0.0	10.1	11.1	13.2	10.6	12.5	11.5
370800	3746000	0.0	0.0	12.6	11.6	10.6	13.6	9.0	11.5
370750	3746000	0.5	0.5	12.1	11.8	11.1	13.8	8.6	11.5
370750	3746550	4.4	4.4	9.2	11.9	7.2	11.7	16.7	11.4
370850	3746350	3.8	3.8	14.1	16.6	8.3	8.5	9.2	11.3
371033	3746079	4.7	4.7	14.0	10.8	11.6	8.4	11.9	11.3
371200	3747100	19.1	19.1	12.1	12.4	11.2	10.0	10.9	11.3
371150	3747100	20.5	20.5	12.5	12.2	10.7	10.6	10.5	11.3
370750	3746900	7.2	7.2	8.9	12.4	6.1	17.7	11.2	11.2
370700	3746650	5.1	5.1	4.4	16.7	8.3	11.9	14.7	11.2
371000	3746050	4.2	4.2	12.9	11.1	11.8	8.2	12.0	11.2

Redondo Beach Energy Project
Attachment 2 Table 5
PSD Competing Source Modeling Receptors
June 2013

Easting (X) (m)	Northing (Y) (m)	Elevation (Z) (m)	Controlling Hill Height (m)	2005 Modeled Impact (µg/m³)	2006 Modeled Impact (µg/m³)	2007 Modeled Impact (µg/m³)	2008 Modeled Impact (µg/m³)	2009 Modeled Impact (µg/m³)	Five-Year Average Impact (µg/m³)
371050	3747050	16.6	22.0	11.6	12.1	9.4	11.1	11.6	11.2
371138	3746598	6.8	21.9	15.0	6.5	7.7	21.0	5.5	11.1
371350	3746800	23.1	23.1	11.5	11.1	11.4	10.7	10.8	11.1
371050	3746800	4.9	21.9	12.2	11.5	10.7	9.3	11.6	11.1
371300	3747050	25.5	25.5	12.3	10.1	10.2	12.3	10.1	11.0
371100	3747150	21.9	21.9	11.4	11.1	10.1	10.8	11.2	10.9
370850	3746000	0.0	0.0	10.5	10.9	11.6	10.8	10.7	10.9
371350	3746850	23.7	23.7	11.2	10.6	11.6	10.5	10.6	10.9
370650	3746850	5.3	5.3	8.4	13.4	9.6	11.4	11.3	10.8
371074	3746096	5.1	5.1	13.3	10.5	11.3	7.8	11.2	10.8
371250	3747100	23.5	23.5	10.6	11.8	10.6	10.0	11.1	10.8
370700	3746900	6.0	6.0	7.4	13.0	5.0	16.9	11.6	10.8
370650	3746800	5.1	5.1	7.7	12.1	12.1	8.7	13.1	10.8
371000	3746900	10.0	10.0	10.8	13.9	9.2	10.8	9.0	10.8
371095	3746105	5.4	5.4	11.7	11.2	11.3	8.0	11.4	10.7
370650	3746900	5.4	5.4	8.1	12.9	7.5	14.1	11.1	10.7
371150	3747150	20.2	20.2	11.7	11.4	9.9	10.8	9.9	10.7
370750	3745950	1.7	1.7	11.8	10.4	10.0	13.0	8.3	10.7
370900	3746800	8.8	8.8	11.2	8.8	7.8	16.5	9.1	10.7
371350	3746900	25.0	25.0	11.3	10.6	11.1	9.9	10.5	10.7
371300	3746700	19.2	19.2	10.8	10.9	11.5	10.1	10.2	10.7
371350	3746750	22.1	22.1	11.2	10.9	11.4	9.9	10.1	10.7
371053	3746088	4.8	4.8	13.9	9.6	11.0	7.8	10.8	10.6
371100	3746100	5.4	5.4	11.3	11.2	11.2	8.0	11.3	10.6
371200	3747150	20.1	25.4	11.2	11.4	10.6	9.6	10.1	10.6
370750	3746150	0.0	0.0	14.9	12.3	9.3	9.3	7.1	10.6
371050	3747100	17.5	22.0	10.9	11.1	9.1	10.9	11.0	10.6
371044	3746783	3.9	21.9	12.0	10.8	10.3	9.0	11.0	10.6
370850	3746850	10.2	10.2	11.3	9.0	7.3	15.8	9.3	10.6
371000	3746850	8.2	9.8	10.9	12.8	9.0	11.0	9.1	10.6
371350	3747050	26.3	26.3	11.7	10.2	10.2	10.6	9.7	10.5
371350	3746700	19.2	21.0	10.2	11.3	10.6	10.0	10.3	10.5
370650	3746750	4.8	4.8	5.8	9.0	12.1	10.9	14.5	10.5
371000	3746950	8.5	22.1	10.4	14.2	9.1	10.2	8.4	10.5
370750	3746500	3.5	3.9	7.7	7.8	5.9	13.8	17.0	10.4
371115	3746114	5.6	5.6	10.3	11.5	11.0	8.1	11.1	10.4
371250	3747150	25.3	25.3	10.7	11.2	10.0	9.4	10.7	10.4
371300	3747100	25.7	25.7	11.2	9.8	9.3	11.3	10.3	10.4
371350	3747000	26.0	26.0	11.3	10.4	9.9	9.9	10.1	10.3
371400	3746850	24.2	24.2	10.9	10.6	10.3	10.2	9.6	10.3
371350	3746950	25.7	25.7	10.8	10.5	10.2	9.9	10.1	10.3
370650	3746700	4.6	4.6	4.0	13.1	9.1	11.2	14.0	10.3
371300	3746650	21.3	21.3	10.2	10.4	10.4	9.9	10.5	10.3
370950	3746000	2.6	2.6	10.5	9.5	12.8	7.8	10.9	10.3

Redondo Beach Energy Project
Attachment 2 Table 5
PSD Competing Source Modeling Receptors
June 2013

Easting (X) (m)	Northing (Y) (m)	Elevation (Z) (m)	Controlling Hill Height (m)	2005 Modeled Impact (µg/m³)	2006 Modeled Impact (µg/m³)	2007 Modeled Impact (µg/m³)	2008 Modeled Impact (µg/m³)	2009 Modeled Impact (µg/m³)	Five-Year Average Impact (µg/m³)
371350	3746650	19.7	19.7	10.3	9.8	10.5	10.3	10.5	10.3
370800	3745950	0.0	0.0	10.5	10.4	10.5	11.0	8.9	10.3
370830	3746471	4.4	4.4	8.4	8.7	5.6	13.7	14.9	10.3
370700	3746000	1.6	1.6	11.1	12.1	9.9	11.1	7.1	10.3
371400	3746800	23.5	23.5	11.1	10.4	10.3	9.5	10.0	10.2
370950	3746750	6.8	6.8	10.3	7.9	8.1	16.6	8.4	10.2
370900	3746000	0.0	0.0	9.0	8.8	12.8	9.1	11.5	10.2
371350	3747100	26.6	26.6	11.4	9.6	10.0	10.6	9.1	10.2
370700	3745950	1.6	1.6	10.3	11.1	9.9	12.1	7.3	10.1
371100	3747200	21.0	21.0	10.4	10.3	9.4	10.3	10.3	10.1
371400	3746700	20.6	20.6	10.1	10.4	10.2	9.6	10.2	10.1
371050	3747150	17.0	21.9	10.5	10.4	8.6	10.5	10.3	10.1
371017	3746773	4.4	4.4	11.1	11.0	8.9	10.7	8.6	10.1
370700	3746950	6.3	6.3	7.6	11.3	5.6	15.8	10.0	10.1
371150	3747200	19.7	19.7	10.9	10.6	9.1	10.5	9.2	10.1
371000	3747000	9.4	22.1	9.8	14.1	8.7	9.3	8.2	10.0
371000	3746800	6.0	6.0	10.5	11.1	8.3	11.3	8.8	10.0
371000	3746000	3.9	3.9	11.9	9.7	10.7	7.2	10.5	10.0
371400	3746750	22.2	22.2	9.5	10.9	9.8	9.4	10.4	10.0
370800	3746900	9.9	9.9	10.3	8.9	7.1	14.8	8.9	10.0
371050	3746050	4.7	4.7	13.1	8.9	10.6	7.3	10.0	10.0
370700	3746600	4.2	4.2	6.5	14.7	5.9	11.5	11.2	10.0
371350	3746600	21.1	21.1	10.1	9.7	9.7	10.0	10.1	9.9
371400	3746650	19.6	19.6	9.9	9.8	9.9	9.8	10.0	9.9
371100	3746050	5.3	5.3	10.5	10.3	10.3	7.3	10.9	9.9
371200	3747200	23.2	25.3	10.3	10.5	9.9	9.2	9.4	9.9
371250	3747200	25.5	25.5	10.1	10.6	9.7	8.8	10.1	9.8
371300	3747150	26.1	26.1	9.8	10.2	8.9	10.0	10.0	9.8
371400	3746900	24.6	24.6	10.2	9.6	10.0	9.8	9.5	9.8
371350	3746550	21.9	21.9	9.8	9.2	10.5	10.0	9.4	9.8
370700	3746050	1.6	1.6	12.3	11.7	8.9	9.3	6.3	9.7
371000	3747050	10.9	22.0	9.2	13.5	8.3	9.3	8.2	9.7
371350	3747150	27.0	27.0	10.7	9.1	9.4	10.2	9.0	9.7
370600	3746900	4.7	4.7	7.6	12.1	8.1	10.6	10.0	9.7
370700	3745900	1.1	1.1	10.6	9.4	9.3	11.9	7.3	9.7
371128	3746089	5.8	5.8	9.0	10.8	10.6	7.7	10.1	9.6
370750	3745900	1.6	1.6	10.6	9.7	9.2	11.2	7.3	9.6
371450	3746700	20.8	20.8	9.6	9.5	9.7	9.2	9.9	9.6
370600	3746850	4.7	4.7	7.1	11.4	10.2	8.4	10.8	9.6
370650	3746950	5.5	5.5	6.4	11.8	4.4	15.0	10.2	9.6
370950	3746950	6.9	6.9	8.6	13.1	7.1	10.7	8.3	9.6
370950	3746900	7.9	7.9	8.3	13.5	7.1	10.7	8.2	9.6
371400	3746550	20.9	20.9	9.6	9.1	10.4	9.7	9.1	9.6
371050	3747200	16.1	21.0	10.0	9.8	8.2	10.1	9.6	9.5

Redondo Beach Energy Project
Attachment 2 Table 5
PSD Competing Source Modeling Receptors
June 2013

Easting (X) (m)	Northing (Y) (m)	Elevation (Z) (m)	Controlling Hill Height (m)	2005 Modeled Impact (µg/m³)	2006 Modeled Impact (µg/m³)	2007 Modeled Impact (µg/m³)	2008 Modeled Impact (µg/m³)	2009 Modeled Impact (µg/m³)	Five-Year Average Impact (µg/m³)
371400	3746600	19.2	19.2	9.6	9.5	9.2	9.6	9.7	9.5
371400	3746950	25.3	25.3	10.3	9.4	9.7	9.0	9.0	9.5
371300	3746600	21.5	21.5	9.6	8.8	9.7	9.7	9.5	9.5
371450	3746850	25.8	25.8	10.1	9.7	9.1	9.0	9.3	9.5
370600	3746950	4.9	4.9	7.2	11.4	6.1	12.7	9.8	9.4
371100	3747250	21.8	21.8	9.7	9.5	8.8	9.7	9.5	9.4
370864	3746396	4.1	4.1	9.4	13.0	7.2	8.2	9.2	9.4
370700	3746550	2.7	2.7	7.5	8.5	5.8	10.0	15.0	9.4
371150	3747250	19.4	25.4	10.0	9.8	8.5	10.0	8.6	9.4
371050	3746000	4.4	4.4	11.9	8.6	9.9	7.1	9.5	9.4
371450	3746800	25.0	25.0	9.4	10.0	9.0	8.5	10.1	9.4
370600	3746800	4.4	4.4	5.7	9.2	11.0	8.5	12.3	9.3
371450	3746650	19.7	19.7	9.5	9.6	8.9	9.3	9.4	9.3
370800	3746300	2.2	2.2	13.0	13.7	6.2	6.6	7.0	9.3
371450	3746750	22.0	22.0	9.2	10.1	9.3	8.5	9.3	9.3
370650	3746650	4.3	4.3	4.1	14.7	5.6	10.6	11.5	9.3
370950	3747000	8.4	23.6	8.6	12.5	6.8	10.1	8.2	9.3
371450	3746900	24.9	51.6	9.7	9.7	9.0	9.4	8.4	9.3
370900	3745950	0.0	0.0	8.4	8.0	12.1	7.5	10.4	9.3
370750	3746950	7.8	7.8	9.1	8.6	6.7	13.6	8.3	9.2
371400	3747000	26.4	26.4	9.8	9.3	9.2	9.0	9.0	9.2
371000	3747100	12.4	22.1	8.4	12.3	7.8	9.6	8.1	9.2
370850	3745950	0.0	0.0	7.9	8.6	10.7	8.7	10.2	9.2
371140	3746064	5.9	5.9	8.6	10.2	10.5	7.3	9.5	9.2
371250	3747250	26.0	26.0	9.4	9.9	9.2	8.1	9.4	9.2
371155	3746084	6.1	6.1	9.1	10.1	10.3	7.2	9.3	9.2
371300	3747200	26.5	26.5	9.1	9.8	8.7	8.8	9.5	9.2
371400	3747100	27.5	27.5	9.8	9.2	9.1	9.0	8.7	9.2
371350	3747200	27.5	27.5	9.8	8.7	8.6	9.6	9.1	9.1
371200	3747250	25.1	25.1	9.7	9.5	9.2	8.7	8.6	9.1
370750	3746200	0.0	0.0	14.1	12.7	6.8	6.4	5.7	9.1
370950	3745950	1.7	1.7	9.5	8.7	11.4	6.3	9.7	9.1
371450	3746600	19.0	19.0	9.3	9.3	9.2	8.9	9.0	9.1
371100	3746000	5.3	5.3	9.7	9.5	9.5	6.7	10.3	9.1
370900	3746850	9.5	9.5	9.9	9.8	7.6	10.8	7.6	9.1
371400	3747050	27.0	27.0	9.9	9.1	8.8	8.8	9.0	9.1
371000	3745950	3.8	3.8	11.0	8.4	10.1	6.8	9.3	9.1
370950	3746850	8.1	8.1	7.6	12.5	7.2	10.2	7.9	9.1
371400	3747150	28.1	43.1	10.0	8.9	9.1	8.8	8.6	9.1
371250	3746650	17.7	21.9	8.9	9.0	9.6	8.8	8.9	9.1
370700	3746500	0.0	0.0	6.7	6.4	5.7	11.4	14.9	9.1
371150	3746050	6.0	6.0	8.6	9.8	10.4	7.0	9.2	9.0
371450	3746550	20.2	20.2	9.0	8.6	9.8	9.0	8.6	9.0
370950	3747050	10.1	23.6	8.4	12.3	6.7	9.5	8.0	9.0

Redondo Beach Energy Project
Attachment 2 Table 5
PSD Competing Source Modeling Receptors
June 2013

Easting (X) (m)	Northing (Y) (m)	Elevation (Z) (m)	Controlling Hill Height (m)	2005 Modeled Impact (µg/m³)	2006 Modeled Impact (µg/m³)	2007 Modeled Impact (µg/m³)	2008 Modeled Impact (µg/m³)	2009 Modeled Impact (µg/m³)	Five-Year Average Impact (µg/m³)
371500	3746700	20.0	20.0	8.8	8.8	9.8	8.4	9.0	9.0
371170	3746104	6.4	6.4	9.4	9.5	10.1	7.0	8.7	8.9
371050	3747250	15.7	22.0	9.5	9.1	7.7	9.5	8.9	8.9
370600	3746750	4.1	4.1	3.6	9.2	9.3	9.9	12.6	8.9
370650	3747000	5.7	5.7	6.7	10.4	5.1	14.0	8.5	8.9
371000	3747150	12.3	21.9	8.3	11.3	7.2	9.5	8.2	8.9
371500	3746750	22.1	50.1	9.3	8.9	9.1	8.2	9.0	8.9
371500	3746600	19.0	19.0	9.1	9.7	8.8	8.3	8.4	8.9
371450	3747000	27.4	51.0	9.3	8.5	8.5	9.0	9.0	8.9
371450	3747050	27.8	51.0	8.9	8.7	8.5	9.0	9.0	8.8
370700	3745850	0.0	0.0	10.0	8.6	8.0	10.7	6.8	8.8
371400	3747200	28.8	44.5	9.7	8.7	8.8	8.7	8.2	8.8
370990	3746763	5.3	5.3	8.9	9.2	7.4	10.4	8.2	8.8
370800	3745900	0.0	0.0	8.2	8.7	10.0	8.4	8.7	8.8
371300	3746550	18.0	19.2	8.9	8.0	9.2	9.2	8.7	8.8
370900	3746900	9.5	9.5	7.8	12.2	7.0	10.3	6.6	8.8
371450	3746950	26.4	51.0	9.1	8.9	8.6	9.0	8.3	8.8
370650	3745900	0.0	0.0	8.6	10.3	8.6	10.1	6.3	8.8
371500	3746650	18.8	18.8	9.4	8.9	8.1	8.7	8.8	8.8
371150	3747300	20.7	25.3	9.3	9.0	8.2	9.5	8.0	8.8
370962	3746753	6.4	6.4	9.2	6.7	8.0	11.8	8.1	8.8
370850	3746900	10.6	10.6	9.9	8.5	7.4	10.9	7.0	8.8
370650	3746600	4.0	4.0	5.7	11.5	5.4	10.4	10.6	8.7
371100	3747300	21.2	21.2	9.1	8.7	8.1	9.1	8.7	8.7
371150	3746600	7.2	22.0	10.8	6.1	5.6	15.3	5.9	8.7
371500	3746850	27.4	51.4	8.8	9.0	8.7	7.7	9.3	8.7
370650	3745850	0.0	0.0	9.2	9.0	8.4	10.6	6.3	8.7
370850	3746950	10.9	10.9	8.4	10.6	6.8	11.5	6.2	8.7
371400	3746500	21.3	21.3	8.0	8.2	8.5	8.9	9.8	8.7
371500	3746800	25.8	49.8	8.7	9.3	8.5	7.7	9.2	8.7
371050	3745950	4.4	4.4	10.9	8.2	8.6	6.8	8.9	8.7
370550	3746950	4.2	4.2	6.9	10.8	6.9	9.8	8.9	8.7
371166	3746400	6.9	10.3	7.5	8.5	12.1	8.0	7.0	8.6
371450	3746500	20.6	20.6	8.3	9.0	8.3	8.3	9.2	8.6
371550	3746750	21.7	57.3	8.7	8.1	9.9	8.1	8.4	8.6
371250	3747300	26.2	26.2	8.7	9.2	8.7	7.9	8.6	8.6
370650	3745950	0.0	0.0	9.7	10.6	8.2	8.9	5.8	8.6
371350	3746500	22.0	22.0	8.0	7.5	8.4	9.2	9.9	8.6
370750	3745850	1.8	1.8	8.8	8.8	9.1	9.0	7.3	8.6
370950	3747100	10.2	24.3	8.1	11.7	6.5	9.1	7.6	8.6
371450	3747100	28.6	50.8	8.9	8.7	8.2	8.6	8.6	8.6
371300	3747250	26.9	26.9	8.6	9.2	8.2	7.8	9.2	8.6
370950	3746800	6.6	6.6	8.4	9.7	7.9	9.2	7.6	8.6
371000	3747200	11.8	11.8	8.2	10.3	6.7	9.4	8.1	8.5

Redondo Beach Energy Project
Attachment 2 Table 5
PSD Competing Source Modeling Receptors
June 2013

Easting (X) (m)	Northing (Y) (m)	Elevation (Z) (m)	Controlling Hill Height (m)	2005 Modeled Impact (µg/m³)	2006 Modeled Impact (µg/m³)	2007 Modeled Impact (µg/m³)	2008 Modeled Impact (µg/m³)	2009 Modeled Impact (µg/m³)	Five-Year Average Impact (µg/m³)
371500	3746900	27.8	56.0	9.1	8.9	8.0	8.3	8.4	8.5
371350	3747250	27.9	43.8	8.8	8.5	7.7	8.7	8.9	8.5
370600	3746700	3.8	3.8	3.7	12.6	6.0	8.8	11.4	8.5
371550	3746600	19.0	19.0	9.1	9.7	8.2	7.9	7.6	8.5
370550	3746900	4.1	4.1	6.5	10.5	8.4	8.1	8.9	8.5
370600	3747000	5.1	5.1	5.7	10.6	3.9	13.3	9.0	8.5
370850	3745900	0.0	0.0	7.4	7.1	10.6	7.8	9.5	8.5
371500	3746550	19.8	19.8	8.4	8.7	9.0	8.2	8.0	8.5
371200	3747300	25.4	25.4	9.1	8.7	8.4	8.3	7.8	8.5
371650	3746800	31.1	63.1	7.9	8.0	9.7	8.5	8.1	8.4
370700	3747000	6.5	6.5	7.9	8.2	6.1	12.4	7.6	8.4
370700	3746100	0.0	0.0	12.7	10.2	7.0	6.8	5.4	8.4
371150	3746000	5.9	5.9	8.0	9.2	9.7	6.4	8.8	8.4
371100	3745950	5.0	5.0	8.9	8.6	8.7	6.2	9.6	8.4
370900	3746950	9.5	9.5	6.0	13.3	6.3	9.7	6.8	8.4
371500	3747100	31.2	52.1	8.0	8.5	7.9	8.8	8.8	8.4
371500	3746950	28.2	56.5	8.7	8.8	8.1	8.5	7.9	8.4
370900	3745900	0.0	0.0	7.8	7.1	11.2	6.5	9.3	8.4
371500	3746500	20.2	20.2	8.8	9.0	7.9	7.6	8.5	8.4
371050	3747300	19.0	19.0	9.0	8.5	7.2	9.0	8.2	8.4
371400	3747250	29.4	45.1	9.1	8.3	8.3	8.5	7.7	8.4
371600	3746800	28.7	57.3	8.1	7.8	9.3	8.4	8.2	8.4
371500	3747050	29.9	55.8	8.3	8.2	7.8	8.7	8.7	8.4
370950	3747150	10.2	24.3	7.7	10.9	6.2	9.0	7.9	8.3
370550	3747000	4.4	4.4	6.5	10.1	5.0	11.4	8.6	8.3
370650	3746500	1.0	1.1	6.6	5.7	5.7	10.2	13.4	8.3
371450	3747150	29.5	49.3	8.8	8.3	8.1	7.9	8.5	8.3
371185	3746124	6.7	6.7	9.1	8.6	9.5	6.7	7.6	8.3
371000	3745900	3.6	3.6	10.1	7.3	9.4	6.5	8.2	8.3
370650	3745800	0.0	0.0	9.3	8.0	7.7	10.2	6.2	8.3
371550	3746700	19.4	56.2	8.4	8.2	9.2	7.7	7.8	8.3
371550	3746650	19.0	19.0	9.3	8.4	7.7	7.9	8.0	8.3
371600	3746750	24.3	62.9	7.8	7.7	10.0	8.0	7.9	8.3
371550	3746850	28.8	56.5	8.4	8.3	8.4	7.7	8.5	8.3
371184	3746151	6.7	6.7	9.0	8.5	9.7	6.7	7.4	8.3
371700	3746800	34.5	63.2	7.9	7.8	9.6	8.1	7.8	8.2
371500	3747150	34.7	45.0	7.9	8.4	8.0	8.4	8.4	8.2
370900	3747000	10.2	23.6	6.3	13.2	6.0	8.8	6.9	8.2
370550	3746850	4.0	4.0	5.5	9.0	9.9	6.3	10.3	8.2
371600	3746650	20.1	45.3	9.4	8.6	7.8	7.7	7.7	8.2
370950	3745900	0.0	2.9	9.0	7.8	10.0	5.6	8.6	8.2
371700	3746850	38.4	62.9	8.0	7.8	8.8	8.5	7.9	8.2
370850	3747000	11.8	11.8	6.7	11.7	6.0	10.7	5.8	8.2
371600	3746600	19.1	45.3	9.0	9.3	7.5	7.6	7.3	8.1

Redondo Beach Energy Project
Attachment 2 Table 5
PSD Competing Source Modeling Receptors
June 2013

Easting (X) (m)	Northing (Y) (m)	Elevation (Z) (m)	Controlling Hill Height (m)	2005 Modeled Impact (µg/m³)	2006 Modeled Impact (µg/m³)	2007 Modeled Impact (µg/m³)	2008 Modeled Impact (µg/m³)	2009 Modeled Impact (µg/m³)	Five-Year Average Impact (µg/m³)
371550	3746800	27.0	56.0	8.4	8.3	8.1	7.8	8.1	8.1
371150	3747350	21.3	21.3	8.5	8.3	7.6	8.9	7.4	8.1
371500	3747000	29.1	56.3	8.1	8.3	8.0	8.2	8.1	8.1
371000	3747250	12.1	22.2	7.9	9.4	6.3	9.1	7.9	8.1
371050	3745900	4.4	4.4	9.9	7.9	8.0	6.5	8.3	8.1
370800	3746950	10.5	10.5	9.6	6.8	7.3	10.2	6.5	8.1
370900	3747050	11.0	24.2	6.5	12.5	5.9	8.6	7.0	8.1
370600	3746650	3.7	3.7	3.9	12.5	5.2	10.0	8.9	8.1
371300	3747300	27.2	27.2	8.2	8.6	7.7	7.3	8.7	8.1
371100	3747350	20.1	20.1	8.5	8.0	7.5	8.4	8.0	8.1
371450	3747200	30.8	45.3	8.4	7.9	8.0	7.9	8.2	8.1
371184	3746178	6.7	6.7	8.8	8.2	9.7	6.7	6.9	8.1
370800	3747000	11.4	11.4	8.2	8.6	6.9	10.9	5.7	8.1
371650	3746650	22.6	46.6	9.1	8.4	7.6	7.5	7.5	8.0
371550	3747150	41.7	43.6	7.7	8.1	7.6	8.4	8.4	8.0
370950	3747200	10.5	24.3	7.2	10.3	5.9	8.7	8.1	8.0
371550	3746550	19.3	19.3	8.7	8.4	8.2	7.5	7.4	8.0
370850	3746400	4.2	4.2	7.6	10.2	7.3	7.0	8.2	8.0
371650	3746750	28.1	63.1	7.6	7.7	9.6	7.4	7.7	8.0
371200	3746650	11.3	22.0	7.3	7.6	7.8	9.2	8.2	8.0
370650	3746550	2.7	2.7	6.5	6.1	5.1	8.8	13.5	8.0
371250	3747350	26.3	26.3	8.1	8.5	8.1	7.5	7.9	8.0
371550	3746900	30.4	57.0	8.2	8.1	8.2	7.2	8.3	8.0
370700	3745800	0.0	0.0	8.8	8.2	7.8	9.1	6.0	8.0
370650	3746000	1.6	1.6	10.6	9.9	7.1	7.1	5.1	8.0
371650	3746850	35.6	57.3	7.9	7.5	8.1	8.4	7.8	8.0
371350	3747300	28.3	43.8	8.1	8.0	7.3	7.9	8.5	8.0
371450	3747250	34.3	45.1	8.4	7.9	8.0	7.7	7.9	8.0
371550	3746500	19.6	19.6	9.0	8.7	7.4	6.9	7.8	7.9
371700	3746700	29.6	45.3	8.5	7.9	7.6	8.2	7.6	7.9
370750	3746250	0.0	0.0	11.4	11.3	5.5	5.3	6.2	7.9
371500	3747200	38.0	43.6	7.9	8.1	7.7	7.7	8.3	7.9
370600	3747050	5.3	5.3	6.0	9.5	4.6	12.4	7.2	7.9
371450	3746450	19.0	19.0	6.0	9.9	7.4	8.3	8.0	7.9
371200	3746100	6.9	6.9	8.7	7.7	10.2	6.1	6.9	7.9
371550	3747100	39.6	50.1	7.5	8.0	7.4	8.3	8.3	7.9
371400	3747300	30.8	44.8	8.4	7.7	7.6	8.0	7.7	7.9
371300	3746500	17.5	22.0	7.3	6.8	8.1	8.5	8.8	7.9
371600	3746700	21.3	62.9	8.7	7.6	8.3	7.2	7.6	7.9
371650	3746700	24.7	63.1	8.5	7.7	7.7	7.8	7.7	7.9
371200	3747350	25.1	25.1	8.5	8.1	7.7	7.9	7.1	7.9
371300	3746150	11.7	22.0	5.4	8.5	12.0	6.4	6.9	7.9
371700	3746750	31.6	63.1	7.7	7.6	8.7	7.6	7.6	7.9
371600	3746850	32.3	57.1	8.1	7.6	7.7	8.0	7.7	7.8

Redondo Beach Energy Project
Attachment 2 Table 5
PSD Competing Source Modeling Receptors
June 2013

Easting (X) (m)	Northing (Y) (m)	Elevation (Z) (m)	Controlling Hill Height (m)	2005 Modeled Impact (µg/m³)	2006 Modeled Impact (µg/m³)	2007 Modeled Impact (µg/m³)	2008 Modeled Impact (µg/m³)	2009 Modeled Impact (µg/m³)	Five-Year Average Impact (µg/m³)
371550	3747200	40.5	40.5	7.7	7.9	7.6	8.0	8.1	7.8
371600	3746900	36.3	56.3	7.9	7.7	8.1	7.7	7.7	7.8
370600	3745800	0.0	0.0	7.8	8.7	7.7	9.3	5.7	7.8
371400	3746450	19.4	19.4	6.1	8.6	7.9	8.6	8.0	7.8
370850	3745850	0.2	1.2	6.9	6.5	10.1	6.8	8.8	7.8
371150	3745950	5.7	5.7	7.3	8.5	9.0	5.9	8.4	7.8
371200	3746150	7.1	7.1	8.4	7.3	10.6	6.1	6.6	7.8
371550	3747000	34.0	56.3	7.9	8.5	7.7	7.7	7.3	7.8
370800	3746450	4.1	4.1	5.9	6.3	5.4	9.7	11.6	7.8
371050	3747350	21.4	21.4	8.4	7.9	6.7	8.4	7.6	7.8
371183	3746205	6.8	6.8	8.4	7.7	9.5	6.6	6.8	7.8
371200	3746050	6.8	6.8	8.6	7.8	9.5	5.9	7.2	7.8
371800	3746700	42.4	42.4	8.0	8.0	7.4	7.9	7.5	7.8
371550	3747050	36.2	53.3	7.4	8.1	7.7	7.8	7.8	7.8
371700	3746650	27.5	46.6	8.7	8.0	7.3	7.6	7.2	7.8
370800	3745850	0.5	1.1	6.5	7.1	9.3	7.4	8.4	7.7
370500	3747000	3.9	3.9	6.3	9.7	5.8	9.1	7.9	7.7
370900	3747100	12.2	24.3	6.6	11.3	5.7	8.3	6.9	7.7
370550	3746800	3.6	3.8	3.7	6.6	9.2	8.2	11.0	7.7
371650	3746600	21.8	46.5	8.7	8.7	7.1	7.3	7.0	7.7
371550	3746950	30.6	57.6	8.2	8.1	7.4	7.5	7.5	7.7
370600	3745850	0.0	0.0	7.7	9.5	7.6	8.5	5.4	7.7
370800	3747050	13.5	13.5	6.8	9.7	6.3	10.8	5.1	7.7
371500	3746450	19.4	19.4	6.1	10.2	6.9	7.7	7.6	7.7
371600	3746550	19.1	44.2	8.6	8.1	7.5	7.4	7.0	7.7
371100	3745900	4.8	4.8	8.2	7.9	8.0	5.6	8.9	7.7
370900	3745850	1.5	1.5	7.5	6.5	10.3	5.8	8.3	7.7
370550	3746750	2.1	2.1	3.3	9.5	6.6	8.3	10.7	7.7
371000	3747300	16.0	22.2	7.7	8.5	5.9	8.7	7.6	7.7
371250	3746200	9.3	22.0	5.1	8.5	11.6	6.1	7.0	7.7
371600	3746950	39.1	56.0	7.8	8.2	7.9	7.1	7.3	7.7
370600	3746600	3.8	3.8	5.3	8.9	5.0	9.2	9.9	7.7
370600	3746500	2.1	2.1	6.3	5.2	5.6	9.1	12.0	7.7
371800	3746800	40.5	63.2	7.1	7.4	8.2	7.6	7.9	7.7
371800	3746900	50.2	62.1	8.1	7.3	7.8	7.8	7.1	7.6
371650	3746550	20.9	46.1	8.4	7.7	7.3	7.6	7.1	7.6
371450	3747300	37.4	44.4	8.1	7.7	7.6	7.3	7.4	7.6
371300	3747350	27.3	27.3	7.8	8.1	7.2	6.8	8.1	7.6
371000	3745850	3.8	3.8	9.3	6.6	8.8	6.2	7.3	7.6
370800	3746350	3.3	3.3	7.5	9.2	7.2	6.4	7.8	7.6
370650	3747050	6.0	6.0	6.8	7.7	5.5	11.2	6.9	7.6
370950	3747250	11.0	24.3	6.7	9.5	5.6	8.1	8.1	7.6
371600	3747000	42.4	50.8	7.7	8.1	7.9	7.2	7.2	7.6
370850	3747050	12.9	23.8	5.2	11.9	5.3	9.7	6.0	7.6

Redondo Beach Energy Project
Attachment 2 Table 5
PSD Competing Source Modeling Receptors
June 2013

Easting (X) (m)	Northing (Y) (m)	Elevation (Z) (m)	Controlling Hill Height (m)	2005 Modeled Impact (µg/m³)	2006 Modeled Impact (µg/m³)	2007 Modeled Impact (µg/m³)	2008 Modeled Impact (µg/m³)	2009 Modeled Impact (µg/m³)	Five-Year Average Impact (µg/m³)
371650	3746950	45.9	50.8	7.3	8.1	7.9	7.5	7.2	7.6
371600	3746500	19.0	19.0	8.8	8.2	7.5	6.3	7.1	7.6
370600	3745750	0.0	0.0	8.3	7.3	7.3	9.4	5.6	7.6
370550	3747050	4.7	4.7	5.1	9.6	3.5	11.8	7.9	7.6
370650	3745750	0.0	0.0	8.7	7.5	6.8	9.1	5.8	7.6
370500	3746950	2.8	2.8	6.0	9.6	6.9	7.6	7.7	7.6
370950	3745850	2.4	2.4	8.5	7.3	8.5	5.5	7.8	7.5
371500	3747250	42.3	42.3	7.6	7.7	7.2	7.2	8.0	7.5
371550	3746450	19.9	19.9	6.7	10.0	6.7	7.1	7.2	7.5
371200	3746000	6.5	6.5	8.4	7.6	8.8	5.6	7.2	7.5
371050	3745850	3.9	3.9	9.0	7.5	7.4	6.1	7.6	7.5
371650	3747000	48.2	48.2	7.2	8.1	8.1	6.9	7.3	7.5
371700	3746600	26.2	46.6	8.2	8.0	7.0	7.3	7.1	7.5
371650	3746900	41.2	55.8	7.7	6.9	7.8	7.9	7.3	7.5

The modeled results include a 0.8 ambient NO2/Nox ratio.
The modeled scenario was selected based on the turbine load scenario resulting in the highest impacts (106 °F, 70%

Redondo Beach Energy Project
Attachment 2 Table 6
PSD Competing Source Modeling Parameters - Stack Parameters
June 2013

Point Sources

Source ID	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)
RBEP Stack 1	371060	3746515	4.4	42.7	463	15.1	5.49
RBEP Stack 2	371096	3746520	4.4	42.7	463	15.1	5.49
RBEP Stack 3	371132	3746525	4.4	42.7	463	15.1	5.49
80008901	376803	3746636	20.0	30.5	494	17.0	2.68
80008902	376791	3746758	19.8	36.6	627	4.99	2.21
80008903	376807	3746820	19.0	22.9	487	16.2	1.97
80008904	376797	3746840	19.0	27.4	558	27.7	3.35
80008905	376670	3746640	20.0	36.6	618	11.1	1.74
80008906	376691	3746640	20.0	49.7	394	9.59	1.71
80008907	376622	3746824	20.0	28.7	514	20.0	1.65
80008908	376614	3746824	20.0	28.7	514	20.0	1.65
80008909	376944	3746685	18.0	21.3	632	8.26	1.22
80008910	376944	3746672	18.0	19.8	604	6.51	1.51
80008911	376799	3746958	18.0	30.5	614	5.26	3.17
80008912	376798	3746878	19.0	36.3	591	5.47	1.91
80008913	376787	3746576	20.0	39.6	589	8.90	1.40
80008914	376787	3746546	20.0	39.6	545	8.87	1.40
80008915	376786	3746514	20.0	39.6	482	5.82	1.40
80008916	376786	3746487	20.7	39.2	579	5.30	1.98
80008917	376785	3746451	21.0	39.6	595	9.15	1.49
80008918	376785	3746421	21.0	39.6	595	10.5	1.49
80008919	376533	3746645	20.0	30.5	519	21.7	3.73
80008920	376427	3746791	20.0	45.7	443	9.50	1.62
80008921	376280	3746541	22.0	45.7	927	2.88	1.95
80008922	376476	3746524	21.0	45.7	660	8.46	2.29
80008923	376718	3746815	20.0	30.5	460	7.95	1.77
80008924	376730	3746815	20.0	30.5	473	8.17	1.77
80008925	378000	3746802	16.9	7.3	970	1.22	0.91
80008926	376747	3746635	20.0	16.8	532	7.40	2.26
80008927	376798	3746861	19.0	36.3	526	5.23	1.75
80008928	376193	3746282	23.0	24.4	751	7.44	0.99
80008929	376215	3746275	23.0	5.49	1089	0.36	0.91

Competing source data provided by SCAQMD

Redondo Beach Energy Project
Attachment 2 Table 7
PSD Competing Source Modeling Parameters - Emission Rates
June 2013

Emission Rates for PSD 1-hr NO_2 Competing Source Modeling

Source	1-hr NO_2 (g/s)	1-hr NO_2 (lb/hr)
RBEP Stack 1	3.21	25.4
RBEP Stack 2	3.21	25.4
RBEP Stack 3	3.21	25.4
80008901	0.0025	0.02
80008902	0.0025	0.02
80008903	2.20	17.4
80008904	6.18	49.0
80008905	0.090	0.71
80008906	0.056	0.45
80008907	2.85	22.6
80008908	2.85	22.6
80008909	0.028	0.22
80008910	0.028	0.22
80008911	0.0013	0.01
80008912	2.90	23.0
80008913	0.54	4.31
80008914	0.46	3.67
80008915	0.68	5.40
80008916	0.52	4.16
80008917	0.028	0.22
80008918	0.028	0.22
80008919	4.19	33.2
80008920	0.095	0.75
80008921	0.016	0.13
80008922	0.028	0.22
80008923	0.028	0.22
80008924	0.028	0.22
80008925	0.076	0.60
80008926	1.99	15.8
80008927	2.77	22.0
80008928	0.028	0.22
80008929	0.028	0.22

Competing source data provided by SCAQMD

Redondo Beach Energy Project
Attachment 2 Table 8
PSD Competing Source Modeling Results Summary
June 2013

Source	Year	1-hr NO_2
ALL		125
RBEP	2005	26.3
COMPETING		13.4
ALL		125
RBEP	2006	27.6
COMPETING		13.5
ALL		121
RBEP	2007	25.8
COMPETING		13.5
ALL		123
RBEP	2008	32.1
COMPETING		13.5
ALL		121
RBEP	2009	21.4
COMPETING		13.5

Attachment 3
Redondo Beach Energy Project Class II Visibility Assessment

AES RBEP Class II Visibility Assessment

PREPARED FOR: AES Southland Development, LLC

COPY TO: CH2M HILL Project Folder

PREPARED BY: John Frohning/CH2M HILL

DATE: June 25, 2013

AES Redondo Beach, LLC (AES) owns and operates the Redondo Beach Generating Station located in Redondo Beach, California and is proposing to replace the existing power boilers with more efficient natural gas fired combustion turbines in a combined cycle configuration. The proposed Redondo Beach Energy Project (RBEP) would be one of the 28-major source categories defined in Title 40 of the Code of Federal Regulations (CFR), Section 51.166, and the modification would trigger Prevention of Significant Deterioration (PSD) permitting requirements.

The South Coast Air Quality Management District (AQMD) is a responsible agency with regards to the permitting of RBEP. In addition to the information needed to satisfy the requirements for a complete PSD permit application, the AQMD has requested an analysis of the project's impacts on visibility for nearby Class II areas. This memorandum outlines the RBEP visibility analysis approach and results at the Class II areas of concern identified with consultation with AQMD.

Class II Areas of Concern

A survey of California State Parks and Wilderness areas designated as Class II areas was conducted within 50-km of RBEP. The results of this survey were summarized and presented to the AQMD staff for review and approval. The Class II areas identified and approved by the SCAQAMD for inclusion in the Class II visibility analysis are presented in Table 1 below and shown on Figure 1.

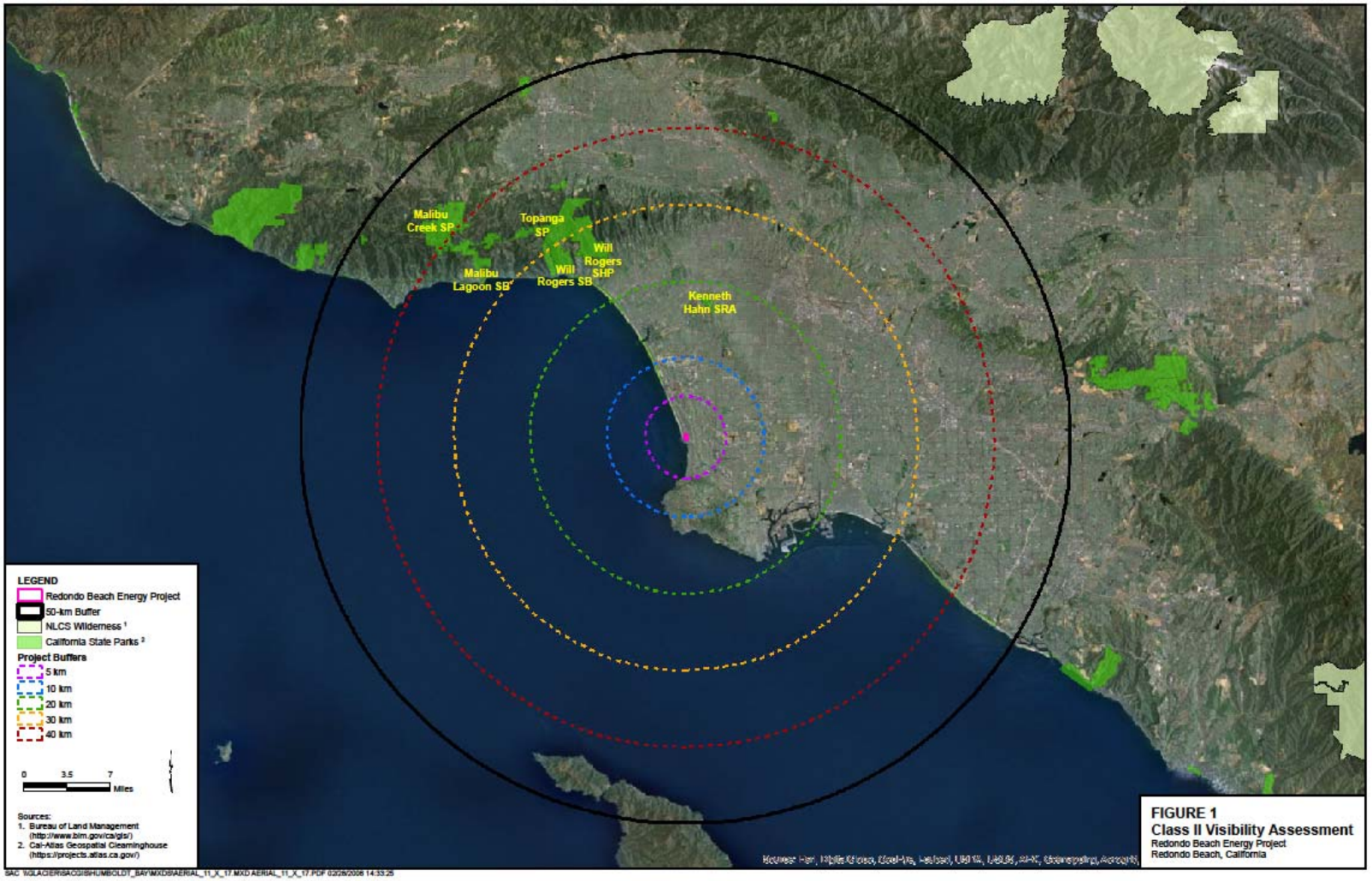
TABLE 1

Class II Areas within 50-km of RBEP

Class II Area	Nearest Distance	Furthest Distance
Kenneth Hahn State Park	16.9-km	18.9-km
Will Rogers State Park [a]	24.6-km	34.7-km
Topanga State Park [a]	24.6-km	34.7-km
Malibu Creek State Park [b]	33.2-km	43.6-km
Malibu Lagoon State Park [b]	33.2-km	43.6-km

[a] Assumed Will Rogers State Park and Topanga State Park cover the same area since they are directly adjacent to one another.
[b] Assumed Malibu Creek State Park and Malibu Lagoon State Park cover the same area since they are directly adjacent to one another.

FIGURE 1
Class II Area within 50-km of RBEP



Visibility Assessment Approach

No specific requirements or criteria exist in the PSD regulations for assessing Class II visibility impacts. Therefore, the general approach used to assess visibility impacts of Class I areas within 50-km of a PSD project site were used.

The *Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report – Revised (2010)* (Federal Land Managers [FLM], 2010) guidance document for addressing Class I areas initially recommends the use of the U.S Environmental Protection Agency's (EPA) VISCREEN screening model to assess the change in color difference (ΔE) and contrast between the facility's plume and the viewing background. The VISCREEN screening model can use a tiered approach to determine if the facility emissions would impact visibility at a nearby Class I area. If the VISCREEN Tier I and Tier II screening assessment demonstrate that visibility could be impacted at the Class I area, then the PLUVUE II model is recommended for a Tier III assessment. The PLUVUE II model differs from the VISCREEN screening model as VISCREEN uses a single representative worst case meteorological condition to determine the facility's potential impacts on visibility while PLUVUE II considers a realistic array of all conditions that would be expected to occur in a typical year in the region. Procedures outlined in the *Workbook for Plume Visual Impact Screening and Analysis* (EPA, 1992) were followed to conduct a visibility assessment with VISCREEN at the nearby Class II areas.

The VISCREEN screening model was developed to present a visual effect evaluation of emissions from a source as observed from a given vantage point on either a sky or terrain background. Emissions input into the model are conservatively assumed to travel along an infinitely long, straight line toward the specified area of concern. As mentioned above, the VISCREEN screening model allows for the use of a tiered approach to assess a proposed source's impacts on visibility. A Tier I assessment utilizes conservative assumptions for both plume characteristics and dispersion conditions to determine if the plume would have an impact on visibility. If a Tier I assessment exceeds the FLAG guidance levels of concern for Class I areas of 2.0 for ΔE and 0.05 for contrast, then a Tier II assessment would be conducted. A Tier II assessment provides a more realistic representation of the possible worst-case meteorology and plume transport for a specific area to be analyzed.

Background visual ranges for the Class II areas presented in Table 1 were selected from the Interagency Monitoring of Protected Visual Environments (IMPROVE) annual average background visual range map. These data are provided on the IMPROVE website[1]. The average of the annual upper and lower bounds of the background visual range for the identified Class II areas was used for the analysis.

For RBEP, if a VISCREEN Tier I assessment exceeded the conservative criteria for Class I areas for either ΔE or contrast, a Tier II assessment utilized the AQMD meteorological dataset for the King Harbor monitoring station[2] for determining representative worst case single combinations of wind speed, wind direction, and atmospheric stability for each Class II area above the criteria. The King Harbor monitoring station pre-processed meteorological data are for a single year; the station was located approximately 1.75-km directly south of the RBEP. The AQMD pre-processed King Harbor data for the Industrial Source Complex (ISC) modeling system contain the required parameters of wind speed, wind direction, and stability class to create the joint frequency distributions[3]. These meteorological data would be considered representative for creating the joint frequency tables for determining the conservative representative worst case single wind speed and stability class required for a Class I area VISCREEN assessment. Therefore, the meteorological data would be representative of the Class II area VISCREEN assessment. The meteorological data joint frequency distribution of these parameters for each Class II area requiring a Tier II assessment is provided in Attachment A.

Since the annual average background visual ranges for each Class II area was used, the annual average RBEP emissions in tons per year (tpy) were used for oxides of nitrogen (NOx) and total particulate matter (PM). The

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[1] http://www2.nature.nps.gov/air/monitoring/vismonresults.cfm. Accessed June 15, 2013.

[2] Data obtained from http://www.aqmd.gov/smog/metdata/ISCST3_Table1.html. Accessed June 17, 2013.

[3] Meteorological data processed for ISC is preferred to create the joint frequency distribution tables for a Tier II VISCREEN assessment since the data contain Pasquill-Gifford Stability Classes. Meteorological data pre-processed for AERMOD do not contain the Pasquill-Gifford stability parameters.

assessment conservatively assumes only the project increases in emissions from RBEP would be modeled and would not consider any contemporaneous decreases of these pollutants from removal of the existing Redondo Beach Generating Station Units 5, 6, 7, and 8 boilers. The RBEP potential to emit are 121.5 tpy of NOx and 49.7 tpy of PM.

Visibility Assessment Results

Following the approach above, Table 2 summarizes the VISCREEN Tier I modeled results for each Class II area shown in Table 1. The maximum modeled values for ΔE and contrast are presented for inside the area analyzed, regardless of the VISCREEN modeled lines of sight for the observer.

TABLE 2

Tier I VISCREEN Results

Class II Area	Minimum Distance	Maximum Distance	Variable	Sky	Terrain	Criteria
Kenneth Hahn State Park	16.9	18.9	Delta E	1.011	**2.79**	2.0
			Contrast	0.01	0.018	|0.05|
Will Rogers State Park and Topanga State Park	24.6	34.7	Delta E	1.247	1.772	2.0
			Contrast	-0.013	0.013	|0.05|
Malibu Creek State Park and Malibu Lagoon State Park	33.2	43.6	Delta E	0.911	1.208	2.0
			Contrast	0.009	0.011	|0.05|

Bold Values exceed the Class I significant impact criteria.

As shown in Table 2, the results of the Tier I assessment demonstrate that the proposed RBEP would be below the significance criteria for both ΔE and contrast at Will Rogers State Park, Topanga State Park, Malibu Creek State Park, and Malibu Lagoon State Park. The Tier I assessment exceeded the criteria for ΔE at Kenneth Hahn State Park. As a result, a Tier II assessment was performed for the Kenneth Hahn State Park. The Tier II VISCREEN results are summarized in Table 3.

TABLE 3

Tier II RBEP VISCREEN Results for Kenneth Hahn State Park

Class II Area	Minimum Distance	Maximum Distance	Wind Speed [a]	Stability [a]	Variable	Sky	Terrain	Criteria
Kenneth Hahn State Park	16.9	18.9	5	E	Delta E	0.114	0.327	2.0
					Contrast	0.001	0.002	|0.05|

[a] The joint frequency distribution table used to calculate the wind speed and stability for the Tier II assessment is presented in Attachment A.

The VISCREEN Tier II assessment for Kenneth Hahn State Park did not exceed the criteria for ΔE or contrast. As the modeled results are below the conservative Class I area criteria for both ΔE and contrast, RBEP would not adversely affect visibility at nearby Class II Areas.

References

U.S. Environmental Protection Agency (EPA). 1992. *Workbook for Plume Visual Impact Screening and Analysis* (EPA-454/R-92-023). October.

Federal Land Managers (FLM). 2010. *Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report – Revised (2010), Natural Resource Report NPS/NRPC/NRR-2010/232*. October.

South Coast Air Quality Management District (AQMD). 2013. *AQMD Meteorological Data*. http://www.aqmd.gov/smog/metdata/ISCST3_Table1.html. Accessed June 17.

Interagency Monitoring of Protected Visual Environments (IMPROVE). 2013. *Visibility Monitoring Data, Results*. http://www2.nature.nps.gov/air/monitoring/vismonresults.cfm. Accessed June 15.

Attachment A

Kenneth Hahn State Park Joint Frequency Distribution for Tier II VISCREEN Assessment

Table A-1
Kenneth Hahn Joint Frequency Distribution

Dispersion Condition		σz·σy·u [a]	Transport Time	Count	Frequency	Cumulative
Stability	Wind Speed		(hours)	(hours) [b]		Frequency
F	1	2.46E+04	4.7	14	0.001598	0.001598
F	2	4.92E+04	2.3	20	0.002283	0.003881
E	1	6.55E+04	4.7	1	0.000114	0.003995
F	3	7.39E+04	1.6	16	0.001826	0.005822
F	4	9.86E+04	0.9	0	0	0.005822
E	2	1.31E+05	2.3	5	0.000571	0.006393
D	1	1.57E+05	4.7	5	0.000571	0.006963
E	3	1.97E+05	1.6	3	0.000342	0.007306
E	4	2.62E+05	1.2	10	0.001142	0.008447
D	2	3.14E+05	2.3	11	0.001256	0.009703
E	5	3.28E+05	0.9	7	0.000799	0.010502
D	3	4.72E+05	1.6	8	0.000913	0.011416
D	4	6.29E+05	1.2	7	0.000799	0.012215

[a] σz·σy·u is based on a distance of 16.9 km.

[b] Count is for hours during which winds blow toward the sector between 6 and 16 degrees from true north.

The highlighted row represents the top 1 percent of the data; the corresponding wind speed and stability were used for the Tier II analysis.