3.4 Air Quality

3.4.1 Existing Conditions

3.4.1.1 Climate and Meteorology

Santa Barbara County's air quality is influenced by both local topography and meteorological conditions (Santa Barbara County Air Pollution Control District [SBCAPCD], 2004). The Project would be located in an inland, rural area on ridges of the Santa Ynez Mountains. The terrain includes rolling hills and rugged, steeper slopes where the wind prevails from the northwest. The principal land use in the Project area is cattle grazing.

A complete summary of the meteorological and topographical influences that are important to air quality in Santa Barbara County is available in the 2004 Clean Air Plan (SBCAPCD, 2004). The following describes the meteorological and topographical influences, excerpted from the 2004 Clean Air Plan, that may affect air quality in the Project area:

- The semipermanent high pressure that lies off the Pacific Coast leads to limited rainfall (around 18 inches per year), with warm, dry summers and relatively damp winters. Maximum summer temperatures average about 70 degrees Fahrenheit near the coast and in the high 80s to 90s inland. During winter, average minimum temperatures range from the 40s along the coast to the 30s inland. Additionally, cool, humid, marine air causes frequent fog and low clouds along the coast, generally during the night and morning hours in the late spring and early summer. The fog and low clouds can persist for several days until broken up by a change in the weather pattern.
- During summer, the northwesterly winds are stronger and persist later into the night. At night, the sea breeze weakens and is replaced by light land breezes (from land to sea). The alternation of the land-sea breeze cycle can sometimes produce a "sloshing" effect, where pollutants are swept offshore at night and subsequently carried back onshore during the day. This effect is exacerbated during periods when wind speeds are low.
- Santa Ana winds are northeasterly winds that occur primarily during fall and winter, but occasionally in spring. These are warm, dry winds blown from the high inland desert that descend down the slopes of a mountain range. Wind speeds associated with the Santa Anas are generally 15 to 20 miles per hour, though they can sometimes reach speeds in excess of 60 miles per hour. During Santa Ana conditions, pollutants emitted in Santa Barbara County, Ventura County, and the South Coast Air Basin (Los Angeles region) are moved out to sea. These pollutants can then be moved back onshore into Santa Barbara County in what is called a "post-Santa Ana condition." The effects of the post-Santa Ana condition can be experienced throughout the county. However, not all post-Santa Ana condition lead to high pollutant concentrations in Santa Barbara County.
- Upper-level winds (measured at Vandenberg Air Force Base [VAFB] once each morning and afternoon) are generally from the north or northwest throughout the year, but occurrences of southerly and easterly winds do occur in winter, especially during the morning. Upper-level winds from the south and east are infrequent during the summer. When they do occur, they are usually associated with periods of high O_3 levels. Surface and upper-level winds can move pollutants that originate in other areas into the county.

- Surface temperature inversions (0 to 500 feet) are most frequent during the winter, and subsidence inversions (1,000 to 2,000 feet) are most frequent during the summer. Inversions are an increase in temperature with height and are directly related to the stability of the atmosphere. Inversions act as a cap to the pollutants that are emitted below or within them, and O_3 concentrations are often higher directly below the base of elevated inversions than they are at the earth's surface. For this reason, elevated monitoring sites will occasionally record higher O_3 concentrations than sites at lower elevations. Generally, the lower the inversion base height and the greater the rate of temperature increase from the base to the top, the more pronounced effect the inversion will have on inhibiting vertical dispersion. The subsidence inversion is very common during summer along the California coast and is one of the principal causes of air stagnation.
- Poor air quality is usually associated with "air stagnation" (high stability and restricted air movement). Therefore, it is reasonable to expect a higher frequency of pollution events in the southern portion of the county where light winds are frequently observed, as opposed to the northern part of the county where the prevailing winds are usually strong and persistent.

3.4.1.2 Existing Air Quality

The SBCAPCD operates a network of ambient air quality monitoring stations within the Santa Barbara County portion of the South Central Coast Air Basin (SCCAB), which includes the Project area. The monitoring stations measure concentrations of the following air pollutants: carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), respirable particulate matter defined as particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), and fine particulate matter defined as particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$). The monitoring stations located closest to the proposed Project area are VAFB Space Transportation System (STS) facility on VAFB and Lompoc H Street. $PM_{2.5}$ is measured at only two monitoring stations in Santa Barbara County: the Santa Barbara-East Canon Perido station in the City of Santa Barbara and Santa Maria-S Broadway station in the City of Santa Maria. Table 3.4-1 lists the maximum pollutant levels measured and the number of days each year that ambient concentrations were above the federal and California standards from 2004 to 2006. As shown in Table 3.4-1, measured PM_{10} concentrations exceeded the 24-hour California standards twice in the past 3 years. However, the federal PM_{10} standards were not exceeded. Ozone (O_3), CO, NO_2, and $PM_{2.5}$ did not exceed the California or federal standards during the past 3 years.

TABLE 3.4-1
Summary of Maximum Ambient Air Quality Monitoring Data in the Project Area

Pollutant	Averaging Time	2004	2005	2006
Ozone (ppm)				
Lompoc-S H Street	1 Hour	0.084	0.064	0.056
	Number of Exceedances (State)	0	0	0
	8 Hour	0.075	0.052	0.054
	Number of Exceedances (Federal)	0	0	0
VAFB-STS	1 Hour	0.090	0.072	0.063
	Number of Exceedances (State)	0	0	0
	8 Hour	0.083	0.066	0.060
	Number of Exceedances (Federal)	0	0	0
Carbon Monoxide (ppm)				
Lompoc-S H Street	1 Hour	2.7	2.2	2.3
	Number of Exceedances (State)	0	0	0
	Number of Exceedances (Federal)	0	0	0
	8 Hour	1.26	1.07	1.09
	Number of Exceedances	0	0	0
VAFB-STS	1 Hour	0.3	0.9	0.3
	Number of Exceedances (State)	0	0	0
	Number of Exceedances (Federal)	0	0	0
	8 Hour	0.36	0.70	0.28
	Number of Exceedances	0	0	0
Nitrogen Dioxide (ppm)				
Lompoc-S H Street	Annual Arithmetic Mean	0.006	0.006	0.005
	Number of Exceedances (Federal)	0	0	0
	1 Hour	0.036	0.035	0.037
	Number of Exceedances (State)	0	0	0
VAFB-STS	Annual Arithmetic Mean	0.001	0.001	*
	Number of Exceedances (Federal)	0	0	0
	1 Hour	0.023	0.019	0.016
	Number of Exceedances (State)	0	0	0
PM_{10} ($\mu g/m^3$)				
Lompoc-S H Street	Annual Arithmetic Mean	21	18	*
	Number of Exceedances (State)	1	0	0
	Number of Exceedances (Federal)	0	0	0
	24 Hour	52.3	86.6	26.8
	Number of Exceedances (State)	1	1	0
	Number of Exceedances (Federal)	0	0	0
VAFB-STS	Annual Arithmetic Mean	19	16	*
	Number of Exceedances (State)	0	0	0
	Number of Exceedances (Federal)	0	0	0
	24 Hour	38.1	41.8	43.4
	Number of Exceedances (State)	0	0	0
	Number of Exceedances (Federal)	0	0	0

TABLE 3.4-1
Summary of Maximum Ambient Air Quality Monitoring Data in the Project Area

Pollutant	Averaging Time	2004	2005	2006
$PM_{2.5}$ ($\mu g/m^3$)[a]				
Santa Barbara-East Canon Perido	Annual Arithmetic Mean	*	*	*
	Number of Exceedances (State)	*	*	*
	Number of Exceedances (Federal)	*	*	*
	24 Hour	27.5	28.3	27.7
	Number of Exceedances (State)	0	0	0
	Number of Exceedances (Federal)	0	0	0
Santa Maria – S Broadway	Annual Arithmetic Mean	7.5	*	*
	Number of Exceedances (State)	*	*	*
	Number of Exceedances (Federal)	*	*	*
	24 Hour	16.6	29.8	12.7
	Number of Exceedances (State)	0	0	0
	Number of Exceedances (Federal)	0	0	0

*According to the California Air Resources Board (ARB), there was insufficient (or no) data available to determine the value.

[a]$PM_{2.5}$ is only measured at two monitors in Santa Barbara County, the Santa Barbara-East Canon Perido and Santa Maria-S Broadway.

Notes:

Hydrogen sulfide, vinyl chloride, and visibility-reducing particles are not monitored in the SCCAB.

ppm – parts per million

$\mu g/m^3$ – micrograms per cubic meter

N/A – There was insufficient (or no) data to determine the value.

Source: ARB, 2006b; EPA, 2007.
Data as of February 23, 2007.

3.4.2 Regulatory Framework

The regulatory structure for air quality planning in California includes federal, state, regional, and local agencies. These agencies either have actual regulatory authority or are responsible for the development and implementation of programs and plans designed to reduce air pollution levels.

3.4.2.1 Federal

Federal air quality policies are regulated through the Federal Clean Air Act (CAA). Pursuant to this act, the United States Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for the following air pollutants (termed "criteria" pollutants): CO, O_3, NO_2, sulfur dioxide (SO_2), respirable particulate matter defined as particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), fine particulate matter defined as particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$), and lead. The act was amended in 1977 to require each state to maintain a state implementation plan (SIP) for achieving compliance with the NAAQS. In 1990, the act was amended again to strengthen regulation of both stationary and motor vehicle emission sources. Conformity to the SIP is defined under the 1990 CAA amendments as conformity with the plan's purpose in eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of these standards. The federal CAA also requires the EPA to designate areas (counties or air basins)

as attainment or nonattainment with respect to each criteria pollutant, depending on whether the area meets the NAAQS. An area that is designated nonattainment means the area is not meeting the NAAQS and is subject to planning requirements to attain the standard.

3.4.2.2 State

The California Air Resources Board (ARB) oversees California air quality policies and is responsible for preparing and submitting the SIP to the EPA. California established state ambient air quality standards (CAAQS) in 1969. These standards are generally more stringent and include more pollutants than the NAAQS. The California CAA was approved in 1988 and requires each local air district in the state to prepare an air quality plan to achieve compliance with the CAAQS. Similar to the EPA, the ARB designates counties in California as attainment or nonattainment with respect to the CAAQS.

The federal and state ambient air quality standards represent levels established to avoid specific adverse health effects associated with each pollutant. Table 3.4-2 presents the federal and state attainment status for each pollutant.

Santa Barbara County has been designated nonattainment for O_3 and particulate matter. A brief summary of the pollutants follows.

Ozone (O_3)

Ozone is a gas created when nitrogen oxides (**(**NO_X) and volatile organic compounds (VOCs) chemically react in the presence of ultraviolet sunlight. Ozone is a primary ingredient of summertime smog. Studies have indicated that exposure to ground-level O_3 air pollution, even at very low levels, can cause a number of respiratory health effects (SBCAPCD, 2006a). The major sources of O_3 precursor emissions in Santa Barbara County are motor vehicles, the petroleum industry, and solvents associated with paints, consumer products, and certain industrial processes. (SBCAPCD, 2007).

Particulate Matter

Fine mineral, metal, soot, smoke, and dust particles suspended in the air can harm the lungs (SBCAPCD, 2006a). For health reasons, there are two sizes of particulate matter of concern, PM_{10} and $PM_{2.5}$. Sources of PM_{10} include mineral quarries, grading, demolition, agricultural tilling, road dust, and vehicle exhaust (which also contributes to $PM_{2.5}$) (SBCAPCD, 2007). Particles of these sizes can permanently lodge in the deepest and most sensitive areas of the lung, and can aggravate many respiratory illnesses including asthma, bronchitis, and emphysema. High levels of particle pollution have also been associated with a higher incidence of heart problems, including heart attacks (SBCAPCD, 2006a).

TABLE 3.4-2
Ambient Air Quality Standards and Attainment Status

Criteria Pollutant	Federal Standard (Averaging Period)[a]	Federal Attainment Status	State Standard (Averaging Period)[b]	State Attainment Status
Carbon Monoxide (CO)	35 ppm (1 hour)	Attainment	20 ppm (1 hour)	Attainment
	9 ppm (8 hour)	Attainment	9 ppm (8 hour)	Attainment
Nitrogen Dioxide (NO_2)	0.053 ppm (annual arithmetic mean)	Attainment	0.25 ppm (1 hour)	Attainment
Ozone (O_3)	0.08 ppm (8 hour)	Attainment	0.07 ppm (8 hour)	Nonattainment[c]
			0.09 ppm (1 hour)	Moderate Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	15 μg/m^3 (annual arithmetic mean)	Attainment	12 μg/m^3 (annual arithmetic mean)	Unclassified
	35 μg/m^3 (24 hour)[d]	Attainment	No separate Standard (24 hour)	
Particulate Matter (PM_{10})	Revoked[d]	Attainment	20 μg/m^3 (annual arithmetic mean)	Nonattainment
	150 μg/m^3 (24 hour)	Attainment	50 μg/m^3 (24 hour)	Nonattainment
Sulfur Dioxide (SO_2)	0.030 ppm (annual arithmetic mean)	Attainment	--	--
	0.14 ppm (24 hour)	Attainment	0.04 ppm (24 hour)	Attainment
	--	--	0.25 ppm (1 hour)	Attainment
Lead	1.5 μg/m^3 (calendar quarter)	Attainment	1.5 μg/m^3 (30 day average)	Attainment
Sulfates	No Federal Standards		20 μg/m^3 (24 hour)	Attainment
Hydrogen Sulfide			0.03 ppm (1 hour)	Attainment
Vinyl Chloride			0.01 ppm (24 hour)	Attainment
Visibility Reducing Particles			Extinction coefficient of 0.23 per kilometer — visibility of 10 miles or more (0.07 to 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent.	Unclassified

Source: ARB, 2006a.

ppm: parts per million, by volume

μg/m3: micrograms per cubic meter

Notes:

[a]National standards, other than O_3, particulate matter, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[b]California standards for O_3, CO, sulfur dioxide (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded.

[c]According to the SBCAPCD (2006b), although the ARB has not officially designated areas for the 8-hour O_3 standard, the ambient air data collected by the district indicate the area will be designated nonattainment.

[d]On September 21, 2006, the EPA promulgated a new 24-hour $PM_{2.5}$ standard and revoked the annual PM_{10} standard. To attain the $PM_{2.5}$ standard, the 3-year average of the 98th percentile 24-hour concentration at each population-oriented monitor within an area must not exceed 35 μg/m^3. These changes became effective December 17, 2006 (EPA, 2006b).

Greenhouse Gases

- Assembly Bill 32 (AB 32) requires that California's greenhouse gas (GHG) emissions be reduced to 1990 levels by 2020. The reduction will be accomplished through an enforceable statewide cap on global warming emissions to be phased in beginning 2012. AB 32 directs the ARB to develop regulations and a mandatory reporting system to track and monitor global warming emissions levels (AB 32, Chapter 488, Statutes of 2006).

  In passing AB 32, the California Legislature found that:

  > "*Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.*"

  The California Climate Action Team Report to the Governor (2006) includes a range of strategies to reduce GHG emissions. One of these strategies is the Accelerated Renewables Portfolio Standard Program, which requires investor-owned public utilities to transition to renewable energy sources. The report shows this program to be one of the most promising strategies for reducing GHG emissions, with reductions projected to be 5 million metric tons (CO2 Equivalent) by 2010 and 11 million metric tons by 2020.

- Senate Bill 1368 (SB 1368). This bill aims specifically to reduce GHG emissions from electric utilities. It prohibits any "load-serving entity" (for example, electric service provider) from entering into a long-term electricity procurement contract unless it complies with greenhouse gas emission performance standards. The standards will be developed and enforced by the Public Utilities Commission (CPUC). (SB 1368, Chapter 598, Statutes of 2006).

GHG emissions have not historically been regulated. Because the laws are new, neither GHG emissions standards nor thresholds of significance for their environmental impacts have been established. Nevertheless, anticipated GHG emissions and benefits from the Project warrant qualitative discussion. Please refer to Section 4.5, Cumulative Impacts.

3.4.2.3 Regional and Local

The Project is located within the jurisdiction of the SBCAPCD. The SBCAPCD is the local agency charged with preparing, adopting, and implementing mobile, stationary, and area air emission control measures and standards. Under the California CAA, the SBCAPCD is required to develop an air quality attainment plan for nonattainment criteria pollutants within the air district. The district has two attainment plans; one plan to meet federal CAA requirements, and one plan to meet California CAA requirements. The SBCAPCD 2004 Clean Air Plan (3-Year Update for California Clean Air Act) was adopted by the SBCAPCD Board in December of 2004, has been submitted to the ARB, and is the 3-year update to the 2001 Clean Air Plan. The 2004 Plan shows how the county will make progress towards meeting the state 1-hour O_3 standard. The SBCAPCD 2001 Clean Air Plan (federal CAA) was adopted by the SBCAPCD Board and approved by both the EPA and the ARB. This plan is in effect for federal standards.

Because the County is designated nonattainment for the state PM_{10} standards, dust mitigation measures are required for all discretionary construction activities regardless of the significance of the fugitive dust impacts (SBCAPCD, 2007).

The Project is subject to all SBCAPCD prohibitory rules and regulations even though permits may not be required. Stationary sources, such as emergency generators, are required to have permits from the SBCAPCD before constructing, changing, or operating the source. During Project construction, the concrete batch plant and other portable equipment would ~~either~~ need to be permitted by the SBCAPCD or registered in California's Portable Equipment Registration Program, as appropriate. Portable or temporary equipment if present on site for more than 12 months, including concrete batch plants and associated engines, and gasoline storage tanks of 250 gallons or more would require permits from the SBCAPCD. During Project operation, stationary sources that would require permits from the SBCAPCD have not been identified.

Local agencies, cities, and organizations also take part in improving air quality. For example, the Santa Barbara County Association of Governments assisted the SBCAPCD in preparing the 2004 Clean Air Plan. The County of Santa Barbara also contributes to improving air quality through land use planning and developing guidance documents. The following County documents were reviewed for applicability to Project-related air quality impacts: Comprehensive Plan: Air Quality Supplement to the Land Use Element, Environmental Thresholds and Guidelines Manual, and Conditions of Approval and Mitigation Measures.

3.4.3 Project Impacts, Mitigation, and Residual Impacts

This section assesses Project-induced impacts to air quality during the construction and post-construction phases.

3.4.3.1 Impact Assessment Methodology

The potential air quality impacts occurring during the construction and operation of the Project were evaluated using the CEQA Guidelines and the quantitative thresholds of significance established by the County of Santa Barbara and the SBCAPCD. It was assumed that if construction emissions (reactive organic compounds [ROC] and NO_x) and operation emissions were less than the thresholds of significance, the Project would not cause or contribute to a violation of the ambient air quality standards. Additional details regarding the methodological approach used are described under the individual impacts. Appendix A includes the results of the air quality modeling for construction and operations.

3.4.3.2 Thresholds of Significance

The County's Environmental Thresholds and Guidelines Manual and the SBCAPCD guidance document summarize the criteria for determining whether the construction and operation of a project would have a significant adverse air quality impact (County, 2006; SBCAPCD, 2007). Based on this guidance, the following two issues are addressed:

- Would the project cause or contribute to a violation of any federal or California Ambient Air Quality Standard

- Would the project be consistent with the adopted federal and California air quality plans for Santa Barbara County

Table 3.4-3 summarizes the quantitative thresholds of significance used to evaluate the potential air quality impacts of the Project. The County has not established ~~published~~ quantitative thresholds of significance for short-term construction emissions; however, the SBCAPCD uses 25 tons per year for ROC or NO_x as a guideline for determining the significance of construction impacts (SBCAPCD, 2007). For long-term or operation impacts, the values in Table 3.4-3 represent a combination of the most conservative quantitative thresholds from both the County and the SBCAPCD.

TABLE 3.4-3
Thresholds of Significance

Impact Source	Thresholds of Significance		
	ROC	NO_x	PM_{10}
Construction (ton/yr)[a]	25	25	NA
Operation – All Project Sources (Mobile and Stationary) (lb/day)[b]	55	55	80
Operation – Motor Vehicle Trips (lb/day)[b]	25	25	NA

[a] Under APCD Rule 202 D.16, if the combined emissions from all construction equipment used to construct a stationary source which requires an Authority to Construct have the potential to exceed 25 tons of any pollutant, except carbon monoxide, in a 12-month period, the owner of the stationary source shall provide offsets under the provisions of Rule 804 and shall demonstrate that no ambient air quality standard would be violated.

~~[a] Quantitative thresholds of significance for short-term construction emissions have not been established; however, the SBCAPCD suggests using 25 tons/year of ROC or NOx as a guideline for determining the significance of construction impacts (SBCAPCD, 2007).~~

[b] County of Santa Barbara, 2006.

NA – Not applicable; a significance threshold has not been established.

3.4.3.3 Project Impacts

Consistency with Plans

The SBCAPCD 2004 Clean Air Plan presents the strategy to continue to improve air quality in the County. The plan includes emission reductions achieved from existing and proposed regulations and provides emission inventories up to the year 2020. The Air Quality Supplement to the County's Comprehensive Plan is a mandated element of the Comprehensive Plan. The Project would be consistent with the overall goal of the Air Quality Supplement because it would not increase regional vehicles miles traveled. The Project would also be consistent with Policy E (integration of long-range planning with air quality) of the Air Quality Supplement. The Project would generate energy with a minimal impact to air quality when compared to traditional sources of energy generation. The Project is consistent with the goals of the 2004 Clean Air Plan and the policies in the Air Quality Supplement of the County's Comprehensive Plan. Operation of the Project would generate energy and would not contribute to a violation of an air quality standard.

Comparison to Thresholds of Significance

Impact No.	Impact Description	Phase	Impact Classification
AQ-1	Exhaust emissions from construction equipment would result in short-term emissions of NOx and ROC.	Construction	Class III

Impact AQ-1: Short-term Construction NO_x and ROC. Construction equipment exhaust would result in short-term emissions of NO_x and ROC. Although the Project is expected to be constructed in as many as three phases that span more than one calendar year, construction emissions were conservatively estimated by assuming that the Project would be completed in 1 year. ~~and estimated annual construction emissions were compared to the ton per year thresholds of significance.~~ Exhaust emissions from the construction equipment listed in Table 2-4 were quantified using URBEMIS2002 (version 8.7.0). Emissions from the truck trips associated with construction (Table 2-3) were calculated using year 2007 EMFAC2007 (version 2.3) emission factors for heavy-duty diesel trucks in Santa Barbara County. Exhaust emissions from helicopters that may be used during power line construction were estimated using emission factors from the Federal Aviation Administration's Emissions and Dispersions Modeling System (EDMS) (FAA, 2007).

As shown in Table 3.4-4, the construction phase NO_x and ROC emissions would be less than the threshold of significance (25 tons per year); therefore, the impact from construction NO_x and ROC emissions would be adverse but less than significant (*Class III*).

Impact No.	Impact Description	Phase	Impact Classification
AQ-2	Particulate matter emissions during construction would result from soil disturbance, travel on unpaved roads, mobile source exhaust emissions, and concrete batch plants.	Construction	Class II

Impact AQ-2: Short-term Construction PM_{10} Emissions. Particulate matter emissions during construction would result from soil disturbance, travel on unpaved roads, mobile source exhaust emissions, and concrete batch plants located in several locations throughout the Project site. PM_{10} emissions from construction equipment exhaust and soil disturbance were quantified for the Project using URBEMIS2002 (version 8.7.0). PM_{10} exhaust emissions from truck trips associated with construction were calculated using the year 2007 EMFAC2007 (Version 2.3) emission factors for heavy-duty diesel trucks in Santa Barbara County (ARB, 2007). Concrete batch plant emissions were estimated using AP-42, Fifth Edition, Compilation of Air Pollutant Emission Factors, Chapter 11.12 (EPA, 2006a). Table 3.4-4 presents the PM_{10} emissions. Quantitative PM_{10} and $PM_{2.5}$ thresholds of significance have not been established by the County or the SBCAPCD for construction, but the County is designated nonattainment for the state PM_{10} standards; and dust mitigation measures are required for all discretionary construction activities regardless of the significance of the fugitive dust impacts (SBCAPCD, 2007). Project impacts from construction PM_{10} emissions would be significant, but mitigable to less than significant (*Class II*).

TABLE 3.4-4
Construction Emissions

Construction Activity	Emissions (tons/yr)[a,b,c]		
	ROC	**NO_x**	**PM_{10}**
Site Preparation and Road Construction	0.71	4.9	0.64
Foundation Construction	0.43	2.9	1.7
Electrical Collection System	0.22	1.4	0.5
Power Line Construction	0.66~~0~~	4.3 ~~3.9~~	1.7~~5~~
Substation, O&M Facility, and Meteorological Tower	0.33	2.3	0.8
Turbine Installation	0.32	1.9	0.7
TOTAL (tons/yr)	**2.67**	**17.7**	**6.0 ~~5.8~~**
Truck Trips[d]	**ROC**	**NO_x**	**PM_{10}**
Transport of WTG Parts	0.04	0.19	0.01
Transport for WTG Foundation	0.09	0.52	0.03
Transport for WTG Water	0.09	0.45	0.03
Access Roads	0.08	0.40	0.02
Pole Placement	0.03	0.15	0.009
Line Stringing	0.005	0.02	0.001
Meteorological Tower	0.003	0.02	0.001
Substation and O&M Facility	0.002	0.009	0.0005
TOTAL (tons/yr)	**0.3**	**1.8**	**0.1**
GRAND TOTAL (tons/yr)	**3**	**19**	**6**
Thresholds of Significance (ton/yr)	**25**	**25**	**NA**

[a]Calculations from pounds per day in the URBEMIS2002 output to tons per project assume that construction equipment would operate 22 days/month.

[b]Fugitive dust emissions assume 2 acres per day would be disturbed for each activity.

[c]Helicopter emissions are included with Power Line Construction and assume the helicopter would operate 3 hours per day per LTO and would operate 5 times per month during six-month construction period.

[d]Truck emissions assume each truck travels a distance of 12 miles within the Project boundary per trip.

NA – Not applicable, a PM_{10} significance threshold has not been established for construction related impacts.

URBEMIS2002 estimates reactive organic gas (ROG) emissions. It was assumed ROG emissions equal ROC emissions.

Impact No.	Impact Description	Phase	Impact Classification
AQ-3	Exhaust emissions from workers driving onsite and a forklift would result in long-term emissions of NO_x and ROC. Fugitive dust emissions from workers driving on unpaved roads would result in long-term emissions of PM_{10}.	Operations	Class III

Impact AQ-3: Long-term Emissions. Operation of the Project would involve an onsite staff of approximately 10 workers who would travel onsite as needed, monitor WTG and system operation, perform routine maintenance, troubleshoot malfunctions, shut down and restart turbines when necessary, and provide security. In addition, support equipment, such as a forklift used for unloading parts, would be used as part of Project operation. Operation of the Project would not require the use of diesel-powered backup generators. Any use of a diesel-powered generator would require a permit from SBCAPCD. Exhaust emissions from workers driving onsite and a forklift would result in long-term emissions of NO_x and ROC. Fugitive dust emissions from workers driving on unpaved roads would result in long-term emissions of PM_{10}. Operation emissions were quantified using URBEMIS2002 (version 8.7.0) (Jones and Stokes, 2002). As shown in Table 3.4-5, NO_x, ROC, and PM_{10} emissions would be less than the thresholds of significance. Therefore, long-term emissions would be adverse, but less than significant (*Class III*).

TABLE 3.4-5
Operation Emissions

Operation Source	Emissions (lb/day)[a]		
	ROC	NOx	PM_{10}
Forklift	0.2	1.1	0.03
On-site Gasoline-fueled Trucks	0.09	0.05	18
TOTAL (lb/day)	0.3	1.2	18
Thresholds of Significance – All Sources (lb/day)	**55[b]**	**55[b]**	**80[b]**
Thresholds of Significance – Motor Vehicle Trips (lb/day)	**25[b]**	**25[b]**	**NA**

[a]Output from URBEMIS2002 (version 8.7.0) assuming an operation year of 2008, a vehicle mix of 100 percent light duty trucks traveling 20 miles per day onsite on unpaved roads at 15 miles per hour, and one forklift operating 2 hours per day.
[b]County, 2006.

URBEMIS2002 estimates reactive organic gas (ROG) emissions. It was assumed ROG emissions equal ROC emissions.

3.4.3.4 ~~Applicant-Proposed~~ Mitigation Measures

The following mitigation measures incorporate appropriate provisions of the Applicant-proposed mitigation measures listed in Section 2.8.4, with revisions as needed to ensure maximum feasible mitigation in accordance with Santa Barbara County policy.

~~The following Applicant-proposed mitigation measures are considered part of the project description. They have been grouped by topic and refined where appropriate to reflect the Standard Conditions of Approval and Mitigation Measures (Santa Barbara County, 2005), including plan requirements, timing, and monitoring actions that would be required.~~

AQ-1: Construction Equipment Emission Reduction Plan. A Construction Equipment Emission Reduction Plan shall be prepared by the Applicant that contains the following elements. These measures are based on the construction impact mitigation measures for equipment exhaust summarized in the SBCAPCD guide (SBCAPCD, 2007).

a. ***Catalytic Converters –*** Ensure that catalytic converters are installed on all gasoline-powered equipment, if feasible. Install diesel catalytic converters, diesel oxidation catalysts, and diesel particulate filters as certified and/or verified by EPA or California on diesel equipment, if available.

b. ***High Pressure Fuel Injectors –*** Use high-pressure fuel injectors on Caterpillar engine types 3306 and 3406 DITA to reduce NO_x emissions.

c. ***Engine Maintenance –*** Maintain engines and emission systems in proper operating condition.

d. ***Engine Model Year –*** Utilize heavy-duty diesel-powered construction equipment manufactured after 1996, whenever feasible**.**

e. ***Engine Size –*** The engine size of construction equipment will be the minimum practical size.

f. ***Number of Equipment –*** The number of construction equipment operating simultaneously will be minimized through efficient management practices to ensure that the smallest practical number is operating at any one time.

g. ***Engine Timing –*** Construction equipment operating onsite will be equipped with two to four degree engine timing retard or precombustion chamber engines.

h. ***Equipment Replacement –*** Diesel-powered equipment will be replaced by electric equipment whenever feasible.

i. ***Truck Idle Time –*** Idling of heavy-duty diesel trucks during loading and unloading will be limited to 5 minutes; auxiliary power units will be used whenever possible.

j. ***Worker Trips –*** Construction worker trips will be minimized by requiring carpooling and by providing for lunch onsite.

Plan Requirements: Requirement shall be shown on grading and building plans prior to the issuance of zoning clearance for the first phase of construction and prior to issuance of zoning clearance for subsequent Project phases.

Timing: Condition will be enforced throughout all construction periods.

MONITORING: County staff will ensure measures are included in the Construction Equipment Emission Reduction Plan. County staff shall perform periodic site inspections of construction contractor maintenance activities (*Addresses Impact AQ-1)*.

AQ-2: Dust Control Plan. A Dust Control Plan shall be prepared by the Applicant that contains the following elements.

a. ***Water Application –*** Apply water sprays to all disturbed active construction areas a minimum of two times per day, except when soil water content would exceed the level recommended by the soils engineers for compaction or when weather conditions warrant a reduction in water application. Additionally, use adequate dust control to keep fugitive dust from being transmitted outside of the trail right-of-way. Perform increased dust control watering when wind speeds exceed 15 miles per hour. The amount of additional watering would depend upon soil moisture content.

b. ***Soil Stabilization –*** Stabilize any disturbed area that would not be covered with base or paving within 14 days after completion of disturbing activities by use of soil coating mulch, dust palliatives, compaction, reseeding, or other approved methods. Soil stockpiled for more than 2 days shall be covered, kept moist, or treated with soil binders to prevent dust generation. Trucks transporting soil will be covered in transit.

c. ***Construction Monitoring –*** The contractor or builder shall designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties will include holiday and weekend periods when work may not be in progress.

d. ***Limit Traffic Speed*** – Reduce traffic speeds on all unpaved roads to 15 miles per hour or less.

Plan Requirements: All requirements shall be shown on grading and building plans prior to the issuance of the zoning clearance for the first phase of construction and prior to issuance of the zoning clearances for subsequent Project phases.

Timing: Condition will be enforced throughout all construction periods.

MONITORING: County staff will ensure measures are included in the Dust Control Plan and shall perform periodic site inspections to ensure compliance (*Addresses Impact AQ-2)*.

3.4.3.5 Residual Impacts

Impact AQ-1, construction NOx and ROC emissions, would be less than significant The residual impact of Impacts AQ-2 and AQ-3, construction and operational PM_{10} emissions, respectively, would be less than significant given implementation of Mitigation Measures ~~A-~~ AQ-1 and AQ-2. Impact AQ-3, operational NOx and ROC emissions, would be ~~reduce an already~~ less than significant~~impact~~.