4.9 AIR QUALITY

4.9.1 REGULATORY SETTING

Both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) require consideration of impacts on air quality. A general discussion of NEPA and CEQA requirements is provided in Chapter 1 of this Tier 1 Environmental Impact Statement/Environmental Impact Report (EIS/EIR). In addition, other types of legislation influence air quality. Relevant laws and guidelines are described below.

4.9.1.1 Federal and State Air Quality Standards

Federal and state governments have each established standards for ambient air quality. The U.S. Environmental Protection Agency (U.S. EPA) has established primary and secondary National Ambient Air Quality Standards (NAAQS) that specify allowable ambient concentrations for criteria pollutants under the provisions of the Clean Air Act (CAA). Allowable ambient concentrations are set for the following criteria pollutants: ozone (O3), respirable particulate matter (PM10), fine particulate matter (PM2.5), carbon monoxide (CO), nitrogen dioxide (NO2), lead (Pb), and sulfur dioxide (SO2). Table 4.9-1 summarizes the NAAQS for these pollutants. The 8-hour O3 and PM2.5 standards listed in the table were promulgated in 1997 but were challenged in the courts. In 2002, the courts upheld these two standards. The U.S. EPA made final designations for the 8-hour O3 standards on April 15, 2004, and final designations for the new federal PM2.5 standards in December 2004. Currently, the U.S. EPA and the states are working together to develop air quality plans to achieve compliance with these standards, where needed.

The U.S. EPA, under the provisions of the CAA, requires each state with regions that have not attained the NAAQS to prepare a State Implementation Plan (SIP) detailing how those standards are to be met in each local area. The SIP is a legal agreement between each state and the federal government to commit resources to improving air quality. It serves as the template for conducting regional and project-level air quality analysis. The regional analysis is performed by the appropriate Metropolitan Planning Organization (MPO), and the project-level analysis by the project sponsor. The SIP is not a single document but a compilation of new and previously submitted plans, programs, district rules, state regulations, and federal controls. Areas designated as serious non-attainment are required to achieve attainment by June 15, 2013. The California Air Resources Board (CARB), which is part of the California Environmental Protection Agency, is the lead agency for developing this SIP. Local air districts and other agencies prepare Air Quality Attainment Plans (AQAPs) or Air Quality Management Plans (AQMPs) and submit them to CARB for review and approval.

In 1976, the California Legislature adopted the Lewis Air Quality Management Act, which created Air Quality Management Districts (AQMDs) and Air Pollution Control Districts (APCDs). Though separate from federal actions, the creation of AQMDs/APCDs became an integral part of transportation conformity, which is described below. CARB oversees activities of the APCDs and regional AQMDs. The AQMDs and APCDs promulgate the SIPs for achieving cleaner air quality on a region-by-region basis and provide technical assistance to the MPO and project sponsor for regional and project-level air quality analyses.

The CAA requires that no MPO approve any transportation plan, program, or project that does not conform to a SIP. The concept of transportation conformity was introduced in the CAA of 1977, which included a provision to ensure that transportation investments conform to a state's air quality plan for meeting the federal air quality standards. Conformity requirements were made substantially more rigorous in subsequent CAA amendments (FHWA, 2007). Revisions in 1990 require that transportation plans, programs, and projects must conform to the purpose of the SIP. This was accomplished by the

Table 4.9-1
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	**Method[4]**	**Primary[3,5]**	**Secondary[3,6]**	**Method[7]**
Ozone (O_3)	1 hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 hours	0.070 ppm (137 µg/m^3)		0.08 ppm (157 µg/m^3)[8]		
Respirable Particulate Matter (PM_{10})	24 hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		50 µg/m^3 (see footnote #9)		
Fine Particulate Matter ($PM_{2.5}$)	24 hours	No Separate State Standard		65 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8 hours	9 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-dispersive Infrared Photometry (NDIR)
	1 hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 hours (Lake Tahoe)	6 ppm (7 mg/m^3)		–	–	–
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.03 ppm (57 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 hour	0.18 ppm (338 µg/m^3)		–		
Lead[10]	30-day Average	1.5 µg/m^3	Atomic Absorption	–	–	–
	Calendar Quarter	–		1.5 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	–	Spectro-photometry (Pararosaniline Method)
	24 hours	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	–	
	3 hours	–		–	0.5 ppm (1,300 µg/m^3)	
	1 hour	0.25 ppm (655 µg/m^3)		–	–	–

Table 4.9-1 (Continued)
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Visibility Reducing Particles	8 hours	Extinction coefficient of 0.23 per kilometer – visibility of 10 miles of more (0.07–30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		NO FEDERAL STANDARDS		
Sulfates	24 hours	25 µg/m^3	Ion Chroma-tography			
Vinyl Chloride[10]	24 hours	0.01 ppm (26 µg/m^3)	Gas Chroma-tography			
Hydrogen Sulfide	1 hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			

Source: California Air Resources Board (2006)

Notes:

µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; ppm = parts per million

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of CARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. New federal 8-hour ozone and fine particulate matter standards were promulgated by the U.S. EPA on July 18, 1997. In 2006, the U.S. EPA approved these standards, set attainment designation for all areas within the United States, and required non-attainment areas to develop attainment strategies.
9. Due to lack of evidence linking health problems to long-term exposure to coarse particle pollution, the agency revoked the annual PM_{10} standard in 2006 (effective December 17, 2006).
10. CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

development of the Transportation Conformity Rule (40 Code of Federal Regulations (CFR) Parts 51 and 93) in 1993. This rule established the criteria and procedures by which the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and MPO entities determine the conformity of federally funded or approved highway and transit plans, programs, and projects to SIP provisions.

CARB oversees activities of local air quality management agencies and is responsible for incorporating AQAPs and AQMPs from local air districts into the SIP for U.S. EPA approval. CARB also maintains air quality monitoring stations throughout the state in conjunction with local air districts. Data collected at these stations are used by CARB to classify air basins as being in attainment or non-attainment with respect to each pollutant and to monitor progress in attaining air quality standards.

CARB has promulgated ambient air quality standards for O_3, PM_{10}, $PM_{2.5}$, CO, NO_2, SO_2, and Pb that are more stringent than the U.S. EPA's standards, as shown in Table 4.9-1. Counties and metropolitan areas are classified as being in attainment or non-attainment with respect to federal and state ambient pollutant standards. An area's classification is determined by comparing actual monitored air pollutant concentrations with state and federal standards. More than 200 air monitoring stations are located in California; these are part of the State and Local Air Monitoring Network. These stations are operated by CARB, APCDs, or AQMDs, private contractors, and the National Park Service (NPS). Areas that do not have sufficient data for a determination are given an "unclassified" designation and are not considered to be non-attainment.

The California CAA requires that each area exceeding the state ambient air quality standards for O_3, CO, SO_2, and NO_2 must develop a plan aimed at achieving those standards (California Health and Safety Code 40911). The California Health and Safety Code Section 40914 requires air districts to design a plan that achieves an annual reduction in district-wide emissions of 5 percent or more, averaged every consecutive three-year period. To satisfy this requirement, the AQMDs and APCDs have to develop and implement air pollution reduction measures, which are described in their AQAP/AQMP outlining strategies for achieving the state ambient air quality standard for any criteria pollutants for which the region is classified as non-attainment. The AQAP/AQMP outlines both stationary and mobile emission source control measures and emphasizes Transportation Control Measures (TCMs) and Indirect Source Control Measures to reduce mobile source emissions. These measures are also incorporated into the SIP to satisfy federal requirements.

It should be noted that in addition to criteria pollutants, hazardous air pollutants (HAPs) and toxic air contaminants (TACs) are regulated. TACs are compounds that are known or suspected to cause short-term (acute) and/or long-term (chronic non-carcinogenic or carcinogenic) adverse health effects, although exceedance thresholds have not been adopted for them yet. Sources of TACs include industrial facilities, internal combustion engines (stationary and mobile), and small area sources such as solvent usage. As such, local rules and regulations limit the amount of HAPs and TACs emitted from stationary sources through the air permit application process. Facilities exceeding the air permitting exemption thresholds may be required to meet restrictions such as operating hours and annual operating limits, install air pollution control systems, and conduct a health risk assessment. The results of the health risk assessment have to show that nearby sensitive receptors exposed to HAPs and TACs emitted from the facility will not have an increase in carcinogenic risks or detrimental acute and chronic noncancer health effects. Stationary sources emitting HAPs and TACs are not a part of the project and no stationary source emissions are expected from the operation of the Parkway; therefore, they will not be analyzed or discussed in this document. However, it should be noted that certain TACs are emitted from mobile sources (i.e., motor vehicles), known as mobile source air toxics (MSATs), which also present health concerns.

MSATs are classified as such to distinguish the originating source (i.e., mobile versus stationary). MSATs are released as part of vehicle exhaust emissions and include acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, diesel particulate matter, and diesel exhaust organic gases (FHWA, 2006a). Prolonged exposure to MSATs may cause cancer and/or other serious health effects, such as reproductive problems and birth defects. Such effects are also influenced by other variables, such as distance between sources of MSAT and sensitive receptors. Reduction of MSATs is a cooperative effort between federal, state, and local agencies. Details of regulations and new engine emissions standards relevant to MSATs are provided in the Air Quality Technical Memorandum (URS, 2007a). These standards include recent U.S. EPA regulations that pertain to the use of Ultra Low Sulfur Diesel Fuel, which is a cleaner-burning diesel fuel with reduced sulfur levels and almost negligible levels of particulate matter.

As previously mentioned, Placer Parkway is geographically located within Sutter and Placer counties and therefore is not subjected to any other air district's rules and regulations. However, because the Feather River Air Quality Management District (FRAQMD) and Placer County Air Pollution Control District (PCAPCD) (see Section 4.9.2.3) are relatively small air districts, they sometimes rely on other air districts' guidelines to supplement their needs. This is a common and accepted practice among air districts within the State of California. Because MSAT and analysis techniques are an emerging science, guidance manuals and protocols to assess air quality impacts are currently in the development stage by various regulatory agencies (i.e., Sacramento Metropolitan Air Quality Management District [SMAQMD], FHWA, CARB).

For instance, SMAQMD recently developed a document, *Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways, Version 1.0*, January 2007, which was endorsed by their Board of Directors on January 25, 2007. Although it was endorsed, it should be recognized that this is a draft document and subjected to modifications during its final phases. This document is used to determine whether there is a potential for detrimental health effects from living near a major roadway. The SMAQMD protocol is a preliminary screening tool for land use decision makers for approving or denying the siting of residential projects or other sensitive land uses in close proximity (i.e., less than 500 feet) to a high traffic volume roadway (i.e., more than 100,000 annual average daily trips [urban]; more than 50,000 annual average daily trips [rural]). This screening tool was not used in this Tier 1 assessment because the "preferred" alignment has not been chosen; therefore, project-specific data are not available. In addition, because Placer Parkway includes a 500- to 1,000-foot no-development buffer zone, residential or other sensitive uses will not be sited within the 500-foot guidance limit established by some agencies.

In addition, to determine the type of air quality analysis required from exposure to MSATs, FHWA produced a guidance document, *Interim Guidance on Air Toxics in NEPA Documents* (2006c). The Interim Guidance describes FHWAs tiered approach for analyzing MSATS in NEPA documents, which involves three levels of analysis, depending on the potential for MSATs (based primarily on project characteristics and vehicle miles traveled). Furthermore, a California Environmental Protection Agency (Cal-EPA)/CARB document, *Air Quality and Land Use Handbook: A Community Health Perspective* (2005), presents general information regarding potential detrimental health effects to sensitive receptors (e.g., residences, hospitals, day care centers) located less than 500 feet from a major roadway (i.e., a roadway with more than 100,000 daily vehicle trips).

4.9.1.2 Federal Regulations

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was passed in 2005. SAFETEA-LU addresses issues such as safety to reduce highway fatalities, reduce traffic congestion, improve efficiency in freight movement, increase intermodal connectivity, and protect the environment. Additional details of SAFETEA-LU are provided in the Air

Quality Technical Memorandum. Details of transportation conformity regulations with the CAA are provided above in Section 4.9.1.1.

4.9.1.3 Regional Regulations

The Transportation Conformity Rule requires a regional emissions analysis to be performed by the MPO for projects within its jurisdiction, unless they are exempt. The regional emissions analysis includes all projects listed in the Regional Transportation Plan (RTP) and the Regional Transportation Improvement Program (RTIP). At the Tier 1 level, the Parkway is exempt from the requirements of the Transportation Conformity Rule. FHWA will make a project-level conformity determination on the Parkway in the Tier 2 EIS/EIR, at which time the Parkway would be included in the RTP for Placer County and the Sacramento Area Council of Governments (SACOG)'s Metropolitan Transportation Plan (MTP) and would therefore conform to the SIP. The Parkway is included in the current RTP, MTP, and RTIP. Additional details of the RTP and MTP are provided in the Air Quality Analysis Technical Memorandum.

Placer Parkway is considered to be a regionally significant project for the purposes of air quality. The definition of regionally significant project under 40 CFR 93.101 is a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region; major activity centers in the region; major planned developments such as new retail malls, sports complexes, etc.; or transportation terminals as well as most terminals themselves) and normally would be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed transit facilities that offer an alternative to regional highway travel.

The study area is primarily in Sutter and Placer counties, where air quality is regulated by the local regulatory agencies, FRAQMD and PCAPCD, respectively. FRAQMD also has jurisdiction over Yuba County. Although the study area overlaps into Sacramento County, where air quality is regulated by SMAQMD, none of the corridor alignment alternatives would be located within Sacramento County. Therefore, SMAQMD's rules and regulations are not applicable or enforceable in the study area. As such, only general air quality data for Sacramento County is discussed in this document. The analysis recognizes that air pollutants will inevitably transport back and forth across county and basin boundaries. The amount and types of pollutants transported are dependent on meteorological conditions, day of the week (i.e., weekday versus weekend), and seasonal activities. During the transporting process, certain pollutants can contribute substantially to total air pollutant concentrations in the receiving region.

The FRAQMD and PCAPCD implement and enforce air quality regulations within their jurisdiction to reduce air pollutants in order to meet the federal and state ambient air quality standards (AAQS). Projects with the potential to generate emissions exceeding the thresholds are considered to have an adverse impact on air quality. If the project's emissions exceed any of the significance thresholds, feasible mitigation measures must be implemented. Tables 4.9-2 and 4.9-3 present these thresholds for criteria pollutants emitted from proposed projects within FRAQMD and PCAPCD jurisdictions, respectively. Volatile organic compounds (VOCs) and reactive organic gases (ROGs) are terms used to describe the same category of pollutants and are used interchangeably throughout this section to correspond with terminology used by different regulatory agencies. VOC is a "newer" terminology to describe gases emitted from certain solids or liquids, whereas, ROG is an "older" terminology used to describe the same types of gases.

Table 4.9-2
FRAQMD Significance Thresholds, Sutter and Yuba Counties

Pollutant	Significance Thresholds (lb/day)
ROG	25
NO_X	25
PM_{10}	80
Source: FRAQMD, 1998.	

Table 4.9-3
PCAPCD Operational and Significance Thresholds, Placer County

Pollutant	Cumulative Operational Thresholds (lb/day)	Significance Thresholds (lb/day)
ROG	10	82
NO_X	10	82
SO_2	N/A	136
PM_{10}	N/A	82
CO	N/A	550
Source: Backus, 2006.		

Additional details of these thresholds are presented in Section 4.9.2.1.

4.9.2 AFFECTED ENVIRONMENT

This section describes the existing air quality conditions for the potential affected study area in Sutter County, Placer County, and northern Sacramento County. The ambient air quality setting is based on existing available data and reports available at the air districts' websites (FRAQMD, 2006a, b, and c; PCAPCD, 2006a and b; CARB, 2006c).

The boundaries of the study area were defined as part of the Transportation Technical Report (DKS Associates, 2007) and reflect the area that potentially would be affected by the operation of Placer Parkway (see Section 4.9.2.1 for further details). The study area is located in the Sacramento Valley Air Basin (SVAB) (Figure 4.9-1), within southern Sutter County, the southwestern portion of Placer County, and northern Sacramento County. In the SVAB, air quality is affected by air pollutants transported from the San Francisco Bay Area Air Basin, in addition to emissions from within the Sacramento Valley and Mountain Counties Air Basins. Similarly, air pollutants from the SVAB contribute to air quality downwind in the San Joaquin Valley Air Basin and also upwind in the northern parts of the SVAB. Consequently, adjacent air basins with transporting pollutants must take into account local impacts to air quality from transport and local emissions as well as the impact of emissions on downwind areas.

4.9.2.1 Compliance with Air Quality Standards in the Study Area

The Sacramento Metropolitan Area (SMA), consisting of Sacramento, Yolo, and parts of Placer (including the study area), Sutter, El Dorado, and Yuba counties, is designated as severe non-attainment for the 8-hour average O_3 NAAQS. The air districts within the SMA, created under the Lewis Air Quality Management Act in California in 1976, have worked together to develop the 2003 Sacramento Area Regional Ozone Attainment Plan to satisfy the SIP requirement. This Attainment Plan identifies source controls and trip reduction strategies. This attainment strategy requires reductions of approximately 38 percent of ROG (see Section 4.9.1.3 for definition) and 40 percent of nitrogen oxide (NO_X) (O_3 precursors) relative to 1990 baseline emissions, and relies heavily on mobile source NO_X reductions, as mobile sources generate the majority of regional NO_X emissions. While the federal 1-hour O_3 standard has been revoked, the air districts will continue to implement the existing control strategies and continue to strategize new control measures to meet the new 8-hour O_3 standard. Efforts are currently underway to develop and submit an 8-hour O_3 attainment plan by June 2007. Currently, the attainment date for the Sacramento region with the 8-hour O_3 standard is June 15, 2013.

Air monitoring stations are collecting ambient air data at designated locations throughout Sutter and Placer counties. The ambient data from all these stations are used by the U.S. EPA and CARB to determine attainment or non-attainment with federal and state AAQS, respectively. For reference purposes, monitoring data collected from the air monitoring stations in the study area located in Sutter and Placer counties are provided in Tables 4.9-4, 4.9-5, and 4.9-6, with the locations illustrated in Figure 4.9-2. In addition, the federal and state air quality designations for Sutter and Placer counties are presented in the Air Quality Technical Memorandum.

Table 4.9-4
Maximum Measured Pollutant Concentrations
at Pleasant Grove, California, Monitoring Station

Pollutant	Averaging Time	Units	Standards		Maximum Measured Concentration		
			Federal	State	2002	2003	2004
O_3	1 hour	ppm	None	0.09	0.109[2]	NA	NA
	8 hours	ppm	0.08	0.070	0.092[1,2]	NA	NA
PM_{10}	24 hours	$\mu g/m^3$	150	50	NA	NA	NA
	Annual Average	$\mu g/m^3$	50	20	NA	NA	NA
$PM_{2.5}$	24 hours	$\mu g/m^3$	65	None	NA	NA	NA
	Annual Average	$\mu g/m^3$	15	12	NA	NA	NA
NO_2	1 hour	ppm	None	0.25	NA	NA	NA
	Annual Average	ppm	0.053	None	NA	NA	NA
CO	1 hour	ppm	35	20	NA	NA	NA
	8 hours	ppm	9	9.0	NA	NA	NA
SO_2	1 hour	ppm	None	0.25	NA	NA	NA
	3 hours	ppm	0.5	None	NA	NA	NA
	24 hours	ppm	0.14	0.04	NA	NA	NA
	Annual Average	ppm	0.030	None	NA	NA	NA

Source: Monitoring station located at 7310 Pacific Avenue, Pleasant Grove, California

Notes:
1. Exceeds the federal standard
2. Exceeds the state standard

NA = not available because data were not collected at this station. This station was closed in 2002.

Source:
California Air Resources Board, http://www.arb.ca.gov/ei/maps/basins/absvmap.htm

SVAB Boundary

Placer Parkway

Tier 1 EIS/EIR

Sacramento Valley Air Basin

Figure 4.9-1

June 2007

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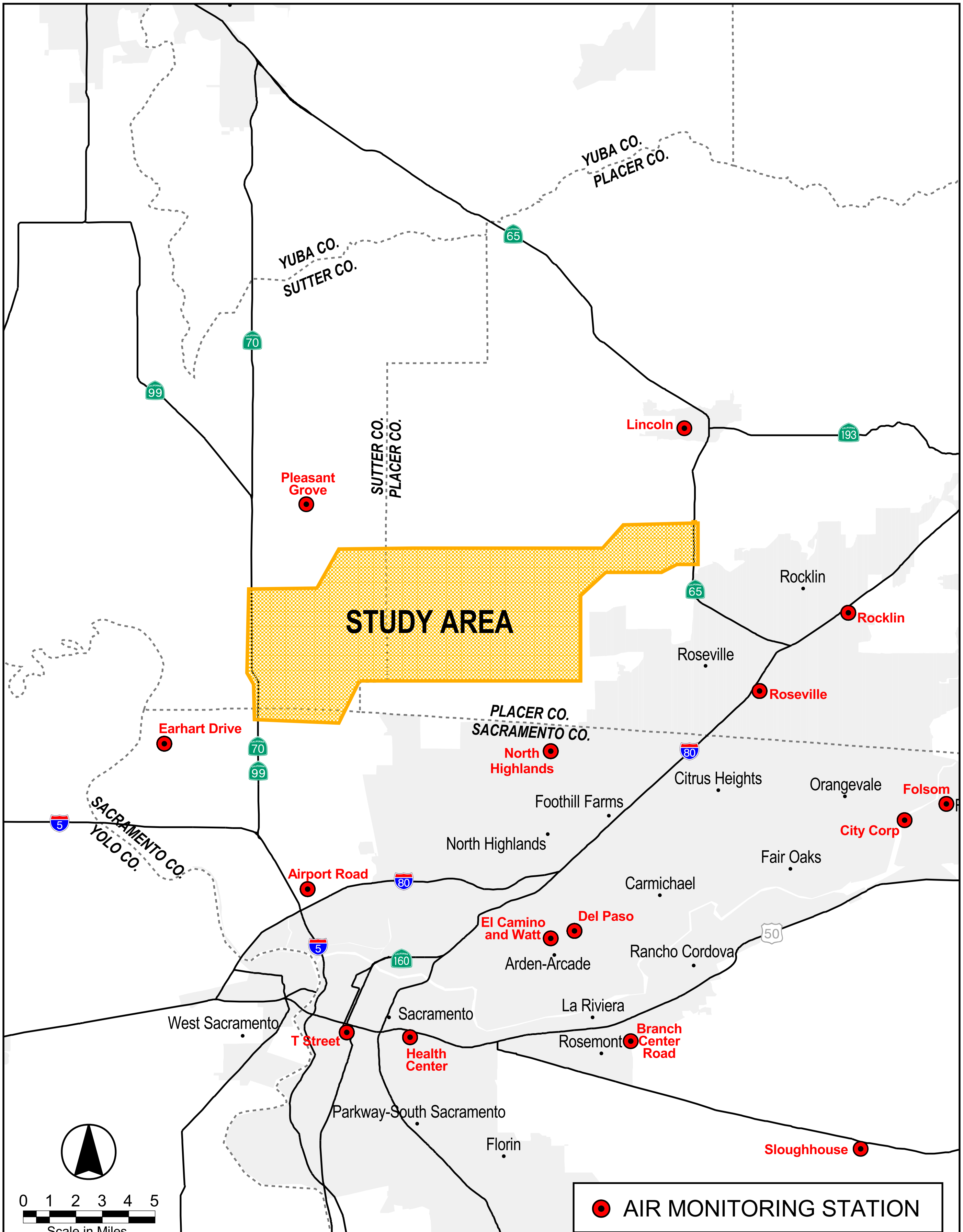

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PLACER PARKWAY

Tier 1 EIS/EIR

Air Quality Monitoring Stations

Figure 4.9-2

June 2007

Ozone

O_3 is a colorless gas that has a pungent odor and causes eye and lung irritation, visibility reduction, and crop damage. A primary constituent of smog, O_3 is formed in the atmosphere in the presence of sunlight by a series of chemical reactions involving NO_X and ROG. Because these reactions occur on a regional scale, O_3 is considered a regional air pollutant. Industrial fuel combustion and motor vehicles are primary sources of NO_X and ROG/VOC. O_3 concentrations in the project area consistently exceed federal and state ambient air quality standards. Sutter, Placer, and Sacramento counties are located in a non-attainment region known as the Sacramento Federal Nonattainment Area that includes portions of Sutter, Placer (western Placer County), El Dorado, and Yuba counties, and all of Sacramento and Yolo counties.

Particulate Matter

Particulate matter is generally composed of particles in the air such as dust, soot, aerosols, fumes, and mists. Of particular concern are inhalable particulates that have aerodynamic diameters of 10 micrometers or less (PM_{10}). A subgroup of these particulates is fine particulates (particles with aerodynamic diameters less than 2.5 micrometers ($PM_{2.5}$), which have very different characteristics, sources, and potential health effects. Sources and health effects of $PM_{2.5}$ are provided in the Air Quality Technical Memorandum.

Table 4.9-5
Maximum Measured Pollutant Concentrations at
Roseville, California (I-80), Monitoring Station

Pollutant	Averaging Time	Units	Standards		Maximum Measured Concentration		
			Federal	State	2003	2004	2005
O_3	1 hour	ppm	None	0.09	0.133(2)	0.106(2)	0.118(2)
	8 hours	ppm	0.08	0.070	0.109(1,2)	0.085(1,2)	0.106(1,2)
PM_{10}	24 hours	µg/m³	150	50	58.0(2)	43.0	55.0(2)
	Annual Average	µg/m³	50	20	21.0(2)	22.0(2)	19.0
$PM_{2.5}$	24 hours	µg/m³	65	None	30.0	32.0	51.0
	Annual Average	µg/m³	15	12	9.9	9.4	10.7
NO_2	1 hour	ppm	None	0.25	0.083	0.067	0.079
	Annual Average	ppm	0.053	None	0.014	0.013	0.013
CO	1 hour	ppm	35	20	2.4	2.6	2.0
	8 hours	ppm	9	9.0	1.6	1.9	1.3
SO_2	1 hour	ppm	None	0.25	NA	NA	NA
	3 hours	ppm	0.5	None	NA	NA	NA
	24 hours	ppm	0.14	0.04	NA	NA	NA
	Annual Average	ppm	0.030	None	NA	NA	NA

Source: Monitoring station located at 151 N. Sunrise Blvd., Roseville, California
Notes: 1. Exceeds the federal standard
2. Exceeds the state standard
NA = not available because data were not collected at this station.

Measured concentrations at the Roseville monitoring station have not exceeded federal PM_{10} 24-hour and annual average standards over the past 3 years. However, the state PM_{10} 24-hour standard was exceeded in 2003 and the annual average standard was exceeded in 2003 and 2004. The last exceedance of the state annual average $PM_{2.5}$ standard was in 2002. As of January 2006, Sutter, Placer, and Sacramento counties are federally designated as unclassifiable/attainment for $PM_{2.5}$. With regard to the state standard, Sutter County is designated as unclassified for $PM_{2.5}$, and Placer and Sacramento counties are designated as non-attainment for $PM_{2.5}$.

Carbon Monoxide

CO is an odorless, colorless gas that tends to dissipate rapidly into the atmosphere and consequently is generally a concern at the local level, particularly at major road intersections. Sources and health effects of CO are provided in the Air Quality Technical Memorandum.

Table 4.9-6
Maximum Measured Pollutant Concentrations at North Highlands, California, Monitoring Station

Pollutant	Averaging Time	Units	Standards		Maximum Measured Concentration		
			Federal	State	2003	2004	2005
O_3	1 hour	ppm	None	0.09	0.131(2)	0.103(2)	0.103(2)
	8 hours	ppm	0.08	0.070	0.094(1,2)	0.088(1,2)	0.085(1,2)
PM_{10}	24 hours	μg/m^3	150	50	62.0(2)	44.0	110.0(2)
	Annual Average	μg/m^3	50	20	21.0(2)	24.0(2)	27.0
$PM_{2.5}$	24 hours	μg/m^3	65	None	NA	NA	NA
	Annual Average	μg/m^3	15	12	NA	NA	NA
NO_2	1 hour	ppm	None	0.25	0.087	0.146	0.06
	Annual Average	ppm	0.053	None	0.015	0.014	0.011
CO	1 hour	ppm	35	20	4.4	7.3	8.0
	8 hours	ppm	9	9.0	2.1	4.1	2.9
SO_2	1 hour	ppm	None	0.25	0.012	0.008	0.01
	3 hours	ppm	0.5	None	0.008	0.006	0.007
	24 hours	ppm	0.14	0.04	0.004	0.002	0.007
	Annual Average	ppm	0.030	None	0.001	0.001	0.001

Source: Monitoring station located at 7823 Blackfoot Way, North Highlands, California

Notes: 1. Exceeds the federal standard
2. Exceeds the state standard

NA = not available because data were not collected at this station.

CO concentrations at the Roseville and North Highlands monitoring stations have been well below federal and state 1-hour and 8-hour average standards. Sutter and Placer counties are designated as unclassified/attainment for federal CO standards and attainment for state CO standards. Sacramento County is classified as attainment for both federal and state CO standards.

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is a key precursor to O_3. Sources and health effects of NO_2 are provided in the Air Quality Technical Memorandum.

Tables 4.9-4 through 4.9-6 show that measured concentrations of NO_2 in the project area have consistently remained well below the federal and state standards. With similar trends throughout the region (and state), the area is well within federal and state NO_2 standards.

Sulfur Dioxide

SO_2 is a colorless acidic gas with a strong odor. Sources and health effects of SO_2 are provided in the Air Quality Technical Memorandum. Table 4.9-6 shows that measured concentrations of SO_2 at the North Highlands monitoring station have consistently remained well below the federal and state standards. SO_2 is not measured at the Roseville or Pleasant Grove monitoring stations. The air basin is designated as unclassified/attainment for federal and state standards. Sulfur oxides (SO_X) include SO_2 and other oxides of sulfurs and are reported in this analysis as equivalent to SO_2.

4.9.2.2 Existing Emissions Sources

Pollutants that affect air quality are generated from both manmade and natural sources. Manmade sources of emissions are generally divided into three types: stationary, area-wide, and mobile sources. The contributions of these source categories vary from region to region. CARB maintains an emissions inventory to determine the sources and quantities of air pollution generated within the state's counties and air basins. Tables 4.9-7 and 4.9-8 present a summary of the estimated 2005 pollutant emission data for Sutter County and the Sacramento Valley portion of Placer County, respectively. Similar data for Sacramento County are presented in Table 4.9-9. Mobile sources are the largest contributors to the ROG, CO, NO_X, and SO_X emissions inventories, but are minor contributors to the PM_{10} and $PM_{2.5}$ emissions inventories.

Table 4.9-7
Summary of 2005 Estimated Annual Average Emissions in Sutter County (lbs/day)

Source	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Stationary Sources						
Fuel Combustion	1,200	3,600	10,200	200	600	800
Cleaning and Surface Coatings	1,200	0	0	0	0	0
Petroleum Production and Marketing	5,200	0	0	0	0	0
Industrial Processes	0	0	0	0	2,800	1,200
Total Stationary Sources	**7,600**	**3,600**	**10,200**	**200**	**3,400**	**2,000**
Area Sources						
Solvent Evaporation	4,000	0	0	0	0	0
Miscellaneous Processes	2,000	20,800	1,200	200	24,000	7,000
Total Area Sources	**6,000**	**20,800**	**1,200**	**200**	**24,000**	**7,000**
Mobile Sources						
Other Mobile Sources	5,200	24,100	11,600	400	800	800
On-Road Motor Vehicles	5,200	50,300	8,800	0	200	200
Total Mobile Sources	**10,400**	**74,400**	**20,400**	**400**	**1,000**	**1,000**
Total All Sources	**24,000**	**98,800**	**31,800**	**800**	**28,600**	**10,000**

Source: CARB, 2006b.

Note: Original CARB data are in tons per day. Values in the table have been converted to lbs/day and rounded. Total may not result from the addition of the individual elements due to rounding.

Table 4.9-8
Summary of 2005 Estimated Annual Average Emissions in Placer County (lbs/day)

Source	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Stationary Sources						
Fuel Combustion	800	3,900	6,100	100	400	400
Waste Disposal	200	0	0	0	0	0
Cleaning and Surface Coatings	5,500	0	0	0	0	0
Petroleum Production and Marketing	2,100	0	0	0	0	0
Industrial Processes	3,000	500	300	100	3,000	1,600
Total Stationary Sources	**11,600**	**4,400**	**6,400**	**200**	**3,400**	**2,000**
Area Sources						
Solvent Evaporation	6,600	0	0	0	0	0
Miscellaneous Processes	7,000	93,200	2,200	400	44,400	16,600
Total Area Sources	**13,600**	**93,200**	**2,200**	**400**	**44,400**	**16,600**
Mobile Sources						
Other Mobile Sources	11,700	87,600	27,400	1,300	1,700	1,400
On-Road Motor Vehicles	16,100	153,700	24,400	200	800	600
Total Mobile Sources	**27,800**	**241,300**	**51,800**	**1,500**	**2,500**	**2,000**
Total All Sources	**53,000**	**338,900**	**60,200**	**2,100**	**50,400**	**20,800**

Source: http://www.arb.ca.gov/app/emsinv/emseic1_query.php

Note: Original CARB data are in tons per day. Values in the table have been converted to lbs/day and rounded. Total may not result from the addition of the individual elements due to rounding.

Table 4.9-9
Summary of 2005 Estimated Annual Average Emissions in Sacramento County (lbs/day)

Source	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Stationary Sources						
Fuel Combustion	700	6,600	6,900	100	1,000	1,000
Waste Disposal	500	200	100	0	0	0
Cleaning and Surface Coatings	11,000	0	0	0	0	0
Petroleum Production and Marketing	8,500	0	0	0	0	0
Industrial Processes	2,200	600	400	100	2,200	1,200
Total Stationary Sources	**22,900**	**7,400**	**7,400**	**200**	**3,200**	**2,200**
Area Sources						
Solvent Evaporation	27,600	0	0	0	0	0
Miscellaneous Processes	8,200	79,600	6,200	200	76,600	24,000
Total Area Sources	**35,800**	**79,600**	**6,200**	**200**	**76,600**	**24,000**
Mobile Sources						
Other Mobile Sources	21,600	183,400	53,000	1,300	3,600	3,200
On-Road Motor Vehicles	54,600	511,200	103,600	1,000	3,600	2,400
Total Mobile Sources	**76,200**	**694,600**	**156,600**	**2,300**	**7,200**	**5,600**
Total All Sources	**134,800**	**781,600**	**170,200**	**2,700**	**87,000**	**31,800**

Source: CARB, 2006b.

Note: Original CARB data are in tons per day. Values in the table have been converted to lbs/day and rounded. Total may not result from the addition of the individual elements due to rounding.

4.9.3 IMPACT ANALYSIS

4.9.3.1 Methodology for Impact Evaluation

Emissions associated with the long-term future operation of Placer Parkway have been estimated using CARB's EMFAC2002 mobile emissions model using input parameters including vehicle miles traveled (VMT) and vehicle hours of delay (VHD) as projected on the five build alternatives for 2020 and 2040 by the Transportation Technical Report (DKS Associates, 2007). Additional details of the methodology are provided in the Air Quality Analysis Technical Memorandum (URS, 2007a).

Air quality impacts are evaluated by quantifying the pollutants generated from each build alternative and comparing them to the No-Build Alternative to determine the net increase or decrease of pollutants.

Construction Impact Evaluation Methodology

In the analysis of potential impacts on air quality, construction impacts are generally considered as short-term effects and operational impacts are considered as long-term effects. Site-specific data are not available to calculate construction emissions; therefore, potential air quality impacts from construction activities associated with Placer Parkway can be evaluated only broadly. This is done by estimating the maximum area expected to be affected by grading and construction activities and then using a model—the Road Construction Emissions Model, Version 5.2, created by the Sacramento Metropolitan Air Quality Management District—to determine the number of pieces of construction equipment that could be used and the maximum area that could be disturbed without resulting in emissions exceeding the PCAPCD thresholds. Additional details of this methodology are provided in the Air Quality Technical Memorandum.

Operational Impact Evaluation Methodology

The Transportation Technical Report (DKS Associates, 2007) provides peak-hour VMT data for the No-Build Alternative and build alternatives 1 through 5. In addition, daily VMT data categorized into 5-mile increments and by hour-of-day also were provided by DKS for the study area. The transportation analysis included two distinct study areas, as described below:

- Transportation Analysis Study Area (TASA). The area where the travel model shows substantial changes in traffic volumes, although the percentage of roadways that would be affected by the Placer Parkway decreases on the TASA's fringes (see Figure 4.8-1, Section 4.8, Traffic and Transportation).

- Analysis Focus Area (AFA). A portion of the TASA that is closer to the Parkway build alternatives. It represents the area where most of the transportation benefits of a future Placer Parkway would occur.

Although this air quality analysis assesses the significance of air quality impacts associated with pollutants emitted from mobile sources (i.e., motor vehicles) within the traffic study area (i.e., both TASA and AFA), it should be noted that air quality impacts could extend beyond the traffic study area because meteorological conditions such as prevailing wind could transport air pollutants to other areas within the SVAB.

VMT data for the No-Build Alternative and build alternatives were used as input into the EMFAC2002 mobile emissions model to estimate daily emissions. Emissions from the build alternatives were compared with the No-Build Alternative to determine the net increase in daily emissions. The amount of net increase is compared with FRAQMD and PCAPCD significance thresholds to determine whether the build alternatives would create substantial air quality impacts.

4.9.3.2 Evaluation Criteria

For the proposed project, potential impacts to air quality have been evaluated on a preliminary basis using the evaluation criteria listed below. The project would be considered to have adverse air quality impacts if:

- There is an exceedance of FRAQMD and PCAPCD pollutant thresholds (see Tables 4.9-2 and 4.9-3). Cumulative Operational Thresholds are used by PCAPCD to calculate monetary fees required to be paid by the project developer to reduce overall Placer County pollutants for attainment purposes. Total fees are based on the difference between the thresholds and a proposed project's operational summer emissions, i.e., after all feasible and applicable mitigation measures have been implemented.

- The Parkway traffic volumes will exceed 50,000 vehicles (Annual Average Daily Traffic (AADT)) and there are sensitive receptors, such as residences, schools, daycare centers, playgrounds, and medical facilities within 500 feet of the Parkway edge.

4.9.3.3 Existing Conditions Analysis (2004)

SMAQMD's Rate-of-Progress Plan EIR provides VMT data and vehicle emissions data for the Sutter County and the Sacramento Valley portion of Placer County for 2004 (see Figure 4.9-1 and Table 4.9-10). These data are consistent with the on-road vehicle emissions inventory data presented earlier. These data were not developed specifically from a traffic analysis in the Placer Parkway TASA or AFA.

Table 4.9-10
VMT and Criteria Pollutant Emissions for Year 2005

Location	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)
Sutter County	444,939	9,400	8,800	1,620	60
Placer County[1]	8,032,866	12,520	114,840	18,600	760
Sacramento County	32,319,034	56,240	519,360	105,280	3,740

Source: Data are from Appendix C of the DEIR Sacramento Regional Non-Attainment Area 8-Hour Ozone Rate-of-Progress Plan, Sacramento Metropolitan AQMD, September 2005. Data are also from Table 3 of the Sacramento Regional Nonattainment Area, 8-Hour Ozone Rate-of-Progress Plan Final Report, February 2006.

Note:

1. VMT data and pollutant data are for the Sacramento Valley portion of Placer County.

Based on a qualitative evaluation consistent with a Tier 1 analysis, the Placer Parkway traffic analysis for the 2004 Existing Plus Project conditions concluded that the project alternatives would result in similar but smaller changes in travel patterns in the Transportation Analysis Study Area in 2004 than in 2020. That is, the project alternatives would:

- Increase traffic volumes (VMT) on some roadway segments near proposed interchanges along the proposed project. These increases would likely be less than those under 2020 conditions.

- Result in decreases in traffic volumes on a larger number of local roadway segments in southern Sutter County and southwestern Placer County. These decreases probably would be less than those under 2020 conditions.

- Have a lower traffic volume on Placer Parkway than 2020 conditions.

Based on these findings, because the traffic volumes for the Existing Plus Project conditions would increase vehicle volumes only at a few roadway segments and decrease volumes at a much larger number of local roadways, the air quality impacts under Existing Plus Project conditions are expected to be potentially less than under 2020 conditions.

4.9.3.4 Future Analysis (2020) Conditions

Construction Impacts

In the analysis of potential impacts on air quality, construction impacts are generally considered as short-term effects and operational impacts are considered as long-term effects. Site-specific data are not available to calculate construction emissions; therefore, potential air quality impacts from construction activities associated with Placer Parkway can be evaluated only broadly at the Tier 1 level. The area that is estimated to be utilized during construction could be up to 1,473 acres in size (16.2 miles long and 750 feet wide [assuming an average between the proposed corridor width of 500 to 1,000 feet]). Depending on the construction timeline, a substantial amount of pollutants could be generated from the construction of Placer Parkway.

The modeled daily pollutant emission estimates are shown in Table 4.9-11.

Table 4.9-11
Estimated Amount of Pollutants Emitted During Site Grading Activities (lbs/day)

Description	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)
Site Grading	84	363	387	97
FRAQMD Thresholds (lbs/day)	25	None	25	80
Exceed FRAQMD Threshold (Yes/No)?	Yes	Not Applicable	Yes	Yes
PCAPCD Thresholds (lbs/day)	82	550	82	82
Exceed PCAPCD Threshold (Yes/No)?	Yes	No	Yes	Yes

The model indicates there would be exceedences of FRAQMD and PCAPCD thresholds for ROG, NO_X and PM_{10}. This would be a short-term air quality impact.

Construction emissions would result from construction equipment exhaust and fugitive dust generated from grading activities. These emissions probably would include criteria pollutants and diesel particulate matter (DPM). Therefore, to minimize emissions from construction activities, mitigations consistent with FRAQMD's and PCAPCD's regulations for fugitive dust control and best construction management practices would be implemented. For example, FRAQMD has a Best Available Mitigation Measures Construction Activity Plan (FRAQMD, 2006c) that must be adhered to during construction activities.

Operational Impacts

Compared to the No-Build Alternative, all of the build alternatives would decrease VMT on many arterial/collector roadway segments in unincorporated portions of south Sutter County, western Roseville, and unincorporated portions of west Placer County but also would cause increases in traffic volumes on the following roadway segments:

- State Route (SR) 70/99 south of the projected Placer Parkway connection;
- SR 65 north of the projected Placer Parkway connection;
- Rocklin's Whitney Ranch Parkway and the future Valley View Parkway; and
- Some roadways near future Placer Parkway interchanges.

The Transportation Technical Report analysis concluded that, compared to the No-Build Alternative, all the build alternatives would:

- Increase the total VMT in the TASA;
- Reduce the VMT on congested roadways, especially in the AFA. For each alternative, the scenarios with a Watt Avenue interchange would provide a larger reduction in VMT on congested roadways than without one; and
- Substantially reduce VHD within the TASA and especially in the AFA.

The following discussion presents the analysis of potential operational air quality impacts based on the traffic analysis, summarized above.

No-Build Alternative

Under the No-Build Alternative, land for the future construction of the Placer Parkway would not be acquired and the Placer Parkway would not be constructed. No impacts on air quality due to Placer Parkway would occur as a result of the No-Build Alternative. For the purposes of the analysis for 2020, which compares conditions with and without the project, the following discussion presents future conditions under the No-Build Alternative.

Future conditions under the No-Build Alternative were quantified using projected VMTs for the study area. These projections assumed vehicle movement within the region, without a Placer Parkway, using SR 65, Interstate 80 (I-80), Interstate 5 (I-5), SR 70/99, and other viable arterial roads that provide connections within the TASA. VMT data and associated air pollutants are presented in Table 4.9-12.

Table 4.9-12
VMT and Criteria Pollutant Emissions for No-Build Alternative in 2020

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build Alternative	17,725,900	8,900	68,320	9,880	1,440	160

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutant emissions are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.
3. Although the model does not calculate $PM_{2.5}$ emissions, to ensure a conservative approach $PM_{2.5}$ emissions can be assumed to be the same as PM_{10} for the purposes of the analysis.

Alternative 1 – the Red Alternative

Total emissions under these scenarios in 2020 are presented in Table 4.9-13. The percentage difference in emissions between this Alternative 1 scenario and the No-Build Alternative is presented in Table 4.9-14.

Table 4.9-13
VMT and Criteria Pollutant Emissions for Alternative 1 and the No-Build Alternative in 2020

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build Alternative	17,725,900	8,900	68,320	9,880	1,440	160
Alternative 1	17,846,974	8,960	68,640	9,940	1,440	180

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Table 4.9-14
Percentage Change in VMT and Criteria Pollutant Emissions Between Alternative 1 and the No-Build Alternative in 2020

Description	VMT Increase (%)	Emissions Increase Over No-Build Alternative (%)				
		ROG	CO	NO_X	PM_{10}	SO_X
Alternative 1	0.68	0.67	0.47	0.61	0.00	12.50

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Compared to the No-Build Alternative, Alternative 1 would:

- Increase VMT by 0.68 percent. All other alternatives would also increase VMT over the No-Build Alternative.
- Increase emissions by less than 1 percent, except for SO_X. All other alternatives would have similar increases.

Alternative 2 – the Orange Alternative

Total emissions for Alternative 2 as compared to the No-Build Alternative are presented in Table 4.9-15. The percentage difference in emissions between this Alternative and the No-Build Alternative is presented in Table 4.9-16.

Table 4.9-15
VMT and Criteria Pollutant Emissions for Alternative 2 and the No-Build Alternative in 2020

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build Alternative	17,725,900	8,900	68,320	9,880	1,440	160
Alternative 2	17,875,272	8,960	68,740	9,960	1,460	180

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Table 4.9-16
Percentage Change in VMT and Criteria Pollutant Emissions Between Alternative 2 and the No-Build Alternative in 2020

Description	VMT Increase (%)	Emissions Increase Over No-Build Alternative (%)				
		ROG	CO	NO_X	PM_{10}	SO_X
Alternative 2	0.84	0.67	0.61	0.81	1.39	12.50

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Compared to the No-Build Alternative, Alternative 2 would:

- Increase VMT by 0.84 percent. All other alternatives would also increase VMT over the No-Build Alternative.
- Increase emissions by less than 1 percent, except for PM_{10} and SO_X. All other alternatives would have similar increases.

Alternative 3 – the Blue Alternative

The emissions estimated for Alternative 3 are presented in Table 4.9-17 with the percentage increase in emissions between this Alternative and the No-Build Alternative presented in Table 4.9-18.

Table 4.9-17
VMT and Criteria Pollutant Emissions for Alternative 3 and the No-Build Alternative in 2020

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build Alternative	17,725,900	8,900	68,320	9,880	1,440	160
Alternative 3	17,888,226	8,980	68,780	9,960	1,460	180

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Table 4.9-18
Percentage Change in VMT and Criteria Pollutant Emissions Between Alternative 3 and the No-Build Alternative in 2020

Description	VMT Increase (%)	Emissions Increase Over No-Build Alternative (%)				
		ROG	CO	NO_X	PM_{10}	SO_X
Alternative 3	0.92	0.90	0.67	0.81	1.39	12.5

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Compared to the No-Build Alternative, Alternative 3 would:

- Increase VMT by 0.92 percent—the greatest of all the alternatives but still less than a 1 percent increase. All other alternatives would also increase VMT over the No-Build Alternative.
- Increase emissions by less than 1 percent except for PM_{10} and SO_X. All other alternatives would have similar increases.

Alternative 4 – the Yellow Alternative

Alternative 4 emissions are presented in Table 4.9-19. The increase in emissions between Alternative 4 and the No-Build Alternative is presented in Table 4.9-20.

Table 4.9-19
VMT and Criteria Pollutant Emissions for Alternative 4 and the No-Build Alternative in 2020

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build Alternative	17,725,900	8,900	68,320	9,880	1,440	160
Alternative 4	17,871,573	8,960	68,720	9,960	1,460	180

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Table 4.9-20
Percentage Change in VMT and Criteria Pollutant Emissions Between Alternative 4 and the No-Build Alternative in 2020

Description	VMT Increase (%)	Emissions Increase Over No-Build Alternative (%)				
		ROG	CO	NO_X	PM_{10}	SO_X
Alternative 4	0.82	0.67	0.59	0.81	1.39	12.50

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Compared to the No-Build Alternative, Alternative 4 would:

- Increase VMT by 0.82 percent. All other alternatives would also increase VMT over the No-Build Alternative.
- Increase emissions by less than 1 percent, except for PM_{10} and SO_X. All other alternatives would have similar increases.

Alternative 5 – the Green Alternative

Emissions associated with Alternative 5 are presented in Table 4.9-21. The percentage increase in emissions between these scenarios and the No-Build Alternative is presented in Table 4.9-22.

Table 4.9-21
VMT and Criteria Pollutant Emissions for Alternative 5 and the No-Build Alternative in 2020

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build Alternative	17,725,900	8,900	68,320	9,880	1,440	60
Alternative 5	17,874,270	8,960	68,720	9,940	1,460	180

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Table 4.9-22
Percentage Change in VMT and Criteria Pollutant Emissions Between Alternative 5 and the No-Build Alternative in 2020

Description	VMT Increase (%)	Emissions Increase Over No-Build Alternative (%)				
		ROG	CO	NO_X	PM_{10}	SO_X
Build – Alternative 5	0.84	0.67	0.59	0.61	1.39	12.50

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Compared to the No-Build Alternative, Alternative 5 would:

- Increase VMT by 0.84 percent. All other alternatives would also increase VMT over the No-Build Alternative.
- Increase emissions by less than 1 percent, except for PM_{10} and SO_X. All other alternatives would have similar increases.

Comparison of Alternatives

Potential impacts on air quality could occur during construction of Placer Parkway due to mobile-source pollutant emissions from construction vehicles and equipment. Impacts also could occur during operation through generation of mobile-source pollutants from vehicles. The future Placer Parkway would generate an increase in VMTs, which typically is associated with an increase in vehicle exhaust pollution. The comparison of VMT and operational emissions for all alternatives is shown in Table 4.9-23.

Table 4.9-23
Comparison of VMT and Operational Emissions for Build Alternatives in 2020

Description	VMT	Emissions (lbs/day)				
		ROG	CO	NO_X	PM_{10}	SO_X
No-Build Alternative	17,725,900	8,900	68,320	9,880	1,440	160
Total Emissions Increase Over No-Build Alternative (lbs/day)						
Alternative 1	17,846,974	60	320	60	0	20
Alternative 2	17,875,272	60	420	80	20	20
Alternative 3	17,888,224	80	460	80	20	20
Alternative 4	17,871,573	60	400	80	20	20
Alternative 5	17,874,270	60	400	60	20	20
FRAQMD Significance Thresholds		**25**	**None**	**25**	**80**	**None**
PCAPCD Significance Thresholds		**82**	**550**	**82**	**82**	**136**

Note:
1. The net increase in emissions is calculated based on the comparison with the No-Build Alternative.

All build alternatives exceed the FRAQMD significance thresholds for ROG and NO_X. None of the build alternatives exceed the PCAPCD significance thresholds for any pollutants. As shown in Table 4.9-23, Alternative 1 and Alternative 3 would generate the least and most amount of pollutants, respectively. Hence, the implementation of Alternative 1 can be considered to have fewer air quality impacts compared with the other four build alternatives. Conversely, implementation of Alternative 3 would generate the most air pollutants and potentially create the greatest air quality impacts. However, a comparison shows that most increases in criteria pollutants between Alternative 3 and the No-Build Alternative can be considered negligible. The incremental increase is approximately 0.9 percent for ROG, 0.7 percent for CO, 0.9 percent for NO_X, 1.3 percent for PM_{10}, and 12.5 percent for SO_X. The incremental increase, in percentage, is quantified by dividing the amount increased by the total amount generated in the No-Build alternative. Incremental increases, in percentages, for other build alternatives will either be lower than or the same as Alternative 3. Although SO_X shows the highest increase, it should be noted that the amount of sulfur emitted correlates to the amount of sulfur in the fuel (i.e., a reduction in sulfur content in fuel will result in a lower amount of sulfur emitted). Within California, ultra-low sulfur fuel (i.e., 15 ppm sulfur content) has been available for on-road vehicles since September 1, 2006. Therefore, sulfur emissions from vehicles are expected to be substantially lower in the future.

Additional Factors Affecting Air Quality

As fuel, vehicle technology, and transit systems improve over the next decade, vehicle emissions increases can be expected to be lower than the projections presented in this analysis; as this is already accounted for in the analysis model, these impacts probably are overstated.

The transportation analysis shows that the operation of the Parkway would alleviate traffic congestion on many arterial roadways within the TASA and AFA. Reducing traffic congestion would increase travel speed, which would reduce overall vehicle exhaust emissions (i.e., vehicle emissions are linearly correlated with travel speed). Historical and current studies and testing of vehicles traveling at less than 65 mph show that lower travel speed (5 to 15 mph) results in emission of greater quantities of pollutants than vehicles traveling at higher speed (EMFAC2002, 2003).

Similarly, the Parkway would reduce VHD within the TASA and AFA and would alleviate traffic congestion, reduce travel time, and increase average travel speed, resulting in reduced emissions. Although improved travel speed and reduced travel time are expected to reduce emissions, these reductions were not quantified because available data are insufficient at this Tier 1 level. To quantify pollutants from VHD, extremely detailed travel data would be required, such as travel speed for every type of vehicle for every hour in a day and the exact travel route. However, these factors related to reduced traffic congestion probably would reduce the emissions associated with the increase of VMTs.

In addition to the increase in vehicle emissions, there would be an increase in emissions from the use of electricity or alternative power sources to operate traffic signals at on- and off-ramps and to power the lighting system along the corridor. The level of emissions from these sources is negligible as traffic signals use a relatively small amount of energy in comparison to vehicle fuel consumption and lighting will be the minimum amount needed for safety purposes in accordance with Caltrans standards. The increase of these emissions may not occur within the region because electricity could be generated from another location beyond the study area (e.g., in another part of the state or in another state altogether).

Mobile Source Air Toxics

Although a comprehensive analysis of MSATs will be conducted at the Tier 2 level if warranted (see Section 4.9.5), the discussion below presents a preliminary discussion of potential MSAT impacts associated with the Parkway.

Using annual average daily traffic (AADT) on Placer Parkway identified in the transportation analysis, it is estimated that approximately 4,100 diesel trucks will be traversing Placer Parkway on a daily basis. Additional details of this calculation are provided in the Air Quality Technical Memorandum (URS, 2007a). Diesel particulate matter (DPM) emitted from these trucks has the potential to have detrimental health effects on sensitive receptors. Because of the proximity of the Parkway to existing and proposed developments, the *Air Quality and Land Use Handbook: A Community Health Perspective, April 2005* (Cal-EPA/CARB, 2005) was consulted to assess the potential impact of trucks using the Parkway on sensitive receptors in the study area. Such receptors include residences, schools, daycare centers, playgrounds, and medical facilities. The Air Quality Handbook recommends a distance of at least 500 feet between sensitive receptors and edge of roadways with daily vehicle traffic volumes exceeding 50,000 (estimated 2040 Parkway daily volumes are between 40,300 and 71,700 vehicles (DKS Associates, 2007). In traffic-related studies quoted in the CARB document, risks of other adverse health effects were identified within a distance of 1,000 feet, with the greatest risks occurring within 300 feet. California freeway studies in the same CARB document show about a 70 percent drop-off in particulate pollution levels at 500 feet. Placer Parkway includes a 500- to 1,000-foot no-development buffer zone. This buffer will provide the minimum 500-foot separation of the roadway identified in some guidance documents.

Even with the project’s 500- to 1,000-foot corridor widths, potential air toxic impacts could differ among the project’s corridor alignment alternatives, depending on the roadway alignment within the selected corridor and its distance from existing/future sensitive receptors. Because the precise location of the alignment in any of the corridor alignment alternatives cannot be determined at this time, and the precise layout and location of future developments in the vicinity of the Parkway are not yet known, it is not possible to differentiate between build alternatives at the Tier 1 level of analysis with respect to air toxics. However, using the FHWA Interim Guidance (2006C), some general statements can be made. Based on the projected AADT of 40,300 to 71,700 in 2040, Placer Parkway would most likely be characterized as a project with a low potential for MSAT emissions (ultimate traffic level less than 150,000 ADT). According to the FHWA Interim Guidance, the amount of MSATs emitted would be proportional to the VMT (assuming the fleet mix is the same for each alternative). The VMT differences between the alternatives, compared to the No-Build Alternative, vary from 0.68 percent to 0.92 percent, and are all less than a 1 percent increase over the No-Build Alternative, as shown earlier in this section. Thus, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. "Also, regardless of the alternative chose, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent from 2000 to 2020" (FHWA, 2006c). In addition, as described earlier, the project will result in a decrease in vehicle hours of delay compared to the No-Build Alternative. As noted in the FHWA Interim Guidance, projects that result in increased travel speeds (travel occurring in less congested conditions) will reduce emissions of certain MSATs. Detailed analysis would be performed during the Tier 2 analysis for the Parkway, as determined appropriate at that time.

4.9.3.5 Year 2027 – Conformity Year

The Transportation Conformity Rule (see Section 4.9.1.3) requires a regional emissions analysis to be performed by the MPO for projects within its jurisdiction, unless exempt. The regional emissions analysis includes all projects listed in the RTP and the RTIP. The Placer County RTP is assessed for conformity along with the MTP by SACOG and submitted to the FHWA and FTA for review and approval. Hence, if the MTP is approved for conformity by the FHWA and FTA, then all projects listed in the RTP are also considered conforming to the SIP. The Placer Parkway project was included in the MTP prepared in 2002, which had a 2025 planning horizon (MTP 2025).

In 2006, SACOG prepared an updated MTP for the SACOG region. This MTP updated the MTP 2025 and extended the planning horizon to 2027. The current MTP (MTP 2027) includes the Placer Parkway project.

As required by CEQA, SACOG evaluated the potential environmental impacts of MTP 2027. The environmental work for MTP 2027 analyzed each environmental impact category identified in the Environmental Impact Report for the MTP 2025 to determine whether there was a potentially different level of impact or a more severe impact in the MTP 2027 than in the MTP 2025. This analysis concluded that under the MTP 2027 there were no new significant impacts, nor were there any impacts that were more severe than that identified in the MTP 2025.

SACOG prepared an Addendum to the MTP 2025 EIR, which was adopted by the SACOG Board on March 16, 2006. Air Quality Conformity determinations were also approved by the SACOG Board on the same date. The MTP 2027 was submitted to FHWA on April 7, 2006, for approval. The conformity findings for the MTP 2027 were approved by the FHWA on April 20, 2006. Therefore, the 2027 MTP is considered to be conforming to the State Implementation Plan, as are projects identified in the MTP 2027 such as the Placer Parkway project.

Most recently, SACOG is in the process of developing the 2035 MTP, which is a 28-year plan for improving transportation within the six-county region (i.e., El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties). Additional details are provided in the Air Quality Technical Memorandum (URS, 2007a).

4.9.3.6 Secondary and Indirect Impacts

The following secondary and indirect effects discussion considers impacts on air quality that may occur as a result of direct impacts associated with the Parkway. Potential impacts on air quality associated with anticipated growth are described in Section 6.1, Growth.

No-Build Alternative

Under the No-Build Alternative, land for the Parkway would not be acquired and the Parkway would not be constructed. There would not be any secondary or indirect impacts on air quality under the No-Build Alternative.

Build Alternatives

Construction and operation of the Parkway could result in secondary and indirect impacts on air quality. The potential adverse impacts could include:

- Increased risk of adverse health effects on humans residing in areas affected by poor air quality;
- Impacts on pollution-sensitive wildlife species such as lichens; and
- Contribution to climate change associated with higher levels of atmospheric carbon dioxide (CO_2) generated from vehicle emissions. This is discussed in greater detail below.

However, beneficial impacts would include reduced traffic congestion, less travel time, and increased travel speed, which could potentially offset the increase in criteria pollutants.

4.9.3.7 Greenhouse Gases

Greenhouse gases (GHG) are chemical compounds found in the earth's atmosphere, and which can affect the temperature of the earth's surface. Many are naturally occurring compounds such as water vapor, CO_2, methane (CH_4), nitrous oxide (N_2O), and O_3. Synthetic compounds that are also classed as GHG include chlorofluorocarbons (CFCs), halogenated fluorocarbons (HFCs), and partially halogenated chlorofluorocarbons (HCFCs). GHGs are emitted from numerous commercial and industrial processes, with the burning of fossil fuels such as petroleum, coal, and natural gas, and vehicular exhaust emissions being major contributors.

For purposes of this EIS/EIR, global warming, climate change and the greenhouse effect are used interchangeably. The greenhouse effect has worsened over the last 50 years due to anthropogenic activities (California Climate Change Portal, 2005). While this view is widely held, there is not universal agreement on the effect of human activities on climate change. Natural factors and natural processes are also sources of climate change (U.S. EPA, 2007).

On September 27, 2006, the Governor of California signed Assembly Bill 32 (AB32), the Global Warming Solutions Act, to reduce GHG emissions in California. The goals of AB32 are to reduce GHG to year 2000 levels by 2010, and to 1990 levels by 2020. Provisions within AB32 provide CARB with the authority and responsibility to develop and enforce a GHG reduction program.

GHG Analysis Under CEQA and NEPA

This Tier 1 EIS/EIR addresses project GHG emissions to the extent feasible at this time. There are no accepted thresholds for significance or magnitude relative to GHG emissions. Thus, there is no consistent means of determining whether project impacts, to the extent they can be identified, will make a "significant" or "substantial" contribution to greenhouse gases. In addition, global warming is a cumulative, world-wide environmental phenomenon, but there are no established mitigation measures that can be identified as reasonably sure to address and reduce the global problem. Measures that will reduce an individual project's GHG emissions have been identified, and it is expected that additional technological solutions will be available in the future. Currently, there is no approved methodology to correlate an individual project's impacts or reductions on this global phenomenon, although the Association of Environmental Professionals has recently circulated a Revised Draft White Paper detailing possible approaches to the analysis of GHG emissions in CEQA documents (AEP, 2007).

AB 32 does not directly amend CEQA. Instead, it provides for creation of a greenhouse gas emissions program. Under AB 32, CARB will implement GHG emissions reductions on a timetable that involves multiple steps, leading to regulations on or before January 1, 2011, that will become operative on January 1, 2012. Until that time, the potential source characterization of, and significance of emissions related to, new infrastructure will not be known, and numeric thresholds of significance cannot be established.

Direct impacts on climate change from a roadway are difficult to determine because infrastructure does not constitute a separate source of greenhouse gas emissions, distinct from overall emissions in the area. Potential cumulative incremental climate change impacts related to urban development, including infrastructure, cannot be discerned with a high degree of certainty. This Tier 1 EIS/EIR assesses the project's greenhouse gas emissions to the extent feasible. The assessment of impacts incorporates many assumptions and generalized formulas. Impacts may be substantially overstated because of these limitations.

Construction Impacts

GHG would be generated during construction and operation of the Parkway. Construction activities would likely result in unavoidable and temporary increase of GHG, based on current, readily available construction equipment technology, which is likely to be improved to reduce GHG emissions by the time the project is constructed in approximately 2020. This Tier 1 analysis does not provide a construction level of clearance, and due to the level of detail available at this time, there are no project-specific data (e.g., construction timeline, equipment type, and quantity), by which GHG associated with construction activities can be analyzed in this Tier 1 document.

Operational Impacts

GHG associated with the Parkway can only be preliminarily quantified at this time, based on the information available. Data such as VMT, traffic volume, vehicle fleet mix, level of service (LOS), vehicle operating time, net change in travel time, and fuel consumption for all affected roadways are integral to an accurate estimation of GHG emissions. However, because this is a Tier 1 analysis of alternative corridors, and not a specific roadway alignment, not all data are available for the Tier 1 analysis. Therefore, GHG emissions from operation of the Parkway were estimated using only VMT data. VMT data estimated for the Parkway using traffic data for the No-Build Alternative and build alternatives were used as input parameters into the EMFAC2002 model. Currently, an accurate method to quantify the magnitude of CO_2 emissions from vehicle exhausts does not exist because of all the different additives in fuel (e.g., ethanol, methyl tertiary-butyl ether, and feedstock). The additives affect the oxidation capability of carbon in fuel during combustion and there is not a complete conversion of all carbon to CO_2 (OTAQ, 2005). Because the EMFAC2002 model only provides CO_2 data, it was assumed that all fuel carbon would oxidize during combustion and convert to CO_2 emissions from vehicles, and that these are directly converted to GHG. This is a conservative approach and results in an overestimate of GHG because not all of the fuel carbon would be converted.

CO_2 emissions were quantified using the EMFAC2002 model with VMT for the No-Build Alternative and build alternatives as model input. Compared to the No-Build Alternative, CO_2 emissions would increase by a maximum of 1.37 percent in the 2020 and 2.02 percent in 2040. This increase does not account for emissions reduced due to the decrease in travel time, faster traveling speed, and less congested roadways (i.e., VHD) related to project implementation.

The differences in travel time for each impacted roadway segment, LOS, vehicle trip data, and average travel speed on similar segments can be used to calculate the amount of GHGs generated from the No-Build Alternative and build alternatives when that information is available in the future. These detailed calculations will be conducted in the Tier 2 analysis. The amount of CO_2 emissions from vehicles is directly correlated with VMT; therefore, an increase in VMT would result in an increase of GHG/CO_2 emissions. Based solely on this factor, the alternatives with the greatest VMT would contribute the most GHG emissions. But, these emissions are expected to be offset by reductions in travel in congested conditions. Using only VMT data to quantify CO_2 emissions for all the build alternatives is conservative, and overestimates impacts because it does not account for all the congestion relief and travel time reductions associated with the Parkway. Project benefits such as reduction of VMT on congested roadways within the AFA and the reduction of VHD within the TASA and AFA would further reduce CO_2 emissions and potentially show negligible or beneficial differences between the No-Build Alternative and build alternatives.

Since there are no thresholds for determining the level of climate change impact from the emissions described above, it is appropriate to evaluate potential impacts based on an assessment of the project's compliance with applicable regional planning and air quality policies. CO_2 emissions from motor vehicles are currently unregulated. However, to meet clean air goals, other mobile air pollutants are regulated. As such, the Clean Air Act's conformity process establishes the link between transportation and air quality planning processes. Conformity is a way to ensure that federal funding and approval are only granted to transportation activities that are consistent with air quality goals. While the focus of approved conforming transportation activities is to reduce the amount of criteria air pollutants, reductions in energy use and other objectives of conforming projects will also reduce CO_2 emission. Federal, state, and local transportation planning goals and policies also focus on transportation system management programs to reduce congestion through improving traffic flow. Promoting efficient travel movement and various travel demand management programs (i.e., ride sharing, transit, and pedestrian and bicycle programs) will minimize the aggregate number of single occupancy trips and miles traveled. The ancillary benefits of these transportation programs also reduce greenhouse gas emissions.

Other strategies to reduce GHG could consist of landscaping with an abundance of trees along the Parkway as described in the Landscaping Concept, using energy-efficient light bulbs for lighting systems, and additional design features that would reduce overall energy use.

4.9.3.8 Cumulative Impacts

The cumulative development scenario would result in development of a large portion of the study area and adjacent areas. This would result in an increase in vehicular emissions and other air pollutants associated with increased residential, commercial, educational, and industrial development.

Without the Parkway, traffic volumes are expected to increase by up to 100,000 vehicles per day on portions of SR 65 and SR 70/99. Growth in population and employment in the six-county Sacramento region, and especially growth in south Sutter County, southwest Placer County, and north Sacramento County will influence travel demand in and around the study area. Within the study area roadways, the increase in vehicles per day is expected to range from 2,700 vehicles on portions of Brewer Road to as much as 51,400 more vehicles on Pleasant Grove Boulevard east of Woodcreek Oaks Boulevard.

All of the build alternatives would increase the total VMT in the study area and would reduce vehicle hours of delay compared to the 2040 No-Build scenario. Based on the increase in traffic associated with this level of development (DKS Associates, 2007), the combined air quality impacts from the proposed project and other projects would be cumulatively considerable.

The Parkway transportation analysis indicates that a comparison between the No-Build Alternative and build alternatives in 2040 would decrease traffic on many arterial/collector roadway segments in unincorporated portions of south Sutter County, western Roseville, and unincorporated portions of west Placer County. Although all the build alternatives would decrease traffic volumes on many roadway segments, they would cause increases in traffic volumes on the following:

- SR 70/99 south of the Placer Parkway connector
- SR 65 north of the Placer Parkway connector
- Rocklin's Whitney Ranch Parkway and the future Valley View Parkway
- Some roadways near future Placer Parkway interchanges

The Parkway transportation analysis summarized VMT data in 2040 for the roadways that would operate at LOS F for 1 hour, 2 hours and for 3 or more hours and concluded that:

- Compared to the No-Build Alternative, all build alternatives would increase the total VMT in the TASA.
- Compared to the No-Build Alternative, all build alternatives would reduce the VMT on congested roadways, especially in the AFA.

In 2040, Placer Parkway is expected to be fully operational as a six-lane facility (some portions may remain at four lanes depending on traffic volumes). Similar to the 2020 conditions, 2040 VMT data were used as input parameters into the EMFAC2002 model to estimate criteria pollutants emitted for each alternative. The study area for air quality cumulative impacts is the TASA.

No-Build Alternative

Under the No-Build Alternative there would not be any cumulative impacts associated with the Parkway. Emissions from the No-Build Alternative were quantified using projected VMTs for the study area assuming vehicle movement within the region traverses between the two state routes using I-80, I-5, and other viable arterial roads that provide connections within the TASA. VMT and associated emissions for 2040 are presented in Table 4.9-24. The No-Build Alternative includes anticipated emissions associated with traffic generated by the other projects in the cumulative development scenario expected to be developed in the study area by 2040.

Table 4.9-24
VMT and Criteria Pollutant Emissions for the No-Build Alternative in 2040

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build Alternative	25,983,131	6,060	44,260	4,960	2,100	240

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Alternative 1 – the Red Alternative

Total estimated emissions for all Alternative 1 scenarios are presented in Table 4.9-25.

Table 4.9-25
VMT and Criteria Pollutant Emissions for Alternative 1 in 2040

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build Alternative	25,983,131	6,060	44,260	4,960	2,100	240
Alternative 1	26,424,662	6,160	44,680	5,040	2,120	260

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Compared to the No-Build Alternative, Alternative 1 would:

- Increase VMT by 1.7 percent
- Increase ROG by 1.7 percent
- Increase CO by 1.0 percent
- Increase NO_X by 1.6 percent
- Increase PM_{10} by 1.0 percent
- Increase SO_X by 8.3 percent

Alternative 2 – the Orange Alternative

Table 4.9-26 presents estimated pollutant emission information for Alternative 2.

Table 4.9-26
VMT and Criteria Pollutant Emissions for Alternative 2 in 2040

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build Alternative	25,983,131	6,060	44,260	4,960	2,100	240
Alternative 2	26,477,729	6,180	44,740	5,060	2,120	260

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Compared to the No-Build Alternative, Alternative 2 would:

- Increase VMT by 1.9 percent
- Increase ROG by 2 percent
- Increase CO by 1.1 percent
- Increase NO_X by 2 percent
- Increase PM_{10} by 1.0 percent
- Increase SO_X by 8.3 percent

Alternative 3 – the Blue Alternative

Table 4.9-27 presents estimated pollutant emission information for Alternative 3.

Table 4.9-27
VMT and Criteria Pollutants for Alternative 3 in 2040

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build Alternative	25,983,131	6,060	44,260	4,960	2,100	240
Alternative 3	26,488,169	6,180	44,760	5,060	2,120	260

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Compared to the No-Build Alternative, Alternative 3 would:

- Increase VMT by 1.9 percent
- Increase ROG by 2 percent
- Increase CO by 1.1 percent
- Increase NO_X by 2 percent
- Increase PM_{10} by 1.0 percent
- Increase SO_X by 8.3 percent

Alternative 4 – the Yellow Alternative

Table 4.9-28 presents estimated pollutant emission information for Alternative 4.

Table 4.9-28
VMT and Criteria Pollutant Emissions for Alternative 4 in 2040

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build Alternative	25,983,131	6,060	44,260	4,960	2,100	240
Alternative 4	26,482,450	6,180	44,760	5,060	2,120	260

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Compared to the No-Build Alternative, Alternative 4 would:

- Increase VMT by 1.9 percent
- Increase ROG by 2 percent
- Increase CO by 1.1 percent
- Increase NO_X by 2 percent
- Increase PM_{10} by 1.0 percent
- Increase SO_X by 8.3 percent

Alternative 5 – the Green Alternative

Table 4.9-29 presents estimated pollutant emission information for Alternative 5. Interchanges would be similar to Alternative 4.

Table 4.9-29
VMT and Criteria Pollutant Emissions for Alternative 5 in 2040

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build Alternative	25,983,131	6,060	44,260	4,960	2,100	240
Alternative 5	26,461,066	6,180	44,720	5,060	2,120	260

Notes:
1. VMT data are from the Placer Parkway VMT – 5mph Spds Bin – (values).xls, March 21, 2007, prepared by DKS Associates for this project.
2. Pollutants are calculated using the Burden option in CARB's EMFAC2002 model and project-specific VMT data.

Compared to the No-Build Alternative, Alternative 5 would:

- Increase VMT by 1.8 percent
- Increase ROG by 2.0 percent
- Increase CO by 1.0 percent
- Increase NO_X by 2 percent
- Increase PM_{10} by 1.0 percent
- Increase SO_X by 8.3 percent

Summary of Cumulative Impacts

Potential impacts on air quality could occur during construction of Placer Parkway as a result of the generation of pollutants from construction vehicles and equipment as development projects under the 2040 scenario are built along with portions of Placer Parkway. Impacts also could occur through the generation of pollutants from vehicles using Placer Parkway. The new Parkway would generate an increase in VMTs, which typically is associated with an increase of vehicle exhaust pollution. The comparison of VMT and estimated operational emissions for all alternatives under the cumulative impact scenario is shown in Table 4.9-30.

Table 4.9-30
Operational Emissions from All Alternatives in 2040

Description	VMT	ROG (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	SO_X (lbs/day)
No-Build	25,983,131	6,060	44,260	4,960	2,100	240
Alternative 1	26,424,662	6,160	44,680	5,040	2,120	260
Alternative 2	26,477,729	6,180	44,740	5,060	2,120	260
Alternative 3	26,488,169	6,180	44,760	5,060	2,120	260
Alternative 4	26,482,450	6,180	44,760	5,060	2,120	260
Alternative 5	26,461,066	6,180	44,720	5,060	2,120	260

Note: 1. Vehicle emissions are calculated using EMFAC2002 mobile emission factor and methodology prescribed by CARB.

As shown in Table 4.9-30, the alternatives generating the most air pollutants can be associated with the highest VMT. Alternatives are ranked from the least impact on air quality to the most impact, as follows: No-Build Alternative, Alternative 1, Alternative 5, Alternative 2, Alternative 4, and Alternative 3. However, the increase in criteria pollutants between Alternative 3 and the No-Build Alternative in 2040 shows that most increases in criteria pollutants can be considered negligible. The incremental increase is approximately 2 percent for ROG, 1 percent for CO, 2 percent for NO_X, 1 percent for PM_{10}, and 8.3 percent for SO_X. The incremental increase, in percentage, is quantified by dividing the amount increased by the total amount generated in the No-Build Alternative. Incremental increases, in percentages, for other build alternatives will either be lower than or the same as Alternative 3. Although SO_X shows the highest increase, it should be noted that the amount of sulfur emitted correlates to the amount of sulfur in the fuel (i.e., a reduction in sulfur content in fuel will result in a lower amount of sulfur emitted). Within California, ultra-low sulfur fuel (i.e., 15 ppm sulfur content) has been available for on-road vehicles since September 1, 2006. Therefore, sulfur emissions from vehicles are expected to be substantially lower in the future. The increase of daily emissions from all five alternatives in 2040 relative to the No-Build Alternative is provided in Table 4.9-31. The FRAQMD and PCAPCD significance thresholds also are presented in this table to determine whether the operation of the alternatives would create substantial air quality impacts.

Table 4.9-31
Comparison of VMT and Operational Emissions from All Alternatives in 2040

Description	VMT	Emissions (lbs/day)				
		ROG	CO	NO_X	PM_{10}	SO_X
No-Build Alternative	25,931,131	6,060	44,260	4,960	2,100	240
Total Emissions Increase Over No-Build Alternative (lbs/day)						
Alternative 1	26,424,662	100	420	80	20	20
Alternative 2	26,477,729	120	480	100	20	20
Alternative 3	26,488,169	120	500	100	20	20
Alternative 4	26,482,450	120	500	100	20	20
Alternative 5	26,461,066	120	460	100	20	20
FRAQMD Significant Thresholds		**25**	**None**	**25**	**80**	**None**
PCAPCD Significant Thresholds		**82**	**550**	**82**	**82**	**136**

Note:
1. The net increase in emissions is calculated based on the comparison with the No-Build Alternative.

Under cumulative conditions, incremental emissions associated with all build alternatives relative to the No-Build Alternative would exceed the FRAQMD significance thresholds for ROG and NO_X. All build alternatives would exceed the PCAPCD significance threshold for ROG and NO_X except for Alternative 1.

As fuel and vehicle technology improve over the next decade, vehicle emissions can be expected to be lower than those presented in Table 4.9-31. In addition, emissions associated with the reduction of VHD were not quantified because of lack of detailed data and were not included in Table 4.9-31. Therefore, the reduction of emissions associated with the reduced VHD potentially could result in lower emissions than the levels reported.

All Placer Parkway build alternatives would increase the total vehicle miles traveled in the TASA and would reduce vehicle hours of delay compared to the 2040 No-Build scenario. The air quality analysis shows that Placer Parkway would contribute an additional increment to pollutant emissions, which would cumulatively contribute to air quality impacts in 2040. On an overall basis, the Parkway's incremental contribution to cumulative air quality impacts would be considerable.

4.9.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION STRATEGIES

4.9.4.1 Tier 1 – Avoidance/Minimization Strategies

- During the development of alternatives, avoidance alternatives were considered to reduce environmental impacts (see Section 2.5.4). These alternatives did not meet the project Purpose and Need and were therefore eliminated from further consideration.

- During the alternatives screening process, efforts were made to eliminate alternatives that did not achieve the project Purpose and Need (see Chapter 1, Introduction). Examples of such efforts included modification and/or elimination of PSR conceptual corridor alignments and/or project components that resulted in increased travel times that substantially reduced the Parkways' benefits, and those which would not attract sufficient traffic to the Parkway to generate substantial congestion reduction in the system-wide traffic network. Additional details of alternatives and alternative components are provided in Section 2.5.

- During early conceptual planning and development of the Tier 1 conceptual design of the Parkway, efforts were made to avoid adverse impacts on traffic patterns, which would also contribute to reduction of potential air quality impacts. These efforts included:

  – The restriction of access between Pleasant Grove Road and Fiddyment Road to provide a high-speed, free-flowing facility, avoid inducing urban growth and associated traffic in areas not designated for development in existing general plans and maintain the rural character of western Placer County and south Sutter County.

  – The provision of access at the western and eastern ends of the Parkway, where existing areas of dense development are already located or planned and future congestion is anticipated.

  – The location of the Parkway within a no-development buffer zone (see Section 2.2.4) that would preserve open space and agricultural uses adjacent to the Parkway and limit future development in the buffer zone, including the provision of additional future interchanges which would affect the long-term reliable travel time reductions provided by the Parkway.

4.9.4.2 Tier 2 – Consultation

- PCPTA will continue to coordinate with local jurisdictions in Tier 2 to reduce the likelihood of air quality impacts. Coordination will include development of a construction air quality plan to minimize construction impacts as described below, and consultation regarding the design and location of other planned and proposed development in the study area.

- During Tier 2, PCTPA will consult with FRAQMD and PCAPCD regarding the need for preparation of a screening level or detailed health risk assessment.

4.9.4.3 Tier 2 – Mitigation Commitments

- No open burning of removed vegetation will be allowed during infrastructure improvements. Vegetative material will be chipped and delivered to waste to energy facilities, or to an appropriate disposal site.

- If it is not possible to maintain a distance of 500 feet or more between the edge of the Parkway and any sensitive air receptors (see Section 4.9.3.4), then a health risk assessment will be conducted. If risks exceed the accepted standards, mitigation will be implemented as appropriate to reduce risks to an acceptable level, and will include consideration of relocations if necessary.

- Environmental reports prepared for proposed development projects, such as specific and community plans, that are in close proximity to the Parkway (i.e., 500 feet or less) will be reviewed. As appropriate, PCTPA will request, via comments on such documents, that potential detrimental health risks posed to individuals living near the corridor are considered, and that local jurisdictions add policies to their development review process or general plans that require assessment of air toxics for projects within 500 feet of the Parkway. PCPTA will also request that, before a city, county, special district or school district approves a project that would place sensitive receptors (e.g., children, the elderly, and hospitals) within 500 feet of the selected corridor, an analysis of potential air toxic contaminants be conducted to determine whether mitigation strategies are needed as part of the proposed use, or if the location is not appropriate for such a use. This supplemental analysis would provide information regarding the potential health risks to exposed individuals. Since Placer Parkway includes a 500- to 1,000-foot no-development buffer, any development projects would likely be at least 500 feet from the roadway and it is possible that no additional assessment would be required.

- A dust control plan will be prepared and implemented, and will address the minimum Administrative Requirements found in Regulation 3.16, *Fugitive Dust Emissions* (FRAQMD, 2006d) and Section 400 of *District Rule 228, Fugitive Dust* (PCAPCD, 2006b). Additional details of dust control strategies are provided in the Placer Parkway Air Quality Technical Memorandum. Dust control strategies will include using appropriate measures to prevent dust and dirt from contaminating offsite areas and controlling dust to prevent air quality and water contamination from inactive construction areas.

- Prior to construction, the contractor will be required to provide FRAQMD and PCAPCD with a comprehensive inventory of construction equipment and anticipated construction timeline.

- Construction equipment and vehicles will be maintained so that exhaust emissions shall not exceed District *Rule 202 Visible Emission* limitations. Operators of vehicles and equipment found to exceed opacity limits are to be immediately notified and the equipment must be repaired within 72 hours. An Applicant representative that is CARB-certified to perform VEE shall routinely evaluate project-related off-road and heavy-duty on-road equipment emissions for compliance with this requirement.

- Idling time for diesel-power equipment will be minimized to 5 minutes or less for all diesel-power equipment.

4.9.4.4 Tier 2 – Mitigation Considerations

- During Tier 2 design, consideration will be given to aligning the Parkway within the selected corridor to maximize the distance between the roadway's edge and any sensitive air receptors (see Section 4.9.3.4).

- Where possible, alternative power sources (e.g., power poles) and fuel will be used to operate equipment instead of using diesel-powered equipment. If existing sources are not available, low sulfur fuel will be used for diesel power generators.

- Where possible, alternative fuel such as aqueous or emulsified diesel fuel will be used for all equipment to reduce NO_X and diesel exhaust emissions.

- Within Tier 2 design, consideration will be given to the strategic placement of trees near roadways (in accordance with FHWA and Caltrans guidance) to enhance pollutant dispersal and provide shading to reduce diurnal hydrocarbon emissions.

- Construction will comply with all relevant California Air Pollution Control District rules and policies, and all grading codes and construction air quality policies designed to limit idling and construction equipment emissions, including ozone precursor emission controls, preparation of diesel emission reduction plans, requirements for use of CARB-certified equipment for post combustion controls, and compliance with state construction vehicle emission standards, etc.

4.9.5 TIER 1 AND TIER 2 STUDIES

- Analyses completed in Tier 1
  - Air quality criteria pollutant emissions (ROG, CO, NO_X, SO_X and PM_{10}).

- Analyses begun in Tier 1 which will be undertaken in greater detail in Tier 2
  - Using guidance provided in *Interim Guidance on Air Toxic Analysis in NEPA Documents* (FHWA, 2006c), the air quality analysis will identify which category the Placer Parkway falls under (i.e., No Analysis, Qualitative Analysis, or Quantitative Analysis) as specified in the guidance. In addition, SMAQMD's protocol, *Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways* (2007a), shall be evaluated and recommendations provided for potential siting of sensitive land uses located in close proximity to the Parkway (i.e., less than 500 feet).

- Analyses that will begin in Tier 2
  - CO hot spot. This analysis will be performed to determine whether the Parkway would create a CO hot spot. This analysis will adhere to the procedures for preparing a screening analysis as provided in Appendix A of *The Transportation Project-Level Carbon Monoxide Protocol* (University of California, Davis, 1997). If necessary, detailed modeling shall be conducted using the CALIN4 or CAL3QHCR model and corresponding emission factors from the latest version of the EMFAC model (e.g., EMFAC2007).

- PM_{10} and $PM_{2.5}$ hot spots analyses. Currently, Placer and Sutter counties are designated as unclassified/attainment for federal PM_{10} and $PM_{2.5}$ standards and therefore do not require any PM_{10} and $PM_{2.5}$ hot-spot analyses. If this status changes, then the Tier 2 analysis will include hot-spots analyses based on guidance provided in, *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (U.S. EPA and FHWA, 2006). As part of the hot-spot analyses, a project-level conformity determination will include a finding of whether the Parkway is a "Project Of Air Quality Concern" (POAQC).

- An Airborne Asbestos analysis will include determining whether the Parkway would be located in a Naturally Occurring Asbestos area and evaluation of potential asbestos exposure from structures proposed for demolition or renovation.

- Construction traffic impacts analysis, including quantification of construction emissions and comparison to FRAQMD and PCAPCD significance thresholds.

- A health risk assessment to assess cancer risks and noncarcinogenic hazards for sensitive receptors (e.g., existing residences) located near the Parkway, if required.

- A more detailed analysis of greenhouse gases, if required.