5.1 Air Quality

This section describes and evaluates the air quality effects of the Huntington Beach Energy Project (HBEP). Section 5.1.2 provides an overview of the project related to air quality. Section 5.1.3 provides an overview of the existing air quality settings. Section 5.1.4 provides an overview of air quality standards. Section 5.1.5 presents information on the existing air quality in the region and in the general area of the project. Section 5.1.6 provides the project's environmental analysis related to air quality, the emission estimates for the facility, and the methodology used to determine the potential air quality impacts associated with the construction, commissioning, and operation of the HBEP. Section 5.1.7 evaluates any potential cumulative effects to air quality, and Section 5.1.8 addresses proposed mitigation measures that would avoid or minimize any adverse impacts. Section 5.1.9 describes the laws, ordinances, regulations, and standards (LORS) that apply to the project, and Section 5.1.10 presents agencies and agencies contacts. Section 5.1.11 identifies the permits and permit schedule related to air quality, and Section 5.1.12 contains the references used to prepare this section. Potential public health risks posed by emissions of toxic air contaminants, including ammonia, are addressed in Section 5.9, Public Health.

5.1.1 Setting

The HBEP site is located in an industrial area of Huntington Beach at 21730 Newland Street, just north of the intersection of the Pacific Coast Highway (Highway 1) and Newland Street. The project will be located within the existing Huntington Beach Generating Station, an operating power plant. The HBEP site is bounded on the west by a manufactured home/recreational vehicle park, on the north by a tank farm, on the north and east by the Huntington Beach Channel and residential areas, on the southeast by the Huntington Beach Wetland Preserve / Magnolia Marsh wetlands, and to the south and southwest by the Huntington Beach State Park and the Pacific Ocean. The site is located on a gently sloping coastal plain.

HBEP is a 939-megawatt combined-cycle power plant, consisting of two power blocks. Each power block is composed of three combustion turbines with supplemental fired heat recovery steam generators (HRSG), a steam turbine generator (STG), an air-cooled condenser, and ancillary facilities. HBEP will reuse existing onsite potable water, natural gas, stormwater, process wastewater, and sanitary pipelines and electrical transmission facilities. No offsite linear developments are proposed as part of the project.

The project will use potable water, provided by the City of Huntington Beach, for construction and operational process and sanitary uses. During operation, stormwater and process wastewater will be discharged to a retention basin and then ultimately to the Pacific Ocean via an existing outfall. Sanitary wastewater will be conveyed to the Orange County Sanitation District via the existing City of Huntington Beach sewer connection. Two 230-kilovolt (kV) transmission interconnections will connect HBEP Power Blocks 1 and 2 to the existing onsite Southern California Edison 230-kV switchyard.

HBEP construction will require the removal of the existing Huntington Beach Generating Station Units 1, 2, and 5. Demolition of Unit 5, scheduled to occur between the fourth quarter of 2014 and the end of 2015, will provide the space for the construction of HBEP Block 1. Construction of Blocks 1 and 2 are each expected to take approximately 42 and 30 months, respectively, with Block 1 construction scheduled to occur from the first quarter of 2015 through the second quarter of 2018, and Block 2 construction scheduled to occur from the first quarter of 2018 through the second quarter of 2020. Removal/demolition of existing Huntington Beach Generating Station Units 1 and 2 is scheduled to occur from the fourth quarter of 2020 through the third quarter of 2022.

Existing Huntington Beach Generating Station Units 3 and 4 were licensed through the California Energy Commission (CEC) (00-AFC-13C) and demolition of these units is authorized under that license and will proceed irrespective of the HBEP. Therefore, demolition of existing Huntington Beach Generating Station Units 3 and 4 is not part of the HBEP project definition. However, to ensure a comprehensive review of potential project impacts, the demolition of existing Huntington Beach Generating Station Units 3 and 4 is included in the cumulative impact assessment. Removal/demolition of existing Huntington Beach Generating Station Units 3 and 4 will be in advance of the construction of HBEP Block 2.

HBEP construction will require both onsite and offsite laydown and construction parking areas. Approximately 22 acres of construction laydown will be required, with approximately 6 acres at the Huntington Beach Generating Station used for a combination of laydown and construction parking, and 16 acres at the AES Alamitos Generating Station (AGS) used for construction laydown (component storage only/no assembly of components at AGS). During HBEP construction, the large components will be hauled from the construction laydown area at the AGS site to the HBEP site as they are ready for installation.

Construction worker parking for HBEP and the demolition of the existing units at the Huntington Beach Generating Station will be provided by a combination of onsite and offsite parking. A maximum of 330 parking spaces will be required during construction and demolition activities. As shown on Figure 2.3-3 in Section 2.0, Project Description, construction/demolition worker parking will be provided at the following locations:

- Approximately 1.5 acres onsite at the Huntington Beach Generating Station (approximately 130 parking stalls)
- Approximately 3 acres of existing paved/graveled parking located adjacent to HBEP across Newland Street (approximately 300 parking stalls)
- Approximately 2.5 acres of existing paved parking located at the corner of Pacific Coast Highway and Beach Boulevard (approximately 215 parking stalls)
- 225 parking stalls at the City of Huntington Beach shore parking west of the project site.
- Approximately 1.9 acres at the Plains All American Tank Farm located on Magnolia Street (approximately 170 parking stalls)

5.1.2 Project Overview as it Relates to Air Quality

HBEP will consist of two three-on-one combined-cycle power blocks with a net capacity of 939 MW. Each power block will consist of three Mitsubishi Power Systems Americas (MPSA) 501DA combustion turbine generators (CTG), one steam turbine, and an air cooled condenser. Each combustion turbine will be equipped with an HRSG and will employ supplemental natural gas firing (duct firing). The turbines will use dry low NO_x (oxides of nitrogen) burners, and selective catalytic reduction (SCR) to limit NO_x emissions to 2 parts per million by volume (ppmv). Emissions of carbon monoxide (CO) will be limited to 2 ppmv and volatile organic compounds (VOC) to 1 ppmv through the use of good combustion practices and the use of an oxidation catalyst. Best combustion practices and burning pipeline-quality natural gas will minimize emissions of the remaining pollutants.

HBEP will retain the use of the two existing 275-horsepower diesel-fired emergency fire water pumps installed during the existing Huntington Beach Generating Station's Units 3 and 4 retooling project in 2001. Because the fire water pumps have been permitted by the South Coast Air Quality Management District (SCAQMD) and are considered part of the existing background conditions, the emergency fire pump engines have not been included in this analysis.

The existing Huntington Beach Generating Station consists of five electrical generating air emission units. Existing Units 1 and 2 are currently in operation but will be removed as part of the HBEP. Existing Units 3 and 4 were no longer under contract to generate electricity as of January 1, 2012, and AES had planned to permanently decommission these units as part of the development of the Walnut Creek Energy Center (05-AFC-02). Unit 5 is a peaker unit that was decommissioned as part of the AES Units 3 and 4 retooling process licensed by the CEC in 2001. Therefore, the only electrical generating emission units currently generating electricity as part of the existing Huntington Beach Generating Station are Units 1 and 2. Because existing Units 1 and 2 will be retired and removed as part of the project, the maximum 2 year historical past actual emissions from these two units between calendar years 2007 and 2011 were subtracted from the criteria pollutant and greenhouse gas (GHG) potential to emit (PTE) emissions for HBEP. However, it is expected that AES will continue to operate existing Units 1 and 2 through the commissioning of HBEP Block 2.

The ability to meet the project's objectives is also contingent on the use of the offset exemption contained in SCAQMD's Rule 1304(a)(2). Rule 1304 allows the replacement of older, less efficient electric utility steam boilers with specific new generation technologies on a megawatt-to-megawatt basis (that is, the replacement megawatts are equal or less than the megawatts from the electric utility steam boilers).

5.1.3 Existing Site Conditions

The HBEP will be constructed entirely within the existing Huntington Beach Generating Station site. The HBEP site is bounded to the west by a recreational vehicle park and manufactured home park; to the north by a tank farm, the proposed Poseidon desalination plant (located on a portion of Huntington Beach Generating Station that the Property Owner has leased to Poseidon) and the Huntington Beach Channel (a facility operated by the Orange County Flood Control District); to the southeast by wetlands and the Plains All American Tank Farm, and to the south and southwest by the Pacific Coast Highway, Huntington State Beach, and the Pacific Ocean. The project site is located within the city limits of Huntington Beach at 21730 Newland Street.

5.1.3.1 Geography and Topography

The existing Huntington Beach Generating Station is located approximately 1.5 miles southeast of downtown Huntington Beach in flat terrain near the Pacific Ocean. The project site is at an elevation of approximately 10 to 14 feet above sea level. The area surrounding the project site is categorized as medium density residential by the SCAQMD. The nearest complex terrain (terrain exceeding stack height) in relation to the proposed project is located in the San Joaquin Hills, approximately 5.5 miles (or approximately 9 kilometers [km]) to the east and southeast. The nearest Class I areas are the San Gabriel Wilderness and the Cucamonga Wilderness, which are approximately 43 miles (~70 km) north of the HBEP site.

5.1.3.2 Climate and Meteorology

The climate of the South Coast Air Basin is determined by its terrain and geographical location. The basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter. The general region lies in the semi-permanent high pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. (SCAQMD, 1993)

The annual average temperature varies little throughout the 6,600-square-mile Basin, averaging 62 degrees Fahrenheit (°F). However, with a less pronounced oceanic influence, the eastern portion shows greater variability in annual minimum and maximum temperatures. Practically all of the annual rainfall in the Basin falls during the November-April period. Summer rainfall normally is restricted to widely scattered thundershowers near the coast and slightly heavier shower activity in the east and over the mountains. Annual average rainfall varies from 9 inches in Riverside to 14 inches in downtown Los Angeles, but higher amounts are measured at foothill locations. Monthly and yearly rainfall totals are extremely variable. Rainy days vary from 5 to 10 percent of all days in the Basin, the frequency of such days being higher near the coast. Except for infrequent periods when dry, continental air is brought into the Basin by off-shore winds, the ocean effect is dominant. Periods with heavy fog are frequent; and low stratus clouds, sometimes referred to as "high fog" are a characteristic climate feature. Annual average relative humidity is 70 percent at the coast and 57 percent in the eastern part of the Basin. (SCAQMD, 1993)

Long-term average temperature and precipitation data have been collected from two surface climatological stations near HBEP (the Long Beach and Newport Beach COOP sites). The data indicate the normal daily maximum temperatures are relatively consistent throughout the year, with average daily maximum temperatures ranging from 63 to 84°F, and a normal daily minimum ranging from 45 to 63°F (WRCC, 2012). The Long Beach location receives an average of 12.0 inches of rain annually and the Newport Beach location receives an average of 11.0 inches (WRCC, 2012).

Atmospheric stability and mixing heights are important parameters in the determination of pollutant dispersion. Atmospheric stability reflects the amount of atmospheric turbulence and mixing. In general, the less stable an atmosphere, the greater the turbulence, which results in more mixing and better dispersion. The mixing height, measured from the ground upward, is the height of the atmospheric layer in which convection and mechanical turbulence promote mixing. Good ventilation results from a high mixing height and at least moderate wind speeds within the mixing layer.

With very light average wind speeds, the Basin's atmosphere has a limited capability to disperse air contaminants horizontally. Downtown Los Angeles wind speeds average 5.7 miles per hour with little seasonal variation. Summer wind speeds average slightly higher than winter wind speeds. Inland areas record slightly lower wind speeds than downtown Los Angeles, while coastal wind speeds average about 2 miles per hour higher than downtown Los Angeles. The dominant daily wind pattern is a daytime sea breeze and a nighttime land breeze. This regime is broken only by occasional winter storms and infrequent strong northeasterly Santa Ana flows from the mountains and deserts north of the Basin (SCAQMD, 1993).

Along the southern California coast, surface air temperatures are relatively cool. The resultant shallow layer of cool air at the surface, coupled with warm, dry, subsiding air from aloft produces early morning inversions on approximately 87 percent of the days of the year. The Basin-wide average occurrence of inversions at the ground surface is 11 days per month; the averages vary from 2 days in June to 22 days in December and January. Higher inversions, but less than 2,500 feet above sea level, occur 22 days each month; occurring on an average of 25 days in June/July to 4 days in December and January. Restricted maximum mixing heights, 3,500 feet above sea level or less, average 191 days each year. The potential for high concentrations varies seasonally for many contaminants. During late spring, summer, and early fall, light winds, low mixing heights, and brilliant sunshine combine to produce conditions favorable for the maximum production of photochemical oxidants, mainly ozone. During the spring and summer, when fairly deep marine layers are frequently found in the Basin, sulfate concentrations are at their peak. (SCAQMD, 1993)

5.1.4 Overview of Air Quality Standards

The U.S. Environmental Protection Agency (EPA) has established national ambient air quality standards (NAAQS) for the following seven pollutants, termed criteria pollutants: ozone, nitrogen dioxide (NO_2), CO, sulfur dioxide (SO_2), particulate matter with aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and airborne lead. The federal Clean Air Act (CAA) requires EPA to designate areas (counties) as attainment or non-attainment with respect to each criteria pollutant, depending on whether the areas meet the NAAQS. An area that is designated non-attainment means the area is not meeting the NAAQS and is subject to planning requirements to attain the standard.

In addition to the seven pollutants listed above, the California Air Resources Board (ARB) has established state standards for visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. Similar to EPA, ARB designates counties in California as attainment or non-attainment with respect to the California ambient air quality standards (CAAQS). The state standards were designed to protect the most sensitive members of the population, such as children, the elderly, and people who suffer from lung or heart diseases.

Both state and federal air quality standards are based on two variables: maximum concentration and an averaging time over which the concentration would be measured. Maximum concentrations were based on levels that may have an adverse effect on human health. The averaging times were based on whether the damage caused by the pollutant would occur during exposures to a high concentration for a short time (for example, 1 hour), or to a relatively lower average concentration over a longer period (8 hours, 24 hours, or 1 month). For some pollutants, there is more than one air quality standard, reflecting both short-term and long-term effects. Table 5.1-1 presents the NAAQS and CAAQS.

TABLE 5.1-1
Ambient Air Quality Standards

Pollutant	Averaging Time	California	National
Ozone	1-hour 8 hour	0.09 ppm (180 μg/m^3) 0.07 ppm (137 μg/m^3)	— 0.075 ppm (147 μg/m^3)
CO	1-hour 8-hour	20 ppm (23 mg/m^3) 9.0 ppm (10 mg/m^3)	35 ppm (40 mg/m^3) 9 ppm (10 mg/m^3)
NO_2	1-hour Annual arithmetic mean	0.18 ppm (339 μg/m^3) 0.030 (57 μg/m^3)	100 ppb (188 μg/m^3) [a] 53 ppb (100 μg/m^3)
SO_2 [b]	1-hour 3-hour (secondary standard) 24-hour	0.25 ppm (655 μg/m^3) — 0.04 ppm (105 μg/m^3)	75 ppb (196 μg/m^3) 0.5 ppm (1,300 μg/m^3) —
PM_{10}	24-hour Annual arithmetic mean	50 μg/m^3 20 μg/m^3	150 μg/m^3 —
$PM_{2.5}$	24-hour Annual arithmetic mean	— 12 μg/m^3	35 μg/m^3 [c] 15.0 μg/m^3 [d]
Sulfates	24-hour	25 μg/m^3	—
Lead	30-day average Calendar quarter	1.5 μg/m^3 —	— 1.5 μg/m^3
Hydrogen sulfide (H_2S)	1- hour	0.03 ppm (42 μg/m^3)	—
Vinyl chloride	24-hour	0.010 ppm (26 μg/m^3)	—
Visibility-reducing particles	8-hour (10 a.m. to 6 p.m. PST)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.	—

[a] To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb.
[b] On June 2, 2010, EPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The EPA also revoked both the 24-hour SO_2 standard of 0.14 ppm and the annual primary SO_2 standard of 0.030 ppm, effective August 23, 2010. The secondary SO_2 standard was not revised at that time; however, the secondary standard is undergoing a separate review by EPA.
[c] The 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.
[d] 3-year average of the weighted annual mean concentrations.

μg/m^3 = microgram(s) per cubic meter
ppm = parts per million

Source: ARB, 2012a

5.1.5 Existing Air Quality

The federal CAA requires EPA to classify areas in the country as attainment or non-attainment, with respect to each criteria pollutant, depending on whether they meet the national standards. In addition, ARB makes area designations within California for state ambient air quality standards (AAQS). The attainment status for both the NAAQS and CAAQS are listed in Table 5.1-2.

TABLE 5.1-2
State and Federal Air Quality Designations for Orange County, California

Pollutant	State Designation	Federal Designation
Ozone	1-Hour: Non-attainment (Extreme) 8-Hour: Non-attainment	1-Hour: N/A 8-Hour: Non-attainment
CO	1-Hour: Attainment 8-Hour: Attainment	1-Hour: Attainment 8-Hour: Attainment
NO_2	1-Hour: Non-attainment Annual: Non-attainment	1-Hour: Attainment Annual: Attainment
SO_2	1-Hour: Attainment 24-Hour: Attainment	1-Hour: Attainment 24-Hour: N/A
PM_{10}	24-Hour: Non-attainment Annual: Non-attainment	24-Hour: Non-attainment Annual: N/A
$PM_{2.5}$	24-Hour: N/A Annual: Non-attainment	24-Hour: Non-attainment Annual: Non-attainment
Lead, H_2S, and Sulfates	Attainment, Unclassified, Attainment	Attainment, No federal standard, No federal standard

Source: ARB, 2011; EPA, 2011.

H_2S = hydrogen sulfide
N/A = not applicable

According to Appendix B (g)(8)(G) of the CEC data adequacy checklist, the ambient concentrations of all criteria pollutants for the previous 3 years as measured at the three ARB-certified monitoring stations closest to the project site, along with an analysis of whether this data is representative of conditions at the project site, is required. The applicant may also substitute an explanation as to why information from one, two, or all stations is either not available or unnecessary.

The three closest ARB-certified monitoring sites relative to the HBEP site are located approximately 3.5 miles northeast of the project site in Costa Mesa, California (Orange County); approximately 13 miles to the north of the project site in Anaheim, California (Orange County); and 15 miles to the northwest of the project site in (South) Long Beach, California (Los Angeles County). The Mission Viejo and Long Beach monitoring stations are also ARB-certified monitoring sites located near the project site. The Mission Viejo monitoring station is approximately 17 miles to the southeast of the project site in Orange County, and the Long Beach monitoring station is approximately 17 miles to the northwest of the project site in Los Angeles County.

Table 5.1-3 lists the pollutants monitored at each of the monitoring stations. A discussion of the representativeness of each individual station is included in Section 5.1.6.3.

The ambient air quality data are based on data published by ARB (ADAM Web site), SCAQMD (SCAQMD Web site) and EPA (AIRS Web site). The SCAQMD data summaries were used as the primary source of data and the ARB and EPA AIRS database summaries were used when data were unavailable on the SCAQMD Web site. The maximum ambient background concentrations will be combined with the modeled concentrations and used for comparison to the AAQS.

TABLE 5.1-3
Summary of the Nearest Monitoring Stations and the Pollutants Monitored at Each Station

Monitoring Location	Ozone	NO_2	CO	SO_2	PM_{10}	$PM_{2.5}$
North Coastal Orange County (Costa Mesa)	X	X	X	X	NA	NA
Saddleback Valley (Mission Viejo)	X	NA	X	NA	X	X
Central Orange County (Anaheim)	X	X	X	NA	X	X
South Coastal Los Angeles County 1 (Long Beach)	X	X	X	X	X	X
South Coastal Los Angeles County 2 (South Long Beach)	NA	NA	NA	NA	X	X

NA = pollutant was not monitored at this location
X = pollutant monitored at this location

5.1.5.1 Nitrogen Dioxide

NO_2 is a byproduct of combustion sources such as on-road and off-road motor vehicles or stationary fuel-combustion sources. The principle form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts quickly to form NO_2, creating a mixture of NO and NO_2 commonly called NO_x (SCAQMD, 1993). Exposures to NO_2, along with pollutants from vehicle exhaust, are associated with respiratory symptoms, episodes of respiratory illness, and impaired lung function (ARB, 2012b). The South Coast Air Basin is currently designated attainment status for NO_2 by EPA and non-attainment status by ARB.

As shown in Table 5.1-4, NO_2 concentrations measured at the three nearest stations have not exceeded either the state or federal standards for the previous 3 years.

TABLE 5.1-4
Background NO_2 Concentrations (μg/m^3)

Station	Averaging Time	CAAQS/NAAQS	2008	2009	2010
North Coastal Orange County (Costa Mesa)	1-hour (max)	339/—	152.4	122.3	131.7
	1-hour (98th percentile)	—/188	120.4	107.2	105.4
	Annual*	57/100	24.8	24.5	21.3
Central Orange County (Anaheim)	1-hour (max)	339/—	175.0	127.9	137.9
	1-hour (98th percentile)	—/188	137.3	116.6	115.0
	Annual*	57/100	38.2	33.7	32.9
South Coastal LA County 1 (Long Beach)	1-hour (max)	339/—	235.2	208.8	174.6
	1-hour (98th percentile)	—/188	165.6	131.7	132.1
	Annual*	57/100	39.1	39.9	37.3

*Annual Arithmetic Mean

Source: SCAQMD, 2012a; ARB, 2012b; and EPA, 2012

5.1.5.2 Ozone

Ozone is a photochemical oxidant that is formed when VOCs and NO_x react in the presence of ultraviolet sunlight. The principal sources of NO_x and VOC, often termed ozone precursors, are combustion processes (including motor vehicle engines) and evaporation of solvents, paints, and fuels.

Exposure to levels of ozone above the current ambient air quality standard can lead to human health effects such as lung inflammation and tissue damage and impaired lung functioning. Ozone exposure is also associated with symptoms such as coughing, chest tightness, shortness of breath, and the worsening of asthma symptoms. The greatest risk for harmful health effects belongs to outdoor workers, athletes, children and others who spend greater amounts of time outdoors during smoggy periods. Elevated ozone levels can reduce crop and timber yields, as well as damage native plants. Ozone can also damage materials such as rubber, fabrics and plastics. (ARB, 2012b). The South Coast Air Basin is designated as a non-attainment area for ozone by both EPA and ARB.

As shown in Table 5.1-5, the current state regulatory 1-hour ozone concentration standards were exceeded at each of the three monitoring stations except for at Costa Mesa and Long Beach monitoring stations in 2009. The measured 8-hour ozone concentrations also exceeded the federal and state standards with a few exceptions. The concentration in 2009 at the Costa Mesa monitoring station met the federal standard. At the Long Beach monitoring station, concentrations were below the federal standard in 2008 and below state and federal standards in 2009.

TABLE 5.1-5
Background Ozone Concentrations (μg/m³)

Station	Averaging Time	CAAQS/NAAQS	2008	2009	2010
North Coastal Orange County (Costa Mesa)	1-hour	180/—	185	171	190
	8-hour	137/147	155	147	149
Saddleback Valley (Mission Viejo)	1-hour	180/—	232	238	230
	8-hour	137/147	204	187	161
Central Orange County (Anaheim)	1-hour	180/—	206	183	204
	8-hour	137/147	169	151	173
South Coastal LA County 1 (Long Beach)	1-hour	180/—	183	175	198
	8-hour	137/147	145	134	165

Source: SCAQMD, 2012a; ARB, 2012b; and EPA, 2012

5.1.5.3 Sulfur Dioxide

Sulfur dioxide is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Effects from SO_2 exposures at levels near the 1-hour standard include broncho-constriction accompanied by symptoms, which may include wheezing, shortness of breath, and chest tightness, especially during exercise or physical activity (ARB, 2012b). The South Coast Air Basin is designated as attainment for SO_2 by both EPA and ARB.

As shown in Table 5.1-6, the 1-hour, 3-hour, and 24-hour SO_2 concentrations measured at the Costa Mesa and Long Beach monitoring stations have not exceeded state or federal standards in the past 3 years.

TABLE 5.1-6
Background SO_2 Concentrations (μg/m³)

Station	Averaging Time	CAAQS/NAAQS	2008	2009	2010
North Coastal Orange County (Costa Mesa)	1-hour (max)	655/—	26.2	26.2	18.7
	1-hour (99th percentile)	—/196	20.9	15.7	10.8
	3-hour*	—/1,300	17.3	17.3	7.5
	24-hour	105/—	7.9	10.5	5.5
South Coastal LA County 1 (Long Beach)	1-hour (max)	655/—	236	52.4	78.5
	1-hour (99th percentile)	—/196	78.5	31.4	31.4
	3-hour*	—/1,300	98.4	29.6	48.3
	24-hour	105/—	31.4	13.1	15.7

* EPA Secondary Standard

Source: SCAQMD, 2012a; ARB, 2012b; and EPA, 2012

5.1.5.4 Carbon Monoxide

CO is a colorless, odorless gas formed by incomplete combustion of fossil fuels. Exposure to CO near the levels of the AAQS can lead to fatigue, headaches, confusion, and dizziness (ARB, 2012b). The South Coast Air Basin is designated as attainment for the state CO standards by both EPA and ARB.

As shown in Table 5.1-7, CO concentrations measured at the Costa Mesa, Mission Viejo, Anaheim, and Long Beach monitoring stations have not exceeded either the state or federal standards in the past 3 years.

TABLE 5.1-7
Background CO Concentrations (μg/m^3^)

Station	Averaging Time	CAAQS/NAAQS	2008	2009	2010
North Coastal Orange County (Costa Mesa)	1-hour	23,000/40,000	3,436	3,436	2,290
	8-hour	10,000/10,000	2,290	2,519	2,405
Saddleback Valley (Mission Viejo)	1-hour	23,000/40,000	2,290	2,290	1,145
	8-hour	10,000/10,000	1,260	1,145	1,031
Central Orange County (Anaheim)	1-hour	23,000/40,000	4,581	3,436	3,436
	8-hour	10,000/10,000	4,123	3,092	2,290
South Coastal LA County 1 (Long Beach)	1-hour	23,000/40,000	3,436	3,436	3,436
	8-hour	10,000/10,000	2,978	2,519	2,405

Source: SCAQMD, 2012a; ARB, 2012b; and EPA, 2012

5.1.5.5 Fine Particulates (PM_{10} and $PM_{2.5}$)

Fine particulate matter (PM_{10} and $PM_{2.5}$) includes a wide range of solid or liquid particles, including smoke, dust, aerosols, and metallic oxides. Extensive research indicates that exposures to ambient PM_{10} and $PM_{2.5}$ concentrations that exceed current air quality standards are associated with increased risk of hospitalization for lung and heart-related respiratory illness, including emergency room visits for asthma. PM exposure is also associated with increased risk of premature death, especially in the elderly and people with pre-existing cardiopulmonary disease. In children, studies have shown associations between PM exposure and reduced lung function and increased respiratory symptoms and illnesses (ARB, 2012b). The South Coast Air Basin is designated as non-attainment by EPA and ARB for PM_{10} and $PM_{2.5}$ standards.

As shown in Table 5.1-8, PM_{10} concentrations measured at the Mission Viejo, Anaheim, Long Beach, and South Long Beach monitoring stations did not exceed the 24-hour PM_{10} NAAQS. The 24-hour CAAQS PM_{10} standards have been exceeded each year during the past 3 years, with the exception of the Mission Viejo monitoring station in 2008 and 2010, as well as the Anaheim and Long Beach stations in 2010. The annual PM_{10} CAAQS concentrations have been exceeded each year in the past 3 years.

TABLE 5.1-8
Background PM_{10} Concentrations (μg/m^3^)

Station	Averaging Time	CAAQS/NAAQS	2008	2009	2010
Saddleback Valley (Mission Viejo)	24-hour	50/150	42	56	34
	Annual*	20/—	22.6	23.5	18.1
Central Orange County (Anaheim)	24-hour	50/150	61	63	43
	Annual*	20/—	28.6	30.9	22.4
South Coastal LA County 1 (Long Beach)	24-hour	50/150	62	62	44
	Annual*	20/—	29.1	30.5	22.0
South Coastal LA county 2 (South Long Beach)	24-hour	50/150	81	83	76
	Annual*	20/—	35.8	33.2	27.3

* Annual Arithmetic Mean

Source: SCAQMD, 2012a; ARB, 2012b; and EPA, 2012

As shown in Table 5.1-9, the 24-hour $PM_{2.5}$ concentrations measured at the Mission Viejo, Anaheim, Long Beach, and South Long Beach monitoring stations have exceeded the NAAQS in 2008 and 2009, except for the Mission Viejo station in 2008. The 24-hour $PM_{2.5}$ NAAQS were met in 2010 at all four stations. The annual $PM_{2.5}$ concentrations measured at the Anaheim, Long Beach, and South Long Beach monitoring stations did not exceed the annual NAAQS but each exceeded the state standards with the exception of Anaheim in 2009 and Anaheim and South Long Beach in 2010. The annual $PM_{2.5}$ concentrations measured at Mission Viejo did not exceed annual federal or state standards.

TABLE 5.1-9
Background $PM_{2.5}$ Concentrations (µg/m^3)

Station	Averaging Time	CAAQS/NAAQS	2008	2009	2010
Saddleback Valley (Mission Viejo)	24-hour (98th percentile)	—/35	27.1	23.8	17.3
	Annual*	12/15	10.4	9.5	8.0
Central Orange County (Anaheim)	24-hour (98th percentile)	—/35	39.4	32.1	25.2
	Annual*	12/15	13.7	11.8	10.2
South Coastal LA County 1 (Long Beach)	24-hour (98th percentile)	—/35	38.9	34.2	28.3
	Annual*	12/15	14.2	13.0	10.5
South Coastal LA county 2 (South Long Beach)	24-hour (98th percentile)	—/35	36.4	30.5	26.5
	Annual*	12/15	13.7	12.5	10.4

* Annual Arithmetic Mean
Source: SCAQMD, 2012a; ARB, 2012b; and EPA, 2012

5.1.5.6 Greenhouse Gases

ARB has promulgated new laws to address the potential effects of increasing atmospheric concentrations of carbon dioxide and other greenhouse gases. On September 20, 2006, California signed into law the California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32, codified at Section 1, Division 25.5, Section 38500 et seq. of the California Health & Safety Code). This law requires ARB to design and implement emission limits, regulations, and other measures, such that statewide greenhouse gas emissions are reduced in a technologically feasible and cost-effective manner to 1990 levels by 2020 (representing a 25 percent reduction), and further reduced by 2050 (an 80 percent reduction over 1990 levels).

AB 32 does not directly amend other environmental laws, such as the California Environmental Quality Act (CEQA). Instead, it provides for creation of a greenhouse gas emissions program that will involve identification of sources, prioritization of sources for regulation based on significance of source contribution to greenhouse gas emissions, and eventual regulation of those sources.

Greenhouse gases include the following pollutants:

- Carbon dioxide (CO_2) is a naturally occurring gas, as well as a by-product of burning fossil fuels and biomass, land-use changes, and other industrial processes. It is the principal anthropogenic greenhouse gas that affects the Earth's radiative balance.
- Methane (CH_4) is a greenhouse gas with a global warming potential (GWP) most recently estimated at 21 times that of CO_2. GWP is a measure of how much a given mass of greenhouse gas is estimated to contribute to global warming and is a relative scale that compares the mass of one greenhouse gas to that same mass of carbon dioxide. CH_4 is produced through anaerobic (without oxygen [O_2]) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.
- Nitrous oxide (N_2O) is a greenhouse gas with a GWP of 310 times that of CO_2. Major sources of nitrous oxide include soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning.
- Hydrofluorocarbons (HFCs) are compounds containing only hydrogen, fluorine, chlorine, and carbon. HFCs have been introduced as a replacement for the chlorofluorocarbons identified as ozone-depleting substances.
- Perfluorocarbons (PFCs) are compounds containing only fluorine and carbon. Similar to HFCs, PFCs have been introduced as a replacement for chlorofluorocarbons. PFCs are also used in manufacturing and are emitted as by-products of industrial processes. PFCs are powerful greenhouse gases.

- Sulfur hexafluoride (SF_6) is a colorless gas soluble in alcohol and ether, and slightly soluble in water. It is a very powerful greenhouse gas used primarily in electrical transmission and distribution systems, as well as dielectrics in electronics.

Although HBEP will use the existing transmission infrastructure to the extent possible, some modifications to the interconnection of the HBEP into these systems will require the replacement of existing SF_6-containing equipment. However, it is assumed the overall SF_6 levels will be consistent with the existing quantities. Therefore, an increase in emissions of HFCs, PFCs, or SF_6 is not expected to be significant for the project. Therefore, the project impact assessment focused on the impacts from emissions of CO_2, CH_4, and N_2O.

5.1.6 Environmental Analysis

This section describes the analysis conducted to assess the ambient air quality impacts from HBEP and to demonstrate compliance with the local, state, and federal air quality requirements for criteria pollutants. Emission estimates are presented for demolition and construction; commissioning; and operation. Dispersion model selection and setup are also described (emissions scenarios and release parameters, building wake effects, meteorological data, and receptor locations). Results are presented for the dispersion modeling analysis and are compared to the applicable local, state, and federal air quality regulations.

5.1.6.1 Criteria Pollutant and Greenhouse Gas Emission Estimates

Criteria pollutant emission rates were calculated for three components of the project: demolition of existing structures and construction of the new electrical generating components, commissioning activities, and operation. Hourly, daily, and annual criteria pollutant emissions were calculated based on a 96-month construction schedule and 5,000 hours of base load operation without duct burner firing per turbine per year, 1,200 hours of base load operation with duct burner firing per turbine per year, and 624 startups and shutdowns per turbine per year. The criteria pollutants evaluated include NO_x, oxides of sulfur (SO_x), VOCs, CO, PM_{10}, and $PM_{2.5}$.

Construction Emissions. The construction of the HBEP will require the removal of the existing Huntington Beach Generating Station's Units 1 through 5. The existing Huntington Beach Generating Station Units 3 and 4 were licensed through the CEC (00-AFC-13C) and demolition of these units will be authorized under that license. Therefore, demolition of existing Huntington Beach Generating Station's Units 3 and 4 is not part of the HBEP project definition. However, the demolition of existing Huntington Beach Generating Station's Units 3 and 4 will be included as part of the CEC cumulative impact assessment.

Onsite demolition activities will include the removal of the non-operational Unit 5 peaker unit, the buildings and small tanks associated with Unit 5, and a fuel oil storage tank. Demolition of existing Units 1 and 2 will include an organized, top down, dismantling of the existing boiler units, generator, and stack. The existing foundation and all subsurface facilities for Units 1 and 2 will remain largely intact at the conclusion of the demolition activities and most of the demolition materials will be transported to an offsite location where they can be sold or recycled. Onsite construction activities will consist of installing six new combined cycle gas turbines, various auxiliary equipment, and administrative structures. HBEP will reuse existing onsite potable water, natural gas, stormwater, process wastewater, and sanitary pipelines, and electrical transmission facilities to the maximum extent possible; however, some modification and interconnection of the HBEP into these systems will require construction activity.

HBEP construction will require both onsite and offsite laydown and construction parking areas. Approximately 22 acres of construction laydown will be required, with approximately 6 acres at the existing Huntington Beach Generating Station used for a combination of laydown and construction parking, and 16 acres at the AGS site used for offsite construction laydown. Large and heavy components of the generating units (turbines, HRSG components) will arrive by ship or rail at the Port of Long Beach. From the Port of Long Beach, the large components of the generating units will be hauled to AGS (located 13 miles northwest of the HBEP site) to a designated laydown area. When the components are ready for installation, heavy haul trucks will transport the large components to the HBEP site.

Construction worker parking for HBEP and the demolition of the existing units at Huntington Beach Generating Station will be provided using a combination of parking on the project site and offsite parking. A maximum of 330 parking spaces will be required during construction and demolition activities. Construction and demolition parking options include the following:

- Approximately 1.5 acres onsite at the Huntington Beach Generating Station (approximately 130 parking stalls)
- Approximately 3 acres of existing paved/graveled parking located adjacent to the HBEP across Newland Street (approximately 300 parking stalls)
- Approximately 2.5 acres of existing paved parking located at the corner of Pacific Coast Highway and Beach Boulevard (approximately 215 parking stalls)
- 225 parking stalls at the City of Huntington Beach shore parking west of the project site
- Approximately 1.9 acres at the Plains All American Tank Farm located on Magnolia Street (approximately 170 parking stalls)

Onsite and offsite project emissions have been divided into three categories: (1) vehicle and construction equipment exhaust; (2) fugitive dust from vehicle and construction equipment, including grading and bulldozing during construction of HBEP Block 1 and Block 2; and (3) fugitive dust from demolition activities such as the top-down removal of the boiler stack and loading waste haul trucks with the generated debris.

The following criteria pollutant emissions have been calculated: NO_x, SO_x, VOC, CO, PM_{10}, and $PM_{2.5}$. Fugitive dust and construction equipment exhaust emissions have been estimated using methodology and emission factors consistent with the California Emissions Estimator Model (CalEEMod; version 2011.1.1), which incorporates OFFROAD2007 and portions of the EPA's AP-42 (ENVIRON, 2011; SCAQMD et al., 2011). Vehicle exhaust emissions for both paved and unpaved roads will be estimated using EMFAC2007 (version 2.3) emission factors, as consistent with the CalEEMod methodology.[1] It is not expected that large stockpiles of earthen materials would be present during project construction, therefore, wind-blown fugitive dust emissions from earthen stockpiles were assumed to be negligible. The Applicant will also comply with all requirements outlined in SCAQMD Rule 1403, which requires the notification and special handling of asbestos-containing materials during demolition activities.

Maximum daily and annual emissions were estimated based on the number and type of construction equipment, the number of heavy-duty trucks, and the workforce projected for each month of construction. It was conservatively assumed the construction activities will occur 10 hours per day, 23 days per month. The maximum annual construction emissions will occur from month 5 through month 16.

The maximum daily and annual construction emissions are presented in Table 5.1-10. The detailed emission calculations for construction are provided in Appendix 5.1A.

TABLE 5.1-10
Maximum Daily and Annual Emissions from Construction

Construction Emissions	NO_x	CO	VOC	SO_2	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions (lb/day)	215.4	137.8	28.0	0.30	99.5	27.8
Maximum Annual Emissions (tons/yr)	25.2	16.1	3.3	0.04	10.5	3.0

Note: Maximum daily and annual emissions include contributions from onsite construction equipment, onsite vehicles, and offsite vehicles. The PM_{10} and $PM_{2.5}$ emissions include exhaust and fugitive dust emissions.

[1] CalEEMod is a statewide computer model created by ENVIRON and the SCAQMD to quantify criteria pollutant and GHG emissions associated with the construction activities from a variety of land use projects (ENVIRON, 2011). Developed in cooperation with air districts throughout the state, CalEEMod is intended to standardize air quality analyses while allowing air districts to provide specific defaults reflecting regional conditions, regulations, and policies (SCAQMD et al., 2011). CalEEMod is generally viewed as an improvement and replacement of URBEMIS2007 by providing updated factors, methodologies, and defaults that are robustly documented.

The maximum annual GHG from construction activities are presented in Table 5.1-11. Construction equipment GHG emissions have been estimated using emission factors from The Climate Registry (TCR) General Reporting Protocol (GRP, version 1.1) (TCR, 2008) and fuel consumption rates from OFFROAD2007. Vehicle emissions (trucks and worker commutes) have been estimated using emission factors from TCR GRP (version 1.1) (TCR, 2008) and fuel economy values from EMFAC2007 (version 2.3). No significant emissions of HFCs, PFCs, or SF_6 are expected during the construction.

The Council on Environmental Quality (CEQ) has provided draft guidance suggesting that quantities of direct GHG emissions equal to or greater than 25,000 metric tons of carbon dioxide equivalent (CO_2e) on an annual basis are meaningful and should be quantified and disclosed for project evaluations within the National Environmental Policy Act (NEPA) framework (CEQ, 2010). While this is not a NEPA evaluation, this threshold will be used as a guide for assessing whether GHG emissions from construction activities and mobile source emissions during operation may be meaningful. As presented in Table 5.1-11, the quantities of direct GHG emissions are less than 25,000 metric tons of CO_2e on an annual basis. Therefore, based on the draft CEQ guidance, the GHG emissions from construction activities would not be meaningful.

Estimated total fuel use during construction would be 1,234,513 gallons of diesel and 223,852 gallons of gasoline. Construction equipment fuel consumption rates were obtained from the OFFROAD2007 model. Vehicle fuel economies were estimated based on EMFAC2007 fuel economy values. Detailed greenhouse gas emission and fuel use calculations are included in Appendix 5.1A.

TABLE 5.1-11
Maximum Annual Greenhouse Gas Emissions Estimates for HBEP Construction Activities

Greenhouse Gas Emissions	CO_2	CH_4	N_2O	CO_2 Equivalent
Total (metric tons)	3,563	0.19	0.08	3,592

CO_2 equivalent total assumes a global warming potential of 21 for CH_4 and 310 for N_2O (IPCC, 1996)

Commissioning Emissions. During commissioning, each turbine will be initially operated at various load rates without the benefit of the emission control systems to ensure proper operation of the equipment. The total duration of the commissioning period for each 3 × 1 block is expected to be up to 180 days. During the commissioning period, each turbine will be operated for up to 491 hours without, or with partial, emission control systems in operation. The Applicant will ensure that emissions are reduced to the extent feasible by limiting equipment operation consistent with the equipment manufacturer's recommended intervals. However, several possible scenarios during commissioning are expected to result in NO_x, VOC, and CO emissions that are greater than during normal operations. During commissioning, $PM_{10/2.5}$ and SO_2 emissions are expected to be no greater than full load operations.

Short-term NO_2, VOC, and CO emissions during the commissioning were estimated based on correspondence with the turbine vendor. The emission estimates are based on the estimated duration of each commissioning event, emission control efficiencies expected for each event, and turbine operating rates. The maximum hourly and event commissioning emission rates are presented in Table 5.1-12. The annual impacts for commissioning were not evaluated because the commissioning for each 3 × 1 block is expected to be completed within 180 days. As previously stated, maximum hourly emission rates for SO_2, PM_{10}, and $PM_{2.5}$ are expected to be equal to or lower than normal operating rates due to reduced loads during commissioning. The detailed emission calculations for commissioning are provided in Appendix 5.1B.

TABLE 5.1-12
HBEP Turbine Commissioning Emission Rate

Commissioning Emissions	NO_x	CO	VOC	SO_2	PM_{10}	$PM_{2.5}$
Maximum Hourly, lb/hr (per turbine)[a]	109.7	3,169	383.8	2.64	9.5	9.5
Total Commissioning Period, tons (per 3 × 1 block)[b]	12.4	169	21.2	1.60	4.4	4.4

[a] SO_2 and PM emissions not emitted in amounts greater than normal operating rates (includes duct burner firing).
[b] Total commissioning period SOx and PM emissions based on the maximum unfired emission rates at 32°F with the exception of "Emissions Tuning at 100% load", "Commissioning Duct Burners", "Refire Unit with Duct Burners", half of the "Source Testing" hours, "Performance Testing", and "CALISO Certification". For those activities, the maximum fired emission rates at 32°F were used.

lb/hr = pound(s) per hour

Turbine Emissions—Operations. Operational emission estimates were prepared for the turbine startup and shutdown modes and the steady-state operating mode. Emission estimates for these operating modes are based on vendor data and engineering estimates. Natural gas will be the only fuel burned in the turbines. The turbines will use dry low NO_x combustors, combined with SCR, to limit emissions of NO_x to 2.0 parts per million by volume, corrected to 15 percent O_2 (ppmvdc). Best combustion practices, combined with the use of an oxidation catalyst, will be used to limit CO and VOC emissions to 2.0 and 1.0 ppmvdc, respectively. PM_{10} and SO_2 emissions will be kept to a minimum through the exclusive use of natural gas, inlet air filtration (for particulate matter control), and the oxidation catalyst system.

Startup and Shutdown Emissions. During the startup and shutdown operating modes, the emission control systems are not fully functional, which may result in higher air emission rates relative to the steady-state operating mode. The MPSA 501DA is equipped with fast start technology and has the ability to reach full power within 10 minutes of initiating a startup. However, the inclusion of the steam generation system (HRSG, steam turbine generator, and condenser) requires an extended startup period to allow for the gradual heating of the HRSG and steam turbine components.

Three startup scenarios have been developed for HBEP. For a cold start event, the combustion turbine and the steam generation system are all at ambient temperature at the time of the startup, which would typically occur if more than 49 hours elapse between a shutdown event and a system startup event. For the cold start event, the time from fuel initiation until reaching the baseload operating rate is expected to take up to 90 minutes. Although the exhaust emissions are expected to reach BACT levels in less than 90 minutes, a 90-minute startup period provides a conservative estimate of time for the SCR and oxidation catalyst systems to equilibrate and to achieve allowable BACT emission levels. A warm start event would typically be between 9 and 49 hours from a shutdown event. A hot start event would typically be within 9 hours of a shutdown event. For the warm and hot start events, the time from fuel initiation until reaching the baseload operating rate is expected to take up to 32.5 minutes. Although the exhaust emissions are expected to reach BACT levels in less than 32.5 minutes, a 32.5-minute startup period provides a conservative estimate of time for the SCR and oxidation catalyst systems to equilibrate and to achieve allowable BACT emission levels.

The duration of a MPSA 501DA shutdown event is approximately 10 minutes. As with the startup events, the emission controls are operational, but may not be achieving the proposed BACT levels for NO_x, CO, and VOC.

The maximum facility startup and shutdown emission rates are presented in Table 5.1-13, on a pound-per-event (lb/event) and a pound-per-hour (lb/hr) basis. The maximum startup and shutdown event data are based on manufacturer data and engineering estimates. The maximum hourly startup and shutdown emission rates include the balance of steady-state operating emissions at 32°F, with the exception of the cold startup event. Because the duration for cold startup event is greater than 60 minutes, it was conservatively assumed that the system would reach BACT emission levels within 60 minutes, which estimates that approximately 90 percent of the cold start event emissions would occur within the first 60 minutes. The detailed estimates of the facility startup and shutdown emissions are provided in Appendix 5.1B.

TABLE 5.1-13
Facility Startup/Shutdown Emission Rates[a]

	NO_x	CO	VOC	SO_2[b]	PM_{10}	$PM_{2.5}$
Cold Start[c]						
Startup (lb/event/turbine)	28.7	115.9	27.9	—	—	—
Startup (lb/hr/turbine)	25.5	115.3	25.9	< 1.97	< 4.5	< 4.5
Warm Start[d]						
Startup (lb/event/turbine)	16.6	46.0	21.0	—	—	—
Startup (lb/hr/turbine)	23.2	50.0	21.6	< 2.64	< 9.5	< 9.5
Hot Start[d]						
Startup (lb/event/turbine)	16.6	33.6	20.4	—	—	—
Startup (lb/hr/turbine)	23.2	37.6	21.0	< 2.64	< 9.5	< 9.5
Shutdown[d]						
Shutdown (lb/event/turbine)	9.0	45.3	31.0	—	—	—
Shutdown (lb/hr/turbine)	17.8	50.7	31.8	< 1.97	< 4.5	< 4.5

[a] See Appendix 5.1B.
[b] Maximum SO_2 hourly emission rate based on the 0.75 grains of sulfur per 100 dry standard cubic feet (dscf) of natural gas.
[c] The hourly NO_x, CO, and VOC emission rates for a cold start are estimated assuming the SCR and catalyst are functional within 60 minutes. Therefore, the hourly emission rate is conservatively calculated by subtracting the lowest hourly emissions for the 70 percent load, without duct burner firing, at 110°F.
[d] The NO_x, CO, and VOC emissions for the balance of the hour for a warm and hot start event were based on the hourly emission rate for 100 percent load, with duct burner firing, at 32°F. The balance of the hour for shutdown is based on 100 percent load, without duct burner firing, at 32°F.

Steady-state Operating Emissions. The turbine operational emission rates for steady-state operations without and with duct burner firing have been estimated based on the combined maximum heat input rating and conservative estimates of annual operation. The emission rates for the MPSA 501DA combustion turbines are shown in Table 5.1-14. Emission estimates are provided in Appendix 5.1B.

TABLE 5.1-14
Maximum Pollutant Emission Rates for the MPSA 501DA Turbine[a]

	Without Duct Burner		With Duct Burner	
Pollutant	**ppmvd @ 15% O_2**	**Emission Rate (lb/hr)**	**ppmvd @ 15% O_2**	**Emission Rate (lb/hr)**
NO_x	2.0 (1-hour)	10.6	2.0 (1-hour)	14.3
CO	2.0 (1-hour)	6.4	2.0 (1-hour)	8.7
VOC	1.0 (1-hour)	1.8	1.0 (3-hour)	2.5
SO_2[d]	NA[c]	1.97	NA[c]	2.64
$PM_{10}/PM_{2.5}$[b]	NA[c]	4.5	NA[c]	9.5
Ammonia	5	9.8	5	13.2

[a] Maximum values are for each turbine at an ambient temperature of 32°F and excludes startups and shutdowns.
[b] 100 percent of particulate matter emissions assumed to be emitted as PM_{10} and $PM_{2.5}$.
[c] Not applicable.
[d] Estimated using a maximum of 0.75 grains of sulfur per 100 dscf of natural gas.

Facility Emissions. Emission sources at HBEP would include the six natural gas MPSA 501DA turbines. Natural gas will be the only fuel used during plant operation. The typical natural gas composition is shown in Table 5.1-15. Natural gas combustion results in the formation of NO_x, CO, unburned hydrocarbons (VOCs), SO_2, PM_{10}, and $PM_{2.5}$. Because natural gas is a clean-burning fuel, there will be minimal formation of combustion PM_{10}, $PM_{2.5}$, and SO_2.

TABLE 5.1-15
Typical Natural Gas Specifications

Component Analysis		Chemical Analysis	
Component	**Average Concentration, Volume**	**Molecular Weight**	**Weighted Average**
CH_4	96.19	16.04	15.43
C_2H_6	1.67	30.07	0.50
C_3H_8	0.27	44.00	0.12
C_4H_{10}	0.098	58.12	0.057
C_5H_{12}	0.0072	72.15	0.0052
C_6H_{14}	0.022	86.18	0.019
N_2	0.41	28.01	0.11
CO_2	1.34	44.01	0.59
		Average	**16.83**

Note: Analysis assumes an average fuel sulfur content of 0.25 grains per 100 dscf of natural gas and a maximum fuel sulfur content of 0.75 grains per 100 dscf of natural gas.

Table 5.1-16 presents the maximum fuel use expected for each of the turbines, each of the duct burners, and the facility total. The estimated maximum hourly and daily fuel use was based on the maximum heat input for the turbine and duct burner at an ambient temperature of 32°F. The annual fuel use was estimated based on an average heat input at 65.8°F, 5,000 hours of base load operation without duct burner firing per turbine, 1,200 hours of base load operation with duct burner firing, and 624 startups and shutdowns per turbine.

TABLE 5.1-16
Estimated Facility Fuel Use (MMBtu)[a,b]

Period	Gas Turbine (each)	Duct Burner (each)	Total Fuel Use (all units)
Per hour	1,498	507	12,031
Per day	35,956	12,168	288,743
Per year	9,351,233	608,400	59,757,795

[a] The maximum hourly and daily fuel use was based on the maximum heat input for the turbine and duct burner at an ambient temperature of 32°F. The annual fuel use was estimated based on an average heat input at 65.8°F, 5,000 hours of base load operation without duct burner firing per turbine, 1,200 hours of base load operation with duct burner firing, and 624 startups and shutdowns per turbine.
[b] See Appendix 5.1B

Maximum hourly turbine NO_x, and CO emissions are based on a cold startup event. Maximum hourly turbine VOC emissions are based on a shutdown event. Because particulate matter and SOx emissions are based on fuel consumption, the maximum hourly PM_{10}, $PM_{2.5}$, and SO_x emissions are based on each turbine operating at full load with duct burners at the minimum ambient temperature.

Monthly emissions are based on the following proposed operating profile (daily emissions represent the maximum monthly total divided by 30 days):

- Five cold starts per turbine
- 25 warm starts per turbine

- 60 hot starts per turbine
- 90 shutdowns per turbine
- 489.5 hours of operation per turbine at 100 percent load and 65.8°F, without duct burner firing
- 186 hours of operation per turbine at 100 percent load at 65.8°F with duct burner firing

The annual natural gas sulfur content is expected to average 0.25 grains per 100 dscf. However, on rare occasions, the natural gas fuel sulfur content can deviate up to 0.75 grains of sulfur per 100 dscf. Therefore, hourly, daily, and monthly SO_2 emissions have been estimated assuming a natural gas sulfur content of 0.75 grains per 100 dscf.

Annual emissions are based on the following:

- 5,000 hours of base load operation without duct burner firing per turbine per year
- 1,200 hours of base load operation with duct burner firing per turbine per year
- 624 startups and shutdowns per turbine per year

Annual SO_2 emissions are based on an expected annual fuel sulfur level of 0.25 grains per 100 dscf of natural gas. Emission estimates are provided in Appendix 5.1B.

The maximum 2-year historical past actual emissions from existing Huntington Beach Generating Station Units 1 and 2 have been subtracted from the annual HBEP PTE to establish the overall net increase. The maximum has been developed based on operations between calendar years 2007 and 2011 (Appendix 5.1B). This timeframe represents normal operations for these two existing units. A summary of the past actual emissions are presented in Table 5.1-17.

TABLE 5.1-17
HBEP Facility Emissions

	NO_x	SO_2	VOC	CO	PM_{10}	$PM_{2.5}$
Maximum Hourly Emissions (per turbine)[a], lb/hr	25.5	2.64	2.49	8.70	9.5	9.5
Average Daily Facility Emissions[b], lb/day	2,042	318.3	1,209	2,519	856	856
Maximum Monthly Facility Emissions[c], lb/month	61,249	9,549	36,256	75,582	25,668	25,668
Average Annual Facility Emissions (tpy)[d]						
HBEP (PTE)	245.6	20.9	131.3	279.0	108.0	108.0
Huntington Beach Generating Station Units 1 and 2 (Past Actual)[e]	51.7	7.2	11.7	2,444	16.9	9.8
Net Increase	**193.9**	**13.8**	**119.6**	**(2,165.3)**	**91.1**	**98.2**

[a] Maximum hourly NO_x, CO, and VOC emissions were based on a turbine cold startup. The maximum hourly PM_{10}, $PM_{2.5}$, and SO_x emissions are based on each turbine operating at full load with duct burners firing at the minimum ambient temperature.
[b] Average daily emissions represent the maximum monthly total divided by 30 days.
[c] Maximum monthly emissions are based on 5 cold starts, 25 warm starts, 60 hot starts, 90 shutdowns and 489.5 hours of operation at 100 percent load, 65.8°F, without duct burner firing and 186 hours of operation at 100 percent load, 65.8°F with duct burner firing for each turbine.
[d] Average annual emissions are based on 5,000 hours of base load operation without duct burner firing per turbine per year, 1,200 hours of base load operation with duct burner firing per turbine per year, and 624 startups and shutdowns per turbine per year. Annual sulfuric acid emissions are less than 1 tpy.
[e] Huntington Beach Generating Station Units 1 and 2 will be retired and removed as part of the project, the maximum 2-year historical past actual emissions from these two units between calendar years 2007 and 2011 were subtracted from the HBEP PTE (See Appendix 5.1B).

tpy = ton(s) per year

Criteria pollutant emissions from worker commutes and material deliveries were also calculated. The emissions are presented in Table 5.1-18. Emissions were estimated using emission factors from EMFAC2007 (version 2.3). Detailed calculations are included in Appendix 5.1B.

TABLE 5.1-18
Criteria Pollutant Emissions from Worker Commute and Deliveries During Operation

Emission Source	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Worker Commute (lb/yr)	10.6	620	57.3	1.64	16.5	9.08
Material Deliveries (lb/yr)	0.89	4.4	12.0	0.039	0.57	0.44
Total	**11.5**	**624**	**69.3**	**1.68**	**17.1**	**9.52**

5.1.6.2 Greenhouse Gas Emission Estimates

Combustion of natural gas in the gas turbines would result in emissions of CO_2, CH_4, and N_2O. GHG emissions for normal facility operations were calculated based on the maximum fuel use predicted for HBEP and emission factors contained in the TCR General Reporting Protocol (TCR, 2008). The emission factors used to estimate the GHG emissions are summarized in Appendix 5.1B. Similar to the criteria pollutant calculations, the maximum 2-year historical past actual emissions from the existing Huntington Beach Generating Station Units 1 and 2 were subtracted from the HBEP PTE between calendar years 2007 and 2011 since the existing Units 1 and 2 will be retired as part of the project (see Appendix 5.1B). Emissions of CO_2, N_2O, and CH_4 resulting from HBEP operation are presented in Table 5.1-19.

TABLE 5.1-19
Estimated Annual Greenhouse Gas Emissions from HBEP

	CO_2	CH_4	N_2O	CO_2e
HBEP (PTE), metric tons/year	3,161,785	227	53.8	3,183,226
Huntington Beach Generating Station Units 1 and 2 (Past Actual)*, metric tons/year	471,424	8.0	8.0	474,078
Total (NET) Emissions	**2,690,361**	**219**	**46**	**2,709,148**

* Huntington Beach Generating Station Units 1 and 2 will be retired and removed as part of the project. Therefore, the maximum 2-year historical past actual emissions from these two units between calendar years 2007 and 2011 (See Appendix 5.1B) were subtracted from the HBEP PTE.

GHG emissions from worker commutes and material deliveries were also calculated as part of the analysis. The GHG emissions are presented in Table 5.1-20. Emissions were estimated using emission factors from TCR GRP (version 1.1) (TCR, 2008) and fuel economy values from EMFAC2007 (version 2.3). Detailed calculations are included in Appendix 5.1B.

TABLE 5.1-20
Greenhouse Gas Emissions from Worker Commute and Deliveries During Operation

	Greenhouse Gas Emissions (metric tons/year)			
Emission Source	CO_2	CH_4	N_2O	CO_2 Equivalent
Worker Commute, metric tons/year	73.3	0.00014	0.000030	73.3
Material Deliveries, metric tons/year	1.87	0.000001	0.000001	1.87
Total	**75.1**	**0.00015**	**0.00003**	**75.2**

5.1.6.3 Air Quality Impact Analysis

An ambient air quality impact analysis was conducted to compare worst-case ground-level impacts resulting from the HBEP with established state and federal AAQS and applicable SCAQMD significance criteria. The analysis was conducted in accordance with the air quality impact analysis guidelines presented in the EPA's 40 CFR Part 51,

Appendix W: *Guideline on Air Quality Models* (EPA, 2005) and SCAQMD's *AQMD Modeling Guidance for AERMOD* (SCAQMD, 2012b).

The analysis includes an evaluation of the possible effects of simple, intermediate, and complex terrain, and aerodynamic effects (downwash) due to nearby building(s) and structures on plume dispersion and ground-level concentrations. A basic Gaussian plume model was used in this analysis. The model assumes that the concentrations of emissions within a plume can be characterized by a Gaussian distribution of gaseous concentrations about the plume centerline. Gaussian dispersion models are approved by EPA and SCAQMD for regulatory use and are based on conservative assumptions (that is, the models tend to over predict actual impacts by assuming steady-state conditions, no pollutant loss through conservation of mass, no chemical reactions, etc.).

The following subsections present the:

- Modeling methodology for evaluating the impacts on ambient air quality
- Modeling scenarios and source data used to evaluate the impacts on ambient air quality
- Modeling results compared to the AAQS

Modeling Methodology for Evaluating Impacts on Ambient Air Quality. The air dispersion modeling was conducted based on guidance presented in the *Guideline on Air Quality Models* (EPA, 2005) and the EPA-approved dispersion model, AERMOD (version 12060).

Model Selection. The AERMOD model is a steady-state, multiple-source, dispersion model that incorporates hourly meteorological data inputs and local surface characteristics. The AERMOD model is well suited for this assessment based on the ability of the model to handle the various physical characteristics of project emission sources, including point, area, and volume source types. The required emission source data inputs to AERMOD include source locations, source elevations, stack heights, stack diameters, stack exit temperatures, stack exit velocities, and pollutant emission rates. The source locations are specified for a Cartesian (x,y) coordinate system where x and y are distances east and north in meters, respectively. The Cartesian coordinate system used for these analyses is the Universal Transverse Mercator Projection (UTM), 1983 North American Datum (NAD 83).

Where noted, the NO_2 1-hour modeling was refined using the AERMOD Plume Volume Molar Ratio Method (PVMRM) model option. PVMRM offers a more realistic method of calculating concentrations of NO_2 by assuming that during the combustion of natural gas, approximately 50 percent of the stack emissions are emitted as NO_2. The remaining stack gas is released as nitrogen oxide. In the atmosphere, nitrogen oxide chemically reacts with ambient concentrations of ozone to form NO_2. The PVMRM model calculates NO_2 concentrations based on the ambient ozone concentrations using this principle. The hourly ozone data used for the HBEP PVMRM was collected at the Costa Mesa monitoring station between 2005 and 2007 and preprocessed for use with AERMOD by the SCAQMD.

Model Options. The technical options selected for the AERMOD model include:

- Regulatory default control options
- Urban dispersion mode because land use within 3 kilometers of the HBEP is primarily classified as urban based on the Auer Method. A population of 3,010,759 was also used in AERMOD, as recommended by the SCAQMD for projects in Orange County (SCAQMD, 2012b)
- Receptor elevations and controlling hill heights were obtained from AERMAP (Version 11103) output.

The model output is included on the attached modeling file compact disc.

Meteorological Data. The CEC requires a minimum of 1 year of meteorological data approved by ARB or the local air pollution control district to be used in the air dispersion modeling analysis. SCAQMD model guidance recommends use of the nearest station to the project site. According to EPA's Guideline on Air Quality Models (EPA, 2005), representativeness of meteorological data used in dispersion modeling depends on (1) the proximity of the meteorological monitoring site to the area under consideration; (2) the complexity of the terrain; (3) the exposure of the meteorological monitoring site; and (4) the period of time during which data are collected.

The Costa Mesa monitoring station is located approximately 3.5 miles northeast of the existing Huntington Beach Generating Station. There are no complex terrain features between the monitoring site and the existing power plant. With the exception of the modeling domain located over the ocean, the land uses surrounding the monitoring site and the existing Huntington Beach Generating Station facility are similar and have been categorized as medium density residential. The surface meteorological data collected at the Costa Mesa monitoring station for the period of January 1, 2005, through December 31, 2007 have been compiled and preprocessed by the SCAQMD using the AERMET preprocessor. The surface data has also been coupled with the National Climatic Data Center soundings from the San Diego Miramar National Weather Service station (Station #03190). The final AERMET data files for 2005 through 2007 were downloaded directly from the SCAQMD website. Because of the proximity of the meteorological station relative to the proposed project and the involvement of the SCAQMD in developing the meteorological data set, the monitoring station is considered representative of the HBEP site and 3 years of monitored data are considered adequate for this modeling analysis.

The annual and quarterly wind rose plots for the Costa Mesa meteorological station are presented in Appendix 5.1C.

Background Data. As outlined in 40 CFR 51, Appendix W, Section 9.2, the background data used to evaluate the potential air quality impacts need not be collected on a project site, as long as the data are representative of the air quality in the subject area. The following three criteria were used for determining whether the background data are representative: (1) location, (2) data quality, and (3) data currentness. These criteria are defined and applied to the project as follows:

- **Location:** The measured data must be representative of the areas where the maximum concentration occurs for the proposed stationary source, existing sources, and a combination of the proposed and existing sources.

  The nearest monitoring station to the project site is the North Coastal Orange County (Costa Mesa) station. This site is located approximately 3.5 miles from the project site. Based on a review of meteorological data collected at the Costa Mesa monitoring station, this station is also downwind of the HBEP site for most meteorological conditions. Therefore, it is expected that the maximum short- and long-term concentrations will occur in proximity to this monitoring station.

  Because the Costa Mesa monitoring station does not include PM_{10} and $PM_{2.5}$ monitoring equipment, the nearest representative location for PM_{10} and $PM_{2.5}$ was selected based on the surrounding terrain and the wind roses from the Costa Mesa, Long Beach, Anaheim, and Mission Viejo monitoring stations (SCAQMD, 2009). The nearest complex terrain is located approximately 5.5 miles east-southeast of the project site, and the wind roses suggest a westerly flow from Costa Mesa inland with flow toward the Mission Viejo monitoring station. Therefore, the Mission Viejo monitoring station was chosen as the most representative monitoring station for PM_{10} and $PM_{2.5}$.

- **Data quality:** Data must be collected and equipment must be operated in accordance with the requirements of 40 CFR Part 58, Appendices A and B, and PSD monitoring guidance.

  The SCAQMD, ARB, and EPA ambient air quality data summaries were used as the primary sources of data. Therefore, the data at all five monitoring stations listed in Table 2-2 will meet the data quality requirements of 40 CFR Part 58, Appendices A and B, and PSD monitoring guidance.

- **Data currentness:** The data are current if they have been collected within the preceding 3 years and are representative of existing conditions.

  The maximum ambient background concentrations from the period 2008 through 2010 was combined with the modeled concentrations and used for comparison to the ambient air quality standards. Therefore, the data at all five monitoring stations listed in Table 5.1-3 represent the three most recent years of data available.

Based on the criteria presented above, the three most recent years of background NO_2, CO, SO_2, and ozone data from the Costa Mesa monitoring station and the three most recent years of background PM_{10} and $PM_{2.5}$ from the Mission Viejo monitoring station have been combined with the modeled concentrations and used for comparison to the ambient air quality standards. A summary of the background concentrations for 2008 through 2010 are presented in Table 5.1-21.

TABLE 5.1-21
Background Air Concentrations (2008–2010)[a]

Pollutant	Averaging Time	2008		2009		2010		Maximum
		ppm	µg/m³	ppm	µg/m³	ppm	µg/m³	µg/m³
NO_2 [b]	1-hour (max)	0.081	152	0.065	122	0.070	132	152
	1-hour (98th percentile)	0.064	120	0.057	107	0.056	105	120
	Annual[d]	0.0132	24.8	0.0130	24.5	0.0113	21.3	24.8
SO_2 [b]	1-hour (max)	0.01	26.2	0.01	26.2	0.0095	24.9	26.2
	1-hour (99th percentile)	0.008	20.9	0.006	15.7	0.006	14.4	20.9
	3-hour[e]	0.0066	17.3	0.0066	17.3	0.0038	9.9	17.3
	24-hour	0.003	7.9	0.004	10.5	0.0021	5.50	10.5
CO [b]	1-hour	3	3,436	3	3,436	2	2,290	3,436
	8-hour	2.0	2,290	2.2	2,519	2.1	2,405	2,519
PM_{10} [c]	24-hour	-	42	-	56	-	34	56
	Annual	-	22.6	-	23.5	-	18.1	23.5
$PM_{2.5}$ [c]	24-hour (98th percentile)	-	27.1	-	23.8	-	17.3	27.1
	Annual	-	10.4	-	9.5	-	8.0	10.4

[a] The SCAQMD, ARB, and EPA ambient air quality data summaries were used as reference.
[b] Data from the Costa Mesa monitoring station.
[c] Data from the Mission Viejo monitoring station.
[d] Annual Arithmetic Mean
[e] EPA Secondary Standard

Receptor Grid Spacing. The base modeling receptor grid for the AERMOD modeling consists of receptors that are placed at the ambient air boundary and Cartesian-grid receptors that are placed beyond the project's site boundary at spacing that increases with distance from the origin. Property boundary receptors were placed at 30-meter intervals. Beyond the project's property boundary, receptor spacing was as follows:

- 50-meter spacing from property boundary to 500 meters from the origin
- 100-meter spacing from beyond 500 meters to 3 km from the origin
- 500-meter spacing from beyond 3 km to 10 km from the origin
- 1,000-meter spacing from beyond 10 km to 25 km from the origin
- 5,000-meter spacing from beyond 25 km to 50 km from the origin

All receptors and source locations were expressed in Universal Transverse Mercator North American Datum 1983 (NAD83), Zone 11 coordinate system. AERMAP (Version 11103) was used to calculate the receptor elevations and the controlling hill heights. Terrain in the vicinity of the project was accounted for by assigning base elevations to each receptor. National Elevation Dataset (NED) files from the United States Geological Survey (USGS) were obtained in one-third arc-second resolution for the 50-km grid. The AERMAP domain was large enough to encompass the 10 percent slope factor required for calculating the controlling hill height.

The base (coarse) receptor grid was supplemented with receptors at closer (refined) receptor spacing, where appropriate, so that the maximum points of impact were identified. The selection of the refined receptor grid was developed based on the location of the maximum impacts for each pollutant, averaging period, and year for all scenarios. The following refined receptor grid spacing was used to estimate the predicted maximum impacts:

- 50-meter spacing surrounding areas of maximum impact extending 500 meters from the maximum location.

The coarse and refined receptor grids are presented in Appendix 5.1C.

Building Downwash and Good Engineering Practice Assessment. For the analysis of the potential turbine impacts during operation, EPA's BPIP-Prime (Building Profile Input Program – Plume Rise Model Enhancement, Version 04274), was used to calculate the projected building dimensions required for AERMOD evaluation of impacts from building downwash.

Good engineering practice (GEP), as used in the modeling analyses, is the maximum allowed stack height to ensure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies, or wakes that may be created by the source itself, nearby structures, or nearby terrain obstacles. In addition, the GEP modeling restriction ensures that any required regulatory control measure is not compromised by the effect of that portion of the stack that exceeds the GEP.

EPA's guidance for determining GEP stack height (H_g) (EPA, 1985) is based on the height of a nearby structure(s) measured from the ground-level elevation at the base of the stack (H) and the lesser dimension, height or projected width, of the nearby structure(s) (L) as follows:

$$H_g = H + 1.5L$$

The GEP modeling restriction is the greater of the calculated GEP stack height or 65 meters. Therefore, based on the onsite and offsite building dimensions as input into BPIP-Prime, the calculated GEP height for the facility stack is the greater of 65 meters or the calculated height of 79.25 meters. The proposed turbine stack height of 36.6 meters (120 feet) does not exceed GEP stack height.

Modeling Scenarios and Source Data Used to Evaluate Impacts on Ambient Air Quality. In evaluating the potential impacts of HBEP on ambient air quality, modeling of the worst-case ambient impacts for the project were compared to the state AAQS, federal AAQS, and the applicable SCAQMD new source review and PSD thresholds.

Construction Impacts Analysis. As previously discussed the construction activities for HBEP will occur for approximately 96 months and various stages of construction will overlap throughout this period (e.g., the demolition of Unit 5 and the existing tank farm will overlap for several months with the construction of Block 1). To evaluate the overall potential air quality impacts from construction activities, the schedules for each activity were aligned and the maximum daily, monthly, and annual rolling 12 month emissions were developed. A complete summary of the combined maximum daily, monthly, and annual emissions are summarized in Appendix 5.1A.

The SCAQMD CEQA guidelines include daily CEQA significance thresholds for construction. Therefore, the maximum daily emissions have been compared to the SCAQMD CEQA significance thresholds in Table 5.1-22. As shown in Table 5.1-22, the maximum daily emissions are less than the significance thresholds for all pollutants except NO_x. Therefore, the daily emissions from construction are expected to be less than significant with the exception of NO_x.

TABLE 5.1-22
Maximum Daily Construction Emissions

Construction Emission Source	NO_x	CO	VOC	SO_2	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions (lb/day)	215.4	137.8	28.0	0.30	99.5	27.8
SCAQMD CEQA Significance Threshold (lb/day)	100	550	75	150	150	55
Exceed Threshold? (yes or no)	Yes	No	No	No	No	No

Note: Maximum daily emissions include contributions from onsite construction equipment, onsite vehicles, and offsite vehicles. The PM_{10} and $PM_{2.5}$ emissions include exhaust and fugitive dust emissions.

In addition to the SCAQMD significance thresholds, the CEC requires an assessment of the potential ambient air quality impacts for construction. However, only the inclusion of the maximum hourly, daily, monthly, and annual rolling 12 month emissions from onsite activities are required. Therefore, the modeled concentrations of

NO_x, CO, PM_{10}, $PM_{2.5}$, and SO_x from onsite construction activities were combined with the ambient background concentrations and compared to the AAQS. The exhaust emissions were modeled as volume sources with a plume centerline height of 4.6 meters (15 feet), and the fugitive dust emissions were modeled as an area source assuming an average release height of 1 meter. The maximum 1-hour NO_2 concentrations were derived from the predicted 1-hour NO_x concentrations at each receptor and the NO_2 to NO_x ratios as a function of downwind distance, as discussed in the SCAQMD Localized Significance Threshold Methodology (LST) (SCAQMD, 2003). The results of the construction modeling analysis are presented in the following section. A detailed summary of the assumptions and emission factors used to estimate the emission rates are presented in Appendix 5.1A. A summary of the dispersion modeling input files are presented in Appendix 5.1C.

Commissioning Impacts Analysis. During the HBEP commissioning periods, each turbine will be initially operated at various load rates without the benefit of the emission control systems to ensure proper operation of the equipment. However, the commission periods for Block 1 and Block 2 will not occur within the same year. Therefore, for the dispersion modeling analysis, it is assumed that the maximum predicted impacts for the simultaneous commissioning of all three units at Block 2 combined with the cold startup of all three units at Block 1 would be greater than the predicted impacts from the commissioning or cold startup of Block 1 only. It was also assumed that the maximum impact would occur if all three turbines were simultaneously undergoing commissioning activities with the highest unabated emissions (e.g., initial full speed no load CTG testing, steam blows, HRSG and steam safety valve settings). Therefore, the AERMOD coarse and refined grid dispersion analyses were conducted using the parameters and emission rates presented in Table 5.1-23. It is anticipated that Units 1 and 2 will be operational through the commissioning of Block 2. Therefore, the building downwash from the existing Huntington Beach Generating Station's Units 1 and 2 was also included in the dispersion modeling analysis.

The short-term concentrations of NO_2 and CO (the 1-hour and 8-hour impacts) from the commissioning of the project were combined with the ambient background concentrations and compared to the short-term AAQSs. Emission rates of PM_{10}, $PM_{2.5}$, and SO_x are expected to be equal to or lower than normal operating rates due to reduced loads during commissioning. The results of the commissioning modeling analysis are presented in the following section.

Because the commissioning of each of the two HBEP power blocks is expected to be completed within 180 calendar days (180 calendar days for Block 1 and 180 calendar days for Block 2) annual impacts were not evaluated for the commissioning of the project. Additional details used to determine the maximum commissioning emission details are presented in Appendix 5.1B. A summary of the dispersion modeling input files are presented in Appendix 5.1C.

TABLE 5.1-23
HBEP Commissioning Dispersion Modeling Scenarios

Scenarios	No. of Turbines/ Modeling Load	Exit Velocity (m/s)	Exhaust Temperature (K)	Emission Rates[a] (lb/hr)		
				1-Hr NO_x	1-Hr CO	8-Hr CO
CTG testing (full speed no load, FSNL)	Three/5%	10.06	499.8	48.53	1,709	1,709
Steam blows[b]	Three/50%	9.90	465.9	109.7	3,169	3,169
Set unit HRSG and steam safety valves	Three/100%	22.73	471.7	41.95	28.4	28.4
Restart CTGs and run HRSG in bypass mode. STG bypass valve tuning. HRSG blow down and drum tuning	Three/40%	9.95	473.2	25.97	1,373	1,373

[a] Emission rate given per turbine.
[b] The steam blows of the first CTG are expected to last up to 40 hours at 50 percent load. It is expected that steam blows on the remaining two CTGs will only last up to 20 hours (each) at 50 percent load.

m/s = meter(s) per second
K = degrees Kelvin

Operation Impacts Analysis. Turbine emissions and stack parameters, such as flow rate and exit temperature, would exhibit some variation with ambient temperature and operating load. Therefore, to evaluate the worst-case air quality impacts, an initial screening level dispersion modeling analysis was conducted at 70, 80, 90, and 100 percent load with and without duct burners at 32°F, 65.8°F, and 110°F. Because all six HBEP units are identical, a unit emission factor (1 g/s) was used to predict the downwind concentrations from the operation of Blocks 1 and 2 combined. At the completion of the screening level analysis, a refined grid dispersion modeling analysis was conducted based on the exhaust parameters and emission rates associated with the maximum predicted screening level impact. The emission rates used in the refined grid analysis are presented in Table 5.1-24.

TABLE 5.1-24
Emission Rates Corresponding to the Highest Predicted AERMOD Impacts

	Turbine 1 (lb/hr)	Turbine 2 (lb/hr)	Turbine 3 (lb/hr)	Turbine 4 (lb/hr)	Turbine 5 (lb/hr)	Turbine 6 (lb/hr)
NO_2						
1-Hour	25.5	25.5	25.5	25.5	25.5	25.5
Annual	9.34	9.34	9.34	9.34	9.34	9.34
CO						
1-Hour	115	115	115	115	115	115
8-Hour	45.4	45.4	45.4	45.4	45.4	45.4
SO_2						
1-hour	2.45	2.45	2.45	2.45	2.45	2.45
3-hour	2.45	2.45	2.45	2.45	2.45	2.45
24-hour	2.45	2.45	2.45	2.45	2.45	2.45
PM_{10}						
24-hour	9.50	9.50	9.50	9.50	9.50	9.50
Annual	4.11	4.11	4.11	4.11	4.11	4.11
$PM_{2.5}$						
24-hour	9.50	9.50	9.50	9.50	9.50	9.50
Annual	4.11	4.11	4.11	4.11	4.11	4.11

Emission rates are based on the following assumptions:

- The maximum 1-hour NO_x and CO turbine emission rates are based on a 60 minutes of a cold startup.
- 1-, 3-, and 24-hour SO_2 emission rate based on the worst-case fuel sulfur content of 0.75 grains per 100 dscf of natural gas.
- 8-hour CO emission rate estimate based on one cold startup, two warm startups, three shutdowns, and the remaining hours operating at 70 percent load.
- 24-hour PM_{10}/$PM_{2.5}$ emission rate estimates are based on operation at 100% load with duct burner firing.
- Annual emission rate for NO_x, PM_{10}, and $PM_{2.5}$ were based on 5,000 hours of turbine operation without duct burner firing at 100 percent load, 1,200 hours of turbine operation with duct burner firing at 100 percent load, 24 cold startups, 150 warm startups, 450 hot startups, and 624 shutdowns.

Emission rates presented in Table 5.1-24 were calculated based on vendor data and additional conservative assumptions of turbine performance. Exhaust parameters for the MPSA 501DA stacks were also based on information provided by the vendor. The 1-hour NO_x and CO emission rates were based on the conservative assumption that all six MPSA 501DA units would be in cold startup mode within the same hour. The 1-hour SO_2 emission rate was estimated based on a fuel sulfur concentration of 0.75 grains of sulfur per 100 dscf of natural gas.

The hourly emission rate for the 3-hour and 24-hour SO_2 averaging period were assumed to be the same as the 1-hour emission rate. The hourly emission rate for 8-hour CO averaging period was based on the conservative assumption that all six MPSA 501DA units would complete one cold startup, two warm startup events, three shutdowns, and the remaining hours operating at 70 percent load. The hourly emission rate for the 24-hour PM_{10} and $PM_{2.5}$ were based on operation at 100 percent load with duct burner firing. The maximum 3-, 8-, and 24-hour emission rates are presented in Table 5.1-24.

The annualized hourly NO_x, PM_{10}, and $PM_{2.5}$ emission rates for the annual impact assessment were based on:

- 5,000 hours of turbine operation without duct burner firing at 100 percent load,
- 1,200 hours of turbine operation with duct burner firing at 100 percent load,
- 24 cold startups,
- 150 warm startups,
- 450 hot startups, and
- 624 shutdowns

The annual emission rates are presented in Table 5.1-24. A summary of the source parameters and the UTM locations of each source are shown in Appendix 5.1C. The results of the modeling analysis are presented in the following section and Appendix 5.1C.

<u>Rule 1303 and Rule 1304</u>. SCAQMD Rule 1303 requires an ambient air quality analysis for each new emission source to demonstrate that a proposed project will not cause a violation or make significantly worse an existing violation of the CAAQS or NAAQS. However, under Rule 1304(a)(2), the HBEP is exempt from this rule because it is a replacement of existing electric utility steam boilers with combined cycle gas turbines with no increase in energy output rating. Therefore, a comparison of potential impacts on Regulation 1303, Appendix A-2 significant change in air quality thresholds is not required as part of this air quality impacts analysis. As previously discussed, the fire pump engines are existing permit units at the existing Huntington Beach Generating Station that will be retained and used for the HBEP. Therefore, they will not be subject to modeling under Rule 1303 and 1304 requirements. Further, permit requirements limit operation to 200 hours per year and Rule 1304(a)(4) otherwise exempts these engines from modeling under SCAQMD requirements.

<u>Rule 2005</u>. SCAQMD Rule 2005 sets forth pre-construction review requirements for new facilities subject to the requirements of the RECLAIM program, for modifications to RECLAIM facilities, and for facilities that increase their allocation to a level greater than their starting allocation plus non-tradable credits. The existing Huntington Beach Generating Station is currently subject to the RECLAIM requirements, and HBEP will also exceed the major NO_2 modification threshold of 1 lb/day. Therefore, Rule 2005 requires an ambient air quality analysis to demonstrate that HBEP will not cause a significant increase in the air quality concentration of NO_2 as specified in Rule 2005, Appendix A.

<u>Regulation XVII (PSD)</u>. SCAQMD Regulation XVII sets forth pre-construction review requirements for stationary sources to ensure that air quality in clean air areas does not significantly deteriorate, while maintaining a margin for future industrial growth, and shall apply to pre-construction review of new or modified stationary sources that emit more than 100 tpy of federal attainment air contaminants. Based on the estimate emissions and attainment designations, NO_x is the only attainment pollutant from HBEP that will exceed the significant emissions increase threshold for which dispersion modeling is applicable and be subject to dispersion modeling requirements (see Appendix 5.1E, Dispersion Modeling Protocol).

The dispersion modeling approach and settings used to evaluate the project NO_2 impacts for comparison to the NAAQS and CAAQS was also used to determine the PSD near field (Class II) impacts. Table 5.1-25 summarizes the Class II significance impact levels (SIL), Class II PSD increments, and the significant monitoring concentration levels.

TABLE 5.1-25
PSD Air Quality Impact Standards Applicable to the Project

Averaging Period/ Pollutant	Significance Impact Level ($\mu g/m^3$)	PSD Increment ($\mu g/m^3$)	Significant Monitoring Concentrations ($\mu g/m^3$)
NO_2 (1-hour)	7.52*	NS	NS
NO_2 (Annual)	1	25	14

*SIL for 1-hour NO_2 is based on SCAQMD correspondence (Chico, 2012).

NS = no standard

In addition to addressing HBEP's impacts within the near field, a Class I impact analysis was conducted to demonstrate that the HBEP will not cause or contribute to an exceedance of the Class I SIL or Increment Standards and will not adversely affect air quality-related values (AQRVs). In order to evaluate the potential impacts on Class I areas near the HBEP site, all Class I areas within 300 km of HBEP were identified. Based on this survey, the San Gabriel Wilderness and the Cucamonga Wilderness, which are approximately 69 km from the HBEP site, were identified as the nearest Class I areas. To address the PSD Class I Increment thresholds, AERMOD was used with a receptor ring at 50 km from the facility. The ring was spaced in 5-degree increments centered on the HBEP site location.

Table 5.1-26 summarizes the Class I SIL and allowable PSD increment consumption. If modeled impacts are below the SILs, then the project would be considered to have negligent impact at the more distant Class I areas.

TABLE 5.1-26
Class I SIL and Increment Standards Applicable to the Project

Averaging Period/ Pollutant	Significance Impact Level ($\mu g/m^3$)	PSD Increment ($\mu g/m^3$)
NO_2 (Annual)	0.1	2.5

To evaluate the potential impacts on visibility and deposition at the nearest Class I area, the Federal Class I area air quality guidance (FLAG 2010) allows an emissions/distance (Q/D) factor of 10 to be used as a screening criteria for sources located more than 50 km from a Class I area. This screening criterion includes all AQRVs. Emissions are calculated as the total SO_2, NO_x, PM_{10}, and sulfuric acid (H_2SO_4) annual emissions (in tpy, based on 24-hour maximum allowable emissions multiplied by 365 days) unless an emission source is limited to time periods shorter than a year. For this scenario, the annual equivalent emissions (Q) are calculated by multiplying the maximum permitted total tons per year of SO_2, NO_x, PM_{10}, and H_2SO_4 by the ratio of annual hours of operation (that is, 6,665 hours per year/permitted hour operation) (FLAG, 2010). Emissions (Q) are then divided by the distance (D) from the Class I area to calculate the Class I area visibility and deposition screening factor for comparison to the screening criteria.

Because the HBEP will be limited to an operating profile of 6,665 hours per year, the combined annual emissions of NO_x, SO_2, H_2SO_4 and PM_{10} from the HBEP are limited to approximately 367 tpy or an annual equivalent emissions (Q) of 483 tpy. Based on a distance from HBEP to the nearest Class I area of 69 km (D), the Class I area visibility and deposition screening factor for the HBEP (Q/D) is 7.0. The factor is less than the Federal Class I area air quality screening criteria of 10. Therefore, visibility and deposition modeling is not required for any of the Class I areas since the potential impacts are expected to be less than significant.

Modeling Results Compared to the Ambient Air Quality Standards

Construction Impacts Analysis. The results presented in Table 5.1-27 indicate that the maximum CO and SO_x construction impacts combined with the background concentrations will be below the AAQS for each averaging period. Although the predicted NO_2 concentrations include the implementation of the localized significance threshold NO to NO_2 conversion methodology, the predicted concentrations exceed the hourly and annual standards. As a result, mitigation measures will be implemented to reduce NO_2 impacts during the construction period. For particulate, the annual and 24-hour PM_{10} background concentrations exceed the state AAQS without adding the modeled concentrations and the $PM_{2.5}$ concentrations exceed the AAQS. As a result, the predicted impacts would also be greater than the AAQS. Based on the modeling analysis, fugitive dust is a significant contribution to the predicted concentrations but the maximum PM_{10} and $PM_{2.5}$ concentrations will remain near the property boundary. Similar to NO_2, the implementation of the construction mitigation measures presented in Section 5.1.8.1 are expected to reduce the offsite construction air quality impacts to less-than-significant levels.

TABLE 5.1-27
Maximum Modeled Impacts from Construction and the Ambient Air Quality Standards

Pollutant	Averaging Period	Maximum Modeled Concentration (μg/m^3)	Background Concentration[a] (μg/m^3)	Total Predicted Concentration (μg/m^3)	State Standard (μg/m^3)	Federal Standard (μg/m^3)
NO_2[b]	1-hour	591	152	743	339	—
	Federal 1-hour[c]	591	111	702	—	188
	Annual	155	24.8	179	57	100
SO_2	1-hour	4.74	26.2	30.9	655	—
	Federal 1-hour[d]	4.74	17.0	21.7	—	196
	3-hour	4.23	17.3	21.5	—	1,300
	24-hour	0.836	10.5	11.4	105	365
CO	1-hour	2,289	3,436	5,725	23,000	40,000
	8-hour	1,404	2,519	3,923	10,000	10,000
PM_{10}	24-hour	333	56	389	50	150
	Annual	121	23.5	145	20	—
$PM_{2.5}$	24-hour (98th percentile)	84.0	22.7	107	—	35
	Annual	31.1	10.4	41.5	12	15

[a] Background concentrations were the highest concentrations monitored during 2008 through 2010.
[b] The maximum 1-hour NO_2 concentration is based on LST output, and the maximum annual NO_2 concentration includes an NO_2 to NO_X equilibrium ratio of 0.75.
[c] Total predicted concentrations for the federal 1-hour NO_2 standard and 24-hour $PM_{2.5}$ standard are the respective maximum modeled concentrations combined with the three-year average of 98th percentile background concentrations.
[d] Total predicted concentrations for the federal 1-hour SO_2 standard is the maximum modeled concentrations combined with the three-year average of 99th percentile background concentrations.

Commissioning Impacts Analysis. The potential impacts on ambient air quality associated with the HBEP commissioning activities were assessed based on engineering estimates of schedule and emissions. As previously discussed, it is assumed that the maximum predicted impacts for the simultaneous commissioning of all three Block 2 units combined with the cold startup of all three units at Block 1 would be greater than the predicted impacts from the commissioning or cold startup of Block 1 only. It was also assumed that the maximum impact would occur if all three turbines were simultaneously undergoing commissioning activities with the highest unabated emissions (for example, initial full speed no load CTG testing, steam blows, HRSG and steam safety valve settings).

Table 5.1-28 presents a comparison of the maximum modeled project commissioning impacts to the AAQS. The duct burners are not expected to be fired during the initial unabated commissioning activities. Therefore, the maximum impacts for SO_2, PM_{10}, and $PM_{2.5}$ are expected to be equal to or lower than normal operating rates with duct firing. As a result, the SO_2, PM_{10}, and $PM_{2.5}$ impacts from normal operation of all six turbines with duct firing are included in Table 5.1-29 for comparison to the AAQS. The analysis excluded a comparison to the annual averaging period standards or thresholds because commissioning of each of the HBEP two power blocks will only occur once during the project lifetime, and is expected to be completed within 180 calendar days. The analysis also excluded a comparison to the federal 1-hour NO_2 and SO_2 standards because the maximum hourly unabated emission rates which result in the highest predicted concentrations are only expected to occur once in the life of the project and that one time would be less than 40 hours per turbine.[2] The 1-hour standards are also based on a 98th and 99th percentile statistical standard. Therefore, it is unlikely that simultaneous one-time unabated emissions for all three Block 2 turbines would occur at the same time as three Block 1 cold startup events on the days with the highest background NO_2 and ozone concentrations.

TABLE 5.1-28
Turbine Commissioning Impacts Analysis—Maximum Modeled Impacts Compared to the Ambient Air Quality Standards
Impacts Associated with Simultaneous Commissioning of Three Block 2 Turbines and Cold Startup of Three Block 1 Turbines

Pollutant	Averaging Time	Maximum Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)[a]	Total Predicted Concentration ($\mu g/m^3$)	State Standard ($\mu g/m^3$)	Federal Standard ($\mu g/m^3$)
NO_2[b]	1-hour	160.5	152	312.5	339	—
CO	1-hour	8,582	3,436	12,018	23,000	40,000
	8-hour	4,157	2,519	6,676	10,000	10,000
SO_2	1-hour	2.13	26.2	28.3	655	—
	3-hour	1.56	17.3	18.9	—	1,300
	24-hour	0.72	10.5	11.2	105	365
PM_{10}	24-hour	2.8	56	58.8	50	150
$PM_{2.5}$	24-hour[c]	2.8	22.7	25.5	—	35

[a] Background concentrations were the highest concentrations monitored during 2008–2010
[b] The maximum 1-hour NO_2 concentration is based on AERMOD PVMRM output.
[c] Total predicted concentrations for the 24-hour $PM_{2.5}$ standard are the respective maximum modeled concentrations combined with the three-year average of 98th percentile background concentrations.

The maximum facility NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$ impacts combined with the background concentration are less than the AAQS, with the exception of the state PM_{10} AAQS. The annual and 24-hour background PM_{10} concentrations exceed the state AAQS without adding the modeled concentrations. As a result, the predicted impacts would also be greater than the AAQS. However, the commissioning activity would be finite and the Applicant will limit the hours of operation required to complete the commissioning activities. As discussed in Section 5.1.8.2, HBEP emissions will be fully offset consistent with SCAQMD Rules 1303 and 1304 through the SCAQMD internal offset bank. Therefore, impacts from commissioning will be less than significant.

Operation Impacts Analysis. The highest modeled concentrations were used to demonstrate compliance with the AAQS. Table 5.1-29 presents a comparison of the maximum HBEP operational impacts to the AAQS. The NO_2, CO, SO_2, and $PM_{2.5}$ concentrations combined with the background concentrations do not exceed the AAQS. Therefore, HBEP will not cause or contribute to the violation of a standard, and the NO_2, CO, SO_2, and $PM_{2.5}$ impacts from operation will be less than significant.

For PM_{10}, the background concentrations exceed the AAQS without the proposed project, with the exception of the federal 24-hour standard. As a result, the predicted project impact plus background also exceeds the AAQS and the operation of the proposed project would further contribute to an existing violation of the state standards absent mitigation. As discussed in Section 5.1.8.2, HBEP emissions will be fully offset consistent with SCAQMD Rules 1303 and 1304 using the SCAQMD internal offset bank. Therefore, the PM_{10} impacts from operation will be less than significant.

A complete list of offsite impacts for the multiple turbine operating scenarios is presented in Appendix 5.1C.

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[2] The steam blows of the first CTG are expected to last up to 40 hours at 50 percent load and the remaining two CTGs would only last up to 20 hours (each) at 50 percent load.

TABLE 5.1-29
HBEP Operation Impacts Analysis—Maximum Modeled Impacts Compared to the Ambient Air Quality Standards

Pollutant	Averaging Time	Maximum Modeled Concentration (μg/m^3)	Background Concentration (μg/m^3)[a]	Total Predicted Concentration (μg/m^3)	State Standard (μg/m^3)	Federal Standard (μg/m^3)
NO_2[b]	1-hour	35.6	152	188	339	—
	Federal 1-hour[c]	35.6	111	146	—	188
	annual	0.86	24.8	25.7	57	100
SO_2	1-hour	2.13	26.2	28.3	655	—
	Federal 1-hour[d]	2.13	17.0	19.1	—	196
	3-hour	1.56	17.3	18.9	—	1,300
	24-hour	0.72	10.5	11.2	105	365
CO	1-hour	161	3,436	3,600	23,000	40,000
	8-hour	30.9	2,519	2,550	10,000	10,000
PM_{10}	24-hour	2.8	56	58.8	50	150
	Annual	0.44	23.5	23.9	20	—
$PM_{2.5}$	24-hour[c]	2.8	22.7	25.5	—	35
	Annual	0.44	10.4	10.8	12	15

[a] Background concentrations were the highest concentrations monitored during 2008 through 2010.
[b] The hourly and annual NO_2 concentrations conservatively assume a complete conversion of NO_x to NO_2.
[c] Total predicted concentrations for the federal 1-hour NO_2 standard and 24-hour $PM_{2.5}$ standard are the respective maximum modeled concentrations combined with the three-year average of 98th percentile background concentrations.
[d] Total predicted concentrations for the federal 1-hour SO_2 standard is the maximum modeled concentrations combined with the 3-year average of 99th percentile background concentrations.

Rule 2005.The maximum modeled NO_2 concentrations from the refined dispersion modeling analysis for each turbine are presented in Table 5.1-30 and compared to the Rule 2005 significance threshold. The maximum modeled NO_2 concentrations were also added to representative background concentrations, and the results compared to the state and federal ambient air quality standards for NO_2. The NO_2 concentrations per turbine exceed the Rule 2005 1-hour threshold but not the AAQS. Therefore, the predicted NO_2 impacts from operation will be less than significant compared to Rule 2005.

TABLE 5.1-30
Rule 2005 Air Quality Thresholds and Standards Applicable to the Project (per emission unit)

Pollutant/ Averaging Period	Maximum Modeled Impact (μg/m^3)	Significant Threshold[a] (μg/m^3)	Background Concentration (μg/m^3)[b]	Total Predicted Concentration (μg/m^3)	CAAQS/NAAQS (μg/m^3)
NO_2 (1-hour)	24.4	20	152	176	339/NA
NO_2 (federal 1-hour)	24.4	NA	111	135	NA/188[c]
NO_2 (annual)	0.148	1	24.8	24.9	57/100

[a] Allowable change in air quality concentration per emission unit per Rule 2005, Appendix A.
[b] Background concentrations were the highest concentrations monitored during 2008 through 2010, unless otherwise noted
[c] National 1-hour standard represents the 3-year average of the 98th percentile of the daily maximum 1-hour average

Regulation XVII (PSD).Table 5.1-31 presents a summary of the predicted hourly and annual NO_2 impacts and a comparison to the Class II modeling SILs, Class II PSD increments, and the significant monitoring concentration levels. The predicted annual NOx impacts are less than the significance levels listed in Table 5.1-31. Therefore, the annual NOx impacts are less than significant and no further analysis is required. The maximum 1-hour NO_2 concentration exceeds the significance impact level assuming a 100 percent conversion of NO to NO_2. The radius of impact with predicted concentrations greater than 7.52 μg/m^3 is 2.9 kilometers. Based on a survey of the area within 2.9 km, it is expected that the significant NOx sources within this distance are represented in the existing background data and the results presented in Table 5.1-29 indicate that even with the conservative assumption of 100 percent conversion and the use of the maximum background NO_2 concentration, HBEP will not cause or contribute to a violation of the AAQS. Furthermore, the NO_2 impacts from the existing Huntington Beach Generating Station Units 1 through 4 are also included in the background concentrations and would no longer be operating at the completion of the HBEP. Therefore, the combined impacts from the existing NO_2 sources within 2.9 km of the existing Huntington Beach Generating Station and the predicted impacts from HBEP are not expected to cause or contribute to a violation of the NAAQS or CAAQS.

TABLE 5.1-31
HBEP Predicted Impacts Compared to the PSD Air Quality Impact Standards

Averaging Period/ Pollutant	Maximum Predicted Impact (µg/m^3)	Significance Impact Level (µg/m^3)	PSD Increment (µg/m^3)	Significant Monitoring Concentrations (µg/m^3)
NO_2 (1-hour)	35.6	7.52	NS	NS
NO_2 (annual)	0.86	1	25	14

* SIL for 1-hour NO_2 is based on SCAQMD correspondence (Chico, 2012).

Note:The hourly and annual NO_2 concentrations conservatively assume a complete conversion of NO_x to NO_2.

NS = no standard

Table 5.1-32 presents a summary of the predicted annual NO_2 impacts and a comparison to the Class I Increment thresholds. The predicted impacts from the operation of the HBEP are below the SILs. Therefore, the project would have a negligible impact at the more distant Class I areas.

TABLE 5.1-32
HBEP Predicted Impacts Compared to the Class I SIL and Increment Standards

Averaging Period/ Pollutant	Maximum Predicted Impact at 50 km (µg/m^3)	Significance Impact Level (µg/m^3)	PSD Increment (µg/m^3)
NO_2 (annual)	0.030	0.1	2.5

Fumigation Impacts Analysis. A meteorological condition that can produce high concentrations of ground-level pollutants is referred to as shoreline or inversion breakup fumigation. Inversion breakup fumigation occurs when a plume is emitted into a stable layer of air and that layer is then mixed to the ground in a short period of time through convective heating and microscale turbulence. Shoreline fumigation occurs when a plume is emitted into a stable layer of air and is then mixed to the surface as a result of advection of the air mass to less stable surroundings. Under both conditions, an exhaust plume may be drawn to the ground with little diffusion, causing high ground-level pollutant concentrations, although typically for periods less than 1 hour. Therefore, only comparisons to the 1-hour standards were included.

In some cases, the fumigation impacts can be greater than impacts predicted with the AERMOD model. To verify that fumigation impacts do not result in higher ambient air quality impacts, fumigation modeling was conducted. The effects of fumigation on the maximum modeled impacts were evaluated using the EPA SCREEN3 model (Version 96043) (EPA, 1992). The results of the fumigation modeling were based on the respective load and operating scenario which was identified in the operational ambient air quality impact analysis as the worse-case turbine impact scenario for each combination of pollutant and averaging time. Regulatory default mixing heights were selected.

The maximum inversion breakup fumigation concentration predicted by SCREEN3 occurs over 18 kilometers downwind of the combustion turbine locations, while the maximum shoreline fumigation occurs at over 1.4 kilometers downwind of the combustion turbine locations. Table 5.1-33 presents a comparison of the potential HBEP operational fumigation impacts to the AAQS. The NO_2, SO_2, and CO concentrations combined with the background concentrations do not exceed the state AAQS. Therefore, fumigation impacts of NO_2, SO_2, and CO would be less than significant.

TABLE 5.1-33
HBEP Operation Impacts Analysis—Fumigation Impacts Analysis Results Compared to the Ambient Air Quality Standards

Pollutant	Averaging Time	SCREEN3 Fumigation Result ($\mu g/m^3$)	Background Concentration[a] ($\mu g/m^3$)	Total Predicted Concentration ($\mu g/m^3$)	State Standard ($\mu g/m^3$)	Federal Standard ($\mu g/m^3$)
NO_2	1-hour	131.3[b]	152	283	339	—
SO_2	1-hour	10.9	26.2	37.1	655	—
CO	1-hour	660	3,436	4,096	23,000	40,000

[a] Background concentrations were the highest concentrations monitored during 2008 through 2010.
[b] 1-hr NO_2 results include a NO_2 to NO_X equilibrium ratio of 0.9.

5.1.7 Cumulative Effects

The Applicant requested a list of projects that are within a 6-mile radius of HBEP and are either currently in the permitting process, undergoing CEQA review, or recently receiving a Permit to Construct (PTC) from the SCAQMD. Once the source list is received, the sources will be provided to the CEC for review and comment on the appropriateness of excluding specific sources (sources with negligible emissions, administrative permit amendments with no increase in air emissions, and VOC sources) and a cumulative air quality impact analysis will be prepared using the methodology presented in the Air Dispersion Modeling Protocol within 60 days of receipt of the necessary data from the air district. This cumulative impact analysis will also be used to demonstrate HBEP's compliance with the 1-hour federal NO_2 standard consistent with PSD program requirements.

5.1.8 Mitigation Measures

5.1.8.1 Construction Mitigation

SCAQMD Rule 403 requires the implementation of best mitigation practices to control fugitive dust[3]. Construction impacts will be further reduced with the implementation of a construction fugitive dust and diesel-fueled engine control plan. This plan will focus on reducing construction air quality impacts and will include the following construction mitigation measures:

- Watering unpaved roads and disturbed areas
- Limiting onsite vehicle speeds to 10 mph and post the speed limit
- Frequent watering during periods of high winds when excavation/grading is occurring
- Sweeping onsite paved roads and entrance roads on an as-needed basis
- Replacing ground cover in disturbed areas as soon as practical
- Covering truck loads when hauling material that could be entrained during transit
- Applying dust suppressants or covers to soil stockpiles and disturbed areas when inactive for more than 2 weeks
- Using ultra-low sulfur diesel fuel (15 ppm sulfur) in all diesel-fueled equipment
- Use of Tier III construction equipment where feasible
- Maintaining all diesel-fueled equipment per manufacturer's recommendations to reduce tailpipe emissions
- Limiting diesel heavy equipment idling to less than 5 minutes, to the extent practical
- Using electric motors for construction equipment to the extent feasible

5.1.8.2 Operational Mitigation

During operations, the appropriate mitigation measure is to reduce potential air emissions before they are emitted. This is accomplished by the careful design of the project, including the installation of the best available control technology (BACT) to minimize air emissions. Air quality impacts will be further mitigated by providing emission offsets in the quantity expected to be emitted. The remainder of this section describes the BACT analysis and the emission offset mitigation.

[3] Best Available Control Measures means fugitive dust control actions that are set forth in Table 1 of Rule 403.

BACT Analysis. Based on the SCAQMD's BACT definition and major source thresholds (SCAQMD Rule 1302 and 1303), a BACT analysis is required for the uncontrolled emissions of NO_x, VOCs, CO, SO_x, PM_{10}, and $PM_{2.5}$. The EPA also requires a BACT analysis for the emissions of GHGs as part of the PSD permit application required under the EPA Tailoring Rule.

HBEP relies on the response characteristics of the MPSA 501DA combustion turbines and duct burning firing to provide a wide range of efficient, operationally flexible, fast start, fast ramping capacity to allow for the efficient integration of renewable energy sources into the California electrical grid. However, the Applicant does not anticipate that duct burning will be required every hour the turbines are operating to meet the variable electric generation demands. Therefore, the Applicant has proposed two separate permit levels to allow the flexibility of operating the turbines with and without duct burning. The proposed HBEP emission limits are presented in Table 5.1-34.

TABLE 5.1-34
Proposed BACT Emission Limits for HBEP

	Emission Limit (at 15% O_2)	
Pollutant	**Without Duct Burning**	**With Duct Burning**
NO_x	2.0 ppm (averaged over 1 hour)	2.0 ppm (averaged over 1 hour)
CO	2.0 ppm (averaged over 1 hour)	2.0 ppm (averaged over 1 hour)
VOC	1.0 ppm (averaged over 1 hour)	1.0 ppm (averaged over 3 hours)
PM_{10}	4.5 lb/hr	9.5 lb/hr
$PM_{2.5}$	4.5 lb/hr	9.5 lb/hr
SO_x	0.75 grain of sulfur/100 scf of natural gas	0.75 grain of sulfur/100 scf of natural gas

The proposed BACT for NO_x emissions is the use of dry low NO_x combustors with SCR to control NO_x emissions to 2.0 ppmvd (1-hour average) with and without duct burning. The BACT for CO emissions is best combustion design and the installation of an oxidation catalyst system to control CO emissions to 2.0 ppmvd (1-hour) with and without duct burning. The BACT for VOC emissions is best combustion design and the installation of an oxidation catalyst system to control VOC emissions to 1.0 ppmvd (1-hour) without duct burning and 1.0 ppmvd (3-hour) with duct burning. The BACT for PM_{10}/$PM_{2.5}$ emissions is best combustion practice, use of pipeline-quality natural gas, and use inlet air filtration to control PM_{10}/$PM_{2.5}$ emissions to 4.5 lb/hr without duct burning and 9.5 lb/hr with duct burning. The BACT for SO_2 is the exclusive use of low sulfur pipeline-quality natural gas with a maximum fuel sulfur content of 0.75 grains per 100 standard cubic feet. A complete summary of the top down BACT assessment for criteria pollutants is included in Appendix 5.1D.

GHG pollutants are emitted during the combustion process when fossil fuels are burned. One of the possible ways to reduce GHG emissions from fossil fuel combustion is to use inherently lower GHG-emitting fuels and to minimize the use of fuel, which in this case is achieved by using thermally efficient gas turbines, with well designed HRSGs and STGs to generate additional power from the heat of the gas turbine exhaust.

As discussed in Appendix 5.1D, the MPSA 501DA CTGs operating in a combined cycle operating configuration as a multistage generator compares favorably with other comparable simple cycle turbines operating in a peaking capacity. The HBEP turbines and duct burners will combust natural gas in order to generate electricity from the both the CTG and STG units. Therefore, the thermal efficiency for the project is best measured in terms of pounds of CO_2e per MWh.

The performance of all CTGs degrades over time. Typically turbine degradation at the time of recommended routine maintenance is up to 10 percent. Additionally, thermal efficiency can vary significantly with combustion turbine turndown and steam turbine/duct firing combinations. Finally, annual metrics for output-based limits on GHG emissions are affected by startup and shutdown periods because fuel is combusted before useful output of energy or steam. Therefore, the annual average thermal efficiency performance of any turbine will be greater than the optimal efficiency of a new turbine operating continuously at peak load over the lifetime of the turbine.

Based on the top-down GHG BACT analysis included in Appendix 5.1D, the only feasible and cost-effective option is the "Thermal Efficiency" option, which, therefore, was selected as the BACT. The GHG BACT calculation for the HBEP was determined in pounds of CO_2e per MWh of energy output (on a gross basis) and includes the inherent degradation in turbine performance over the life of the HBEP. HBEP has concluded that the BACT for GHG emissions is an emission rate of 1,082 pounds CO_2/MWhr of gross energy output, and a total annual CO_2e emissions limit of 3,183,226 metric tons per year. Degradation over time and turndowns, startup, and shutdown are incorporated into these limits.

Emission Offsets. The project would be required to provide emission offsets for SO_2, PM_{10}, and VOC emissions and RECLAIM trading credits (RTCs) for NO_x and SOx emissions under SCAQMD Rules 1303 and 2005. Under the exemption in Rule 1304(a)(2), HBEP is exempt from Rule 1303 offsetting requirements because the HBEP is a replacement of existing electric utility steam boilers with combined cycle gas turbines with no increase in energy output rating. The requirement to provide offsets is still applicable but is the responsibility of the SCAQMD to surrender offsets consistent with Rule 1303. AES plans to enable the offset exemption under Rule 1304(b)(2) for the 939 MWs at HBEP by permanently retiring Redondo Beach Generating Units 6 (175 MW) and 8 (480 MW) and Huntington Beach Generating Station Units 1 and 2 (215 MW each) for a total of 1,085 MW. The surplus megawatts from these retirements will be applied to repowering projects at other AES-owned facilities in the future.

The Rule 1304 offset exemption does not extend to Regulation XX RTC and the Applicant will secure the required NO_x and SOx RTCs for the first year and subsequent years of operation as outlined in Table 5.1-35. The first years of operation assume a multi-year cycle for the commissioning and operation of the two 3 × 1 combustion turbine blocks and include emissions from startup and shutdown events:

- Year 1 includes the NO_x and SOx emissions from the commissioning and operation of Block 1.
- Year 2 includes the NO_x and SOx emissions from the operation of Block 1 only.
- Year 3 includes the NO_x and SOx emissions from the operation of Block 1 and the commissioning and operation of Block 2.
- Year 4 includes the NO_x and SOx emissions from the operation of Blocks 1 and 2.

TABLE 5.1-35
SCAQMD NO_x/SOx RECLAIM Requirements

Pollutant	Offsets Required[a]
NO_x	252,503 lb NO_x RTCs (first year – Block 1 Commissioning Plus Operation) 227,655 lb NO_x RTCs (second year – Block 1 Operation Only) 480,158 lb NO_x RTCs (third year – Block 1 Operation plus Block 2 Commissioning and Operation) 455,310 lb NO_x RTCs (Block 1 and Block 2 Operation)
SO_x[b]	18,917 lb SO_x RTCs (first year – Block 1 Commissioning Plus Operation) 15,725 lb SO_x RTCs (second year – Block 1 Operation Only) 34,643 lb SO_x RTCs (third year – Block 1 Operation plus Block 2 Commissioning and Operation) 31,451 lb SO_x RTCs (Block 1 and Block 2 Operation)

[a]The first- and third-year RTC calculation includes the commissioning activities for Block 1 and Block 2, respectively, plus 624 startups and shutdowns per year, 1,200 hours of turbine operation at 100 percent load, 65.8°F and duct burner firing, and 5,000 hours of turbine operation at 100 percent load, 65.8°F. The second and fourth year normal operation RTC calculation includes 624 startups and shutdowns per year, 1,200 hours of turbine operation at 100 percent load, 65.8°F and duct burner firing, and 5,000 hours of turbine operation at 100 percent load, 65.8°F.

[b] The SOx RECLAIM calculation is based on a maximum hourly SOx emission rate with duct burner firing for warm and hot startup events, a maximum hourly emission rate without duct burner for cold startup and a shutdown events, and the annual allowable SOx emission rate with and without duct burner firing for the normal operations.

Ref: Rule 1304(d)(1)(B), Rule 1303(b)(2), Rule 1304, Table A, Regulation 2005

5.1.9 Laws, Ordinances, Regulations, and Standards

The CAA, implemented by EPA, requires major new and modified stationary sources of air pollution to obtain a construction permit prior to commencing construction through a program known as the federal New Source Review (NSR) program. The requirements of the NSR program are dependent on whether the air quality in the area where the new source (or modified source) is being located attains the NAAQS. The program that applies in areas that are in attainment of the NAAQS is the Prevention of Significant Deterioration (PSD). The program that applies to areas where the air does not meet the NAAQS (termed non-attainment areas) is the non-attainment NSR.

EPA implements the NSR program through regional offices. Arizona, California, Hawaii, Nevada, and specific Pacific trust territories are administrated out of the EPA Region IX office in San Francisco. EPA typically delegates its NSR, Title V, and Title IV authority to local air quality agencies that have sufficient regulatory structure to implement these programs consistent with requirements of the CAA and implementing regulations. SCAQMD has been delegated several of these programs, including the authority to administer the PSD program.

ARB was established by the state legislature in 1967 with the purpose of attaining and maintaining healthy air quality, conducting research into causes and solutions to air pollution, and addressing the impacts that motor vehicles have on air quality. To this end, ARB implements the following programs:

- Establish and enforce motor vehicle emission standards, including fuel standards.
- Monitor, evaluate, and set health-based air quality standards.
- Conduct research to solve air pollution problems.
- Establish toxic air contaminant (TAC) control measures.
- Oversee and assist local air quality districts.

Air pollution control districts were established based on meteorological and topographical factors. The districts were established to enforce air pollution regulations for the purpose of attaining and maintaining all state and federal AAQS. The districts regulate air emissions by issuing air permits to stationary sources of air pollution in compliance with approved regulatory programs. Each district promulgates rules and regulations specific to air quality issues within its jurisdiction. The air emissions sources regulated by each district vary. The types of air pollution sources that might be regulated include manufacturers, power plants, refineries, gasoline service stations, and auto body shops.

The applicable LORS and compliance with these requirements are discussed in more detail in the following sections. Applicable PTC forms have been prepared in conjunction with this AFC and are included in Appendix 5.1E.

5.1.9.1 Federal LORS

EPA promulgates and enforces federal air quality regulations, with Region IX administering the federal air programs in California. The federal CAA provides the legal authority to regulate air pollution from stationary sources. The applicable federal regulations are summarized in Table 5.1-36, along with the agency responsible for administration of the regulation.

TABLE 5.1-36
Applicable Federal Laws, Ordinances, Regulations, and Standards for Protection of Air Quality

LORS	Purpose	Regulating Agency	Applicability/Compliance Strategy
Title 40 CFR Part 50	Establishes AAQS for criteria pollutants.	EPA Region IX	The Applicant conducted a dispersion modeling analysis to determine if the project would exceed the state or federal AAQS. Dispersion modeling indicates the project will not exceed the state or federal AAQS for the attainment pollutants during normal operations. Non-attainment pollutant emissions will be mitigated consistent with the SCAQMD's State Implementation Plan-Approved NSR program.
Title 40 CFR Parts 51, NSR (SCAQMD Reg XIII)	Requires pre-construction review and permitting of new or modified stationary sources of air pollution to allow industrial growth without interfering with the attainment and maintenance of AAQS.	SCAQMD with EPA Region IX	Requires NSR facility permitting for construction or modification of specified stationary sources. NSR applies to pollutants for which ambient concentration levels are higher than NAAQS. The NSR requirements are implemented at the local level with EPA oversight (SCAQMD Reg XIII). A PTC and Permit to Operate (PTO) application will be obtained from SCAQMD prior to construction of the project. As a result, the compliance requirements of 40 CFR, Part 51 will be met.
Title 40 CFR Parts 52, PSD	The PSD program allows new sources of air pollution to be constructed, or existing sources to be modified in areas classified as attainment, while preserving the existing ambient air quality levels, protecting public health and welfare, and protecting Class I Areas (e.g., national parks and wilderness areas).	SCAQMD with EPA Region IX	The PSD requirements apply on a pollutant-specific basis to any project that is a new major stationary source or a major modification to an existing major stationary source. SCAQMD classifies an unlisted source (which is not in the specified 28 source categories) that emits or has the potential to emit 250 tpy of any pollutant regulated by the Act as a major stationary source. For listed sources, the threshold is 100 tpy. NO_x, VOC, or SO_x emissions from a modified major source are subject to PSD if the cumulative emission increases for either pollutant exceeds 40 tpy. In addition, a modification at a non-major source is subject to PSD if the modification itself would be considered a major source. In May 2010, EPA issued the GHG permitting rule officially known as the "Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule" (GHG Tailoring Rule), in which EPA defined six GHG pollutants (collectively combined and measured as CO_2e) as NSR-regulated pollutants and therefore subject to PSD permitting when new projects emit GHG pollutants above certain threshold levels. Under the GHG Tailoring Rule, beginning July 1, 2011, new sources with a GHG PTE equal to or greater than 100,000 tpy of CO_2e will be considered a major source and required to undergo PSD permitting, including preparation of a BACT analysis for GHG emissions. Modifications to existing major sources (CO_2e PTE of 100,000 tpy or greater) that result in an increase of CO_2e greater than 75,000 tpy are similarly required to obtain a PSD permit, which includes a GHG BACT analysis. HBEP is a combined-cycle project and would be considered one of the 28 source categories. Therefore, the emission rates were compared to the 100 ton per year threshold. As shown in Table 5.1-17, the net emission increase in NO_x and VOC would exceed the 100 tpy per pollutant. Therefore, HBEP would be subject to PSD analysis requirements for NO_x and VOC. The project also results in a GHG emissions increase above the new source PSD thresholds for CO_2e. Therefore, the project is subject to the GHG Tailoring Rule, and is required to obtain a PSD permit for GHGs. A PSD application will be submitted to the SCAQMD and EPA as part of the authority to construction permit application.

TABLE 5.1-36
Applicable Federal Laws, Ordinances, Regulations, and Standards for Protection of Air Quality

LORS	Purpose	Regulating Agency	Applicability/Compliance Strategy
Title 40 CFR, Part 60 (SCAQMD Rule IX)	Establishes national standards of performance for new or modified facilities in specific source categories.	SCAQMD with EPA Region IX oversight	Proposed 40 CFR Part 60 Subpart KKKK – NO_x Emission Limits for New Stationary Combustion Turbines would apply to all new combustion turbines that commence construction, modification, or reconstruction after February 18, 2005. The rule requires natural gas-fired turbines greater than or equal to 30 MW to meet a NO_x emission limit of 50 nanograms per Joule (ng/J) (0.39 pounds per megawatt-hour [lb/MW-hr]), and an SO_2 limit of 73 ng/J (0.58 lb/MW-hr). Alternatively, a fuel sulfur limit of 500 parts per million by weight (ppmw) could be met. Stationary combustion turbines regulated under this subpart would be exempt from the requirements of Subpart GG. The proposed turbine will utilize dry low NO_x combustors along with an SCR system, pipeline-quality natural gas, and will comply with both the NO_x and SO_2 limits. The NO_x and SO_2 emissions from the turbines will be 0.12 lb/MW-hr and 0.021 lb/MW-hr, respectively. The certified NO_x Continuous Emission Monitoring System (CEMS) will ensure compliance with the standard. Records of natural gas use and fuel sulfur content will ensure compliance with the SO_2 limit.
Title 40 CFR, Part 63	Establishes national emission standards to limit emissions of hazardous air pollutants (HAPs, or air pollutants identified by EPA as causing or contributing to the adverse health effects of air pollution but for which NAAQS have not been established) from facilities in specific categories.	SCAQMD with EPA Region IX oversight	Title 40, Code of Federal Regulations, Part 63—National Emission Standards for Hazardous Air Pollutants for Source Categories, establishes emission standards to limit emissions of hazardous air pollutants from specific source categories for Major HAP sources. Sources subject to Part 63 requirements must either use the maximum achievable control technology (MACT), be exempted under Part 63, or comply with published emission limitations. The potential National Emissions Standards for Hazardous Air Pollutants (NESHAP) applicable to the project are Subpart YYYY, which sets a formaldehyde emission limit or an operational limit of 91 parts per billion by volume (ppbv) for turbines. Projects would be subject to the Title 40 CFR, Part 63 requirements if the HAP PTE is greater or equal to 25 tpy for combined HAPs and 10 tpy for individual HAPs. As shown in Section 5.9 (Public Health), HBEP would not exceed the major source thresholds for HAPs (10 tpy for any one pollutant or 25 tpy for all HAPs combined). Therefore, HBEP would be less than the 40 CFR, Part 63 applicability threshold. Although HBEP emissions are below the applicability threshold, the expected formaldehyde emissions associated with HBEP would be less than 91 ppbv. Therefore, the project is expected to comply with the Subpart YYYY control technology and formaldehyde emission limit requirement of 91 ppbv.

TABLE 5.1-36
Applicable Federal Laws, Ordinances, Regulations, and Standards for Protection of Air Quality

LORS	Purpose	Regulating Agency	Applicability/Compliance Strategy
Title 40 CFR Part 64 (CAM Rule)	Establishes onsite monitoring requirements for emission control systems.	SCAQMD with EPA Region IX oversight	Title 40, Code of Federal Regulations, Part 64—Compliance Assurance Monitoring (CAM), requires facilities to monitor the operation and maintenance of emissions control systems and report any control system malfunctions to the appropriate regulatory agency. If an emission control system is not working properly, the CAM rule also requires a facility to take action to correct the control system malfunction. The CAM rule applies to emissions units with uncontrolled potential to emit levels greater than applicable major source thresholds. Emission control systems governed by Title V operating permits requiring continuous compliance determination methods are generally compliant with the CAM rule. HBEP will have an emission control systems for NO_x and CO (SCR and oxidation catalyst). However, emissions of NO_x and CO would be directly measured by a continuous monitoring system. Therefore, HBEP is exempt from the CAM provisions based on the exemption in Title 40 CFR Part 64.2(b)(vi) and SCAQMD Reg XX for NO_x.
Title 40 CRF Part 70 (SCAQMD Reg XXX)	CAA Title V Operating Permit Program	SCAQMD with EPA Region IX oversight	Title 40, Code of Federal Regulations, Part 70—Operating Permits Program, requires the issuance of operating permits that identify all applicable federal performance, operating, monitoring, recordkeeping, and reporting requirements. The requirements of 40 CFR, Part 70 apply to facilities that are subject to NSPS requirements and are implemented at the local level through SCAQMD Reg XXX. According to Reg XXX, Rule 3001, a facility would be required to submit a Title V application if the facility had a potential to emit greater than 10 tpy NO_x or VOC, 100 tpy of SO_x, 50 tpy of CO, or 70 tpy of PM_{10}, the HAP PTE is greater or equal to 25 tpy for combined HAPs and 10 tpy for individual HAPs, or the facility has the potential to emit greater than 100,000 tpy CO_2e. HBEP will exceed the Title V thresholds listed in Rule 3001. As a result, HBEP will submit a Title V application as part of the permitting process.
Title 40 CFR Part 72 (SCAQMD Reg XXXI)	CAA Acid Rain Program	SCAQMD with EPA Region IX oversight	Title 40, Code of Federal Regulations, Part 72—Acid Rain Program, establishes emission standards for SO_2 and NO_x emissions from electric generating units through the use of market incentives, requires sources to monitor and report acid gas emissions, and requires the acquisition of SO_2 allowances sufficient to offset SO_2 emissions on an annual basis. An acid rain facility, such as HBEP, must also obtain an acid rain permit as mandated by Title IV of the Clean Air Act. A permit application must be submitted to SCAQMD at least 24 months before operation of the new units commences. The application must present all relevant sources at the facility, a compliance plan for each unit, applicable standards, and estimated commencement date of operation. The necessary Title IV applications will be submitted as part of the permitting process.

5.1.9.2 State LORS

ARB's primary responsibilities are to develop, adopt, implement, and enforce the state's motor vehicle pollution control program; to administer and coordinate the state's air pollution research program; to adopt and update, as necessary, the state's AAQS; to review the operations of the local air pollution control districts; and to review and coordinate preparation of the State Implementation Plan for achievement of the federal AAQS.

The California Health and Safety Code, Section 41700 prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, that endanger the comfort, repose, health, or safety of the public, or that damage business or property.

The state has promulgated numerous laws and regulations at the state level (Toxic Air Contaminants and Air Toxic Hot Spots) which are effectuated at the local level by the air districts. A discussion of these state and local LORS is presented in Tables 5.1-37 and 5.1-38, respectively. A discussion of the public health risks posed by emissions of toxic air contaminants, including ammonia, is presented in Section 5.9, Public Health.

TABLE 5.1-37
Applicable State Laws, Ordinances, Regulations, and Standards for the Protection of Air Quality

LORS	Purpose	Regulating Agency	Applicability/Compliance Strategy
California Code of Regulations, Section 41700	Prohibits emissions in quantities that adversely affect public health, other businesses, or property.	SCAQMD with ARB oversight	The CEC conditions of exemption and the air quality management district PTC processes are developed to ensure no adverse public health affects or public nuisances result from operation of the project.
California Assembly Bill 32 – Global Warming Solutions Act of 2006 (AB32)	The purpose is to reduce carbon emissions within the state by approximately 25 percent by the year 2020.	SCAQMD with ARB oversight	Requires the ARB to develop regulations to limit and reduce GHG emissions.
California Air Resources Board California Code of Regulations, Title 17, Article 5	Establishes GHG limitations, reporting requirements, and a Cap and Trade offsetting program.		The ARB has promulgated a Cap and Trade regulation that limits or caps greenhouse gas emissions and requires subject facilities to acquire GHG allowances. HBEP greenhouse gas emissions have been estimated and the Applicant will report emissions and acquire allowances consistent with these regulations.
California Senate Bill 1368 – Emissions Performance Standards (SB 1368)	The law limits long-term investments in baseload generation by the state's utilities to power plants that meet an emissions performance standard (EPS) jointly established by the California Energy Commission and the California Public Utilities Commission.	CEC with ARB oversight	The CEC has designed regulations that establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 lbs CO_2 per megawatt-hour (MWh). HBEP will emit 1,082 lbs CO_2 per megawatt-hour.

TABLE 5.1-38
Applicable Local Laws, Ordinances, Regulations, Standards, and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Applicability/Compliance Assessment
SCAQMD Rule 201	Rule 201 (Permit to Construct) establishes an orderly procedure for the review of new and modified sources of air pollution through the issuance of permits.	SCAQMD	Rule 201 specifies that any facility installing nonexempt equipment that causes or controls the emission of air pollutants must first obtain a Permit to Construct from the SCAQMD. SCAQMD has three separate preconstruction review programs for new or modified sources of criteria pollutant emissions: Reg XIII (New Source Review), Reg XVII (Prevention of Significant Deterioration), and Rule 2005 (NSR for RECLAIM). The air quality analysis includes an assessment of the air quality impacts in accordance with Reg XIII, Reg XVII, and Rule 2005. The completed SCAQMD PTC application forms have also been included in Appendix 5.1E.
SCAQMD Rule 201.1	Rule 201.1 incorporates the permit conditions in federally issued permits to construct.	SCAQMD	A person constructing and/or operating equipment or an agricultural permit unit, pursuant to a permit to construct issued by the federal Environmental Protection Agency, shall construct the equipment or agricultural permit unit in accordance with the conditions set forth in that permit, and shall operate the equipment or agricultural permit unit at all times in accordance with such conditions. A federal PSD permit will be obtained for the HBEP. The Applicant will comply with the permit conditions established in the PSD permit.
SCAQMD Rule 212	The purpose of this rule is to establish standards for approving permits and issuing public notice.	SCAQMD	Rule 212 requires public notification if a. any new or modified permit unit, source under Regulation XX, or equipment under Regulation XXX that may emit air contaminants is located within 1,000 feet from the outer boundary of a school. b. any new or modified facility which has on-site emission increases exceeding any of the daily maximums specified in subdivision (g) of this rule; c. any new or modified permit unit, source under Regulation XX, or equipment under Regulation XXX with increases in emissions of toxic air contaminants, for which the Executive Officer has made a determination that a person may be exposed to a maximum individual cancer risk (MICR) is greater than, one in one million (1×10^{-6}), due to a project's proposed construction, modification, or relocation for facilities with more than one permitted equipment unless the applicant can show the total facility-wide MICR is below ten in a million (10×10^{-6}). HBEP will be greater than 1,000 feet from the outer boundary of a school and the predicted total facility-wide MICR is less than one in one million. However, the on-site emissions will exceed the daily maximums listed in subdivision (g) of this rule. Therefore, a public notice consistent with the requirements outlined in Rule 212 will be issued. The process for public notification and comment will include all of the applicable provisions of 40 Code of Federal Regulations (CFR) Part 51, Section 51.161(b), and 40 CFR Part 124, Section 124.10
SCAQMD Rule 218	Establishes requirements for a Continuous Emissions Monitoring System (CEMS)	SCAQMD	The owner or operator of any equipment subject to this Rule shall provide, properly install, operate, and maintain in calibration and good working order a certified CEMS to measure the concentration and/or emission rates, as applicable, of air contaminants and diluent gases, flow rates, and other required parameters. Each gas turbine will be equipped with a CEMS. These units will comply with all applicable requirements of Rule 218, Rule 212 (NO_x/SOx RECLAIM) and Title IV (Acid Rain – 40 CFR75).
SCAQMD Rule 401	Establishes limits for visible emissions from stationary sources.	SCAQMD	Rule 401 prohibits visible emissions as dark as or darker than Ringlemann No. 1 for periods greater than 3 minutes in any hour. Natural gas will be the only fuel fired in the natural gas turbines. Therefore, the project will not create visible emissions as dark as or darker than Ringlemann No. 1.
SCAQMD Rule 402	Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property.	SCAQMD	A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The CEC conditions of exemption and the SCAQMD PTC process are designed to ensure that the operation of the project will not cause a public nuisance.
SCAQMD Rule 403	Establishes requirements to reduce the amount of particulate matter entrained in the ambient air as a result of man-made fugitive dust sources.	SCAQMD	Rule 403 requires the implementation of best available control measures to minimize fugitive dust emissions and prohibits visible dust emissions beyond the property line, a 50 $\mu g/m^3$ incremental increase in PM_{10} concentrations across a facility as measured by upwind and downwind concentrations, and track-out of bulk material onto public, paved roadways. The project will implement best available control measures as part of the stormwater pollution prevention program (SWPPP) to minimize fugitive dust emissions during construction and operation.
SCAQMD Rule 404	Establishes limits for particulate matter emission concentrations.	SCAQMD	Person shall not discharge into the atmosphere from any source, particulate matter in excess of the concentration at standard conditions listed in Rule 404. However, per Rule 404.c, this rule does not apply to emissions resulting from the combustion of liquid or gaseous fuels in steam generators or gas turbines. Because HBEP will combust natural gas only, Rule 404 is not applicable and will not be addressed further.
SCAQMD Rule 405	Establishes limits for particulate matter mass emission rates.	SCAQMD	Emission rate limits are based upon the process weight (fuel burned) per hour. Natural gas will be the only fuel fired in the natural gas turbines. Therefore, the project is expected to comply with the Rule 405 particulate emission limits.
SCAQMD Rule 407	Establishes limits for CO and SO_x emissions from stationary sources.	SCAQMD	Rule 407 prohibits CO and SO_x emissions in excess of 2,000 and 500 ppm, respectively, from any source. The CO emissions from the MPSA 501DA turbines will be less than 2 ppm. Therefore, the project meets the CO limit. In addition, equipment that complies with the requirements of Rule 431.1 is exempt from the SO_x limit. Since the facility will comply with Rule 431.1, the SO_x provisions of Rule 407 will not be addressed further.

TABLE 5.1-38
Applicable Local Laws, Ordinances, Regulations, Standards, and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Applicability/Compliance Assessment
SCAQMD Rule 409	Establishes limits for particulate emissions from fuel combustion sources.	SCAQMD	Rule 409 prohibits particulate emissions in excess of 0.1 grains per cubic foot of gas at 12 percent CO_2 at standard conditions. Natural gas will be the only fuel fired in the natural gas turbines. Therefore, the project is expected to comply with the Rule 409 particulate emission limits.
SCAQMD Rule 431.1	Establishes limits for the sulfur content of gaseous fuels to reduce SO_x emissions from stationary combustion sources.	SCAQMD	Rule 431.1 limits the sulfur content of natural gas calculated as hydrogen sulfide (H_2S) to be less than 16 ppmv. The sulfur content the natural gas will be less than 0.75 grains of sulfur per 100 dscf of natural gas or 12.6 ppmv. Therefore, the project is expected to comply with the Rule 431.1 requirement.
SCAQMD Rule 474	Establishes limits for emissions of NO_x from stationary combustion sources.	SCAQMD	Per Rule 2001, NO_x RECLAIM facilities are exempt from the provisions of Rule 474. Since the project will be a NO_x RECLAIM facility, Rule 474 is not applicable and will not be addressed further.
SCAQMD Rule 475	Establishes limits for combustion contaminant (PM) emissions from subject equipment.	SCAQMD	Rule 475 prohibits PM emissions that exceed both 11 lbs/hr (per emission unit) and 0.01 grains per dry standard cubic foot (gr/dscf) at 3 percent O_2. The MPSA 501DA turbines PM emission rate will be 9.5 lb/hr and less than 0.01 gr/dscf.
SCAQMD Rule 476	Establishes limits for NO_x and PM emissions from steam generating equipment with a maximum heat input rating exceeding 50 MMBtu/hr.	SCAQMD	Per Rule 2001, NO_x RECLAIM facilities are exempt from the NO_x requirements for this rule. Therefore, only the PM provisions of this rule will apply. The MPSA 501DA turbines PM emission rate will be 9.5 lb/hr and less than 0.01 gr/dscf.
SCAQMD Rule 53	Established limits for emissions of sulfur compounds (SO_x) from stationary sources in Orange County.	SCAQMD	A person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge, 500 parts per million by volume calculated as sulfur dioxide (SO_2). The use of low sulfur natural gas will result in SO_2 concentrations significantly less than 500 pppmv.
SCAQMD Regulation IX (Permits – 40CFR Part 60)	Establishes national standards of performance for new or modified facilities in specific source categories.	SCAQMD with EPA Region IX oversight	See Federal, Title 40 CFR, Part 60 (Table 5.1-36) to review applicability and the compliance assessment.
SCAQMD Regulation X (Permits – 40CFR Part 63)	Establishes national emission standards to limit emissions of hazardous air pollutants (HAPs, or air pollutants identified by EPA as causing or contributing to the adverse health effects of air pollution but for which NAAQS have not been established) from facilities in specific categories.	SCAQMD with EPA Region IX oversight	See Federal, Title 40 CFR, Part 63 (Table 5.1-36) to review applicability and the compliance assessment.
SCAQMD Rule 1134	Establishes limits for emissions of NO_x from the stationary gas turbines.	SCAQMD	Per Rule 2001, NO_x RECLAIM facilities are exempt from the provisions of Rule 1134. Therefore, Rule 1134 is not applicable to the project and will not be addressed further.
SCAQMD Rule 1135	Establishes limits for emissions of NO_x from the electricity generating systems.	SCAQMD	Per Rule 2001, NO_x RECLAIM facilities are exempt from the provisions of Rule 1135. Therefore, Rule 1135 is not applicable to the project and will not be addressed further.
SCAQMD Rule 1146	Establishes limits for emissions of oxides of nitrogen from industrial, institutional, and commercial boilers, steam generators, and process heaters.	SCAQMD	Per Rule 2001, NO_x RECLAIM facilities are exempt from the provisions of Rule 1146. Therefore, Rule 1146 is not applicable to the project and will not be addressed further.

TABLE 5.1-38
Applicable Local Laws, Ordinances, Regulations, Standards, and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Applicability/Compliance Assessment
SCAQMD Rule XIII (Permits – NSR)	The purpose of this rule is to provide for the review of new and modified sources and provide mechanisms, including the use of BACT and emission offsets, by which authorities to construct such sources may be granted for non-RECLAIM pollutants.	SCAQMD	Rule 1303(a) – BACT: BACT shall be applied to any new or modified source which results in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia. The BACT requirements of Rule 1303 apply regardless of any modeling or offset exemption in Rule 1304. Therefore, a complete top down BACT analysis was conducted for emissions of CO, VOC, PM_{10}, $PM_{2.5}$, and GHG emissions. The proposed BACT emission limits are presented in Section 5.1.8.2 (See Appendix 5.1D). A BACT analysis for NO_x and SO_x was conducted as part of compliance with Rule 2005. Rule 1303(b)(1) – Modeling: As part of the NSR permit approval process, an air quality dispersion analysis must be conducted using a mass emissions-based analysis contained in the rule or an approved dispersion model, to evaluate impacts of increased criteria pollutant emissions from any new or modified facility on ambient air quality. The HBEP is exempt from modeling requirements per Rule 1304 for those pollutants subject to Regulation XIII, but not Regulation XX. Rule 1303(b)(2) – Offsets: Unless exempt from offsets requirements pursuant to Rule 1304, emission increases shall be offset by either Emission Reduction Credits approved pursuant to Rule 1309, or by allocations from the Priority Reserve in accordance with the provisions of Rule 1309.1, or allocations from the Offset Budget in accordance with the provisions of Rule 1309.2. Offset ratios shall be 1.2-to-1.0 for Emission Reduction Credits and 1.0-to-1.0 for allocations from the Priority Reserve, except for facilities not located in the South Coast Air Basin (SOCAB), where the offset ratio for Emission Reduction Credits only shall be 1.2-to-1.0 for VOC, NO_x, SO_x and PM_{10} and 1.0-to-1.0 for CO. The HBEP is exempt from offset requirements per Rule 1304 with the exception of Regulation XX pollutants. Rule 1303(b)(3) – Sensitive Zone Requirements: Unless credits are obtained from the Priority Reserve, facilities located in the South Coast Air Basin are subject to the Sensitive Zone requirements specified in Health and Safety Code Section 40410.5. The HBEP is exempt from offset requirements per Rule 1304. Rule 1303(b)(4) – Facility-wide Compliance: The project will complies with all applicable rules and regulations of the District. Rule 1303(b)(5)(A) – Alternative Analysis: Conduct an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed source and demonstrate that the benefits of the proposed project outweigh the environmental and social costs associated with that project. The Applicant has conducted a comparative evaluation of alternative sites as part of the AFC process and has concluded that the benefits of providing grid reliability and increased employment in the surrounding area will outweigh the environmental and social costs incurred in the construction and operation of the proposed facility. Rule 1303(b)(5)(B) –Statewide Compliance: Demonstrate prior to the issuance of a Permit to Construct, that all major stationary sources, as defined in the jurisdiction where the facilities are located, that are owned or operated by such person (or by any entity controlling, controlled by, or under common control with such person) in the State of California are subject to emission limitations and are in compliance or on a schedule for compliance with all applicable emission limitations and standards under the Clean Air Act. The Applicant has certified in the 400-A form that all major sources under its ownership or control in the State of California are in compliance with all federal, state, and local air quality rules and regulations. Rule 1303(b)(5)(C) –Protection of Visibility: Conduct a modeling analysis for plume visibility in accordance with the procedures specified in Appendix B if the net emission increase from the new or modified source exceeds 15 tons/year of PM_{10} or 40 tons/year of NO_x; and the location of the source, relative to the closest boundary of a specified Federal Class I area, is within 28 kilometers. Emissions of PM_{10} and NO_x will exceed the emissions thresholds but the distance to the nearest Class I area is approximately 70 kilometers. Therefore, a visibility analysis is not required. Rule 1303(b)(5)(D) –Compliance through CEQA: Because the CEC certification process is similar to the CEQA process, the applicable CEQA requirements have been addressed in this Application for Certification.
SCAQMD Rule 1401 (Permits – Toxics New Source Review)	The purpose of this rule is to provide for the review of new and modified sources of TAC emissions in order to evaluate potential public exposure and health risk, to mitigate potentially significant health risks resulting from these exposures, and to provide net health risk benefits by improving the level of control when existing sources are modified or replaced.	SCAQMD	TBACT shall be applied to any new or modified source of TACs where the source risk is a cancer risk greater than 1.0 in a million (10^{-6}), a chronic hazard index greater than 1.0, or an acute hazard index greater than 1.0. The predicted MICR at the MEIR and MEIW cancer risks for the project are 0.30 and 0.059 in a million, respectively. The maximum predicted chronic and acute hazard indices are 0.013 and 0.049, respectively. The values are less than the individual source thresholds of 1.0 in a million (10^{-6}). The levels are also below the PTC or PTO facility thresholds for cancer risk of 10 in a million and the chronic and acute hazard index of 1.0. Nevertheless, the project will employ emission controls considered to be T-BACT.
SCAQMD Rule 1403 (Permits – Asbestos Removal)	The purpose of this rule is to specify work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials.	SCAQMD	The Applicant will comply with the requirements outlined in Rule 1403 prior to the removal of asbestos containing materials.
SCAQMD Reg XVII (Permits – PSD)	The PSD program allows new sources of air pollution to be constructed, or existing sources to be modified in areas classified as attainment, while preserving the existing ambient air quality levels, protecting public health and welfare, and protecting Class I Areas (e.g., national parks and wilderness areas).	SCAQMD with EPA Oversight	See Federal, Title 40 CFR, Part 52 (Table 5.1-36) to review applicability and the compliance assessment.

TABLE 5.1-38
Applicable Local Laws, Ordinances, Regulations, Standards, and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Applicability/Compliance Assessment
SCAQMD Reg XX (Permits – NO_x RECLAIM)	The purpose of this rule is to provide for the review of new and modified sources and provide mechanisms, including the use of BACT and emission offsets, by which authorities to construct such sources may be granted for RECLAIM pollutants.	SCAQMD	Rule 2005(b)(1)(A) – BACT: BACT shall be applied to any new or modified source which results in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia. A complete top down BACT analysis was conducted for emissions of NO_x and SO_x. The proposed BACT emission limits are presented in Section 5.1.8.2 (See Appendix 5.1D). A BACT analysis for CO, VOC, PM_{10}, $PM_{2.5}$, and GHG were conducted as part of compliance with Rule 1303. Rule 2005(b)(1)(B) – Modeling: As part of the NSR permit approval process, an air quality dispersion analysis must be conducted for NO_x using a mass emissions-based analysis contained in the rule or an approved dispersion model, to evaluate impacts of increased NO_x emissions from any new or modified facility on ambient air quality. An air quality dispersion analysis was conducted for NO_x using the AERMOD dispersion model. Rule 2005(b)(2) – Offsets: NO_x and SO_x emission increases shall be offset using RECLAIM trading credits at a ratio of 1.0-to-1.0. The HBEP project will participate in the NO_x/SO_xRECLAIM program and will secure the necessary offsets as outlined in Section 5.1.8. Rule 2005(e) – Trading Zone Requirements: Any increase in an annual Allocation to a level greater than the facility's starting plus non-tradable Allocations, and all emissions from a new or relocated facility must be fully offset by obtaining RTCs originated in one of the two trading zones. A facility in Zone 1 may only obtain RTCs from Zone 1. A facility in Zone 2 may obtain RTCs from either Zone 1 or 2, or both. The HBEP is located in Zone 1. Therefore, the Applicant will obtain RTCs from Zone 1 only. Rule 2005(g)(1) –Statewide Compliance: Demonstrate prior to the issuance of a Permit to Construct, that all major stationary sources, as defined in the jurisdiction where the facilities are located, that are owned or operated by such person (or by any entity controlling, controlled by, or under common control with such person) in the State of California are subject to emission limitations and are in compliance or on a schedule for compliance with all applicable emission limitations and standards under the Clean Air Act. The Applicant has certified in the 400-A form that all major sources under its ownership or control in the State of California are in compliance with all federal, state, and local air quality rules and regulations. Rule 2005(g)(2) – Alternative Analysis: Conduct an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed source and demonstrate that the benefits of the proposed project outweigh the environmental and social costs associated with that project. The Applicant has conducted a comparative evaluation of alternative sites as part of the AFC process and has concluded that the benefits of providing grid reliability and increased employment in the surrounding area will outweigh the environmental and social costs incurred in the construction and operation of the proposed facility. Rule 2005(g)(3) –Compliance through CEQA: Because the CEC certification process is similar to the CEQA process, the applicable CEQA requirements have been addressed in this Application for Certification. Rule 2005(g)(4) –Protection of Visibility: Conduct a modeling analysis for plume visibility in accordance with the procedures specified in Appendix B if the net emission increase from the new or modified source exceeds 40 tons/year of NO_x; and the location of the source, relative to the closest boundary of a specified Federal Class I area, is within 28 kilometers. Emissions of NO_x will exceed the emissions thresholds but the distance to the nearest Class I area is approximately 70 kilometers. Therefore, a visibility analysis is not required. Rule 2005(h) –Public Notice: The applicant shall provide public notice, if required, pursuant to Rule 212 The Applicant will comply with the requirements for Public Notice outlined in Rule 212. Rule 2005(i) –Rule 1401 Compliance: All new or modified sources shall comply with the requirements of Rule 1401 The Applicant will comply with the requirements of 1401 as demonstrated in Section 5.9. Rule 2005(j) – Compliance with State and Federal NSR: The project will comply with all applicable rules and regulations of the District.
SCAQMD Reg XXX (Permits – Title V)	The purpose of this rule is to implement the operating permit requirements of Title V of the CAA as amended in 1990.	SCAQMD with EPA Oversight	See Federal, Title 40 CFR, Part 70 (Table 5.1-36) to review applicability and the compliance assessment.
SCAQMD Reg XXXI (Permits – Acid Rain)	The purpose of this rule is to incorporate by reference the provisions of 40 CFR Part 72 for purposes of implementing an acid rain program that meets the requirements of Title IV of the CAA.	SCAQMD with EPA Oversight	See Federal, Title 40 CFR, Part 72 (Table 5.1-36) to review applicability and the compliance assessment.

In August 2006, the California legislature passed Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 requires California resource agencies to establish a comprehensive program of regulatory and market mechanisms to achieve reductions in greenhouse gas emissions (ARB, 2006). HBEP will be subject to AB 32, and will be required to comply with all final rules, regulations, emissions limitations, emission reduction measures or market-based compliance mechanisms adopted under AB 32. The ARB promulgated a Cap and Trade regulation to limit GHG emissions and to develop a market based compliance mechanism for the creation, sale, and use of GHG allowances. The ARB is conducting a hearing on June 28, 2012 to consider amendments to the Cap and Trade regulations to add secure and implementing the trading market.

In addition to AB 32, Senate Bill 1368 (Perata, Chapter 598, Statutes of 2006) was signed into law on September 29, 2006. The law limits long-term investments in baseload generation by the state's utilities to power plants that meet an emissions performance standard (EPS) jointly established by the California Energy Commission and the California Public Utilities Commission. In response, the Energy Commission has designed regulations that establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 lbs CO_2 per megawatt-hour. A baseload generation is defined as electricity generation from a powerplant that is designed and intended to provide electricity at an annualized plant capacity factor of at least 60 percent. The permitted capacity factor for HBEP will be approximately 70 percent. Therefore, the GHG emissions from the operation of the combined cycle combustion turbines are also compared to the 1,100 lbs CO_2 per MWh threshold.

5.1.9.3 Local LORS

When the state's air pollution statutes were reorganized in the mid-1960s, local districts were required to be established in each county of the state. There are three different types of districts: county, regional, and unified. In addition, special air quality management districts, with more comprehensive authority over non-vehicular sources as well as transportation and other regional planning responsibilities, have been established by the Legislature for several regions in California, including SCAQMD. Air quality management districts have principal responsibility for developing plans for meeting the NAAQS and CAAQS; for developing control measures for non-vehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards; for implementing permit programs established for the construction, modification, and operation of sources of air pollution; and for enforcing air pollution statutes and regulations governing non-vehicular sources.

The SCAQMD plans define the proposed strategies, including stationary source control measures and NSR rules, whose implementation will attain the state AAQS. The relevant stationary source control measures and NSR requirements are presented in Table 5.1-38.

5.1.10 Agencies and Agency Contacts

Each level of government has adopted specific regulations that limit emissions from stationary combustion sources, several of which are applicable to HBEP. The agencies having permitting authority for HBEP, and their contact information, are shown in Table 5.1-39.

5.1.11 Permits and Permit Schedule

A PTC application has been submitted to the SCAQMD as part of the CEC licensing process. The PTC included permitting forms for the Title IV and Title V permitting programs. SCAQMD is responsible for issuing the required construction permits related to air quality. Consistent with the CEC siting regulations, SCAQMD must issue a preliminary determination of compliance within 180 days after issuing the application completeness determination letter. If all requirements of the SCAQMD rules are met, SCAQMD will issue a determination of compliance to the CEC within 240 days after the acceptance of the application as complete. Upon approval of the project by the CEC, a determination of compliance serves as the SCAQMD PTC. A permit to operate will be issued by SCAQMD after construction and prior to commencement of operation. A separate PTC, Title IV and Title V are issued by the SCAQMD at the time of final Commission Decision.

TABLE 5.1-39
Agency Contacts for Air Quality

Issue	Agency	Agencies Contacted
Regulatory oversight	EPA Region IX	Gerardo Rios EPA Region IX 75 Hawthorne Street San Francisco, CA 94105 (415) 947-3974
Regulatory oversight	ARB	Michael Tollstrup Project Assessment Branch California Air Resources Board 2020 L Street Sacramento, CA 95814 (916) 322-6026
Permit issuance, enforcement	SCAQMD	Andrew Lee South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765 (909) 396-2643

5.1.12 References

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