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AES Huntington Beach

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July 17, 2013

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

Subject: Huntington Beach Energy Project Permit Application (Facility ID# 115389)

Dear Mr. Nazemi:

AES Huntington Beach, LLC (AES-HB) is submitting this letter in response to the South Coast Air Quality Management District's (SCAQMD) June 7, 2013 request for a cumulative 1-hour nitrogen dioxide (NO_2) national ambient air quality impact assessment and a revised Class II visibility impact area analysis for the Huntington Beach Energy Project (HBEP). Attached is an addendum Air Dispersion Modeling Protocol for HBEP. This addendum presents an assessment of the available air dispersion modeling meteorological data sources and an assessment of the applicability of each source for use in the HBEP Prevention of Significant Deterioration (PSD) modeling assessment.

We have attempted to secure emissions and modeling data for the sources the SCAQMD has requested be included in the cumulative 1-hour NO_2 impact assessment through the SCAQMD's Public Records Request (PRR) process. However, we have been informed that source test reports, the best source of exhaust parameter data, are not covered by the PRR process. Therefore, during a recent telephone conversation, SCAQMD staff (Mr. Tom Chico and Ms. Jillian Baker) suggested we submit our proposed treatment of the emissions and exhaust parameters to the SCAQMD. Below is our proposed treatment of emissions and exhaust data collected for use in the 1-hour NO_2 cumulative impact assessment:

- Emergency equipment, operating less than 200 hours per year, will not be included in the cumulative 1-hour NO_2 impact assessment consistent with U.S. Environmental Protection Agency (EPA) guidance.
- Only equipment listed in the facility permits as operational (active) will be included in the analysis.
- Cumulative source exhaust stack flow rates will be determined from SCAQMD device forms (400-E forms) when appropriate. When exhaust stack flow rates are either unavailable or inconsistent with available data for similar equipment, the exhaust stack flow rates will be calculated using EPA Reference Method 19 and the maximum fuel heat input rates.

- If equipment-specific exhaust stack parameters are unavailable for a source (i.e., the Beta Offshore crane engines), then stack parameters for similar sized diesel-powered engines will be used.
- The SCREEN3 air dispersion model will be used to calculate the exhaust stack characteristics for the Beta Offshore facility's flare if these data are unavailable through the PRR process.
- Specific locations for emission sources are not always available. When source locations are not available, emissions will be modeled at the respective property centroid for each facility. For Beta Offshore, all sources will be placed on the Elly platform.

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

Sincerely,

S. O'Kane

Stephen O'Kane
Manager
AES Huntington Beach, LLC

Attachments

cc: Robert Mason/CH2M HILL
Jennifer Didlo/AES
Melissa Foster/Stoel Rives
Jerry Salamy/CH2M HILL
Felicia Miller/CEC

Modeling Protocol Addendum

Dispersion Modeling Protocol for the Huntington Beach Energy Project

Prepared for

AES Huntington Beach, LLC

21730 Newland Street
Huntington Beach, CA 92646

July 17, 2013

Submitted to

South Coast Air Quality Management District and the California Energy Commission

Prepared by

CH2MHILL

2485 Natomas Park Drive, Suite 600
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Addendum to the Air Dispersion Modeling Protocol

1.1 Introduction

AES Huntington Beach, LLC (AES) proposes to construct the Huntington Beach Energy Project (HBEP or project) at the existing AES Huntington Beach Generating Station site at 21730 Newland Street, Huntington Beach, California 92646. The HBEP will consist of two three-on-one combined-cycle power blocks with a net capacity of 939 megawatts. Each power block will consist of three Mitsubishi Power Systems Americas (MPSA) 501DA combustion turbines, one steam turbine, and an air cooled condenser. Each combustion turbine will be equipped with a heat recovery steam generator (HRSG) and will employ supplemental natural gas firing (duct firing). The turbines will use advanced combustion controls, dry low oxides of nitrogen (NOx) burners, and selective catalytic reduction to limit NOx emissions to 2 parts per million by volume (ppmv). Emissions of carbon monoxide (CO) and volatile organic compounds (VOC) will be limited to 2 ppmv and 1 ppmv, respectively, through the use of the advanced combustion controls, combined with the use of an oxidation catalyst. Good combustion practices and the use of pipeline-quality natural gas will minimize emissions of the remaining pollutants.

A prevention of significant deterioration (PSD) permit application was initially submitted to the South Coast Air Quality Management District (SCAQMD) on June 22, 2012 with the understanding that SCAQMD would forward copies of the permit application to U.S. Environmental Protection Agency (EPA) Region 9. The permit application did not include a complete 1-hour nitrogen dioxide (NO_2) modeling demonstration for comparison to the National Ambient Air Quality Standards (NAAQS). On July 24, 2012, the SCAQMD requested that AES submit a copy of the PSD permit application directly to EPA Region 9. AES submitted the PSD permit application to EPA Region 9 on September 22, 2012. However, on January 9, 2013, the SCAQMD became the agency responsible for issuance of GHG PSD permits for sources in the District (77 Fed. Reg. 73320 (December 10, 2012) and EPA Region 9 transferred the AES PSD permit application back to the SCAQMD on that same date The PSD permit application is currently under review by the SCAQMD; however, the project is required to demonstrate compliance with the 1-hour NO_2 NAAQS before the final PSD permit can be granted. Methodology for conducting the PSD permit modeling was submitted to the SCAQMD on March 22, 2013. AES is currently working with the SCAQMD to develop the competing source inventory based on the submitted methodology.

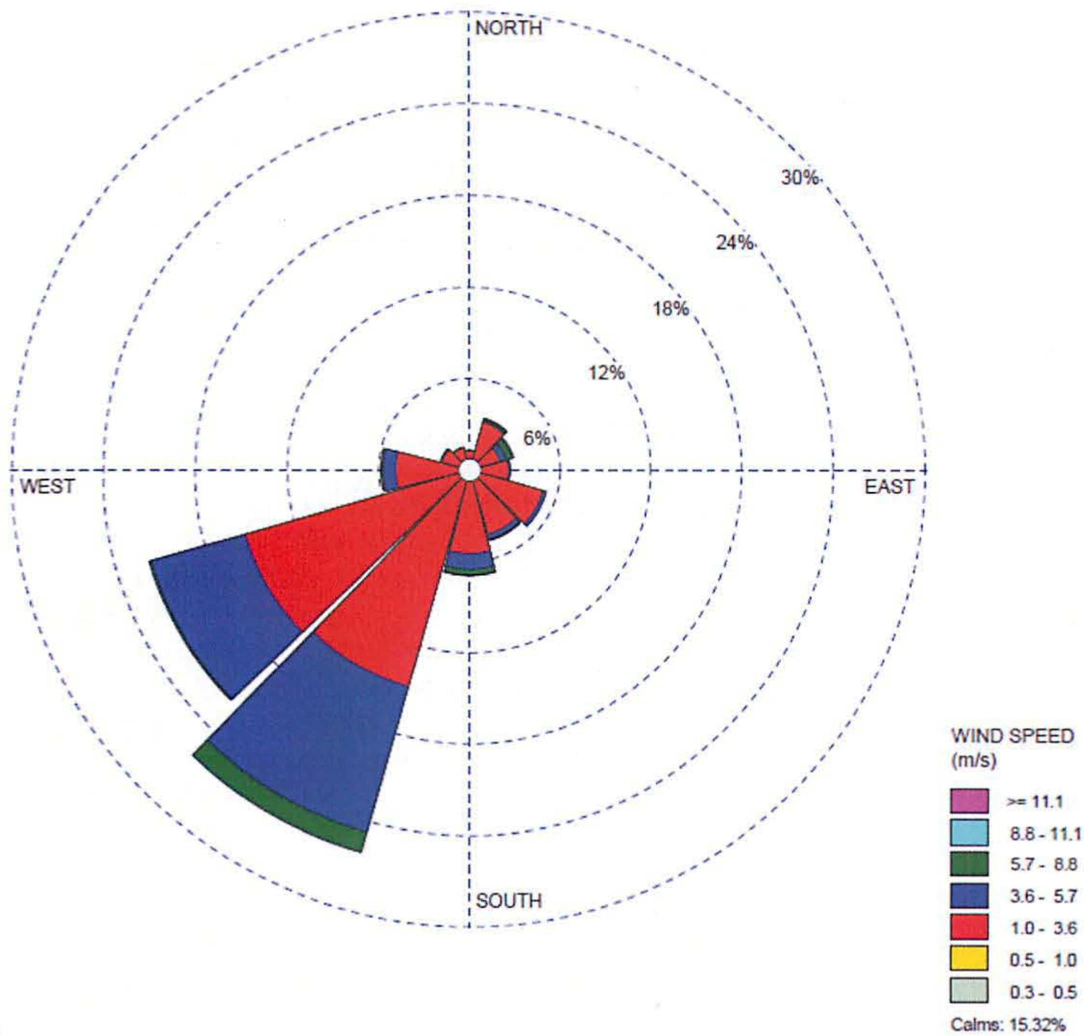
1.2 Purpose of the Protocol

This protocol addendum discusses the meteorological data to be used in evaluating the 1-hour NO_2 ambient air quality standard and is intended to augment the modeling methodology submitted to the SCAQMD on March 22, 2013. Based on the meteorological data evaluation attached with this protocol, AERMOD will be modeled with 5 years of integrated surface hourly (ISH) data collected at the John Wayne Airport meteorological monitoring station, owned and operated by the National Weather Service (NWS), in conjunction with the corresponding 1-minute automated surface observational system (ASOS) data.[1] This station was selected because the most recent 5 years of meteorological data are publicly available, the data have undergone a comprehensive quality assurance program administered by the NWS, the data are greater than 90-percent complete on a quarterly basis prior to data substitution, the wind rose is similar to expected winds for the coastal project location, and the surface characteristics surrounding the monitoring site are more representative than other nearby monitoring sites of the HBEP for the predominant wind directions. Five complete years of meteorological data collected from 2008 to 2012 were processed with the AERMET meteorological data preprocessor for use in the PSD permit modeling. Figure 1 below shows the 5-year wind rose for the John Wayne Airport station.

[1] Twice-daily National Climatic Data Center soundings from the San Diego Miramar National Weather Service station (Station #03190) will also be utilized in developing the AERMOD-ready meteorological data file.

FIGURE 1
John Wayne Airport 5-year Wind Rose

WIND ROSE PLOT:	DISPLAY:
NWS Meteorological Data **John Wayne Airport Meteorological Station**	**Wind Speed** **Direction (blowing from)**



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	Start Date: 1/1/2008 - 00:00 **End Date: 12/31/2012 - 15:00**	MODELER:	
	CALM WINDS: **15.32%**	TOTAL COUNT: **43489 hrs.**	
	AVG. WIND SPEED: **2.36 m/s**	DATE: **6/5/2013**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Attachment 1: Meteorological Data Evaluation

Representative Meteorological Data for the HBEP PSD Permit Modeling

PREPARED FOR: AES Southland Development, LLC

COPY TO: CH2M HILL Project Folder

PREPARED BY: John Frohning/CH2M HILL

DATE: July 17, 2013

AES Huntington Beach, LLC (AES) owns and operates the Huntington Beach Generating Station located in Huntington 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 Huntington Beach Energy Project (HBEP or project) would be one of the 28 major source categories defined in 40 Code of Federal Regulations (CFR) 51.166 and the modification would trigger prevention of significant deterioration (PSD) for the South Coast Air Basin attainment pollutants of oxides of nitrogen (NOx), volatile organic compounds (VOC), and greenhouse gases (GHG). Therefore, the project is required to conduct an ambient air quality dispersion modeling analysis to determine the project's impacts on both the national ambient air quality standards (NAAQS) and PSD Class II Increment standards (Increments) for NOx (no NAAQS or Increments exist for VOCs or GHGs).

The modeling procedures outlined in 40 CFR 51 Appendix W, *Guideline on Air Quality Models* (Guideline) (EPA, 2005), will be followed to determine the appropriate inputs to be used in the modeling analysis. A key piece of this analysis is the selection of the appropriate dispersion model utilized to characterize impacts. PSD dispersion modeling for the HBEP will use the U.S. Environmental Protection Agency (EPA) approved AERMOD dispersion modeling system. The AERMOD dispersion modeling system is comprised of three main components:

- AERMOD Dispersion Model (version 12345)
- AERMAP terrain data pre-processor (version 11059)
- AERMET meteorological data pre-processor (version 12345)

The meteorological data used in the analysis, and pre-processed by AERMET, is a critical component to the analysis. This memorandum summarizes the PSD-quality meteorological data criteria recommended by EPA for dispersion modeling, summarizes the available meteorological data collected in the vicinity of the proposed HBEP, and selects the appropriate meteorological data to be used for the AERMOD analysis. The proposed meteorological data for the analysis meets EPA recommendations for conducting an ambient air quality analysis with AERMOD for PSD permitting.

EPA Meteorological Data Selection

Section 8.3 in the Guideline outlines the criteria and recommendations for selecting representative meteorological data for regulatory modeling applications. The main criteria recommended by EPA to determine representativeness are listed and discussed below:

- Proximity of the meteorological monitoring station to the project site
- Complexity of terrain
- Exposure of the meteorological monitoring equipment
- Period of time during which data are collected
- For AERMOD modeling analyses, the surface characteristics surrounding the source and the meteorological monitoring station

The proximity of the meteorological monitoring station to the project site should also consider complex terrain in the area. That is, if a station is closer, it does not necessarily indicate that winds would be representative of the project site if major terrain features exist between the project site and the nearest meteorological monitoring station that may result in different wind flows.

Exposure of the meteorological monitoring equipment should be adequate to characterize the meteorology at the release height of the modeled source. The EPA *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA, 2000) is referenced in the Guideline and outlines the criteria and quality of meteorological data collection and validation for use in dispersion modeling analyses.

The time period of meteorological data recommended by EPA for regulatory modeling is at least a single year of on-site data or 5 years of representative off-site meteorological data. The Guideline specifically mentions that the most recent 5 years of National Weather Service (NWS) data should be used in dispersion modeling for off-site data sources. The monitoring guidance summarizes the meteorological data completeness requirements for dispersion modeling as 90 percent complete on a quarterly basis prior to data substitution (EPA, 2000).

The Guideline includes additional criteria for determining representativeness of meteorological data for use in AERMOD-based modeling assessments in order for AERMOD to construct realistic boundary layer profiles. This requires an additional analysis of the representativeness of surface characteristics around the meteorological monitoring station in comparison to the project site. This is similar to considering complex terrain when selecting a meteorological monitoring station. That is, the surface characteristics for the primary wind directions should be similar between the meteorological monitoring station and the source location. The *AERMOD Implementation Guide* (EPA, 2009) recommends a comparison of surface characteristics between the meteorological monitoring station and the source location.

The noontime albedo, daytime Bowen ratio, and surface roughness lengths are collectively known as surface characteristics. Surface characteristics can vary by season and region (sector) around the data collection site. The mid-day albedo is the fraction of total incident solar radiation reflected by the surface back to the atmosphere without absorption. The daytime Bowen ratio is an indicator of surface moisture, which is the ratio of the sensible heat flux to the latent heat flux. The Bowen ratio is used to determine the planetary boundary layer parameters for convective conditions. Surface roughness length is related to the height of obstacles to the wind flow and is the height at which the mean horizontal wind speed is zero. The AERMOD model uses the surface characteristics to define dispersion coefficients in the model. The *AERMOD Implementation Guide* outlines the procedures to calculate the surface characteristics based on the land cover around the site.

Additionally, the EPA has recently released guidance for using NWS data for AERMET (EPA, 2013). This guidance recommends that 1-minute automated surface observational system (ASOS) data be routinely used in the meteorological data processing for PSD permit modeling if the NWS station is considered representative of the project site. The final processed AERMET meteorological data using the 1-minute ASOS data in conjunction with the integrated surface hourly (ISH) data from the same meteorological data station should be greater than 90 percent complete by quarter (EPA, 2013)[1].

Meteorological monitoring stations which meet the criteria above as representative of the project site would be adequate for PSD permit dispersion modeling.

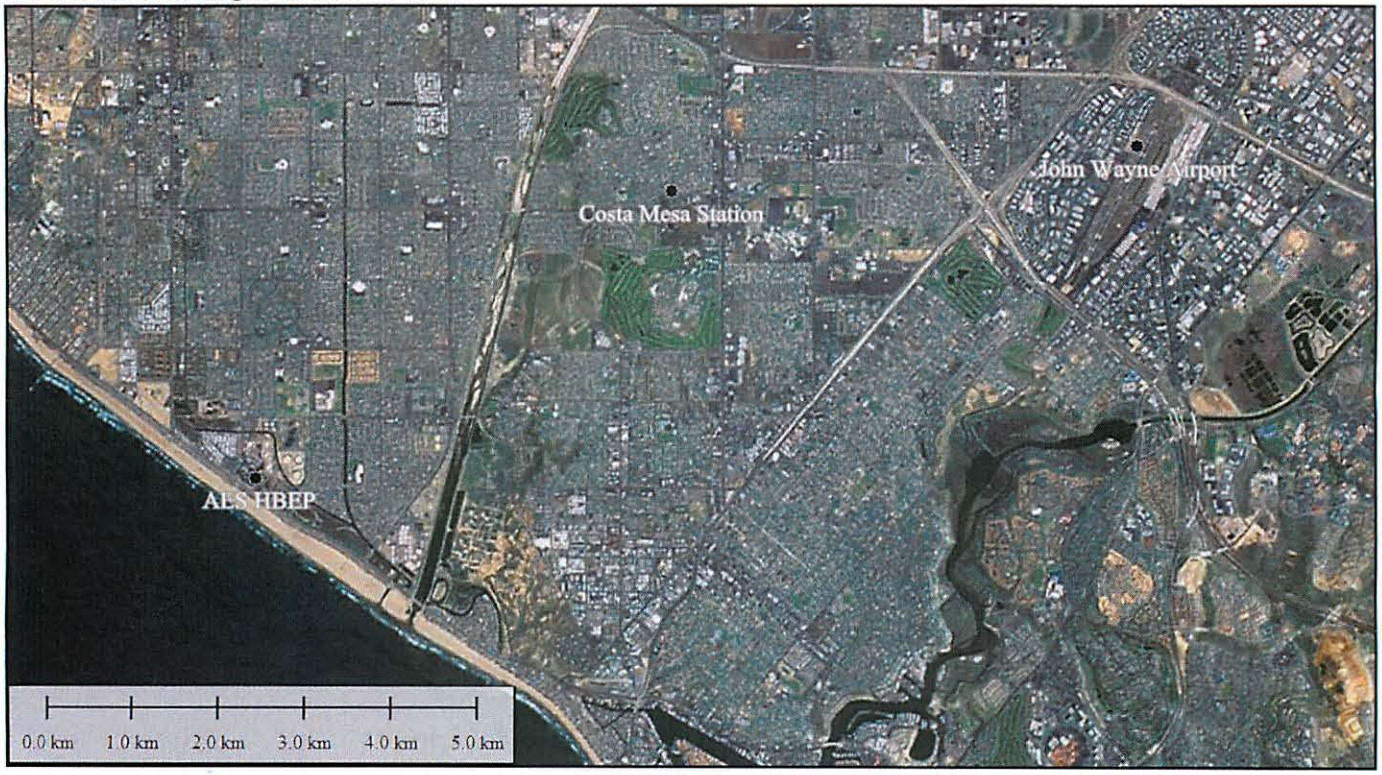
Available Meteorological Data Near HBEP

HBEP does not collect meteorological data onsite. Therefore, a search of meteorological monitoring stations within 15 kilometers (km) of the project site was conducted. The results of this search identified two stations with hourly meteorological data. These stations are the South Coast Air Quality Management District (SCAQMD) Costa Mesa meteorological monitoring station and the NWS John Wayne Airport meteorological monitoring station. The Costa Mesa meteorological monitoring station is located approximately 6 km northeast of the project site

[1] "Although the Guideline does not establish a minimum requirement on data completeness for NWS data, the 90 percent joint capture by quarter serves as a useful benchmark, and if NWS data completeness is less than 90 percent by quarter with the use of AERMINUTE, then the representativeness of the data may be suspect and alternative sources of meteorological data should be considered."

whereas the John Wayne Airport meteorological monitoring station is located 10.5 km northeast of the project site. Figure 1 shows the location of each meteorological monitoring station in relation to the HBEP.

FIGURE 1
Available Meteorological Data Near HBEP



The Costa Mesa meteorological data is available on the SCAQMD's website for download. The data has already been pre-processed with AERMET for years 2005 through 2009. Meteorological data at the John Wayne Airport is available as 1-minute ASOS data and hourly ISH format. The most recent 5 years of data are for 2008 through 2012 and are publicly available by the National Climatic Data Center (NCDC) in a default input format for AERMET. As mentioned above, for NWS data, EPA recommends that the 1-minute ASOS data be used in conjunction with the ISH data for PSD permit modeling. Data should be greater than 90 percent complete on a quarterly basis after the ISH data has been supplemented with the 1-minute ASOS data (EPA, 2013).

No complex terrain exists between HBEP and either of the meteorological monitoring stations and the predominant southwest winds observed at each site are similar. Figures 2 and 3 show the 5-year wind roses for Costa Mesa and John Wayne Airport meteorological monitoring stations, respectively.

FIGURE 2
Costa Mesa 5-Year Wind Rose

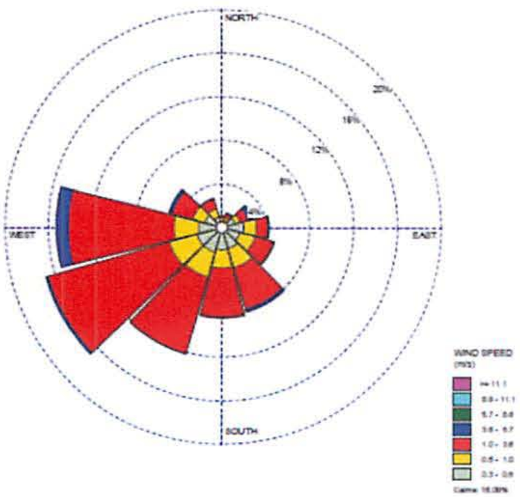
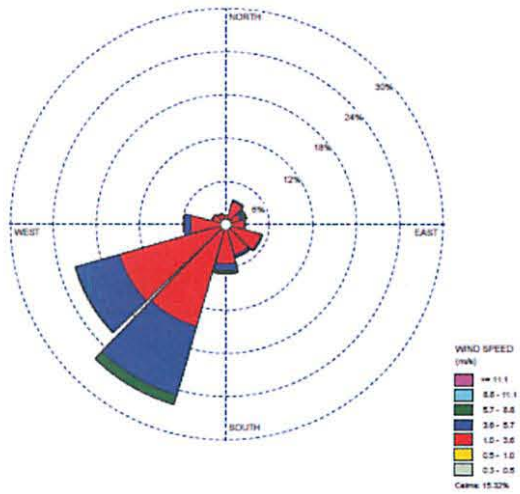


FIGURE 3
John Wayne Airport 5-Year Wind Rose



Tables 1 and 2 summarize the data completeness by quarter for Costa Mesa and John Wayne Airport meteorological monitoring stations, respectively. Tables 1 and 2 were generated using the final AERMET output. The Costa Mesa meteorological monitoring station AERMET processed files were supplied by the SCAQMD. The John Wayne Airport meteorological monitoring station AERMET processed files incorporated the ISH data in conjunction with the 1-minute ASOS data, as recommended by EPA guidance (EPA, 2013)[2].

TABLE 1
Costa Mesa Meteorological Data Completeness (Percent)

Quarter	**1**		**2**		**3**		**4**	
Year	**WS/WD**	**Temp**	**WS/WD**	**Temp**	**WS/WD**	**Temp**	**WS/WD**	**Temp**
2005	**89**	100	96	100	96	100	93	100
2006	**89**	100	95	100	93	100	**87**	100
2007	92	100	100	100	99	100	92	100
2008	97	100	100	100	100	100	99	100
2009	99	99	99	100	100	91	99	97

Bold values do not meet the EPA data completeness requirement
WS/WD: Wind Speed/Wind Direction
Temp: Temperature

[2] Twice-daily National Climatic Data Center soundings from the San Diego Miramar National Weather Service station (Station #03190) was also utilized in developing the AERMET processed meteorological data files. This same upper air station was used by the SCAQMD to process the Costa Mesa meteorological data and is considered appropriate for use at the HBEP site.

TABLE 2
John Wayne Airport Meteorological Data Completeness (Percent)

Quarter	1		2		3		4	
Year	WS/WD	Temp	WS/WD	Temp	WS/WD	Temp	WS/WD	Temp
2008	99	97	100	99	99	99	99	100
2009	99	99	98	98	100	100	99	99
2010	99	100	99	100	99	99	100	99
2011	100	100	98	99	100	100	100	100
2012	99	100	100	100	100	100	100	100

WS/WD: Wind Speed/Wind Direction
Temp: Temperature

The quarterly data completeness tables demonstrate that the Costa Mesa meteorological data do not meet the 90-percent completeness criteria by quarter for PSD permitting. The John Wayne Airport ISH meteorological data, with the inclusion of 1-minute ASOS data, do meet the minimum requirement of 90-percent data completeness, as recommended by EPA guidance (EPA, 2013).

Representativeness to HBEP

Both the Costa Mesa meteorological monitoring station and the John Wayne Airport meteorological monitoring station are near HBEP and no complex terrain features occur between the project site and either station. Figures 2 and 3 above demonstrate that the winds are similar between the two meteorological monitoring stations and are representative of the HBEP site due to its location on the California coastline, as shown in Figure 1.

The AERMOD modeling system will be used to characterize the impacts from the project against the NAAQS and Increments. As mentioned above, EPA recommends that the surface characteristics be similar between the project site and the meteorological monitoring station when using the AERMOD modeling system. The EPA AERSURFACE program is used to determine the surface characteristics surrounding modeled sources and the meteorological monitoring stations.

The AERSURFACE program was developed by EPA to assist in the selection of surface characteristics surrounding meteorological monitoring stations. AERSURFACE uses a user-defined coordinate and United States Geological Survey (USGS) land use and land classification (NLCD) data to output the appropriate surface characteristics for noon-time albedo, daytime Bowen Ratio, and surface roughness lengths following EPA guidance (EPA, 2009). The AERSURFACE output is then used in AERMET to assist in the calculation of the boundary layer profiles.

The AERSURFACE program was run for HBEP, the Costa Mesa meteorological monitoring station, and the John Wayne Airport meteorological monitoring station. Twelve 30-degree sectors surrounding the locations were used as criteria for calculating surface roughness. Noon-time albedo and daytime Bowen ratio calculations in AERSURFACE use the default 10 km-by-10 km survey surrounding the specified coordinate. The default seasonal months without continuous snow cover during winter was assumed. AERSURFACE also uses the default 1-km downwind distance and user-entered sectors for determining surface roughness lengths. Table 3 summarizes the AERSURFACE output surface roughness lengths at each location. Table 4 summarizes the noon-time albedo and daytime Bowen ratios.

TABLE 3

AERSURFACE Surface Roughness

Season	Sector (degrees)	HBEP	CSTA	John W.
Winter	1 (0-30)	0.298	0.375	0.119
	2 (30-60)	0.311	0.514	0.095
	3 (60-90)	0.28	0.441	0.111
	4 (90-120)	0.162	0.386	0.129
	5 (120-150)	0.275	0.407	0.099
	6 (150-180)	0.026	0.34	0.108
	7 (180-210)	0.007	0.209	0.098
	8 (210-240)	0.009	0.22	0.105
	9 (240-270)	0.013	0.258	0.149
	10 (270-300)	0.183	0.261	0.128
	11 (300-330)	0.479	0.29	0.144
	12 (330-360)	0.403	0.389	0.138
Spring	1 (0-30)	0.352	0.459	0.151
	2 (30-60)	0.358	0.578	0.132
	3 (60-90)	0.331	0.516	0.119
	4 (90-120)	0.19	0.453	0.138
	5 (120-150)	0.292	0.464	0.115
	6 (150-180)	0.027	0.403	0.115
	7 (180-210)	0.007	0.251	0.123
	8 (210-240)	0.009	0.265	0.112
	9 (240-270)	0.013	0.32	0.158
	10 (270-300)	0.191	0.338	0.141
	11 (300-330)	0.5	0.364	0.171
	12 (330-360)	0.446	0.474	0.158
Summer	1 (0-30)	0.381	0.469	0.163
	2 (30-60)	0.377	0.583	0.148
	3 (60-90)	0.36	0.527	0.123
	4 (90-120)	0.202	0.466	0.143
	5 (120-150)	0.294	0.483	0.122
	6 (150-180)	0.027	0.434	0.118
	7 (180-210)	0.007	0.296	0.135
	8 (210-240)	0.009	0.288	0.116
	9 (240-270)	0.014	0.345	0.158
	10 (270-300)	0.193	0.357	0.142
	11 (300-330)	0.503	0.377	0.176

	12 (330-360)	0.462	0.48	0.162
Autumn	1 (0-30)	0.376	0.463	0.163
	2 (30-60)	0.374	0.58	0.148
	3 (60-90)	0.357	0.523	0.123
	4 (90-120)	0.199	0.464	0.143
	5 (120-150)	0.294	0.483	0.122
	6 (150-180)	0.027	0.432	0.118
	7 (180-210)	0.007	0.288	0.135
	8 (210-240)	0.009	0.276	0.116
	9 (240-270)	0.014	0.332	0.158
	10 (270-300)	0.193	0.347	0.142
	11 (300-330)	0.503	0.369	0.175
	12 (330-360)	0.461	0.478	0.162

CSTA: Costa Mesa Monitoring Station Location
John W.: John Wayne Airport Monitoring Station Location
Sectors define 30-degree segments around the location starting at true north.
Values are in meters (m).

TABLE 4
AERSURFACE Bowen Ratio and Albedo Output

Bowen Ratio

Season	HBEP	CSTA	John W.
Winter	0.38	1.12	1.15
Spring	0.33	0.88	0.9
Summer	0.34	0.91	0.92
Autumn	0.38	1.12	1.15

Noon-time Albedo

Season	HBEP	CSTA	John W.
Winter	0.14	0.18	0.18
Spring	0.14	0.17	0.17
Summer	0.14	0.17	0.17
Autumn	0.14	0.18	0.18

CSTA: Costa Mesa Monitoring Station Location
John W.: John Wayne Airport Monitoring Station Location

The noon-time Albedo and daytime Bowen ratios do vary slightly for both the Costa Mesa meteorological monitoring station location and the John Wayne Airport meteorological monitoring station location compared to the HBEP. However, the AERMOD model-predicted concentrations are not as sensitive to these parameters for buoyant source types at HBEP (Wesson, 2005). Therefore, these small differences for noon-time Albedo and daytime Bowen ratios between the HBEP and the meteorological monitoring station locations would have little influence on the AERMOD model results for HBEP. However, the AERMOD model is more sensitive to the surface roughness lengths.

Although the surface roughness lengths appear to vary between the three locations, the primary wind directions are from the southwest. That corresponds to wind directions from the segment between 180 degrees and 270 degrees. These southwest winds correspond to sector 7, sector 8, and sector 9 in the AERSURFACE surface roughness length output. HBEP is located on the coast where the southwest sector could be characterized by open water with a low surface roughness. The John Wayne Airport meteorological monitoring station is located near an airport runway which is oriented southwest to northeast. This orientation of the runway has open ground and a low surface roughness associated with the runway land use type for winds blowing from the southwest. The Costa Mesa meteorological monitoring station is located in an area surrounded by residential houses and low-lying commercial land use types. Theses land use types are associated with higher surface roughness lengths for the southwest sectors.

Given that the AERMOD model is sensitive to surface roughness, the John Wayne Airport meteorological monitoring station, which is sited to have similar land use types with corresponding similar surface roughness parameters, would be more representative of the surface characteristics at the HBEP site than the Costa Mesa meteorological monitoring station.

Selection of Meteorological Data for PSD Dispersion Modeling of the HBEP

Based on the analysis of the SCAQMD Costa Mesa pre-processed AERMET data and the John Wayne Airport meteorological data with the inclusion of the 1-minute ASOS data, the John Wayne Airport meteorological data would be representative of the HBEP site. This is because the most recent 5 years of meteorological data are publicly available, the data have undergone a comprehensive quality assurance program administered by the NWS, the data are greater than 90-percent complete on a quarterly basis prior to data substitution, the wind rose is similar to expected winds for the coastal project location, and the surface characteristics surrounding the monitoring site are more representative than other nearby monitoring sites of the HBEP for the predominant wind directions. Therefore, the John Wayne Airport meteorological data processed with AERMET, and the inclusion of the 1-minute ASOS data with AERMINUTE, would be adequate for PSD permit modeling of the HBEP.

In addition, the surface characteristics used to process the John Wayne Airport meteorological data may result in more conservative short term concentrations as a result of the smaller roughness lengths compared to the Costa Mesa meteorological monitoring station. The smaller roughness length in the processed data would result in less turbulent conditions. The less turbulent conditions would not allow the plume to disperse as quickly, thus resulting in possible higher impacts.

References

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