

4.2 AIR QUALITY

4.2.1 SETTING

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape in these areas to determine the movement and dispersal of air pollutants, and consequently affect air quality. This section addresses issues related to air pollutants known as “criteria air pollutants”. The term “criteria air pollutants” refers to those pollutants that are pervasive in urban environments and for which health-based state or national ambient air quality standards have been established. This setting section provides an overview of the regulatory context followed by region-specific information related to climate and topography; plans, policies, and regulations; and existing air quality conditions.

4.2.2 REGULATORY SETTING

CRITERIA AIR POLLUTANTS

Regulation of air pollution is achieved through both national and state ambient air quality standards and emissions limits for individual sources of air pollutants. The federal Clean Air Act requires the U.S. Environmental Protection Agency (U.S. EPA) to identify National Ambient Air Quality Standards (national standards) to protect public health and welfare. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. These pollutants are called “criteria” air pollutants because standards have been established for each of them to meet specific public health and welfare criteria. California has adopted more stringent ambient air quality standards for most of the criteria air pollutants (referred to as State Ambient Air Quality Standards or State standards). **Table 4.2-1** presents both sets of ambient air quality standards (i.e., national and state) and provides a brief discussion of the related health effects and principal sources for each pollutant.

Under amendments to the federal Clean Air Act, U.S. EPA has classified air basins or portions thereof, as either “attainment” or “nonattainment” for each criteria air pollutant, based on whether or not the national standards have been achieved. In 1988, the State Legislature passed the California Clean Air Act, which is patterned after the federal Clean Air Act to the extent that areas are required to be designated as “attainment” or “nonattainment” for the state standards,

**TABLE 4.2-1
STATE AND NATIONAL CRITERIA AIR POLLUTANT STANDARDS,
EFFECTS, AND SOURCES**

Pollutant	Averaging Time^a	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	1 hour 8 hours	0.09 ppm ---	0.12 ppm 0.08 ppm	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when reactive organic gases (ROG) and nitrogen oxides (NO _x) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
Carbon Monoxide	1 hour 8 hours	20 ppm 9.0 ppm	35 ppm 9 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
Nitrogen Dioxide	1 hour Annual Avg.	0.25 ppm ---	--- 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
Sulfur Dioxide	1 hour 3 hours 24 hours Annual Avg.	0.25 ppm --- 0.04 ppm ---	--- 0.5 ppm 0.14 ppm 0.03 ppm	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
Respirable Particulate Matter (PM₁₀)	24 hours Annual Avg.	50 ug/m ³ 30 ug/m ³	150 ug/m ³ 50 ug/m ³	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).
Fine Particulate Matter (PM_{2.5})	24 hours Annual Avg.	--- ---	65 ug/m ³ 15 ug/m ³	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NO _x , sulfur oxides, and organics.
Lead	Monthly Quarterly	1.5 ug/m ³ ---	--- 1.5 ug/m ³	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurologic dysfunction.	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.

NOTE: ppm = parts per million; ug/m³ = micrograms per cubic meter.

a Averaging time refers to the duration over which pollutant concentrations are to be averaged for comparison with the respective ambient air quality standard.

SOURCES: South Coast Air Quality Management District, *1997 Air Quality Management Plan*, November 1996; <http://www.arb.ca.gov/health/health.htm>.

rather than the national standards. Thus, areas in California have two sets of attainment / nonattainment designations: one set with respect to the national standards and one set with respect to the state standards.

The federal Clean Air Act also requires nonattainment areas to prepare air quality that include strategies for achieving attainment. Air quality plans developed to meet federal requirements are referred to as State Implementation Plans (SIPs). The state California Clean Air Act also requires plans for nonattainment areas with respect to the state standards. Thus, just as areas in California have two sets of designations, many also have two sets of air quality plans: one to meet federal requirements relative to the national standards and one to meet state requirements relative to the state standards.

REGULATORY AGENCIES

U.S. EPA is responsible for implementing the myriad of programs established under the federal Clean Air Act, such as establishing and reviewing the national ambient air quality standards and judging the adequacy of State Implementation Plans, but has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented. The Air Resources Board, California's State air quality management agency, is responsible for establishing and reviewing the state ambient air quality standards, compiling the California State Implementation Plan and securing approval of that plan from U.S. EPA, and identifying toxic air contaminants. The state Air Resources Board also regulates mobile emissions sources in California, such as construction equipment, trucks, and automobiles, and oversees the activities of air quality management districts, which are organized at the county or regional level. The county or regional air quality management districts are primarily responsible for regulating stationary emissions sources at industrial and commercial facilities within their geographic area and for preparing the air quality plans that are required under the federal Clean Air Act and state California Clean Air Act.

Table 4.2-2 summarizes the air quality information for the 11 air districts whose jurisdictions cover the study area throughout southern California. The table summarizes the attainment status with respect to the state and federal ambient air quality standards, the applicable air quality plans and the construction and operational significance thresholds recommended by the different air districts.

**TABLE 4.2-2
AIR QUALITY DATA FOR THE AIR DISTRICTS AFFECTED BY THE PROGRAM**

Program Counties	Air District	Air Basin	Attainment Status								Applicable Air Quality Plans	Significance Thresholds (lbs./day)									
			State Standards ^a				National Standards ^b					Construction					Operation				
			Ozone	NO ₂	CO	PM-10	Ozone	NO ₂	CO	PM-10		ROG	NOx	CO	PM-10	SO ₂	ROG	NOx	CO	PM-10	SO ₂
Monterrey County	Monterrey Bay Unified APCD ^c	North Central Coast Air Basin	N	A	U	N	U/A	U/A	A	U	2000 Update to the 1991 Air Quality Management Plan for the Monterey Bay Region	NA	NA	NA	82	NA	137	137	NA	82	150
Fresno County	San Joaquin Valley APCD ^c	San Joaquin Valley Air Basin	N	A	A	N	N	U/A	U/A	N	The Federal Ozone Attainment Demonstration Plan California Clean Air Act Triennial Progress Report and Plan Revision 1997-1999 1997 PM-10 Attainment Demonstration Plan 1992 Federal Attainment Plan for Carbon Monoxide	NA	NA	NA	NA	NA	10 tpy	10 tpy	NA	NA	NA
Kings County																					
Tulare County																					
Western portion of Kern County																					
San Luis Obispo County	San Luis Obispo APCD	South Central Coast Air Basin	N	A	A	N	U/A	U/A	U/A	U	1998 Clean Air Plan	185	185	NA	2.5tpy	NA	25	25	550	25	NA
Santa Barbara County	Santa Barbara APCD			A	A	N	N	U/A	U/A	U	2001 Clean Air Plan	25 tpy	25 tpy	25 tpy	25 tpy	25 tpy	25	25			
Ventura County	Ventura County APCD ^f			A	A	N	N	U/A	U/A	U	1997 Air Quality Management Plan	NA	NA	NA	NA	NA	25	25	NA	NA	NA
Eastern portion of Kern County	Kern County APCD	Mohave Desert Air Basin	N	A	U	N	N	U/A	U/A	U	Kern County APCD 1991 Air Quality Attainment Plan and 1994 Attainment Demonstration. Kern County APCD California Clean Air Act Ozone Air Quality Attainment Plan.	137	137	548	82	137	137	137	548	82	137
Northeastern portion of San Bernardino County	Mojave Desert APCD		N	A	A	N	N/A	U/A	U/A	N	Mohave Desert Air Quality Management District 1991 Air Quality Attainment Plan and its Triennial Revisions. Post 1996 Attainment Demonstration and Reasonable Further progress Plan.	137	137	548	82	137	137	137	548	82	137
Eastern one-third of Riverside County			N	A	A	N	N	U/A	U/A	U	Final Mohave Desert Planning Area Federal Particulate Matter (PM-10) Attainment Plan.										
Northeastern portion of Los Angeles County	Antelope Valley APCD			N	A	A	N	N	U/A	U/A	U	1994 Air Quality Management Plan	137	137	548	82	137	137	137	548	82
Los Angeles County except for Antelope Valley APCD	South Coast AQMD ^d	South Coast Air Basin	N	A	N	N	N	U/A	N	N	1999 Amendment to the 1997 Air Quality Management Plan. 2002 Coachella Valley PM-10 State Implementation Plan.	75	100	550	150	150	55	55	550	150	150
Orange County			N	A	A	N	N	U/A	N	N											
Southwestern portion of San Bernardino			N	A	A	N	N	U/A	N	N											
Western one-third of Riverside County			N	A	A	N	N	U/A	N	N											

TABLE 4.2-2 (continued)
AIR QUALITY DATA FOR THE AIR DISTRICTS AFFECTED BY THE PROGRAM

Program Counties	Air District	Air Basin	Attainment Status								Applicable Air Quality Plans	Significance Thresholds (lbs./day)									
			State Standards ^a				National Standards ^b					Construction					Operation				
			Ozone	NO ₂	CO	PM-10	Ozone	NO ₂	CO	PM-10		ROG	NOx	CO	PM-10	SO ₂	ROG	NOx	CO	PM-10	SO ₂
Central one-third of Riverside County		Salton Sea Air Basin	N	A	U	N	U/A	U/A	U/A	N											
Imperial County	Imperial County APCD ^e		N	A	U	N	N	U/A	U/A	N/A	Imperial County APCD 1991 Air Quality Attainment Plan. State Implementation Plan for PM-10 in the Imperial Valley.	75	100	550	150	150	55	55	550	150	150
San Diego County	San Diego APCD ^f	San Diego Air Basin	N	A	A	N	N	U/A	U/A	U	1998 Update to the 1991 San Diego Regional Air Quality Strategy. Final Carbon Monoxide Redesignation Request for Ten Federal Planning Areas.	75	100	550	150	150	55	55	550	150	150

NOTES:

1. NA = Not Applicable
 2. In 1997, EPA established an 8-hour standard for ozone, and annual and 24-hour standards for very fine particulate matter (PM-2.5). As of May 2002, there is insufficient monitoring data to determine the attainment status for PM-2.5.
 3. N = Nonattainment, A = Attainment, U = Unclassified
 4. APCD = Air Pollution Control District, AQMD = Air Quality Management District
 5. tpy = tons per year, lbs./day = pounds per day
- a California Standards for ozone, carbon monoxide, sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM-10 are values that are not to be exceeded.
- b National standards other than for ozone and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year.
- c All construction impacts are considered significant, however, with application of standard dust control measures identified as part of the program, impacts are mitigated to less than significant.
- d While daily values are shown, the following quarterly values apply as well; 2.5 tons per quarter of ROG and NOx, 24.75 tons per quarter of CO, and 6.75 tons per quarter of PM-10 and SO2.

4.2.3 IMPACTS AND MITIGATION MEASURES

APPROACH TO ANALYSIS

The following air quality analysis identifies the types of emissions sources that would be associated with the program and evaluates their significance taking into account such factors as the types and amounts of the different pollutants that would be emitted and the applicable criteria. Emissions estimates have been made taking into account such factors as fuel types, applicable air district regulations and standards, and expected usage rates for different pieces of equipment.

SIGNIFICANCE CRITERIA

The analysis of significance of impacts of the proposed program is based on the criteria listed below. Generally, a project would have a significant effect on the environment if it would:

- conflict with or obstruct implementation of the applicable air quality plan;
- violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- result in a cumulatively considerable net increase of any nonattainment pollutant;
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

IMPACT MECHANISMS

Essentially all of the air quality impacts due to the program would be short term in nature and would be associated with the FIG installation. Program construction would apply FIG technology to place conduit to house fiber optic cable in SCG/SDG&E's active gas pipelines or gas mains. Over the short-term, activities related to installing new conduit would result in emissions of ozone precursors and particulate matter (PM-10 and PM-2.5) from operation of construction equipment and construction worker commute trips and in emissions of "fugitive" dust from earthmoving operations and vehicle travel over unpaved surfaces. "Fugitive" emissions are those that are released to the atmosphere through a means other than through a stack or tailpipe. "Fugitive" dust refers to such sources as earthmoving activities, vehicle movement over paved or unpaved roads, and wind blowing over exposed surfaces.

On a regional level, the equipment and vehicle emissions associated with installing conduit in existing gas lines would contribute incrementally to atmospheric loading of pollutant compounds, or their precursors that are involved in the formation of ozone, PM-10, and PM-2.5. On a local level, the fugitive dust emissions would contribute to local PM-10 concentrations and may result in nuisance-type impacts from particulate settling, and in reduced local visibility. In contrast to installing new conduit, FIG technologies allow fiber to be placed in existing structures in little time with less equipment and surface disturbance than other commonly used methods of installing fiber.

Once operational, the program would result in negligible emissions over the long-term of ozone precursors or PM-10. The only long-term emissions source would be any vehicle trips associated with operation and maintenance that are anticipated to be minor to nonexistent.

IMPACT ASSESSMENT

Emissions increases from the program are evaluated against specific significance criteria recommended by the applicable regional air quality management districts whose jurisdictions cover the areas in which the program would be located.

Impact AIR-1: Introduction of additional emissions sources in a region for which air quality plans have been developed.

FIG installation in SCG/SDG&E service territories would result in emissions primarily due to the use of construction equipment. Emissions from worker commute trips would represent less than 10 percent of overall construction-related emissions. Construction equipment would emit ozone precursors and carbon monoxide.

Emissions during the construction phase have been estimated using California Air Resources Board emission factors and activity data provided by SCG/SDG&E. The estimates are shown in **Table 4.2-3**. As shown in the table, construction emissions would be well below the significance thresholds for all air districts within which the program would be located. Based on the attainment status, local air districts have adopted regional air quality management plans that include strategies to achieve or maintain the ambient air quality standards. The Districts have also specified construction and operational significance thresholds, below which FIG installations could be implemented without conflicting or obstructing implementation of the regional air quality plans. Since the estimated construction emissions per day would be less than the significance thresholds for construction for all air districts within which the program would be located, construction activities associated with the proposed program would not conflict with or obstruct implementation of the regional air quality plans prepared for the study area.

Once operational, the program would not involve operation of any new stationary emissions sources. There could be occasional maintenance-related vehicle trips that would result in negligible emissions of ozone precursors and PM-10 over the long term and this would not conflict with or obstruct implementation of any regional air quality plan.

Mitigation Measure: No mitigation is required.

**TABLE 4.2-3
CONSTRUCTION EMISSIONS (pounds per day)**

Pollutant	Estimated FIG Construction Emissions^{a,b,c,d}
ROG	6
NO _x	49
PM-10	17
CO	18

- a Estimates include emissions from construction equipment, emissions from worker commute trips and fugitive dust emissions
- b Emission factors for construction equipment derived from statewide activity and emissions inventory prepared by the CARB for the year 2002.
- c Worker commute emissions assume 50% light duty trucks and 50% light duty automobiles; emissions based on EMFAC 2000, year 2002 emissions factors for LDA & LDT-catalytic, 85 degrees temperature, 40 mph speed and assumes a round-trip distance of 30 miles.
- d Worker commute emissions assume a maximum of 8 workers per crew with one crew operational per day.

NOTE: **Bold** values are in excess of applicable standard.

Source: Environmental Science Associates, 2002.

Impact AIR-2: Increase in local pollutant concentrations.

Heavy equipment and fugitive dust emissions would produce temporarily increased levels of air pollutants during construction. FIG installation would result in the generation of air pollutants in areas classified as nonattainment areas and could contribute to program air quality violations and expose sensitive receptors to substantial pollutant concentrations. This is considered a significant impact. Although the expected emissions would fall below the thresholds established by all air districts in the study area, specific mitigation measures are identified to minimize the generation of dust and exhaust emissions associated with construction activities. With the implementation of the following mitigation measures, construction impacts would be reduced to a less than-significant level.

Mitigation Measure AIR-2a: SCG/SDG&E would require the construction contractors to implement a dust abatement program to reduce dust and air emissions.

The dust abatement program will include Best Management Practices (BMPs), as required in the respective air pollution control district or air quality management district, for construction activities. The available BMPs will, at a minimum, include the practices listed below in combination with any additional practices required by the presiding air district.

- Water all active construction areas at least twice daily;
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard;

- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites;
- Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites; and
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

Implementation of the measures included in the dust abatement program would reduce the chance that PM-10 standards would be violated in the vicinity of FIG installation or that visibility would be significantly affected during the construction period.

Significance After Mitigation: Less than significant.

Impact AIR-3: FIG installation would create an increase in local pollutant concentrations.

With implementation of the identified mitigation measures described above, the proposed program would comply with all air quality standards. The program would not conflict with or obstruct implementation of any applicable air quality plan nor exceed any air quality standard or contribute substantially to an air quality violation. Therefore, the increase of criteria air pollutants attributable to the program would be cumulatively *de minimus*. Consequently, the program would not result in a cumulatively considerable net increase of a criteria pollutant in a nonattainment area for which the service territories are a nonattainment area for applicable ambient air quality standards and, with mitigation, would not expose sensitive receptors to substantial pollutant concentrations. No additional mitigation is required.

Mitigation Measure: Implement **Mitigation Measure AIR-2a**.

Significance After Mitigation: Less than significant.

Impact AIR-4: FIG installation would expose sensitive receptors to substantial pollutant concentrations.

The program could result in exposure of sensitive receptors, such as residents, to substantial pollutant concentrations during construction from fugitive dust emissions sources such as vehicle travel over unpaved surfaces since residences would be located near pipeline access points for FIG installation. This impact would be mitigated to a less-than-significant level with implementation of the dust abatement program that SCG/SDG&E would require of its construction contractors (see **Impact AIR-2** and related mitigation measure).

Mitigation Measure: Implement **Mitigation Measure AIR-2a**.

Significance After Mitigation: Less than significant.