C.2 Air Quality

This section presents information on ambient air quality conditions in the vicinity of the Project site and identifies potential impacts to air quality as a result of the construction and operation of the proposed Project. The air quality emission calculations assumptions, methodologies, and results are provided in Appendix 3.

C.2.1 Environmental Setting

C.2.1.1 Meteorological Conditions

The climate of northwestern Los Angeles County and eastern Kern County is characterized by hot, dry summers and mild to cold winters with seasonally heavy precipitation that occurs primarily during the winter months. Summer typically has clear skies, high temperatures, and low humidity. A monthly climate summary for Lancaster and Mojave, California, near each end of the Project route, was selected to characterize the climate of the study area. As described in Table C.2-1, average summer (June-August) high and low temperatures in the study area range from 97°F to 57°F, respectively. Average winter (December-March) high and low temperatures in the study area range from 66°F to 29°F. The average annual precipitation in the Antelope Valley/Mojave Desert portion of the route ranges from 6.6 inches to 7.4 inches with over 70 percent occurring between December and March. Little precipitation occurs during summer because a high-pressure cell blocks migrating storm systems over the eastern Pacific. The weather over the extreme northern part of the Project route near Tehachapi is somewhat cooler and wetter on average than Lancaster or Mojave.

Table C.2-1. Monthly Average Temperatures and Precipitation

Month	Lancaster			Mojave		
	Temperature, °F		Precipitation Inches	Temperature, °F		Precipitation Inches
	Maximum	Minimum		Maximum	Minimum	
January	57	31	1.60	58	34	1.34
February	61	35	1.62	62	37	1.51
March	65	39	1.44	66	41	1.13
April	71	45	0.32	72	46	0.22
May	79	53	0.12	81	54	0.15
June	89	60	0.05	91	62	0.05
July	95	66	0.10	97	67	0.16
August	95	64	0.14	96	66	0.27
September	88	57	0.20	90	59	0.28
October	78	46	0.30	79	49	0.28
November	65	35	0.50	66	39	0.43
December	57	29	1.01	58	33	0.81

Source: The Weather Channel 2006.
Note: Averaged over a minimum period of 30 years.

The project route traverses the Kern County Air Pollution Control District (KCAPCD) and the Antelope Valley Air Pollution Control District (AVAQMD) jurisdictions and the entire project route is located within the Mojave Desert Air Basin (MDAB) ending just north of the South Coast Air Basin (SCAB). Figure C.2-1 shows the proposed Project route and shows the air basin and air district jurisdiction boundaries. The prevailing strong winds in the MDAB are generally out of the west and southwest (AVAQMD, 2002).

The proposed Project would extend from a new substation to be located in Monolith, CA, just east of Tehachapi, south to the Vincent substation located in the foothills of the San Gabriel Mountains. The route would traverse north-south over the Beusse Hills into and completely through the Antelope Valley extending

over Portal Ridge and the Sierra Pelona Mountains to Soledad Pass where the Vincent substation is located near Acton just north of the San Gabriel Mountains.

C.2.1.2 Existing Air Quality

The United States Environmental Protection Agency (USEPA), California Air Resources Board (CARB), and the local air districts classify an area as attainment, unclassified, or nonattainment depending on whether or not the monitored ambient air quality data shows compliance, insufficient data available, or non-compliance with the ambient air quality standards, respectively. The National and California Ambient Air Quality Standards (NAAQS and CAAQS) relevant to the Project are provided in Table C.2-2.

Table C.2-2. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards
Ozone (O_3)	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.08 ppm
Respirable particulate matter (PM_{10})	24-hour	50 µg/m^3	150 µg/m^3
	Annual mean	20 µg/m^3	50 µg/m^3
Fine particulate matter ($PM_{2.5}$)	24-hour	—	65 µg/m^3
	Annual mean	12 µg/m^3	15 µg/m^3
Carbon monoxide (CO)	1-hour	20 ppm	35 pm
	8-hour	9.0 ppm	9 ppm
Nitrogen dioxide (NO_2)	1-hour	0.25 ppm	—
	Annual mean	—	0.053 ppm
Sulfur dioxide (SO_2)	1-hour	0.25 ppm	—
	3-hour		0.5 ppm
	24-hour	0.04 ppm	0.14 ppm
	Annual mean	—	0.03 ppm

Notes: ppm=parts per million; µg/m^3= micrograms per cubic meter; "—" = no standard
Source: CARB 2006a, Ambient Air Quality Standards Table.

The proposed Project area would be located within the MDAB, under the jurisdiction of the Kern County Air Pollution Control District (KCAPCD) for the Kern County portion of the route, and under the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD) for the Los Angeles County portion of the route. Ozone, CO, NO_2, PM10, and PM2.5 concentrations are currently recorded at the Lancaster Division Street monitoring station, located approximately nine miles east of the Antelope Substation. Ozone, NO_2, PM10, and PM2.5 are currently recorded at the Mojave Poole Street monitoring station, located approximately 7 miles east of the proposed Substation One location. The nearest operating monitoring station for SO_2 is in the City of Burbank about 25 miles south of the southern extent of the proposed Project area.

Table C.2-3 summarizes the federal and State attainment status of criteria pollutants for the Project area based on the NAAQS and CAAQS, respectively.

Figure Links

(Click to activate) page

Table C.2-3. Attainment Status for the Kern County and Antelope Valley Portions of the MDAB

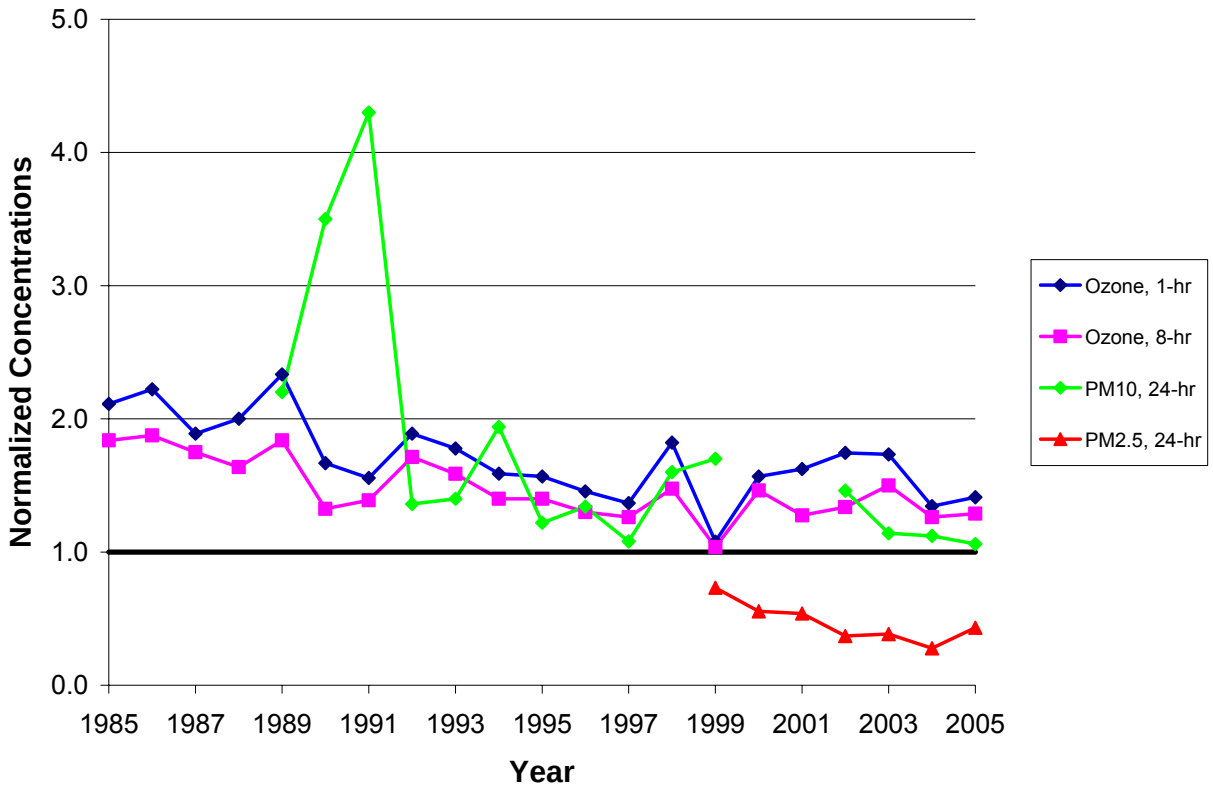
Pollutant	Attainment Status Kern County Portion of the MDAB		Attainment Status Antelope Valley Portion of the MDAB	
	Federal	State	Federal	State
Ozone – 1 Hour	N/A	Moderate Nonattainment	N/A	Extreme Nonattainment
Ozone – 8 Hour	Nonattainment	Not Available[a]	Moderate Nonattainment	Not Available[a]
CO	Unclassified/Attainment	Attainment	Unclassified/Attainment	Attainment
NO_2	Unclassified/Attainment	Attainment	Unclassified/Attainment	Attainment
SO_2	Attainment	Attainment	Attainment	Attainment
PM10	Attainment	Nonattainment	Unclassified	Nonattainment
PM2.5	Attainment	Unclassified	Unclassified	Unclassified

Source: CARB 2006b, USEPA 2006

a. The attainment status of the California 8-hour ozone standards, promulgated in 2005, have not yet been determined.

Figures C.2-2 and C.2-3 summarize the historical air quality data for the Project area collected at the nearest representative air quality monitoring stations in Lancaster and Mojave, respectively.

Figure C.2-2. Normalized Maximum Short-term Historical Air Pollutant Concentrations in Lancaster

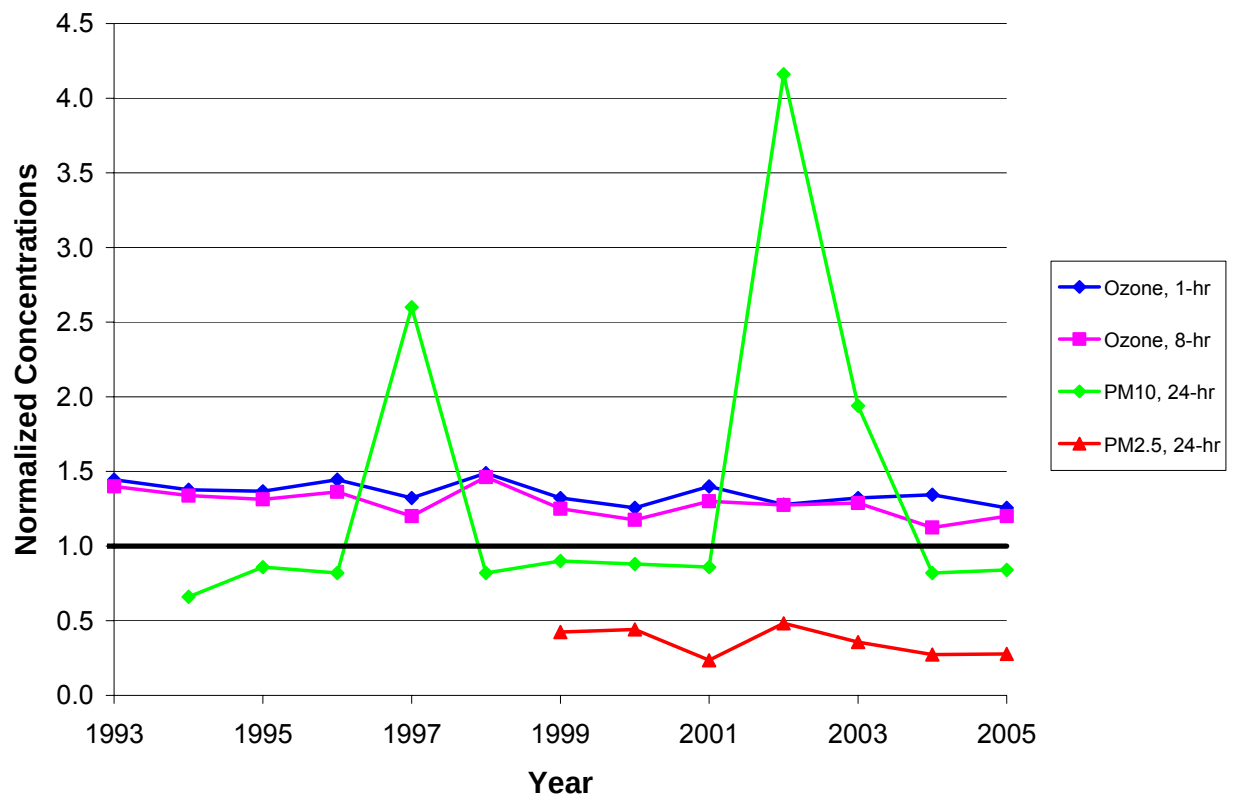


Source: CARB 2002, CARB 2006c.

a. A Normalized Concentration is the ratio of the highest measured concentration to the applicable most stringent air quality standard. For example, in 1990 the highest 1-hour average ozone concentration measured at Lancaster Pondera Street was 0.150 ppm. Since the most stringent ambient air quality standard is the State standard of 0.09 ppm, the 1990 normalized concentration is 0.150/0.09 = 1.67.

b. The second highest maximum for PM10 in 1990 and 1991 are used since the highest maximums, which were 342 and 780 $\mu g/m^3$, respectively, likely occurred as a result of wind-related events.

Figure C.2-3. Normalized Maximum Short-term Historical Air Pollutant Concentrations in Mojave



Source: CARB 2006c.

Various monitoring stations in the area were used to compile available data for 1985 to 2005 (21-year period) for Lancaster, and all available data for 1993 to 2005 from the Mojave 923 Poole Street monitoring station was used to create Figures C.2-2 and C.2-3. For ozone in the Lancaster area, the following monitoring stations were used: Lancaster (1985-1989), Lancaster West Pondera Street (1990-2001), and Lancaster Division Street (2002-2005). For PM10 in the Lancaster area, the following monitoring stations were used: Lancaster (1989), Lancaster West Pondera Street (1990-2001), and Lancaster Division Street (2002-2005). And for PM2.5 in the Lancaster area, the following monitoring stations were used: Lancaster West Pondera Street (1999-2001) and Lancaster Division Street (2002-2005). Normalized concentrations represent the ratio of the highest measured concentrations in a given year to the most-stringent currently applicable national or State ambient air quality standard. Therefore, normalized concentrations lower than one indicates that the measured concentrations were lower than the most-stringent ambient air quality standard.

As shown in Figures C.2-2 and C.2-3, the Project area has ambient concentrations above the State 1-hour and 8-hour ozone standards and the State 24-hour PM10 standard, and the Project area does not have ambient concentrations above the federal 24-hour PM2.5 standard. In the long term, there has been an overall gradual downward trend for the maximum ozone, PM10 (excepting Mojave), and PM2.5 concentrations.

Ozone

In the presence of ultraviolet radiation, both NO_x and VOCs go through a number of complex chemical reactions to form ozone. Table C.2-4 summarizes the best representative ambient ozone data for the Project area collected over the past ten years from monitoring stations in the western MDAB. The table includes the maximum hourly concentration and the number of days above the National and State standards. As indicated in this table, ozone formation is generally higher in spring and summer and lower in the winter. The Los Angeles County and Kern County portions of the MDAB in the Project area are classified as extreme and moderate nonattainment areas, respectively, for the 1-hour CAAQS. The Los Angeles County and Kern County portions of the MDAB in the Project area are classified as moderate and basic nonattainment areas, respectively, for the 8-hour NAAQS. Classifications for the 8-hour ozone CAAQS have not yet been determined.

Table C.2-4. Ozone Air Quality Summary 1995-2005

Year	Days Above NAAQS 1-Hr	Days Above CAAQS 1-Hr	Month of Max. 1-Hr Avg.	Max. 1-Hr Avg. (ppm)	Days Above NAAQS 8-Hr	Month of Max. 8-Hr Avg.	Max. 8-Hr Avg. (ppm)
	Mojave - 923 Poole Street						
1995	0	33	AUG	0.123	30	AUG	0.105
1996	2	46	AUG	0.130	42	MAY	0.109
1997	0	22	DEC	0.119	19	JUN	0.096
1998	2	43	JUL	0.134	40	JUL	0.117
1999	0	39	SEP	0.119	34	JUL	0.100
2000	0	25	JUL	0.113	15	JUL	0.094
2001	1	33	AUG	0.126	32	AUG	0.104
2002	0	18	JUL	0.115	26	JUL	0.102
2003	0	31	JUL	0.119	27	JUN	0.103
2004	0	8	SEP	0.121	3	JUN	0.090
2005	0	8	JUN	0.113	9	JUN	0.096
	Lancaster – West Pondera Street						
1995	5	61	JUN	0.141	35	JUL	0.112
1996	1	40	JUL	0.131	18	JUN	0.104
1997	0	14	JUN	0.123	7	JUN	0.101
1998	8	24	JUL	0.164	18	JUL	0.118
1999	0	1	JUN	0.097	0	JUN	0.083
2000	2	35	JUL	0.141	28	JUL	0.117
2001	3	37	AUG	0.146	24	AUG	0.102
	Lancaster – 43301 Division Street						
2002	5	46	JUL	0.157	38	AUG	0.107
2003	4	50	JUL	0.156	33	JUL	0.120
2004	0	37	JUN	0.121	24	JUN	0.101
2005	1	42	AUG	0.127	31	JUL	0.103

Source: CARB 2006c.
California Ambient Air Quality Standard (CAAQS): 1-hr, 0.09 ppm
National Ambient Air Quality Standard (NAAQS): 1-hr, 0.12 ppm; 8-hr, 0.08 ppm

The long-term trends for ozone concentrations have shown some reduction since the mid 1980's; however, since the mid 1990's the trend has been fairly flat and ozone continues to be above the State 1-hour and federal 8-hour ozone standards. The western MDAB is primarily impacted by ozone and ozone precursor pollutants transported from the SCAB (i.e. Metropolitan Los Angeles) and the San Joaquin Valley Air Basin (SJVAB). The long-term trends in ozone pollutant levels in the western MDAB are inexorably tied to the reduction in ozone precursor pollutant levels in these two upwind air basins.

Carbon Monoxide (CO)

CO is generally found in high concentrations only near a significant source of emissions (i.e., freeway, busy intersection, etc.). The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level in what is known as the stable boundary layer. These conditions occur frequently in the wintertime late in the afternoon, persist during the night and may extend one or two hours after sunrise. Since mobile sources (motor vehicles) are the main cause of CO, ambient concentrations of CO are highly dependent on motor vehicle activity. In fact, the peak CO concentrations occur during the rush hour traffic in the morning and afternoon. Carbon monoxide concentrations in the State have declined significantly due to two Statewide programs: (1) the 1992 wintertime oxygenated gasoline program, and (2) Phases I and II of the reformulated gasoline program. Additionally, overall vehicle fleet turnover from higher-emitting older engines to lower-emitting new engines is a significant factor in the declining CO levels.

Table C.2-5 summarizes the best representative ambient carbon monoxide data for the Project area collected over the past ten years from Lancaster monitoring stations. The table includes the available maximum 1-hour and 8-hour concentrations.

Table C.2-5. Carbon Monoxide Air Quality Summary 1996-2005

Year	Maximum 1-Hr Avg. (ppm)	Month of Max. 8-Hr Avg.	Maximum 8-Hr Avg. (ppm)
	Lancaster – West Pondera Street		
1996	6.8	DEC	4.69
1997	5.9	DEC	3.99
1998	5.4	DEC	3.59
1999	7.2	JAN	5.41
2000	6.0	DEC	4.34
2001	---	JAN	3.33
	Lancaster – 43301 Division Street		
2002	---	SEP	2.24
2003	---	DEC	1.88
2004	---	JAN	1.72
2005	---	DEC	1.54

Source: CARB 2002, CARB 2006c.
California Ambient Air Quality Standard (CAAQS): 1-hr, 20; 8-hr, 9.0 ppm
National Ambient Air Quality Standard (NAAQS): 1-hr, 35 ppm; 8-hr, 9 ppm

Most of the proposed Project site route area, and proposed Options route areas, would be expected to have lower CO levels than those presented in Table C.2-5, as most of these routes are not located near dense population centers and would experience minimal or no nearby vehicle traffic, which is the major contributor to CO emissions. As indicated in the table, there have been no exceedances of CAAQS or NAAQS since at least 1995 for the 1-hour and the 8-hour CO standards in Lancaster.

Nitrogen Dioxide (NO_2)

The majority of the NO_x emitted from combustion sources is in the form of NO, while the balance is mainly NO_2. NO is oxidized by O_2 (oxygen) in the atmosphere to NO_2 but some level of photochemical activity is needed for this conversion. This is why the highest concentrations of NO_2 often occur during the fall and not in the winter. While winter atmospheric conditions favor the trapping of ground level releases of NO there is a lack of significant radiation intensity (less sunlight) to oxidize NO to NO_2. In the summer, the conversion rates of NO to NO_2 are high, but the relatively high temperatures and windy conditions (atmospheric unstable conditions) disperse pollutants, preventing the accumulation of NO_2 to levels approaching the 1-hour ambient

air quality standard. NO is also oxidized by O_3 to form NO_2. The formation of NO_2 in the summer with the help of the ozone occurs according to the following reaction:

$$NO + O_3 \rightarrow NO_2 + O_2$$

In urban areas, ozone concentration level is typically high. That level will drop substantially at night as the above reaction takes place between ozone and NO. This reaction explains why, in urban areas, ozone concentrations at ground level drop, while aloft and in downwind rural areas (without sources of fresh NO_x emissions) ozone concentrations can remain relatively high.

Table C.2-6 summarizes the best representative ambient nitrogen dioxide data for the Project area collected over the past ten years from western MDAB monitoring stations. The table includes the maximum 1-hour and annual concentrations. As indicated in the table, there have been no exceedances of California Ambient Air Quality Standards or National Ambient Air Quality Standards since at least 1996 for the 1-hour and the annual NO_2 standards. The MDAB is either unclassified or in attainment for nitrogen dioxide.

Table C.2-6. Nitrogen Dioxide Air Quality Summary 1996-2005

Year	Month of Max. 1-Hr Avg.	Maximum 1-Hr Avg. (ppm)	Maximum Annual Avg. (ppm)
	Mojave – 923 Poole Street		
1996	AUG	0.075	0.009
1997	DEC	0.075	0.010
1998	AUG	0.082	0.011
1999	SEP	0.083	0.010
2000	FEB	0.071	0.010
2001	SEP	0.071	0.010
2002	NOV	0.071	0.009
2003	FEB	0.073	0.009
2004	OCT	0.064	0.008
2005	na	na	na
	Lancaster – West Pondera Street		
1996	DEC	0.080	0.015
1997	OCT	0.071	0.014
1998	NOV	0.077	0.016
1999	NOV	0.083	0.018
2000	NOV	0.065	0.016
2001	OCT	0.075	---
	Lancaster – 43301 Division Street		
2002	JUN	0.101	0.016
2003	MAY	0.067	0.015
2004	AUG	0.103	0.015
2005	SEP	0.074	0.015

Source: CARB 2006c.
California Ambient Air Quality Standard (CAAQS): 1-hr, 0.25 ppm
National Ambient Air Quality Standard (NAAQS): Annual, 0.053 ppm

Inhalable Particulate Matter (PM10)

PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NO_x, SO_x, VOC, and ammonia, given the right meteorological conditions, can form particulate matter in the form of nitrates (NO_3), sulfates (SO_4), and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted, but are formed through complex chemical reactions in the atmosphere.

Table C.2-7 summarizes the ambient particulate matter data collected from the western MDAB monitoring stations located nearest the Project area. The table includes the maximum 24-hour and annual arithmetic average concentrations.

Table C.2-7. Particulate Matter Air Quality Summary 1996-2005

Year	Days * Above Daily NAAQS	Days * Above Daily CAAQS	Month of Max. Daily Avg.	Max. Daily Avg. (μg/m³)	State Annual Arithmetic Mean (μg/m³)
	Mojave – 923 Poole Street				
1996	0	0	AUG	41	16.9
1997	6	0	AUG	130	18.4
1998	0	0	APR	41	15.0
1999	0	0	SEP	45	17.7
2000	0	---	OCT	44	---
2001	0	0	JUN	43	18.2
2002	7	7	OCT	208	21.4
2003	0	12	FEB	97	19.3
2004	0	0	SEP	41	18.3
2005	---	---	SEP	42	---
	Lancaster – West Pondera Street				
1996	0	12	SEP	67	29.0
1997	0	12	FEB	54	---
1998	0	---	DEC	80	---
1999	0	---	DEC	85	---
2000	---	---	---	---	---
2001	---	---	---	---	---
	Lancaster – 43301 Division Street				
2002	0	---	DEC	73	---
2003	0	6	OCT	57	23.2
2004	0	---	SEP	56	---
2005	0	---	JUL	53	---

Source: CARB 2006c.

California Ambient Air Quality Standard (CAAQS): 24-hr, 50 μg/m³; annual arithmetic, 20 μg/m³

National Ambient Air Quality Standard (NAAQS): 24-hr, 150 μg/m³; annual arithmetic, 50 μg/m³

* Days above the State and national standard (calculated): Because PM10 is monitored approximately once every six days, the potential number of exceedance days is calculated by multiplying the actual number of days of exceedance by six.

As shown in Table C.2-7, the Project area experiences exceedances of the State and 24-hour PM10 standards and the State annual arithmetic mean PM10 standards. The western MDAB in the project area is unclassified for the federal PM10 standard and in nonattainment of the State PM10 standard.

There has been an overall gradual downward trend for PM10 concentrations and number of exceedances of the California 24-Hour Standard; however, there has been little or no further progress since 1993. Additionally, meeting the revised PM10 annual arithmetic mean State standard of 20 μg/m³ will pose an even greater challenge than meeting the former annual geometric mean State standard of 30 μg/m³.

Fine Particulate Matter (PM2.5)

Table C.2-8 summarizes the ambient fine particulate matter data collected over the past seven years from the western MDAB monitoring stations located nearest the Project area. The MDAB is unclassified for both the federal and State PM2.5 standards.

Table C.2-8 Fine Particulate Matter Air Quality Summary 1999-2004

Year	Month of Max. Daily Avg.	Max. Daily Avg. ($\mu g/m^3$)	98th Percentile of Max. Daily Avg. ($\mu g/m^3$)	Days Above 98th Percentile Daily NAAQS	3-Yr. Avg. 98th Percentile of Max. Daily Avg. ($\mu g/m^3$)	National Annual Avg. ($\mu g/m^3$)	3-Yr. Avg. of National Annual Avg. ($\mu g/m^3$)
	Mojave – 923 Poole Street						
1999	FEB	27.6	---	0	---	---	---
2000	DEC	28.7	---	0	---	---	---
2001	MAY	15.3	13.9	0	---	6.1	---
2002	OCT	31.4	---	0	---	---	---
2003	NOV	23.2	---	0	---	---	---
2004	JUN	17.8	---	0	---	---	---
2005	JUL	18.1	---	0	---	---	---
	Lancaster West Pondera Street						
1999	JUL	47.6	23.5	0	---	11.2	---
2000	DEC	36.0	21.0	0	---	10.5	---
2001	JAN	35.0	---	0	---	---	---
	Lancaster – 43301 Division Street						
2002	OCT	24.0	20.0	0	---	10.4	---
2003	MAR	25.0	17.0	0	---	9.4	---
2004	JUL	18.0	15.0	0	17	8.5	9
2005	FEB	28.0	16.0	0	16	8.9	8

Source: CARB 2006c.

National Ambient Air Quality Standard: 3-Year Average - 98th Percentile of 24-Hr Avg. Conc., 65 $\mu g/m^3$.

3-Year Average of Annual Arithmetic Mean (National Annual Average), 15 $\mu g/m^3$; 3-Year Average of Annual Arithmetic Mean (State Annual Average), 12$\mu g/m^3$.

Sulfur Dioxide (SO_2)

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Fuels such as natural gas contain very little sulfur and consequently have very low SO_2 emissions when combusted. By contrast, fuels high in sulfur content such as coal or heavy fuel oils can emit very large amounts of SO_2 when combusted. Sources of SO_2 emissions come from every economic sector and include a wide variety of fuels, gaseous, liquid and solid.

The MDAB is designated attainment or unclassified for all SO_2 State and federal ambient air quality standards. There are no monitoring stations near the Project site or within the MDAB west of Victorville/Trona; therefore, no representative SO_2 ambient air quality data exists. The closest currently operating SO_2 monitoring stations to the Project area is in Burbank south of the San Gabriel Mountains, where no exceedances of the SO_2 CAAQS or NAAQS have been observed between 1985 and 2005. Additionally, the Victorville and Trona SO_2 monitoring stations (located approximately 50 miles east and 70 miles northeast of the project area, respectively) have not shown any exceedances of the SO_2 CAAQS or NAAQS between 1985 and 2005 (CARB, 2006c).

Summary

As discussed above and presented in Table C.2-3, the Project area is in nonattainment of the State ozone and PM10 standards, and the federal 8-hour ozone standard. The Project area is designated as attainment and/or unclassified for all other criteria pollutant standards. The Project area's attainment status is significantly influenced by pollutant transport from both the south (South Coast Air Basin, i.e., Los Angeles area) and the west (San Joaquin Valley Air Basin). The long-term trends in pollutant levels in the western MDAB are inexorably tied to the reduction in pollutant levels in these two upwind air basins.

C.2.1.3 Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill and the chronically ill, especially those with cardio-respiratory diseases. Construction impacts from the project will be localized and will be limited to short periods of time at the tower/pole sites, pole demolition sites, and the affected new and existing substations. The localized short-term impacts are greatest to those located adjacent or very close to these construction sites. Sensitive receptors located more then 500 feet from these construction sites will have limited exposure times and concentrations, so only the sensitive receptors located within 500 feet of the construction sites are considered those with potentially significant pollutant exposure.

Residential areas are also considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods for industrial/commercial areas are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

A land use survey was conducted to identify sensitive receptors (e.g., local residences, schools, hospitals, churches, recreational facilities) in the general vicinity of the proposed Project alignment. The two new substations, Substation One and Substation Two, and the route between these two substations is very remote and traverses through an existing wind farm area where no more than a couple of residences would be located within 500 feet of a transmission tower construction site. In the southern portion of Segment 3 (Substation One to Antelope Substation), the transmission line route would travel through generally undeveloped or agricultural areas where only a few rural residences would be located within 500 feet of a transmission tower or pole construction site. In the Segment 2 portion of the route the majority of the transmission line would pass through undeveloped or agricultural areas with very few nearby residences; however, the proposed Project would pass nearby of the exiting Anaverde residential development and for Option B would pass through the future Ritter Ranch residential development. No schools or hospitals are currently located adjacent to the route or within 500 feet of any of the project's construction sites. The closest school is located more than one-half mile from any project related construction sites (towers, poles, substations), and the closest hospital is located more than two miles from any project related construction sites.

C.2.2 Regulatory Framework

The proposed Project includes construction but does not include any stationary emission sources, so there are very few direct air quality regulations that specifically regulate the Project's air quality emission sources. The regulations that do apply, such as fugitive dust regulations, tend to be general and allow multiple means of achieving compliance. A description of the specific and general regulations that apply to the Project is provided below.

C.2.2.1 Federal

The United States Environmental Protection Agency (USEPA) has issued a number of National Ambient Air Quality Standards (NAAQS). Pollutants regulated under these standards include ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), respirable particulate matter (PM10), fine particulate matter (PM2.5), and

sulfur dioxide (SO_2). Additional information regarding the NAAQS that are relevant to the Project is provided Section C.2.1.2. The KCAPCD, AVAQMD and the California Air Resources Board (CARB) are the responsible agencies for providing attainment plans and meeting attainment with these standards; and the USEPA reviews and approves these plans and regulations that are designed to attain and maintain attainment with the NAAQS.

USEPA has a number of other regulations under the authority of the federal Clean Air Act (such as New Source Review (NSR), Prevention of Significant Deterioration (PSD), Title V permitting program, etc.); however, none of these regulations apply to this Project because the Project would have no operating stationary emission sources. The USEPA does have on-road and off-road engine emission reduction programs that indirectly affect the Project's emissions through the phasing in of cleaner on-road and off-road equipment engines.

C.2.2.2 State

CARB has issued a number of California Ambient Air Quality Standards (CAAQS). These standards include pollutants not covered under the NAAQS and also require more stringent standards than provided under the NAAQS. Pollutants regulated under these standards include ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), respirable particulate matter (PM10), fine particulate matter (PM2.5), sulfur dioxide (SO_2), lead, sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. Additional information regarding the CAAQS that are relevant to the Project is provided Section C.2.1.2.

CARB, like USEPA, also has on-road and off-road engine emission reduction programs that indirectly affect the Project's emissions through the phasing in of cleaner on-road and off-road equipment engines. Additionally, CARB has a Portable Equipment Registration Program that allows owners or operators of portable engines and associated equipment to register their units under a Statewide portable program to operate their equipment, which must meet specified program emission requirements, throughout California without having to obtain individual permits from local air districts.

C.2.2.3 Local

The proposed Project is routed through two separate local jurisdictions, the KCAPCD and the AVAQMD. The local jurisdictions are responsible for planning, implementing, and enforcing federal and State ambient standards within their jurisdictions. The regulations of these agencies are focused on stationary sources; therefore, most of the local agency regulations are not relevant to this Project. However, portable engines used during construction that are larger than 50 hp and that are not registered under the CARB Portable Equipment Registration Program would need to be obtain permits from the KCAPCD and AVAQMD.

Both agencies have visible emissions, nuisance, and fugitive dust regulations with which the Project's construction will need to comply. The specific regulations are as follows:

KCAPCD Rule 401 – Visible Emissions	AVAQMD Rule 401 – Visible Emissions
KCAPCD Rule 402 – Fugitive Dust	AVAQMD Rule 402 – Nuisance
KCAPCD Rule 419 – Nuisance	AVAQMD Rule 403 – Fugitive Dust

These rules limit the visible dust emissions from the project construction sites, prohibit emissions that can cause a public nuisance, and require the prevention and reduction of fugitive dust emissions. One or more measures are required by the Fugitive Dust rules reduce fugitive dust emissions from specific dust causing activities. These measures may include, adding freeboard to haul vehicles, covering loose material on haul

vehicles, watering, using chemical stabilizers and/or ceasing all activities (such as during periods of high winds).

C.2.3 Applicant-Proposed Measures (APMs)

The Applicant-Proposed Measures (APMs) are shown in Table C.2-9 (SCE, 2004).

Table C.2-9. Applicant-Proposed Measures – Air Quality	
APM AQ-1	Use of low sulfur diesel fuel. (see Mitigation Measure A-1a)
APM AQ-2	Use of clean-burning on-road and off-road diesel engines. Where feasible, heavy-duty diesel powered construction equipment manufactured after 1996 (with federally mandated "clean" diesel engines) would be utilized. (see Mitigation Measure A-1g).
APM AQ-3	Construction workers would carpool when possible.
APM AQ-4	Vehicle idling time would be minimized. (see Mitigation Measure A-1d.)
APM AQ-5	Water all active construction areas, access roads, and staging areas as needed. (See Mitigation Measure A-1a).
APM AQ-6	Cover all trucks hauling soil and other loose material, or require at least 2 feet of freeboard. (See Mitigation Measure A-1a).
APM AQ-7	Construction vehicles would use paved roads to access the construction site when possible. (See Mitigation Measure A-1a).
APM AQ-8	Limit vehicle speeds to 15 mph on unpaved roads. (See Mitigation Measure A-1a).
APM AQ-9	Clean paved streets daily if visible soil material is carried onto adjacent public streets.
APM AQ-10	Apply soil stabilizers to inactive construction areas on an as- needed basis. (See Mitigation Measure A-1a).
APM AQ-11	Enclose, cover, water twice daily, or add soil binders to exposed stockpiles of soil and other excavated materials.
APM AQ-12	Replant vegetation in disturbed areas following the completion of construction. (See Mitigation Measure A-1a).

Many of these proposed measures do not provide definitive requirements, do not ensure measurable emission reductions, and are not enforceable as written. Hence, some of these measures, as noted in Table C.2-9, have been replaced and/or rewritten in Mitigation Measure A-1a provided in Section C.2.4.2.2.

C.2.4 Environmental Impacts and Mitigation Measures

The air quality impacts of the proposed Project are discussed below under subheadings corresponding to each of the significance criterion presented in the following section. The analysis describes the impacts of the proposed Project related to air quality and, for each criterion, determines whether implementation of the proposed Project would result in significant impacts.

C.2.4.1 Criteria for Determining Significance

CEQA allows for the significance criteria established by the applicable air quality management or air pollution control district to be used to assess impacts of a project on air quality. The AVAQMD and the KCAPCD have established regional thresholds of significance for construction activities and for project operations as shown below in Table C.2-10. As a conservative approach, the most stringent of these standards would apply to the proposed Project.

Note that ozone and PM2.5 are not included in Table C.2-10. Ozone is not directly emitted from stationary or mobile sources; rather it is formed as the result of chemical reactions in the atmosphere between directly emitted air pollutants, specifically oxides of nitrogen (NOx) and hydrocarbons (VOCs). Therefore, it cannot be directly regulated. PM2.5 is not included as it is currently in the beginning stages of becoming regulated, and as such, PM2.5 significance thresholds have not yet been developed.

Table C.2-10. Air Quality Regional Thresholds

Criteria Pollutant	Antelope Valley AQMD		Kern County APCD	
	Construction or Operation		Construction or Operation	
	tons/year	lbs/day	Tons/year	lbs/day
Volatile Organic Compounds (VOC)	25	137	25	137 [1]
Oxides of Nitrogen (NOx)	25	137	25	137 [1]
Particulate Matter (PM10)	15	82	15	--
Oxides of Sulfur (SOx)	25	137	27	--
Carbon Monoxide (CO)	100	548	--	--

1 – Indirect vehicle trip emissions only. The project does not create indirect trip generation, such as a housing project, so the project does not have the potential to create significant impacts for this KCAPCD significance criteria.

Source: AVAQMD 2002 and KCAPCD 1999.

For this analysis, the proposed Project may result in significant impacts if:

- Criterion AIR1: The Project would be inconsistent with the current approved Air Quality Management Plan.
- Criterion AIR2: The Project would generate emissions of air pollutants that would exceed any AVAQMD or KCAPCD air quality significance threshold as defined in Table C.2-10.
- Criterion AIR3: The Project would generate emissions of air pollutants that could expose sensitive receptors to substantial pollutant concentrations.
- Criterion AIR4: The Project would expose a substantial number of people to objectionable odors.

C.2.4.2 Impact Analysis

Construction Overview

Construction of the proposed Project would include the following separate construction/demolition activities:

- Equipment and material receipt, storage, and preparation for site delivery at the primary and secondary marshalling yards.
- Construction and maintenance of unpaved access roads.
- Installation of new supporting structure foundations.
- Erection of new tower/pole structure.
- Stringing of the new conductor.
- Installation of guard poles and cleanup activities.
- Removal and relocation of several miles of 66 kV poles.
- Construction of new facilities at the Antelope and Vincent substations.
- Construction of the proposed Substation 1 and Substation 2

The detailed construction activity assumptions, including the construction equipment use, onroad traffic, helicopter use, and construction schedule are provided in Appendix 3.

Operation Overview

The operating emissions from the proposed Project and ~~two~~three project Options are comprised of regular annual inspection activities, and occasional unscheduled maintenance activities, only as necessary (SCE 2004). No new stationary source operating emission sources are proposed to be constructed/operated as part of this Project. The new substations would be unmanned and no new personnel would be required for the existing facilities. The normal operating emissions would only include a few hours of small helicopter use and the use

of a crew truck for a week each year to inspect the transmission line. The detailed operating activity assumptions and emission calculations are provided in Appendix 3.

C.2.4.2.1 Impact and Mitigation Summary

This section summarizes the conclusions of the impact analysis and associated mitigation measures presented in Section C.2.4.2.2. Table C.2-11 lists each impact identified for the proposed Project, along with the significance of each impact. Impacts are classified as Class I (significant, cannot be mitigated to a level that is less than significant), Class II (significant, can be mitigated to a level that is less than significant), Class III (adverse, but less than significant), or Class IV (beneficial). Detailed discussions of each impact and the specific locations where each is identified are presented in the following sections.

Table C.2-11. Impact and Mitigation Summary – Air Quality

Impact	Impact Significance	Mitigation Measures*
A-1: Project emissions would exceed the AVAQMD regional emission thresholds.	Class I	A-1a through A-1i
A-2: Project emissions would exceed the KCAPCD regional emission thresholds.	Class II	A-1a through A-1i
A-3: The Project would expose sensitive receptors to substantial pollutant concentrations.	Class II	A-1a through A-1i
A-4: The Project would create objectionable odors.	Class III	None required

* Applicable to significant impacts only (i.e., Class I and Class II).

C.2.4.2.2 Project Impacts and Mitigation Measures

Air Quality Management Plan Conformance (Criterion AIR1)

The proposed Project is located in the MDAB under the jurisdiction of the KCAPCD and the AVAQMD. These Districts are responsible for developing those portions of the State Implementation Plan (SIP), and the Air Quality Management Plan (AQMP), that deal with certain stationary and area source controls and, in cooperation with the transportation planning agencies (TPAs), the development of transportation control measures (TCMs). The California Air Resources Board (CARB) is responsible for submitting the SIP to USEPA. The conformance with the air quality management plans for each local air basin/district are discussed separately.

Kern County Air Pollution Control District

The eastern Kern County portion of the MDAB is designated as non-attainment for both federal (8-hour) and State (1-hour) ozone and state PM10 standards. All other criteria pollutants (NO_2, and SO_2, and PM2.5) are considered to be in attainment by the State, and in attainment and/or unclassified under federal standards.

The KCAPCD developed an ozone redesignation request and maintenance plan for the federal 1-hour ozone standard in 2003 (KCAPCD 2003). The eastern portion of Kern County was determined to be in attainment of the 1-hour ozone standard by the USEPA in 2004 and deemed a maintenance area (FR 2004). The initial 8-hour ozone standard attainment plan is not yet due to USEPA; however, the 1-hour ozone maintenance plan remains in force until such time as the 8-hour attainment plan is approved. The 1-hour ozone maintenance plan requires no new control measure for maintaining attainment of the 1-hour standard.

The KCAPCD California Clean Air Act Ozone Air Quality Attainment Plan was approved by the California Air Resources Board (CARB) on February 18, 1993. KCAPCD's most recent Annual Implementation

Progress Report for this attainment plan was completed in 2005 (KCAPCD 2005). The implementation progress report notes that the area is overwhelmingly impacted by upwind transport, with the majority of the ambient ozone pollution in the area being due to pollutants that are transported by the wind from the San Joaquin Valley and South Coast Air Basins. The implementation progress report indicates that no additional control measures are required for attainment of the ozone CAAQS, attainment will occur by reducing the pollution in these adjacent air basins.

Therefore, both the federal and State ozone management plans require no new control measures that would affect the proposed Project and compliance with existing KCAPCD rules and regulations during construction and operation would ensure conformance with the approved KCAPCD air quality management plans.

Antelope Valley Air Quality Management District

The Antelope Valley portion of the MDAB is in non-attainment of the federal and State ozone standards and the State PM10 standard. The AVAQMD has developed a 2004 Ozone Attainment Plan (State and federal attainment) and has prepared a list of measures to reduce PM emissions to meet State planning requirements. The ozone plan was prepared based on violating the 1-hour ozone standard that was revoked in 2005, and the initial 8-hour ozone standard attainment plan is not yet due to USEPA; however, the 1-hour ozone attainment plan remains in force until such time as the 8-hour plan is approved.

Ozone

The AVAQMD 2004 Ozone Attainment Plan (AVAQMD, 2004) does not propose any new control measures beyond those identified in the former SCAQMD 1997 Air Quality Management Plan (SCAQMD, 2006a) that included the Antelope Valley, prior to its split into a separate jurisdiction in 1997. Of the control measures presented in the 1997 plan, the only measure that appears relevant to the proposed Project is FIP-11, which proposes a strategy to regulate emissions from non-road internal combustion engines greater than or equal to 50 horsepower (hp). The incorporation of the recommended Mitigation Measures A-1f through A-1i (see below under Criterion AIR2), that mitigate non-road construction equipment engine emissions, should meet the intent of control measure FIP-11. Therefore, the proposed Project would be consistent with the Ozone Air Quality Management Plan for Antelope Valley.

PM10

The AVAQMD prepared a list of measures to reduce PM emissions in 2005 (AVAQMD, 2005). Of the new control measures listed, the only applicable measures are fugitive dust control measures that would be integrated into Rule 403 – Fugitive Dust. The construction contractor will be required to comply with all AVAQMD rules and regulations; therefore, the Project would comply with the AVAQMD State PM attainment control measures.

Summary

The proposed Project must comply with all rules and regulations applicable at the time of the Project's construction and operation; and the proposed Project would not cause significant direct or indirect population or traffic growth and so would not impact the growth projections considered by the relevant AQMPs. Additionally, the mitigation measures required below under Criterion AIR2 would meet the intent of all relevant AQMP control measures for the AVAQMD. Therefore, the proposed Project is less than significant based upon Criterion AIR1.

Regional Emission Thresholds (Criterion AIR2)

Construction of the proposed Project would result in short-term impacts to ambient air quality. Construction is tentatively scheduled for March 2008 through June 2009. Temporary construction emissions would result from on-site activities, such as surface clearing, excavation, foundation construction, steel construction, etc.; and from off-site activities such as construction related haul trips and construction worker commuting. Pollutant emissions would vary from day to day depending on the level of activity, the number of concurrent construction activities, the location of the construction activities, and the prevailing weather (i.e., wind and rain).

Construction equipment would include machinery such as bulldozers, graders, backhoes, loaders, cranes, water trucks, dump trucks, diggers, tension machines, and concrete pump trucks (SCE, 2004). A considerable number of the off-site truck trips are associated with importing concrete and structural steel for the Segment 2 and 3 T/L construction and exporting wastes from the 66-kV line demolition.

Air emissions for the proposed Project were calculated using the latest standard calculation methodologies accepted by such agencies as the South Coast Air Quality Management District (SCAQMD) and incorporating applicant proposed measures, and additional appropriate mitigation measures, such as fugitive dust controls. For on-road and off-road vehicles (except helicopters), SCAQMD approved emission factors for the year 2008 (SCAQMD, 2006b) were used. Fugitive dust emissions were calculated using the USEPA's AP-42 emission factors (USEPA, 2003) and various SCAQMD CEQA Handbook (SCAQMD, 1993) guideline parameters (e.g., silt content, precipitation, etc.) were used as inputs into the USEPA emission factor calculations. Helicopter emission factors are based on available helicopter engine emission factors in the FAA Aircraft Engine Emissions Database (FAEED) database (FAA, 2001). Emission calculation methodology, emission factors, and emission calculations are presented in Appendix 3.

Impact A-1: Project emissions would exceed the AVAQMD regional emission thresholds.

Construction

Based on the assumed construction schedule, it is assumed that the worst-case day would occur in August 2008 for AVAQMD emissions. Maximum daily and maximum annual construction emission calculations and assumptions are presented in Appendix 3 and a comparison of those emissions with the AVAQMD significance criteria are presented in Table C.2-12.

Table C.2-12. Proposed Project Construction Emission / AVAQMD Regional Emission Threshold Comparison

		Emissions (daily – lbs/day, total - tons)					
Air District		NOx	VOC	CO	PM10	PM2.5	SO_2
AVAQMD	Maximum Daily Emissions	385	47	282	556	122	1
	Significance Threshold	137	137	548	82	--	137
	Exceeds (YES/NO)	YES	NO	NO	YES	--	NO
	Total Emissions	24.9	3.4	19.4	19.2	5.4	0.0
	Significance Threshold	25	25	150	15	--	25
	Exceeds (YES/NO)	NO	NO	NO	YES	--	NO

Daily construction emissions would be significant for NOx and PM10 on a daily basis in the AVAQMD and, depending on final Project schedule, would be significant for PM10 on an annual basis in the AVAQMD.

Implementation of Mitigation Measures A-1a through A-1i would reduce construction impacts to air quality to the maximum degree feasible but would not eliminate all significant impacts. The proposed Project's NOx and PM10 emissions, even after implementation of all feasible mitigation measures listed below, will remain above the AVAQMD daily significance threshold values for NOx and PM10. Additionally, depending on the actual project schedule the annual PM10 emission would remain above the AVAQMD annual significance thresholds. Therefore, the daily emissions from the proposed Project would cause significant and unavoidable impacts (**Class I**).

Mitigation Measures for Impact A-1

A-1a **Implement Construction Fugitive Dust Control Plan.** SCE shall develop a Fugitive Dust Emission Control Plan (FDECP) for construction work. The plan shall be submitted to the CPUC for review and approval prior to construction. Measures incorporated into the plan shall include, but are not limited to, the following:

- Water the disturbed areas of the active construction sites at least three times per day and more often if uncontrolled fugitive dust is noted.
- Enclose, cover, water twice daily, and/or apply non-toxic soil binders according to manufacturer's specifications to exposed piles with a five percent or greater silt content.
- CARB certified non-toxic soil binders shall be applied per manufacturer recommendations to active unpaved roadways, unpaved staging areas, and unpaved parking area(s) throughout construction to reduce fugitive dust emissions. Other non-toxic soil binder products, selected from lists available from EPA's Environmental Technology Verification program or the SCAQMD, may be applied per manufacturer recommendations in place of the CARB certified soil binders if such products can be reasonably demonstrated to be as effective as the CARB certified non-toxic soil binders.
- Maintain unpaved road vehicle travel to the lowest practical speeds, and no greater than 15 mph, to reduce fugitive dust emissions.
- All vehicle tires shall be inspected, are to be free or dirt, and washed as necessary prior to entering paved roadways.
- Install wheel washers or wash the wheels of trucks and other heavy equipment where vehicles exit the site.
- Cover all trucks hauling soil and other loose material, or require at least two feet of freeboard.
- Establish a vegetative ground cover (in compliance with biological resources impact mitigation measures) or otherwise create stabilized surfaces on all unpaved areas at each of the construction sites within 21 days after active construction operations have ceased.
- Increase the frequency of watering, or implement other additional fugitive dust mitigation measures, to all active disturbed fugitive dust emission sources when wind speeds (as instantaneous wind gusts) exceed 25 miles per hour (mph).
- Travel routes to each construction site shall be developed to minimize unpaved road travel.

A-1b **Properly Maintain Mechanical Equipment.** The construction contractor shall ensure that all mechanical equipment associated with project construction is properly tuned and maintained in accordance with the manufacturer's specifications.

A-1c **Use Ultra Low-sulfur Diesel Fuel.** CARB-certified ultra low-sulfur diesel (ULSD) fuel containing 15 ppm sulfur or less shall be used in all diesel-powered construction equipment.

A-1d **Restrict Engine Idling to 10 Minutes.** Diesel engine idle time shall be restricted to no more than 10 minutes.

A-1e **Schedule Deliveries Outside of Peak Traffic Hours.** All material deliveries to the marshalling yards and from the marshalling yards to the construction sites shall be scheduled outside of peak traffic hours (6:00 to 9:30 am and 3:30 to 6:30 pm) to the extent feasible, and other truck trips during peak traffic hours shall be minimized to the extent feasible.

A-1f **Offroad Diesel-fueled Equipment Standards.** All offroad construction diesel engines not registered under CARB's Statewide Portable Equipment Registration Program, which have a rating of 50 hp or more, shall meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, section 2423(b)(1) unless that such engine is not available for a particular item of equipment. In the event a Tier 2 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a Tier 1 engine. In the event a Tier 1 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a catalyzed diesel particulate filter (soot filter), unless certified by engine manufacturers that the use of such devices is not practical for specific engine types. Equipment properly registered under and in compliance with CARB's Statewide Portable Equipment Registration Program are in compliance with this mitigation measure.

A-1g **On-road Vehicles Standards.** All on-road construction vehicles shall meet all applicable California on-road emission standards. ~~and shall be licensed in the State of California~~. This does not apply to construction worker personal vehicles.

A-1h **Offroad Gasoline-fueled Equipment Standards.** All offroad stationary and portable gasoline powered equipment shall have EPA Phase 1/Phase 2 compliant engines, where the specific engine requirement shall be based on the new engine standard in affect two years prior to the initiating project construction.

A-1i **Reduction of Helicopter Emissions.** Helicopter use will be limited to the extent feasible and helicopters with low emitting engines shall be used to the extent practical.

These mitigation measures are designed to reduce the significant NOx and PM10 emission levels to the greatest extent feasible, and have been incorporated into the emission calculations. These mitigation measures also provide assurance that the other criteria pollutant emissions remain below their respective emissions significance criteria thresholds. Specifically, Mitigation Measures A-1d through A-1i will ensure that the CO and VOC emissions remain below the AVAQMD daily emission significance criteria threshold.

Operation

The proposed Project maximum daily and annual normal annual inspection operations emissions are presented in Table C.2-13.

Table C.2-13. Proposed Project Operation Emission / AVAQMD Regional Emission Threshold Comparison

		Emissions (daily – lbs/day, total - tons)					
Air District		NOx	VOC	CO	PM10	PM2.5	SO_2
AVAQMD	Maximum Daily Emissions	9.8	1.7	5.2	43.3	7.27	0.1
	Significance Threshold	137	137	548	82	--	137
	Exceeds (YES/NO)	NO	NO	NO	NO	--	NO
	Total Emissions	0.01	0.00	0.01	0.11	0.02	0.00
	Significance Threshold	25	25	150	15	--	25
	Exceeds (YES/NO)	NO	NO	NO	NO	--	NO

As Table C.2-13 shows the proposed Project's normal operating inspection emissions are well below the AVAQMD regional emission thresholds resulting in less than significant impacts. No air quality mitigation is required for project operations.

Option A

Option A would slightly increase the number of Segment 2 towers to be constructed within AVAQMD jurisdiction. Option A does not change the 66 kV demolition and relocation construction activities or the Segment 3 construction activities that would occur within AVAQMD jurisdiction. Option A would not change the operating emission assumption for annual inspection, as this minor route adjustment would not require more helicopter flying time or increase vehicle travel needed for transmission line inspection.

This option would cause construction activities similar to those of the proposed Project, except it would:

- Increase the number of new towers by one, proportionately increasing Segment 2 T/L construction requirements for marshalling areas, roadwork, foundation construction, steel assembly, conductor installation, and cleanup.

The maximum daily construction assumptions and emissions within the AVAQMD are not impacted by this project option. The total project emissions within the AVAQMD are marginally impacted by the small amount of additional construction work required for Option A. Appendix 3 provides the emission assumptions and detailed emission summary for this option and shows a comparison with the emissions estimated for the proposed Project. Table C.2-14 presents a comparison of the Option A project emissions with the AVAQMD significance criteria.

Table C.2-14. Option A Project Construction Emission / AVAQMD Regional Emission Threshold Comparison

		Emissions (daily – lbs/day, total - tons)					
Air District		NOx	VOC	CO	PM10	PM2.5	SO_2
AVAQMD	Maximum Daily Emissions	385	47	282	556	122	1
	Significance Threshold	137	137	548	82	--	137
	Exceeds (YES/NO)	YES	NO	NO	YES	--	NO
	Total Emissions	25.0	3.4	19.5	19.3	5.4	0.0
	Significance Threshold	25	25	150	15	--	25
	Exceeds (YES/NO)	NO	NO	NO	YES	--	NO

Implementation of Mitigation Measures A-1a through A-1i would reduce construction impacts to air quality to the maximum degree feasible but would not reduce significant impacts to a level less than significant. The Option A NOx and PM10 emissions, even after implementation of all feasible mitigation measures listed below, will remain above the AVAQMD daily significance threshold values for NOx and PM10. Additionally, depending on the actual project schedule the annual PM10 emission would remain above the AVAQMD annual significance thresholds. Therefore, the daily emissions from the proposed Project would cause significant and unavoidable impacts (**Class I**).

Option B

Option B would reduce the number of Segment 2 towers to be constructed within AVAQMD jurisdiction reducing the emissions associated with the tower construction, and would further reduce project fugitive dust emissions due to the elimination of the long unpaved road access and road construction requirements for the remote towers that are being removed or replaced by less remote towers. Option B does not change the 66 kV demolition and relocation construction activities or the Segment 3 construction activities that would occur

within AVAQMD jurisdiction. Option B would somewhat reduce the insignificant operating emission from annual inspection due to the more accessible route.

This option would cause construction activities similar to those of the proposed Project, except it would:

- Decrease the number of new towers by 21 and proportionately reduce Segment 2 T/L construction requirements for marshalling areas, foundation construction, steel assembly, conductor installation, and cleanup.
- Reduce roadwork requirements for the Segment 2 T/L construction by 37 percent due to the reduction in unpaved road access requirements.
- Reduce the worst case day unpaved road trip length assumed for vehicles accessing the tower construction sites from 8 miles/trip to 5 miles/trip.

The maximum daily and total project emissions within the AVAQMD are impacted by Option B. Appendix 3 provides the emission assumptions and detailed worst-case annual emission summary for this alternative and shows a comparison with the annual emissions estimated for the proposed Project. Table C.2-15 presents a comparison of the Option B maximum daily and total project emissions with the AVAQMD significance criteria.

Table C.2-15. Option B Project Construction Emission / AVAQMD Regional Emission Threshold Comparison

		Emissions (daily – lbs/day, total - tons)					
Air District		NOx	VOC	CO	PM10	PM2.5	SO_2
AVAQMD	Maximum Daily Emissions	378	47	278	435	102	1
	Significance Threshold	137	137	548	82	--	137
	Exceeds (YES/NO)	YES	NO	NO	YES	--	NO
	Total Emissions	22.0	3.0	17.2	15.2	4.5	0.0
	Significance Threshold	25	25	150	15	--	25
	Exceeds (YES/NO)	NO	NO	NO	YES	--	NO

Implementation of Mitigation Measures A-1a through A-1i would reduce construction impacts to air quality to the maximum degree feasible but would not eliminate all significant impacts. The Option B NOx and PM10 emissions, even after implementation of all feasible mitigation measures, will remain above the AVAQMD daily significance threshold values for NOx and PM10. Additionally, depending on the actual project schedule the annual PM10 emission could remain above the AVAQMD annual significance thresholds. Therefore, the daily emissions from the proposed Project would cause significant and unavoidable impacts (**Class I**).

Impact A-2: Project emissions would exceed the KCAPCD regional emission thresholds.

Construction

Based on the assumed construction schedule, it is assumed that the worst-case day would occur in December 2008 for KCAPCD emissions. Maximum daily and maximum annual construction emission calculations and assumptions are presented in Appendix 3. Total project emissions within KCAPCD jurisdiction are compared with the KCAPCD significance criteria in Table C.2-16.

Table C.2-16. Proposed Project Construction Emission/KCAPCD Regional Emission Threshold Comparison

		Emissions (tons)					
Air District		NOx	VOC	CO	PM10	PM2.5	SO_2
KCAPCD	Total Emissions	17.4	2.3	13.4	13.0	3.9	0.0
	Significance Threshold	25	25	--	15	--	27
	Exceeds (YES/NO)	NO	NO	--	NO	--	NO

Implementation of Mitigation Measures A-1a through A-1i would reduce construction emission impacts to less than significant (**Class II**) within KCAPCD jurisdiction. These mitigation measures are focused on reducing NOx and PM10 emissions and providing mitigation as assumed in the emission calculations to assure that other emissions remain below there respective emissions significance criteria thresholds. Specifically, Mitigation Measures A-1d through A-1i will help ensure that the NOx emissions potential would remain below the KCAPCD emission significance criteria threshold; and Mitigation Measure A-1a, including the requirement for using CARB approved soil binders on unpaved roads, will ensure that the PM10 emission potential would remain below the KCAPCD emission significance criteria threshold.

Operation

The proposed Project maximum daily and annual normal annual inspection operations emissions are presented in Table C.2-17.

Table C.2-17. Proposed Project Operation Emission/KCAPCD Regional Emission Threshold Comparison

		Emissions (tons)					
Air District		NOx	VOC	CO	PM10	PM2.5	SO_2
KCAPCD	Total Emissions	0.01	0.00	0.01	0.11	0.02	0.00
	Significance Threshold	25	25	--	15	--	27
	Exceeds (YES/NO)	NO	NO	--	NO	--	NO

As Table C.2-17 shows the proposed Project's normal operating inspection emissions are well below the KCAPCD regional emission thresholds resulting in less than significant impacts. No air quality mitigation is required for project operations.

Option A

Option A is wholly located within AVAQMD jurisdiction and does not impact the KCAPCD regional emission threshold impact findings.

Option B

Option B is wholly located within AVAQMD jurisdiction and does not impact the KCAPCD regional emission threshold impact findings.

Sensitive Receptors (Criterion AIR3)

Impact A-3: Construction of the Project would expose sensitive receptors to substantial pollutant concentrations.

The majority of the construction route traverses through remote mountainous, agricultural, or desert areas that do not have substantial numbers of sensitive receptors. There are no schools or hospitals located within one-half and two miles of the project area, respectively. The portion of the project route within Kern County has a

very low residential population density and there are only a few residences located within 500 feet of any of the tower/pole construction sites and no residences are located within 500 feet of the proposed Substation One and Substation Two locations. The population density increases in Los Angeles County, particularly along certain portions of the Segment 2 route, such as near Anaverde. However, there are still very few residences located within 500 feet of any of the tower/pole construction sites and no residences are located closer than 500 feet from the existing Antelope or Vincent Substation fence lines.

It has been determined considering that: 1) the Project requires all feasible mitigation measures to reduce NOx and PM10 emissions to mitigate Impact A-1; 2) residences are located more than 500 feet from any of the substation construction sites; 3) tower construction emissions will be of very short duration and relatively low intensity at any given time at any of the tower/pole sites located near residences; 4) the mitigation measures recommended to mitigated impact A-1 would minimize localized equipment tailpipe and fugitive dust emissions; and 5) the project's limited operating inspection emissions will be negligible in any given location, the proposed Project would result in less-than-significant impacts to sensitive receptors with the implementation of Mitigation Measures A-1a through A-1i (**Class II**).

Option A

Option A realigns the Segment 2 transmission line~~T/L~~ route a few hundred feet further away from a few residences located just north of Elizabeth Lake Road, but closer to another residence located north of this part of the route, so Option A would not increase or substantially decrease impacts to sensitive receptors or change the overall significance level, which remains less than significant after mitigation (Class II).

Option B

Option B shortens the Segment 2 transmission line~~T/L~~ route by routing straight through the proposed Ritter Ranch and Anaverde Ranch developments, but the realigned towers would not be located within 1000 feet of any existing residences, so Option B would not increase impacts to sensitive receptors or change the overall significance level, which remains less than significant after mitigation (**Class II**). There is the potential that residences within Ritter Ranch and Anaverde Ranch could be constructed and occupied prior to the Segment 2 transmission line~~T/L~~ construction, and if so this might adversely affect the impacts to sensitive receptors; however, based on the criteria noted for the proposed Project the mitigated tower construction emissions would still not create significant impacts or otherwise change the overall significance level for this impact.

Odors (Criterion AIR4)

Impact A-4: The Project would create objectionable odors.

Construction equipment and construction operations, such as the potential for some small areas of asphalt paving, may create mildly objectionable odors. These odors would be temporary and would not affect a substantial number of people. The normal operating emissions from the annual inspection activities would not result in any noticeable odor emissions. Therefore, the odor impacts from the proposed Project's construction and operation would be less than significant (**Class III**) and no mitigation measures would be required.

Option A

Option A would not create any new odor sources or worsen the impacts of any of the Project's odor sources. Therefore, the impacts for Option A would be less than significant (**Class III**) and no mitigation measures would be required.

Option B

Option B would not create any new odor sources or worsen the impacts of any of the Project's odor sources. Therefore, the impacts for Option B would be less than significant (**Class III**) and no mitigation measures would be required.