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SECTION ACRONYMS/ABBREVIATIONS

ACRONYM/ ABBREVIATION	DEFINITION
AAQS	Ambient Air Quality Standards
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AFC	Application for Certification
APCDs	Air Pollution Control Districts
AQCMM	Air Quality Construction Manager
AQCMP	Air Quality Construction Mitigation Plan
AQIA	Air Quality Impact Analysis
AQMDs	Air Quality Management Districts
ATC	Authority to Construct
ATCM	Airborne Toxic Control Measure
BACT	Best Available Control Technology
bhp	Brake Horsepower
Btu	British Thermal Unit
Btu/kW-hr	British Thermal Unit per Kilowatt Hour
Btu/SCF	British Thermal Unit per Standard Cubic Foot
°C	Degrees Celsius
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAISO	California Independent System Operator
CARB	California Air Resource Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEMS	Continuous Emission Monitoring System
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CPM	Commission Project Manager
CO	Carbon Monoxide
CO_2e	Carbon Dioxide Equivalents
CTG	Combustion Turbine Generators

ACRONYM/ ABBREVIATION	DEFINITION
DPLU	County of San Diego Department of Planning and Land Use
DPM	Diesel Particulate Matter
°F	Degrees Fahrenheit
FREF	Fallbrook Renewable Energy Facility
ft/sec	Feet per Second
DOC	Determination of Compliance
EPA	United States Environmental Protection Agency
GE	General Electric
GHG	Greenhouse Gas
gpm	Gallons per Minute
gr/dscf	Grains per Dry Standard Cubic Foot
GWP	Global Warming Potential
H&SC	Health & Safety Code
H1H	Highest-1st-High
H2H	Highest-2nd-High
H8H	Highest-8th-High
H_2S	Hydrogen Sulfide
HAPs	Hazardous Air Pollutants
HARP	Hotspots Analysis and Reporting Program
hp	Horsepower
HHV	Higher Heating Value
hr	Hour
HRA	Health Risk Assessment
ISCST3	Industrial Source Complex Short Term Version 3
kg/MMBtu	Kilograms per Million British Thermal Units
km	Kilometers
lb	Pounds
lb/day	Pounds per Day
lb/MMBtu	Pounds per Million British Thermal Units
LORS	Laws, Ordinances, Regulations and Standards
µg	Micrograms

ACRONYM/ ABBREVIATION	DEFINITION
$\mu g/m^3$	Micrograms per Cubic Meter
m	Meters
MMBtu/hr	Million British Thermal Units per Hour
m/s	Meters per Second
MCR	Monthly Compliance Report
MW	Megawatt
NAAQS	National (Federal) Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
N_2O	Nitrous Oxide
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
NSR	New Source Review
O_3	Ozone
OAP	Ozone Attainment Plan
OC	Oxidation Catalyst
OEHHA	Office of Environmental Health Hazard Assessment
OLM	Ozone Limiting Method
Orange Grove Energy	Orange Grove Energy, L.P.
PAH	Polycyclic Aromatic Hydrocarbon
Pb	Lead
PM	Particulate Matter
PM_{10}	Particulate Matter of 10 Micrograms or Less in Diameter
$PM_{2.5}$	Particulate Matter of 2.5 Micrograms or Less in Diameter
ppm	Parts per Million
ppmv	Parts per Million by Volume
ppmw	Parts per Million by Weight
Project	Subject of this SPPE application, Orange Grove Project
Project Site	Approximately 8.5 acre parcel to be leased for the power plant Site (a.k.a. “Site”)

ACRONYM/ ABBREVIATION	DEFINITION
Property	Approximately 202-acres owned by SDG&E that encompasses the approximately 8.5 acre Project Site and surrounding lands
PSD	Prevention of Significant Deterioration
RAQS	Regional Air Quality Control Strategy
RFO	Request for Offer
scf	Standard Cubic Foot
SCR	Selective Catalytic Reduction
SDG&E	San Diego Gas & Electric
SDAPCD	San Diego Air Pollution Control District
SF_6	Sulfur Hexafluoride
SIP	State Implementation Plan
Site	Approximately 8.5 acre parcel to be leased for the power plant Site (a.k.a. "Site")
SO_2	Sulfur Dioxide
SO_4	Sulfates
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
TACs	Toxic Air Contaminants, also called non-criteria pollutants
T-BACT	Best Available Control Technology for Toxics
tpy	Tons per Year
ULSD	Ultra Low Sulfur Diesel
USC	United States Code
USGS	United States Geological Survey
VOC	Volatile Organic Compounds
WSO	Weather Service Office

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6.2 AIR QUALITY

The proposed Project involves the installation and operation of a 96 megawatt (MW) simple-cycle power station on an 8.5-acre Site in a rural area of northern San Diego County, California. The Project consists of two General Electric (GE) LM6000PC SPRINT natural-gas-fired combustion turbine generators (CTGs). The CTGs will be equipped with inlet air chiller coils, exhaust ducting, and flue gas treatment systems to meet the required performance and proposed air emission limits. The Project will use clean burning fuels and state–of–the–art emission control technologies, thus limiting the air quality impacts of the facility. While being permitted for a total of 6,400 turbine hours (hr) of operation annually, the facility is actually expected to operate less than 2,000 turbine hours to meet peak electricity demand.

Orange Grove Energy, L.P. (Orange Grove Energy) will develop, build, own and operate the facility. This Project is being developed in response to a San Diego Gas & Electric (SDG&E) Request for Offers (RFO) for new generating capacity to support reliability.

This section describes existing air quality conditions in the immediate Site vicinity, the maximum potential impacts from the Project, and certain Project features and measures taken to mitigate the Project's impacts and reduce these impacts to below the significance thresholds. Additional air quality data are presented in other sections of this Application for Certification (AFC), including an evaluation of hazardous air pollutants (HAPs) or toxic air contaminants (TACs) in Section 6.16, Public Health.

6.2.1 Site Climate and Meteorology

6.2.1.1 Climate

The Site is located in northern San Diego County, approximately 19 miles inland from the Pacific Ocean. The climate in San Diego County is mostly influenced by the Pacific Ocean and its perennial high pressure systems that result in dry, warm summers and mild, occasionally wet winters. One of the main determinants of the climatology is a semi-permanent high pressure area (the Pacific High) in the eastern Pacific Ocean. In the summer, this pressure center is located well to the north, causing storm tracks to be directed north of California. This high pressure cell maintains clear skies in this region for much of the year.

When the Pacific High moves southward during the winter, this pattern changes, and low-pressure storms are brought into the region, causing widespread precipitation. In San Diego County, the months of heaviest precipitation are November through April, averaging about 10 inches annually. The mean annual maximum and minimum temperatures are 69.9 degrees Fahrenheit (°F) and 56.4 °F, respectively, demonstrating temperatures are generally mild. Climate statistics were provided by the Western Region Climate website for the San Diego Weather Service Office (WSO).

6.2.1.2 Representative Meteorological Data

6.2.1.2.1 Gregory Canyon Meteorological Data

The Site is located in the San Diego Air Basin. The boundaries of the air basin correspond to those of the County. The closest meteorological monitoring site is the Gregory Canyon Landfill project located approximately 1.0 mile southwest of the Site. The meteorological data encompassed the entire years of 2002 and 2003. These data were reviewed, approved and made available by the San Diego Air Pollution Control District (SDAPCD) for this Project. The data are composed of onsite surface data, surface data from the Carlsbad Palomar Airport No. 72292, and upper air data from Miramar Weather Service Contract Meteorological Office No. 72293. Surface data from Palomar were incorporated to fill any missing hours from onsite surface data collected by the Gregory Canyon Landfill project. Onsite surface air data were processed along with Palomar's surface and Miramar's upper air data using the United States Environmental Protection Agency (EPA) AERMET meteorological data processor.

The 2002 through 2003 period and quarterly wind roses and frequency distributions counts are provided in Appendix 6.2-A for the AERMET processed Gregory Canyon meteorological data. The two year wind profiles present prevailing winds as southwesterly at an average wind speed of 2.18 meters per second (m/s) (4.24 knots). Overall there is not much variation in wind speed between quarters. There is some variation in wind direction between the fall/winter season (October through March) and the spring/summer season (April through September) as shown by the addition of a northeasterly component of wind direction in the fall/winter season.

Additional tables and charts presenting meteorological data that could be extracted from the AERMET processed Gregory Canyon data are also provided in Appendix 6.2-A. The ambient temperature and relative humidity tables both present maximum, average, and minimum values per quarter. AERMET calculated convective (daytime only) and mechanical boundary layers are also presented Stability Charts are presented as AERMET calculated Monin-Obukhov Length (L). The stability charts show a relatively equal division of stable (negative L) and unstable (positive L) conditions with few missing and neutral (infinite) values.

Since the Gregory Canyon meteorological data are closest to the Project Site and they were approved and provided by the SDAPCD, these data are used to model the ambient incremental criteria pollutant contributions for the project. The proximity of the Gregory Canyon site (i.e. approximately 1.0 mile southwest of the Project Site) qualifies the data as "site specific" under the EPA guidance for dispersion modeling (50 Code of Federal Regulations [CFR] Part 51, Appendix W - Guideline on Air Quality Models). Thus, in lieu of using 5 years of National Weather Service meteorological data, a project may use at least one year of site specific data under this EPA guidance. The two years of Gregory Canyon meteorological data are climatologically representative and appropriate for modeling purposes.

6.2.1.2.2 Escondido Meteorological Data

The closest meteorological data certified by the Office of Environmental Health Hazard Assessment (OEHHA) are available from the Escondido monitoring station, located

approximately 16 miles directly south of Pala. The Escondido monitoring station is located within the City of Escondido and it is maintained by the SDAPCD in accordance with established EPA guidelines.

Period and quarterly wind roses and frequency distributions counts for the processed Escondido data from 1998 to 2000 are provided in Appendix 6.2-A. According to the data, prevailing winds as monitored by the Escondido monitoring station are predominantly westerly. Wind speeds over the Project region average 1.70 m/s (3.30 knots). Average wind speeds per quarter remained between 1 m/s and 2 m/s other than an average wind speed of 2.37 m/s (4.61 knots) in the 4th quarter of 1998. As also shown by the Gregory Canyon wind data, there is some variation in wind direction between the fall/winter season (October through March) and the spring/summer season (April through September) as shown by the addition of a northeasterly component of wind direction in the winter season. The 4th quarter of 1998 deviates from this pattern as having easterlies as the prevailing winds.

Additional tables and charts presenting meteorological data that could be extracted from the processed Escondido data also provided in Appendix 6.2-A. The ambient temperature table presents maximum, average, and minimum values per quarter. Calculated rural mixing height is also presented. Stability charts are also presented as calculated Pasquill-Gifford stability categories ranging from 1 being very unstable through 7 being very stable. The stability charts show that each category is represented fairly equally between quarters with more stable conditions during fall/winter (1st and 4th quarter) and unstable conditions during spring/summer (2nd and 3rd quarter).

Hourly meteorological surface data from the Escondido monitoring station were used to represent transport and dispersion conditions for the purpose of health risk assessment (HRA) in Section 6.16, Public Health. The HRA for this project was completed using the Hotspots Analysis and Reporting Program (HARP) Version 1.3 program published by the California Air Resources Board (CARB) and three years of certified meteorological data. According to the SDAPCD, gaps in the Escondido wind speed and wind direction data were supplemented with data from the Miramar Marine Corps Air Station, No. 93107.

6.2.2 Site Ambient Air Quality

6.2.2.1 Overview of Air Quality Standards

The EPA has established National Ambient Air Quality Standards (NAAQS) for ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM) 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 EPA as “non-attainment areas” subject to planning and pollution control requirements that are more stringent than attainment area requirements. The Project is located within the jurisdiction of the SDAPCD, which has delegated authority from EPA to administer the federal air pollution programs.

Statewide, the CARB has established the California Ambient Air Quality Standards (CAAQS) for O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, sulfates, airborne lead, hydrogen sulfide (H_2S), and vinyl chloride at concentrations designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases.

Both the 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. 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 (e.g. 1 hour to 24 hours), or to a lower average concentration over a longer period (e.g. annual). For some pollutants there is more than one air quality standard, reflecting both short-term and long-term effects. Table 6.2-1 presents both the NAAQS and the CAAQS for applicable pollutants. The California standards are generally set at concentrations lower than the federal standards and, in some cases, have shorter averaging periods.

Table 6.2-1 – Federal and State Ambient Air Quality Standards

POLLUTANT	AVERAGING TIME	CALIFORNIA(1)	NATIONAL(2)
Ozone (O_3)	8 Hour	0.070 parts per million (ppm) (137 μg/m^3)	0.075 ppm (147 μg/m^3)
	1 Hour	0.09 ppm (180 μg/m^3)	-
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide (NO_2)(3)	Annual Average	0.030 ppm (57 μg/m^3)	0.053 ppm (100 μg/m^3)
	1 Hour	0.18 ppm (339 μg/m^3)	-
Sulfur Dioxide (SO_2)	Annual Average	-	0.03 ppm (80 μg/m^3)
	24 Hour	0.04 ppm (105 μg/m^3)	0.14 ppm (365 μg/m^3)
	3 Hour	-	0.5 ppm (1300 μg/m^3)(4)
	1 Hour	0.25 ppm (655 μg/m^3)	-
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 μg/m^3	-
	24 Hour	50 μg/m^3	150 μg/m^3
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 μg/m^3	15 μg/m^3
	24 Hour	-	35 μg/m^3
Lead (Pb)	Calendar Quarter	-	1.5 μg/m^3
	30 Days	1.5 μg/m^3	-
Sulfates (SO_4)	24 Hour	25 μg/m^3	-
Hydrogen Sulfide (H_2S)	1 Hour	0.03 ppm (42 μg/m^3)	-
Vinyl Chloride	24 Hour	0.01 ppm (26 μg/m^3)	-
Visibility Reducing Particles	8-Hour (10am to 6pm PST)	Extinction coefficient of 0.23 per km – visibility of 10 or more.	-

(1) Source – CARB– 04/01/2008, standards are not to be exceeded.
(2) NAAQS, annual values not to be exceeded, short term standards have various forms.
(3) California 1-hour NO_2 standard effective 03/20/2008
(4) This is a national secondary standard, which is designed to protect public welfare

EPA, CARB and SDAPCD classify an area as attainment, unclassified, or nonattainment, depending on whether the monitored ambient air quality data show compliance, insufficient data, or non-compliance with the ambient air quality standards, respectively. The proposed Project is located in the northern portion of the San Diego Air Basin. Except for the 8-hour ozone standard, the County is in attainment with all other NAAQS. The SDAPCD submitted its 8-Hour Ozone Attainment Plan (May 2007) to CARB for inclusion into the State Implementation Plan (SIP). Under the California standards, the County is classified as nonattainment for the ozone, PM_{10} and $PM_{2.5}$ standards. Table 6.2-2 summarizes the attainment status with the California and national standards for each criteria pollutant.

Table 6.2-2 – Federal and State Attainment Status

POLLUTANT	CALIFORNIA(1)	NATIONAL(2)
Ozone – 1 Hour	Nonattainment	Attainment (July 2003) Standard revoked June 2005
Ozone – 8 Hour	Nonattainment	Nonattainment (Subpart 1 Basic)(3)
CO	Attainment	Attainment (June 1998)
NO_2	Attainment	Unclassified/Attainment
SO_2	Attainment	Attainment
PM_{10}	Nonattainment	Unclassified
$PM_{2.5}$	Nonattainment	Unclassifiable/Attainment
Lead	Attainment	No Designation
Hydrogen Sulfide	Unclassified	N/A
Visibility Reducing Particles	Unclassified	N/A

(1) Source – CARB Proposed 2006 State Area Designations (http://www.arb.ca.gov/desig/adm/adm.htm)
(2) Source – EPA Green Book for Nonattainment Areas for Criteria Pollutants (http://www.epa.gov/air/oaqps/greenbk/index.html)
(3) SDAPCD is undergoing a determination of attainment with the national 8-hour ozone standard.

6.2.2.2 Existing Site Air Quality Conditions

As recommended by SDAPCD, data from the two nearest ambient air monitoring stations were evaluated to characterize the air quality at the Project location. The nearest monitoring station to the Project location is in Escondido, approximately 16 miles directly south of the Project site. The second monitoring station is at Camp Pendleton where its data are more representative of coastal conditions and reflect military training activities in the area. The Escondido station is, in contrast, approximately the same distance from the coast as the Project location and is more climatologically representative of the Project site as discussed in Section 6.2.1. With greater commercial and industrial activities in Escondido, the ambient air quality data from Escondido are believed to be a conservative representation of the Project site conditions. Since Escondido does not collect data on SO_2, data from the San Diego 12th Avenue and Beardsley Street monitoring stations are used for this pollutant.

Table 6.2–3 below provides a summary of the highest ambient concentrations of criteria pollutants through 2007, the most recent data year published at the time of this writing. All data were obtained from SDAPCD and CARB publications.

Table 6.2-3 - Criteria Pollutants Measured at the Escondido Station, 1999-2007(1)

POLLUTANTS	AVERAGING PERIOD	1999	2000	2001	2002	2003	2004	2005	2006	2007
Ozone (ppm)	Highest 1-Hour Average	0.104	0.124	0.141	0.100	0.105	0.099	0.095	0.108	0.094
Ozone (ppm)	Highest 8-Hour Average	0.080	0.106	0.098	0.081	0.083	0.086	0.079	0.096	0.077
NO_2 (ppm)	Highest 1-Hour Average	0.100	0.083	0.088	0.084	0.135	0.080	0.076	0.071	0.072
NO_2 (ppm)	Annual Average	0.023	0.021	0.020	0.021	0.020	0.018	0.016	0.017	0.016
CO (ppm)	Highest 1-Hour Average	9.9	9.3	8.5	8.5	8.9(1)	6.3	5.9	5.7	5.2
CO (ppm)	Highest 8-Hour Average	5.26	4.93	5.11	3.85	3.9(1)	3.80	3.10	3.61	3.20
SO_2 (ppm)(2)	Highest 1-Hour Average	0.039	0.038	0.052	0.028	0.036	0.042	0.040	0.034	0.018
SO_2 (ppm)(2)	Highest 3-Hour Average	0.025	0.029	0.036	0.015	0.019	0.020	0.019	0.03	0.01
SO_2 (ppm)(2)	Highest 24-Hour Average	0.008	0.010	0.012	0.007	0.008	0.009	0.006	0.009	0.006
SO_2 (ppm)(2)	Annual Average	0.002	0.004	0.003	0.003	0.004	0.004	0.002	0.004	0.003
PM_{10} ($\mu g/m^3$)	Highest 24-Hour Average	52.0	65.0	74.0	51.0	58(1)	57.0	42.0	51.0	68
PM_{10} ($\mu g/m^3$)	Annual Arithmetic Mean	30.0	29.8	31.2	27.1	32.6	27.5	23.9	24.2	26.9
$PM_{2.5}$ ($\mu g/m^3$)	Highest 24-Hour Average	64.3	65.9	60.0	53.6	69.2	67.3	43.1	41.0	36.4(1)
$PM_{2.5}$ ($\mu g/m^3$)	98th % 24-Hour Average(3)	45	48	41	39	34	37	32	28	38
$PM_{2.5}$ ($\mu g/m^3$)	Annual Arithmetic Mean	18.0	15.8	17.5	16.0	14.2	14.1	12.3	11.5	13.35

Source: CARB website http://www.arb.ca.gov/adam/welcome.html Source: SDAPCD website http://www.sdapcd.org/air/reports/smog.pdf Source: EPA AirData website http://www.epa.gov/air/data/index.html

(1) Excluding data from wild fire episode

(2) Data for SO_2 were only available for downtown San Diego, on 12th Avenue for years 1999-2005, and on Beardsley Street for years 2006-2007

(3) 98th percentile value

The ambient air contaminant concentrations presented above, as normalized by the most stringent air quality standards are presented graphically in Figure 6.2-1. This figure shows that except for the 1-hour and 8-hour ozone standard and the PM standards, this region in general is in attainment with all other applicable national and state standards and that the measured air quality has improved over time.

Additional data and more detailed discussion on each air contaminant are provided in Appendix 6.2-B – Supplemental Ambient Air Quality Data.

6.2.2.3 Air Quality Background Concentrations

Using data collected for the latest available three years (2005-2007), the highest reading is taken as the worst case background concentration for the Project, except for $PM_{2.5}$, for which there is no 24-hour average CAAQS and which uses the federal form of the 24-hour standard as the

average of the 98th percentile concentrations over a 3 year period. For pollutants emitted by the Project, presented in Table 6.2-4 below, this approach results in the background concentration exceeding the CAAQS for annual and 24-hour average PM_{10} and annual $PM_{2.5}$. These background concentrations will used for the air impact analysis later in this section.

Table 6.2-4 - Ambient Air Quality Background Concentration (Baseline) for Project Site

POLLUTANTS	AVERAGING PERIOD	2005	2006	2007	BACK-GROUND(1)	MOST STRINGENT STANDARD
NO_2 (ppm)	Highest 1-Hour Average (CAAQS > 0.25 ppm)	0.076	0.071	0.072	0.076 ppm (143.1 µg/m^3)	0.18 ppm (339 µg/m^3)
NO_2 (ppm)	Annual Average (NAAQS = 0.053 ppm)	0.016	0.017	0.016	0.017 ppm (33.9 µg/m^3)	0.030 ppm (57 µg/m^3)
CO (ppm)	Highest 1-Hour average	5.9	5.7	5.2	5.9 ppm (6,785 µg/m^3)	20 ppm (23,000 µg/m^3)
CO (ppm)	Highest 8-Hour average	3.10	3.61	3.20	3.61 ppm (4,152 µg/m^3)	9.0 ppm (10,000 µg/m^3)
SO_2 (ppm)(2)	Highest 1-Hour Average	0.040	0.034	0.018	0.040 ppm (105 µg/m^3)	0.25 ppm (655 µg/m^3)
SO_2 (ppm) (2)	Highest 3-Hour Average	0.019	0.030	0.01	0.030 ppm (78.0 µg/m^3)	0.5 ppm (1,300 µg/m^3)
SO_2 (ppm) (2)	Highest 24-Hour Average	0.006	0.009	0.006	0.009 ppm (23.6 µg/m^3)	0.04 ppm (105 µg/m^3)
SO_2 (ppm) (2)	Annual Average	0.002	0.004	0.003	0.004 ppm (10.5 µg/m^3)	0.03 ppm (80 µg/m^3)
PM_{10} (µg/m^3)	Highest 24-Hour Average	42.0	51.0	68	68.0 µg/m^3	50 µg/m^3
PM_{10} (µg/m^3)	Annual Arithmetic Mean	23.9	24.2	26.9	26.9 µg/m^3	20 µg/m^3
$PM_{2.5}$ (µg/m^3)	98th Percentile 24-Hour Average	32	28	38	32.7 µg/m^3	35 µg/m^3
$PM_{2.5}$ (µg/m^3)	Annual Arithmetic Mean	12.3	11.5	13.4	13.4 µg/m^3	12 µg/m^3

* Data not available

(1) Background is established using the highest recorded data point from the latest 3 years of available data, except 24–hour $PM_{2.5}$ which uses form of the NAAQS.

(2) SO_2 data were obtained from the San Diego 12th Avenue monitoring station for 2005 and the Beardsley Street monitoring station for 2006-2007. All other data were from the Escondido monitoring station.

6.2.3 Air Modeling Protocol

6.2.3.1 Criteria Pollutant Modeling

The purpose of air dispersion modeling is to demonstrate that criteria air pollutant emissions from the Project will not cause or contribute significantly to a violation of a CAAQS or NAAQS. Although the modeling methodology for both criteria and non-criteria pollutants (i.e. HAPs or TACs) is described here, the emissions and potential impacts of non-criteria pollutants are discussed in Section 6.16, Public Health.

The criteria pollutant modeling addresses emissions from construction, commissioning and the operation of the facility. Impacts from construction activities include fugitive dust from grading and excavating disturbed areas, and emissions associated with products of combustion from

diesel- and gasoline-fueled construction equipment. Commissioning emissions are from initial testing and tuning of the turbines. These emissions are temporary. The impacts from operations are associated with the natural gas combustion with the two turbines and the periodic testing of the black-start engine and the diesel-fired emergency fire pump engine.

Separate modeling analyses were performed for the Project construction, commissioning and operational emissions because these activities will occur at and for different time periods and durations. The air quality impacts modeling approaches applied to this Project are discussed below.

The criteria pollutant air quality dispersion modeling for this Project was conducted using the EPA-approved American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) developed by the American Meteorological Society and Environmental Protection Agency. The EPA-approved AERMOD model is a steady-state Gaussian plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain. The model can account for settling and wet and dry deposition of particulates. It accommodates multiple sources and source types, including point, area, line, and volume source types. It handles 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).

The basic model equation used in AERMOD assumes that the concentrations of emissions within a plume can be characterized by a statistical distribution around the centerline of the plume. AERMOD is approved by EPA for regulatory use and is based on conservative assumptions (i.e., the model tends to over predict actual impacts). This modeling tool is used to determine if ambient air quality standards would be exceeded.

There are three input data processors that are regulatory components of the AERMOD modeling system: AERSURFACE, a micro–meteorological parameter preprocessor that analyzes the surface roughness, radiation and moisture variables, AERMET, a meteorological data preprocessor that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, and AERMAP, a terrain data preprocessor that incorporates terrain elevations using United States Geological Survey (USGS) Digital Elevation Data.

The Site location and setting are described in Section 2.0, including topographic maps. A facility plot plan is included as Figure 6.2–2. The ambient air quality impacts analysis (AQIA) of the Project for the construction, commissioning and operational phases was performed following recommendations of the EPA "Guideline on Air Quality Models" (http://www.epa.gov/scram001/guidance/guide/appw_05.pdf, November 2005).

AERMOD was run for a dense array of receptors from the property boundary to a distance of over 10 kilometers (km) from the Project to determine the maximum ground-level concentrations. Gregory Canyon meteorological data, as supplied by the SDAPCD, were used for AERMOD input. Following EPA guidance, the potential stack plume downwash induced by nearby structures (e.g., sound wall, storage tanks) was included in the model. AERMOD was

run with its "regulatory default" options, except that NO_2 1-hour modeling was conducted using the ozone limiting method (OLM) with concurrent hourly observed ozone data from Escondido supplied by SDAPCD and model default NO_2/NOx ratio of 0.1. Modeling predictions were combined with background air quality monitoring data described above to complete the AQIA.

6.2.3.2 Modeling for Non-Criteria Pollutants

For the health risk assessment, modeling was conducted using the HARP Version 1.3 software published by CARB. HARP was designed to support the health risk assessment needs of various agencies in California. The HARP software consists of an air emission inventory module, an air dispersion module and a risk evaluation module. The HARP dispersion module is based on the EPA Industrial Source Complex Short Term Version 3 (ISCST3) air dispersion model. Health risk assessment modeling is discussed further in Section 6.16.

6.2.4 Air Quality Impacts

The following sections summarize the criteria pollutant emission estimates and air quality impacts of the construction, commissioning and operational phases of the Project. Each section is coupled with an AQIA which summarizes the results of the respective dispersion modeling. Appendices 6.2–C through 6.2–F provide the detailed data on which these summaries are based.

6.2.4.1 Construction Emissions

The construction emission estimates have been compiled for activities during Site and pipeline construction as shown in Tables 6.2-5 through 6.2-7. Details on the construction emissions calculations are provided in Appendix 6.2–C, Tables 6.2–C-1 through 10. In addition to the Site and pipeline construction, minor improvements will be made by Orange Grove Energy to the fresh and reclaim water supply pickup stations. As described in Section 2.6.2, the minimal improvements at the water pickup stations are minor, remote from the Project site and are not expected to result in significant air emissions.

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Table 6.2–5 – Summary of Onsite Construction Maximum Daily Emissions(1)

CONSTRUCTION ACTIVITY/POLLUTANT (POUNDS [LB] PER DAY [LB/DAY]	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Combustion Emissions (lb/day)	14.27	59.65	132.82	0.11	5.80	-
Earth Moving (lb/day)	-	-	-	-	12.09	4.02
Material Handling(2) (lb/day)	-	-	-	-	1.03	0.16
Unpaved Roadway(3) (lb/day)	-	-	-	-	18.67	1.87
Maximum Daily Emission (lb/day)	14	60	133	0.1	40.6	6.4
Significant Thresholds(4) (lb/day)	75	550	250	250	100	55
Exceed Significant Threshold?	No	No	No	No	No	No

(1) Reference Appendix 6.2-C – Tables 6.2C–1, 6.2C–6 to 6.2C–10 for detailed calculations.
(2) No additional soil will be imported to the site; material handling emissions are for aggregates.
(3) Construction parking area will be paved with crushed rocks and located a short distance from the highway. Emissions from the parking area are negligible compared to those from site construction equipment.
(4) San Diego County Guidelines for Determining Significance.

Table 6.2-6 – Summary of Total Off-Site Construction Vehicle Combustion Emissions(1)

CONSTRUCTION ACTIVITY/POLLUTANT	VOC	CO	NO_X	SO_X	PM_{10}
Gas Line Construction Emissions (lb)	258	726	1,164	1.16	90

(1) Reference Appendix 6.2-C - Table 6.2C-7 for detailed calculations.

Table 6.2–7 – Summary of Construction Related On–Road Vehicle Emissions(1)

CONSTRUCTION ACTIVITY/POLLUTANT	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Workers Commute & Delivery Trucks Exhaust (lb)	622	5,776	973	0.365	71	69
Workers Commute & Delivery Trucks Dust Entrainment (lb)		-	-	-	545	109

(1) Reference Appendix 6.2–C – Table 6.2C–3 to 6.2C–5 for detailed calculations

6.2.4.2 Construction Impact Analyses

The impacts associated with onsite construction emissions shown in Table 6.2-5 were assessed using the latest version of EPA's approved air dispersion modeling system, AERMOD (Version 07026). Since construction equipment and operation will move continuously around the Site, construction-related emission sources were modeled as volume sources. The fuel combustion emissions from construction equipment were grouped into four volume sources (COMB1 to COMB4) equally distributed on the Site. The fugitive dust emissions from earth moving, material handling and traveling on unpaved roads were modeled as 13 distinct volume sources (FUG01 to FUG13) randomly placed on the Project site.

Property line receptor points were set at 25 meters apart. The grid points were 100 meters (m) apart for areas within 1 km of the Site. From 1 to 5 km, the grid points were 500 m apart. A 1,000 m spacing was used for areas within 5 to 10 km. A typical construction workday from 7:00am to 5:30pm, however to be conservative a 12-hour workday was assumed for air quality

modeling. The OLM was applied for the 1-hour NO_2 impact assessment. The modeling emission input files are presented in Appendix D. The modeled impacts associated with construction activities are presented in Table 6.2-8. The electronic modeling files are provided in Appendix 6.2-E.

Table 6.2-8 – Air Modeling Results for Onsite Construction Activities(1)

	Concentration (µg/m³)																
	CO				NO_2		PM_{10}			$PM_{2.5}$		SO_2					
	1-Hour		8-Hour		1-Hour	Annual	24-Hour		Annual	24-Hour	Annual	1-Hour	3-Hour		24-Hour		Annual
	H1H	H2H	H1H	H2H	H1H	H1H	H1H	H2H	H1H	H8H	H1H	H1H	H1H	H2H	H1H	H2H	H1H
Construction	170.7	150.6	27.3	20.2	79.3	0.746	8.28	6.33	0.311	1.06	0.0881	0.326	0.133	0.108	0.0173	0.0102	0.000700
CA Signif. Level	2,000	---	500	---	---	1	5	---	1	---	---	---	---	---	5	---	1
National Signif. Level	2,000	---	500	---	---	1	5	---	1	---	---	---	25	---	5	---	1
Background	6,785	6,785	4,152	4,152	143.1	33.9	68.0	68.0	26.9	32.7	13.4	105	78.0	78.0	23.6	23.6	10.5
Max + Background	6,956	6,936	4,179	4,172	222	34.6	76.3	74.3	27.2	33.8	13.5	105	78.1	78.1	23.6	23.6	10.5
California AAQS	23,000	---	10,000	---	339	57	50	---	20	---	12	655	---	---	105	---	---
National AAQS	---	40,000	---	10,000	---	100	---	150	---	35	15	---	---	1,300	---	365	80

Table 6.2-8 shows the Highest-1st-High (H1H), Highest-2nd-High (H2H), and Highest-8th-High (H8H) for the respective pollutants and averaging periods. Values listed are the higher impact predicted by AERMOD using either the 2002 or 2003 Gregory Canyon meteorological data. Except for PM, the predicted concentrations for all pollutants at all applicable averaging periods will be below the current ambient air quality standards. In the case of PM emissions, the background concentrations, which are based on the highest sample value collected in downtown Escondido during the last 3 years, already exceed the ambient air quality standard. For $PM_{2.5}$, the emission rate is below the significance threshold of 10 tons per year (tpy) or 55 lb/day, and thus is not subject to ambient air quality assessments under SDAPCD regulations.

6.2.4.3 Project Equipment and Controls Summary

The facility will contain air emission sources including two GE LM6000 PC SPRINT CTGs, inlet air chiller cooling tower with three cells, an emergency fire water pump and a black start generator. The CTGs will exhaust through 80-foot-tall stacks with stack tip internal diameters of 12.5 feet. The nominal operational exhaust temperature will be approximately 818 to 845 °F with an exhaust exit velocity of 58 to 81 feet per second (ft/sec). The permitted maximum allowable capacity factor is 6,400 turbine-hours (for both turbines combined) per year. Peaking facility actual operation levels are heavily influenced by unpredictable events, such as system outages, unexpected demand, and weather. Therefore, for contingency planning purposes, the requested maximum allowable emissions are substantially above the level that the units are likely to operate in an average year. As noted by California Energy Commission (CEC) staff in the recent Preliminary Staff Assessment for the Chula Vista Replacement Project, "The historical capacity factors, for peaker power plants built after the year 2000, found in a review of the Energy Commission's Quarterly Fuel and Energy Reporting data and available SDAPCD 2005 and 2006 data (Moore 2008) show generation or hour-based capacity factors that have not exceeded 8.4% for any single facility" (PSA, page 4.1-38).

The CTGs will burn pipeline natural gas with a higher heating value (HHV) of 1,015 British thermal units (Btu) per standard cubic foot (SCF) (Btu/scf). The chemical characteristics of the natural gas are presented in Table 6.2–9.

Table 6.2–9 – Natural Gas Chemical Characteristics

GAS CONSTITUENT	VALUE
Moisture	<7 lb/MMSCF
Hydrogen Sulfide	<0.25 grains/100 SCF
Mercaptan Sulfur	<0.30 grains/100 SCF
Total Sulfur	<0.75 grains/100 SCF
Carbon Dioxide (CO_2)	<3%(v/v)
Oxygen	<0.2%(v/v)
Inerts	<4%(v/v)
Hydrocarbons Dew Point	<45˚ F at below 400 psig

Pollutant emissions from the CTGs will be controlled by both combustion process controls and post-combustion controls. Water injection is used to control the combustion process, increase turbine mass flow and reduce flame temperatures, resulting in reduced NO_x emissions. Post combustion controls include SCR which reduces NO_x emissions by 90 percent to 2.5 ppm. An oxidation catalyst (OC) oxidizes 90 percent of the CO emissions resulting in 6 ppm emission concentration. The OC also controls volatile organic compound (VOC) emissions. The proposed CTGs meet Best Available Control Technology (BACT) standards. The turbine stacks will be equipped with Continuous Emission Monitors (CEMs) to measure and report stack concentrations of NO_x, CO and oxygen.

The cooling tower will consist of three Baltimore Aircoil Company Model 31132C cells equipped with drift eliminators and operate only during 100 percent turbine load operating scenarios. The total flow rate of water through all cells of the cooling will be 8,500 gallons per minute (gpm). Conservatively, the total dissolved solids content of the cooling water is estimated to be 4,594 ppm by weight and the drift loss will be 0.085 gpm. This yields a PM emission rate of 0.2 lb/hr.

The black start generator will have a Cummins Model GTA38-G2 or equivalent natural gas fired engine producing 965 brake horsepower (bhp), see Appendix 6.2-F. The black start generator will exhaust through 19.17 foot tall stack with stack tip internal diameters of 1.17 feet. The nominal exhaust temperature will be approximately 1,123 °F with an exhaust exit velocity of 103 ft/sec. The black start generator is emergency equipment and will be run one–half hour per month for testing purposes.

The emergency fire water pump will have a Cummins Model CFP11E-F10 or equivalent Ultralow Sulfur Diesel (ULSD) fired engine rated at 373 bhp, see Appendix 6.2-G. The emergency fire water pump will exhaust through an 18 foot tall stack with a stack tip internal diameter of 0.5 feet. The nominal exhaust temperature will be approximately 917 °F with an exhaust exit velocity of 165 ft/sec. In chemical composition, ULSD is a fractional distillate of crude oil between 200 degrees Celsius (ºC) and 350 ºC at atmospheric pressure. As such, ULSD is chemically composed of a variety of low volatility aliphatic hydrocarbons (86 to 88 percent

carbon, 12 to 13 percent hydrogen by weight) with a maximum sulfur content of 15 parts per million by weight (ppmw). ULSD has low nitrogen content (<0.1 percent) and low ash content (<0.001 percent). The fire water pump is emergency equipment and will be run one–half hour per week for testing.

6.2.4.4 Commissioning Emissions

The commissioning emissions for the project CTGs burning natural gas are based on a range of start up operating conditions provided by GE. Detailed commissioning scenarios and emission estimates are provided in Table 6.2C-11 of Appendix 6.2-C.

The commissioning of each turbine will take place under GE supervision. Commissioning will consist of the following test periods.

- First fire of the unit, where each unit is operated on fuel at speeds ranging from minimum idle to full speed at no load and not tied to the grid. Correct electrical phase rotation is established and systems are checked out and tuned (e.g. fuel gas compressors and the gas turbine fuel system). One 12-hour day per unit.

- Synchronization, where the unit is tied to the grid and operated at low load (<15 MW with no water injection and SCR operation). Controls are tuned during this phase to establish reliable starting and stopping of the unit. Two 12-hour days per unit.

- Low-load to full-load operation (approximately 1.5 MW to full-load, no SCR operation). Water injection and watering schedule are established during this phase to establish the desired gas turbine emissions profile. The gas turbine and generator excitation system controls are tuned to provide desired response. One 6-hour day per unit.

- Low-load to full-load operation (> 15 MW to full-load), with water injection and SCR in operation. The SCR is commissioned and tuned. One 6-hour day per unit.

- Power augmentation equipment (SPRINT and inlet chilling systems) are commissioned and tuned. SCR is re-tuned if necessary to account for power augmentation equipment. One 12-hour day per unit.

Only one unit will be commissioned at a time until both units can operate with functioning SCR systems. This will ensure methodical start-up and minimize instantaneous emissions.

The following is a summary of the emission estimates.

Table 6.2-10 – Summary of Commissioning Emissions(1)

COMMISSIONING EMISSIONS (TONS)	NO_X	CO	VOC	PM_{10}	$PM_{2.5}$	SO_X
Planned (Each Turbine)	0.635	0.24	0.015	0.05	0.05	0.015
Planned (Total)	1.27	0.48	0.03	0.10	0.10	0.03
Permitted (Total)	4.24	1.61	0.11	0.32	0.32	0.09

(1) Reference Appendix 3.2-C - Table 3.2C-11 for detailed calculations

The planned commissioning duration is expected to be about 60 hours for each turbine. However, to account for potentially longer testing requirements, 200 hours of commissioning for each turbine will be provisioned in the permit. It is important to note that commissioning emissions are worst-case, one-time emissions that will occur within a short 4 week window and only one turbine at a time will be operated during commissioning.

6.2.4.5 Commissioning Impact Analyses

Commissioning impacts were evaluated using all 35 cases of turbine operating conditions that can occur during start-up. Appendix 6.2–D presents the modeling emission inputs for all phases of the Project. Each turbine was modeled independently. Impacts for all applicable criteria pollutants and averaging periods are shown in Tables 6.2-11 and 6.2-12 for Turbine #1 and Turbine #2 respectively. Values listed are the higher impact predicted by AERMOD using either the 2002 or 2003 Gregory Canyon meteorological data.

Case 100 in Tables 6.2-11 and 6.2-12 represent each turbine being operated at full load, with water injection for NO_x control and inlet air cooling with SPRINT. Cases 101 to 109 are variations of Case 100 with reduced load. Cases 110 to 116 are with the turbines operating at various loads with water injection, but without SPRINT. Cases 117 to 134 are with the turbines operating at various loads with no water injection. The complete GE profiles for all 35 cases are provided in Appendix 6.2-C.

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Table 6.2–11 – Summary for Project Commissioning: Turbine #1

		Concentration (µg/m³)																
		CO				NO_2		PM_{10}			$PM_{2.5}$		SO_2					
	Case	1-Hour		8-Hour		1-Hour	Annual	24-Hour		Annual	24-Hour	Annual	1-Hour	3-Hour		24-Hour		Annual
		H1H	H2H	H1H	H2H	H1H	H1H	H1H	H2H	H1H	H8H	H1H	H1H	H1H	H2H	H1H	H2H	H1H
Commissioning Turbine #1	100	99.7	73.7	20.4	15.4	58.5	0.0282	0.382	0.303	0.00175	0.191	0.00175	2.27	0.757	0.559	0.142	0.112	0.000650
	101	38.8	27.9	8.10	6.16	59.8	0.0272	0.370	0.287	0.00178	0.188	0.00178	2.07	0.689	0.494	0.131	0.102	0.000630
	102	65.7	46.6	13.8	10.5	60.3	0.0273	0.369	0.287	0.00181	0.189	0.00181	2.00	0.667	0.473	0.128	0.0996	0.000630
	103	64.2	44.8	13.6	10.4	60.8	0.0273	0.365	0.286	0.00183	0.190	0.00183	1.95	0.651	0.455	0.125	0.0981	0.000630
	104	31.5	22.0	6.66	5.10	61.3	0.0274	0.362	0.285	0.00186	0.190	0.00186	1.92	0.640	0.448	0.123	0.0966	0.000630
	105	35.4	24.9	7.49	5.74	60.3	0.0273	0.358	0.283	0.00189	0.191	0.00189	1.88	0.628	0.441	0.120	0.0949	0.000630
	106	60.0	42.1	12.8	9.75	58.9	0.0274	0.356	0.281	0.00192	0.191	0.00192	1.84	0.613	0.430	0.118	0.0929	0.000630
	107	58.3	40.8	12.6	9.49	57.4	0.0278	0.355	0.278	0.00198	0.191	0.00198	1.77	0.591	0.414	0.115	0.0897	0.000640
	108	28.2	20.0	6.19	4.61	55.7	0.0279	0.355	0.274	0.00202	0.191	0.00202	1.72	0.573	0.406	0.113	0.0871	0.000640
	109	31.4	22.6	6.99	5.13	54.1	0.0279	0.353	0.269	0.00205	0.190	0.00205	1.66	0.553	0.399	0.110	0.0843	0.000640
	110	51.7	37.5	11.6	8.44	51.2	0.0269	0.347	0.264	0.00205	0.187	0.00205	1.59	0.529	0.383	0.106	0.0805	0.000620
	111	50.0	36.2	11.3	8.10	49.1	0.0271	0.406	0.258	0.00210	0.186	0.00210	1.54	0.512	0.371	0.122	0.0773	0.000630
	112	24.2	17.4	5.51	3.86	47.0	0.0270	0.421	0.251	0.00213	0.183	0.00213	1.48	0.495	0.356	0.124	0.0738	0.000620
	113	26.8	19.3	6.14	4.21	44.6	0.0269	0.405	0.242	0.00216	0.175	0.00216	1.43	0.476	0.344	0.117	0.0699	0.000620
	114	44.6	32.7	10.3	6.90	42.1	0.0265	0.399	0.234	0.00217	0.167	0.00217	1.36	0.454	0.333	0.112	0.0657	0.000610
	115	42.5	31.8	9.88	6.49	39.5	0.0257	0.400	0.225	0.00217	0.169	0.00217	1.29	0.430	0.321	0.109	0.0612	0.000600
	116	20.1	15.3	4.71	3.08	36.9	0.0253	0.383	0.218	0.00218	0.169	0.00218	1.24	0.412	0.313	0.104	0.0589	0.000590
	117	22.1	16.8	5.18	3.38	70.9	0.0769	0.380	0.217	0.00217	0.168	0.00217	1.19	0.396	0.301	0.0996	0.0569	0.000560
	118	38.2	29.1	8.97	5.86	70.7	0.0759	0.378	0.217	0.00217	0.168	0.00217	1.16	0.388	0.295	0.0976	0.0560	0.000560
	119	37.4	28.5	8.80	5.74	70.0	0.0728	0.371	0.217	0.00217	0.169	0.00217	1.14	0.381	0.291	0.0954	0.0559	0.000560
	120	18.3	14.0	4.31	2.80	69.3	0.0695	0.361	0.216	0.00217	0.169	0.00217	1.12	0.375	0.287	0.0929	0.0557	0.000550
	121	17.9	13.7	4.22	2.74	68.5	0.0662	0.353	0.217	0.00216	0.169	0.00216	1.08	0.361	0.277	0.0884	0.0543	0.000550
	122	17.5	13.5	4.13	2.67	67.8	0.0629	0.343	0.217	0.00215	0.168	0.00215	1.07	0.355	0.274	0.0858	0.0544	0.000540
	123	17.1	13.2	4.02	2.60	67.0	0.0594	0.334	0.218	0.00214	0.166	0.00214	1.05	0.349	0.271	0.0836	0.0545	0.000530
	124	16.6	13.0	3.92	2.53	66.2	0.0561	0.328	0.217	0.00213	0.165	0.00213	1.03	0.343	0.268	0.0821	0.0542	0.000530
	125	16.2	12.8	3.82	2.45	64.4	0.0526	0.323	0.215	0.00212	0.163	0.00212	0.984	0.328	0.260	0.0786	0.0524	0.000520
	126	15.7	12.5	3.69	2.37	58.1	0.0492	0.319	0.216	0.00212	0.163	0.00212	0.964	0.321	0.257	0.0771	0.0522	0.000510
	127	15.1	12.2	3.57	2.27	52.0	0.0457	0.314	0.216	0.00212	0.161	0.00212	0.916	0.305	0.246	0.0735	0.0507	0.000500
	128	14.5	11.8	3.43	2.18	46.3	0.0422	0.320	0.217	0.00212	0.161	0.00212	0.893	0.298	0.242	0.0744	0.0505	0.000490
	129	13.9	11.4	3.29	2.16	41.0	0.0389	0.312	0.217	0.00212	0.159	0.00212	0.841	0.280	0.230	0.0702	0.0487	0.000480
	130	13.3	11.0	3.15	2.14	37.4	0.0356	0.308	0.216	0.00210	0.156	0.00210	0.815	0.272	0.225	0.0690	0.0483	0.000470
	131	12.7	10.6	3.03	2.11	36.3	0.0325	0.305	0.216	0.00209	0.155	0.00209	0.790	0.263	0.219	0.0676	0.0478	0.000460
	132	12.5	10.4	3.00	2.10	35.3	0.0308	0.303	0.216	0.00208	0.154	0.00208	0.767	0.256	0.214	0.0658	0.0468	0.000450
	133	12.5	10.4	3.00	2.10	35.3	0.0308	0.303	0.216	0.00208	0.154	0.00208	0.767	0.256	0.214	0.0658	0.0468	0.000450
	134	12.5	10.4	3.00	2.10	35.3	0.0308	0.303	0.216	0.00208	0.154	0.00208	0.767	0.256	0.214	0.0658	0.0468	0.000450
Maximum		99.7	73.7	20.4	15.4	70.9	0.0769	0.421	0.303	0.00218	0.191	0.00218	2.27	0.757	0.559	0.142	0.112	0.000650
CA Signif. Level		2,000	---	500	---	---	1	5	---	1	---	---	---	---	---	5	---	1
National Signif. Level		2,000	---	500	---	---	1	5	---	1	---	---	---	25	---	5	---	1
Background		6,785	6,785	4,152	4,152	143.1	33.9	68.0	68.0	26.9	32.7	13.4	105	78.0	78.0	23.6	23.6	10.5
Max + Background		6,885	6,859	4,172	4,167	214	34.0	68.4	68.3	26.9	32.9	13.4	107	78.8	78.6	23.7	23.7	10.5
California AAQS		23,000	---	10,000	---	339	57	50	---	20	---	12	655	---	---	105	---	---
National AAQS		---	40,000	---	10,000	---	100	---	150	---	35	15	---	---	1,300	---	365	80

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Table 6.2–12 – Air Modeling Summary for Project Commissioning: Turbine #2

		Concentration (µg/m³)																
		CO				NO_2		PM_{10}			$PM_{2.5}$		SO_2					
	Case	1-Hour		8-Hour		1-Hour	Annual	24-Hour		Annual	24-Hour	Annual	1-Hour	3-Hour		24-Hour		Annual
		H1H	H2H	H1H	H2H	H1H	H1H	H1H	H2H	H1H	H8H	H1H	H1H	H1H	H2H	H1H	H2H	H1H
Commissioning Turbine #2	100	99.4	71.8	19.3	14.5	57.7	0.0286	0.369	0.275	0.00178	0.174	0.00178	2.26	0.755	0.545	0.137	0.102	0.000660
	101	39.1	27.2	7.69	5.79	59.0	0.0279	0.357	0.256	0.00183	0.174	0.00183	2.08	0.693	0.482	0.126	0.0905	0.000640
	102	66.5	45.5	13.1	9.92	59.6	0.0282	0.356	0.250	0.00187	0.171	0.00187	2.02	0.674	0.461	0.123	0.0868	0.000650
	103	65.0	43.7	13.0	9.76	60.1	0.0283	0.354	0.248	0.00190	0.167	0.00190	1.98	0.660	0.444	0.122	0.0851	0.000650
	104	31.7	20.9	6.44	4.79	60.6	0.0286	0.356	0.247	0.00194	0.168	0.00194	1.94	0.645	0.425	0.121	0.0839	0.000660
	105	35.5	23.3	7.34	5.40	61.1	0.0287	0.357	0.246	0.00199	0.168	0.00199	1.89	0.629	0.413	0.120	0.0826	0.000660
	106	59.7	39.8	12.6	9.16	61.5	0.0290	0.358	0.245	0.00204	0.169	0.00204	1.83	0.611	0.407	0.118	0.0811	0.000670
	107	57.6	39.2	12.4	8.91	61.5	0.0290	0.358	0.243	0.00207	0.169	0.00207	1.75	0.584	0.397	0.116	0.0786	0.000670
	108	28.0	19.2	6.12	4.32	59.7	0.0290	0.358	0.241	0.00209	0.168	0.00209	1.70	0.568	0.390	0.113	0.0766	0.000670
	109	31.2	21.6	6.91	4.81	57.9	0.0289	0.355	0.238	0.00212	0.167	0.00212	1.65	0.550	0.381	0.111	0.0744	0.000670
	110	51.5	35.8	11.5	7.92	54.8	0.0277	0.350	0.233	0.00210	0.164	0.00210	1.58	0.526	0.365	0.107	0.0712	0.000640
	111	49.5	34.7	11.2	7.59	52.7	0.0275	0.347	0.229	0.00213	0.163	0.00213	1.52	0.507	0.355	0.104	0.0687	0.000640
	112	23.7	16.7	5.44	3.63	50.4	0.0271	0.343	0.225	0.00214	0.161	0.00214	1.45	0.485	0.341	0.101	0.0660	0.000630
	113	26.0	18.4	6.06	3.99	47.8	0.0267	0.337	0.219	0.00215	0.158	0.00215	1.38	0.461	0.328	0.0973	0.0631	0.000620
	114	42.7	31.0	10.1	6.61	45.2	0.0263	0.331	0.212	0.00215	0.154	0.00215	1.30	0.435	0.316	0.0931	0.0597	0.000610
	115	40.2	30.3	9.73	6.26	42.5	0.0256	0.325	0.206	0.00216	0.153	0.00216	1.22	0.407	0.306	0.0884	0.0562	0.000590
	116	19.0	14.7	4.64	2.94	39.6	0.0250	0.314	0.200	0.00216	0.151	0.00216	1.17	0.390	0.300	0.0849	0.0541	0.000580
	117	20.9	16.2	5.10	3.22	70.7	0.0760	0.311	0.199	0.00214	0.150	0.00214	1.12	0.374	0.290	0.0817	0.0523	0.000560
	118	36.2	28.0	8.83	5.58	70.5	0.0750	0.310	0.199	0.00214	0.150	0.00214	1.10	0.367	0.285	0.0801	0.0514	0.000560
	119	35.4	27.7	8.66	5.44	69.7	0.0720	0.307	0.199	0.00214	0.150	0.00214	1.08	0.361	0.283	0.0789	0.0513	0.000550
	120	17.2	13.7	4.24	2.65	68.9	0.0684	0.302	0.199	0.00213	0.149	0.00213	1.06	0.354	0.281	0.0776	0.0511	0.000540
	121	16.8	13.5	4.15	2.58	68.2	0.0651	0.298	0.199	0.00212	0.149	0.00212	1.02	0.340	0.272	0.0745	0.0498	0.000540
	122	16.4	13.3	4.06	2.50	67.3	0.0618	0.293	0.199	0.00212	0.148	0.00212	0.998	0.333	0.270	0.0732	0.0497	0.000530
	123	15.9	13.1	3.95	2.42	66.5	0.0582	0.287	0.198	0.00210	0.147	0.00210	0.976	0.325	0.267	0.0718	0.0495	0.000520
	124	15.4	12.9	3.85	2.39	65.7	0.0548	0.284	0.197	0.00208	0.146	0.00208	0.954	0.318	0.266	0.0710	0.0494	0.000510
	125	14.9	12.6	3.75	2.36	64.8	0.0512	0.283	0.197	0.00206	0.144	0.00206	0.906	0.302	0.256	0.0688	0.0479	0.000500
	126	14.3	12.3	3.63	2.34	62.5	0.0479	0.282	0.198	0.00206	0.144	0.00206	0.882	0.294	0.253	0.0680	0.0478	0.000500
	127	13.7	12.0	3.50	2.31	55.9	0.0444	0.277	0.198	0.00206	0.143	0.00206	0.831	0.277	0.243	0.0648	0.0464	0.000490
	128	13.1	11.7	3.41	2.27	49.8	0.0409	0.272	0.199	0.00205	0.142	0.00205	0.804	0.268	0.240	0.0633	0.0462	0.000480
	129	12.5	11.4	3.36	2.23	44.1	0.0375	0.267	0.198	0.00204	0.140	0.00204	0.754	0.251	0.229	0.0600	0.0445	0.000460
	130	11.9	11.0	3.30	2.19	40.9	0.0343	0.266	0.197	0.00202	0.140	0.00202	0.730	0.243	0.225	0.0596	0.0441	0.000450
	131	11.6	10.6	3.24	2.15	38.0	0.0313	0.268	0.197	0.00201	0.139	0.00201	0.720	0.240	0.220	0.0592	0.0436	0.000440
	132	11.3	10.4	3.20	2.12	36.8	0.0296	0.267	0.197	0.00201	0.138	0.00201	0.693	0.231	0.214	0.0580	0.0427	0.000430
	133	11.3	10.4	3.21	2.12	36.7	0.0296	0.267	0.197	0.00201	0.138	0.00201	0.693	0.231	0.214	0.0581	0.0427	0.000430
	134	11.3	10.4	3.21	2.12	36.7	0.0296	0.267	0.197	0.00201	0.138	0.00201	0.693	0.231	0.214	0.0581	0.0427	0.000430
Maximum		99.4	71.8	19.3	14.5	70.7	0.0760	0.369	0.275	0.00216	0.174	0.00216	2.26	0.755	0.545	0.137	0.102	0.000670
CA Signif. Level		2000	---	500.0	---	---	1.00	5.00	---	1.00	---	---	---	---	---	5.00	---	1.00
National Signif. Level		2000	---	500.0	---	---	1.00	5.00	---	1.00	---	---	---	25.0	---	5.00	---	1.00
Background		6,785	6,785	4,152	4,152	143.1	33.9	68.0	68.0	26.9	32.7	13.4	105.0	78.0	78.0	23.6	23.6	10.5
Max + Background		6,884	6,857	4,171	4,167	213.8	34.0	68.4	68.3	26.9	32.9	13.4	107.3	78.8	78.5	23.7	23.7	10.5
California AAQS		23,000	---	10,000	---	339	57	50	---	20	---	12	655	---	---	105	---	---
National AAQS		---	40,000	---	10,000	---	100	---	150	---	35	15	---	---	1,300	---	365	80

Except for PM, the predicted concentrations for all pollutants at all applicable averaging periods will be below the current ambient air quality standards. For PM_{10}, the highest measured ambient concentration in the last three years is above the CAAQS; however, the highest predicted incremental increase is below the significant threshold of 5 µg/m³. Likewise for $PM_{2.5}$, the highest measured ambient concentration in the last three years is above the CAAQS; however, the estimated emission rates are below the significance thresholds of 10 tpy or 55 lb/day.

6.2.4.6 Operational Emissions

Tables 6.2–13 through 6.2–16 summarize the emission rates for the facility in the operational phase. Both the average and the maximum permitted annual facility emissions are provided. Appendix 6.2-C includes detailed calculations for each emission source.

Table 6.2-13 – Summary of Maximum Hourly Operational Emissions

POLLUTANT	NO_X	CO	VOC	$PM_{10/2.5}$	SO_X
Turbines (lb/hr)	30.73	30.28	4.70	6.14	1.77
Black-Start Engine (lb/hr)	1.39	1.85	0.31	0.04	0.008
Fire-Pump Engine (lb/hr)	1.58	0.31	0.0003	0.04	0.001
Chiller Cooling Tower (lb/hr)	-	-	-	0.20	-
Water Trucks (lb/hr)	2.01	0.62	0.16	0.10	0.002
Maximum Facility Hourly (lb/hr)	**35.70**	**33.05**	**5.16**	**6.51**	**1.78**

(1) Reference Tables 6.2C-12 to 15 for detailed calculations and notes.

Table 6.2-14 – Summary of Maximum Daily Operational Emissions

POLLUTANT	NO_X	CO	VOC	$PM_{10/2.5}$	SO_X
Turbines (lb/day)	282.5	365.3	34.9	132.8	47.2
Black-Start Engine (lb/day)	1.39	1.85	0.31	0.04	0.008
Fire-Pump Engine (lb/day)	1.58	0.31	0.0003	0.04	0.001
Chiller Cooling Tower (lb/day)	-	-	-	4.69	-
Water Trucks (lb/day)	48.21	14.77	3.79	2.30	0.05
Maximum Facility Daily (lb/day)	**333.71**	**382.26**	**38.96**	**139.91**	**47.26**

(1) Reference Tables 6.2C-12 to 15 for detailed calculations and notes.
(2) Over 99 percent of PM_{10} emissions are $PM_{2.5}$ for natural gas combustion source (CARB); therefore, these values are applicable to both PM_{10} and $PM_{2.5}$.

Table 6.2-15 – Summary of Annual Operational Emissions(1)

POLLUTANT	NO_X	CO	VOC	$PM_{10/2.5}$	SO_X
Turbines: Maximum (lb/yr)	35,413	45,630	3,938	17,550	6,336
Turbines: Expected (lb/yr)	11,448	14,725	1,335	5,508	1,974
Black-Start Engine (lb/yr)	19.39	25.90	4.27	0.56	0.12
Fire-Pump Engine (lb/yr)	81.94	15.92	0.01	1.94	0.05
Chiller Cooling Tower (lb/yr)	-	-	-	625	-
Water Trucks Maximum (lb/yr)	10,043	3,077	790	479	10
Water Trucks Expected (lb/yr)	2,009	615	158	96	2
Maximum Facility Annual (lb/yr)	41,942	47,641	4,448	18,484	6,342
Maximum Facility Annual (tpy)	**20.97**	**23.82**	**2.22**	**9.24**	**3.17**
Average Facility Annual (tpy)	**6.77**	**7.86**	**0.75**	**3.11**	**0.99**

(1) Reference Tables 6.2C-12 to 15 for detailed calculations and notes.

6.2.4.7 Operation Impact Analyses

The air quality impacts associated with the operation of the facility were evaluated using AERMOD and the meteorological data provided by SDAPCD. The results are summarized in Table 6.2-16. The modeling inputs are provided in Appendix 6.2-D and the modeling files are included on compact disk (Appendix 6.2-E).

Table 6.2–16 – Summary of Modeling Results for Facility Operation

				Concentration (µg/m³)																
				CO				NO_2		PM_{10}			$PM_{2.5}$		SO_2					
	Turbine 1 Mode	Turbine 2 Mode	Load	1-Hour		8-Hour		1-Hour	Annual	24-Hour		Annual	24-Hour	Annual	1-Hour	3-Hour		24-Hour		Annual
				H1H	H2H	H1H	H2H	H1H	H1H	H1H	H2H	H1H	H8H	H1H	H1H	H1H	H2H	H1H	H2H	H1H
Operation A (1-hr)	Base Load	Base Load	50%	52.7	45.7	---	---	58.3	---	---	---	---	---	---	4.42	---	---	---	---	---
	Base Load	Base Load	75%	52.7	45.7	---	---	58.3	---	---	---	---	---	---	5.49	---	---	---	---	---
	Base Load	Base Load	100%	52.7	45.8	---	---	58.3	---	---	---	---	---	---	6.73	---	---	---	---	---
Operation B (1-hr)	Base Load	Start/Stop	50%	70.7	65.7	---	---	54.6	---	---	---	---	---	---	4.98	---	---	---	---	---
	Base Load	Start/Stop	75%	71.8	63.2	---	---	54.6	---	---	---	---	---	---	5.56	---	---	---	---	---
	Base Load	Start/Stop	100%	78.1	62.7	---	---	55.0	---	---	---	---	---	---	6.65	---	---	---	---	---
Operation C (1-hr)	Start/Stop	Base Load	50%	73.9	66.5	---	---	54.6	---	---	---	---	---	---	5.00	---	---	---	---	---
	Start/Stop	Base Load	75%	70.0	63.9	---	---	54.6	---	---	---	---	---	---	5.55	---	---	---	---	---
	Start/Stop	Base Load	100%	76.6	64.0	---	---	55.1	---	---	---	---	---	---	6.65	---	---	---	---	---
Operation D (1-hr)	Start/Stop	Start/Stop	50%	108.7	101.2	---	---	57.3	---	---	---	---	---	---	5.55	---	---	---	---	---
	Start/Stop	Start/Stop	75%	106.0	91.8	---	---	54.7	---	---	---	---	---	---	5.62	---	---	---	---	---
	Start/Stop	Start/Stop	100%	107.6	84.7	---	---	54.6	---	---	---	---	---	---	6.57	---	---	---	---	---
Operation E (Periods Longer than 1-hr)	All Modes	All Modes	50%	---	---	21.7	19.5	---	0.387	2.43	2.15	0.202	1.75	0.202	---	2.78	2.57	0.721	0.640	0.0609
	All Modes	All Modes	75%	---	---	21.1	19.2	---	0.422	2.53	2.28	0.215	1.83	0.215	---	3.06	2.76	0.830	0.748	0.0718
	All Modes	All Modes	100%	---	---	22.0	20.1	---	0.464	2.72	2.50	0.235	1.96	0.235	---	3.64	2.97	0.943	0.840	0.0823
Maximum				108.7	101.2	22.0	20.1	58.3	0.464	2.72	2.50	0.235	1.96	0.235	6.73	3.64	2.97	0.943	0.840	0.0823
CA Signif. Level				2,000	---	500	---	---	1	5	---	1	---	---	---	---	---	5	---	1
National Signif. Level				2,000	---	500	---	---	1	5	---	1	---	---	---	25	---	5	---	1
Background				6,785	6,785	4,152	4,152	143.1	33.9	68.0	68.0	26.9	32.7	13.4	105	78	78	23.6	23.6	10.5
Max + Background				6,894	6,886	4,174	4,172	201	34.4	70.7	70.5	27.1	34.7	13.6	112	81.6	81.0	24.5	24.4	10.6
California AAQS				23,000	---	10,000	---	339	57	50	---	20	---	12	655	---	---	105	---	---
National AAQS				---	40,000	---	10,000	---	100	---	150	N/A	35	15	---	---	1,300	---	365	80

Except for PM, the predicted impacts for all pollutants at all applicable averaging periods will be below the current most stringent ambient air quality standards. In the case of PM emissions, the existing background concentrations, which are based on the highest reading monitored in downtown Escondido during the last three years, already exceed the ambient air quality standard. However, the maximum facility predicted PM concentrations are below the significance incremental threshold of 5.0 µg/m^3 for the 24-hour standard and 1.0 µg/m^3 for the annual standard. An analysis of the coincident PM_{10} predicted concentrations and the monitored concentrations during the modeling period found that only one monitoring day (June 26, 2003) with a reported monitored concentration of 49 µg/m^3 had the potential (monitored concentration between 48 and 50 µg/m^3) to become an additional PM_{10} CAAQS violation day because of the contribution from the Project. The maximum predicted concentration on that day was 0.62 µg/m^3, resulting in a total predicted concentration (predicted plus observed background) of 49.6 µg/m^3, and thus no additional violations of the CAAQS are attributable to the Project.

6.2.4.8 Cumulative Air Quality Impacts Analysis

In addition to impacts associated with the Project, potential cumulative impacts were evaluated by considering all other applicable projects. For this evaluation, the SDAPCD was contacted and has provided a list of permit applications filed since 2006 from facilities within 6 miles of the Project site. This list would include new facilities as well as any modifications proposed for existing facilities. It also includes projects that are at different stages of development, but have sufficient commitment to warrant the filing for authorities to construct.

With this inquiry, the only applications found were a portable thermal oxidizer proposed for soil remediation in Escondido and a dust collector for a spent abrasive handling and recycling system in the city of Vista. There appear to be no other sources of potential emission proposed with the SDAPCD.

A review of potential projects listed with the County of San Diego Department of Planning and Land Use (DPLU) and SDAPCD as described in Section 6.1 reveals two potential projects that can have air quality impacts. The primary projects are the Gregory Canyon Landfill and the Rosemary's Mountain Quarry projects. These projects will have particulate emission as well as products of combustion from earth moving and transport equipment. The Gregory Canyon Landfill project has recently filed a permit application with the SDAPCD. Significant impacts from the landfill are expected to be at their fenceline and are not expected to overlap with the Project's impacts. The Rosemary's Mountain Quarry site is sufficiently far west of the Project site and is not expected to add significant impact to the Orange Grove Project. Construction on the quarry began in February 2008.

Two additional projects that can potentially have an air quality impact are a back-up generator proposed for a Verizon Cellular Tower and the Fallbrook Renewable Energy Facility (FREF). The backup nature of the cell tower generator will however not add any significant impacts to the Project. The FREF has not yet submitted an application to the CEC, and thus its potential impacts cannot yet be quantified but are not expected to significantly contribute to air quality concentrations in the area surrounding the Orange Grove Energy Project.

In addition to the absence of projects for cumulative analysis, an aggregate mine on the opposite side of State Route (SR) 76 from the Project location has ceased operation. The property was purchased by the Pala tribe that has indicated that no future development is planned for the property during a recent meeting with tribal representatives. The cessation of this operation means that locally there would be less cumulative impacts, particularly in PM and NO_x emissions associated with the quarry operation and transportation activity.

6.2.4.9 Greenhouse Gas Emissions

Greenhouse gas (GHG) emissions from the turbines include CO_2, nitrous oxide (N_2O) and methane. Emission rates have been calculated from the fuel heating value. CARB lists the CO_2 emission factor for natural gas as 52.87 kilograms per million British thermal units (kg/MMBtu) (http://www.arb.ca.gov/regact/2007/ghg2007/modifications.pdf) or 116.6 pounds per million British thermal units (lb/MMBtu). EPA-AP-42 listed emission factors for N_2O and methane are 0.002 and 0.0086 lb/MMBtu, respectively. Each GHG is adjusted using the Global Warming Potential (GWP) to determine the carbon dioxide equivalents (CO_2e) (http://www.arb.ca.gov/regact/2007/ghg2007/modifications.pdf):

$$(116.6 \text{ lb } CO_2 / \text{MMBtu})(1 \text{ lb } CO_2e / 1 \text{ lb } CO_2) = 116.6 \text{ lb } CO_2e / \text{MMBtu}$$

$$(0.002 \text{ lb lb } N_2O / \text{MMBtu})(310 \text{ lb } CO_2e / 1\text{lb } N_2O) = 0.62 \text{ lb } CO_2e / \text{MMBtu}$$

$$(0.0086 \text{ lb } CH_4 / \text{MMBtu})(21 \text{ lb } CO_2e / 1 \text{ lb } CH_4) = 0.18 \text{ lb } CO_2e / \text{MMBtu}$$

This results in a total GHG estimate of 117.4 lb CO2e / MMBtu. Further, the facility will not utilize sulfur hexafluoride (SF_6) and thus no emissions of this gas will occur.

The fuel consumption rate for both turbines is 953.8 (477.9 each) British thermal units per kilowatt hour (Btu/kW-hr), the CO_2/GHG emission rate is therefore:

(953.8 Btu/kW-hr)(1,000 kW/MW)(117.4 lb/MMBtu)/(1E06) = 112.0 lb GHG/(MW-hr)

At a gross power output of 100.757 MW and a maximum operation of 3,200 hours per year for both turbines, the annual CO_2/GHG emissions are as follows.

(100.757 MW)(112.0 lb GHG/(MW-hr))(3,200 hr/yr)/(2000 lb/ton) = 18,056 tpy GHG

Please note this is an extremely conservative estimate since start-up and shutdown events included in the 3,200 hours will produce less GHG emissions.

6.2.5 Project Air Pollution Control and Mitigation Measures

The following section describes certain design features and measures incorporated into the Project and the construction phase of the facility. Collectively, these measures further reduce the facility's air quality impacts.

6.2.5.1 Construction

Consistent with good construction practices, the following measures will be applied for the Project during the construction phase.

- Air Quality Construction Mitigation Manager (AQCMM): Orange Grove Energy will designate and retain an onsite AQCMM who will be responsible for directing and documenting compliance with construction mitigation measures for the entire Project site and linear facility construction. The onsite AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates will have full access to all areas of construction on the Project site and linear facilities, and will have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM will not be terminated without written consent of the Commission Project Manager (CPM).

- At least 60 days prior to the start of ground disturbance, Orange Grove Energy will submit to the CPM for approval, the name, resume, qualifications, and contact information for the on-site AQCMM and all AQCMM Delegates. The AQCMM and all Delegates must be approved by the CPM before the start of ground disturbance.

- Air Quality Construction Mitigation Plan (AQCMP): Orange Grove Energy will provide an AQCMP, for approval, which details the steps that will be taken and the reporting requirements necessary to ensure compliance.

- Construction Fugitive Dust Control: The AQCMM will submit documentation to the CPM in each Monthly Compliance Report (MCR) that demonstrates compliance with the following mitigation measures for the purposes of preventing fugitive dust plumes from leaving the Project site and linear facility routes. Any deviation from the following mitigation measures will require prior CPM notification and approval.

    - All unpaved roads and disturbed areas in the Project and linear construction sites will be watered as frequently as necessary. The frequency of watering may be reduced or eliminated during periods of precipitation.

    - No vehicle will exceed 10 miles per hour within the construction site.

    - The construction site entrances will be posted with visible speed limit signs.

    - All construction equipment vehicle tires will be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.

    - Gravel ramps of at least 20 feet in length will be provided at the tire washing/cleaning station.

    - All unpaved exits from the construction site will be graveled or treated to prevent track-out to public roadways.

    - All construction vehicles will enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM.

    - Construction areas adjacent to any paved roadway will be provided with sandbags or other measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent run-off to roadways.

    - All soil storage piles and disturbed areas that remain inactive for longer than 10 days will be covered, or will be treated with appropriate dust suppressant compounds.

    - All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions will be provided with a cover, or the materials will be sufficiently wetted and loaded onto the trucks in a manner to provide at least 2 feet of freeboard.

    - Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) will be used on all construction areas that may be

disturbed. Any windbreaks installed to comply with this condition will remain in place until the soil is stabilized or permanently covered with vegetation.

- The area disturbed by clearing, grading, earth moving, or excavation operations will be minimized to prevent excessive amounts of dust.

- Pre-grading/excavation activities will include watering the area to be graded or excavated before commencement of grading or excavation operations. The applied water will penetrate sufficiently to minimize fugitive dust during grading activities.

- Fugitive dust produced during grading, excavation, and construction activities will be controlled by the following activities:

  1) Although not anticipated, if soil is hauled offsite, all trucks will be required to cover their loads as required by California Vehicle Code §23114.

  2) All graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved on-site roadways, will be treated to prevent fugitive dust. Treatment will include periodic watering, application of environmentally-safe soil stabilization materials, and/or roll-compaction as appropriate.

- Equipment idling time will not exceed 5 minutes.

- Orange Grove Energy will include in the MCR (1) a summary of all actions taken to maintain compliance with this condition, (2) copies of any complaints filed with the air district in relation to Project construction, and (3) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at Orange Grove Energy's discretion.

- Dust Plume Response Requirement: The AQCMM or an AQCMM Delegate will monitor construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (1) off the Project site or (2) 200 feet beyond the centerline of the construction of linear facilities indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMM or Delegate will implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed:

  Step 1: The AQCMM or Delegate will direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.

  Step 2: The AQCMM or Delegate will direct implementation of additional methods of dust suppression if Step 1 fails to result in adequate mitigation within 30 minutes of the original determination.

Step 3: The AQCMM or Delegate will direct a temporary shutdown of the activity causing the emissions if Step 2 fails to result in effective mitigation within 1 hour of the original determination. The activity will not restart until the AQCMM or Delegate is satisfied that appropriate additional mitigation or other Site conditions have changed so that visual dust plumes will not result upon restarting the shutdown source. The owner/operator may appeal to the CPM any directive from the AQCMM or Delegate to shut down an activity, provided that the shutdown will go into effect within 1 hour of the original determination, unless overruled by the CPM before that time.

- The AQCMP will include a section detailing how the additional mitigation measures will be accomplished within the time limits specified.

- Diesel-Fueled Engines Control: The AQCMM will submit to the CPM, in the MCR, a construction mitigation report that demonstrates compliance with the following mitigation measures for the purposes of controlling diesel construction-related emissions. Any deviation from the following mitigation measures will require prior CPM notification and approval.

  - All diesel-fueled engines used in the construction of the facility will be fueled only with ultra-low sulfur diesel, which contains no more than 15 ppm sulfur.

  - All diesel-fueled engines used in the construction of the facility will have clearly visible tags issued by the onsite AQCMM showing that the engine meets the conditions set forth herein.

  - All construction diesel engines greater than 25 horsepower (hp) will comply with CARB's Regulation for In-Use Off-Road Diesel Vehicles (California Code of Regulations (CCR) Title 13, Section 2449, Article 4.8) including the 5 minute idling limit.

    (1) There is no available soot filter that has been certified by either the CARB or EPA for the engine in question; or

    (2) The construction equipment is intended to be onsite for 10 days or less.

    (3) The CPM may grant relief from this requirement if the AQCMM can demonstrate that they have made a good faith effort to comply with this requirement and that compliance is not possible.

  - The use of a soot filter may be terminated immediately if one of the following conditions exists, provided that the CPM is informed within 10 working days of the termination:

    (1) The use of the soot filter is excessively reducing normal availability of the construction equipment due to increased downtime for maintenance, and/or reduced power output due to an excessive increase in backpressure.

(2) The soot filter is causing or is reasonably expected to cause significant engine damage.

(3) The soot filter is causing or is reasonably expected to cause a significant risk to workers or the public.

(4) Any other seriously detrimental cause which has the approval of the CPM prior to the termination being implemented.

(5) All heavy earthmoving equipment and heavy duty construction related trucks with engines meeting the requirements of (c) above will be properly maintained and the engines tuned to the engine manufacturer's specifications.

- All diesel heavy construction equipment will not remain idling for more than 5 minutes, to the extent practical.

- Orange Grove Energy will include in the MCR (1) a summary of all actions taken to maintain compliance with this condition, (2) copies of all diesel fuel purchase records, (3) a list of all heavy equipment used onsite during that month, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained, and (4) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition.

6.2.5.2 Commissioning

During the commissioning of the facility, the initial phase would be to stabilize the turbines prior to commissioning the ammonia injection system. Once the turbines are stabilized, ammonia injection will commence to optimize the operation of the SCR system. As presented above, air modeling results on the worst case commissioning conditions show that this process will have less than significant impacts. To further minimize potential emissions, the facility will apply the following measures:

- Limit the commissioning of the turbines to one unit at any one time.
- Minimize the extent of testing on the turbines prior to the commissioning of the SCR system.

6.2.5.3 Operation

Orange Grove Energy will use BACT for its emission units. As required by the SDAPCD, the proposed CTG will be controlled by water injection to the turbine to reduce NO_x formation. In addition, the turbines will be further controlled by the application of an oxidation catalyst reducing CO and VOC emissions and an SCR system reducing NO_x emissions. The cooling tower for the facility will have drift eliminators to reduce particulate matter emissions.

San Diego County has been successfully reducing air emissions basin-wide. Both the SDAPCD Ozone Attainment Plan (OAP) and the Regional Air Quality Control Strategy (RAQS) have been very effective as San Diego County has earned the distinction of making the greatest improvement in emission reduction. For its NSR program, the SDAPCD has consistently shown that actual non-bankable emission reductions in the County far exceed minor source emission increases from projects similar to the Project. Additionally, SDAPCD has adopted and implemented regulations and BACT requirements to further ensure the on-going air quality improvement in this region. Further, adding gas-fired modern peaking units also may lead to the reduced use or shut down of older less efficient, higher emitting generating units in San Diego County, such as the South Bay Power Plant. The California Independent System Operator (CAISO) has stated that with the addition of sufficient additional peaking and transmission capacity the current "must run" contract for South Bay could be removed as early as 2010 (letter from Yakout Mansour, President and CEO, CAISO to Mayor Cox, Chula Vista, January 28, 2008).

As a measure of good faith and in accordance with CEC's practice of requiring mitigation beyond air district regulations, Orange Grove Energy will undertake the following additional mitigation measures, to further augment San Diego County's OAP and the RAQS. These measures are designed to reduce emissions at levels that are equivalent to the projected average emission of the proposed facility, i.e. a 1:1 emissions reduction ratio for non-attainment pollutants and their pre-cursors emitted by operation of the Project (NO_x, SO_2, VOCs, PM_{10}).

Orange Grove Energy will offset its emissions of SO_2, NO_x, PM_{10}, and VOCs through the Carl Moyer mitigation fee program. The offsets are calculated for an assumed facility usage of 2,000 full load annual turbine hours. Table 6.2-17 presents the facility emissions (turbines, ancillary equipment) and water truck expected emissions (one heavy-heavy diesel truck each per hour of operations for reclaim water and fresh water).

Table 6.2-17 – Summary of Expected Annual Emissions (Tons per Year)

POLLUTANT	FACILITY EMISSIONS	WATER TRUCK EMISSIONS	TOTAL EMISSIONS
NO_x	5.77	1.00	6.77
SO_2	0.99	0.001	0.99
VOC	0.67	0.08	0.75
PM_{10}	3.06	0.05	3.11
Total	10.49	1.13	11.62

To mitigate these expected emissions of non-attainment pollutants and their precursors, Orange Grove Energy will provide an air quality fund to contribute to the SDAPCD Carl Moyer Program. The Carl Moyer Program will use these funds to provide incentives for actual emission reductions within the San Diego air basin. Recently the Chula Vista Upgrade Energy Project proposed funding for the Carl Moyer Program at $20,000 per ton of pollutant emissions. Orange Grove Energy proposes to fund the Carl Moyer Program at the same rate plus a 20 percent administrative fee. This results in a total of $278,880. These proposed measures will therefore provide additional assurances that this project will not have unmitigated air quality impacts.

6.2.6 Laws, Ordinances, Regulations and Standards

The applicable laws, ordinances, regulations and standards (LORS) on this Project are summarized in Table 6.2-18 below. Detailed discussions of compliance with federal, state and local requirements are provided in the following section.

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Table 6.2-18 – Laws, Ordinances, Regulations Standards and Permit Requirements

JURIS-DICTION	AUTHORITY	AGENCY[1]	REQUIREMENT(S)	COMPLIANCE	AFC SECTIONS AND PAGES
Federal	Clean Air Act (CAA) §160-169A and implementing regulations, Title 42 United States Code (USC) §7470-7491 (42 USC §7470-7491), Title 40 CFR Parts 51 & 52 Prevention of Significant Deterioration (PSD) Program	EPA	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.	The proposed Project emissions are below the applicability thresholds of PSD.	6.2.6.1.1 Page 6.2-32
	CAA §171-193, 42 USC §7501 et seq. (NSR)	SDAPCD with EPA 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.	Determination of Compliance (DOC) with conditions limiting emissions. Agency approval will be obtained before start of construction.	6.2.6.1.2 Page 6.2-33
	CAA §401 (Title IV), 42 USC §7651 (Acid Rain Program)	SDAPCD with EPA Oversight	Requires reductions in NO_x and SO_2 emissions.	DOC to be made with permit application to be submitted within 12 months after commencement of operations.	6.2.6.1.3 Page 6.2-33
	CAA §501 (Title V), 42 USC §7661 (Federal Operating Permits Program)	SDAPCD with EPA Oversight	Establishes comprehensive permit program for major stationary sources.	The proposed Project will not exceed the program thresholds; however, it will be issued a Title V compliant permit through the Acid Rain Program. Application to be submitted 12 months after commencement of operation.	6.2.6.1.4 Pages 6.2-33 to 6.2-34

1 Pursuant to 20 CCR Chapter 5 Appendix B Section (i)(1)(B): Each agency with jurisdiction to issue applicable permits and approvals or to enforce identified LORS and adopted local, regional and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the CEC to certify sites and related facilities.

JURIS-DICTION	AUTHORITY	AGENCY[1]	REQUIREMENT(S)	COMPLIANCE	AFC SECTIONS AND PAGES
	CAA §111, 42 USC §7411, 40 CFR Part 60 (New Source Performance Standards – NSPS)	SDAPCD with EPA Oversight	Establishes national standards of performance for new stationary sources.	DOC by SDAPCD with conditions limiting emissions. Approval will be obtained prior to start of construction.	6.2.6.1.5 Page 6.2-34
State	Health & Safety Code (H&SC) §44300-44384; CCR §93300-93347 (Toxic "Hot Spots" Act)	SDAPCD with CARB Oversight	Requires preparation and biennial updating of facility emission inventory of hazardous substances; HRA.	DOC will be completed through periodic SDAPCD inspection. A HRA has been completed and submitted with this AFC filing.	6.2.6.2.3 6.2.6.2.6 Pages 6.2-36 to 6.2-37
	17 CCR § 93115 (Airborne Toxic Control Measure [ATCM] for Stationary Compression Ignition Engines)	SDAPCD with CARB Oversight	Establishes emission and operational limits for diesel-fueled stationary compression ignition engines.	DOC with conditions limiting emissions and operation. Agency approval to be obtained before start of construction.	6.2.6.2.4 Page 6.2-34
	California Public Resources Code §25523(a); 20 CCR §§1752, 2300-2309 (CEC & CARB Memorandum of Understanding)	CEC	Requires CEC decision to include requirements to assure protection of the environmental including air quality.	DOC will be incorporated into the CEC decision documents for the CEC decision. DOC will also be made by SDAPCD prior to issuance of permits.	6.2.6.2.7 Page 6.2-37
Local	SDAPCD Rule 20.2 NSR – Non-Major Stationary Sources)	SDAPCD with CARB Oversight	NSR: Requires that pre-construction review be conducted for all proposed new or modified sources of air pollution, including BACT, and AQIA and PSD	DOC by SDAPCD with conditions limiting emissions. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42
	SDAPCD Rule 20.5 (Power Plants)	SDAPCD with CARB Oversight	SDAPCD coordination with CEC on permitting power plants. CEC to serve as the California Environmental Quality Act CEQA lead agency and SDAPCD to issue permit upon CEC issuance and adoption of an Initial Study.	CEC to complete CEQA analysis based on AFC. SDAPCD to evaluate and issue permit once the CEC completes CEQA analysis.	6.2.6.3.2 Pages 6.38 to 6.2-42
	SDAPCD Rule 50 (Visible Emissions)	SDAPCD with CARB Oversight	Limits visible emissions to no darker than Ringelmann No. 1 for periods greater than 3 minutes in any hour.	DOC by SDAPCD with conditions limiting emissions, controls and fuel type. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42

JURIS-DICTION	AUTHORITY	AGENCY[1]	REQUIREMENT(S)	COMPLIANCE	AFC SECTIONS AND PAGES
	SDAPCD Rule 51 (Nuisance)	SDAPCD with CARB Oversight	Prohibits emissions in quantities that adversely affect public health, other businesses, or property.	DOC by SDAPCD with conditions limiting emissions, controls and fuel type. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42
Local (Cont'd)	SDAPCD Rule 52 (Particulate Matter)	SDAPCD with CARB Oversight	Limits PM emissions from stationary sources.	DOC by SDAPCD with conditions limiting emissions, controls and fuel type. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42
	17 CCR § 93115 (ATCM for Stationary Compression Ignition Engines)	SDAPCD with CARB Oversight	Establishes emission and operational limits for diesel-fueled stationary compression ignition engines.	DOC with conditions limiting emissions and operation. Agency approval to be obtained before start of construction.	6.2.6.2.4 Page 6.2-36
	California Public Resources Code §25523(a); 20 CCR §§1752, 2300-2309 (CEC & CARB Memorandum of Understanding)	CEC	Requires CEC decision to include requirements to assure protection of the environmental including air quality.	DOC will be incorporated into the Initial Study for the Commission Decision. DOC will also be made by SDAPCD prior to issuance of permits.	6.2.6.2.7 Page 6.2-37
	SDAPCD Rule 20.2 (NSR – Non-Major Stationary Sources)	SDAPCD with CARB Oversight	NSR: Requires that pre-construction review be conducted for all proposed new or modified sources of air pollution, including BACT, and AQIA and PSD	DOC by SDAPCD with conditions limiting emissions. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42
	SDAPCD Rule 20.5 (Power Plants)	SDAPCD with CARB Oversight	SDAPCD coordination with CEC on permitting power plants. CEC to serve as the California Environmental Quality Act of 1970 (CEQA) lead agency and SDAPCD to issue permit upon CEC issuance and adoption of an Initial Study.	CEC to prepare and issue CEQA document based on AFC. SDAPCD to evaluate and issue permit once the CEQA document (Initial Study) is approved by CEC.	6.2.6.3.2 Pages 6.38 to 6.2-42
	SDAPCD Rule 50 (Visible Emissions)	SDAPCD with CARB Oversight	Limits visible emissions to no darker than Ringelmann No. 1 for periods greater than 3 minutes in any hour.	DOC by SDAPCD with conditions limiting emissions, controls and fuel type. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42

JURIS-DICTION	AUTHORITY	AGENCY[1]	REQUIREMENT(S)	COMPLIANCE	AFC SECTIONS AND PAGES
	SDAPCD Rule 51 (Nuisance)	SDAPCD with CARB Oversight	Prohibits emissions in quantities that adversely affect public health, other businesses, or property.	DOC by SDAPCD with conditions limiting emissions, controls and fuel type. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42
Local (Cont'd)	SDAPCD Rule 52 (Particulate Matter)	SDAPCD with CARB Oversight	Limits PM emissions from stationary sources.	DOC by SDAPCD with conditions limiting emissions, controls and fuel type. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42
	SDAPCD Rule 53 (Combustion Contaminants)	SDAPCD with CARB Oversight	Limits SO_2 emissions from stationary sources.	DOC by SDAPCD with conditions limiting emissions and fuel type. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42
	SDAPCD Rule 62 (Sulfur Content of Fuels)	SDAPCD with CARB Oversight	Limits the sulfur content of fuels combusted in stationary sources.	DOC by SDAPCD with conditions limiting fuel type. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42
	SDAPCD Rule 69.3.1 (Stationary Gas Turbines)	SDAPCD with CARB Oversight	Limits NO_x emissions from stationary gas turbines.	DOC by SDAPCD with conditions limiting emissions, controls and fuel type. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42
	SDAPCD Rule 69.4.1 (Stationary Reciprocating Internal Combustion Engines)	SDAPCD with CARB Oversight	Limits CO, NO_x, and VOC emissions from stationary reciprocating internal combustion engines.	DOC by SDAPCD with conditions limiting emissions and operating hours. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42
	SDAPCD Regulation X (NSPS: 40 CFR 60, Subpart KKKK, Stationary Gas Turbines)	SDAPCD with CARB Oversight	Requires monitoring of fuel, other operating parameters; limits NO_x and SO_2 and PM emissions, requires source testing, emissions monitoring, and recordkeeping.	DOC by SDAPCD with monitoring, source testing and recordkeeping conditions. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42

JURIS-DICTION	AUTHORITY	AGENCY[1]	REQUIREMENT(S)	COMPLIANCE	AFC SECTIONS AND PAGES
	SDAPCD Rule 1200 (Toxics – NSR)	SDAPCD with CARB Oversight	Requires that pre-construction review be conducted for all proposed new or modified sources of toxic air contaminants, including Best Available Control Technology for Toxics (T-BACT), and a HRA.	DOC by SDAPCD based on review of HRA completed for AFC and permit application. Agency approval will be obtained prior to start of construction.	6.2.6.3.2 Pages 6.38 to 6.2-42
	SDAPCD Rule 1412 (Federal Acid Rain Program Requirements)	SDAPCD with EPA Oversight	Implements acid rain regulations of CAA Title IV.	DOC to be made with permit application to be submitted within 24 months before commencement of operations.	6.2.6.3.2 Pages 6.38 to 6.2-42
Local (Cont'd)	SDAPCD Rule 1414 (Title V Applications)	SDAPCD with EPA Oversight	Implements operating permits requirements of CAA Title V.	Facility below Title V threshold but for Acid Rain Provision. Application to be submitted 12 months after commencement of operation.	6.2.6.3.2 Pages 6.38 to 6.2-42

Source: SDAPCD Rule 20.1 Table 20.1-11

6.2.6.1 Federal

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

- PSD
- NSR
- Title IV: Acid Rain Program
- Title V: Operating Permits
- NSPS
- National Emission Standards for Hazardous Air Pollutants (NESHAP)

6.2.6.1.1 PSD Program

Authority: CAA §160-169A, 42 USC §7470-7491; 40 CFR Parts 51 and 52. Administering Agency: EPA Region 9

Requirements: Requires 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). 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). This program is normally implemented at the local level through federal delegation, and is presently implemented in San Diego by EPA Region 9.

Conformance: The PSD trigger thresholds and the proposed Project emissions are provided in Table 6.2-19. As shown, the emissions for this Project are well below the respective thresholds, therefore, the PSD requirements will not apply to this project.

Table 6.2-19 - PSD Trigger Levels

AIR CONTAMINANT	PSD TRIGGER LEVELS (TON/YR)	PROJECT (TON/YR)
Particulate Matter (PM_{10})	250	9.1
Oxides of Nitrogen (NO_X)	250	17.8
Volatile Organic Compounds (VOC)	250	2.0
Oxides of Sulfur (SO_X)	250	3.2
Carbon Monoxide (CO)	250	22.8

6.2.6.1.2 New Source Review

Authority: CAA §171-193, 42 USC §7501 et seq.; 40 CFR Parts 51 and 52. Administering Agency: SDAPCD, with EPA Region 9 oversight

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. NSR jurisdiction has been delegated to the SDAPCD for all non-attainment pollutants.

Conformance: Refer to local LORS and conformance discussed below.

6.2.6.1.3 Acid Rain Program

Authority: CAA §401 (Title IV), 42 USC §7651. Administering Agency: SDAPCD, with EPA Region 9 oversight

Requirement: Requires the monitoring and reporting of 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.

Conformance: Refer to local LORS and conformance discussed below.

6.2.6.1.4 Title V Operating Permits Program

Authority: CAA §501 (Title V), 42 USC §7661. Administering Agency: SDAPCD, with EPA Region 9 oversight

Requirements: Requires the issuance of operating permits that identify all applicable federal performance, operating, monitoring, recordkeeping, and reporting requirements. Title V applies to major facilities (NSPS, NESHAP), Phase II acid rain facilities, subject solid waste incinerator facilities, and any facility listed by EPA as requiring a Title V permit. SDAPCD has received delegated authority for this program.

Conformance: The major source thresholds for San Diego County and the proposed Project emissions are presented in Table 6.2–20. The proposed plant will therefore not be a major source and will be evaluated by SDAPCD as a non–major source under Rule 20.2. However, the facility is subject to the Acid Rain requirements which are implemented through Title V. A permit application will therefore be submitted to the SDAPCD within 12 months of plant operation.

Table 6.2-20 - Major Stationary Source Thresholds

AIR CONTAMINANT	THRESHOLDS (TON/YR)	PROJECT (TON/YR)
Particulate Matter (PM_{10})	100	9.1
Oxides of Nitrogen (NO_X)	50	17.8
Volatile Organic Compounds (VOC)	50	2.0
Oxides of Sulfur (SO_X)	100	3.2
Carbon Monoxide (CO)	100	22.8
Lead (Pb)	100	0

Source: SDAPCD Rule 20.1 Table 20.1-6

6.2.6.1.5 National Standards of Performance for New Stationary Sources

Authority: Clean Air Act §111, 42 USC §7411; 40 CFR Part 60. Administering Agency: SDAPCD, with EPA Region 9 oversight

Requirements: Establishes standards of performance to limit the emission of criteria pollutants (air pollutants for which EPA 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 Subpart KKKK, Standards of Performance for Stationary Gas Turbines set limits on NO_x and SO_2 emissions.

Conformance: Standards will be incorporated into local permit conditions. Refer to local LORS and compliance discussion below.

6.2.6.1.6 National Emission Standards for Hazardous Air Pollutants

Authority: CAA §112, 42 USC §7412. Administering Agency: SDAPCD, with EPA Region 9 oversight

Requirements: Establishes national emission standards to limit emissions of HAPs, (air pollutants identified by EPA as causing or contributing to the adverse health effects of air pollution, but for which NAAQS have not been established) from major sources of HAPs in specific source categories. These standards are implemented at the local level with federal oversight. Only the NESHAP for combustion turbines, which limit formaldehyde emissions from turbines, are potentially applicable to a new power plant.

Conformance: The combustion 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 any one HAP or 25 tpy of all combined HAPs). Thus, NESHAP requirements will not be addressed further.

6.2.6.2 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 (APCDs); and to review and coordinate preparation of the SIP for achievement of the NAAQS. CARB has implemented the following state or federal stationary source regulatory programs in accordance with the requirements of the federal CAA and H&SC:

- SIP
- CAA
- TAC Program
- ATCM for Stationary Compression-Ignition Engines
- Nuisance Regulation
- Air Toxics "Hot Spots" Act
- CEC and CARB Memorandum of Understanding

6.2.6.2.1 State Implementation Plan

Authority: H&SC §39500 et seq. Administering Agency: SDAPCD, with CARB and EPA Region 9 oversight

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.

Conformance: The relevant SDAPCD Rules and Regulations that have been incorporated into the SIP are discussed with the local LORS below.

6.2.6.2.2 California Clean Air Act

Authority: H&SC §40910 – 40930. Administering Agency: SDAPCD, with CARB oversight

Requirements: Established in 1989, the California Clean Air Act 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.

Conformance: The relevant components of the SDAPCD Air Quality Plan are discussed with the local LORS below.

6.2.6.2.3 Toxic Air Contaminant Program

Authority: H&SC §39650 – 39675. Administering Agency: SDAPCD, with CARB oversight

Requirements: Established in 1983, the Toxic Air Contaminant Identification and Control Act created a two-step process to identify TAC and control their emissions. CARB identifies and prioritizes the pollutants to be considered for identification as TAC. CARB assesses the potential for human exposure to a substance, while the OEHHA evaluates the corresponding health effects. Both agencies collaborate in the preparation of a risk assessment report, which concludes 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 federally-identified HAPs as TAC. CARB reviews the emission sources of an identified TAC and, if necessary, develops ATCM to reduce the emissions.

Conformance: As a SDAPCD permitted source, the facility will submit from time to time the necessary information for the SDAPCD to estimate TAC emissions and perform the necessary HRA.

6.2.6.2.4 Airborne Toxic Control Measure for Stationary Compression-Ignition Engines

Authority: Title 17, CCR, §93115. Administering Agency: SDAPCD and CARB

Requirements: The purpose of the ATCM is to reduce diesel particulate matter (DPM) 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 bhp. This applies to the emergency diesel-fired engine pump specified for the Project. The ATCM requires the use of CARB-certified diesel fuel or equivalent, and limits emissions from, and operations of, compression ignition engines.

Conformance: Standards will be incorporated into local permit conditions. Refer to local LORS (SDAPCD Rule 62 & Rule 69.4.1) and conformance discussed below.

6.2.6.2.5 Nuisance Regulation

Authority: H&SC §41700. Administering Agency: SDAPCD and CARB

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."

Conformance: Stipulations will be incorporated into local permit conditions. Refer to local LORS (SDAPCD Rule 51) and conformance discussed below.

6.2.6.2.6 Air Toxic "Hot Spots" Act

Authority: H&SC §44300-44384; 17 CCR §93300-93347. Administering Agency: SDAPCD and CARB

Requirements: Established in 1987, the Air Toxics "Hot Spots" Information and Assessment Act supplements the toxic air contaminant 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 HRA, 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.

Conformance: The facility will submit the necessary plan and report as required. A HRA has been prepared and presented in Section 6.16 based on the maximum operating conditions of the facility.

6.2.6.2.7 CEC and CARB Memorandum of Understanding

Authority: PRC §25523(a); 20 CCR §1752, 1752.5, 2300-2309 and Div. 2, Chap. 5, Art. 1, Appendix B, Part (k). Administering Agency: CEC

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

Conformance: The air quality impacts of this Project have been evaluated and hereby presented with proposed mitigation.

6.2.6.3 San Diego Air Pollution Control District

When the state's air pollution statutes were reorganized in the mid-1960s, local air pollution districts were established in each county. There are three different types of districts: county (including the SDAPCD), regional, and unified. In addition, special 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 to do the following:

- Develop plans for meeting the NAAQS and California ambient air quality standards
- Develop control measures for non-vehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards

- Implement permit programs established for the construction, modification, and operation of sources of air pollution
- Enforce air pollution statutes and regulations governing non-vehicular sources
- Develop programs to reduce emissions from indirect sources

6.2.6.3.1 San Diego RAQS

Authority: H&SC §40914. Administering Agency: SDAPCD with EPA Region 9 and CARB oversight

Requirements: Air quality plans define the proposed strategies, including stationary source and transportation control measures and NSR rules that 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 SDAPCD Rules and Regulations below.

6.2.6.3.2 SDAPCD Rules and Regulations

Authority: H&SC §4000 et seq., H&SC §40200 et seq., indicated SDAPCD Rules. Administering Agency: SDAPCD with EPA Region 9 and CARB oversight

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

Authority to Construct SDAPCD 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 SDAPCD. Under Rule 20.5 (h) (Power Plants), this AFC serves as the application for the ATC for SDAPCD and the District's Final Determination of Compliance acts as an ATC for a power plant upon approval of the Project by the CEC.

Orange Grove Energy applied to SDAPCD on September 1, 2007 for an ATC. On January 8, 2008 SDAPCD issued a positive Application Completeness Determination (see Appendix 6.2–H) for all the proposed emission units. The previous application has been superseded by this AFC.

Review of New or Modified Sources Rule 20.2 (NSR – Non-Major Stationary Sources) – Implements the federal PSD and NSR requirements of the California Clean Air Act. The rule contains the following elements:

- BACT
- AQIA
- PSD
- Public Notice and Comment

Best Available Control Technology

As a NSR requirement under Rule 20.2, BACT applies to any new or modified source resulting in an emissions increase exceeding 10 lb/day. Since the projected emission rates for the Project exceed this threshold, BACT applies.

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

- Has been proven in field application and that is cost-effective unless not achievable; or
- Has been demonstrated, but not necessarily proven, in field applications, and that is cost-effective; or
- Is any control equipment, process modification, changes in raw material including alternate fuels, and substitution of equipment or processes with any equipment or processes (or any combination of these) determined to be technologically feasible and cost-effective; or
- Is contained in any SIP approved by EPA for such emission unit category, unless demonstrated to not be proven in field application, not be technologically feasible, or not be cost-effective

The proposed BACT for this Project is the use of clean burning fuel and a CO oxidation catalyst follow by an ammonia SCR system. A complete BACT analysis is provided in Appendix 6.2–I.

Air Quality Impact Analysis

If a new or modified facility has emission rates exceeding any AQIA trigger level shown in Table 6.2-21, an AQIA must be conducted to evaluate ambient air quality impacts of the emission increases. As shown below, both NO_x and PM_{10} exceed the AQIA trigger levels. Therefore, an AQAI is required to assure the Project emissions do not cause a new exceedance or contribute significantly to an existing exceedance of any ambient air quality standard. The modeling analysis shows that the projected background concentration with the increments will be below the most stringent AAQS except for PM_{10} and $PM_{2.5}$ for which the area is nonattainment. For the limited time for which certain uninhabited offsite concentrations may exceed the AAQS, mitigation is proposed in form of Carl Moyer Program emission offsets.

Table 6.2-21 - SDAPCD AQIA Trigger Levels

AIR CONTAMINANT	EMISSION THRESHOLDS			PROJECT EMISSION RATES		
	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy
CO	100	550	100	33.4	391	24.4
NO_x	25	250	40	36.83	361	22.8
PM_{10}	N/A	100	15	NA	141	9.3
SO_x	25	250	40	1.78	47.2	3.17

Source: Rule 20.3, Table 20.3-1.

Prevention of Significant Deterioration
As shown in the federal LORS discussion above, the proposed emissions level for this Project are below the PSD applicability thresholds.

Public Notice
Since the proposed emission rates for this Project exceed the AQIA trigger levels, public notice under this rule is required and the Project expects the SDAPCD Air Pollution Control Officer will provide this notice in a timely manner.

CEC Review
Rule 20.5 establishes a procedure for coordinating SDAPCD review of power plant projects with the CEC AFC and SPPE processes. Under this rule, the SDAPCD will directly issue permits upon its determination of compliance under its permit evaluation process and upon CEC approval of the AFC and its CEQA review.

Prohibitory Rules
The general prohibitory rules of the SDAPCD applicable to the Project include the following. Full conformances via permit evaluation and/or permit conditions are expected.

- *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 the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property

- *Rule 52 – Particulate Matter Emission Standards.* Prohibits PM emissions in excess of 0.10 grains per dry standard cubic foot (gr/dscf)

- *Rule 53 – Combustion Contaminants.* Prohibits sulfur emissions, calculated as SO_2, in excess of 0.05 percent by volume (500 parts per million by volume [ppmv]), and combustion particulate emissions in excess of 0.10 gr/dscf at 12 percent CO_2.

- *Rule 62 – Sulfur Content of Fuels.* Prohibits the burning of gaseous fuel with a sulfur content of more than 10 gr/100 scf and liquid fuel with a sulfur content of more than 0.05 percent sulfur by weight.

- *Rule 69 – Electrical Generating Steam Boilers.* Limits NO_x and ammonia emissions from electrical generating steam boilers rated greater than or equal to 100 MMBtu/hr to BACT levels.

- *Rule 69.3.1 – Stationary Gas Turbines.* 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 O_2, corrected for efficiency).

- *Rule 69.4.1 – Stationary Reciprocating Internal Combustion Engines.* Limits CO, NO_x, and VOC emissions from stationary reciprocating internal combustion engines rated greater than or equal to 50 bhp. However, emergency equipment operating less than or equal to 52 hours per year for testing or maintenance purposes and less than or equal to 200 hours per year for any purpose are exempt from the emission limits of Rule 69.4.1.

NSPS – SDAPCD Regulation X (Standards of Performance for New Stationary Sources) adopts, by reference, the federal standards of performance for new or modified stationary sources.

Subpart KKKK (Standards of Performance for Stationary Combustion Turbines) applies to gas turbines with a heat input in excess of 1 MMBtu/hr. Subpart KKKK limits NO_x and SO_2 emissions from new gas turbines based on power output. The limits for turbines greater than 30 MW are 0.39 lb- NO_x per MW-hr and 0.58 lb SO_2 per MW-hr. The proposed turbines the emission rate is 0.08 lb- NO_x per MW-hr and 0.02 lb-SO_2 per MW-hr.

TAC – NSR – SDAPCD Rule 1200 - Provides a mechanism for evaluating the potential impact of TAC air emissions from new, modified, and relocated sources in the SDAPCD. The rule requires a demonstration that the source will not exceed the risk thresholds summarized in Table 6.2–22. As shown in this table, there are different acceptable risk levels depending upon whether a project uses T-BACT. The proposed Project will have T-BACT installed.

As presented in Section 6.16, Public Health, the modeled incremental risks associated with this Project are below the respective thresholds listed in Table 6.2–21.

Table 6.2-22 - SDAPCD Health Risk Thresholds

RISK CRITERION	RISK THRESHOLD
Cancer Risk with T-BACT	1×10^{-5}
Cancer Risk without T-BACT	1×10^{-6}
Acute Noncarcinogenic Health Hazard Index	1.0
Chronic Noncarcinogenic Health Hazard Index	1.0

Acid Rain Permit – SDAPCD Rule 1412 (Federal Title IV Acid Rain Program Requirements) – This rule adopts, by reference, the federal requirements of 40 CFR Part 72, which requires that certain subject facilities comply with maximum operating emissions levels for SO_2 and NO_x, and monitor SO_2, NO_x, and carbon dioxide emissions and exhaust gas flow rates. A Phase II acid rain facility, such as a new power plant project, must obtain an acid rain permit. A permit application should be submitted to the SDAPCD at least 24 months before the operation commences. The application must present all relevant Phase II sources at the facility, a compliance plan for each unit, applicable standards, and an estimated commencement date of operations. An Acid Rain Permit application is in progress.

Federal Operating Permit – SDAPCD Rule 1414 (Title V Applications) requires new or modified major facilities, NSPS sources, NESHAP sources, and/or Phase II acid rain facilities to obtain an operating permit containing the federally enforceable requirements mandated by Title V of the 1990 Clean Air Act Amendments. A permit application for a new or modified source must be submitted to the SDAPCD within 12 months of commencing operation. The application must present a process description, 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.

This Project is subject to this requirement solely because it is categorized as an acid rain facility. The proposed emissions from the Project are well below the major source threshold for criteria pollutants and HAP. The application will be submitted along with the application for Title IV Acid Rain requirements.

6.2.7 Responsible Agencies and Contacts

The EPA has responsibility for enforcing, on a national basis, the requirements of many of the country's environmental laws. California is under the jurisdiction of EPA Region 9, which has its offices in San Francisco. Region 9 is responsible for the administration of EPA programs for California, Arizona, Nevada, Hawaii, and certain Pacific trust territories. EPA's activities relative to the California air pollution control program focus principally on reviewing California's submittals for the SIP. The SIP is required by the federal CAA to demonstrate how all areas of the state will meet the NAAQS within the federally specified deadlines (42 USC §7409, 7411).

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 state's ambient air quality standards; to review the operations of the local APCDs; and to review and coordinate preparation of the SIP for achievement of the federal ambient air quality standards (California H&SC §39500 et seq.).

When the state's air pollution statutes were reorganized in the mid-1960s, local APCDs were required to be established in each county of the state (H&SC §4000 et seq.). There are three different types of districts: county, regional, and unified. In addition, special 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. APCDs and AQMDs in California have principal responsibility for:

- Developing plans for meeting the state and federal ambient air quality standards
- 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 for developing employer-based trip reduction programs

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 Project. The air agencies having permitting authority for this Project are shown in the table below. The applicable federal LORS and compliance with these requirements are provided in earlier sections.

Table 6.2-23 – Agency Contacts for Air Quality

AGENCY	AUTHORITY
Environmental Protection Agency Region 9 75 Hawthorne Street San Francisco, California 94105 G. Rios, Chief, Permits Office (415) 744-1259	SIP Review/Approval
California Air Resource Board 2020 L Street Sacramento, California 95814 M. Tollstrup, Chief, Project Assessment Branch (916) 322-6026	SIP Preparation
San Diego Air Pollution Control District 10124 Old Grove Road San Diego, California 92131 A. Carbonell Senior Engineer (858) 586-2741 J. Annicchiarico, Supervising Engineer (858) 586-2733 T. Weeks, Chief, Engineering Division (858) 586-2600 R. DeSiena Meteorologist (858) 586-2772 M. Hossain, Chief, Monitoring & Technical Service (858) 586-2760	Permitting, Enforcement

6.2.8 Permits and Permitting Schedule

Pursuant to SDAPCD Rule 20.5 (Power Plants), the SDAPCD requires that for all new or modified power plants submitting an AFC, the Air Pollution Control Officer will conduct a DOC Review. The Orange Grove Project submitted an application for an Authority to Construct permit to the SDAPCD in August 2007. The Project has been routinely communicating with SDAPCD and an Application Completeness Determination (see Appendix H) was previously

issued by SDAPCD based on earlier filings. It is anticipated that this AFC will result in the issuance of an Application Completeness Determination and Authority to Construct permits for each stationary source. A schedule for permitting with SDAPCD is provided in Section 2.15. The Preliminary Determination of Compliance from SDAPCD is expected by October 2008.

In addition to SDAPCD operating permits, this facility will be required to obtain an acid rain permit under SDAPCD Rule 1412 (Federal Acid Rain Program Requirements). This rule adopts, by reference, the federal requirements of 40 CFR Part 72 which requires that certain subject facilities comply with maximum operating emissions levels for SO_2 and NO_x, and monitor SO_2, NO_x, and carbon dioxide emissions and exhaust gas flow rates. The SDAPCD has received delegation from EPA for Title IV implementation under its Title V Operating Permit program pursuant to Rule 1414. Sources such as this Project that use pipeline-quality natural gas as the exclusive fuel are exempt from many of the acid rain program requirements; however, the facility will be required to estimate SO_2 and CO_2 emissions from the Project and monitor NO_x emissions with a CEMS). The Acid Rain Permit is in preparation. In addition, within 1 year of start–up, the facility must apply for a Title V operating permit.

6.2.9 References

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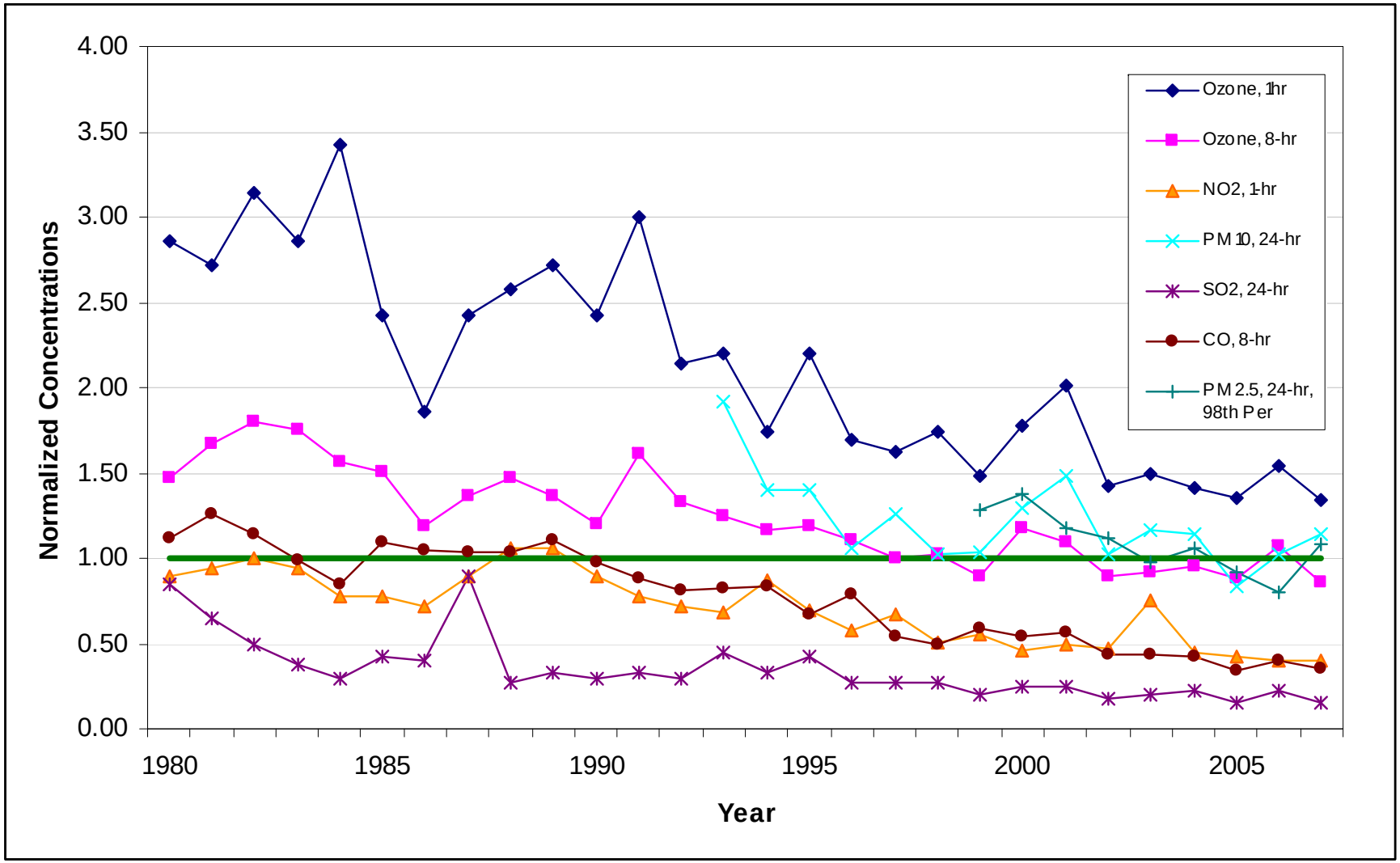
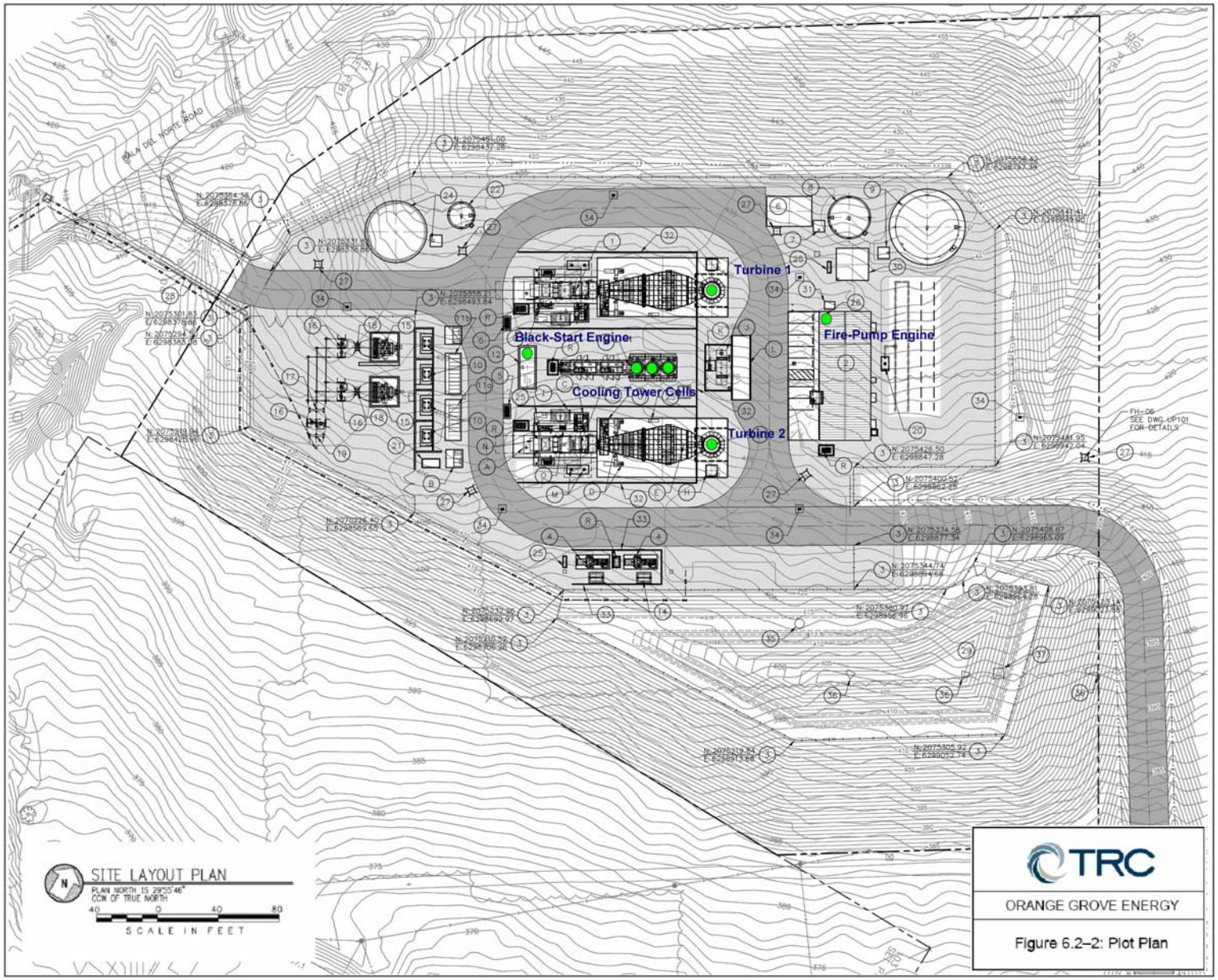


Figure 6.2–1
Normalized Maximum Short–Term Historical
Air Pollutant Concentrations



TRC

ORANGE GROVE ENERGY

Figure 6.2–2: Plot Plan