C.2 AIR QUALITY

C.2 AIR QUALITY

This section addresses the environmental setting and impacts related to the proposed project and alternatives. Specifically, Section C.2.1 provides a description of the environmental baseline and regulatory settings, followed by an environmental impacts analysis of the proposed project in Section C.2.2. Impact analysis for the alternatives is provided in Sections C.2.3 and C.2.4.

C.2.1 ENVIRONMENTAL BASELINE AND REGULATORY SETTING

C.2.1.1 Environmental Setting

C.2.1.1.1 *Climate and Meteorology*

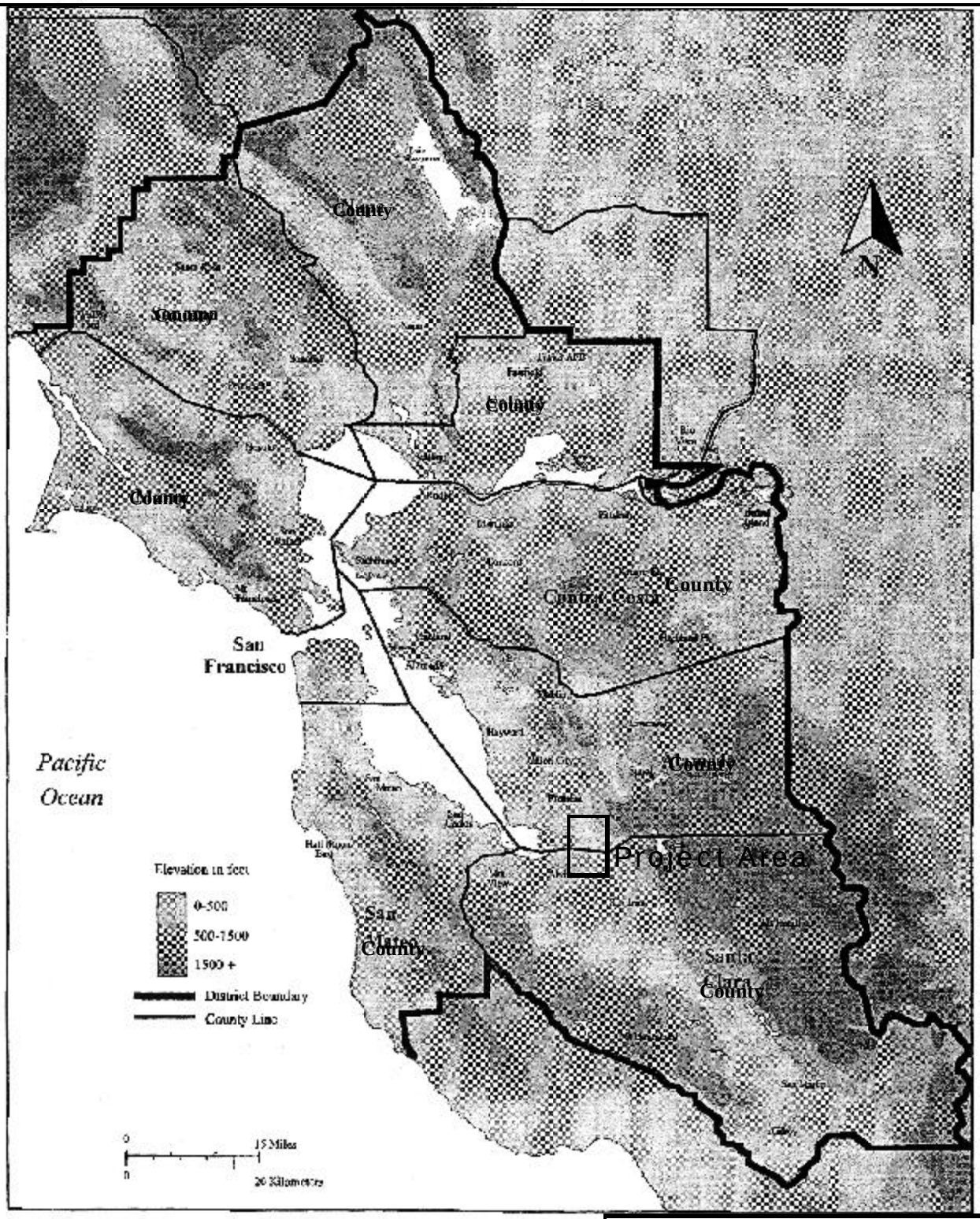
The study area lies within the San Francisco Bay Area (see Figure C.2-1), which is characterized by moderately wet winters and dry summers. The regional climate is dominated by a strong and persistent high pressure system that frequently lies off the Pacific coast (generally known as the *Pacific High*). The Pacific High shifts northward or southward in response to seasonal changes or the presence of cyclonic storms. Besides the influence from the Pacific High, other important meteorological characteristics influencing air quality in the study area are the persistent temperature inversions, predominance of on shore winds, mountain ridge and valley topography, and prevalent sunlight.

Temperature and Precipitation. Monthly climate summaries for two monitoring stations (San Jose and Newark) located in the vicinity of the study area were selected to characterize the climate of the study area. As described in Table C.2-1, average summer (July) high and low temperatures in the San Jose area are 82.1 F and 56.7 F, while in the Newark area the average summer high and low temperatures are 76.7 F and 65.5 F, respectively. Average winter (January) high and low temperatures in the San Jose area are 57.9 F and 41.3 F, while in the Newark area the average winter high and low temperatures are 57.1 F and 40.7 F, respectively. Annual rainfall at both monitoring stations averages approximately 14.5 inches. Most of the annual rainfall occurs between November and April, with minor precipitation during summer months.

Table C.2-1 Monthly Temperature and Precipitation

Month	San Jose Monitoring Station			Newark Monitoring Station		
	Temperature (F)		Precipitation (inches)	Temperature (F)		Precipitation (inches)
	Maximum	Minimum		Maximum	Minimum	
January	57.9	41.3	3.05	57.1	40.7	3.19
February	62.0	44.1	2.49	60.8	43.8	2.41
March	65.2	45.6	2.32	63.4	45.9	2.17
April	69.9	47.5	1.07	66.7	48.4	1.05
May	74.2	51.1	0.40	69.9	51.7	0.41
June	79.1	54.6	0.09	73.9	55.1	0.11
July	82.1	56.7	0.04	76.7	65.5	0.03
August	81.8	56.8	0.09	77.1	57.3	0.06
September	80.6	56.0	0.21	77.1	56.3	0.15
October	74.6	51.7	0.71	72.8	52.6	0.74
November	65.1	45.9	1.76	64.6	46.6	1.89
December	58.0	41.5	2.32	57.7	40.9	2.36

Note: The period of record for both monitoring stations is from July 1, 1948 to December 31, 1999.
Source: WRCC, 2000.



Not toScale

Source: BAAQMDCEQAGuidelines,1996

Northeast San Jose Transmission Reinforcement Project EIR

Figure C.2-1

Bay Area Air Quality Management District Jurisdiction

Aspen EnvironmentalGroup

Wind. Winds in the vicinity of the proposed project are predominantly out of the northwest during the summer months. In the winter, winds are likely to be from the east. A north-northwesterly sea breeze flows through the study area during the afternoon and early evening, and a light south-southeasterly drainage flow occurs during the late evening and early morning.

Wind speeds are greatest in the spring and summer and weakest in the fall and winter. Nighttime and early morning hours frequently have calm winds in all seasons, while summer afternoons and evenings are quite breezy. Strong winds are rare and mostly associated with the occasional winter storm. Annual average wind speeds close to the bay average about 7 miles per hour, while further inland they average about 6 miles per hour (BAAQMD, 1999).

C.2.1.1.2 *Existing Air Quality*

Criteria Pollutants. The quality of the surface air (air quality) is evaluated by measuring ambient concentrations of pollutants that are known to have deleterious effects. The degree of air quality degradation is then compared to the current National and California Ambient Air Quality Standards (NAAQS and CAAQS). Because of unique meteorological problems in California, and because of differences of opinion by medical panels established by the California Air Resources Board (CARB) and the U.S. EPA, there is considerable diversity between state and federal standards currently in effect in California. In general, the CAAQS are more stringent than the corresponding NAAQS. The standards currently in effect in California are shown in Table C.2-2.

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

Pollutant	Averaging Time	California Standards[1]	National Standards[2]
Ozone (O_3)	8-hour	NS	0.08 ppm[3]
	1-hour	0.09 ppm	0.12 ppm
Carbon Monoxide (CO)	8-hour	9.0 ppm	9.0 ppm
	1-hour	20 ppm	35 pm
Nitrogen Dioxide (NOx)	Annual Average	NS	NS
	1-hour	0.25 ppm	0.053 ppm
Sulfur Dioxide (SOx)	Annual Average	NS	0.03 ppm
	24-hour	0.05 ppm	0.14 ppm
	1-hour	0.25 ppm	NS
Fine Particulate Matter (PM_{10})	Annual Arithmetic Mean	NS	50 ug/m^3
	Annual Geometric Mean	30 : g/m^3	NS
	24-hour	50 : g/m^3	150 ug/m^3
Fine Particulate Matter (PM2.5)[3]	Annual Arithmetic Mean	NS	15 ug/m^3
	24-hour	NS	65 ug/m^3

Notes: ppm = parts per million; ug/m^3; NS = no standard

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM_{10} are values that are not to be excluded. In particular, measurements are excluded that California Air Resources Board determines would occur less than once per year on the average.
2. 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. For example, the ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.
3. In 1997 U.S. EPA established an 8-hour standard for ozone, and annual and 24-hour standards for very fine particulate matter (PM2.5). As of December 1999, the District did not have sufficient monitoring data to determine the region's attainment status. The new standards were challenged in court, and as of December 1999, their status was uncertain.

Source: BAAQMD, 1999.

Air quality standards are designed to protect those people most susceptible to respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. Table C.2-3 provides a summary of the health effects from the major criteria air pollutants. Healthy adults can tolerate occasional exposure to air pollutant concentrations above these minimum standards before adverse effects are observed.

Table C.2-3 Summary of Health Effects of the Major Criteria Pollutants

Air Pollutant	Adverse Effects
Ozone	-Eye irritation -Respiratory function impairment -Aggravation of respiratory and cardiovascular diseases
Carbon Monoxide	-Impairment of oxygen transport in the bloodstream, increase of carboxyhemoglobin -Aggravation of cardiovascular disease -Impairment of central nervous system function -Fatigue, headache, confusion, dizziness -Death at high levels of exposure -Aggravation of some heart diseases (angina)
Nitrogen Dioxide	-Risk of acute and chronic respiratory disease
Suspended Particulates	-Increased risk of chronic respiratory disease -Reduced lung function -With SO_2, may produce acute illness -Particulate matter 10 microns or less in size (PM_{10}) may lodge in and/or irritate the lungs

Source: SCAQMD, CEQA Air Quality Handbook, 1993.

Attainment Status. A summary of the air quality status within the San Francisco Bay Area relative to meeting the national and state AAQS is provided in Table C.2-4. "Non-attainment" is a term used to indicate violations of the standards. As indicated in Table C.2-4, air quality in the San Francisco Bay area is below the standards of the NAAQS and CAAQS for ozone and of the CAAQS for PM_{10}. In June of 1998, the Bay Area attained the 8-hour carbon monoxide standards of NAAQS. Although the Bay Area is currently above the national CO standard, it is still considered to be a "maintenance area" for that pollutant (Hilken, 2000).

Table C.2-4 Bay Area Attainment Status

Air Basin	O_3		CO		NO_2		SO_2		PM_{10}	
	State	National	State	National	State	National	State	National	State	National
SF Bay Area	**N**	**N**	A	A	A	A	A	A	**N**	U

Notes: A = Attainment; N = Non-attainment; U = Unclassified

The Bay Area Air Quality Management District (BAAQMD) operates a regional air quality monitoring network that regularly measures the concentrations of the five major air pollutants. Two monitoring stations near the proposed project in San Jose and Fremont were selected to provide a general profile of the air quality within the study area. Table C.2-5 presents the ambient air quality concentrations recorded from 1996 through 1998.

Table C.2-5 Air Quality Summary

Standards	Monitoring Station San Jose, 4th Street			Monitoring Station Fremont		
	1996	1997	1998	1996	1997	1998
Ozone (1-Hour) Standard						
Max. Concentration (ppm)	0.11	0.07	0.15	0.10	0.11	0.12
Days>NAAQS (0.12 ppm)	0	0	1	0	0	0
Days>CAAQS (0.09 ppm)	5	0	4	2	2	7
NO_2 (Annual) Standard						
Max. Concentration (ppm)	0.11	0.12	0.08	0.09	0.09	0.10
Days>CAAQS (0.25 ppm)	0	0	0	0	0	0
PM_{10} (Ann. Geo. Mean**) Standard**						
Ann. Geo. Mean (*u*g/m^3)	22.1	23.7	22.5	20.5	21.8	20.2
Days>CAAQS (30 *u*g/m^3)	2	3	3	1	1	1
CO (8-Hour) Standard						
Max. Concentration (ppm)	6.5	5.8	6.0	3.4	3.0	2.8
Days>CAAQS (9.0 ppm)	0	0	0	0	0	0
Days>CAAQS (9.0 ppm)	0	0	0	0	0	0

Notes: ppm = parts per million; *u*g/m^3 = micrograms per cubic meter; Ann. Geo. Mean = annual geometric mean
Source: BAAQMD. 1997, 1998, and 1999 Summary of Air Pollution in the Bay Area.

As indicated in Table C.2-5, there was only one violation of the NAAQS for ozone between the two stations. However, the stations recorded 20 cases when the ozone exceeded CAAQS during the 3 year monitoring period. With regard to fine particulate matter (PM_{10}), the San Jose Station recorded eight cases when it exceeded the CAAQS, while the Fremont Station averaged one violation per year over the 3 year monitoring period. Neither station recorded a violation of the NAAQS for PM_{10}. There were no violations recorded for nitrogen dioxide or carbon monoxide.

Toxic Air Contaminants. Toxic air contaminants (TACs) are regulated because they are suspected or known to cause cancer, genetic mutations, birth defects, or other serious illnesses in exposed people. TACs are not regulated by the federal or state AAQS but are addressed by the National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Title III of the 1990 Clean Air Act Amendments.

Table C.2-6 contains the mean concentrations of selected toxic pollutants that are monitored at the BAAQMD San Jose 4th Street Air Monitoring Station. This monitoring program was designed to determine the concentrations in air of various gaseous toxic pollutants that U.S. EPA has defined as those that may reasonable be anticipated to result in increased deaths or serious illness and which are not already regulated. Trigger levels are also included in Table C.2-6. These levels are used by the BAAQMD in evaluating air contaminant emissions and risk levels of facilities within the San Francisco Bay Area. If the emissions from a single source are less than the listed trigger levels, it is assumed that the source would not cause any excess risks to the surrounding public. If the emissions are equal to or greater than one or more of the trigger levels, a risk screen should be completed to determine risk potential to the local community.

C.2-6 Toxic Air Pollutant Measurements (San Jose 4th Street Air Monitoring Station)

Parameter	Mean Concentrations (ppb) per Year				Trigger Level
	1996	1997	1998	1999	(lbs./year)
Benzene	0.77	0.68	0.76	0.73	6.70E+00
1,3-Butadiene	0.263	0.235	0.239	0.227	4.60E+00
Carbon Tetrachloride	0.077	NA	NA	NA	4.60E+00
Chloroform	0.03	0.032	NA	NA	3.60E+01
ortho-Dichlorobenzene	0.1	0.06	NA	NA	6.80E+01
para-Dichlorobenzene	0.14	0.12	NA	NA	5.60E-01
Ethyl Benzene	0.42	0.39	NA	0.35	1.93E+05
Methyl Chloroform	0.125	0.174	NA	NA	6.18E+04
Methyl Ethyl Ketone	0.09	0.19	0.14	NA	1.49E+05
Methyl Chloride	0.55	NA	NA	NA	1.90E+02
Styrene	0.1	0.09	NA	NA	1.35E+05
Tetrachloroethene [1]	0.068	0.096	NA	NA	3.30E+01
Toluene	2.72	2.97	NA	1.87	3.86E+04
Trichloroethene	0.022	0.018	NA	NA	9.70E+01
meta/para-Xylene	1.25	1.00	NA	1.83	5.79E+04

Note: E + 00 is scientific notation that indicates how many places the decimal point should be to the right of its current position. For example 3.84E + 02 = 384.
1 Also known as Perchloroethylene
NA = yearly mean concentration is currently not available
Source: ARB, 2000 and PG&E Co., 1998.

The concentrations of toxic pollutants are determined by the level of emissions at the source and the meteorological conditions encountered as these pollutants are transported away from the source. Thus, risks from toxic pollutant emissions tend to be site-specific and their intensity is subject to constantly changing meteorological conditions. The worst meteorological conditions that affect short-term impacts (low wind speed, highly stable air mass, and constant wind direction) occur relatively infrequently.

C.2.1.2 Applicable Regulations, Plans, and Standards

Federal, state, and regional agencies have established air quality standards, regulations, and plans that affect proposed projects. The following federal and state regulatory considerations may apply to the project and to all alternatives.

Federal Regulations and Standards

- The Federal Clean Air Act of 1970 directs the attainment and maintenance of National Ambient Air Quality Standards (NAAQS). The 1990 Amendments to this Act determine attainment and maintenance of NAAQS (Title I), motor vehicles and fuel reformulation (Title II), hazardous air pollutants (Title III), acid deposition (Title IV), operating permits (Titles V), stratospheric ozone protection (Title VI), and enforcement (Title VII)

- The U.S. Environmental Protection Agency (U.S. EPA) implements New Source Review (NSR) and Prevention of Significant Deterioration (PSD). PSD applies to major sources with annual emissions exceeding either 100 or 250 tons per year (TPY) depending on the source, or that cause or contribute adverse impacts to any Federally classified **Class I** area

- The U.S. EPA implements the NAAQS and determines attainment of federal air quality standards on a short- and long-term basis.

State Regulations and Laws

- The California Air Resources Board (ARB) has established the California Ambient Air Quality Standards (CAAQS) and determines attainment status for criteria air pollutants

- The California Clean Air Act (CCAA) went into effect on January 1, 1989 and was amended in 1992. The CCAA mandates achieving the health-based CAAQS at the earliest practicable date

- The California Health and Safety Code, Division 26 Air Resources, Part 6 Air Toxics Hot Spots Information and Assessment, Section 44300, requires an inventory of air toxics emissions from individual existing facilities, an assessment of health risk, and notification of potential significant health risk when found to be present

- California Health and Safety Code, Division 26 Air Resources, Chapter 6 Facility Toxic Air Contaminant Risk Reduction Audit and Plan, Section 44390, provides guidelines to identify a more realistic health risk, requires high risk facilities to submit an air toxic emission reduction plan, holds air districts accountable for ensuring that the plans will achieve their objectives, and high risk facilities will be required to achieve their planned emission reduction

- California Health and Safety Code, Division 26 Air Resources, Chapter 3.5 Toxic Air Contaminants, Article 2.5 Coordination with the Federal Act, Section 39656, sets forth provisions to implement the Federal program for hazardous air pollutants

- California Health and Safety Code, Division 26 Air Resources, Part 4 Nonvehicular Air Pollution Control, Chapter 4 Enforcement, Section 42301.6, requires new or modified sources of air contaminants located within 1,000 ft. from the outer boundary of a school to give public notice to the parents of school children before an air pollution permit is granted

- Section 21151.4 of the California Public Resources Code, Division 13 Environmental Quality, Chapter 4 Local Agencies, addresses Hazardous Air Pollutant releases within one-fourth mile of a school site.

BAAQMD and Other Regional Agencies Plans and Programs

- **Bay Area Air Quality Plan** (1979 and 1982). This BAAQMD plan is a regional plan required by the federal government to address how the Bay Area will attain the NAAQS

- **Ozone Maintenance Plan** (1993). In June, 1995 the U.S. EPA approved BAAQMD, Metropolitan Transportation Commission (MTC), and Association of Bay Area Government's (ABAG) request to redesignate the Bay Area as an attainment area of the NAAQS for ozone. The U.S. EPA also approved the Ozone Maintenance Plan

- **Carbon Monoxide Maintenance Plan** (1994). A San Francisco Bay Area Redesignation Request and Maintenance Plan for the Carbon Monoxide NAAQS was adopted in 1994 by the three regional agencies. In 1998, U.S. EPA redesignated the Bay Area as an attainment area for the national CO standard

- **Bay Area Clean Air Plan** (1997). Prepared by BAAQMD in cooperation with MTC and ABAG, its main objective is to attain the State air quality standards for ozone. The CAP presents a comprehensive strategy to reduce emissions from stationary, area, and mobile sources

- **Toxic Air Contaminant Control Program**. The Toxic Air Contaminant Control Program is a regional program administered by the BAAQMD. Its main objective is to reduce public exposure to toxic air contaminants

- **Odorous Substances Regulation.** The BAAQMD has enacted an odorous substance control program as part of its effort to control the use and emission of odorous substances within the Bay Area

- **Regional Transportation Plan** (1994). The Metropolitan Transportation Commission's Regional Transportation Plan guides Bay Area transportation system improvement projects and shows how they will help attain regional air quality objectives

- **Congestion Management Program.** The main goals of the Congestion Management Plan, which is prepared by the county Congestion Management Agencies, are to establish a political process through which countywide roadway congestion can be controlled or relieved, and to develop a comprehensive strategy to respond to countywide transportation needs.

C.2.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED PROJECT

C.2.2.1 Introduction

Short-term construction impacts and long-term operational impacts would result from implementation of the proposed project. In this section, the potential incremental impacts associated with the construction and operation of the proposed project are analyzed. Section C.2.2.2 presents the significance criteria to determine potentially significant adverse environmental impacts. Section C.2.2.3 presents the applicant proposed mitigation measures, while Sections C.2.2.4 and C.2.2.5 give a general overview of the proposed construction and operations, respectively. Impacts and mitigation measures are presented in Section C.2.2.6.

C.2.2.2 Definition and Use of Significance Criteria

Section 15002 of the California Environmental Quality Act has established guidelines for determining the significance of air quality and other environmental impacts (CEQA, 1992). Each air quality management/control district establishes its own significance criteria based on the specific conditions in its jurisdiction. The BAAQMD has established guidelines and thresholds to determine potentially significant adverse environmental impacts.

In addition, U.S. EPA regulates air quality impacts of projects that involve federal assistance or permits via general conformity requirements of the Federal Clean Air Act. The following BAAQMD and U.S. EPA significance criteria apply to the project.

BAAQMD Significance Criteria

Construction. Construction equipment exhaust emissions contain a number of criteria pollutants including carbon monoxide (CO) and ozone precursors nitrous oxides (NOx) reactive organic compounds (ROC). However, CO, NOx, and ROC emissions are included in the BAAQMD emissions

inventory that is the basis for regional air quality plans, and are not expected to impede attainment or maintenance of ozone and carbon monoxide standards in the Bay Area. Therefore, the BAAQMD does not have significance criteria for these pollutants, and their emissions generated during construction projects are considered less than significant. BAAQMD has determined that fine particulate matter (PM_{10}) is the pollutant of greatest concern with respect to construction activities. The BAAQMD's approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive PM_{10} control measures rather than detailed quantification of project emissions. The BAAQMD believes that determination of significance with respect to construction emissions should be based on consideration of the control measures to be implemented. These control measures are listed in Table C.2-7. As noted in the table, some measures should be used at all construction sites regardless of size. Additional measures should be used at larger construction sites (greater than 4 acres) where PM_{10} emissions generally would be higher. There are also optional mitigation measures that may be implemented if further emission reduction is deemed necessary.

Table C.2-7 BAAQMD Control Measures For Construction Emissions of PM_{10}

Basic Control Measures (to be implemented at all construction sites)
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
Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets
Enhanced Control Measures (to be implemented at construction sites greater than four acres in area)
Hydroseed or apply (non-toxic) soil stabilizers to inactive construction area (previously graded areas inactive for ten days or more)
Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc)
Limit traffic speeds on unpaved roads to 15 mph
Install sandbags or other erosion control measures to prevent silt runoff to public roadways
Replant vegetation in disturbed areas as quickly as possible
Optional Control Measures (strongly encouraged at construction sites that are large in area, located near sensitive receptors or for any other reason that may warrant additional emissions reductions)
Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site
Install wind breakers, or plant trees/vegetative wind breaks at windward side(s) of construction areas
Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph
Limit the area subject to excavation, grading and other construction activity at any one time

Source: BAAQMD, 1999

In addition, demolition, renovation or removal of asbestos containing building materials is subject to the limitations of District Regulation 11, Rule 2: Hazardous Materials; Asbestos Demolition, Renovation and Manufacturing. Any demolition activity subject to but not complying with the requirements of District Regulation 11, Rule 2 would be considered to have a significant impact.

Operations. The BAAQMD recommends that project operations be compared to the thresholds provided in Table C.2-8. Total operational emissions evaluated under this threshold should include all emissions from motor vehicle use associated with a project. A project that generates criteria pollutant emissions in excess of the annual or daily thresholds in Table C.2-8 would be considered to have a significant air quality impact. In addition to the operational thresholds listed below, the BAAQMD has thresholds of significance for local carbon monoxide concentrations and for odors. Project operational emissions would not approach these thresholds as proposed by PG&E Co..

Table C.2-8 Thresholds of Significance for Project Operations

Pollutant	tons/year	lbs/day	kgm/day
ROC	15	80	36
NOx	15	80	36
PM10	15	80	36

ROC = reactive organic compounds
Source: BAAQMD, 1999.

General Conformity Requirements

The proposed project would involve federal approval of three permits [Section 10/404, Section 7 Consultation, and Section 106 Review (SPEA, 1999)]. Therefore, the project must be evaluated for its general conformity with the State Implementation Plan (SIP) as required by the 1990 Clean Air Act Amendments. Because the Bay Area is classified as a non-attainment area of the NAAQS for ozone and a maintenance area for carbon monoxide, the project must be evaluated for compliance with the General Conformity Requirements. Under 40 CFR (Code of Federal Register) Section 93.153 (Applicability), if the total estimated direct and indirect emissions from the proposed project are below the reactive organic compounds, nitrogen oxide, and carbon monoxide general conformity *de minimis* emission thresholds of 100 tons per year, the proposed project would be exempt from performing a comprehensive Air Quality Conformity Analysis, and would be considered to be in conformity with the SIP. PM_{10} emissions are not evaluated under general conformity requirements because the project area is located within an attainment area.

C.2.2.3 Applicant Proposed Measures

Table C.2-9 contains measures that are proposed by PG&E Co. to reduce the potential air quality impacts associated with the proposed project. Potential construction impacts are evaluated assuming that the applicant proposed measures will be implemented.

Table C.2-9 Applicant Proposed Measures

#	Measure Text
8.1a	Mitigation of fugitive dust (PM_{10}) hydrocarbons, and NOx emissions will occur via education of the construction crews regarding measures that can reduce or minimize emissions. These include operating motor vehicles to minimize emissions and suppress dust. Control measures for construction emissions of PM_{10} will include the following mitigation measures.
8.1.b	Water all active construction areas at least twice daily.
8.1.c	Cover all trucks hauling soil and other loose material, or require at least 2 feet of freeboard.
8.1.d	Pave, apply water three times daily, or apply soil stabilizers on all unpaved access roads and staging areas at construction sites.
8.1.e	Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets.
8.1.f	Apply soil stabilizers, as needed, to inactive construction areas.
8.1.g	Enclose, cover, water twice daily, and add soil binders to exposed stockpiles of soil and other backfill materials.
8.1.h	Limit traffic speeds on unpaved roads to 15 mph.

Source: PG&E Co., 1998

C.2.2.4 Construction of the Proposed Project

To understand potential construction impacts on air quality, it is important to have a good understanding of the proposed construction activities. Following are summaries of the construction activities associated with the three main components of the proposed project.

230kV Transmission Line Route

The transmission line would be constructed in the following three phases:

- Install the supporting structure foundations. Foundations may be drilled concrete piers as deep as 45 feet, or wood or reinforced concrete pile foundations
- Erect the supporting structure body
- Attach insulators and string the electrical conductors.

The procedures for bringing personnel, materials, and equipment to each structure, constructing the supporting structure foundations, erecting the supporting structures, and stringing the conductors would vary along the route alignment. For example, structures sited in salt ponds or on uplands within underlying bay mud or running sands would consist of concrete footings tied to wood or concrete piles.

Construction equipment would include machinery such as trucks, backhoes, cranes, tractors, etc. Table C.2-10 lists the construction equipment that would be used during each major transmission line construction activity. PG&E Co. has estimated that transmission line construction would take approximately 11 months to complete (PG&E Co., 1999). Section C.2.2.6 for a discussion of emissions resulting from project construction. The main emissions generated from these activities include carbon monoxide, nitrogen oxides, and PM_{10}.

Table C.2-10 230kV Transmission Line Construction Equipment by Phase

Pole Line Access	Transmission Line Construction Phases		
	Foundations	Tower Erection	Conductor Installation
2 pickup trucks 3 mechanic trucks 1 backhoe 1 grader 1 air compressor	4 ¾-ton pickup trucks 2 one-ton trucks 1 auger 1 tool van 2 concrete trucks 1 backhoe	4 ¾-ton pickup trucks 1 five-ton trucks 1 ten-ton truck 4 mobile cranes 1 crawler tractor air tampers/compactors	1 ten-ton truck 5 ¾-ton pickup trucks 2 crawler tractors 1 auger 1 five-ton truck 2 tensioners 2 pullers

Source: PEA, 1998a and SPEA, 1999.

Substation Site and 115kV Lines

Construction of the proposed Los Esteros Substation would proceed in the following phases: demolition, site blading and grading, structure delivery and setup, wire installation, cleanup, and landscaping. Construction of the four 115kV power line connections (i.e., to the following existing lines: Los Esteros to Kifer, Los Esteros to Trimble, Los Esteros to Montague, and Agnews 115kV Tap) that would connect the substation to the local 115kV power system would be similar to that described in Section C.2.2.4 for construction of the 230kV transmission line.

Table C.2-11 lists construction equipment for each substation construction activity. PG&E Co. has estimated that construction of the proposed substation would take approximately 6 months to complete (PG&E Co., 2000). Section C.2.2.6 addresses estimated total project construction emissions.

Table C.2-11 Substation Construction Equipment by Activity

Demolition	Site Blading and Grading	Structure Delivery and Setup and Wire Installation	Cleanup and Landscaping
2 ¾-ton pickup trucks 1 one-ton truck 2 D-3 bulldozer 1 mobile crane	2 ¾-ton pickup trucks 1 one-ton truck 1 truck-mounted digger 1 crawler backhoe 1 concrete truck	2 ¾-ton pickup trucks 1 boom truck 1 mobile crane 1 one-ton truck	2-ton flat-bed truck 2 ¾-ton pickup trucks 1 one-ton truck 1 D-3 bulldozer 1 concrete truck

Source: PG&E Co., 1998a and PG&E Co., 1999.

Proposed Trimble-Montague 115kV Upgrade

Construction of the proposed Trimble-Montague 115kV Upgrade would consist of following activities:

- Relocating existing public utilities along Trimble Road to make room for the pole foundations
- Excavation of large foundation holes for each pole (approximately 6 feet in diameter and 15 to 20 feet deep)
- Placement of a rebar cage and concrete with each foundation hole
- Placement of tubular steel pole shafts on the foundations
- Conductor installation.

Equipment that would be used for construction of the 115kV Trimble-Montague Upgrade would be similar to those listed in Table C.2-10. However, there would be no pole line access construction (construction access would be achieved along Trimble Road and Montague Expressway and the I-880/Montague Expressway Interchange), and construction methods do not include the use of crawler tractors, graders, or bulldozers (PG&E Co., 1999). See Section C.2.2.6 for a discussion of emissions resulting from project construction.

C.2.2.5 Proposed Operations

A clear understanding of the activities involved in operation of the proposed project is necessary to adequately evaluate potential air quality impacts. Operations include both direct impacts (e.g., trips associated with periodic maintenance) and indirect impacts (e.g., increase emissions at utility plants).

Operation of the proposed project would include general system monitoring and control, and facility inspections. The proposed Los Esteros Substation would be unmanned, but would require periodic maintenance checks by PG&E Co. staff. Facility inspections along the transmission lines would involve two patrols per year to check the overall integrity of the system: one surface patrol and one air patrol. Approximately 50 PG&E Co. employees would be involved at various times in the maintenance of the facilities. These activities would result mainly in carbon monoxide, nitrogen oxides, and PM_{10} emissions.

The increased electrical power delivered to the project area would require increased electrical generation at power plants in the region. The additional power generated as a result of this project would be provided by a network of power plants (hydroelectric, nuclear, natural gas fired) located throughout northern California. The air emissions resulting from increased power generation are

dispersed throughout northern California and are difficult to quantify. However, these indirect impacts are considered in a qualitative manner.

C.2.2.6 Impacts and Mitigation Measures

C.2.2.6.1 *Impacts of the Proposed Project*

Construction

Exhaust Emissions. Construction emissions can be distinguished as on site and off site. On-site air pollutant emissions during construction would principally consist of exhaust emissions from mobile diesel and gasoline-powered construction equipment, as well as fugitive particulate matter (dust) from grading and material handling. Off-site exhaust emissions would result from the workers commuting to staging areas, transporting workers from staging areas to the work sites, trucks hauling materials to the construction sites, dump trucks hauling away construction debris (e.g., dirt displaced by the tower foundations, or demolition debris generated at the proposed substation site), and trucks hauling concrete to the tower foundation sites. Potential impacts associated with construction exhaust emitting are considered less than significant (**Class III**).

PM_{10} Emissions. Many construction activities associated with the proposed project, such as earth moving operations (e.g., trenching, grading, etc.) and soil disturbance from construction equipment (especially over unpaved roads), would generate PM_{10} emissions. PM_{10} emissions can very greatly depending on the level of activity, the specific activities taking place, and weather and soil conditions.

As shown in Section C.2.2.3, PG&E Co. has committed to implementing several BAAQMD mitigation measures to reduce PM_{10} emissions. However, three of the required BAAQMD measures were not referenced by PG&E Co. (see Table C.2-9). Implementation of the three remaining BAAQMD measures in addition to the Applicant Proposed Measures listed in Table C.2-9 would reduce potentially significant impacts to levels that are less than significant (**Class II**).

Mitigation Measures for PM_{10}

Impact: Construction PM_{10} levels would violate BAAQMD significance criteria if all of BAAQMD PM_{10} control measures are not implemented.

The following BAAQMD PM_{10} control measures are not included with PG&E Co.'s Applicant Proposed Measures and shall be implemented during project construction to reduce potential PM_{10} impacts from significant to less than significant (**Class II**).

A-1 Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.

A-2 Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

A-3 Replant vegetation in disturbed areas within 30 days of completion of construction.

Demolition and Asbestos. The development of the proposed substation site would involve demolition of many structures on the greenhouse property site. Several of these structures are believed to have been built in the late 1970s or early 1980s. Buildings constructed prior to 1980 often included building materials containing asbestos. Because airborne asbestos fibers pose a serious health threat, the demolition of the buildings may be subject to the limitations of BAAQMD Regulation 11, Rule 2: Hazardous Materials; Asbestos Demolition; Renovation; and Manufacturing. Implementation of Mitigation Measure A-4 would reduce potentially significant impacts to a level less than significant (**Class II**) by requiring development of a plan to prevent release of asbestos fibers.

Mitigation Measure for Asbestos

Impact: Demolition activities at the proposed substation site could potentially cause asbestos fibers to become airborne.

Implementation of Mitigation Measure A-4 would reduce potential significant impacts associated with asbestos to a level less than significant (**Class II**).

A-4 PG&E Co. shall obtain a certified asbestos specialist to investigate whether the buildings that are proposed to be demolished contain asbestos. The findings of the investigation shall be presented to both the BAAQMD and the CPUC prior to construction of the proposed project. If it is found that the buildings do contain asbestos, PG&E Co. shall consult with the District's Enforcement Division prior to commencing demolition to plan demolition practices that would not liberate asbestos fibers.

Operations

Direct operational emissions would result from vehicular emissions associated with periodic maintenance, repair, and inspection of the project components would be the only direct source of emissions generated during the operational phase. Indirect emissions would result from generation of additional power by the regional power plants that provide electricity to the area.

The BAAQMD considers potential operational impacts associated with project vehicular emissions and the generation of additional power by the regional power plants to be a negligible impact (BAAQMD, 2000). Therefore, potential impacts associated with project operations are considered to be less than significant (**Class III**). Because potential air quality impacts during project operations are considered to be less than significant, mitigation measures are not required.

General Conformity. To satisfy general conformity requirements of the Federal Clean Air Act, projected nitrogen oxides, reactive organic compounds (ozone precursors), and carbon monoxide emissions should be estimated and compared to the General Conformity Rule *de minimis* emission thresholds for each pollutant.

The estimated total construction period for the proposed project would be approximately 11 months (PG&E Co., 1999). However, project construction would be conducted in several phases. For transmission line construction, tower foundations would be constructed first, followed by tower erection, and conductor installation. For substation construction, the foundation would be the first component constructed, followed by delivery and setup of the substation hardware, wire installation, cleanup, and landscaping. PG&E Co. has estimated the approximate number of days each construction activity would take to complete (PG&E Co., 2000). Total estimated construction days are listed in Table C.2-12. Total project emissions where calculated by multiplying maximum daily emissions listed in Table 8-7 of PG&E Co.'s Proponent's Environmental Assessment (PG&E Co., 1998a) by the total construction days.

Table C.2-12 Estimated Construction Emissions (Daily and Total Project)

Construction Activity	Maximum Daily Emissions (pounds)			Days to Complete Activity	Total Project Emissions (pounds)		
	NO_2	ROC	CO		NO_2	ROC	CO
Transmission Line Construction Emissions							
Pole Line Activity Access	58.66	5.70	103.04	10	586.60	57.00	1030.40
Tower Foundation	156.50	10.56	137.75	190	29735.00	2006.40	26172.50
Tower Erection	206.95	35.62	272.19	38	7864.10	1353.56	10343.22
Conductor Installation	346.66	15.04	194.99	40	13866.40	601.60	7799.60
Substation Construction Emissions							
General Construction	0.71	0.44	6.31	125	88.75	55.00	788.75
Structure Foundation Excavation	91.48	6.35	71.88	31	2835.88	196.85	2228.28
Structure Delivery and Setup	14.56	18.51	553.24	31	451.36	573.81	17150.44
Wire Installation	34.98	2.41	28.17	31	1084.38	74.71	873.27
Cleanup and Landscaping	34.52	6.67	66.52	20	690.40	133.40	1330.40
Total Project Emissions (pounds)					**57202.87**	**5052.33**	**67717.19**
Total Project Emissions (tons)					**28.60**	**2.53**	**33.86**
***De Minimis* Threshold (tons)**					**100**	**100**	**100**
Exceedance?					**No**	**No**	**No**

Notes: Maximum daily construction emissions are taken from Table 8-7 of PG&E Co.'s PEA (PG&E Co., 1998a).
Total project emissions do not include emissions from workers commuting to and the job sites or demolition activities that would last for one week at the Los Esteros Substation Site. Emissions associated with these activities are considered negligible and would not raise total project emissions to near the *de minimis* thresholds.

Table C.2-12 presents PG&E Co.'s daily construction emissions estimates broken down according to construction activity, approximate days it would take to complete each construction activity, total project emissions, and a comparison of total project emissions to the general conformity *de minimis* thresholds. Days to complete construction activities are based on a discussion with PG&E Co.'s Project Manager (PG&E Co., 2000). The rationale is as follows: pole line access activities such as constructing service roads would be limited to only a few foundation sites (i.e., most of the foundation sites are accessible from existing roads), hence, 10 days is a relatively conservative assumptions. Tower

foundations would take approximately five days each to construct and the project consist of 38 towers. It takes approximately one day to raise and secure a tower. It would take approximately two months of active construction to install the conductor. Substation construction would take about six months to complete. Structure foundation excavation, delivery and setup, and wire installation would each take approximately 1.5 months to complete. Cleanup and landscaping would last for approximately one month.

Because project emission levels are estimated to fall well below the *de minimis* thresholds for reactive organic compounds, nitrogen oxides, and carbon monoxide (100 tons for each pollutant), the project would be exempt from the detailed Conformity Analysis, and would be considered to be in conformance with the State Implementation Plan (SIP).

C.2.2.6.2 Cumulative Impacts

Future and proposed single-site and linear projects in close proximity to construction of the proposed project could have cumulative air quality impacts on the study area. A list of cumulative projects in proximity to the proposed project is presented in Table B.8-1. The majority of the projects are light industrial (e.g., Cisco Systems, Bayside Business Park Grading Plan Project) and commercial (e.g., Hampton Inn, Catellus) developments. The pollutants generated from these projects would have an impact on ambient air quality if they were constructed in close proximity and at the same time as the proposed project.

Construction of the cumulative projects could further exacerbate the potentially adverse (**Class III**) exhaust emission impacts and the potentially significant (**Class II**) PM_{10} emission impacts estimated for the proposed project construction.

Cumulative impacts during the operation of the proposed project are not expected since limited amounts of emissions would be generated by the proposed project. The impacts to air quality may be adverse, but less than significant (**Class III**).

C.2.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR THE ALTERNATIVES

The alternative alignments and substation would be constructed in the same air basin as the proposed project. Therefore, the settings for the alternative alignments are the same as presented in Section C.2.1.

The air quality impacts for the alternative alignments and substation will not be significantly different from the proposed project. Localized short-term construction emissions would occur in the same manner as the proposed project. Implementation of the Mitigation Measures A-1 through A-3, in addition to Applicant Proposed Measures 8.1a through 8.1h would reduce potentially significant PM_{10} emissions generated during the construction phase to a level less than significant (**Class II**).

A difference in total construction emissions between the alternatives and the proposed project could occur. Factors that could cause a difference in emissions of the transmission line construction include: if the alternative route is significantly longer or shorter than the proposed project; if the alternative route would have more or less structures than the proposed route; or if the alternative would require special construction techniques such as trenching the line underground. With regard to the alternative substations, a comparison with the proposed substation can be made by comparing areas of the two substation sites that would require grading.

The long-term emissions from maintenance operations would be similar to those of the proposed project. No significant air quality impact would occur from the operational activities.

C.2.3.1 Underground Through Business Park

Although this alternative is approximately the same length as the proposed project, its construction would emit a considerable more amount of pollutants because a majority of this alternative would require installing the line underground using trenching techniques. Trenching operations would create more emissions because it would require excavating a trench 6 to 7 feet deep and about 4 four feet wide for the length of the underground line, compared to the proposed project that would require only two 7-foot (width) by 45-foot (depth) pole foundation excavations approximately every 1,200 feet. Since underground construction activities would involve more hours of excavating activities and higher volumes of associated excavated materials, this alternative would involve higher emissions than the proposed project.

C.2.3.2 I-880-A Alternative

The length of the I-880-A Alternative is 0.3 mile shorter than the proposed project, but this alternative would involve construction of more structure compared to the proposed project. The short-term, day-to-day emissions from constructing the alternative portion of the transmission line would be similar to the construction emissions from constructing the proposed route. However, the total emissions for this alternative may be slightly higher because of construction associated with an extra tower.

C.2.3.3 I-880-B Alternative

Similar to the I-880-A Alternative, the length of the I-880-B Alternative is 0.2 mile shorter than the proposed project, but would involve construction of two additional structures compared to the proposed project. The short-term, day-to-day emissions from constructing the alternative portion of the transmission line would be similar to the construction emissions from constructing the proposed route. However, the total emissions for this alternative may be slightly higher because of construction associated with the two extra towers.

C.2.3.4 Westerly Route Alternative

The Westerly Route Alternative is 0.5 mile shorter than the proposed route. The exact number of structures that would be associated with this alternative is unknown, but believed to be between 36 and 40, compared to 39 that would be associated with the proposed project. Because the exact amount of structures for this alternative has not been determined, a comparison to the proposed route is made based on the lengths of the two routes. The Westerly Route Alternative is approximately 7 percent shorter than the proposed project route. Therefore, the Westerly Route Alternative would create slightly less construction emissions from the alternative than from proposed route.

C.2.3.5 Westerly Upgrade Alternative

The Westerly Upgrade Alternative would involve over twice as much transmission line construction compared to the proposed project's route. The longer distance would create an equivalent increase in the total construction emissions associated with this alternative compared to the proposed project.

C.2.3.6 Substation Alternatives

C.2.3.6.1 *Northern Receiving Substation Alternative*

Construction of the Northern Receiving Substation Alternative would involve construction of an additional transmission line that would not be constructed under the proposed project. Although construction of the Northern Receiving Substation would not involve demolition activities like the proposed substation would, it is anticipated that construction of the additional line in addition to the construction of the alternative substation would generate more emissions then construction of the proposed substation.

C.2.3.6.2 *Zanker Road Substation Alternative*

The main difference between construction of the Zanker Road Substation Alternative and the proposed substation would be that the alternative site would not involve demolition of existing buildings that could potentially cause significant impacts associated with airborne asbestos, as the proposed substation site does. The demolition activities associated with the proposed substation site would also create exhaust and PM_{10} emissions that would not be generated during construction of this substation alternative. As a result, construction of the Zanker Road Substation Alternative would involve reduced potential air quality impacts compared to the proposed project.

C.2.3.7 Trimble-Montague 115kV Upgrade Alternatives

C.2.3.7.1 *Barber 115kV Alternative*

The Barber 115kV Alternative would involve nearly twice as much transmission line construction compared to the Trimble-Montague 115kV Upgrade route. The longer distance would create an equivalent increase in the total construction emissions associated with this alternative compared to the proposed project.

C.2.3.7.2 *Underground Trimble-Montague 115kV Alternative (tentative)*

This alternative would involve placing the transmission line underground along the same route as the Trimble-Montague 115kV Upgrade. Underground transmission line construction would result in a higher level of potential impacts compared to above ground transmission line construction as proposed (see Section C.2.3.1). Consequently, construction of this alternative would involve higher emissions than construction of the proposed project.

C.2.4 No Project Alternative

Under the No Project Alternative, the proposed Northeast San Jose Reinforcement Project would not be constructed, eliminating the air quality impacts discussed in Section C.2.2. However, PG&E Co. would have to upgrade their existing facilities and add new transmission and generation capacity to compensate for existing system limitations and anticipated loads. Construction of the PG&E Co. facility expansions and transmission line additions would occur in the San Francisco Bay area air basin. These localized short-term construction scenarios could create a significant air quality impact since construction activities could create a nuisance or not conform with the requirements of the SIP for the Bay Area Air Basin, which did not attain standards.

C.2.5 Mitigation Monitoring Program

Table C.2-13 on the following page presents the Mitigation Monitoring Program for air quality. These measures would be applicable to construction on the proposed route and all alternative route segments.

Table C.2-13 Mitigation Monitoring Program

Impact	Mitigation Measure	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Proposed Project and Alternatives						
Construction PM_{10} levels would violate BAAQMD significance criteria if all of BAAQMD PM_{10} control measures are not implemented.	**A-1:** Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.	All transmission line and substation construction	Construction plan; monitor construction activities	PM10 emissions are reduced, Effectiveness can not be monitored in the field	CPUC and the BAAQMD	During construction
	A-2: Install sandbags or other erosion control measures to prevent silt runoff to public roadways.	All transmission line and substation construction	Construction plan; monitor construction activities	PM10 emissions are reduced, Effectiveness can not be monitored in the field	CPUC and the BAAQMD	During construction
	A-3: Replant vegetation in disturbed areas within 30 days of completion of construction.	All transmission line and substation construction	Construction plan; monitor construction activities	PM10 emissions are reduced, Effectiveness can not be monitored in the field	CPUC and the BAAQMD	During and after construction
Proposed Project Only (Substation)						
Demolition activities at the proposed substation site could potentially cause asbestos fibers to become airborne.	**A-4:** PG&E Co. shall obtain a certified asbestos specialist to investigate whether the buildings that are proposed to be demolished contain asbestos. If it is found that the buildings do contain asbestos, PG&E Co. shall consult with the District's Enforcement Division prior to commencing demolition to plan demolition practices that would not liberate asbestos fibers.	Proposed Los Esteros Substation	Review findings of the Asbestos Specialist; Review documentation that PG&E Co. has coordinated with the BAAQMD; monitor construction activities	Asbestos fibers a not released to the environment, Effectiveness can not be monitored in the field	CPUC and the BAAQMD	Prior to construction

C.2.6 REFERENCES

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