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4.1 AIR QUALITY

This section describes existing air quality conditions in the vicinity of the Puente Power Project (P3 or project) site, and evaluates potential impacts of the project to air quality. The project area discussed in this section refers to all areas of temporary and permanent disturbance associated with the construction and operation of the new plant and ancillary systems, and construction laydown areas. No new offsite linear facilities are required for P3.

The sections below provide an overview of the affected environment; an evaluation of the environmental consequences of the proposed project to air quality; a cumulative impact analysis; identification of mitigation measures that will avoid and reduce project impacts to less-than-significant levels; and applicable laws, ordinances, regulations, and standards (LORS). The methodology and results of the air quality analysis used to assess potential impacts are also presented. The analysis has been conducted according to California Energy Commission (CEC) power plant siting requirements, and also addresses Ventura County Air Pollution Control District (VCAPCD) air permitting requirements.

Some air quality–related data are presented in other sections of this Application for Certification (AFC), including an evaluation of toxic air pollutants (see Section 4.9, Public Health) and information relating to the fuel characteristics, heat rate, and startup and operating limits of P3 (see Section 2.0, Project Description).

4.1.1 Affected Environment

The proposed P3 would replace two aging gas-fired steam-generating units (Units 1 and 2) at the existing Mandalay Generating Station (MGS) with a new state-of-the-art General Electric Frame 7HA.01 natural-gas-fired simple-cycle combustion turbine generator (CTG) and associated auxiliaries. In addition, the existing diesel emergency generator engine would be replaced with a new emergency engine, and the existing diesel emergency fire pump engine would be shut down. Aside from MGS Units 1 and 2, which would be decommissioned, certain existing ancillary facilities either will be removed to accommodate development of P3, or will be repurposed for future use in connection with P3. One existing natural-gas–fired peaker combustion turbine (Unit 3) will continue to operate, and will not be affected by the proposed P3 project.

P3 would be developed on approximately 3 acres of previously disturbed vacant brownfield land within the existing boundaries of MGS. The location of the project is shown on Figure 2.3-1. The site is bordered by sand dunes and the Pacific Ocean to the west; McGrath Lake State Park and land owned by SunCal to the north; industrial uses to the north, south, and east; and agricultural uses farther to the east.

4.1.1.1 Geography and Topography

P3 would be in the northern portion of the existing MGS site. The project site is adjacent to the Pacific Ocean and is at an elevation of approximately 14 feet above sea level. Terrain elevations are generally flat to the north, east, and south of the project site.

4.1.1.2 Climate and Meteorology

The Mediterranean climate of Ventura County has a large-scale wind and temperature regime controlled by the proximity of the Pacific Ocean and seasonal migration of the Pacific high-pressure system. As a result, summers are relatively cool and winters are warm in comparison to other locations. Temperatures below freezing occur infrequently, as do temperatures over 100 degrees Fahrenheit (°F).

The amount of solar radiation is one factor influencing thermal turbulence; the more thermal turbulence, the more dispersion of pollutants. The project area receives significant sunshine throughout the year, even during winter. Annual average sunshine is the percentage of maximum possible time the sun can shine, and is approximately 73 percent in the Ventura area.

The nearest long-term meteorological station with available temperature and precipitation means and extremes is at the Oxnard Airport monitoring station. This weather station is approximately 2 miles to the east of P3 at latitude 34°11'N, longitude 119°10'W (WRCC, 2015). Data collected at this station over an 11-year period (1998-2008) are presented in Table 4.1-1. Temperatures in the project area range from an average of 55ºF in December and January to an average of 66ºF in August. Precipitation in the vicinity of the project site averages approximately 10.39 inches per year, with most of the precipitation occurring during winter months.

Wind speed and direction are key factors influencing the dispersion and transport of pollutants. Wind flows on an annual basis are predominately westerly. At Oxnard Airport, which is the source of the meteorological data used in air dispersion modeling, the most frequent wind direction is from the west during February through October, and from the northeast during November through January. Wind speeds average approximately 3.24 meters per second, and the maximum wind speed is approximately 16.26 meters per second (for the years 2009-2013). Appendix C-1 contains the quarterly and annual wind roses and wind-speed frequency tables for the 5 years, 2009 through 2013, used in the air dispersion modeling.

4.1.1.3 Overview of Air Quality Standards

The U.S. Environmental Protection Agency (USEPA) has established national ambient air quality standards (NAAQS) for the following seven pollutants, termed criteria pollutants: ozone, nitrogen dioxide (NO_2), carbon monoxide (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. Areas with ambient levels above these standards are designated by USEPA as "nonattainment areas," subject to planning and pollution control requirements that are more stringent than standard requirements.

In addition, the California Air Resources Board (CARB) has established California ambient air quality standards (CAAQS) for ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and airborne lead; and has also set standards for visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride at levels designed to protect the most sensitive members of the population—particularly children, the elderly, and people who suffer from lung or heart diseases.

Both state and national air quality standards consist of two parts: an allowable concentration of a pollutant; and an averaging time over which the concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops, and vegetation—and in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (1 hour, for instance), 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 4.1-2 presents the NAAQS and CAAQS for selected pollutants. The California standards are generally set at concentrations lower than the federal standards, and in some cases, have shorter averaging periods.

USEPA's current NAAQS for ozone went into effect on May 27, 2008. For ozone, the previous 1-hour ozone standard of 0.12 part per million (ppm) was revoked in 1997 in all areas, and the previous federal 8-hour standard of 0.08 ppm was revised to a level of 0.075 ppm.[1] Compliance with this ozone standard is based on the 3-year average of the annual fourth-highest daily maximum 8-hour average concentration measured at each monitor in an area. On April 28, 2005, CARB approved an 8-hour ozone standard of 0.070 ppm; this new standard became effective on May 17, 2006. On November 25, 2014, the USEPA

[1] 73 FR 16436, Mar 27, 2008.

proposed a change to the ozone NAAQS. The change would include updating both the primary ozone standard (to protect public health) and the secondary standard (to protect the public welfare). Both standards would be 8-hour standards set within a range of 65 to 70 parts per billion (ppb). USEPA is seeking comment on levels for the health standard as low as 60 ppb. USEPA is expected to issue a final decision regarding these new standards by October 1, 2015.

The NAAQS for particulates have recently been revised in several respects. On December 14, 2012, the national annual $PM_{2.5}$ standard was lowered from 15 micrograms per cubic meter ($\mu g/m^3$) to 12 $\mu g/m^3$, based on the 3-year average of annual arithmetic means. The existing national 24-hour $PM_{2.5}$ standard was retained at 35 $\mu g/m^3$, based on the 3-year average of the 98th percentile of 24-hour average concentrations at each monitor in an area. The existing 24-hour PM_{10} standard of 150 $\mu g/m^3$ was also retained, and this 24-hour PM_{10} standard is not to be exceeded more than once per year on average over a 3-year period. The state has a PM_{10} standard of 20 $\mu g/m^3$ and a $PM_{2.5}$ standard of 12 $\mu g/m^3$, both on an annual average basis; both standards became effective on July 5, 2003.

The national lead standard is 0.15 $\mu g/m^3$ based on a rolling 3-month average.[2] As of April 12, 2010, a new 1-hour standard of 0.100 ppm (100 ppb) for NO_2 took effect; this 1-hour NO_2 standard is based on the 3-year average of the 98th percentile of the annual 1-hour daily maximum concentrations.[3] The state 1-hour NO_2 standard of 0.18 ppm has been in effect since March 20, 2008. Unlike the federal standard, this state standard applies on a maximum hourly basis and is not to be exceeded.

4.1.1.4 Existing Air Quality

Data from several ambient air monitoring stations were used to characterize air quality for the P3 project site, as identified in Table 4.1-3. The Oxnard (Rio Mesa School) monitoring station is the ambient air quality monitoring station closest to the project site, and is approximately 7 miles northeast of the site. The Santa Barbara monitoring stations for SO_2 and CO are considered to be representative of conditions at the project site due to their proximity to the coastline and the project location, as identified in the modeling protocol provided as Appendix C-4. Sulfate measurements at most monitoring stations in California were discontinued years ago because SO_2 emissions were low enough to prevent sulfate levels from being anywhere near the CAAQS of 25 $\mu g/m^3$ on a 24-hour average basis. All ambient air quality data presented in this section were taken from CARB publications and data sources or USEPA air quality data tables.

4.1.1.4.1 Ozone

Ozone is an end product of complex reactions between reactive organic compounds (ROC) and oxides of nitrogen (NO_X) in the presence of ultraviolet solar radiation. ROC and NO_X emissions from vehicles and stationary sources—combined with daytime wind flow patterns, mountain barriers, temperature inversions, and intense sunlight—generally result in the highest ozone concentrations. For purposes of both state and federal air quality planning, the entire Ventura County is classified as a serious nonattainment area[4,5,6] for the state ozone standard, and a nonattainment area for the 2008 federal 8-hour ozone standard (USEPA, 2015).

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2 73 FR 66964, Nov 12, 2008.
3 75 FR 6474, Feb 9, 2010.
4 Serious nonattainment is of “mid-range” magnitude in a nonattainment classification system based on the amount by which monitored levels of ozone have exceeded ambient air quality standard during the last 3 years. The classification designations, in order of increasing magnitude, are marginal, moderate, serious, severe, and extreme.
5 Classification of attainment type by county is available at USEPA (2014).
6 State Area Designations were approved by the Executive Officer on December 28, 2012, and became effective on April 1, 2013. An ozone 1-hour area classification map is available at CARB (2015).

Table 4.1-4 shows the annual maximum hourly ozone levels recorded at the Oxnard monitoring station during the period from 2004 to 2013, as well as the number of days during which the state and federal standards were exceeded. The 8-hour ozone NAAQS requires that the 3-year average of the fourth-highest values for individual year be maintained at or below 0.075 ppm. Therefore, the number of days in each year that the maximum 8-hour concentrations were above the standard, as shown in Table 4.1-4, does not equate to the number of violations. Trends of the maximum and the 3-year average of the fourth-highest daily concentrations of 8-hour average ozone readings and exceedances of the federal standard are shown on Figure 4.1-1. The long-term trends of maximum 1-hour ozone readings and violations of the state and federal standard are shown on Figure 4.1-2 for this monitoring station.

4.1.1.4.2 Nitrogen Dioxide

Atmospheric NO_2 is formed primarily from reactions between nitric oxide (NO) and oxygen or ozone. NO is formed during high-temperature combustion processes, when the nitrogen and oxygen in the combustion air combine. Although NO is less harmful than NO_2, it can be converted to NO_2 in the atmosphere from within minutes to hours, depending on the composition and temperature of the atmosphere. For purposes of state and federal air quality planning, Ventura County is in attainment for NO_2.

Table 4.1-5 shows the long-term trend of maximum 1-hour NO_2 levels recorded at the Oxnard monitoring station during the period from 2004 to 2013, as well as the annual average level for each of those years. During the period from 2004 to 2013, there were no violations of the CAAQS 1-hour standard (0.18 ppm) at the monitoring station. The highest 1-hour concentration recorded at the Oxnard monitoring station during the years 2004 to 2013 was 0.090 ppm in 2011. A new federal 1-hour NO_2 standard of 0.100 ppm became effective on April 12, 2010. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor must not exceed 0.100 ppm. Table 4.1-5 also shows that there were no violations of the annual NAAQS (0.053 ppm) or annual CAAQS (0.030 ppm) at the Oxnard station during this period. Figure 4.1-3 shows the historical trend of maximum 1-hour NO_2 levels at this monitoring station. Annual average concentrations and trends are shown on Figure 4.1-4.

4.1.1.4.3 Carbon Monoxide

CO is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. In many areas of California, CO emissions from wood-burning stoves and fireplaces can also be measurable contributors to ambient CO levels. Industrial sources typically contribute less than 10 percent of ambient CO levels. Peak CO levels usually occur during winter, due to a combination of higher emission rates and calm weather conditions with strong, ground-based inversions. Ventura County is classified as an attainment area for CO with respect to both state and national standards (USEPA, 2015).

Table 4.1-6 shows the CAAQS and NAAQS for CO, and the maximum 1- and 8-hour average levels recorded at the East Canon Perdido monitoring station during the period from 2004 to 2013. As indicated by this table, the maximum measured 1-hour average CO levels comply with the NAAQS and CAAQS (35.0 ppm and 20.0 ppm, respectively), and the maximum 8-hour values comply with the NAAQS and CAAQS of 9.0 ppm. The highest individual 1-hour and 8-hour CO concentrations at this station during the period from 2004 to 2013 were 5.2 ppm and 1.9 ppm, respectively, recorded in 2008 and 2004/2011, respectively.

Trends of maximum 1- and 8-hour average CO concentrations are shown on Figure 4.1-5 and Figure 4.1-6, which show that maximum ambient CO levels monitored at the East Canon Perdido monitoring station have been well below the state standards for the last 10 years.

4.1.1.4.4 Sulfur Dioxide

SO_2 is produced when any sulfur-containing fuel is burned. It is also emitted by chemical plants that treat, or refine, sulfur or sulfur-containing chemicals. Natural gas contains nearly negligible amounts of sulfur, whereas fuel oils may contain much larger amounts. Peak, but low, concentrations of SO_2 occur at different times of the year in different parts of California, depending on local fuel characteristics, weather, and topography. Ventura County is considered to be in attainment for SO_2 for purposes of state and federal air quality planning (USEPA, 2015).

Table 4.1-7 shows the available data on maximum 1-hour, 24-hour, and annual average SO_2 levels recorded at the University of California, Santa Barbara (UCSB) West Campus monitoring station during the period from 2004 to 2013. As indicated by this table, the maximum measured 1-hour average SO_2 levels comply with the new NAAQS (75 ppb) and CAAQS (0.25 ppm); and the maximum 24-hour values comply with the NAAQS and CAAQS of 0.14 ppm and 0.04 ppm, respectively. The table also demonstrates compliance with the annual SO_2 NAAQS of 0.03 ppm. Figure 4.1-7 shows that from 2004 to 2013, the maximum 24-hour SO_2 levels typically have been well below the state standard.

4.1.1.4.5 Respirable Particulate Matter (PM_{10})

Particulates in the air are caused by a combination of wind-blown fugitive dust; particles emitted from combustion sources and manufacturing processes; sea salts; and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides (SO_X), and NO_X, respectively. In 1984, CARB adopted standards for PM_{10} and phased out the total suspended particulate (TSP) standards that had been in effect previously. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of particulates that can be inhaled into the lungs (respired), and therefore is a better measure to use in assessing potential health effects. In 1987, USEPA also replaced national TSP standards with PM_{10} standards. Ventura County is unclassified for the federal PM_{10} standard, and is an attainment area for the state standard (USEPA, 2015).

Table 4.1-8 shows the federal and state air quality standards for PM_{10}, maximum levels recorded at the Oxnard monitoring station during 2004 to 2013, and arithmetic annual averages for the same period. At the Oxnard station, the maximum 24-hour PM_{10} levels have exceeded the CAAQS state standard of 50 $\mu g/m^3$ every year except 2013. The maximum daily concentration recorded during the analysis period was 248 $\mu g/m^3$ (state testing samplers) and 245 $\mu g/m^3$ (federal testing samplers) in 2007. These high 24-hour ambient background levels during 2007 were due to the Zaca wildfire that occurred in Santa Barbara County.[7] The maximum annual arithmetic mean concentration recorded was 28.9 $\mu g/m^3$, also in 2007, which is above the state standard of 20 $\mu g/m^3$. The federal annual PM_{10} standard was revoked by the USEPA in 2006.

The trend of maximum 24-hour average PM_{10} levels is plotted on Figure 4.1-8. The trend of maximum annual average PM_{10} readings and the California standard are shown on Figure 4.1-9. Annual average PM_{10} concentrations are above the state standard of 20 $\mu g/m^3$.

4.1.1.4.6 Fine Particulate Matter ($PM_{2.5}$)

As discussed previously, the national annual $PM_{2.5}$ standard was lowered from 15 $\mu g/m^3$ to 12 $\mu g/m^3$ on December 14, 2012, based on the 3-year average of annual arithmetic means. The existing national 24-hour $PM_{2.5}$ standard was retained at 35 $\mu g/m^3$, based on the 3-year average of the 98th percentile of 24-hour average concentrations.

[7] The Zaca wildfire in Santa Barbara County burned approximately 240,000 acres (Cal Fire, 2015).

Table 4.1-9 shows the state and federal air quality standards for $PM_{2.5}$, maximum levels recorded at the Oxnard monitoring station 2004-2013, and 3-year averages for the same period. During the past 10 years, the 24-hour average concentrations have exceeded the federal standard of 35 $\mu g/m^3$ once, in 2007, with a concentration of 39.9 $\mu g/m^3$. During the past 5 years, annual average $PM_{2.5}$ levels have generally been below the federal and state standard of 12.0 $\mu g/m^3$. Ventura County is considered an attainment area for the state $PM_{2.5}$ standard, and is unclassified for the federal standard.

The trends of 24-hour and annual average $PM_{2.5}$ levels are plotted on Figure 4.1-10 and Figure 4.1-11, respectively.

4.1.1.4.7 Airborne Lead

The majority of lead in the air results from the combustion of fuels that contain lead. Forty years ago, motor gasoline contained relatively large amounts of lead compounds used as octane-rating improvers, and ambient lead levels were relatively high. Beginning with the 1975 model year, new automobiles began to be equipped with exhaust catalysts, which were poisoned by the exhaust products of leaded gasoline. Therefore, unleaded gasoline became the required fuel for an increasing fraction of new vehicles, and the phase-out of leaded gasoline began. As a result, ambient lead levels decreased dramatically. Ventura County has been in attainment of state and federal airborne lead levels for air quality planning purposes for a number of years.

On October 15, 2008, USEPA revised the federal ambient air quality standard for lead, lowering it from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$ for both the primary and the secondary standards. USEPA subsequently published the final rule in the Federal Register on November 12, 2008. This is the first time that the federal lead standard has been revised since it was first issued in 1978.

In addition to revising the level of the standard, USEPA changed the averaging time from a quarterly average to a rolling 3-month average. The level of the standard is "not to be exceeded," and compliance is evaluated over a 3-year period. Lead levels are measured as lead in TSP. The revised lead standard also includes new monitoring requirements.

Many stations stopped monitoring lead concentrations because the ambient lead concentrations have been well below the federal standard. Ambient lead levels are monitored at only one location in Ventura County: the Simi Valley – Cochran Street monitoring station. Table 4.1-10 lists the levels reported at the Simi Valley-Cochran Street monitoring station between 2009 and 2013. Maximum quarterly levels are not reported on USEPA's website; because the maximum 24-hour averages must be higher than the quarterly average, the data show that lead levels are actually well below the federal standard. Ventura County is in attainment with respect to the state ambient standard for lead; there is no area designation information for the federal standard.

4.1.1.4.8 Particulate Sulfates

Sulfate compounds found in the lower atmosphere consist of both primary and secondary particles. Primary sulfate particles are directly emitted from open-pit mines, dry lakebeds, and desert soils. Fuel combustion is another source of sulfates—both primary and secondary. Secondary sulfate particles are produced when SO_X emissions are transformed into particles through physical and chemical processes in the atmosphere. Particles can be transported long distances. Ventura County is in attainment with respect to the state ambient standard for sulfates (CARB, 2015); there is no federal standard.

4.1.1.4.9 Other State-Designated Criteria Pollutants

Along with sulfates, California has designated hydrogen sulfide and visibility-reducing particles as criteria pollutants, in addition to the federal criteria pollutants. Ventura County remains unclassified for both pollutants (CARB, 2015).

4.1.2 Laws, Ordinances, Regulations, and Standards

The proposed project would be constructed and operated in accordance with all LORS applicable to air quality. Federal, state, and local LORS applicable to air quality are discussed below and summarized later in Table 4.1-13.

4.1.2.1 Federal

The USEPA implements and enforces the requirements of many of the federal environmental laws. USEPA Region 9, which has its offices in San Francisco, administers federal air programs in California. The federal Clean Air Act (CAA), as most recently amended in 1990, provides USEPA with the legal authority to regulate air pollution from stationary sources such as P3. USEPA has promulgated the following stationary source regulatory programs to implement the requirements of the federal CAA:

- Prevention of Significant Deterioration (PSD);
- New Source Review (NSR);
- Title IV: Acid Rain Program;
- Title V: Operating Permits;
- National Standards of Performance for New Stationary Sources (NSPS);
- National Emission Standards for Hazardous Air Pollutants (NESHAPs); and
- Compliance Assurance Monitoring (CAM).

4.1.2.1.1 Prevention of Significant Deterioration Program

Authority: Clean Air Act §§ 160-169A, 42 United States Code §§ 7470-7491; 40 Code of Federal Regulations Parts 51 and 52

Requirements: Pre-construction review and permitting of new or modified major stationary sources of air pollution to prevent significant deterioration of ambient air quality. PSD applies to pollutants for which ambient concentrations do not exceed the corresponding NAAQS (i.e., attainment pollutants). For the VCAPCD, the PSD pollutants are SO_X, NO_X, CO, PM_{10}, $PM_{2.5}$, lead, and greenhouse gases (GHGs). The PSD program allows new sources of air pollution to be constructed, or existing sources to be modified, 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).

The PSD requirements apply to any project that is a new major stationary source or a major modification to an existing major stationary source. A major source is a listed facility (one of 28 PSD source categories listed in the federal CAA) that emits at least 100 tons per year (TPY), or any other facility that emits at least 250 TPY.

Effective July 1, 2011, a stationary source that emits more than 100,000 TPY of GHGs is also considered to be a major stationary source.

A major modification is any project at a major stationary source that results in a significant increase in emissions of any PSD pollutant.

A significant increase for a PSD pollutant is an increase above the significant emission rate for that pollutant (Table 4.1-11). It is important to note that, once PSD review is triggered by any pollutant, PSD requirements apply to any PSD pollutant with an emission increase above the significance level, regardless of whether the facility is major for that pollutant. Based on the Supreme Court's June 23, 2014, opinion on the GHG Tailoring Rule (Utility Air Regulatory Group v. USEPA, No. 12-1146), a project would not be subject to PSD review based solely on its GHG emissions (GHG major modification threshold is 75,000 TPY).

The principal requirements for the PSD program include the following:

- Emissions of pollutants that are subject to PSD review must be controlled using Best Available Control Technology (BACT).
- Air quality impacts, in combination with other increment-consuming sources, must not exceed maximum allowable incremental increases.
- Air quality impacts of all sources in the area, plus ambient pollutant background levels, cannot exceed NAAQS.
- Pre- and/or post-construction air quality monitoring may be required.
- The air quality impacts on soil, vegetation, and nearby PSD Class I areas (specific national parks and wilderness areas) must be evaluated.

Best Available Control Technology. BACT must be applied to any new or modified major source to minimize the emissions increase of those pollutants exceeding the PSD emission thresholds. USEPA defines BACT as an emissions limitation—based on the maximum degree of reduction for each subject pollutant, considering energy, environmental, and economic impacts—that is achievable through the application of available methods, systems, and techniques. BACT must be as stringent as any emission limit required by an applicable NSPS or NESHAP.

Air Quality Impact Analysis. An air quality dispersion analysis must be conducted to evaluate impacts on ambient air quality of significant emission increases from new or modified facilities. PSD source emissions must not cause or contribute to an exceedance of any ambient air quality standard, and the increase in ambient air concentrations must not exceed the allowable increments shown in Table 4.1-12. Once PSD review is triggered for the project, all pollutants with emission increases above the PSD significance thresholds are subject to this requirement.

Air Quality Monitoring. At its discretion, the PSD permit issuer may require pre-construction and/or post-construction ambient air quality monitoring for PSD sources if representative monitoring data are not already available. Pre-construction monitoring data must be gathered over a 1-year period to characterize local ambient air quality. Post-construction air quality monitoring data must be collected as deemed necessary by the PSD permit issuer to characterize the impacts of proposed project emissions on ambient air quality.

Protection of Class I Areas. The potential increase in ambient air quality concentrations for attainment pollutants (i.e., NO_2, PM_{10}, or SO_2) in Class I areas closer than approximately 100 kilometers may need to be quantified if the new or modified PSD source were to have a sufficiently large emission increase as evaluated by the Class I area Federal Land Managers (FLMs). In such a case, a Class I visibility impact analysis would also be performed. The nearest Class I area to the project site is the San Rafael Wilderness Area (U.S. Forest Service Class I area), approximately 88 kilometers from the project site.

Growth, Visibility, Soils, and Vegetation Impacts. Impairment to visibility, soils, and vegetation resulting from PSD source emissions, as well as associated commercial, residential, industrial, and other growth, must be analyzed. This analysis includes cumulative impacts to local ambient air quality.

Although the VCAPCD is in the process of developing a PSD regulation that will be submitted to the USEPA for approval, the PSD program will be implemented in Ventura County by USEPA Region 9.

As discussed in more detail below, P3 includes installing a new simple-cycle gas turbine unit (also referred to as a CTG) and decommissioning the two existing units at the MGS. With the decommissioning of the existing units, the facility-wide net emissions change is expected to be below PSD significance thresholds for all pollutants, with the exception of GHG emissions. Based on the Supreme Court's June 23, 2014 opinion on the GHG Tailoring Rule (Utility Air Regulatory Group v. USEPA, No. 12-1146), the project would not be subject to PSD review based solely on its GHG emissions.

Administering Agency: USEPA Region 9.

4.1.2.1.2 Nonattainment New Source Review

Authority: Clean Air Act §§ 171-193, 42 United States Code § 7501 et seq.; 40 Code of Federal Regulations Parts 51 and 52

Requirement: Requires pre-construction review and permitting of new or modified major stationary sources of air pollution to allow industrial growth without interfering with the attainment and maintenance of NAAQS. Nonattainment NSR jurisdiction resides with the VCAPCD for all nonattainment pollutants, and is discussed further under local LORS and conformance, below.

Administering Agency: VCAPCD, with USEPA Region 9 oversight.

4.1.2.1.3 Title IV: Acid Rain Program

Authority: Clean Air Act § 401 (Title IV), 42 United States Code § 7651

Requirement: Requires monitoring and reporting emissions of acidic compounds and their precursors. The principal source of these compounds is the combustion of fossil fuels. Therefore, Title IV established national standards to monitor, record, and in some cases limit SO_2 and NO_X emissions from electrical power-generating facilities. These standards are implemented at the local level with federal oversight.

Administering Agency: VCAPCD, with USEPA Region 9 oversight.

4.1.2.1.4 Title V: Operating Permits Program

Authority: Clean Air Act § 501 (Title V), 42 United States Code § 7661

Requirements: The issuance of operating permits that identify all applicable federal performance, operating, monitoring, recordkeeping, and reporting requirements. Title V applies to major facilities, Phase II acid rain facilities, subject solid waste incinerator facilities, and any facility listed by USEPA as requiring a Title V permit. VCAPCD implements this program pursuant to USEPA-approved rules.

Administering Agency: VCAPCD, with USEPA Region 9 oversight.

4.1.2.1.5 National Standards of Performance for New Stationary Sources

Authority: Clean Air Act § 111, 42 United States Code § 7411; 40 Code of Federal Regulations Part 60

Requirements: Establishes standards of performance to limit the emission of criteria pollutants (air pollutants for which USEPA has established NAAQS) from new or modified facilities in specific source categories. These standards are implemented at the local level with federal oversight. The applicability of these regulations depends on the equipment size, process rate, and/or the date of construction, modification, or reconstruction of the affected facility.

The NSPS for Stationary Gas Turbines and for Stationary Compression Ignition Internal Combustion Engines will be applicable to the proposed project. Title 40 Code of Federal Regulations (CFR) 60 Subpart KKKK, Standards of Performance for Stationary Gas Turbines, sets limits on NO_X and SO_2 emissions from gas turbines. Subpart KKKK limits NO_X and SO_2 emissions from new gas turbines based on power output. The limits for a gas turbine greater than 850 million British thermal units per hour (MMBtu/hr) are 15 parts per million by volume (ppmv) at 15 percent oxygen per 0.43 pound per megawatt-hour (MWh) for NO_X; and 0.90 pound per MWh SO_2 for SO_X. For the size of the engine proposed for the new emergency generator engine, NSPS Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines requires facilities to purchase engines meeting the USEPA engine non-road certification level of Tier II or better, depending on the year the engine is manufactured/purchased. This regulation also requires the engines to use ultra-low sulfur content diesel fuel.

On September 20, 2013, the USEPA issued a revised proposed NSPS to control GHG emissions from new power plants. The USEPA proposed separate standards for natural-gas–fired turbines and coal-fired units. The comment period for these revised standards ended on May 9, 2014, and USEPA expects to issue the final NSPS in the summer of 2015. Based on the revised proposed regulations, the GHG emission limits (40 CFR 60 Subpart TTTT) for new natural-gas–fired combustion turbines subject to the regulation are 1,000 pounds carbon dioxide (CO_2) per MWh (new combustion turbines with a heat input rating greater than 850 MMBtu/hr) and 1,100 pounds CO_2 per MWh (new combustion turbines with a heat input rating equal to or less than 850 MMBtu/hr). New combustion turbines that supply less than one-third of their potential electric output (on a 3-year rolling average basis) to a utility distribution system are exempt from this regulation. Because the new gas turbine associated with the proposed project would supply less than one-third of its potential electric output to a utility distribution system, the unit would be exempt from this regulation. Consequently, there will be no further discussion of this GHG NSPS in this document.

Administering Agency: VCAPCD, with USEPA Region 9 oversight.

4.1.2.1.6 National Emission Standards for Hazardous Air Pollutants

Authority: Clean Air Act § 112, 42 United States Code § 7412

Requirements: Establishes national emission standards to limit emissions of hazardous air pollutants (HAPs, or air pollutants identified by USEPA as causing or contributing to the adverse health effects of air pollution, but for which NAAQS have not been established) from major sources of HAPs in specific source categories. These standards are implemented at the local level with federal oversight. Only the NESHAPs for gas turbines, which limit formaldehyde emissions from gas turbines, are potentially applicable to a new power plant project. However, the gas turbine NESHAP is not expected to be applicable to the proposed project because the facility would not be a major source of HAPs (i.e., 10 TPY of one HAP or 25 TPY of all HAPs). Thus, NESHAPs requirements will not be addressed further.

Administering Agency: VCAPCD, with USEPA Region 9 oversight.

4.1.2.1.7 Compliance Assurance Monitoring

Authority: 40 Code of Federal Regulations 64 Compliance Assurance Monitoring

Requirements: Compliance monitoring at emission unit at major stationary sources that are required to obtain a Title V permit and that use control equipment to achieve a specified emission limit. The rule is intended to provide "reasonable assurance" that the control systems are operating properly to maintain compliance with the emission limits. CAM is usually implemented through the Title V permit. The only equipment associated with the proposed project that may be affected by CAM is the oxidation catalyst that would be installed on the new gas turbine (if ROC control is claimed for use of oxidation catalysts).

Administering Agency: VCAPCD, with USEPA Region 9 oversight.

4.1.2.2 State

CARB was created in 1968 by the Mulford-Carrell Air Resources Act, through the merger of two other state agencies. CARB'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 CAAQS; to review the operations of the local air pollution control districts; and to review and coordinate preparation of the State Implementation Plan (SIP) for achievement of the NAAQS. CARB has implemented several state or federal stationary source regulatory programs in accordance with the requirements of the federal CAA and California Health and Safety Code, as listed below.

- SIP
- California CAA
- Toxic Air Contaminant (TAC) Program
- Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition Engines
- Nuisance Regulation
- Air Toxics "Hot Spots" Act
- CEC and CARB Memorandum of Understanding
- Climate Change Regulatory Program

4.1.2.2.1 State Implementation Plan

Authority: Health and Safety Code § 39500 et seq.

Requirements: The SIP demonstrates the means by which all areas of the state will attain and maintain NAAQS within the federally mandated deadlines, as required by the federal CAA. CARB reviews and coordinates preparation of the SIP. Local districts must adopt new rules or revise existing rules to demonstrate that the resulting emission reductions, in conjunction with reductions in mobile source emissions, will result in attainment of the NAAQS. The relevant VCAPCD Rules and Regulations that have been incorporated into the SIP are discussed with the local LORS in Section 4.1.2.3.

Administering Agency: VCAPCD, with CARB and USEPA Region 9 oversight.

4.1.2.2.2 California Clean Air Act

Authority: Health and Safety Code §§ 40910 – 40930

Requirements: Established in 1989, the California CAA requires local districts to attain and maintain both national and state ambient air quality standards at the "earliest practicable date." Local districts must prepare air quality plans demonstrating the means by which the ambient air quality standards will be attained and maintained. The relevant components of the VCAPCD Air Quality Plan are discussed with the local LORS.

Administering Agency: VCAPCD, with CARB oversight.

4.1.2.2.3 Toxic Air Contaminant Program

Authority: Health and Safety Code §§ 39650 – 39675

Requirements: Adopted in 1983, the Toxic Air Contaminant Identification and Control Act created a two-step process to identify TACs and control their emissions. CARB identifies and prioritizes the pollutants to be considered for identification as TACs. CARB assesses the potential for human exposure to a substance, while the Office of Environmental Health Hazard Assessment evaluates the corresponding health effects. Both agencies collaborate in the preparation of a risk assessment report, which determines whether a substance poses a significant health risk and should be identified as a TAC. In 1993, the Legislature amended the program to include the 187[8] federally identified HAPs as TACs. CARB reviews the emission sources of an identified TAC; and if necessary, develops air toxics control measures to reduce the emissions.

Administering Agency: CARB

4.1.2.2.4 Airborne Toxic Control Measure for Stationary Compression-Ignition Engines

Authority: Title 17, California Code of Regulations, § 93115

Requirements: The purpose of the ATCM is to reduce diesel particulate matter (PM) and criteria pollutant emissions from stationary diesel-fueled compression ignition engines. The ATCM applies to stationary compression-ignition engines with a rating greater than 50 brake horsepower (bhp). The ATCM requires the use of CARB-certified diesel fuel or equivalent, and limits emissions from, and operations of, compression ignition engines.

Administering Agency: VCAPCD and CARB

4.1.2.2.5 Nuisance Regulation

Authority: California Health and Safety Code § 41700

Requirements: Provides that “no person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes 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.”

Administering Agency: VCAPCD and CARB

[8] Methyl ethyl ketone was removed from the list on December 19, 2005 (USEPA, 2006).

4.1.2.2.6 Air Toxic "Hot Spots" Act

Authority: Health and Safety Code §§ 44300-44384; 17 California Code of Regulations §§ 93300-93347

Requirements: Adopted in 1987, the Air Toxics "Hot Spots" Information and Assessment Act supplements the TAC program by requiring the development of a statewide inventory of air toxics emissions from stationary sources. The program requires affected facilities to prepare (1) an emissions inventory plan that identifies relevant air toxics and sources of air toxics emissions; (2) an emissions inventory report quantifying air toxics emissions; and (3) a health risk assessment, if necessary, to characterize the health risks to the exposed public. Facilities whose air toxics emissions are deemed to pose a significant health risk must issue notices to the exposed population. In 1992, the Legislature amended the program to further require facilities whose air toxics emissions are deemed to pose a significant health risk to implement risk management plans to reduce the associated health risks. This program is implemented at the local level with state oversight.

Administering Agency: VCAPCD and CARB

4.1.2.2.7 CEC and CARB Memorandum of Understanding

Authority: California Public Resources Code § 25523(a); 20 California Code of Regulations §§ 1752, 1752.5, 2300-2309 and Div. 2, Chap. 5, Art. 1, Appendix B, Part (k)

Requirements: Provides for the inclusion of requirements in the CEC's decision on an AFC to assure protection of environmental quality; the application is required to include information concerning the protection of air quality.

Administering Agency: CEC

4.1.2.2.8 California Climate Change Regulatory Program

Authority: Stats. 2006, Ch. 488 and California Health and Safety Code §§ 38500-38599

Requirements: The State of California adopted the Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) on September 27, 2006, which requires sources in the state to reduce carbon emissions to 1990 levels by the year 2020; pursuant to a 2005 Executive Order, additional reductions are required by 2050. Pursuant to this statutory authority, CARB has adopted regulations to limit GHG emissions from electric power plants and other specific source categories through a cap-and-trade program. In addition, CARB has adopted regulations requiring the calculation and reporting of GHG emissions from subject facilities.

Annual GHG emission reports to CARB for subject facilities must include the project's emission rates of GHGs. The project will be required to track and report GHG emissions from the gas turbine and auxiliary equipment, fuels and materials-handling processes, and delivery and storage systems, as well as from all onsite secondary emission sources. The facility will also be required to participate in the cap-and-trade program.

On January 25, 2007, the California Public Utilities Commission (CPUC) and CEC jointly adopted a GHG Emissions Performance Standard (EPS) in an effort to help mitigate climate change. The EPS is a facility-based emissions standard requiring that all new long-term commitments for baseload generation to serve California consumers be with power plants that have emissions no greater than a combined-cycle gas turbine plant. That level is established at 1,100 pounds of CO_2 per MWh (or 0.50 metric ton (MT) CO_2 per MWh). As discussed under California Code of Regulations (CCR) Title 20, Chapter 11, Sections 2900, 2901(b), 2902(a), and 2905(a), this GHG EPS applies only to baseload-generating plants (a power plant that is designed and intended to provide electricity at an annualized plant capacity factor of at least 60 percent – net generation available for sale). Because the proposed project's annual capacity factor would be below 60 percent, this EPS is not applicable to the project. Consequently, there will be no further discussion of this GHG EPS in this document.

Administering Agencies: CARB and CEC

4.1.2.3 Local

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 (including the VCAPCD), regional, and unified. In addition, special air quality management districts (AQMDs), 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. Local districts have principal responsibility for the following:

- Developing plans for meeting the NAAQS and CAAQS;
- Developing control measures for non-vehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards;
- Implementing permit programs established for the construction, modification, and operation of sources of air pollution;
- Enforcing air pollution statutes and regulations governing non-vehicular sources; and
- Developing programs to reduce emissions from indirect sources.

4.1.2.3.1 Ventura County Air Quality Plans

Authority: Health and Safety Code § 40914

Requirements: Air quality plans define the proposed strategies, including stationary source and transportation control measures and NSR rules, which will be implemented to attain and maintain the state ambient air quality standards. The relevant stationary source control measures and NSR requirements are discussed with VCAPCD Rules and Regulations.

Administering Agency: VCAPCD with USEPA Region 9 and CARB oversight.

4.1.2.3.2 Ventura County Air Pollution Control District Rules and Regulations

Authority: Health and Safety Code § 4000 et seq., Health and Safety Code § 40200 et seq., indicated VCAPCD Rules

Requirements: Establishes procedures and standards for issuing permits; establishes standards and limitations on a source-specific basis.

Administering Agency: VCAPCD with USEPA Region 9 and CARB oversight.

Authority to Construct. Rule 10 (Permits Required) specifies that any facility installing nonexempt equipment that causes or controls the emission of air pollutants must first obtain an Authority to Construct (ATC) from the VCAPCD. Under Rule 26.9 (NSR Power Plants), the VCAPCD's Final Determination of Compliance (DOC) acts as an ATC for a power plant upon approval of the proposed project by the CEC.

Review of New or Modified Sources. Rules 26.1 to 26.12 (NSR) implement the federal NSR programs, as well as the NSR requirements of the California CAA. The rules contain the following elements:

- BACT and Lowest Achievable Emission Rates (LAER);
- Emission offsets; and
- Air quality impact analysis (AQIA).

Best Available Control Technology. Under VCAPCD Rule 26.2.A, BACT must be applied to a new, replacement, modified, or relocated emissions unit that would have a potential to emit ROC, NO_X, PM_{10}, or SO_X. The new CTG and emergency generating engine emit these pollutants and will be subject to BACT for NO_X, ROC, SO_X, and PM_{10}.

The VCAPCD defines BACT as the most stringent emission limitation or control technique that:

- Has been achieved in practice for such emissions unit category; or
- Is contained in any implementation plan approved by USEPA for such emissions unit category. A specific limitation or control shall not apply if the owner or operator of such emissions unit demonstrates to the satisfaction of the Air Pollution Control Officer (APCO) that such limitation or control technology is not presently achievable; or
- Is contained in any applicable New Source Performance Standard or National Emission Standard for HAPs set forth in 40 CFR Parts 60 and 61; or
- Any other emission limitation or control technology, including, but not limited to, replacement of such emissions unit with a lower-emitting emissions unit, application of control equipment or process modifications, determined by the APCO to be technologically feasible for such emissions unit and cost effective as compared to the BACT cost-effectiveness threshold adopted by the VCAPCD.

Emissions Offsets. Under VCAPCD Rule 26.2.B.1, emissions offsets are required on a pollutant-specific basis for any new, modified, relocated, or replacement emissions unit with an "emissions increase" of NO_X, ROC, PM_{10}, or SO_X that would be at a stationary source with a potential to emit equal to or greater than 5.0 TPY for NO_X, and/or ROC, or 15.0 TPY for PM_{10} and/or SO_X. Offsets for emissions increases at stationary sources with a potential to emit greater than the above levels are based on a ratio of 1.3:1 for NO_X/ROC, and 1.1:1 for PM_{10}/SO_X.

Air Quality Impact Analysis. Under VCAPCD Rule 26.2.C, an AQIA must be conducted to confirm that emissions increases from a new, replacement, modified, or relocated emissions unit will not cause a violation of any ambient air quality standard.

CEC Review. VCAPCD 26.9 establishes a procedure for coordinating VCAPCD review of power plant projects with the CEC's AFC and Small Power Plant Exemption (SPPE) processes. Under this rule, the VCAPCD reviews the AFC/SPPE and issues a DOC for a proposed project. Upon approval of the proposed project by the CEC, this DOC is equivalent to an ATC. A Permit to Operate (PTO) is issued following demonstration of compliance with all permit conditions.

Prevention of Significant Deterioration. VCAPCD Rule 26.13 (adopted in June 2011) adopts, by reference, the federal PSD program (federal regulations in effect as of August 2, 2010). Although CARB submitted this rule to USEPA in August 2011 as part of a package of SIP amendments, the USEPA has not issued a formal action on the rule to date. Due to a number of changes to the federal PSD regulation over the past few years, the VCAPCD is in the process of developing a revised version of this rule that it will submit to CARB/USEPA for approval this year. Until this revised rule is approved by USEPA, the

PSD program will be implemented based on the federal PSD regulations by either USEPA Region 9 or the VCAPCD (under a source-specific delegation agreement).

Federal Operating Permit. VCAPCD Rules 33.1 to 33.10 implement the Title V federal operating permit program. An application for a Title V permit modification for the new equipment will be submitted prior to the initial operation of the new equipment per Rule 33.5 (for significant Title V permit modifications). The application will present a process description identifying all new stationary sources at the facility, applicable regulations, estimated emissions, associated operating conditions, alternative operating scenarios, a facility compliance plan, and a compliance certification.

New Source Performance Standards. VCAPCD Rule 72 adopts, by reference, the federal standards of performance for new or modified stationary sources. The applicability of the New Source Performance Standards is discussed above under the federal regulations.

4.1.2.3.3 VCAPCD Prohibitory Rules – General and Source Specific Regulations

The general prohibitory rules of the VCAPCD applicable to the proposed project are summarized below.

Rule 50 – Visible Emissions. Prohibits visible emissions as dark as, or darker than, Ringelmann No. 1 for periods greater than 3 minutes in any hour.

Rule 51 – Nuisance. Prohibits a facility from discharging air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property.

Rule 54 – Sulfur Compounds. Prohibits sulfur emissions, calculated as SO_2, in excess of 300 ppmv at 15 percent oxygen, and prohibits offsite ambient SO_2 impacts above 0.25 ppmv (1-hour average) and 0.04 ppmv (24-hour average). SO_X emissions from the proposed project will be below 0.5 ppmv, based on a maximum fuel sulfur content level of 0.75 grain per 100 standard cubic feet (gr/100 scf) (short-term average).

Rule 55 – Fugitive Dust Control. Requires the control of dust emissions during construction activities and prohibits visible dust emissions beyond the property line; also requires minimization of track-out onto public roadways and includes other dust mitigation requirements.

Rule 57.1 – Particulate Matter Emissions from Fuel Burning Equipment. Prohibits PM emissions above 0.12 pound per million British thermal units (lb/MMBtu) for fuel burning equipment. The PM_{10} emissions for the proposed project will be well below this limit, with maximum emissions of approximately 0.009 lb/MMBtu.

Rule 64 – Sulfur Content of Fuels. Prohibits the burning of gaseous fuel with a sulfur content of more than 50 gr/100 scf and liquid fuel with a sulfur content of more than 0.5 percent sulfur by weight.

Rule 72 – New Source Performance Standards. By reference, this rule requires units to comply with the applicable sections of the federal NSPS.

Rule 73 – National Emission Standards for Hazardous Air Pollutants. By reference, this rule requires units to comply with the applicable sections of the federal NESHAP program.

Rule 74.9 – Stationary Internal Combustion Engines. Limits CO, NO_X, and ROC emissions from stationary reciprocating internal combustion engines rated greater than or equal to 50 bhp. However, emergency equipment operating less than or equal to 50 hours per year for testing or maintenance purposes and less than or equal to 200 hours per year for any purpose is exempt from the emission limits of Rule 74.9.

Rule 74.23 – Stationary Gas Turbine. Limits NO_X emissions from stationary gas turbines rated greater than or equal to 10 megawatts (MW) with post-combustion controls to 9 ppmv (at 15 percent oxygen, corrected for efficiency). The NO_X emissions from the P3 CTG will be limited to 2.5 parts per million vinyl chloride (ppmvc), and thus complies with this rule.

All applicable LORS are summarized in Table 4.1-13, along with identification of the section that discusses compliance with each requirement.

4.1.3 Environmental Consequences

Ambient air quality impact analyses for P3 have been conducted to satisfy the VCAPCD, USEPA, and CEC requirements for analysis of impacts from criteria pollutants (NO_2, CO, PM_{10}, $PM_{2.5}$, and SO_2) and non-criteria pollutants during project construction and operation. The analyses cover each phase of the proposed project. Section 4.1.3.1 gives an overview of the analytical approach. Section 4.1.3.2 presents the emissions for operation of P3, and Section 4.1.3.3 gives the ambient air quality impacts of operation. Section 4.1.3.5 gives the analysis for construction of P3.

4.1.3.1 Overview of the Analytical Approach to Estimating Facility Impacts

The following sections describe the emission sources that have been evaluated, the results of the ambient impact analyses, and the evaluation of P3's compliance with the applicable air quality regulations, including the VCAPCD's NSR requirements. These analyses are designed to confirm that the proposed project's design features lead to less-than-significant impacts, even with the following conservative analysis assumptions and procedures: maximum allowable emission rates, project operating schedules that lead to maximum emissions, worst-case meteorological conditions, and the worst-observed existing air quality added to the highest potential ground-level impact from modeling—even though all of these situations could not physically occur at the same time.

4.1.3.1.1 Emitting Unit

The proposed P3 consists of replacing the existing MGS Units 1 and 2 (1,990 MMBtu/hr each, 215 MW net each, natural-gas–fired boilers) with a new natural-gas–fired H-Class simple-cycle CTG (approximately 2,500 MMBtu/hr, 262 MW net nominal), replacing the existing diesel emergency generator engine with a new emergency diesel generator, and shutting down the existing diesel emergency fire pump engine. With the exception of certain existing equipment that will be repurposed for P3, the remainder of the emission-generating equipment at the facility would remain unchanged: one natural-gas–fired peaker combustion turbine (MGS Unit 3) and ancillary facilities.

The new CTG will be equipped with a selective catalytic reduction (SCR) system for NO_X control, and an oxidation catalyst will be used to reduce CO emissions. Particulate, SO_X, and ROC emissions will be minimized through the use of natural gas as the fuel. Emission control systems will operate at all times except during commissioning, startups, and shutdowns. Specifications for the new CTG are summarized in Table 4.1-14. Table 4.1-15 summarizes a typical analysis for the natural gas fuel to be used by the CTG.

Specifications for the new diesel emergency generator are summarized in Table 4.1-16. Table 4.1-17 provides the maximum proposed fuel use for the CTG. A complete list of equipment that would be reused/repurposed is provided in Table 2.5-1.

Facility Operations

CTG performance specifications were developed for four ambient temperature scenarios: extreme summer temperature (82°F), average summer temperature (78°F), ISO temperature (59°F), and winter low temperature (39°F). The winter low-temperature scenario was used to characterize maximum hourly emissions during normal operation because it has the highest hourly heat input and emission rates. The plant may be operated under a wide variety of conditions over its life. The worst-case hourly emissions assume that the CTG would undergo startup with no operation of the emergency generator engine. Maximum daily operations are based on the CTG undergoing four startups/shutdowns with the unit operating at full load for the remaining hours of the day, and the emergency engine operating for 1 hour for testing purposes. Maximum annual emissions are based on the CTG operating a total of 2,453 hours of operation per year (including up to 200 startups/shutdowns per year). Annual emissions include the emergency engine operating a total of 200 hours per year (including 50 hours for testing/maintenance operation).

Heat input levels for the CTG, as summarized in Table 4.1-14, correspond to the calculated unit and project emission levels.

Emissions and operating parameters for the CTG under various loads and ambient conditions are shown in Appendix C-2. Emissions and operating parameters for the emergency engine are also shown in Appendix C-2.

4.1.3.2 Emissions Calculations

The new CTG and emergency engine emission rates have been calculated from vendor data, project design criteria, and established emission calculation procedures. The emission rates for the CTG and emergency engine are shown in the tables provided, and discussed below; the detailed emission calculations are shown in Appendix C-2.

4.1.3.2.1 Criteria Pollutant Emissions: P3

The CTG and emergency engine emission rates have been calculated from vendor data, project design criteria, and established emission calculation procedures. The emission rates for the CTG and emergency engine are shown in Tables 4.1-18, 4.1-19, and 4.1-20. The detailed emission calculations are shown in Appendix C-2.

CTG Emissions During Commissioning

The commissioning period begins when the CTG is prepared for first fire and ends on successful completion of performance/compliance testing. The commissioning process entails several relatively short periods of operation prior to and following installation of the emission control systems. During these periods, NO_X emissions would be higher than normal operating levels because the NO_X emission control system would not be fully operational, and because the CTG would not be tuned for optimum performance. CO emissions would also be higher than normal because turbine performance would not be optimized, and the CO emissions control system would not be fully operational.

CTG commissioning activities can be broken down into several separate test phases, as shown on the commissioning summary table included in Appendix C-2. The emission estimates shown in the detailed commissioning summary table in Appendix C-2 are based on vendor-supplied emission rates. At the conclusion of the commissioning period, emission rates would be at the normal operating levels discussed in the following paragraphs. Although the required continuous emissions monitoring system (CEMS) for NO_X and CO would be calibrated and operating during the commissioning test phases, the CEMS would not be certified until the end of the commissioning period.

The commissioning of the new CTG is expected to occur over an approximately 6-week period. During this commissioning period, it would be necessary to continue to operate the existing MGS Units 1 and 2, as well as Unit 3. Consequently, the commissioning air quality modeling analysis performed for the proposed project includes the simultaneous operation of the new CTG (commissioning tests) and the existing MGS Units 1, 2, and 3. Once the commissioning tests are complete and the new CTG is available for commercial operation, Units 1 and 2 will no longer be operated, and will be removed from service; Unit 3, however, would remain in service.

CTG Emissions During Normal Operations

Emissions of NO_X, CO, and ROC were calculated from the proposed emission limits (in ppmv at 15 percent oxygen) and the exhaust flow rates. The NO_X emission limit reflects the application of dry, low- NO_X combustion and SCR. The ROC and CO emission limits reflect the use of good combustion practices; and for CO, an oxidation catalyst. SO_X, PM_{10}, and $PM_{2.5}$ emission rates are based on the use of natural gas as the fuel, and good combustion practices.

SO_X emissions were calculated from the heat input (in million British thermal units) and an SO_X emission factor (in lb/MMBtu). The short-term SO_X emission factor of 0.0021 lb/MMBtu was derived from the maximum allowable (i.e., tariff limit) fuel sulfur content of 0.75 gr/100 scf). The annual average SO_X emissions were based on the expected annual average sulfur grain loading of 0.25 gr/100 scf.

Maximum hourly PM_{10} emissions are based on vendor-supplied emission levels. $PM_{2.5}$ emissions were determined based on the assumption that all CTG exhaust particulate is less than 2.5 microns in diameter.

Emission rates for the CTG are summarized in Table 4.1-18. The BACT analysis on which the emission factors are based is presented in Appendix C-3 and summarized in Section 4.1.3.9.

CTG Emissions During Startup and Shutdown

Maximum emission rates expected to occur during a CTG startup or shutdown are shown in Table 4.1-19. PM and SO_2 emissions are not included in this table because emissions of these pollutants will not be higher during startup and shutdown than during normal CTG operation. During a CTG startup, there are approximately 30 minutes with elevated emissions (emissions higher than during normal operation). Consequently, the hourly emission rates during CTG startups are based on 30 minutes of elevated emissions followed by 30 minutes of normal operating emission levels. During a CTG shutdown, there are approximately 12 minutes with elevated emissions (emissions higher than during normal operation). Consequently, the hourly emission rates during CTG shutdowns are based on 48 minutes of normal operating emission levels, followed by 12 minutes of elevated emission levels.

It is also anticipated that periodically, there could be an hour when a startup, shutdown, and restart occur. For this hour, there would be 30 minutes of elevated emissions due to the startup, 12 minutes of elevated emissions due to a shutdown, followed by 18 minutes of elevated emissions due to the restart. Although this situation is expected to occur very infrequently, from an hourly emission standpoint, this would represent worst-case hourly emissions, and is therefore included in the ambient air impact analysis for P3. The detailed CTG startup hourly emission calculations are shown in the startup/shutdown summary tables in Appendix C-2.

Criteria Pollutant Emissions Summary

The calculation of maximum proposed project emissions shown in Table 4.1-20 is based on the CTG emission rates shown in Tables 4.1-18 and 4.1-19, and the assumptions outlined below.

- Worst-case hour: CTG would undergo a startup/shutdown/restart sequence in 1 hour. The new emergency generator engine would not be operated during this hour.

- Worst-case day: CTG would undergo 4 startup hours (hours including a startup); 4 shutdown hours (hours including a shutdown); and 16 hours of normal operation. The new emergency generator engine would be operated for 1 hour for testing/maintenance purposes.

- Worst-case year: CTG would undergo 200 startups and 200 shutdowns, with a total of 2,453 hours of operation per year (including startup/shutdown periods). The new emergency generator engine would be operated a total of 200 hours (including 50 hours for testing/ maintenance operation).

The assumptions used in calculating maximum hourly, daily, and annual emissions from the new facility are shown in Appendix C-2.

Cooling for the project would be through the use of an external dry cooling-fan module; therefore, no emissions would be associated with this equipment. The only other source of criteria pollutant emissions for project operations would be fugitive leaks from the new compressor used to increase the natural gas pressure to levels required by the CTG. These leaks would result in a small amount of ROC emissions to the atmosphere. The gas compressor fugitive emission calculations are included in Appendix C-2.

The maximum hourly, daily, and annual emissions in Table 4.1-20 are used in the air dispersion modeling to calculate the maximum potential ground-level concentrations contributed by the proposed project to the ambient air.

4.1.3.2.2 Emissions for Existing Units at the MGS

MGS consists of two conventional steam boiler units (MGS Units 1 and 2) with a combined generating capacity of 430 MW net; and one gas combustion turbine unit (MGS Unit 3), rated at 130 MW net. As part of the proposed project, the existing MGS Units 1 and 2 would be decommissioned following commercial operation of the new equipment. MGS Unit 3 would remain in operation.

To determine the historical actual emissions associated with the operation of the existing MGS units, it is necessary to determine the baseline period. The three regulatory programs that discuss baseline periods for air quality purposes are the California Environmental Quality Act (CEQA), the VCAPCD NSR regulations, and the federal PSD regulations. These three baseline periods are summarized below.

- **CEQA –** Under the CEQA regulations, the baseline period reflects the actual conditions that exist at the start of the environmental review process for a project.

- **VCAPCD NSR –** Under VCAPCD NSR rules (Rule 26.6.C), the baseline period to establish the actual emissions for existing units is the 2-year period immediately preceding the submittal of a permit application, or a more representative consecutive 2-year (determined by the VCAPCD) period during the 5 years preceding the submittal of a permit application.

- **Federal PSD –** Under the federal PSD regulations (40 CFR 52.21.b.48.1), the baseline period to establish the actual emissions for existing units is any consecutive 24-month period within the 5-year period preceding the actual beginning of construction for a new project. The USEPA does allow the use of a different look-back period (up to 10 years prior to construction of a new project) to calculate actual emissions if it is more representative of normal operation.

For CEQA purposes, this analysis examines actual historical emissions for the existing MGS units averaged over the past 5 years. For both NSR and PSD purposes, the baseline emissions for the existing MGS Units 1 and 2, and the associated emissions reductions from the shutdown of these units, are based on actual emissions during the most representative consecutive 2-year period during the 5 years preceding the filing of the VCAPCD permit application for the proposed project (2010 to 2014). The baseline emissions for the existing units are shown in Table 4.1-21, and are based on the 2-year average of actual emissions during 2012 and 2013. This 2-year period was determined to be the most representative because it best reflects the current market conditions of the electricity system in the project area. The detailed calculation of the historical baseline emissions for the existing units at the MGS is included in Appendix C-2.

4.1.3.2.3 Net Changes in Criteria Pollutant Emissions for the Proposed Project

Net emissions changes as a result of the proposed project are calculated on an annual basis for federal PSD and CEQA purposes. These net emission changes are shown in Table 4.1-22, with the emission reductions for MGS Units 1 and 2 based on the representative 2-year average over the past 5 years.

For VCAPCD NSR purposes, the net emission changes for the proposed project are based on the emission calculation approach for replacement emissions units. Under VCAPCD Rule 26.1, Number 29, "Replacement Emissions Unit" is defined as "An emissions unit which supplants another emissions unit where the replacement emissions unit serves the identical function as the emission unit being replaced." Because the function of both existing MGS Units 1 and 2 and the proposed new CTG is to supply electrical power to the grid on an as-needed basis to support the load pocket in this project area, both the existing and new units serve an identical function, which is supported by the similar number of annual startups for the new and existing units. As discussed above, the new CTG is expected to undergo approximately 200 startups per year. Over the past 5 years, Units 1 and 2 have undergone a combined average of approximately 175 startups per year.

The replacement emissions unit net emission change calculation approach is also being used for the replacement of the existing emergency diesel generator engine with a new emergency engine. The net emission changes are shown in Table 4.1-23, and the detailed calculations are included in Appendix C-2.

4.1.3.2.4 Non-Criteria Pollutant Emissions

Non-criteria pollutant emissions were estimated for the proposed new CTG and emergency generator engine. These emissions are summarized in Table 4.1-24; the detailed non-criteria pollutant emissions calculations are included in Appendix C-8.

Table 4.1-25 summarizes the maximum potential to emit for non-criteria pollutants for the existing units at the facility. This information is provided for regulatory applicability purposes.

Greenhouse Gas Emissions

Potential maximum annual GHG emissions for the operation of P3 were calculated using the calculation methods and emission factors from the USEPA GHG Reporting Regulation.[9] Table 4.1-26 presents the estimated GHG emissions due to operation of the new equipment in CO_2 equivalent [CO_2e] emission rates. Emissions of methane (CH_4), nitrous oxide (N_2O), and sulfur hexafluoride (SF_6) have been converted to CO_2e using GHG warming potentials of 25, 298, and 22,800, respectively. The estimated emissions include the combustion emissions for the CTG and the new emergency generator engine. They also include SF_6 leakage emissions from two new circuit breakers associated with the proposed project. The detailed GHG emission calculations are included in Appendix C-2.

[9] 40 CFR 98 (as revised on 11/29/13).

4.1.3.3 Air Quality Impact Analysis

The VCAPCD NSR regulations require the Applicant to prepare ambient air quality modeling analyses and other impact assessments. An ambient air quality impact assessment is also required by the CEC for CEQA review. These analyses are presented in this section.

4.1.3.3.1 Air Quality Modeling Methodology

An assessment of impacts from P3 on ambient air quality has been conducted using USEPA-approved air quality dispersion models. These models use a mathematical description of atmospheric turbulent entrainment and dispersion to simulate the actual processes by which emissions are transported to ground-level areas.

Using conservative assumptions, modeling was conducted to determine the maximum ground-level impacts of P3. The results were compared with state and federal ambient air quality standards and PSD significance levels. If the standards are not exceeded in the analysis, then the facility will cause no exceedances under any operating or ambient conditions, at any location, under any meteorological conditions. In accordance with the AQIA guidelines developed by USEPA (USEPA, 1999), the ground-level impact analysis includes the following assessments:

- Impacts in simple, intermediate, and complex terrain;
- Aerodynamic effects (downwash) due to nearby buildings and structures; and
- Impacts from inversion breakup and shoreline fumigation.

Simple, intermediate, and complex terrain impacts were assessed for all meteorological conditions that would limit the amount of final plume rise. Plume impaction on elevated terrain, such as on the slope of a nearby hill, can cause high ground-level concentrations, especially under stable atmospheric conditions. Another dispersion condition that can cause high ground-level pollutant concentrations is caused by building downwash. A stack plume can be impacted by downwash when wind speeds are high and a sufficiently tall building or structure is in close proximity to the emission stack. This can result in building wake effects where the plume is drawn down toward the ground by the lower-pressure region that exists in the lee (downwind) side of the building or structure.

Fumigation conditions occur when the plume is emitted into a layer of stable air (inversion) that then becomes unstable from below, resulting in a rapid mixing of pollutants out of the stable layer and towards the ground in the unstable layer beneath. The low mixing height that occurs under these conditions allows little dispersion of the stack plume before it is carried downwind to the ground. Although fumigation conditions are short-term, rarely lasting as long as an hour, relatively high ground-level concentrations may be reached during that period. Fumigation tends to occur under clear skies and light winds, and is more prevalent in summer.

Two types of fumigation are analyzed: inversion breakup, and shoreline. Inversion breakup fumigation occurs under low-wind conditions when a rising morning mixing height caps a stack and “fumigates” the air below. Shoreline fumigation occurs when a roughness boundary (generally a beach) causes turbulent dispersion to be much more enhanced near the ground, once again fumigating the air below. SCREEN3 modeling was performed to evaluate shoreline fumigation associated with the proposed project, following the methodology provided by USEPA (1992).

The basic model equation used in this analysis assumes that the concentrations of emissions within a plume can be characterized by a Gaussian (statistical) distribution around the centerline of the plume. Concentrations at any location downwind of a point source such as a stack can be determined from the following equation:

$$C(x,y,z,H) = \left(\frac{Q}{2\pi\sigma_y\sigma_z u}\right) * \left(e^{-1/2(y/\sigma_y)^2}\right) * \left[\left\{e^{-1/2(z-H/\sigma_z)^2}\right\} + \left\{e^{-1/2(z+H/\sigma_z)^2}\right\}\right] \qquad \text{(Eq. 1)}$$

where

- C = pollutant concentration in the air
- Q = pollutant emission rate
- $\sigma_y \sigma_z$ = horizontal and vertical dispersion coefficients, respectively, at downwind distance x
- u = wind speed at the height of the plume center
- x,y,z = variables that define the downwind, crosswind, and vertical distances from the center of the base of the stack in the model's three-dimensional Cartesian coordinate system
- H = the height of the plume above the stack base (the sum of the height of the stack and the vertical distance that the plume rises due to the momentum and thermal buoyancy of the plume)

Gaussian dispersion models are approved by USEPA for regulatory use and are based on conservative assumptions (i.e., the models tend to overpredict actual impacts by assuming steady-state conditions, no pollutant loss [through conservation of mass], no chemical reactions). The USEPA models were used to determine if ambient air quality standards would be exceeded, and whether a more accurate and sophisticated modeling procedure would be warranted to make the impact determination.

Details of the analysis procedures are provided in the following subsections:

- CTG screening modeling;
- Refined AQIA;
- Specialized modeling analyses;
- Results of the ambient air quality modeling analyses; and
- PSD significance levels.

Modeling for the proposed project was performed in accordance with the modeling protocol submitted to the VCAPCD and CEC (see Appendix C-4). The modeling procedures used for each type of modeling analysis are described in more detail in the subsections below.

Two different USEPA guideline models were used for different meteorological conditions in the ambient AQIA: AERMOD[10] and SCREEN3.

The USEPA-approved AERMOD model was used to evaluate impacts in simple, intermediate, and complex terrain. AERMOD is a Gaussian dispersion model capable of assessing impacts from a variety of source types in areas of simple, intermediate, and complex terrain. The model can account for settling and dry deposition of particulates; area, line, and volume source types; downwash effects; and gradual plume rise as a function of downwind distance. The model is capable of estimating concentrations for a wide range of averaging times (from 1 hour to 1 year), and was applied with 5 years (2009 to 2013) of representative meteorological data recorded at the Oxnard Airport monitoring station.

The SCREEN3 model was used to evaluate CTG impacts under inversion breakup and shoreline fumigation conditions because these are special cases of meteorological conditions. The SCREEN3 model uses a range of meteorological conditions that could occur under inversion breakup and shoreline fumigation. Because the emissions from the emergency engines are so small compared to the CTG, they

[10] The acronym AERMOD was derived from American Meteorological Society/Environmental Protection Agency Regulatory Model.

are excluded from this single-source model used for the fumigation analysis. The fumigation analysis is discussed in more detail below.

AERMOD Modeling

The screening and refined air quality impact analyses were performed using the AERMOD model. The screening modeling is performed to determine the combination of ambient temperature and CTG operating conditions that generates the highest ambient air quality levels for each pollutant and averaging period. The refined modeling uses the stack parameters that the screening-level modeling shows produced the highest ambient impacts (for each pollutant and averaging period).

Inputs required by AERMOD include the following:

- Model options;
- Meteorological data;
- Source data; and
- Receptor data.

Standard AERMOD control parameters were used, including stack-tip downwash, non-screening mode, non-flat terrain, and sequential meteorological data check. Stack-tip downwash, which adjusts the effective stack height downward following the methods of Briggs (1972) for cases where the stack exit velocity is less than 1.5 times the wind speed at stack top, was selected per USEPA guidance. As approved by the VCAPCD during its review of the modeling plan, the rural default option was used by not invoking the URBANOPT option.[11]

The required emission source data inputs to both models used in this analysis include source locations, source elevations, stack heights, stack diameters, stack exit temperatures and velocities, and 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 is the Universal Transverse Mercator Projection (UTM). The stack height that can be used in the model is limited by federal Good Engineering Practice (GEP) stack height restrictions, discussed in more detail below. In addition, Building Profile Input Program – Plume Rise Model Enhancements (BPIP-PRIME, current version 04274) requires nearby building dimension data to calculate the impacts of building downwash.

For the purposes of modeling, a stack height beyond what is required by GEP is not allowed. However, this requirement does not place a limit on the actual constructed height of a stack. GEP, as used in modeling, is the height necessary to assure 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 assures that any required regulatory control measure is not compromised by the effect of that portion of the stack that exceeds the GEP. USEPA guidance (USEPA, 1985) for determining GEP stack height indicates that GEP is the greater of 65 meters or H_g, where H_g is calculated as follows:

$$H_g = H + 1.5L$$

[11] The rural vs. urban option in AERMOD is primarily designed to set the fraction of incident heat flux that is transferred into the atmosphere. This fraction becomes important in urban areas having an appreciable “urban heat island” effect due to a large presence of land covered by concrete, asphalt, and buildings. This situation does not exist for the proposed project site.

where:

H_g = GEP stack height, measured from the ground-level elevation at the base of the stack
H = height of nearby structure(s) measured from the ground-level elevation at the base of the stack
L = lesser dimension, height or maximum projected width, of nearby structure(s)

In using this equation, the guidance document indicates that both the height and width of the structure are determined from the frontal area of the structure, projected onto a plane perpendicular to the direction of the wind.

For the new CTG, the nearby (influencing) structure is the catalyst housing for the new unit, which is 106 feet (32.3 meters) high, 87 feet (26.5 meters) long and 25 feet (7.6 meters) wide. Therefore, $H_g = 106 + (1.5 * 87) = 238$ feet (72.6 meters). Because H_g is more than 65 meters, the GEP stack height is 72.6 meters. The proposed stack height of 188 feet (57.3 meters) does not exceed GEP stack height, and consequently satisfies the USEPA requirement.

For regulatory applications, a building is considered sufficiently close to a stack to cause wake effects when the downwind distance between the stack and the nearest part of the building is less than or equal to five times the lesser of the height, or the projected width of the building. Building dimensions for the buildings analyzed as downwash structures were obtained from plot plans. The building dimensions were analyzed using the BPIP-PRIME to calculate 36 wind-direction-specific building heights and projected building widths for use in building wake calculations. The building dimensions used in the GEP analysis are shown in Appendix C-5.

Screening Procedures and Unit Impact Modeling

Screening modeling was performed to select the worst-case CTG operating mode for each pollutant and averaging period. The modeling used emissions data based on an ISO temperature (59°F), average summer temperature (78°F), maximum summer temperature (82°F), and minimum temperature (39°F), and at nominal minimum and maximum CTG operating load points of 30 percent and 100 percent (percent loads based on gross MW output levels). The determination of the worst-case CTG operating condition depends on how changes in emissions rates and stack characteristics (plume rise characteristics) interact with terrain features. For example, lower mass emissions resulting from lower load operations may cause higher concentrations than other operating conditions because lower final plume height may have a greater interaction with terrain features.

Initial AERMOD modeling runs were performed using normalized emission rates to assess the zone of impact and relative magnitude of the impacts. For the AERMOD CTG screening modeling, each CTG was modeled with a unit emission rate of 1 gram per second to obtain maximum 1-hour, 3-hour, 8-hour, 24-hour, and annual average concentration to emission rate (χ/Q in units of $\mu g/m^3$ per g/s) values. These χ/Q values were multiplied by the actual emission rate in grams per second from the CTG to calculate ambient impacts for NO_2, CO, SO_2, and $PM_{10}/PM_{2.5}$ in units of $\mu g/m^3$. Stack characteristics used in the screening modeling analysis are shown in Appendix C-5.

The results of the screening analysis are shown in Appendix C-5. The stack parameters and emission rates corresponding to the operating case that produced the maximum impacts in the CTG screening analysis for each pollutant and averaging period were used in the refined modeling analysis to evaluate the impacts of the new unit.

Refined Air Quality Impact Analysis

In simple, intermediate, and complex terrain, AERMOD was used to estimate proposed project impacts. The AERMOD model was used to calculate 1-hour, 3-hour, 8-hour, 24-hour, and annual average concentrations.

Refined modeling was performed in two phases: coarse-grid modeling, and fine-grid modeling. Preliminary modeling was performed with the coarse grid to locate the areas of maximum concentration. Fine grids were used to refine the location of the maximum concentrations.

The stack parameters and emission rates used to model combined impacts from all new equipment at the facility are shown in Appendix C-5. The model receptor and source base elevations were determined from U.S. Geological Survey National Elevation Dataset data in the GeoTIFF format at a horizontal resolution of 1 arc-second (approximately 30 meters). All coordinates were referenced to UTM North American Datum 1983, Zone 11. The AERMOD receptor elevations were interpolated among the Digital Elevation Model nodes according to standard AERMAP procedure. For determining concentrations in elevated terrain, the AERMAP terrain preprocessor receptor-output file option was chosen.

A 250-meter resolution coarse receptor grid was developed and extended outwards at least 10 kilometers. In addition, a nested grid was developed to fully represent the maximum impact area(s). The receptor grid was constructed as follows:

- One row of receptors spaced 25 meters apart along the facility’s fence line;
- Four tiers of receptors spaced 25 meters apart, extending 100 meters from the fence line;
- Additional tiers of receptors spaced 100 meters apart, extending from 100 meters to 1,000 meters from the fenceline; and
- Additional tiers of receptors spaced 250 meters apart, out to at least 10 kilometers from the most distant source modeled, not to exceed 50 kilometers from the project site.

Additional refined receptor grids with 25-meter resolution were placed around the maximum first-high or maximum second-high coarse grid impacts and extended out 1,000 meters in all directions. Concentrations within the facility fenceline were not calculated.

These terrain data are included in the modeling DVD submitted to the VCAPCD (as part of the ATC/ DOC application package) and to the CEC (as part of the AFC) for the proposed project.

4.1.3.3.2 Specialized Modeling Analyses

Fumigation Modeling

Fumigation occurs when a stable layer of air lies a short distance above the release point of a plume, and unstable air lies below. Under these conditions, an exhaust plume may cause high ground-level pollutant concentrations because the plume is unable to rise upwards normally due to the stable layer capping it from above, and be drawn to the ground by turbulence in the unstable layer. Although fumigation conditions rarely last as long as 1 hour, relatively high ground-level concentrations may be reached during that time. For this analysis, fumigation was assumed to occur for up to 90 minutes, as required by USEPA guidance.

The SCREEN3 model was used to evaluate maximum ground-level concentrations for short-term averaging periods (24 hours or less). Guidance from the USEPA (USEPA, 1992) was followed in evaluating fumigation impacts. This analysis is shown in more detail in Appendix C-5.

Shoreline Fumigation Modeling

Because land surfaces tend to both heat and cool more rapidly than water, shoreline fumigation tends to occur on sunny days when the denser, cooler air over water displaces the warmer, lighter air over land. During an inland sea breeze, the unstable air over land gradually increases in depth with inland distance. The boundary between stable air over the water and unstable air over the land and the wind speed determine whether an exhaust plume will loop down before much dispersion of the pollutants has occurred.

SCREEN3 can examine sources within 3,000 meters of a large body of water, and was used to calculate the maximum shoreline fumigation impact. The model uses a stable onshore flow and a wind speed of 2.5 meters per second; the maximum ground-level shoreline fumigation concentration is assumed by the model to occur where the top of the stable plume intersects the top of the well-mixed thermal inversion boundary layer (TIBL). The model TIBL height was varied between 2 and 6 ($meters^{1/2}$) to determine the highest shoreline fumigation impact. The worst-case (highest) impact was used in determining facility impacts due to shoreline fumigation. Shoreline breakup fumigation was assumed to persist for up to 3 hours. The shoreline fumigation analysis is shown in more detail in Appendix C-5.

CTG Startup

Facility impacts were also evaluated during startup of the new CTG to evaluate short-term impacts under worst-case startup emissions. CTG exhaust parameters used to characterize CTG exhaust during startup and the CO and NO_X emission rates are shown in Appendix C-5.

Ozone Limiting

One-hour NO_2 impacts during proposed project operation were modeled using the Ozone Limiting Method (OLM) (Cole and Summerhays, 1979), implemented through the "OLMGROUP ALL" option in AERMOD (USEPA, 2011). AERMOD OLM was used to calculate the NO_2 concentration based on the OLM method and hourly ozone data. Hourly ozone data collected at the Oxnard (Rio Mesa School) monitoring station during the years 2009-2013 were used in conjunction with OLM to calculate hourly NO_2 concentrations from hourly NO_X concentrations.

Part of the NO_X in the exhaust is converted to NO_2 during and immediately after combustion. The remaining percentage of the NO_X emissions is assumed to be NO. For the new CTG, based on information provided by the CTG vendor, the analysis was performed using the following NO_2/NO_X ratios:

- 30 percent during normal operating hours;
- 40 percent during hours in which a startup/shutdown occurs; and
- 40 percent during commissioning tests when the SCR system is not fully operational.

An NO_2/NO_X ratio of 32.3 percent was used for the analysis of the new diesel emergency generator engine.[12]

As the exhaust leaves the stack and mixes with the ambient air, the NO reacts with ambient ozone to form NO_2 and molecular oxygen. The OLM assumes that at any given receptor location, the amount of NO that is converted to NO_2 by this oxidation reaction is proportional to the ambient ozone concentration. If the ozone concentration is less than the NO concentration, the amount of NO_2 formed by this reaction is

[12] USEPA's ISR database is at www.epa.gov/ttn/scram/no2_isr_database.htm, for a Cat. C-15 engine at the Discoverer facility.

limited; however, if the ozone concentration is greater than or equal to the NO concentration, all of the NO is assumed to be converted to NO_2.

Annual NO_2 concentrations were calculated using the Ambient Ratio Method, originally adopted in Supplement C to the Guideline on Air Quality Models (USEPA, 1995) with a revision issued by USEPA in March 2011 (USEPA, 2011). Based on guidance provided by the VCAPCD, a default of 80 percent was used for the conversion of NO to NO_2 on an annual basis.

CTG Commissioning

CTG commissioning is the process of initial startup, tuning, and adjustment of the new CTG and auxiliary equipment and of the emission control systems. The commissioning process for P3 would consist of sequential test operation of the CTG up through increasing load levels, and with successive application of the air pollution control systems. The total set of commissioning tests would require approximately 366 operating hours for the CTG with a total of approximately 6 weeks required to complete all commissioning tests for the new unit. The detailed CTG commissioning schedule is included in Appendix C-2.

During the commissioning phase of the proposed project, the existing MGS Units 1, 2, and 3 would remain available for operation and the commissioning modeling analysis accounts for the combined impacts for the new unit (undergoing commissioning) and operation of the existing units. Once the commissioning tests are complete and the new CTG is available for commercial operation, MGS Units 1 and 2 will no longer be operated and will be decommissioned; MGS Unit 3 would remain in operation.

Impacts during Normal Operation

Table 4.1-27 summarizes the maximum impacts during the normal operation of P3, calculated from the refined, startup/shutdown and fumigation modeling analyses described above.

Ambient Air Quality Impacts from the Proposed Project

To determine a project's air quality impacts, the modeled concentrations are added to the maximum background ambient air concentrations and then compared to the applicable ambient air quality standards. The background $PM_{2.5}$, PM_{10}, ozone, and NO_2 data were collected at the Oxnard monitoring site (approximately 7 miles from the project site). The background SO_2 data were collected at the Santa Barbara – UCSB monitoring site (approximately 39 miles from the project site), and the background CO data were collected at the Santa Barbara – East Canon Perdido monitoring site (approximately 29 miles from the project site). Because these are the nearest ambient monitoring stations to the project site, the data collected at these stations are considered representative of ambient concentrations in the vicinity of the proposed project.

Table 4.1-28 presents the maximum concentrations of NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$ recorded between 2011 and 2013 from representative nearby monitoring stations, as required by Appendix B(g)(8)(G) of the CEC guidelines.

The maximum modeled concentrations during normal operation shown in Table 4.1-27 are combined with the maximum background ambient concentrations in Table 4.1-28, and compared with the state and federal ambient air quality standards in Table 4.1-29 (with and without Unit 3). Using the conservative assumptions described earlier, during normal operation, the results indicate that P3 would not cause or contribute to violations of state or federal air quality standards, with the exception of the 24-hour and annual state PM_{10} standards. For this pollutant and averaging periods, existing background concentrations already exceed state standards.

Impacts During CTG Commissioning

During the CTG commissioning phase, NO_2 and CO impacts may be higher than under the operating conditions evaluated above. The commissioning period comprises various equipment tests. These tests and the associated emissions are summarized in Appendix C-2.

It is assumed that the maximum modeled impacts during commissioning would occur under the CTG operating conditions that are least favorable for dispersion. These conditions are expected to occur under low-load conditions.

As discussed above, during the commissioning of the new unit it may be necessary to operate existing MGS Units 1, 2, and 3. Therefore, the commissioning modeling analysis analyzed the combined impacts for the commissioning of the new unit and the continued operation of the existing units.

Emission rates and stack parameters for the new and existing units during the commissioning period are shown in Appendix C-5. Modeled short-term impacts (1-hour, 8-hour, and 24-hour average) during the commissioning period are summarized below in Table 4.1-30. Although SO_X and $PM_{10}/PM_{2.5}$ emissions during the commissioning of the new CTG are not expected to be higher than during normal operation, SO_2 and $PM_{10}/PM_{2.5}$ impacts are included in Table 4.1-30 to show the combined short-term impacts for the new/existing units. In addition, the maximum modeled concentrations (new CTG plus impacts from Units 1, 2, and 3) during the commissioning period are compared with state and federal ambient air quality standards in Table 4.1-30. The modeling results demonstrate that during commissioning activities P3 would not cause or contribute to violations of state or federal air quality standards, with the exception of the 24-hour state PM_{10} standard (existing background concentrations already exceed state standard).

PSD Significance Levels

The PSD program was established to allow emission increases that do not result in significant deterioration of ambient air quality in areas where criteria pollutants have not exceeded the NAAQS. As described in Section 4.1.3.7, P3 will not be a major modification (with the decommissioning of existing MGS Units 1 and 2) and will not trigger PSD review. Although the proposed project would not trigger a PSD review, an analysis was conducted to determine whether the ambient impacts of the proposed project exceed the PSD significance thresholds, because these thresholds are generally used as one measure of whether the project's ambient impacts would be significant. Modeled project impacts during normal operation are compared with the PSD significance thresholds in Table 4.1-31. As shown in this table, the maximum impacts for the proposed project (new equipment) during normal operation are below the PSD significance thresholds, with the exception of 1-hour NO_2 impacts. However, as shown in Table 4.1-31, maximum project impacts, combined with maximum background levels, are below the most stringent state and federal ambient air quality standards for this pollutant.

4.1.3.4 Screening Health Risk Assessment

A screening health risk assessment (SHRA) was conducted to determine expected impacts on public health of the non-criteria pollutant emissions from the operation of the CTG and emergency engine. The potential health risks and a detailed discussion of the approach used for the screening level risk assessment, including the detailed non-criteria-pollutant calculations, are provided in Section 4.9, Public Health.

4.1.3.5 Construction Impacts Analysis

Construction of the proposed project is scheduled to occur over an 18-month period, followed by 3 months of Units 1 and 2 decommissioning activities. The construction/decommissioning emission estimates include emissions from vehicle and equipment exhaust, and fugitive dust generated from material handling and paved/unpaved road travel. A dispersion modeling analysis and a SHRA were conducted based on these emissions. The detailed analysis of the construction/decommissioning emissions and ambient impacts is included in Appendix C-6.

4.1.3.6 Significance Criteria

A discussion of whether the potential air quality impacts of P3 would significantly affect the environment is provided in Section 4.1.3.3 (Air Quality Impact Analysis), and in Section 4.1.4 (Cumulative Impacts Analyses).

4.1.3.7 Consistency with Laws, Ordinances, Regulations, and Standards

This section evaluates consistency separately for federal, state, and local requirements.

4.1.3.7.1 Consistency with Federal Requirements

The VCAPCD has been delegated authority by USEPA to implement and enforce most federal requirements that may be applicable to the proposed project, including new source performance standards and NSR for nonattainment pollutants. The proposed project will also be required to comply with the Federal Acid Rain requirements (Title IV). Because the VCAPCD is the delegated authority to implement Title IV through its Title V permit program, the modified Title V Federal Operating Permit that will be issued as a result of the proposed project will include the necessary requirements for compliance with the Title IV Acid Rain provisions. In addition, the VCAPCD is in the processing of obtaining delegation from the USEPA to implement the PSD program. Until that delegation is in place, USEPA Region 9 is the PSD permitting authority. As discussed below, the project does not trigger PSD review.

PSD Program

USEPA has promulgated PSD regulations for areas that are designated attainment or unclassified for NAAQS (40 CFR 52.21). The PSD program allows new sources of air pollution to be constructed, or existing sources to be modified, while preserving the existing ambient air quality levels, protecting public health and welfare, and protecting Class I areas (e.g., specific national parks and wilderness areas). There are five principal areas of the PSD program: (1) Applicability; (2) BACT; (3) Pre-Construction Monitoring; (4) Increments Analysis; and (5) AQIA. Although issuance of a PSD permit would be the responsibility of either the VCAPCD or USEPA Region 9 (depending on the timing for PSD delegation to the VCAPCD), the protection of Class I areas is still the responsibility of the FLMs.

The federal 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 stationary source. (These terms are defined in federal regulations.) (40 CFR 52.21) Because the MGS is an existing major source, the determination of applicability is based on evaluating the emissions increases associated with the proposed project, in addition to all other emissions increases and decreases at the facility over a 5-year look-back period. In Table 4.1-32, the net emission changes at the MGS, based on the emissions from the new equipment and the shutdown of the existing MGS Units 1 and 2, are compared to the regulatory significance thresholds. As shown in this table, the net emission changes associated with the proposed project are below these significance thresholds for all criteria pollutants. Therefore, the proposed project does not trigger PSD permitting.

Title V Operating Permits

VCAPCD Rules 33.1 to 33.10 implement the Title V federal operating permit program. An application for a Title V permit modification for the new equipment will be submitted prior to the initial operation of the new equipment per Rule 33.5 (for significant Title V permit modifications).

40 Code of Federal Regulations Part 60, Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)

This new source performance standard applies to gas turbines with heat inputs in excess of 1 MMBtu/hr that commence construction after February 18, 2005, and therefore is applicable to the P3 CTG. Subpart KKKK limits NO_X and SO_2 emissions from a new gas turbine with a heat input greater than 850 MMBtu/hr to limits of 15 ppmv at 15 percent oxygen (ppm, corrected) for NO_X, and 0.90 lbs/MWh for SO_X. As shown in Table 4.1-33, the proposed CTG at P3 will comply with these limits.

Compliance with the NSPS limits must be demonstrated through an initial performance test. Because the P3 CTG will be equipped with an NO_X CEMS that will comply with NSPS requirements, the initial performance test will be met as part of the initial NO_X CEMS certification testing process, and ongoing annual performance testing will not be required under the NSPS.

40 Code of Federal Regulations Part 60, Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines)

The new emergency diesel generator engine will be subject to this NSPS. For engines in this size range, the NSPS requires manufacturers to provide engines that are certified to meet the NSPS emission standards (depending on the year an engine is manufactured). P3 will comply with the emission limitations of the NSPS by purchasing an engine certified to USEPA Tier 4 (final) standards for non-road diesel engines (standards for generator engines with ratings from 560 kilowatts [kW] to 900 kW).

The NSPS also requires engines in this size range to use fuel with a sulfur content not to exceed 15 ppm. The new emergency engine will comply with this requirement by using only CARB diesel fuel.

National Emission Standards for Hazardous Air Pollutants

This program establishes national emission standards to limit emissions of HAPs from major sources of HAPs in specific source categories. These standards are implemented at the local level with federal oversight. The gas turbine NESHAP is not expected to be applicable to the proposed project, because as shown in Table 4.1-25, P3 would not be a major source of HAPs (i.e., 10 TPY of one HAP or 25 TPY of all HAPs). Thus, NESHAPs requirements are not addressed further.

4.1.3.8 Consistency with State Requirements

As discussed in Section 4.1.2.3, the state legislature established local air pollution control districts and AQMDs with the principal responsibility for regulating emissions from stationary sources. P3 is under the local jurisdiction of the VCAPCD; therefore, compliance with VCAPCD regulations will assure compliance with state air quality requirements.

4.1.3.9 Consistency with Local Requirements: VCAPCD

The VCAPCD has responsibility for implementing local, state, and federal air quality regulations in Ventura County. The proposed project is subject to VCAPCD regulations that apply to new stationary sources, to the prohibitory rules that specify emission standards for individual equipment categories, and to the requirements for evaluation of impacts from emissions of non-criteria pollutants. The following sections evaluate facility compliance with applicable VCAPCD requirements.

4.1.3.9.1 New Source Review Requirements

Under the regulations that govern new sources of emissions (and specifically, power plants subject to CEC jurisdiction), the proposed project is required to secure a preconstruction DOC from the VCAPCD, as well as demonstrate continued compliance with regulatory limits when the new equipment becomes operational. The preconstruction review includes demonstrating that subject new equipment will use BACT; will provide any necessary emission offsets; and will perform an ambient AQIA. The requirements of each of these elements of the VCAPCD's NSR program are discussed below.

Best Available Control Technology

Under VCAPCD Rule 26.2.A, BACT must be applied to a new, replacement, modified, or relocated emissions unit which would have a potential to emit ROC, NO_X, PM_{10}, or SO_X. The new CTG and emergency generator engine would emit these pollutants and will be subject to BACT for NO_X, ROC, SO_X, and PM_{10}.

BACT for the applicable pollutants was determined by reviewing a number of BACT guideline documents, including the South Coast Air Quality Management District (SCAQMD) BACT Guideline Manual, and USEPA's Reasonably Available Control Technology/BACT/LAER Clearinghouse. The detailed BACT analysis is included in Appendix C-3. As discussed in this analysis, P3 will comply with BACT using the measures listed below.

- BACT for NO_X emissions from the CTG will be the use of low-NO_X emitting equipment and add-on controls. The CTG will use dry low-NO_X combustion and SCR to reduce NO_X emissions to 2.5 ppmv, dry NO_X, corrected to 15 percent oxygen (ppm, corrected).

- BACT for CO emissions will be achieved by using good combustion practices and an oxidation catalyst to achieve CO emissions of 4.0 ppm, corrected.

- BACT for ROC emissions will be achieved by use of good combustion practices in the CTG to achieve ROC emissions of 2.0 ppm, corrected.

- BACT for PM_{10} and SO_X is best combustion practices and the use of natural gas. The proposed CTG will burn exclusively CPUC-regulated natural gas with a maximum short-term sulfur content of 0.75 gr/100 scf, and an annual average level of 0.25 gr/100 scf.

- The new emergency generator engine will be certified to meet USEPA diesel non-road Tier 4 (final) requirements.

Emission Offsets

Under VCAPCD Rule 26.2.B.1, emission offsets are required on a pollutant-specific basis for any new, modified, relocated, or replacement emissions unit with an "emissions increase" of NO_X, ROC, PM_{10}, or SO_X that would be at a stationary source with a potential to emit equal to or greater than 5.0 TPY for NO_X and/or ROC, or 15.0 TPY for PM_{10} and/or SO_X. Although the facility-wide potential to emit of the MGS before the proposed installation of the new equipment is above these levels for all pollutants with the exception of SO_X,[13] the proposed project will result in a reduction in the facility-wide potential to emit to below 15 TPY for PM_{10}. As shown in Table 4.1-23, there is no emissions increase for ROC or SO_X, with a negative value for these pollutants (there is a net reduction for PM_{10} as well). Therefore, the proposed new equipment triggers emission offset requirements only for NO_X.

[13] Per annual emission limits in current Title V permit.

The detailed NO_X emission offset calculations are included in Appendix C-2. As shown by these calculations, 40.4 TPY of NO_X emission offset credits must be provided for the proposed project. The Applicant currently controls the necessary amount of emission offsets (approximately 52.7 TPY of NO_X emission offsets credits). The appropriate number of NO_X emission offset credits will be surrendered to the VCAPCD prior to issuance of the final ATC.

Air Quality Impact Analysis

Under VCAPCD Rule 26.2.C, the VCAPCD is required to confirm that a new, replacement, modified, or relocated emissions unit would not cause a violation of any ambient air quality standard. For the VCAPCD to make this determination for the proposed project, the Applicant performed an ambient AQIA. The modeling analyses presented in Section 4.1.3.3 (Air Quality Impact Analysis) show that the proposed project will not interfere with the attainment or maintenance of the applicable air quality standards or cause additional violations of any standards with the exception of the 24-hour state PM_{10} standard, for which existing background concentrations already exceed the state standard.

Statewide Compliance

Under VCAPCD Rule 26.2.D, an Applicant is required to provide the VCAPCD with a certification of statewide compliance for any new “Major Source” or “Major Modification.” Under VCAPCD Rule 26.1, Number 19, “Major Modification” is defined as a physical change or change in method of operation of a Major Source that would result in a “contemporaneous net emissions increase” equal to or exceeding 25 TPY for NO_X and/or ROC. As shown in Table 4.1-23, the “emissions increase” for the proposed project is above 25 TPY for NO_X, but below that level for ROC. Therefore, the proposed project triggers the “Major Modification” threshold for NO_X and a certification of statewide compliance will be required for the proposed project. The Applicant will submit this certification to the VCAPCD in the near future.

Alternatives Analysis

According to VCAPCD Rule 26.2.E, an Applicant is required to perform an analysis of alternatives for any new “Major Source” or “Major Modification.” As discussed above, the proposed project installation would be considered a “Major Modification” for NO_X. Therefore, the Applicant is required to perform an analysis of alternatives for the proposed project. This analysis is included in Section 5, Alternatives.

4.1.3.9.2 VCAPCD Prohibitory Rules – General and Source Specification Regulations

The general prohibitory rules of the VCAPCD applicable to the proposed project are summarized below.

Rule 50 – Visible Emissions

Prohibits visible emissions as dark as, or darker than, Ringelmann No. 1 for periods greater than 3 minutes in any hour. With the use of natural gas fuel for the new CTG, and a Tier 4 engine for the new emergency generator, P3 is expected to comply with this regulation.

Rule 51 – Nuisance

Prohibits a facility from discharging air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property. The only potentially odorous substance that would be emitted by P3 is ammonia, and ambient levels of ammonia will be well below the threshold of detectable odor. The SHRA (see Section 4.9, Public Health) demonstrates that the potential health risks from the emissions are less than significant.

Rule 54 – Sulfur Compounds

Prohibits sulfur emissions, calculated as SO_2, in excess of 300 ppmv at 15 percent oxygen and prohibits offsite ambient SO_2 impacts above 0.25 ppmv (1-hour average) and 0.04 ppmv (24-hour average). SO_X emissions from the proposed project will be below 0.5 ppmv, based on a maximum fuel sulfur content level of 0.75 gr/100 scf (short-term average). As shown in the ambient modeling analysis included in Appendix C-5, the SO_2 ambient impacts for the new equipment are well below these limits.

Rule 55 – Fugitive Dust Control

This rule requires the control of dust emissions during construction activities and prohibits visible dust emissions beyond the property line; it also requires minimization of track-out onto public roadways, and includes other dust mitigation requirements. The proposed mitigation measures during construction of P3 are addressed in the construction analysis included in Appendix C-6. These mitigation measures will assure compliance with this regulation.

Rule 57.1 – Particulate Matter Emissions from Fuel-Burning Equipment

Prohibits PM emissions above 0.12 lb/MMBtu for fuel-burning equipment. The PM_{10} emissions for the proposed project will be well below this limit, with maximum emissions of approximately 0.009 lb/MMBtu.

Rule 64 – Sulfur Content of Fuels

Prohibits the burning of gaseous fuel with a sulfur content of more than 50 gr/100 scf and liquid fuel with a sulfur content of more than 0.5 percent sulfur by weight. The natural gas that would be used in P3 will have a sulfur content that will be less than 0.75 gr/100 scf (short-term average) and 0.25 gr/100 scf (long-term average). The diesel fuel used in the emergency engines will comply with the current CARB fuel sulfur limit of 15 ppm, or 0.0015 percent, well below the limit of this rule.

Rule 72 – New Source Performance Standards

By reference, this rule requires units to comply with the applicable sections of the federal NSPS. The applicability of NSPS is discussed above.

Rule 73 – National Emission Standards for Hazardous Air Pollutants

By reference, this rule requires units to comply with the applicable sections of the federal NESHAP program. As discussed above, the gas turbine NESHAP is not expected to be applicable to the proposed project, because the facility would not be a major source of HAPs.

Rule 74.9 – Stationary Internal Combustion Engines

Limits CO, NO_X, and ROC emissions from stationary reciprocating internal combustion engines rated greater than or equal to 50 bhp. However, emergency equipment operating less than or equal to 50 hours per year for testing or maintenance purposes and less than or equal to 200 hours per year for any purpose is exempt from the emission limits of Rule 74.9. Therefore, with an annual operating limit of 200 hours per year for any purpose, the new emergency generator engine is exempt from these emission limits.

Rule 74.23 – Stationary Gas Turbine

Limits NO_X emissions from stationary gas turbines rated greater than or equal to 10 MW with post-combustion controls to 9 ppmv (at 15 percent oxygen, corrected for efficiency). The NO_X emissions from the P3 CTG will be limited to 2.5 ppmvc, thereby complying with this rule.

Toxic Air Contaminant New Source Review

The VCAPCD does not have a TAC NSR regulation. A typical District TAC NSR regulation (for example, SCAQMD Rule 1401 [SCAQMD, 1998] or San Diego Air Pollution Control District Rule 1200) requires preparation of a health risk assessment and a demonstration that a project will not result in unacceptable health risks (cancer risk > 10 in a million, chronic health index > 1, acute health index > 1). These are also the typical significance levels used by the CEC for recent projects. As discussed in Section 4.9, Public Health, the proposed project will comply with these requirements.

4.1.3.10 Greenhouse Gases

The State of California adopted the Global Warming Solutions Act of 2006 (AB 32) on September 27, 2006, which requires sources in the state to reduce carbon emissions to 1990 levels by the year 2020; additional reductions are required by 2050. Pursuant to this statutory authority, CARB has adopted regulations to limit GHG emissions from electric power plants and other specific source categories through a cap-and-trade program. In addition, CARB has adopted regulations requiring the calculation and reporting of GHG emissions from subject facilities.

GHGs include the pollutants described below.

- 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 GHG that affects the Earth's radiative balance.

- CH_4 is a GHG with a global warming potential (GWP)[14] most recently estimated at 25 times that of CO_2 and is the second most prevalent GHG emitted in the United States from human activities. CH_4 is emitted by natural sources such as wetlands, although more than half of total CH_4 emissions come from human activities. Sources of CH_4 include incomplete fossil fuel combustion, anaerobic decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, and coal production.

- N_2O is a GHG that accounts for only about 6 percent of all U.S. GHG emissions from human activities. However, it has a GWP of 298 times that of CO_2. Less than half of total N_2O emissions come from human activities. Major anthropogenic sources of N_2O include soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning.

- SF_6 is a colorless gas soluble in alcohol and ether, and slightly soluble in water. It is a very potent GHG (GWP of 22,800) used in the electric power industry for insulation and current interruption in electric transmission and distribution equipment.

Annual GHG emission reports to CARB for subject facilities must include the project's emission rates of GHGs. The project will be required to track and report GHG emissions from the CTG and auxiliary equipment, fuels and materials handling processes, and delivery and storage systems, as well as from all onsite secondary emission sources. The facility will also be required to participate in the cap-and-trade program.

As GHG is a cumulative and not a localized impact, GHG is analyzed in Section 4.1.4.2, Cumulative Impacts Analysis, below.

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[14] 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.

4.1.3.11 Attainment Status

The federal CAA requires USEPA to classify areas in the country as attainment or nonattainment with respect to each criteria pollutant, depending on whether they meet the NAAQS. In addition, CARB makes area designations in California for CAAQS.

The project site is in a relatively rural area that is in attainment for most state and federal standards. Table 4.1-34 summarizes the attainment status of Ventura County based on the measured existing air quality described in Section 4.1.1.4, and the ambient air quality standards presented in Table 4.1-2, and the responsibilities of USEPA and CARB discussed in Sections 4.1.2.1 and 4.1.2.2, respectively.

4.1.4 Cumulative Impacts Analyses

An analysis of potential cumulative air quality impacts that may result from P3 and other reasonably foreseeable projects is required by the VCAPCD and the CEC.

4.1.4.1 Criteria Pollutant Cumulative Impacts Analysis

Cumulative air quality impacts from P3 and other reasonably foreseeable projects may be both regional and localized in nature. Regional air quality impacts are possible for pollutants such as ozone, which is formed through a photochemical process that can take hours to occur, and $PM_{2.5}$, which is a mixture of locally generated pollutants and aerosols formed in the atmosphere. CO, NO_X, and SO_X impacts are generally localized in the area in which they are emitted. PM_{10} can create a local air quality problem in the vicinity of its emission source, but can also be a regional issue when it is formed in the atmosphere from ROC, SO_X, and NO_X.

The cumulative impacts analysis considers the potential for both regional and localized impacts due to emissions from proposed operation of P3. Regional impacts are evaluated by comparing maximum daily and annual emissions from P3 with emissions of ozone and PM precursors in Ventura County. Localized impacts are evaluated by looking at other local sources of pollutants that are not included in the background air quality data to determine whether these sources in combination with P3 would be expected to cause significant cumulative air quality impacts.

4.1.4.1.1 Regional Impacts

Regional impacts are evaluated by assessing P3's contribution to regional emissions. Although the relative importance of ROC and NO_X emissions in ozone formation differs from region to region and from day to day, reductions in emissions of both precursors are typically necessary to reduce overall ozone levels. The change in the sum of emissions of these pollutants, equally weighted, provides a rough estimate of the impact of P3 on regional ozone levels. Similarly, a comparison of the emissions of PM_{10} and $PM_{2.5}$ precursor emissions from P3 with regional $PM_{10}/PM_{2.5}$ precursor emissions provides an estimate of the impact of P3 on regional $PM_{10}/PM_{2.5}$ levels.

Table 4.1-35 summarizes these comparisons; detailed calculations for P3 and the emission reductions for the decommissioning of the existing MGS Units 1 and 2 are shown in Appendix C-2. The P3 emissions are compared with regional emissions in 2020 (the proposed project is expected to begin operation in 2020). Ventura County emissions projections for 2020 were taken from CARB's web-based emission inventory projection software (CARB, 2008).

The emission reductions for the decommissioning of the existing units at the MGS examine a 5-year and a 10-year look-back period. As shown in Table 4.1-35, while the decommissioning of MGS Units 1 and 2 will result in a reduction in both ozone and $PM_{10}/PM_{2.5}$ precursors, there is a net emission increase in ozone and $PM_{10}/PM_{2.5}$ precursors. The proposed mitigation for these pollutants are discussed in Section 4.1.5.

4.1.4.1.2 Localized Impacts

In the modeling protocol for P3, which was submitted to the VCAPCD and CEC in February 2015 (Appendix C-4), the Applicant describes the approach that would be followed for the cumulative AQIA for CEQA purposes (see Section 3.10 of the modeling protocol). The key elements in identifying stationary sources to include in the analysis are as follows:

- Identify stationary source emissions sources within a 6-mile radius of the proposed project that have received construction permits since June 1, 2013, or are in the permitting process; and

- Exclude from the cumulative AQIA for each criteria pollutant those stationary sources identified above that have an emission increase of less than 5 TPY for that pollutant, which is considered de minimis.

Existing projects that have been in operation since at least 2013 are reflected in the ambient air quality data that have been used to represent background concentrations for P3; consequently, no further analysis of the emissions from this category of facilities was performed. It should be noted that this same approach for determining which nearby stationary sources to include in a CEQA cumulative AQIA was followed for several power plant projects reviewed by the CEC.

A copy of the request for information about potential projects is included in Appendix C-7. The VCAPCD responded that there were only two facilities meeting the above criteria: (1) the proposed installation of six new natural-gas–fired boilers (ranging in size from 5 to 7 MMBtu/hr) and two new emergency diesel engines at the Community Memorial Hospital in Ventura; and (2) the proposed installation of three new natural-gas–fired boilers (approximately 20 MMBtu/hr) at the Ventura County Medical Center in Ventura. As shown by the preliminary emission estimates provided by the VCAPCD for these two projects (see Appendix C-7), CO is the only pollutant with emission increases above the de minimis of 5 TPY. Therefore, only CO impacts for these two projects would be examined further.

As shown previously in Table 4.1-31, the maximum impacts for P3 remain below the federal significance impact level (SIL) for CO. The primary purpose of federal SILs is to identify a level of ambient impact that is sufficiently low relative to an ambient air quality standard or increment so that the impact can be considered de minimis. Therefore, USEPA considers a source whose individual impact falls below a SIL to have a de minimis impact on air quality concentrations that already exist. If a project's impacts are below a federal SIL, these impacts are not considered to cause or contribute to a violation of an ambient air quality standard and/or increment.[15]

Consequently, because the P3's CO impacts are below federal SILs, the Applicant concludes that the impacts of P3 will be de minimis, and that there is no need to perform a further CEQA cumulative analysis for this pollutant.

Listed below are additional planned development projects that would not involve VCAPCD air permits.

- North Shore Subdivision (approximately 0.6 mile to the southeast from the P3 site)
- Avalon Homes Subdivision (approximately 1 mile southeast from the P3 site)

[15] 75 FR 64891: "Accordingly, a source that demonstrates that the projected ambient impact of its proposed emissions increase does not exceed the SIL for that pollutant at a location where a NAAQS or increment violation occurs is not considered to cause or contribute to that violation."

- Anacapa Townhomes (approximately 1.4 miles southeast from the P3 site)
- Rancho Victoria Plaza Shopping Center (approximately 2.1 miles east from the P3 site)
- Teal Club Specific Plan (approximately 3.0 miles east from the P3 site)

Due to a lack of final construction schedules for the above projects, it is not possible to determine if the construction of these projects would coincide with the construction of P3. However, even if the construction of one or more of these projects overlapped with the construction of P3, because construction impacts tend to be highly localized, and given the distance between the P3 site and these other projects, it is unlikely that there would be any significant cumulative impacts.

4.1.4.2 Greenhouse Gas Cumulative Impacts Analysis

In the absence of established thresholds of significance or methodologies for assessing impacts, this analysis of GHG emission impacts consists of quantifying project-related GHG emissions, determining their significance in comparison to the goals of AB 32, and discussing the potential impacts of climate change within the state as well as strategies for minimizing those impacts.

GHG assessment is by its very nature a cumulative impact assessment. The emission of GHGs by a single project into the atmosphere is not itself necessarily an adverse environmental effect. Rather, it is the increased accumulation of GHG from more than one project and many sources in the atmosphere that may result in global climate change. According to the California Air Pollution Control Officers Association, "GHG impacts are exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective" (CAPCOA, 2008). It is global GHG emissions in their aggregate that contribute to climate change, not any single source of GHG emissions alone. The CEQA Guidelines clarify that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impact analysis.[16] The administrative record of the promulgation of the GHG emissions amendments to the CEQA Guidelines also make clear "that the effects of GHG emissions are cumulative, and should be analyzed in the context of CEQA's requirements for cumulative impact analysis" (Bryant, 2009).

The CEC's 2009 Integrated Energy Policy Report (IEPR) (CEC, 2009c) noted:

> *The Energy Commission's 'Framework for Evaluating Greenhouse Gas Implications of natural Gas-Fired Power Plants in California' found that as California's integrated electricity system evolves to meet GHG emissions reduction targets, the operational characteristics associated with increasing renewable generation will increase the need for flexible generation to maintain grid reliability. The report asserts that natural gas-fired power plants are generally well-suited for this role and that California cannot simply replace all natural gas fired power plants with renewable energy without endangering the safety and reliability of the electric system. The report acknowledges that California will need to modernize its natural gas generating fleet to reduce environmental impacts, however. Overall, the report found that the future of natural gas plants will likely fill five auxiliary roles: 1) intermittent generation support, 2) local capacity requirements, 3) grid operations support, 4) extreme load and system emergencies support, and 5) general energy support. The question remains as to the quantity, type, and location of natural gas-fired generation to fill remaining electricity needs once preferred resource targets are achieved. (p. 110)*

Most renewable energy facilities such as wind and solar are "intermittent resources," meaning these resources are not available to generate in all hours, and therefore have limited operating capacity. For example, intermittent resources can be limited by meteorological conditions on an hourly, daily, and

[16] *See generally* 14 CCR Section 15130(f).

seasonal basis. Furthermore, most renewable resources have no ability to provide regulation—the ability to ramp up and down quickly at the system operator's direction to ensure electric system reliability. In addition, the availability of intermittent resources is often unrelated to the load profile they serve. For example, some photovoltaic resources reach peak production around 12:00 noon, although the electrical demand sometimes peaks between 5:00 p.m. and 7:00 p.m. "Firming" involves the use of fast-starting, flexible generation that is always available under all operating conditions to ramp up or ramp down, as necessary, to balance load and generation. Firming power is the cornerstone of system reliability. Therefore, in the context of CEQA, the CEC's IEPR, and other state GHG policy documents, the project would not be expected to cause a significant cumulative impact with respect to GHGs. Instead, the project supports the state's strategy to reduce fuel use and GHG emissions.

The project can be operated without the limitations affecting intermittent renewable resources. The project would provide fast-starting, flexible generating resources that will supplement and support intermittent renewable resources without affecting electric system reliability. Accordingly, as a fast-starting, flexible generating resource, P3 will enhance the reliability of existing and future intermittent renewable resources, thereby furthering California's Renewable Portfolio Standard and GHG goals. As directed by SB 97, the Resources Agency adopted Amendments to the CEQA Guidelines for GHG emissions (GHG CEQA Guidance) on December 30, 2009. On March 18, 2010, those amendments became effective.

The GHG CEQA Guidance includes the following elements:

- Quantification of GHG emissions;
- Determination of whether the project may increase or decrease GHG emissions as compared to existing environmental setting;
- Determination of whether the project emissions exceed a threshold of significance determined by the lead agency;
- The extent to which the project complies with state, regional, or local plans for reduction or mitigation of GHGs; and
- Mitigation measures.

Certain GHG reduction strategies would require increases in natural gas consumption; for example, some fraction of electric generation from coal-fired power plants would need to be replaced by natural-gas–fired generation. As the 2007 IEPR and a 2009 CEC Siting Committee Report (CEC, 2009a) acknowledged, "new gas-fired power plants are more efficient than older power plants, and they displace these older facilities in the dispatch order." The CEC's 2009 Framework report (CEC, 2009b) further discussed the role of new gas-fired power plants in displacing GHG emissions, and furthering the State's efforts to reduce GHG emissions. The 2009 Framework report concludes that as California expands renewable energy generation to achieve its GHG emissions reduction goals, it cannot simply retire natural-gas–fired power plants: rather, new natural-gas–fired power plants may be needed. Net GHG emissions for the integrated electric system will decline when new gas-fired power plants are added that (1) serve load growth or capacity needs more efficiently than the existing fleet; (2) improve the overall efficiency of the electric system; and/or (3) permit increased penetration of renewable generation (CEC, 2009b). Because of its location and operational characteristics, P3 will contribute to the reduction of GHG emissions because it will achieve all of these goals.

In the Presiding Member's Proposed Decision for the Avenal Energy Project (CEC-800-2009 006-PMPD), the Commission established a three-part test to ensure that new natural-gas–fired power plants approved by the CEC will support the goals and policies of AB 32 and the related parts of California's GHG framework. The elements of this test are listed below.

1. The project must not increase the overall system heat rate for natural gas plants.
2. The project must not interfere with generation from existing renewable facilities or with the integration of new renewable generation.
3. Taking into account the factors listed in (1) and (2), the project must reduce system-wide GHG emissions and support the goals and policies of AB 32.

As a fast-starting, highly efficient facility, P3 will meet all three of these criteria. The proposed high efficiency simple-cycle unit would have a gross heat rate of approximately 9,338 British thermal units per kilowatt-hour (higher heating value) at ISO conditions, which leads to an estimated GHG emission rate of approximately 0.49 MT CO_2 per MWh. The project's capability for fast response will provide firming capability that will support the integration of new renewable generation. By displacing older, less-efficient units, the project will reduce system-wide GHG emissions.

In addition, GHG emissions for P3 will be offset in part by the decommissioning of MGS Units 1 and 2. The net GHG emission change is shown in Table 4.1-36 through 5-year and 10-year look-back periods for the existing MGS units. The detailed GHG emission calculations for the proposed new unit and the existing MGS units are included in Appendices 4.1B and 4.1C. As shown in Table 4.1-36, although the project will result in a net increase in GHG emissions, the decommissioning of MGS Units 1 and 2 will partially offset the increase (for either baseline period).

Finally, the project's compliance with the CARB cap-and-trade program is an additional basis for finding that P3's GHG emissions will not cause a significant environmental impact. Per CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project will comply with an approved plan or mitigation program that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify as adequate mitigation, such a plan or program must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, [and] plans or regulations for the reduction of greenhouse gas emissions." Put another way, CEQA Guidelines Section 15064(h)(3) allows a lead agency to make a finding of non-significance for GHG emissions if a project complies with the CARB cap-and-trade program.

4.1.4.3 Nitrogen Emission Analysis

Nitrogen deposition is the input of NO_X- and ammonia-derived pollutants, primarily nitric acid, from the atmosphere to the biosphere. Nitrogen deposition can lead to adverse impacts on sensitive species including direct toxicity, changes in species composition among native plants, and enhancement of invasive species.

The total nitrogen emission levels (based on NO_X and ammonia emissions) for P3 will be offset in part by the shutdown of MGS Units 1 and 2. The net nitrogen emission change is shown below in Table 4.1-37 through 5-year and 10-year look-back periods for the existing MGS units. The detailed nitrogen emission calculations for the proposed new unit and the existing MGS units are included in Appendix C-2.

As shown on Table 4.1-37, although the shutdown of MGS Units 1 and 2 will result in a reduction of total nitrogen emissions (for either baseline period), there is a net increase in total nitrogen emissions. The mitigation measures for this pollutant would include obtaining NO_X emission reduction credits, as discussed in Section 4.1.5. Discussion regarding potential nitrogen deposition is provided in Section 4.2, Biological Resources.

4.1.5 Mitigation Measures

This section presents mitigation measures that will be implemented to avoid and/or reduce project-related impacts to air quality to less-than-significant levels.

As discussed in Appendix C-6, a collection of mitigation measures are available during construction to control exhaust emissions from the diesel heavy equipment, and the potential emissions of fugitive dust during construction activities. These include, but are not limited to, reducing speed to 15 miles per hour within the construction site; applying water to prevent dust plumes; installing gravel ramps and tire washing/cleaning stations; covering soil storage piles; cleaning paved roads in the construction site; and applying wind erosion control techniques.

Mitigation will be provided for all emissions increases from the proposed project in the form of emission reductions from the shutdown of existing units at MGS, NO_X emission reduction credits, and the installation of BACT for the new equipment, as required under VCAPCD regulations. The demonstration of compliance with the BACT requirements is provided in Appendix C-3.

The emissions increases from P3 will be offset through the reductions achieved by shutting down the existing boiler Units 1 and 2 at MGS, and by providing NO_X emission reduction credits. Table 4.1-32 showed that the proposed project would result in an increase in NO_X, SO_2, ROC, CO, PM_{10}, and $PM_{2.5}$ emissions for CEQA purposes. The NO_X emission offsets required by the VCAPCD have been purchased and will be surrendered to the VCAPCD prior to the issuance of the final ATC for the new equipment. The Applicant will review options to mitigate the net emission increase for the other pollutants (notably ROC, PM_{10}, and $PM_{2.5}$), including funding the Carl Moyer Program or a similar emission reduction program specific to this project.

4.1.6 Involved Agencies and Agency Contacts

Each level of government (state, federal, and county/local air district) has adopted specific regulations that limit emissions from stationary combustion sources, several of which are applicable to this proposed project. The air agencies having permitting authority for this proposed project are shown in Table 4.1-38.

4.1.7 Permits Required and Permit Schedule

Under Rule 26.9, the VCAPCD regulates the construction and operation of new and modified power plants. As part of the application review process, the VCAPCD will conduct a DOC review on receipt of the AFC for P3. Although the VCAPCD considers the AFC to be equivalent to an application for an ATC, a separate application package for a DOC/ATC was submitted to the VCAPCD on March 13, 2015. A copy of the AFC will also be submitted to the VCAPCD. The DOC review will consist of a review identical to that which would be performed if an application for an ATC had been received for a power plant, and will confirm that the project will meet all applicable VCAPCD rules and regulations.

A preliminary DOC (PDOC) is expected within approximately 180 days after the VCAPCD determines that the AFC is complete. The PDOC will be circulated for public comment, and a final DOC (FDOC) will be issued by the VCAPCD after comments have been considered and addressed. Upon approval of P3 by the CEC, the FDOC confers the same rights and privileges as an ATC. The ATC allows for the construction of the new air pollution sources and serves as a temporary PTO. Once the project has completed construction, begun operating, and performed the initial set of emission compliance tests, the VCAPCD will verify that P3 conforms to the FDOC/ATC; and following such verification, will issue a PTO.

The VCAPCD has received delegation from USEPA to administer the federal Title IV and Title V programs for sources in its jurisdiction. The project will be subject to Acid Rain program requirements (federal Title IV) and these requirements will be reflected in the ATC and revised Title V permit for the project. With regard to Title V, prior to the initial operation of the new equipment a Title V permit application will be submitted to the VCAPCD to modify the existing Title V permit for the MGS to include the operation of the new equipment.

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Table 4.1-1
Average Temperature and Precipitation Data at Oxnard Airport Monitoring Station (1998 – 2008)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average Max. Temperature (°F)	64.0	63.6	64.0	64.5	66.8	69.2	72.3	72.4	71.7	70.3	67.7	64.3	67.6
Average Min. Temperature (°F)	45.2	46.2	47.7	48.8	53.2	27.0	60.0	59.6	57.8	53.5	49.0	45.2	51.9
Average Total Precipitation (inches)	2.08	2.68	1.66	1.14	0.40	0.03	0.01	0.02	0.07	0.52	0.72	1.06	10.39

Source: WRCC, 2015
Note: °F = degrees Fahrenheit

Table 4.1-2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards	
		Concentrations	Primary	Secondary
Ozone	1-hour	0.09 ppm (180 μg/m^3)	—	Same as Primary Standard
	8-hour	0.070 ppm (137 μg/m^3)	0.075 ppm[a] (147 μg/m^3)	
Respirable Particulate Matter (10-Micron)	24-hour	50 μg/m^3	150 μg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m^3	—[b]	
Fine Particulate Matter (2.5-Micron)	24-hour	—	35 μg/m^3 [c]	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m^3	12 μg/m^3	15 μg/m^3
Carbon Monoxide	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
	8-hours-	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
Nitrogen Dioxide	1-hour	0.18 ppm (339 μg/m^3)	0.100 ppm (188 μg/m^3)[c]	—
	Annual Arithmetic Mean	0.030 ppm (57 μg/m^3)	0.053 ppm (100 μg/m^3)	Same as Primary Standard
Sulfur Dioxide	1-hour	0.25 ppm (655 μg/m^3)	75 ppb (196 μg/m^3) [d]	—
	3–hours-	—	—	0.5 ppm (1,300 μg/m^3)
	24–hours-	0.04 ppm (105 μg/m^3)	0.14 ppm [e] (365 μg/m^3)	—
Lead	30-day Average	1.5 μg/m^3	—	—
	Calendar Quarter	—	1.5 μg/m^3 [f]	Same as Primary Standard
	Rolling 3-month Average		0.15 μg/m^3	

Table 4.1-3
Ambient Air Quality Standards (Continued)

Pollutant	Averaging Time	California Standards	National Standards	
		Concentrations	Primary	Secondary
Visibility Reducing Particles	8-hour	— [g]	No National Standards	
Sulfates	24-hour	25 $\mu g/m^3$		
Hydrogen Sulfide	1-hour	0.03 ppm (42 $\mu g/m^3$)		
Vinyl Chloride	24-hour	0.01 ppm (26 $\mu g/m^3$)		

Source: CARB, 2013.

Notes:

a. Three-year average of annual 4th-highest daily maximum 8-hour concentration.
b. USEPA revoked the annual PM_{10} NAAQS in 2006.
c. Three-year average of 98th percentile.
d. Three-year average of 99th percentile of 1-hour daily maximum.
e. A new 1-hour SO_2 standard was established in June 2, 2010, and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
f. NAAQS for lead was revised to a rolling 3-month average. The previous 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
g. In 1989, CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

$\mu g/m^3$ = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter
NAAQS = national ambient air quality standards
PM_{10} = particulate matter less than 10 microns in diameter
ppb = parts per billion
ppm = parts per million
SO_2 = sulfur dioxide
USEPA = U.S. Environmental Protection Agency

Table 4.1-4 Representative Background Ambient Air Quality Monitoring Stations		
Pollutant(s)	**Monitoring Station**	**Distance to Project Site**
$PM_{2.5}$, PM_{10}, ozone, and NO_2	Oxnard (Rio Mesa School)	7 miles northeast
SO_2	Santa Barbara – UCSB	39 miles northwest
CO	Santa Barbara – East Canon Perdido	29 miles northwest

Notes:

CO = carbon monoxide
NO_2 = nitrogen dioxide
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SO_2 = sulfur dioxide
UCSB = University of California, Santa Barbara

Table 4.1-5
Ozone Levels in Ventura County, Oxnard Monitoring Station, 2004 – 2013 (ppm)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Highest 1-Hour Average[a]	0.084	0.076	0.089	0.089	0.086	0.099	0.083	0.081	0.082	0.067
Highest 8-Hour Average[a]	0.079	0.067	0.070	0.072	0.074	0.077	0.072	0.068	0.065	0.062
Fourth-highest values, 3-year average[b]	0.066	0.066	0.062	0.061	0.061	0.063	0.063	0.063	0.060	0.059
Number of Days Exceeding:										
State Standard (0.090 ppm, 1-hour) [c]	0	0	0	0	0	1	0	0	0	0
State Standard (0.070 ppm, 8-hour) [c]	1	0	0	1	1	1	1	0	0	0
Federal Standard (0.075 ppm, 8-hour) [d]	1	0	0	0	0	1	0	0	0	0

Notes:

a. USEPA AirData Monitor Values Reports (USEPA, n.d.)
b. CARB iADAM (CARB, n.d.), "National Design Value" for 8-hour Averages
c. CARB iADAM (CARB, n.d.)
d. To attain this standard, the 3-year average of the fourth-highest maximum 8-hour average ozone concentrations measured at each monitor in an area over each year must not exceed 0.075 ppm. (Effective May 27, 2008).

CARB = California Air Resources Board
USEPA = U.S. Environmental Protection Agency
ppm = parts per million

Table 4.1-6
Nitrogen Dioxide Levels in Ventura County, Oxnard Monitoring Station, 2004 – 2013 (ppm)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Highest 1-Hour Average[a]	0.063	0.070	0.050	0.053	0.052	0.051	0.060	0.090	0.057	0.040
98th Percentile, 1-Hour, 3-year average[b]	0.043	0.044	0.041	0.041	0.040	0.038	0.037	0.036	0.036	0.034
Annual Average[c]	0.011	0.011	0.01	0.010	0.008	0.008	0.007	0.007	0.007	0.007
Number of Days Exceeding:										
State Standard (0.180 ppm, 1-hour)[c]	0	0	0	0	0	0	0	0	0	0
Federal Standard[a, d] (0.100 ppm, 1 hour)	0	0	0	0	0	0	0	0	0	0

Notes:

a. USEPA AirData Monitor Values Reports (USEPA, n.d.)
b. Three-year averages are calculated based on the annual values obtained from the USEPA AirData websites.
c. CARB iADAM (CARB, n.d.)
d. The new federal 1-hour average NO_2 standard of 0.100 ppm was announced by USEPA on February 9, 2010, and became effective April 12, 2010. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average values at each monitor must not exceed 100 ppb.

CARB = California Air Resources Board
NO_2 = nitrogen dioxide
ppb = parts per billion
ppm = parts per million
USEPA = U.S. Environmental Protection Agency

Table 4.1-7
Carbon Monoxide Levels in Santa Barbara County, East Canon Perdido Monitoring Station, 2004 – 2013 (ppm)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Highest 1-hour average[a]	4.7	4.0	4.1	3.5	5.2	3.4	3.2	2.5	2.1	2.5
Highest 8-hour average[a]	1.9	1.7	1.8	1.4	1.7	1.6	1.0	1.9	0.9	1.1
Number of days exceeding:										
State Standard (20.0 ppm, 1-hour)[b]	0	0	0	0	0	0	0	0	0	0
State Standard (9.0 ppm, 8-hour)[c]	0	0	0	0	0	0	0	0	0	0
Federal Standard (9.0 ppm, 8-hour)[a]	0	0	0	0	0	0	0	0	0	0

Notes:

a. USEPA AirData Monitor Values Reports (USEPA, n.d.)
b. Based on the highest 1-hour averages, there are no exceedances of the state standards.
c. CARB iADAM (CARB, n.d.)

CARB = California Air Resources Board
ppm = parts per million
USEPA = U.S. Environmental Protection Agency

Table 4.1-8
Sulfur Dioxide Levels in Santa Barbara County, UCSB West Campus Monitoring Station, 2004 – 2013 (ppm)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Highest 1-Hour Average[a]	0.006	0.006	0.009	0.005	0.006	0.004	0.005	0.003	0.002	0.002
Highest 24-Hour Average[a]	0.001	0.002	0.002	0.002	0.003	0.001	0.002	0.001	0.001	0.002
99th percentile 1-Hour, 3-year average[b]	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.002
Annual Average[c]	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	[e]	[e]
Number of days exceeding:										
State Standard (0.25 ppm, 1-hour)[d]	0	0	0	0	0	0	0	0	0	0
Federal Standard[a] (75 ppb, 1-hour)[a]	0	0	0	0	0	0	0	0	0	0
State Standard (0.040 ppm, 24-hour)[d]	0	0	0	0	0	0	0	0	0	0
Federal Standard (0.140 ppm, 24-hour)[a]	0	0	0	0	0	0	0	0	0	0

Notes:

a. USEPA AirData Monitor Values Reports (USEPA, n.d.)
b. Three-year averages are calculated based on the annual 99th percentile 1-hour averages obtained from USEPA Air Data Final Rule signed June 22, 2010, effective August 23, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.
c. CARB iADAM (CARB, n.d.)
d. Based on the highest 1-hour and 24-hour averages obtained, the state standards were not exceeded, so there are zero days of exceedances.
e. There were insufficient data available to determine the value.

CARB = California Air Resources Board
ppb = parts per billion
ppm = parts per million
UCSB = University of California, Santa Barbara
USEPA = U.S. Environmental Protection Agency

Table 4.1-9
PM_{10} Levels in Ventura County, Oxnard Monitoring Station, 2004 – 2013 (μg/m^3)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Highest 24-Hour Average (Federal testing samplers)[a]	59	54	119	245	79	97	59	50	56	45
Highest 24-Hour Average (State testing samplers)[b]	59.3	54.4	119.1	248.0	79.8	99.9	64.5	51.7	56.9	46.7
Annual Arithmetic Mean[b]	28.1	24.9	27.3	28.9	25.6	25.1	21.2	21.6	20.4	23.6
Number of Days Exceeding:										
State Standard (50 μg/m^3, 24-hour)[b]	1	2	4	2	3	2	1	1	1	0
Federal Standard (150 μg/m^3, 24-hour)[a]	0	0	0	1	0	0	0	0	0	0

Notes:
a. USEPA AirData Monitor Values Reports (USEPA, n.d.)
b. CARB iADAM (CARB, n.d.)

CARB = California Air Resources Board
μg/m^3 = micrograms per cubic meter
PM_{10} = particulate matter less than 10 microns in diameter
USEPA = U.S. Environmental Protection Agency

Table 4.1-10
$PM_{2.5}$ Levels in Ventura County Oxnard Monitoring Station, 2004 – 2013 (μg/m^3)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Highest 24-Hour Average (Federal)[a]	28.5	35.2	29.8	39.9	23.4	19.7	21.4	18.3	15.9	16.6
Number of Days Exceeding:										
Federal Standard (35 μg/m^3, 24-hour)[b]	0	0	0	1	0	0	0	0	0	0
98th Percentile, 24-hour[a]	27	24	24	28	20	19	17	17	16	16
98th Percentile 24-hour, 3-year average[c]	28	27	25	25	24	22	19	18	17	16
Annual Mean[a]	11.3	10.5	9.8	10.6	10.7	10.2	8.5	8.9	9	9

Notes:
a. USEPA AirData Monitor Values Reports (USEPA, n.d.)
b. CARB iADAM (CARB, n.d.)
c. Three-year averages are calculated based on the annual values obtained from the USEPA AirData websites.

CARB = California Air Resources Board
μg/m^3 = micrograms per cubic meter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
USEPA = U.S. Environmental Protection Agency

Table 4.1-11
Airborne Lead (Pb) Levels at the Simi Valley – Cochran Street Monitoring Station (μg/m³)

	2009	2010	2011	2012	2013
Maximum 24-hour Average	0.01	0.015	0.009	0.008	0.003
Number of Observations	31	19	16	28	9

Notes:

a. Data from year 2009 to 2013 were obtained from USEPA AirData Monitor Values reports (USEPA, n.d.)

$\mu g/m^3$ = micrograms per cubic meter
USEPA = U.S. Environmental Protection Agency

Table 4.1-12
PSD Significant Emission Thresholds

Pollutant	PSD Significant Emission Threshold (TPY)[a]
SO_2	40
PM_{10}	15
$PM_{2.5}$	10
NO_X	40
CO	100
Lead	0.6
GHGs	75,000[b]

Notes:

a. 40 CFR 52.21 (b)(1)(23)
b. Based on the Supreme Court's June 23, 2014, opinion on the GHG Tailoring Rule (Utility Air Regulatory Group v. EPA, No. 12-1146), the project would not be subject to PSD review based solely on its GHG emissions. However, the June 16, 2011, version of 40 CFR 52.21 includes the 75,000 TPY CO_2e threshold, so that threshold is included here for completeness.

CFR = Code of Federal Regulations
CO = carbon monoxide
CO_2e = carbon dioxide equivalent
GHG =greenhouse gas
NO_X = oxides of nitrogen
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PSD = Prevention of significant deterioration
SO_2 = sulfur dioxide
TPY = tons per year

Table 4.1-13
PSD Increments and Significant Impact Levels

Pollutant	Averaging Time	SIL ($\mu g/m^3$)[a]	Maximum Allowable Class II Increments[b]
SO_2	Annual 24-hour 3-hour 1-hour	1.0 5 25 7.8[c]	20 91 512 No 1-hour increment
PM_{10}	Annual 24-hour	1.0 5	17 30
$PM_{2.5}$[d]	Annual 24-hour	0.3 1.2	4 9
NO_2	Annual 1-hour	1.0 7.5[c]	25 No 1-hour increment
CO	8-hr 1-hour	500 2,000	No CO increments

Notes:

a. 40 CFR 51.165 (b)(2).

b. 40 CFR 52.21 (c).

c. USEPA has not yet defined SILs for 1-hour NO_2 or SO_2 impacts. However, USEPA has suggested that until SILs have been promulgated, values of 4 ppb (7.5 $\mu g/m^3$) for NO_2 and 3 ppb (7.8 $\mu g/m^3$) for SO_2 may be used. These values were used in this analysis wherever an SIL would be used for NO_2 or SO_2.

   In January 2013, USEPA sought, and the U.S. Court of Appeals for the District of Columbia Circuit granted, remand and vacatur of these SILs as they apply for purposes of avoiding a cumulative impacts analysis under federal PSD requirements (40 CFR § 51.166[k][2] and § 52.21[k][2]). However, the USEPA has retained these SILs for purposes of demonstrating whether a source locating in an attainment/unclassifiable area would be deemed to cause or contribute to a violation in a downwind nonattainment area. See Sierra Club v. EPA, No. 10-1413 (D.C. Cir. 2013), slip op. 9. Accordingly, application of these SILs for purposes of satisfying the District's requirement to assure that a new or modified facility does not interfere with the attainment or maintenance of an ambient air quality standard (VCAPCD Rules 26.1 through 26.12) may be appropriate.

CFR = Code of Federal Regulations
CO = carbon monoxide
$\mu g/m^3$ = micrograms per cubic meter
NO_2 = nitrogen dioxide
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
ppb = parts per billion
PSD = Prevention of significant deterioration
SIL = significance impact level
SO_2 = sulfur dioxide
USEPA = U.S. Environmental Protection Agency
VCAPCD = Ventura County Air Pollution Control District

Table 4.1-14
Summary of LORS – Air Quality

LORS	Administering Agency	Applicability	AFC Section
Federal			
CAA §§ 160-169A and implementing regulations, Title 42 USC §§ 7470-7491 (42 USC §§ 7470-7491), Title 40 CFR Parts 51 and 52 (Prevention of Significant Deterioration Program)	USEPA Region 9 until VCAPCD receives delegation	Requires PSD review and facility permitting for construction of new or modified major stationary sources of air pollution. PSD review applies to pollutants for which ambient concentrations are lower than NAAQS.	4.1.2.1, 4.1.3.8, 4.1.3.10
CAA §§ 171-193, 42 USC § 7501 et seq. (NSR)	VCAPCD with USEPA oversight	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.	4.1.2.1, 4.1.3.8, 4.1.3.10
CAA § 401 (Title IV), 42 USC § 7651 (Acid Rain Program)	VCAPCD with USEPA oversight	Requires reductions in NO_X and SO_2 emissions.	4.1.2.1, 4.1.2.3, 4.1.3.8, 4.1.7
CAA § 501 (Title V), 42 USC § 7661 (Federal Operating Permits Program)	VCAPCD with USEPA oversight	Establishes comprehensive permit program for major stationary sources.	4.1.2.1
CAA § 111, 42 USC § 7411, 40 CFR Part 60 (NSPS)	VCAPCD with USEPA oversight	Establishes national standards of performance for new stationary sources.	4.1.2.1, 4.1.2.3, 4.1.3.8, 4.1.3.10,
State			
H&SC § 39500 et seq. (State Implementation Plan)	VCAPCD with CARB and USEPA oversight	Demonstrates the means by which all areas of the state will attain and maintain NAAQS.	4.1.2.2.1
H&SC §§ 40910-40930 (California CAA)	VCAPCD with CARB oversight	Requires local districts to attain and maintain NAAQS and CAAQS at the “earliest practicable date”	4.1.2.2.2
H&SC §§ 39650-39675 (Toxic Air Contaminant Program)	CARB	Identifies toxic air contaminants and controls their emissions.	4.1.2.2.4

Table 4.1-15 Summary of LORS – Air Quality (Continued)			
LORS	**Administering Agency**	**Applicability**	**AFC Section**
H&SC § 41700 (Nuisance Regulation)	VCAPCD and CARB	Provides that no person shall discharge from any source contaminants or other material which causes issues to the public, businesses, and property.	4.1.2.2.5
Stats. 2006, Ch. 488 H&SC §§ 38500-38599 (California Climate Change Regulatory Program)	CARB and CEC	Requires sources to limit GHG emissions from power plants and other specific sources through a cap-and-trade program.	4.1.2.2.8
H&SC §§ 44300-44384; CCR §§ 93300-93347 (Toxic “Hot Spots” Act)	VCAPCD with CARB oversight	Requires preparation and biennial updating of facility emission inventory of hazardous substances; risk assessments.	4.1.2.2.6
California Public Resources Code § 25523(a); 20 CCR §§ 1752, 2300-2309 (CEC & CARB Memorandum of Understanding)	CEC	Requires that CEC’s decision on AFC include requirements to assure protection of environmental quality; AFC required to address air quality protection.	4.1.2.2.7
17 CCR § 93115 (ATCM for Stationary Compression Ignition Engines)	VCAPCD and CARB	Establishes emission and operational limits for diesel-fueled stationary compression ignition engines.	4.1.2.2.4
Local			
H&SC § 40914 (Ventura County Air Quality Plans)	VCAPCD with USEPA Region 9 and CARB oversight	Defines proposed strategies which will be implemented to attain and maintain state ambient air quality standards.	4.1.2.3.1
H&SC § 4000 et. Seq., H&SC § 40200 et. Seq. indicated VCAPCD Rules (VCAPCD Rules and Regulations)	VCAPCD with USEPA Region 9 and CARB oversight	Establishes procedures and standards for issuing permits; establishes standards and limitations on a source-specific basis	4.1.2.3.2
VCAPCD Rule 10 (Permit Requires)	VCAPCD with USEPA Region 9 and CARB oversight	Specifies permitting requirements.	4.1.2.3.2

Table 4.1-15
Summary of LORS – Air Quality (Continued)

LORS	Administering Agency	Applicability	AFC Section
VCAPCD Rule 26.9 (NSR Power Plants)	VCAPCD with USEPA Region 9 and CARB oversight	Establishes a procedure for coordinating VCAPCD review of power plant projects with the CEC processes.	4.1.2.3.2
VCAPCD Rules 26.1 through 26.12 (NSR)	VCAPCD with USEPA Region 9 and CARB oversight	Implements new source review programs as well as the new source review requirements of the California CAA.	4.1.2.3.2
VCAPCD Rule 26.13 (Prevention of Significant Deterioration)	VCAPCD with USEPA Region 9 and CARB oversight	Adopts the federal PSD program.	4.1.2.3.2
VCAPCD Rules 33.1 through 33.10 (Federal Operating Permit)	VCAPCD with USEPA Region 9 and CARB oversight	Implements the Title V federal operating permit program.	4.1.2.3.2
VCAPCD Rule 72	VCAPCD with USEPA Region 9 and CARB oversight	Adopts the federal standards of performance for new or modified stationary sources.	4.1.2.3.2
VCAPCD Rule 50 (Visible Emissions)	VCAPCD with CARB oversight	Limits visible emissions to no darker than Ringelmann No. 1 for periods greater than 3 minutes in any hour.	4.1.2.3, 4.1.3.10
VCAPCD Rule 51 (Nuisance)	VCAPCD with CARB oversight	Prohibits emissions in quantities that adversely affect public health, other businesses, or property.	4.1.2.3, 4.1.3.10
VCAPCD Rule 54 (Sulfur Compounds)	VCAPCD with CARB oversight	Limits sulfur emissions on site and off site.	4.1.2.3, 4.1.1.4, 4.1.3.10, Appendix C-5
VCAPCD Rule 55 (Fugitive Dust Control)	VCAPCD with CARB oversight	Limits visible dust emissions from construction activities.	4.1.2.3, 4.1.3.6, 4.1.3.10
VCAPCD Rule 57.1 (Particulate Matter Emissions from Fuel Burning Equipment)	VCAPCD with CARB oversight	Limits PM emissions from stationary sources.	4.1.2.3, 4.1.3.3, 4.1.3.10

Table 4.1-15
Summary of LORS – Air Quality (Continued)

LORS	Administering Agency	Applicability	AFC Section
VCAPCD Rule 64 (Sulfur Content of Fuels)	VCAPCD with CARB oversight	Limits the sulfur content of fuels combusted in stationary sources.	4.1.2.1, 4.1.2.3, 4.1.3.3, 4.1.3.8, 4.1.3.10
VCAPCD Rule 72 (New Source Performance Standards	VCAPCD with CARB oversight	Requires unit to comply with federal NSPS standards.	4.1.2.1, 4.1.2.3, 4.1.3.8, 4.1.3.10
VCAPCD Rule 73 (National Emission Standards for Hazardous Air Pollutants	VCAPCD with CARB oversight	Requires unit to comply with federal NESHAP standards.	4.1.2.1, 4.1.2.3, 4.1.3.8
VCAPCD Rule 74.9 (Stationary Internal Combustion Engines)	VCAPCD with CARB oversight	Limits CO, NO_X, and ROC emissions from stationary reciprocating engines greater than or equal to 50 bhp.	4.1.2.1, 4.1.3.3, 4.1.3.10
VCAPCD Rule 74.23 (Stationary Gas Turbine)	VCAPCD with CARB oversight	Limits NO_X emissions from stationary gas turbines.	4.1.3.3, 4.1.3.10

Notes:
AFC = Application for Certification
ATCM = airborne toxic control measure
bhp = brake horsepower
CAA = Clean Air Act
CAAQS = California ambient air quality standards
CARB = California Air Resources Board
CCR = California Code of Regulations
CEC = California Energy Commission
CFR = Code of Federal Regulations
CO = carbon monoxide
GHG =Greenhouse Gas
H&SC = Health and Safety Code
LORS = laws, ordinances, regulations, and standards
NAAQS = national ambient air quality standards
NESHAP = National Emission Standards for Hazardous Air Pollutant
NO_X = oxides of nitrogen
NSPS = National Standards of Performance for New Stationary Sources
NSR = new source review
PM = particulate matter
PSD = Prevention of Significant Deterioration
ROC = reactive organic compound
SO_2 = sulfur dioxide
USC = United States Code
USEPA = U.S. Environmental Protection Agency
VCAPCD = Ventura County Air Pollution Control District

Table 4.1-16
New Simple-Cycle CTG Design Specifications

Manufacturer	GE
Model	7HA.01
Fuel	Natural gas
Design Ambient Temperature [a]	39°F
Maximum CTG Heat Input Rate[a]	2,579 MMBtu/hr at HHV
Stack Exhaust Temperature[a]	900 °F
Exhaust Flow Rate[a]	3,551,200 acfm
Exhaust Oxygen Concentration, dry volume[a]	14.0 percent
Exhaust CO_2 Concentration, dry volume[a]	3.2 percent
Exhaust Moisture Content, wet volume[a]	6.4 percent
Emission Controls	Dry, low-NO_X combustion, SCR, oxidation catalyst

Notes:

a. This ambient temperature at 100 percent load results in maximum heat input/power output; exhaust characteristics shown reflect this ambient temperature and load.

acfm = actual cubic feet per minute
CO_2 = carbon dioxide
CTG = combustion turbine generator
°F = degrees Fahrenheit
GE = General Electric
HHV = higher heating value
MMBtu/hr = million British thermal units per hour
NO_X = oxides of nitrogen
SCR = selective catalytic reduction

Table 4.1-17 Nominal Fuel Properties – Natural Gas			
Component Analysis		**Chemical Analysis**	
Component	**Average Concentration, Volume**	**Constituent**	**Percent by Weight**
Methane	96.57%	Carbon	73.48%
Ethane	1.741%	Hydrogen	24.07%
Propane	0.312%	Nitrogen	0.38%
Butane	0.007%	Oxygen	2.08%
Pentane	0.020%	Sulfur	0.75 gr/100 scf (short-term average) 0.25 gr/100 scf (long-term average)
Hexane	0.043%	HHV	1,018 Btu/scf
Nitrogen	0.226%		
Carbon Dioxide	1.088%		

Notes:

Btu/scf = British thermal units per standard cubic foot
gr/100 scf grain per 100 standard cubic feet
HHV = higher heating value

Table 4.1-18 **Emergency Generator Design Specifications**	
Generator Set Manufacturer	Caterpillar
Engine Manufacturer	Caterpillar
Engine Model	C15 ATAAC
Fuel	diesel
Generator Power Output (kW)	500
Engine Work Output (bhp)	779
Fuel Consumption Rate (gal/hr)	35.9
Heat Input Rate (MMBtu/hr at HHV)	4.9
Exhaust Flow Rate (acfm)	3,185
Exhaust Temperature (°F)	1263
Stack Diameter (inch)	6
USEPA Nonroad Engine Certification	Tier 4 (final)

Notes:
Engine specifications data reflect engine at full load.
acfm = actual cubic feet per minute
bhp = brake horsepower
°F = degrees Fahrenheit
gal/hr = gallons per hour
HHV = higher heating value
kW= kilowatt
MMBtu/hr = million British thermal units per hour
USEPA = U.S. Environmental Protection Agency

Table 4.1-19
Maximum Proposed Project Fuel Use – CTG (MMBtu)

Period	Total Fuel Use
Per Hour	2,579
Per Day	61,898
Per Year	6,326,518

Notes:
CTG = combustion turbine generator
MMBtu = million British thermal units

Table 4.1-20
Maximum Hourly Emission Rates[a]: CTG

Pollutant	ppmv, dry at 15 percent oxygen	lb/MMBtu	lb/hr
NO_X	2.5	9.1×10^{-3}	23.4
SO_X (short-term)	n/a	2.1×10^{-3}	5.4
SO_X (long-term)	n/a	7.0×10^{-4}	1.8
CO	4.0	8.8×10^{-3}	22.8
ROC	2.0	2.5×10^{-3}	6.5
$PM_{10}/PM_{2.5}$[b]	n/a	8.9×10^{-3}	10.6

Notes:

a. Emission rates shown reflect the highest value at any operating load during normal operation (excluding startups/shutdowns).
b. 100 percent of PM_{10} emissions assumed to be emitted as $PM_{2.5}$.

CO = carbon monoxide
CTG = combustion turbine generator
lb/hr = pounds per hour
lb/MMBtu = pounds million British thermal units
NO_X = oxides of nitrogen
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
ppmv = parts per million by volume
ROC = reactive organic compounds
SO_X = sulfur oxides

Table 4.1-21
CTG Startup and Shutdown Emission Rates

	NO_X	CO	ROC
CTG Startup, lbs/hr	98.7	178.4	20.3
CTG Shutdown, lbs/hr	22.7	163.2	30.2
CTG Startup/Shutdown/Restart, lbs/hr	143.2	412.2	52.2

Note:

Startup and shutdown emission rates reflect the maximum hourly emissions during an hour in which a startup, shutdown—or both—occur.

CO = carbon monoxide
CTG = combustion turbine generator
lbs = pounds/hour
NO_X = oxides of nitrogen
ROC = reactive organic compounds

Table 4.1-22
Maximum Emissions From New Equipment

Emissions/Equipment	Pollutant				
	NO_X	CO	ROC	$PM_{10}/PM_{2.5}$	SO_X
Maximum Hourly Emissions[a]					
CTG[a]	143.2	412.2	52.2	10.6	5.4
Diesel Emergency Engine[b]	n/a	n/a	n/a	n/a	n/a
Gas Compressor	—	—	0.0	—	—
Total, pounds per hour	143.2	412.2	52.2	10.6	5.4
Maximum Daily Emissions[a]					
CTG	859.2	1730.5	306.1	245.5	130.6
Diesel Emergency Engine	0.9	4.5	0.2	0.0	0.0
Gas Compressor	—	—	0.3	—	—
Total, pounds per day	860.1	1735.0	306.6	245.6	130.6
Maximum Annual Emissions[a]					
CTG	36.0	57.4	11.7	12.8	2.2
Diesel Emergency Engine	0.1	0.4	0.0	0.0	0.0
Gas Compressor	—	—	0.0	—	—
Total, tons per year	36.1	57.9	11.8	12.8	2.2

Notes:

a. Maximum hourly, daily, and annual CTG emission rates include emissions during startups/shutdowns.
b. The diesel emergency generator engine will not be operated during a CTG startup and/or shutdown. Consequently, n/a is shown for all pollutants.

CO = carbon monoxide
CTG = combustion turbine generator
NO_X = oxides of nitrogen
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
ROC = reactive organic compounds
SO_X = sulfur oxides

Table 4.1-23
Emissions for Existing Units 1 and 2
(Representative 2-Year Average for Period From 1/1/10 To 12/31/14)

Emissions/Equipment	Pollutant (tons/year)				
	NO_X	CO	ROC	$PM_{10}/PM_{2.5}$	SO_X
Unit 1	1.9	22.0	0.8	1.4	0.3
Unit 2	3.0	25.9	0.9	1.6	0.4
Total	4.9	47.9	1.7	3.0	0.7

Notes:
CO = carbon monoxide
NO_X = oxides of nitrogen
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
ROC = reactive organic compounds
SO_X = sulfur oxides

Table 4.1-24
Net Emissions Change for Proposed Project (PSD and CEQA)

	Pollutant (tons/year)				
Emissions/Equipment	NO_X	CO	ROC	$PM_{10}/PM_{2.5}$	SO_X
Potential to Emit for New Equipment	36.1	57.9	11.8	12.8	2.2
Reductions from Shutdown of Existing Units 1 and 2	4.9	47.9	1.7	3.0	0.7
Net Emission Change	31.2	10.0	10.1	9.8	1.5

Notes:
CEQA = California Environmental Quality Act
CO = carbon monoxide
NO_X = oxides of nitrogen
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PSD = prevention of significant deterioration
ROC = reactive organic compounds
SO_X = sulfur oxides

Table 4.1-25 Net Emissions Change for Proposed Project (VCAPCD NSR)					
Emissions/Equipment	**Pollutant (tons/year)**				
	NO_X	**CO**	**ROC**	**$PM_{10}/PM_{2.5}$**	**SO_X**
Potential to Emit for New CTG	36.0	57.4	11.7	12.8	2.2
Reductions from Shutdown of Existing Units 1 and 2[a]	4.9	644.4	23.2	41.5	10.0
Net Emission Change	31.1	-587.0	-11.5	-28.7	-7.7
Potential to Emit for New Emergency Generator Engine	0.1	0.4	0.0	0.0	0.0
Reductions from Shutdown of Existing Emergency Generator Engine	0.0	0.1	0.0	0.0	0.0
Net Emission Change	0.1	0.3	0.0	0.0	0.0
Facility-Wide Net Emission Change	31.2	-586.7	-11.5	-28.7	-7.7

Note:

a. As allowed under emission unit replacement calculations, emission reductions for CO, ROC, PM, and SO_X are based on potential to emit of MGS Units 1 and 2.

CO = carbon monoxide
CTG = combustion turbine generator
NO_X = oxides of nitrogen
NSR = new source review
PM = particulate matter
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
ROC = reactive organic compounds
SO_X = sulfur oxides
VCAPCD = Ventura County Air Pollution Control District

Table 4.1-26
Non-Criteria Pollutant Emissions for New Equipment

Compound	Emissions (tons/year)
CTG	
Ammonia (not an HAP)	21.06[a]
Propylene (not an HAP)	2.56
Acetaldehyde	0.14
Acrolein	0.02
Benzene	0.04
1,3-Butadiene	0.00
Ethylbenzene	0.11
Formaldehyde	3.05
Hexane	0.86
Naphthalene	0.00
PAHs (other)	0.00
Propylene Oxide	0.10
Toluene	0.44
Xylene	0.22
Subtotal HAPs	4.98
Subtotal All	28.61
Emergency Engine	
Diesel PM (not a HAP)	0.00
Acrolein	0.00
Subtotal HAPs	0.00
Subtotal All	0.00
Total HAPs (Proposed Project)	4.98
Total All Proposed Project)	28.61

Note:

a. Based on the proposed ammonia slip level of 5 ppm, corrected.

CTG = combustion turbine generator
HAP = hazardous air pollutants
PAH = polycyclic aromatic hydrocarbon
PM = particulate matter

Table 4.1-27
Non-Criteria Pollutant Emissions for Existing Units 1, 2, and 3
(Maximum Potential to Emit)

Compound	Emissions (tons/year)
Ammonia (not an HAP)	78.05
Benzene	0.03
Formaldehyde	0.15
Hexane	0.05
Naphthalene	0.01
Dichlorobenzene	0.00
Toluene	0.14
1,3-Butadiene	0.00
Acetaldehyde	0.02
Acrolein	0.01
Ethyl Benzene	0.04
PAHs (other)	0.00
Xylene	0.10
Total HAPs (Existing Facility)	0.54
Total All (Existing Facility)	78.93

Notes:
HAP = hazardous air pollutants
PAH = polycyclic aromatic hydrocarbon

Table 4.1-28
New Equipment Greenhouse Gas Emissions

Unit	CO_2, metric tons/year	CH_4, metric tons/ year	N_2O, metric tons/ year	SF_6, metric tons/year	CO_2e, metric tons/year[a]	CO_2, metric tons/MWh
New CTG	335,685	6	1	n/a	—	—
New Emergency Engine	72	0	0	n/a	—	—
Existing Unit 3 Gas Turbine	4,799	0	0	n/a	—	—
New Circuit Breakers	n/a	n/a	n/a	$4.20 \times 10\text{-}^{4}$	—	—
Total	340,557	6	1	0	340,918	0.49

Notes:

a. Includes CH_4, N_2O, and SF_6.

CH_4= methane
CO_2= carbon dioxide
CO_2e = carbon dioxide equivalent
CTG = combustion turbine generator
MWh = megawatt hour
n/a = not applicable
N_2O = nitrous oxide
SF_6= sulfur hexafluoride

Table 4.1-29
Normal Operation Air Quality Modeling Results for P3

Pollutant	Averaging Time	Modeled Maximum Concentrations (μg/m³) Normal Operations AERMOD	Startup/ Shutdown AERMOD	Fumigation SCREEN3	Shoreline Fumigation SCREEN3
New CTG					
NO_2	1-hour	1.2	9.7	6.1	37.3
	98th Percentile	0.7	5.8	-	-
	Annual	0.0	N/A[a]	N/A[c]	N/A[c]
SO_2	1-hour	0.3	N/A[a]	0.2	1.4
	3-hour	0.2	N/A[a]	0.2	0.7
	24-hour	0.0	N/A[a]	0.0	0.1
	Annual	0.0	N/A[a]	N/A[c]	N/A[c]
CO	1-hour	1.4	33.2	17.6	107.3
	8-hour	0.4	10.4	10.7	22.5
$PM_{2.5}/PM_{10}$	24-hour	0.1	N/A[b]	0.2	0.2
	Annual	0.0	N/A[b]	N/A[c]	N/A[c]
New Emergency Generator Engine					
NO_2	1-hour	28.2	N/A[d]	N/A[e]	N/A[e]
	98th percentile	23.9	N/A[d]	N/A[e]	N/A[e]
	Annual	0.0	N/A[d]	N/A[e]	N/A[e]
SO_2	1-hour	0.3	N/A[d]	N/A[e]	N/A[e]
	3-hour	0.2	N/A[d]	N/A[e]	N/A[e]
	24-hour	0.0	N/A[d]	N/A[e]	N/A[e]
	Annual	0.0	N/A[d]	N/A[e]	N/A[e]
CO	1-hour	179.9	N/A[d]	N/A[e]	N/A[e]
	8-hour	8.7	N/A[d]	N/A[e]	N/A[e]
$PM_{2.5}/PM_{10}$	24-hour	0.0	N/A[d]	N/A[e]	N/A[e]
	Annual	0.0	N/A[d]	N/A[e]	N/A[e]
Existing Unit 3					
NO_2	1-hour	116.6	N/A	N/A[e]	N/A[e]
	98th percentile	67.6	N/A	N/A[e]	N/A[e]
	Annual	0.0	N/A	N/A[e]	N/A[e]
SO_2	1-hour	0.4	N/A	N/A[e]	N/A[e]
	3-hour	0.2	N/A	N/A[e]	N/A[e]
	24-hour	0.0	N/A	N/A[e]	N/A[e]
	Annual	0.0	N/A	N/A[e]	N/A[e]

Table 4.1-30
Normal Operation Air Quality Modeling Results for P3 (Continued)

Pollutant	Averaging Time	Modeled Maximum Concentrations (μg/m^3)			
		Normal Operations AERMOD	Startup/ Shutdown AERMOD	Fumigation SCREEN3	Shoreline Fumigation SCREEN3
CO	1-hour	86.1	N/A	N/A[e]	N/A[e]
	8-hour	21.9	N/A	N/A[e]	N/A[e]
$PM_{2.5}/PM_{10}$	24-hour	0.7	N/A	N/A[e]	N/A[e]
	Annual	0.0	N/A	N/A[e]	N/A[e]
Combined Impacts New Equipment					
NO_2	1-hour	28.2	N/A[f]	N/A[f]	N/A[f]
	98th percentile	23.9	N/A[f]	N/A[f]	N/A[f]
	Annual	0.0	N/A[f]	N/A[f]	N/A[f]
SO_2	1-hour	0.3	N/A[f]	N/A[f]	N/A[f]
	3-hour	0.2	N/A[f]	N/A[f]	N/A[f]
	24-hour	0.0	N/A[f]	N/A[f]	N/A[f]
	Annual	0.0	N/A[f]	N/A[f]	N/A[f]
CO	1-hour	179.9	N/A[f]	N/A[f]	N/A[f]
	8-hour	8.7	N/A[f]	N/A[f]	N/A[f]
$PM_{2.5}/PM_{10}$	24-hour	0.1	N/A[f]	N/A[f]	N/A[f]
	Annual	0.0	N/A[f]	N/A[f]	N/A[f]
Combined Impacts New Equipment and Unit 3					
NO_2	1-hour	116.7	116.7	6.1	37.3
	98th percentile	67.6	67.6	-	-
	Annual	0.0	N/A[a]	N/A[c]	N/A[c]
SO_2	1-hour	0.4	N/A[b]	0.2	1.4
	3-hour	0.3	N/A[b]	0.2	0.7
	24-hour	0.0	N/A[b]	0.0	0.1
	Annual	0.0	N/A[a]	N/A[c]	N/A[c]
CO	1-hour	179.9	86.1	17.6	107.3
	8-hour	22.0	22.0	10.7	22.5

Table 4.1-30
Normal Operation Air Quality Modeling Results for P3 (Continued)

Pollutant	Averaging Time	Modeled Maximum Concentrations ($\mu g/m^3$) Normal Operations AERMOD	Startup/ Shutdown AERMOD	Fumigation SCREEN3	Shoreline Fumigation SCREEN3
$PM_{2.5}/PM_{10}$	24-hour	0.7	N/A[b]	0.2	0.2
	Annual	0.0	N/A[b]	N/A[c]	N/A[c]

Notes:

a. Not applicable, because startup/shutdown emissions are included in the modeling for annual average.
b. Not applicable, because emissions are not elevated above normal operation levels during startups/shutdowns.
c. Not applicable, because inversion breakup is a short-term phenomenon and as such is evaluated only for short-term averaging periods.
d. Not applicable, because engine will not operate during CTG startups/shutdowns.
e. Not applicable, this type of modeling is not performed for small combustion sources with relatively short stacks.
f. Impacts are the same as shown for CTG.

AERMOD = AMS/USEPA Regulatory Model
CO = carbon monoxide
CTG = combustion turbine generator
$\mu g/m^3$ = micrograms per cubic meter
N/A = not available
NO_2= nitrogen dioxide
P3 = Puente Power Project
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SO_2 = sulfur dioxide

Table 4.1-31
Maximum Background Concentrations
Project Area, 2011 – 2013 (μg/m³)

Pollutant	Averaging Time	2011	2012	2013
NO_2 (Oxnard)	1-hour	**169.5**	107.4	75.3
	Fed. 1-hour[a]	**67.8**	**67.8**	64.0
	Annual	**13.2**	**13.2**	**13.2**
SO_2 (Santa Barbara – UCSB)	1-hour	**7.9**	5.2	5.2
	Fed. 1-hour[b]	**7.9**	**7.9**	5.2
	24-hour	**2.6**	**2.6**	**2.6**
	Annual	0.0	—[c]	—[c]
CO (Santa Barbara – East Canon Perdido)	1-hour	**2,875**	2,415	**2,875**
	8-hour	**2,185**	1,035	1,265
PM_{10} (Oxnard)	24-hour	51.7	**56.9**	46.7
	Annual	21.6	20.4	**23.6**
$PM_{2.5}$ (Oxnard)	24-hour[d]	**18.3**	15.9	16.6
	Annual	8.9	**9.0**	**9.0**

Source: California Air Quality Data, CARB, n.d.; and USEPA AIRData website *www.epa.gov/air/data/*. Reported values have been rounded to the nearest tenth of a $\mu g/m^3$ except for PM_{10} which were already rounded to the nearest integer.

Notes: With the exception of federal 1-hour NO_2, federal 1-hr SO_2, and 24-hr $PM_{2.5}$, **bolded** values are the highest during the 3 years and are used to represent background concentrations.

a. Federal 1-hour NO_2 is shown as the 3-year average 98th percentile, because that is the basis of the federal standard.
b. Federal 1-hour SO_2 is shown as the 3-year average 99th percentile, because that is the basis of the federal standard.
c. There were insufficient data to determine annual SO_2 for 2012 and 2013.
d. 24-hour average $PM_{2.5}$ concentrations shown are 3-year average 98th percentile values, rather than highest values, because compliance with the ambient air quality standards is based on 98th percentile readings.

CARB = California Air Resources Board
CO = carbon monoxide
$\mu g/m^3$ = micrograms per cubic meter
NO_2= nitrogen dioxide
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SO_2 = sulfur dioxide
UCSB = University of California, Santa Barbara
USEPA = U.S. Environmental Protection Agency

Table 4.1-32
Modeled Maximum Proposed Project Impacts (Normal Operation)

Pollutant	Averaging Time	Maximum Project Impact (µg/m³)	Background (µg/m³)	Total Impact (µg/m³)	State Standard (µg/m³)	Federal Standard (µg/m³)
Impacts for New Equipment						
NO_2	1-hour	37.3	169.5	207	339	—
	98th percentile	23.9	67.8[a]	69.3	—	188
	Annual	0.0	13.2	13	57	100
SO_2	1-hour	1.4	7.9	9	655	—
	99th percentile	1.4	7.9[c]	9	—	196
	24-hour	0.1	5.2	5	105	
CO	1-hour	179.9	2,875.0	3,055	23,000	40,000
	8-hour	22.5	2,185.0	2,208	10,000	10,000
PM_{10}	24-hour	0.2	56.9	57	50	150
	Annual	0.0	23.6	24	20	—
$PM_{2.5}$	24-hour	0.2	18.3[b]	19	—	35
	Annual	0.0	9.0	9	12	12
Impacts for New Equipment and Unit 3						
NO_2	1-hour	116.7	169.5	286	339	—
	98th percentile	67.6	67.8[a]	92	—	188
	Annual	0.0	13.2	13	57	100
SO_2	1-hour	1.4	7.9	9	655	—
	99th percentile	1.4	7.9[c]	9	—	196
	24-hour	0.1	5.2	5	105	
CO	1-hour	179.9	2,875.0	3,055	23,000	40,000
	8-hour	22.5	2,185.0	2,208	10,000	10,000
PM_{10}	24-hour	0.7	56.9	58	50	150
	Annual	0.0	23.6	24	20	—
$PM_{2.5}$	24-hour	0.7	18.3[b]	19	—	35
	Annual	0.0	9.0	9	12	12

Notes:

a. 1-hour NO_2 background concentration is shown as the 3-year average of the 98th percentile, because that is the basis of the federal standard.
b. 24-hour $PM_{2.5}$ background concentration reflects 3-year average of the 98th percentile values, based on form of standard.
c. 1-hour SO_2 background concentration reflects 3-year average of the 99th percentile values, based on form of standard.

CO = carbon monoxide
µg/m³ = micrograms per cubic meter
NO_2= nitrogen dioxide
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SO_2 = sulfur dioxide

Table 4.1-33
Modeled Maximum Proposed Project Impacts (Commissioning Period)

Pollutant	Averaging Time	Maximum Project Impact[a] (µg/m^3)	Background (µg/m^3)	Total Impact (µg/m^3)	State Standard (µg/m^3)	Federal Standard (µg/m^3)
NO_2	1-hour	116.8	169.5	286	339	—
	98th percentile	70.5	67.8[b]	95	—	188
SO_2	1-hour	1.0	7.9	9	655	—
	99th percentile	1.0	7.9[c]	9	—	196
	24-hour	0.2	5.2	5	105	—
CO	1-hour	198.6	2,875	3,094	23,000	40,000
	8-hour	67.0	2,185	2,252	10,000	10,000
PM_{10}	24-hour	1.0	56.9	58	50	150
$PM_{2.5}$	24-hour	1.0	18.3[d]	19	—	35

Notes:

a. Includes impacts from existing MGS Units 1, 2, and 3.
b. One-hour NO_2 background concentration is shown as the 98th percentile, because that is the basis of the federal standard.
c. One-hour SO_2 background concentration reflects 3-year average of the 99th percentile values based on form of standard.
d. 24-hr $PM_{2.5}$ background concentration reflects 3-year average of the 98th percentile values based on form of standard.

CO = carbon monoxide
µg/m^3 = micrograms per cubic meter
MGS = Mandalay Generating Station
NO_2= nitrogen dioxide
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SO_2 = sulfur dioxide

Table 4.1-34
Comparison of Maximum Modeled Impacts and PSD Significant Impact Levels

Pollutant	Averaging Time	Significant Impact Level, µg/m³	Maximum Modeled Impact for P3, µg/m³	Exceed Significant Impact Level?
NO_2	1-Hour	7.5[a]	28.2	Yes
	Annual	1	0.0	No
SO_2	1-Hour	7.8[b]	0.3	No
	3-Hour	25	0.2	No
	24-Hour	5	0.0	No
	Annual	1	0.0	No
CO	1-Hour	2000	179.9	No
	8-Hour	500	8.7	No
PM_{10}	24-Hour	5	0.1	No
	Annual	1	0.0	No
$PM_{2.5}$[c]	24-Hour	1.2	0.1	No
	Annual	0.3	0.0	No

Notes:

a. USEPA has not yet defined SILs for 1-hour NO_2 and SO_2 impacts. However, USEPA has suggested that, until SILs have been promulgated, interim values of 4 ppb (7.5 µg/m³) for NO_2 and 3 ppb (7.8 µg/m³) for SO_2 may be used (USEPA [2010c]; USEPA [2010d]). These values will be used in this analysis as interim SILs.

b. USEPA (2010e), p. 64891.

c. In January 2013, the D.C. Circuit Court of Appeals ruled that the $PM_{2.5}$ SILs could not be used as a definitive exemption from the requirements to perform $PM_{2.5}$ preconstruction monitoring or a $PM_{2.5}$ increments analysis or AQIA. However, USEPA's March 2013 interpretation of the Court's decision indicated that the SILs can be used as guidance.

AQIA = air quality impact analysis
CO = carbon monoxide
µg/m³ = micrograms per cubic meter
NO_2= nitrogen dioxide
P3 = Puente Power Project
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
ppb = parts per billion
PSD = prevention of significant deterioration
SIL = significance impact level
SO_2 = sulfur dioxide
USEPA = U.S. Environmental Protection Agency

Table 4.1-35
Net Emission Change and PSD Applicability

Pollutant	Facility Net Increase (TPY)	PSD Significance Levels (TPY)	Are Increases Significant?
NO_X	31.2	40	No
SO_2	1.5	40	No
ROC	10.1	N/A[a]	N/A
CO	10.0	100	No
PM_{10}	9.8	15	No
$PM_{2.5}$	9.8	10	No

Notes:

a. Because the project area is classified as a federal nonattainment for ozone, this pollutant is not subject to PSD review.

CO = carbon monoxide
NO_X = oxides of nitrogen
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 10 microns in diameter
SO_2 = sulfur dioxide
ROC = reactive organic compounds
N/A = not available
PSD = prevention of significant deterioration
TPY = tons per year

Table 4.1-36
Compliance with 40 CFR 60 Subpart KKKK

Pollutant	Project Emission Levels			Subpart KKKK Limits
	ppm, corrected	lb/hr	lb/MWh	
NO_X	2.5	N/A	N/A	15 ppm, corrected
SO_X	N/A	5.4	0.02	0.90 lb/MWh

Notes:

CFR = Code of Federal Regulations
lb/hr = pounds per hour
MWh = megawatt hour
NO_X = oxides of nitrogen
ppm = parts per million
SO_X = sulfur oxides

Table 4.1-37
Ambient Air Quality Standard Attainment Status in Ventura County, California

Pollutant	Averaging Time	California	National
Ozone	1-hour	Nonattainment	No NAAQS
	8-hour	Nonattainment	Nonattainment
Carbon Monoxide	8-hour	Attainment	Unclassified/Attainment
	1-hour	Attainment	Unclassified/Attainment
Nitrogen Dioxide	Annual Average	Attainment	Unclassified/Attainment
	1-hour	Attainment	Unclassified/Attainment
Sulfur Dioxide	Annual Average	No CAAQS	Attainment
	24-hour	Attainment	Attainment
	3-hour	No CAAQS	Attainment
	1-hour	Attainment	Attainment
Respirable Particulate Matter (10 Micron)	Annual Arithmetic Mean	Attainment	Unclassified/Attainment
	24-hour	Attainment	Unclassified/Attainment
Fine Particulate Matter (2.5 Micron)	Annual Arithmetic Mean	Attainment	Unclassified/Attainment
	24-hour	No CAAQS	Unclassified/Attainment
Sulfates	24-hour	Attainment	No NAAQS
Lead	30 days	Attainment	No NAAQS
	Calendar Quarter	No CAAQS	Unclassified/Attainment
	Rolling 3-Month Average	No CAAQS	Unclassified/Attainment
Hydrogen Sulfide	1-hour	Unclassified/ Attainment	No NAAQS
Visibility Reducing Particles	8-hour	Unclassified/ Attainment	No NAAQS

Notes:
NAAQS = national ambient air quality standards
CAAQS = California Ambient Air Quality Standards

Table 4.1-38
Comparison of the P3 Emissions to Regional Precursor Emissions in 2020: Annual Basis[a]

Ozone Precursors – Annual Basis	
Total Ventura County Ozone Precursors, TPY	50,293
Total P3 Ozone Precursor Emissions, TPY	48
P3 Ozone Precursor Emissions as Percent of Regional Total	0.10 percent
Reductions from Shutdown of Existing Units (5-Year Lookback), TPY[b]	4
Reductions from Shutdown of Existing Units (10-Year Lookback), TPY[c]	8
P3 Net Ozone Precursor Emissions with Shutdown of Existing Units (5-Year Lookback), TPY	44
P3 Net Ozone Precursor Emissions with Shutdown of Existing Units (10-Year Lookback), TPY	40
P3 Net Ozone Precursor Emissions as Percent of Regional Total, with Shutdown of Existing Units	0.09 percent
PM_{10} Precursors – Annual Basis	
Total Ventura County PM_{10} Precursors, TPY	63,484
Total P3 PM_{10} Precursor Emissions, TPY	63
P3 PM_{10} Precursor Emissions as Percent of Regional Total	0.10 percent
Reductions from Shutdown of Existing Units (5-Year Lookback), TPY[b]	7
Reductions from Shutdown of Existing Units (10-Year Lookback), TPY[c]	12
P3 Net PM_{10} Precursor Emissions with Existing Units (5-Year Lookback), TPY	56
P3 Net PM_{10} Precursor Emissions with Existing Units (10-Year Lookback), TPY	51
P3 Net PM_{10} Precursor Emissions as Percent of Regional Total, with Shutdown of Existing Units	0.09 percent
PM_{10}/$PM_{2.5}$ Precursors – Annual Basis	
Total Ventura County $PM_{2.5}$ Precursors, TPY	58,130
Total P3 $PM_{2.5}$ Precursor Emissions, TPY	63
P3 $PM_{2.5}$ Precursor Emissions as Percent of Regional Total	0.11 percent
Reductions from Shutdown of Existing Units (5-Year Lookback), TPY[b]	7
Reductions from Shutdown of Existing Units (10-Year Lookback), TPY[c]	12
P3 Net $PM_{2.5}$ Precursor Emissions with Existing Units (5-Year Lookback), TPY	56
P3 Net $PM_{2.5}$ Precursor Emissions with Existing Units (10-Year Lookback), TPY	51
P3 Net $PM_{2.5}$ Precursor Emissions as Percent of Regional Total, with Shutdown of Existing Units	0.10 percent

Notes:

a. Countywide emissions calculated as 365 times daily emissions.
b. Based on average emissions during past 5 years (2010 through 2014).
c, Base on average emissions during past 10 years (2005 through 2014).

P3 = Puente Power Project
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
TPY = tons per year

Table 4.1-39
Net GHG Emissions Change for Proposed Project

Equipment	Total MT CO_2e [a]
P3 vs. Shutdown of Existing Units	
Reductions from Shutdown of Existing Units	
Units 1 and 2 (5-Year Lookback)[b]	88,531
Units 1 and 2 (10-Year Lookback)[c]	156,099
New Equipment (P3)	
CTG and Emergency Engine[d]	340,918
Net Emission Change (5-Year Lookback)	252,387
Net Emission Change (10-Year Lookback)	184,819

Notes:
a. Metric tons of carbon dioxide equivalent.
b. Based on average emissions during past 5 years (2010 to 2014).
c. Base on average emissions during past 10 years (2005 to 2015).
d. Includes SF_6 from circuit breakers.

CTG = combustion turbine generator
GHG =greenhouse gas
MT CO_2e = metric tons of carbon dioxide equivalent
P3 = Puente Power Project
SF_6= sulfur hexafluoride

Table 4.1-40
Net Nitrogen Emissions Change for Proposed Project

Equipment	Total Nitrogen Emissions (tons/year)[a]
Reductions from Shutdown of Existing Units	
Units 1 and 2 (5-Year Lookback)[b]	4
Units 1 and 2 (10-Year Lookback)[c]	7
New Equipment (P3)	
CTG and Emergency Engine[d]	28
Net Emission Change (5-Year Lookback)	24
Net Emission Change (10-Year Lookback)	21

Notes:
a. Includes nitrogen associated with NO_X and ammonia emissions.
b. Based on average emissions during past 5 years (2010 through 2014).
c. Based on average emissions during past 10 years (2005 through 2014).
d. Excludes existing MGS Unit 3.

CTG = combustion turbine generator
MGS = Mandalay Generating Station
NO_X = oxides of nitrogen
P3 = Puente Power Project

Table 4.1-41
Involved Agencies and Agency Contacts

Issue	Agency	Contact/Title	Telephone/E-mail
Permit issuance and oversight, enforcement	USEPA Region 9	Gerardo Rios Chief, Permits Office USEPA Region 9 75 Hawthorne Street San Francisco, CA 94105	(415) 744-1259 Rios.gerardoatepamail.epa.gov
Regulatory oversight	California Air Resources Board	Michael Tollstrup Chief, Project Assessment Branch CARB 1001 I Street Sacramento, CA 95814	(916) 323-8473 mtollstratarb.ca.gov
Permit issuance, enforcement	Ventura Air Pollution Control District	Kerby Zozula Manager, Engineering Division VCAPCD 669 County Square Dr. Ventura, CA 93003	(805) 645-1421 kerbyatvcapcd.org

Notes:
CARB = California Air Resources Board
USEPA = U.S. Environmental Protection Agency
VCAPCD = Ventura County Air Pollution Control District

Figure 4.1-1
Maximum 8-Hour Average Ozone Levels
Oxnard Monitoring Station, 2004-2013

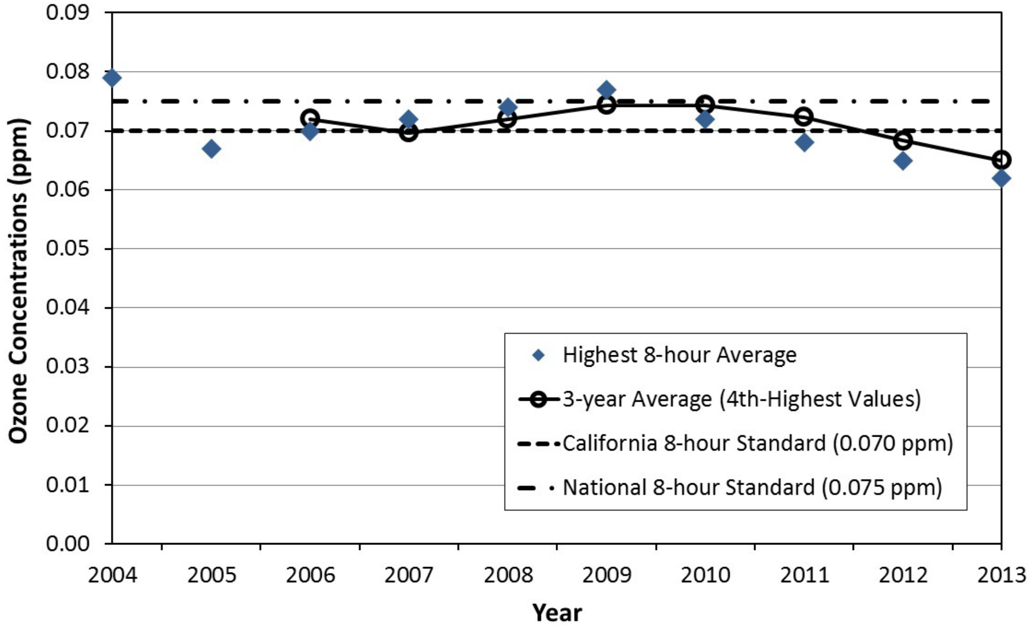

Figure 4.1-2
Maximum 1-Hour Average Ozone Levels
Oxnard Monitoring Station, 2004-2013

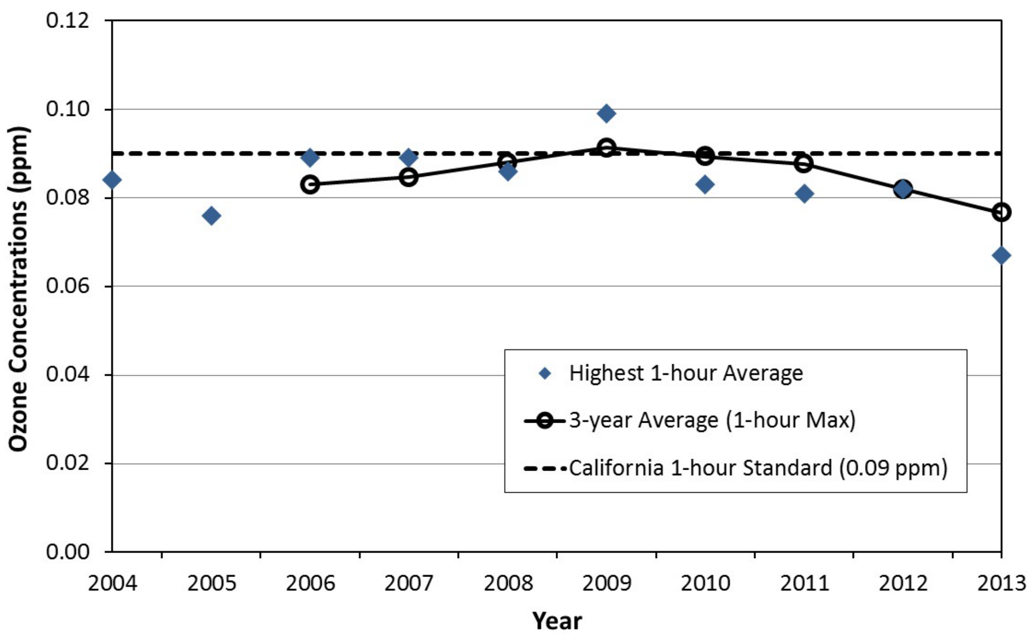

Figure 4.1-3
Maximum 1-Hour Nitrogen Dioxide Levels
Oxnard Monitoring Station, 2004-2013

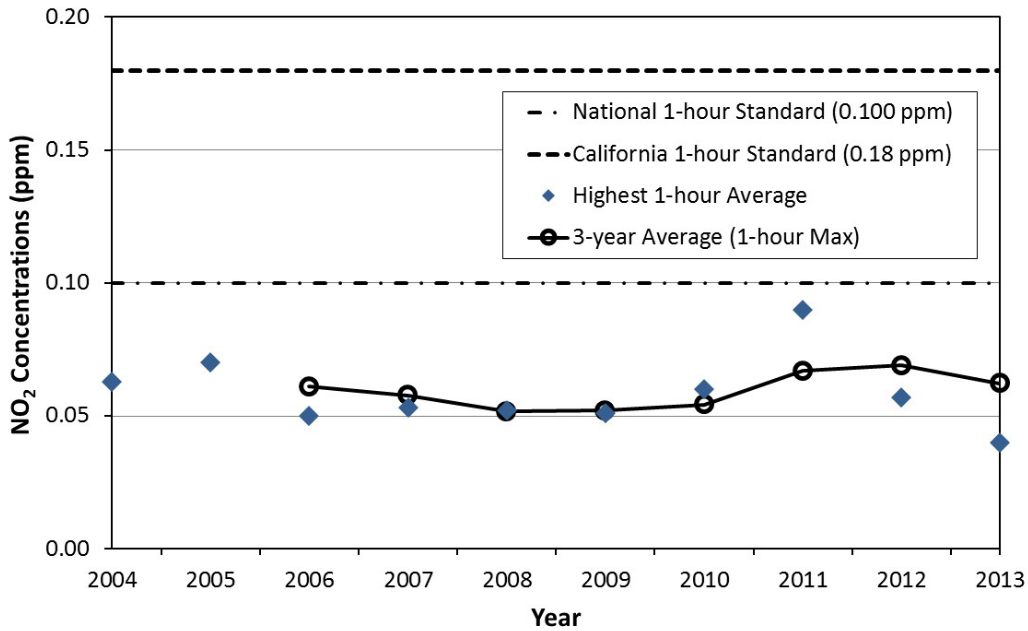

Figure 4.1-4
Annual Average Nitrogen Dioxide Levels
Oxnard Monitoring Station, 2004-2013

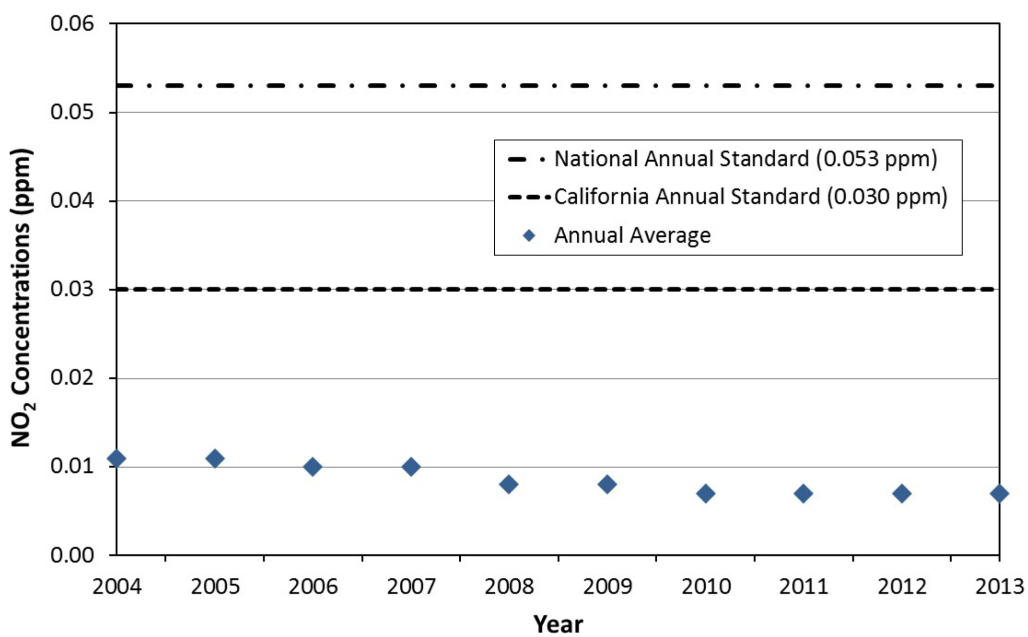

Figure 4.1-5
Maximum 1-Hour Average Carbon Monoxide Levels
Santa Barbara County – East Canon Perdido Monitoring Station, 2004-2013

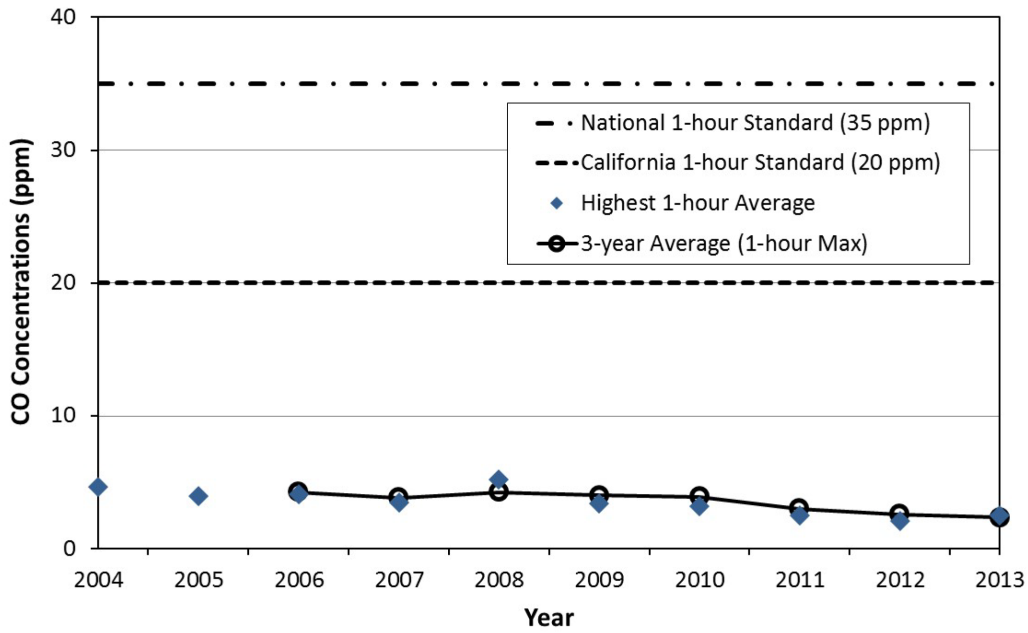

Figure 4.1-6
Maximum 8-Hour Carbon Monoxide Levels
Santa Barbara County – East Canon Perdido Monitoring Station, 2004-2013

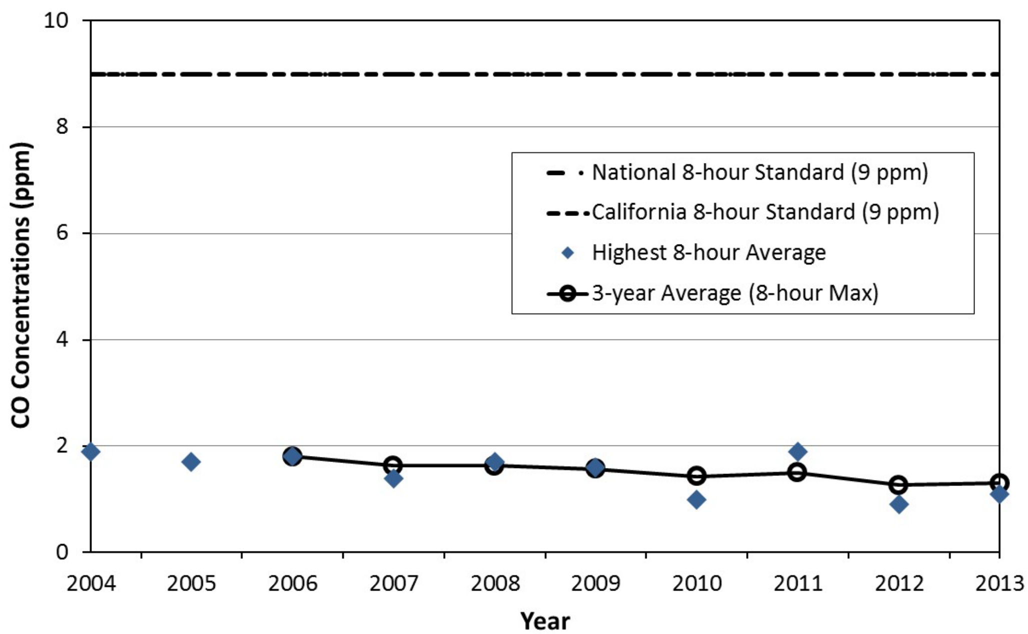

Figure 4.1-7
Maximum 24-Hour Average Sulfur Dioxide Levels
UCSB West Campus Monitoring Station, 2004-2013

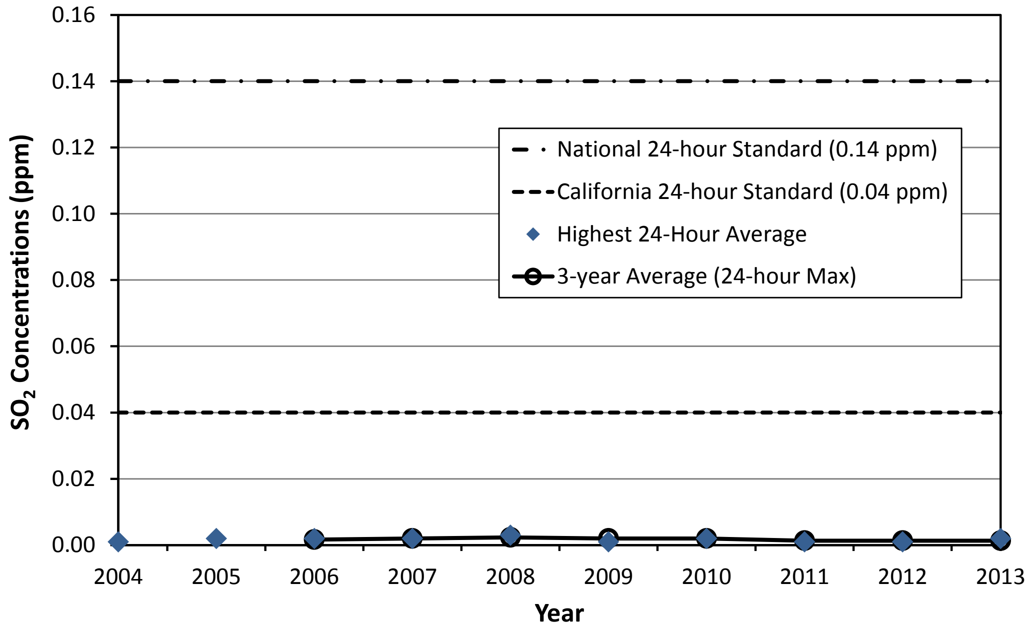

Figure 4.1-8
Maximum 24-Hour Average PM_{10} Levels
Oxnard Monitoring Station, 2004-2013

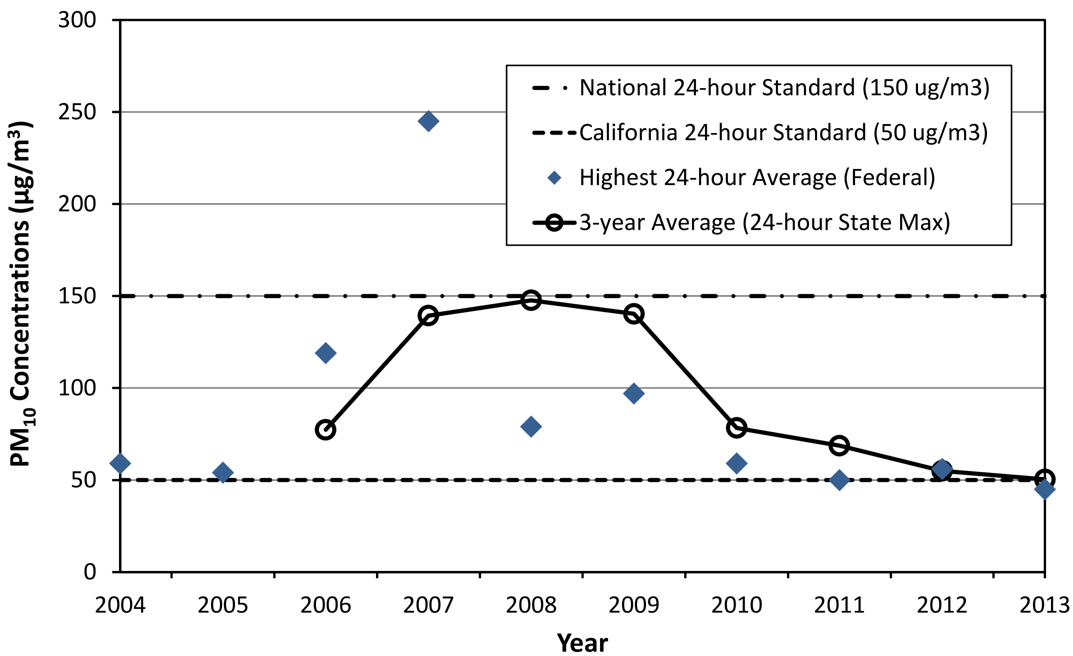

Figure 4.1-9
Annual Average PM_{10} Levels
Oxnard Monitoring Station, 2004-2013

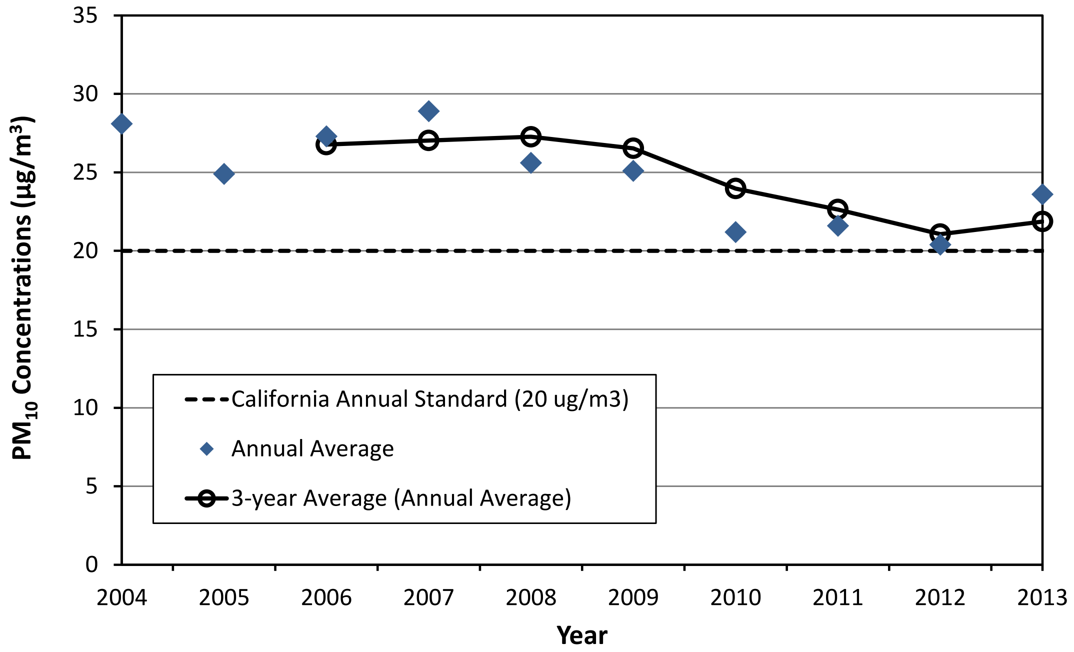

Figure 4.1-10
Maximum 24-Hour Average $PM_{2.5}$ Levels
Oxnard Monitoring Station, 2004-2013

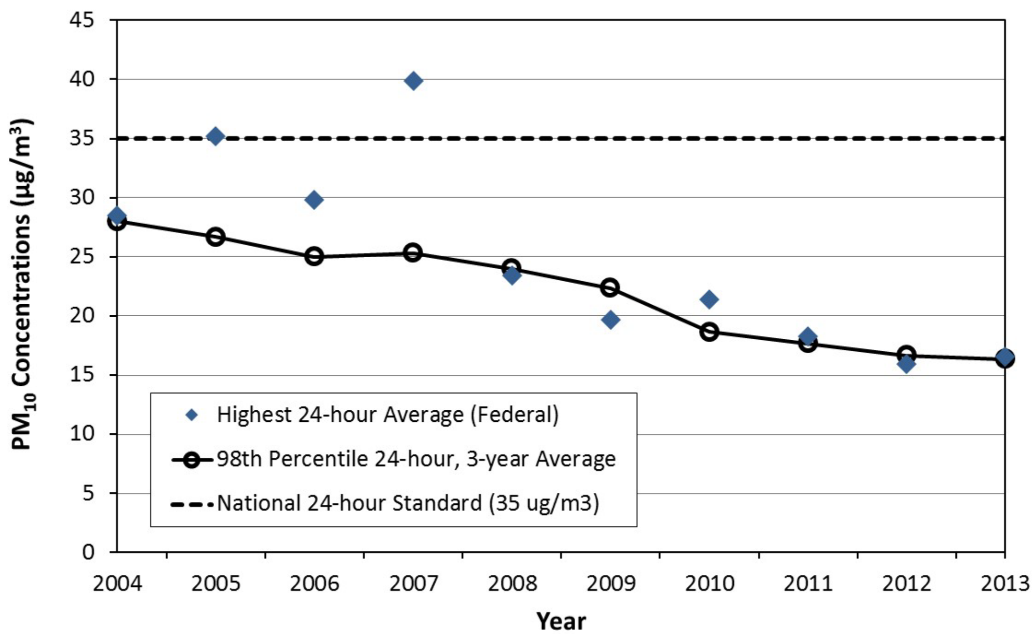

Figure 4.1-11
Annual Average $PM_{2.5}$ Levels
Oxnard Monitoring Station, 2004-2013