Appendix B:
Air Quality Report

Air Quality Analysis Report
Fulton Mall Reconstruction Project
Federal Transportation Improvement Program
Project ID FRE130069
City of Fresno, California

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ACRONYMS AND ABBREVIATIONS

µm	micrometer
AADT	annual average daily trips
ADT	average daily trips
ARB	California Air Resources Control Board
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CCAA	California Clean Air Act
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DMG	California Department of Conservation, Division of Mines and Geology
DPM	diesel particulate matter
EA/FONSI	environmental assessment/finding of no significant impact
EIS	environmental impact statement
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FSTIP	Federal Statewide Transportation Improvements Plan
FTA	Federal Transportation Agency
FTIP	Federal Transportation Improvement Program
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
IPCC	Intergovernmental Panel on Climate Change
LOS	level of service
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
$MTCO_2e$	metric tons of carbon dioxide equivalent
MPO	Metropolitan Planning Organization
MSAT	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Protection Act
NHTSA	National Highway Traffic Safety Administration
NOA	Naturally Occurring Asbestos
NO_X	nitrogen oxides
OPR	Governor's Office of Planning and Research
PES	Preliminary Environmental Study
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter

PM_{10}	particulate matter less than 10 microns in diameter
ppm	parts per million
ROG	reactive organic gases
RTP	Regional Transportation Plan
SER	Standard Environmental Reference
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SIP	State Implementation Plans
STIP	State Transportation Improvement Program
TIP	Transportation Improvement Program
TAC	toxic air contaminants
U.S.	United States
VMT	vehicle miles traveled
VOC	volatile organic compounds

SECTION 1: INTRODUCTION AND PROJECT DESCRIPTION

1.1 - Purpose and Methods of Analysis

This assessment was conducted within the context of the National Environmental Protection Act (NEPA), the California Environmental Quality Act (CEQA) and the Federal project-level conformity analysis requirements. The methodology follows the California Department of Transportation (Caltrans) Standard Environmental Reference (SER), specifically Chapter 11 (Air Quality), the San Joaquin Valley Air Pollution Control District's Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI) and Rule 9120 (Transportation Conformity), and the Transportation Project-Level Carbon Monoxide Protocol (UCD 1997).

1.2 - Purpose and Need of Project

The purpose of the proposed project is to improve parking and vehicle access to local businesses on Fulton Street in order to maximize sustainable development and economic productivity in conjunction with other downtown redevelopment projects. The proposed project would also be intended to lower crime and improve safety for people walking between parking areas and businesses located on the Fulton Mall and for people who live in, work in, and visit the project area.

1.3 - Project Location and Description

The Fulton Mall (Mall) is a pedestrian mall in the City of Fresno. The Mall consists of six linear blocks that were open to traffic prior to 1964 but now do not allow public vehicle access. The Mall is bounded by Tuolumne Street to the north and Inyo Street to the south, and includes portions of three cross streets. The total length of the Mall and, therefore new roadways, would be 0.74 mile. Figures 1 and 2 show project vicinity and location maps.

The "Mall" refers specifically to the pedestrian areas between adjoining buildings located on the former City streets of Fulton, Mariposa, Merced, and Kern, which function as an integrated pedestrian Mall. Fresno Street and Tulare Street, which do allow vehicle traffic, run through the Mall and divide it into three roughly equal sections. Mall landscaping elements include fountains, planters, benches, sculptures, electrical systems, irrigation systems, and two "tot lots." The Mall does not include the adjoining buildings or their facades.

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), in cooperation with the City of Fresno (City) proposes to reconstruct Fulton Mall (Mall) as a complete street by reintroducing vehicle traffic lanes to the existing pedestrian mall.

The proposed project has three Alternatives, including two Build Alternatives and a No Build Alternative. Each alternative is discussed in greater detail below. Alternative 1 and Alternative 2 are

considered the Build Alternatives. Each Build Alternative proposes to reconstruct the Mall using "complete streets" design concepts. Complete streets are those designed to function as shared public space, or as "living streets" - for pedestrians, cyclists, outdoor businesses, and slow-moving, cautiously driven vehicles. Complete streets may include narrow roadways, corner bulb-outs, winding streets, and other traffic calming measures to lower driving speeds; street trees and other landscape elements; wide pedestrian sidewalks and crosswalks; and bicycle accommodations such as dedicated bicycle lanes or wide shoulders. The purpose of incorporating these design concepts into the proposed project is to retain portions of the historic fabric and character of the Mall, maintaining the key elements, feeling and unique experience of a pedestrian mall in downtown Fresno.

Alternative 1 consists of reopening the Mall with two-way streets, with one lane of vehicular traffic in each direction alongside bicycle, pedestrian, and potentially other travel modes. On-street vehicle parking spaces would be reintroduced along the length of the Mall (including cross streets), and construction of streetscape improvements would optimize the streets for the new blend of travel modes. One 11-foot vehicle travel lane would run in each direction, with a parallel parking lane of 9 feet included on both sides of the streets. A 20-foot sidewalk included on both sides of the streets would allow for walking and pedestrian-only seating, landscaping, lighting, and public art. Impacts to native earth during project construction are not anticipated.

The existing 20 works of sculpture present on the Mall today would all remain, though some may be moved so as to be incorporated in sidewalk areas of the new streetscape. Only the three fountains found along the Kern Mall, west of Fulton, would remain. All of the planter beds and raised seating areas found along the Mall today would be removed in favor of wide sidewalks that incorporate artwork and seating areas. The two tot lots present, one located near the corner of Merced and Fulton, and the other located near the corner of Kern and Fulton, would be relocated and potentially combined into one larger tot on Kern Mall between Fulton Street and Home Run Alley, or near the corner of Mariposa and Fulton.

Alternative 2 consists of reconnecting the street grid as in Alternative #1, but would include rebuilding distinctive elements of the Mall in five to six specific locations, known as "vignettes." The vignettes would include many of the existing elements (sculptures, fountains, pavement pattern, trees, etc.). One 11-foot vehicle travel lane would run in each direction and would curve through the vignettes to avoid existing landscape features. Outside the vignette areas the street would be straight, and the landscape would include a 9-foot parallel parking lane and a pedestrian-only walking, seating, vegetation, and public art area 20 feet in width on one or both sides of the street. Within the vignettes the existing Mall landscape elements would be kept maximally intact. The remaining space on each side of the street would be dedicated to pedestrian travel, seating, vegetation, and artwork. Impacts to native earth during project construction are not anticipated.

Fourteen of 20 sculptures would remain in their precise current locations. The other six (along with the various tile mosaics benches on the Mall today) would be reconfigured differently within the current right-of-way to accommodate the new streetscape. Street lighting outside the vignettes would be contemporary and pedestrian-oriented, but the original Mall fixtures would be rehabilitated within each vignette. A total of 12 fountains - nine in vignettes and three on Kern Mall west of Fulton - would remain in place. The 12 fountains would be fully rebuilt or restored to working order. The two tot lots present, one located near the corner of Merced and Fulton, and the other located near the corner of Kern and Fulton, would be relocated and potentially combined into one larger tot on Kern Mall between Fulton Street and Home Run Alley, or near the corner of Mariposa and Fulton.

Alternative 3 is the no-build Alternative. New streets would not be constructed and the Mall would remain as it now exists

The three alternatives are evaluated for construction activity to occur in 2014. The three alternatives are evaluated for year 2015 and 2035. The main difference between Alternative 1 and Alternative 2 is the inclusion of vignettes in Alternative 2. In addition, Alternative 1 would have a parallel parking lane of 9 feet on both sides of the street, and Alternative 2 would have a parallel parking lane on one or both sides of the street.

The roadway volumes and traffic reassignment information Transportation Impact Report (TIS) for project, prepared by Fehr and Peers, was utilized for this document (Fehr and Peers, 2013). As disclosed in the TIS, the study conducted a daily traffic evaluation that looked at the change in daily traffic volumes, and did not conduct a detailed roadway segment Level of Service (LOS) analysis. The project does not propose any additional traffic generating land uses. The alternatives are not expected to affect traffic volumes. Since the Build Alternatives propose narrow, two-way vehicular streets, it is anticipated that the reintroduced roadways associated with these alternatives would serve existing traffic by providing access to existing businesses along the pedestrian malls, but would not induce additional travel upon opening (Fehr and Peers, 2013).

Table 1 contains the annual average daily trips for each study roadway segment in the project area in the existing, or 'Baseline' scenario, both with and without the Build Alternatives. Table 2 contains the annual average daily trips for each study roadway segment in the project area in the cumulative Year 2035 scenario, both with and without Build Alternatives. Table 3 contains the annual average daily trips for the study roadways under Alternatives 1 and 2 (Build Alternatives) and Alternative 3 (No Build).

As shown in Table 1, Table 2, and Table 3, the Build Alternatives would appear to result in slightly more Average Daily Trips than the No Build scenario. Per the Transportation Impact Report:

> … it is anticipated that the reintroduced roadways associated with these alternatives would serve existing traffic by providing access to existing businesses along the pedestrian malls, but would not induce additional travel upon opening.

And

> The Open to Traffic alternatives may cause some shifts in local traffic patterns by opening the existing Fulton Mall and its cross streets to vehicle traffic. However, since these alternatives would create narrow, two-way vehicular streets, these new roadways would primarily carry local trips to access adjacent businesses. Therefore, these changes in traffic patters would be localized to roadways in the project study area.

The apparent increase is not a trip increase from Build Scenarios, but is a result of reassignment of existing trips through the project area. All trips would be existing in the project area under the Build and No Build Alternatives. Under the Build Alternatives, existing trips within the project area would be rerouted from existing travel paths through the project segments. Therefore, the apparent increase on roadway segments identified in Table 1, Table 2, and Table 3 result from a decrease of trips on other project area roadways due to the reassignment of existing trips. Alternative 1 and Alternative 2 (Build Alternatives) would not increase the number of trips on the project area roadways compared to Alternative 3 (No Build Alternative). Table 4 contains the City of Fresno's defined LOS based on the average vehicle delay (in seconds per vehicle).

Table 1: Daily Roadway Segment Traffic Volumes Baseline and Baseline Plus Build Alternatives

Roadway Segment	Annual Average Daily Trips	
	Baseline (No Build) Conditions	Baseline Plus Build Alternatives
1. Broadway: North of Stanislaus St.	2,588	2,580
2. Fulton Street: North of Stanislaus St.	2,731	2,800
3. Van Ness Avenue: North of Stanislaus St.	6,339	6,270
4. Fulton Mall: Tuolumne St. to Inyo St.[1]	N/A	210
5. Van Ness Avenue: Fresno St. to Tulare St.	9,991	10,020
6. Van Ness Avenue: Tulare St. to Inyo St.	9,728	9,740
7. Van Ness Avenue: Inyo St. to Ventura Ave.	7,586	7,580
8. Stanislaus Street: M Street to Van Ness Ave.	4,360	4,340
9. Stanislaus Street: Broadway to E Street	6,996	7,010
10. Tuolumne Street: E Street to Broadway	5,586	5,600
11. Tuolumne Street: Van Ness Ave. to M Street	4,299	4,290
12. Fresno Street: Broadway to Van Ness Ave.	14,444	14,380
13. Fresno Street: Van Ness Ave. to M Street	12,150	12,080
14. Tulare Street: H Street to Van Ness Ave.	9,304	9,280
15. Inyo Street: H Street to Van Ness Ave.	3,301	3,300
16. Ventura Avenue: Van Ness Ave. to M Street	11,838	11,910
Total ADT	111,241	111,390

NA = Not Applicable
No Build is Alternative 3
Build Alternatives are Alternative 1 and Alternative 2
1. Fulton Street is a pedestrian mall between Tuolumne St. and Inyo St. under Baseline Conditions and Baseline Plus Project: Pedestrian Mall alternative.
Source: Fehr and Peers, 2013.

Table 2: Daily Roadway Segment Traffic Volumes Cumulative and Cumulative Plus Build Alternatives

Roadway Segment	Annual Average Daily Trips	
	Cumulative (No Build) Conditions	Cumulative Plus Build Alternatives
1. Broadway: North of Stanislaus St.	13,930	13,810
2. Fulton Street: North of Stanislaus St.	6,310	6,360
3. Van Ness Avenue: North of Stanislaus St.	11,300	11,710
4. Fulton Mall: Tuolumne St. to Inyo St.[1]	N/A	2,310
5. Van Ness Avenue: Fresno St. to Tulare St.	14,280	13,950
6. Van Ness Avenue: Tulare St. to Inyo St.	13,750	13,950
7. Van Ness Avenue: Inyo St. to Ventura Ave.	13,530	13,640
8. Stanislaus Street: M Street to Van Ness Ave.	14,190	14,030
9. Stanislaus Street: Broadway to E Street	22,110	22,010
10. Tuolumne Street: E Street to Broadway	5,570	5,990
11. Tuolumne Street: Van Ness Ave. to M Street	5,290	5,210
12. Fresno Street: Broadway to Van Ness Ave.	18,420	18,480
13. Fresno Street: Van Ness Ave. to M Street	20,200	20,050
14. Tulare Street: H Street to Van Ness Ave.	18,780	18,980
15. Inyo Street: H Street to Van Ness Ave.	6,150	6,120
16. Ventura Avenue: Van Ness Ave. to M Street	24,880	24,570
Total ADT	208,690	211,170

NA = Not Applicable
No Build is Alternative 3
Build Alternatives are Alternative 1 and Alternative 2
1. Fulton Street is a pedestrian mall between Tuolumne St. and Inyo St. under Baseline Conditions and Baseline Plus Project: Pedestrian Mall alternative.
Source: Fehr and Peers, 2013.

Table 3: Annual Average Daily Trips for Project Segment

Year	Annual Average Daily Trips		
	Alternative I (Build Alternative)	Alternative II (Build Alternative)	Alternative III (No Project/No Build Alternative)
2010	NA	NA	NA
2015	210	210	NA
2035	2,310	2,310	NA

NA = Not Applicable
Source: Fehr and Peers, 2013.

Table 4: Level of Service Criteria

Level of Service	Average Vehicle Delay (seconds/vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10.0	≤ 10.0
B	10.1 - 20.0	10.1 - 15.0
C	20.1 - 35.0	15.1 - 25.0
D	35.1 - 55.0	25.1 - 35.0
E	55.1 - 80.0	35.1 - 50.0
F	>80	>50

Source: Fehr and Peers, 2013.

Table 5 contains the LOS for Project-affected intersections in 2015, in the morning and evening peak hours (the most impacted timeframes) for Alternatives 1 and 2 (Build Alternatives) and Alternative 3 (No Build). As shown in Table 5, the build alternatives not change the LOS for the study area intersections under the 2015 Scenario.

Table 5: Intersection Capacity Level of Service, Peak Hour 2015

Intersection	Delay (seconds)- Level of Service					
	Alternative 1 (Build Alternative)		Alternative 2 (Build Alternative)		Alternative 3 (No Project/No Build Alternative)	
	AM	PM	AM	PM	AM	PM
1. Stanislaus St / Van Ness Ave	11-B	13-B	11-B	13-B	11-B	13-B
2. Stanislaus St / Fulton St	12-B	11-B	12-B	11-B	11-B	11-B
3. Stanislaus St / Broadway	10-A	10-B	10-A	10-B	10-A	10-B
4. Tuolumne St / Broadway	18-B	17-B	18-B	17-B	18-B	17-B
5. Tuolumne St /Fulton St	12-B	11-B	12-B	11-B	12-B	11-B
6. Tuolumne St /Van Ness Ave	12-B	13-B	12-B	13-B	12-B	13-B
7. Fresno St / H St	NA	NA	NA	NA	NA	NA
8. Fresno St /Fulton St	4-A	3-A	4-A	3-A	NA	NA
9. Fresno St /Van Ness Ave	35-C	**37-D**	35-C	**37-D**	35-C	35-C
10. Tulare St / H St	12-B	11-B	12-B	11-B	12-B	11-B
11. Tulare St /Fulton St	4-A	4-A	4-A	4-A	NA	NA
12. Tulare St /Van Ness Ave	23-C	26-C	23-C	26-C	23-C	21-C
13. Inyo St / H Street	12-B	11-B	12-B	11-B	13-B	12-B
14. Inyo St /Fulton St	9-A	9-A	9-A	9-A	10-A	10-A
15. Inyo St /Van Ness Ave	13-B	11-B	13-B	11-B	13-B	11-B
16. Ventura Ave / H St	**33-D**	19-C	**33-D**	19-C	**34-D**	**18-D**
17. Ventura Ave / Broadway	20-C	25-C	20-C	25-C	20-C	25-C
18. Ventura Ave / Van Ness Ave	25-C	21-C	25-C	21-C	25-C	21-C

Notes:
LOS D or worse are bolded for easy identification.
Source: Fehr and Peers, 2013.

Table 6 contains the LOS for Project-affected intersections in 2035, in the morning and evening peak hours (the most impacted timeframes) for Alternatives 1 and 2 (Build Alternatives) and Alternative 3 (No Build). As shown in Table 5, the Build Alternatives would improve the LOS for the study area intersections under the 2035 Scenario.

Table 6: Intersection Capacity Level of Service, Peak Hour Cumulative 2035 Scenario

Intersection	Delay (seconds)- Level of Service					
	Alternative 1 (Build Alternative)		Alternative 2 (Build Alternative)		Alternative 3 (No Project/No Build Alternative)	
	AM	PM	AM	PM	AM	PM
1. Stanislaus St / Van Ness Ave	29-C	52-C	29-C	52-C	28-C	**53-D**
2. Stanislaus St / Fulton St	18-B	17-B	18-B	17-B	18-B	16-B
3. Stanislaus St / Broadway	**51-D**	**>150-F**	**51-D**	**>150-F**	**50-D**	**>150-F**
4. Tuolumne St / Broadway	**41-D**	**>150-F**	**41-D**	**>150-F**	**46-D**	**>150-F**
5. Tuolumne St /Fulton St	23-C	28-C	23-C	28-C	22-C	19-B
6. Tuolumne St /Van Ness Ave	**35-D**	**39-D**	**35-D**	**39-D**	**38-D**	**40-D**
7. Fresno St / H St	**77-E**	**92-F**	**77-E**	**92-F**	**84-F**	**102-F**
8. Fresno St /Fulton St	19-B	13-B	19-B	13-B	NA	NA
9. Fresno St /Van Ness Ave	**48-D**	**48-D**	**48-D**	**48-D**	**49-D**	**62-E**
10. Tulare St / H St	15-B	22-C	15-B	22-C	14-B	27-C
11. Tulare St /Fulton St	14-B	15-B	14-B	15-B	NA	NA
12. Tulare St /Van Ness Ave	**42-D**	33-C	**42-D**	33-C	**38-D**	35-C
13. Inyo St / H Street	20-B	14-B	20-B	14-B	12-B	23-C
14. Inyo St /Fulton St	9-A	10-B	9-A	10-B	11-B	9-A
15. Inyo St /Van Ness Ave	14-B	13-B	14-B	13-B	13-B	13-B
16. Ventura Ave / H St	**>150-F**	**>150-F**	**>150-F**	**>150-F**	**>150-F**	**>150-F**
17. Ventura Ave / Broadway	17-B	19-B	17-B	19-B	15-B	18-B
18. Ventura Ave / Van Ness Ave	29-C	31-C	29-C	31-C	29-C	32-C

Notes:
LOS D or worse are bolded for easy identification.
Source: Fehr and Peers, 2013.

1.4 - Summary of Analysis Results

This section describes the results of analysis contained in this report; specifically, this section provides the Project's air quality impacts relative to criteria established by California Environmental Quality Act, the San Joaquin Valley Air Pollution Control District's (SJVAPCD) guidance, as well the transportation conformity requirements under the federal Clean Air Act.

1.4.1 - Transportation Conformity Impacts

For transportation projects, there are two levels of conformity—regional and project-level.

Regional Conformity

- The Project is located in an area with a conforming regional transportation plan and transportation improvement plan, and is contained within those plans. The project is found to be in regional conformity.

Project Level Conformity

- The project area is in attainment/maintenance for the federal CO standard. Therefore, a CO hot-spot analysis is not required.
- The project area is in attainment/maintenance for the federal PM_{10} standards. Therefore, PM_{10} hot-spot analyses are not required. The project does not require a qualitative or quantitative hotspot analysis, as it is not a project of air quality concern.

1.4.2 - NEPA Impacts

The FHWA's 1987 technical advisory contains guidance for air quality impacts assessment for an EIS, but does not specify the content requirements for an EA/FONSI. The guidance states that information should be presented, as appropriate, for two scales: the 'mesoscale' or regional level for ozone, hydrocarbons and nitrogen oxide; and the 'microscale' or localized level for carbon monoxide. This document contains regional conformity (mesoscale) as well estimates the project-generated emissions in respect to the SJVAPCD's significance criteria for regional pollutants, and localized or 'hot-spot' CO analysis (microscale). Therefore, this document appropriately addresses the NEPA considerations as presented by the FHWA.

1.4.3 - Project-level Air Quality Impacts

- The Project is not in an area likely to contain naturally occurring asbestos (NOA); therefore, there is little potential for NOA impacts during construction.
- The Project's construction would not generate quantities of criteria air pollutants or ozone precursors that exceed the San Joaquin Valley Air Pollution Control District's thresholds of significance. Mitigation measures for construction-generated fugitive dust and construction exhaust emissions is added to minimize potential impacts.

- The Project would not generate long-term construction impacts.
- The Project contains low potential for Mobile Source Air Toxics (MSAT) effects.
- The project would not generate localized CO impacts from project operation.
- The Project's construction-generated greenhouse gas emissions would be limited in scope and temporary, and would occur prior to 2020. In addition, the project would not generate an increase in operational emissions of greenhouse gases.
- The Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Exhibit 1: Regional Location Map

Exhibit 2: Project Location Map

SECTION 2: REGULATORY SETTING

Air pollutants are regulated at the national, State, and air basin level; each agency has a different degree of control. The United States Environmental Protection Agency (EPA) regulates at the national level. The California Air Resources Board (ARB) regulates at the state level. The San Joaquin Valley Air Pollution Control District (SJVAPCD) regulates at the regional level.

2.1 - Criteria Pollutants

2.1.1 - Federal and State

The EPA is responsible for global, international, national, and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all State Implementation Plans (SIP), provides research and guidance for air pollution programs, and sets National Ambient Air Quality Standards (NAAQS), also known as federal standards. There are NAAQS for six common air pollutants, called criteria air pollutants, which were identified from provisions of the Clean Air Act (CAA) of 1970. The criteria pollutants are:

- Ozone
- Particulate matter (PM_{10} and $PM_{2.5}$)
- Nitrogen dioxide
- Carbon monoxide (CO)
- Lead
- Sulfur dioxide

The NAAQS were set to protect public health, including that of sensitive individuals; thus, the standards continue to change as more medical research is available regarding the health effects of the criteria pollutants.

The SIP for the State of California is administered by ARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. A SIP is prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain NAAQS. The SIP incorporates individual federal attainment plans for regional air districts. Federal attainment plans prepared by each air district are sent to ARB to be approved and incorporated into the California SIP. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms.

ARB also administers California Ambient Air Quality Standards (CAAQS) for the ten air pollutants designated in the California Clean Air Act (CCAA). The ten state air pollutants are the six criteria pollutants listed above as well as visibility reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. The national and state ambient air quality standards are summarized in Table 7.

Table 7: National and California Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard
Ozone	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.075 ppm
Particulate matter (PM_{10})	24-hour	50 µg/m^3	150 µg/m^3
	Mean	20 µg/m^3	—
Particulate matter ($PM_{2.5}$)	24-hour	—	35 µg/m^3
	Mean	12 µg/m^3	15.0 µg/m^3
Carbon monoxide (CO)	1-hour	20 ppm	35 ppm
	8-hour	9.0 ppm	9 ppm
Nitrogen dioxide (NO_2)	1-hour	0.18 ppm	0.100 ppm
	Mean	0.030 ppm	0.053 ppm
Sulfur dioxide (SO_2)	1-hour	0.25 ppm	0.075 ppm
	24-hour	0.04 ppm	—
	3-hour		0.5 ppm
Lead	30-day	1.5 µg/m^3	—
	Quarter	—	1.5 µg/m^3
	Rolling 3-month average	—	0.15 µg/m^3
Hydrogen sulfide	1-hour	0.03 ppm	—
Sulfates	24-hour	25 µg/m^3	—
Vinyl chloride[1]	24-hour	0.010 ppm	—

Notes:
[1] The ARB has identified vinyl chloride as toxic air contaminant (TAC) with no threshold level of exposure for adverse health effects. Therefore, the vinyl chloride the standard is not a threshold but is the minimum detectable limit. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
Abbreviations:
ppm = parts per million (concentration) µg/m^3 = micrograms per cubic meter
Mean = Annual Arithmetic Mean 30-day = 30-day average Quarter = Calendar year quarter
Source: SJVAPCD, 2013.

The EPA and the ARB designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." Each standard has a different definition, or 'form' of what constitutes attainment, based on specific air quality statistics. For example, the Federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the

Federal annual $PM_{2.5}$ standard is met if the three-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

In addition to attainment designations, the EPA and ARB further classify ozone and PM nonattainment areas based on the severity of the air pollution monitoring, based on the deviation from the respective standard. Federal ozone nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Federal PM_{10} areas are further classified as serious or moderate. ARB classifies 1-hour ozone nonattainment areas as marginal, moderate, serious, severe, or extreme.

Federal Regulations and Guidance

NEPA

NEPA establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment and provides a process for implementing these goals within the federal agencies. Section 102 requires federal agencies to incorporate environmental considerations in their planning and decision-making through a systematic interdisciplinary approach.

The NEPA process consists of an evaluation of the environmental effects of a federal undertaking including its alternatives. There are three levels of analysis: categorical exclusion determination; preparation of an environmental assessment/finding of no significant impact (EA/FONSI); and preparation of an environmental impact statement (EIS). Each federal agency promulgates or adopts its own guidance for preparation and content of NEPA documents. The FHWA's Technical Advisory T6640.8A, Guidance for Preparing and Processing Environmental And Section 4(F) Documents, was published in 1987, and provides the overarching guidance for environmental document analysis and contents for projects that require a FHWA approval. As stated by the advisory, the material is not regulatory, but was developed to provide guidance for uniformity and consistency in the format, contents and processing of various environmental studies and documents pursuant to NEPA.

The FHWA's 1987 technical advisory contains guidance for air quality impacts assessment for an EIS, but does not specify the content requirements for an EA/FONSI. The guidance states that information should be presented, as appropriate, for two scales: the 'mesoscale' or regional level for ozone, hydrocarbons and nitrogen oxide; and the 'microscale' or localized level for carbon monoxide. This document contains regional conformity (mesoscale) as well estimates the project-generated emissions in respect to the SJVAPCD's significance criteria for regional pollutants, and localized or 'hot-spot' CO analysis (microscale). Therefore, this document appropriately addresses the NEPA considerations as presented by the FHWA.

Transportation Conformity

Transportation Conformity is a process set up under the CAA to ensure that transportation planning, transportation improvement programs, and projects are consistent with the plans to achieve and maintain NAAQS. Specific requirements are set by EPA regulations in 40 CFR 93, EPA and U.S.

Department of Transportation guidance documents, and local regulations and procedures set up by Metropolitan Planning Organizations and Air Pollution Control Districts.

The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) must be able to find that the Federal Transportation Improvement Program (FTIP) conforms to the adopted State Implementation Plan and that priority has been given to timely implementation of the transportation control measures found in the SIP. The projects in the TIP should also not further exacerbate the existing air quality problems

Table 1 of 40 CFR 93.109 contains the conformity required from transportation plans, federal transportation improvement plans, and projects. The Project is subject to the following conformity criteria:

Project (From a Conforming Plan and TIP)

- §93.114 Currently conforming plan and FTIP
- §93.115 Project from a conforming plan and FTIP
- §93.116 CO, PM_{10} and $PM_{2.5}$ hot-spots
- §93.117 PM_{10} and $PM_{2.5}$ control measures

Regional Conformity

The Federal CAA requires that all transportation plans and programs pass the air quality conformity test. This process involves forecasting future emissions of air pollution to determine whether the amount of future pollution resulting from the plan or program would be within the allowable limit for motor vehicle emissions.

Transportation conformity must be determined for all federal nonattainment pollutants classified as regional pollutants. In the San Joaquin Valley Air Basin (SJVAB), those pollutants are ozone and $PM_{2.5}$; the SJVAB is in attainment of federal PM_{10} standards. Transportation projects also generate CO, which is considered a localized pollutant. CO micro-scale modeling is required to determine whether a transportation project would cause or contribute to localized violations of federal CO standards.

Regional conformity must be determined based on a full study at least every 3 years. In California, it is determined at least every two years when the state-required regional transportation plan (RTP) updates are done. In addition, a new federal transportation improvement program (FTIP) is required every four years, for which a conformity determination is required. Amendments to both the RTP and FTIP between mandated conformity analyses also must have conformity demonstrated, including a full-scale revision of the regional analysis if regionally significant projects are added, deleted, or significantly modified.

Regional conformity is demonstrated by showing that the project is included in a conforming RTP and FTIP with substantially the same design concept and scope that was used for the regional conformity analysis.

Project-Level Conformity

Project level conformity is demonstrated by showing that it will not cause a localized exceedance of CO and/or PM standards, and that it will not interfere with "timely implementation" of transportation control measures called out in the state implementation plan.

In March 2006, EPA issued amendments to the Transportation Conformity Rule (40 CFR 93) to address localized impacts of particulate matter: "$PM_{2.5}$ and PM_{10} Hot-Spot Analyses in Project-level Transportation Conformity Determinations for the New $PM_{2.5}$ and Existing PM_{10} National Ambient Air Quality Standards" (71 FR 12468). This amendment requires the assessment of localized air quality impacts in PM_{10} and $PM_{2.5}$ federal nonattainment and maintenance areas for federally funded or approved transportation projects of air quality concern. An assessment of localized impacts (i.e., "hot-spot analysis") examines potential air quality impacts on a scale smaller than an entire nonattainment or maintenance area. A hot-spot analysis is a means of demonstrating that a transportation project meets CAA conformity requirements to support state and local air quality goals. EPA further amended 40 CFR 93 in March 2012. The final rule primarily restructures two sections of the conformity rule, 40 CFR 93.109 and 93.119, so that the existing rule requirements clearly apply to areas designated for future new or revised NAAQS, thus reducing the need to amend the transportation conformity rule merely to reference specific new NAAQS.

The Project is located in an area that is in maintenance of federal CO and PM_{10} standards. Therefore, hot-spot analysis for CO and PM_{10} are not required under the Transportation Conformity Rule.

California Regulations and Guidance

Caltrans

The California Department of Transportation (Caltrans) has prepared multiple guidance documents to assist in air quality and transportation conformity analyses. A primary source of guidance is the Standard Environmental Reference (SER), which is an on-line guidance document to assist state and location agency staff to plan, prepare, submit and evaluate environmental documents for transportation projects. SER Chapter 11 contains specific guidance for air quality analysis, as well as references to state and federal analysis requirements and links to other resource documents.

Toxic Air Contaminant Regulations

ARB's Toxic Air Contaminant (TAC) program traces its beginning to the criteria pollutant program in the 1960s. For many years, the criteria pollutant control program has been effective at reducing TACs, since many volatile organic compounds and PM constituents are also TACs. During the 1980s, the public's concern over toxic chemicals heightened. As a result, citizens demanded protection and control over the release of toxic chemicals into the air. In response to public concerns,

the California legislature enacted the Toxic Air Contaminant Identification and Control Act governing the release of TACs into the air. This law charges ARB with the responsibility for identifying substances as TACs, setting priorities for control, adopting control strategies, and promoting alternative processes. ARB has designated almost 200 compounds as TACs. Additionally, ARB has implemented control strategies for a number of compounds that pose high health risk and show potential for effective control.

In July 2001, ARB approved an Air Toxic Control Measure for construction, grading, quarrying and surface mining operations to minimize NOA emissions. The regulation requires application of best management practices to control fugitive dust in areas known to have NOA, as well as requiring notification to the local air district prior to commencement of ground-disturbing activities.

ARB approved a regulatory measure to reduce emissions of toxics and criteria pollutants by limiting idling of heavy-duty diesel vehicles. The driver of any vehicle subject to this section (1) shall not idle the vehicle's primary diesel engine for greater than 5 minutes at any location and (2) shall not idle a diesel-fueled auxiliary power system for more than 5 minutes to power a heater, air conditioner, or any ancillary equipment on the vehicle if it has a sleeper berth and the truck is located within 100 feet of a restricted area (homes and schools).

ARB's Land Use Handbook

ARB adopted the Air Quality and Land Use Handbook: A Community Health Perspective (Land Use Handbook) in 2005. The Land Use Handbook provides information and guidance on siting sensitive receptors in relation to sources of TACs. The sources of TACs identified in the Land Use Handbook are high-traffic freeways and roads, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and large gasoline dispensing facilities. If a project involves siting a sensitive receptor or source of TAC discussed in the Land Use Handbook, siting mitigation may be added to avoid potential land use conflicts, thereby reducing the potential for health impacts to the sensitive receptors (ARB 2005). The Project would not construct a source of TACs or a location of sensitive receptors.

2.1.2 - San Joaquin Valley Air Pollution Control District

The Project is within the San Joaquin Valley Air Basin, which is under the jurisdiction of the San Joaquin Valley Air District (SJVAPCD). The SJVAPCD is responsible for controlling emissions, primarily from stationary sources. The SJVAPCD maintains an air quality monitoring stations throughout Fresno County. The SJVAPCD, in coordination with the Council of Governments and Association of Governments (including Fresno COG), is also responsible for developing, updating, and implementing the Air Quality Attainment Plan for the area. In 2002, the SJVAPCD adopted the Guide for Assessing and Mitigating Air Quality Impacts, which details the recommended environmental setting, impacts discussions, and significance thresholds to be applied to projects in the SJVAB.

Attainment Status

The current attainment designations for the SJVAB are shown in Table 8. The area is designated as nonattainment for the California and federal ozone standards, and the California PM_{10} standard.

Table 8: San Joaquin Valley Air Basin Attainment Status

Pollutant	California Status	Federal Status
Ozone	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Attainment/Maintenance
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Maintenance
Nitrogen Dioxide	Attainment/Unclassified	Attainment/Unclassified
Sulfur Dioxide	Attainment/Unclassified	Attainment/Unclassified
Source: SJVAPCD 2013		

Air Quality Attainment Plans

Ozone Plans

As an extreme nonattainment area for the 1-hour ozone national standard, the SJVAPCD adopted the Extreme Ozone Attainment Demonstration Plan in 2004. On March 8, 2010, the EPA approved the Extreme Ozone Attainment Demonstration Plan for 1-hour ozone. Although effective June 15, 2005, the EPA revoked the 1-hour standard, the control requirements remain in effect to ensure progress toward meeting the new, more stringent 8-hour ozone standard that has replaced the 1-hour standard. The Plan contains commitments to reduce a precursor of ozone, NO_x, including NO_x reductions from indirect sources.

The 2007 Ozone Plan contains measures to reduce ozone and particulate matter precursor emissions to bring the Basin into attainment with the federal 8-hour ozone standard. The 2007 Ozone Plan calls for a 75-percent reduction of NO_x and a 25-percent reduction of ROG. The plan, with a "dual path" strategy, demonstrates attainment of the federal 8-hour ozone standard. The SJVAPCD Governing Board adopted the 2007 Ozone Plan on April 30, 2007. The ARB approved the plan on June 14, 2007.

Particulate Matter Plans

The SJVAPCD adopted the 2007 PM_{10} Maintenance Plan in September 2007 to assure the San Joaquin Valley's continued attainment of the EPA's PM_{10} standard. The EPA designated the valley as an attainment/maintenance area for PM_{10}.

The 2008 $PM_{2.5}$ Plan builds upon the strategy adopted in the 2007 Ozone Plan to bring the Basin into attainment of the 1997 national standards for $PM_{2.5}$. The EPA has identified NO_x and sulfur dioxide as precursors that must be addressed in air quality plans for the 1997 $PM_{2.5}$ standards. The 2008

$PM_{2.5}$ Plan is a continuation of the SJVAPCD's strategy to improve the air quality in the Basin. The SJVAPCD adopted the 2012 $PM_{2.5}$ Plan in December 2012. This plan addresses EPA's most recent 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$.

Rules and Regulations

The SJVAPCD administers rules and regulations to obtain and maintain attainment of the State and federal air quality standards. The rules and regulations that apply to this Project include, but are not limited to, the following:

- Rule 4002 - National Emission Standards for Hazardous Air Pollutants.
- Rule 4102 - Nuisance. The purpose of this rule is to protect the health and safety of the public, and applies to any source operation that emits or may emit air contaminants or other materials.
- Rule 4641 - Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations. The purpose of this rule is to limit ROG emissions from asphalt paving and maintenance operations. If asphalt paving will be used, then the paving operations will be subject to Rule 4641.
- Regulation VIII - Fugitive PM_{10} Prohibitions. Rules 8011-8081 are designed to reduce PM_{10} emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and trackout, etc.
- Rule 9120 Transportation Conformity. This rule incorporates the requirements of the federal Transportation Conformity Rule into the SJVAPCD's rulebook.

Rule 9510 (ISR)

Rule 9510 - Indirect Source Review (ISR) reduces the impact of oxides of nitrogen (NO_x) and PM_{10} emissions from growth in the Air Basin. A master Air Impact Assessment application must be submitted to begin rule compliance.

Compliance with Rule 9510 reduces the emissions impact of the project land uses through incorporation of onsite measures as well as payment of an offsite fee that funds emission reduction projects in the Air Basin. The emissions analysis for Rule 9510 is highly detailed and is dependent on the exact use design that is expected to be constructed or installed. The required amounts of emission reductions required by Rule 9510 for transportation projects that exceed 2 tons per year of NO_X or PM_{10} emissions during construction are as follows:

Construction Exhaust:	20 percent of the total NO_x emissions, and
	45 percent of the total PM_{10} emissions.

2.1.3 - Fresno Council of Governments

Fresno Council of Governments (Fresno COG) is the Metropolitan Planning Organization (MPO) for Fresno County, and is a voluntary association of local governments consisting of:

- City of Clovis
- City of Coalinga
- City of Firebaugh
- City of Fowler
- City of Fresno
- City of Huron
- City of Kerman
- City of Kingsburg
- City of Mendota
- City of Orange Cove
- City of Parlier
- City of Reedley
- City of San Joaquin
- City of Sanger
- City of Selma
- County of Fresno

As the designated MPO, Fresno COG is mandated by the federal government to research and draw up plans for transportation, growth management, hazardous waste management, and air quality. Additional mandates exist at the state level.

Regional Transportation Plan (RTP)

Transportation control measures provided by Fresno COG include those contained in the Regional Transportation Plans (RTP), the most current version of which is the 2011 RTP. The 2011 RTP has control measures to reduce emissions from on-road sources by incorporating strategies such as high occupancy vehicle interventions, transit, and information-based technology interventions. The measures implemented by ARB and Fresno COG affect the Project indirectly by regulating the vehicles that the residents may use and regulating public transportation.

The project is included in the 2011 RTP through 2011 RTP Amendment #2 as Project ID FRE500768. Excerpts from the 2011 RTP Amendment #2 with the project information is provided in Appendix A.

Fresno COG is currently circulating the 2014 RTP for informal and early public review and comment. The 2014 RTP, also called the Regional Transportation Plan 2040, charts a 25-year course to the year 2040. The 2014 RTP addresses greenhouse gas emission reductions and other air emissions with a goal of sustainable planning.

Federal Transportation Improvement Plan

The FTIP is a compilation of project lists from the State Transportation Improvement Program (STIP), urbanized and non-urbanized areas, and other programs using federal funding. The 2013 FTIP is composed of two parts. The first is a priority list of projects and project segments to be carried out in a four-year period. The second is a financial plan that demonstrates how the TIP can be implemented. The project was included in the 2013 FTIP Appendix F, Regional Transportation Plan

Project Listing 2011 through 2035, as RTP ID FRE500768. The project was also included in 2013 FTIP Amendment #1, dated August 2012, as Project ID FRE130069. Excerpts from the 2013 FTIP and 2013 FTIP Amendment #1 with the project information is provided in Appendix A.

Federal Statewide Transportation Improvement Plan

The Federal Statewide Transportation Improvements Plan (FSTIP) covers a four-year period from 2012/2013 through 2015/2016, which includes the listings of proposed transportation projects in the rural non MPO areas of the sate, and incorporates by reference projects listed in the MPO's 2013 FTIPs. Fresno COG submitted their board-approved 2013 FTIP to Caltrans, including 2013 FTIP Amendment #1 made August 2012. The FSTIP was transmitted from Caltrans to FHWA on November 5, 2012.

Transportation Conformity

The FHWA and FTA completed review of the conformity determination for the 2011 RTP and found that the document conforms to the applicable state implementation plan in accordance with the provisions of 40 CFR Parts 51 and 93. The FHWA and FTA issued the determination on December 14, 2010. The FHWA and FTA issued a determination of conformity for the 2011 RTP Amendment #2 on December 14, 2012. The transportation conformity determinations are provided in Appendix A.

The FHWA and FTA completed review of California's 2013 FSTIP, and approved the document as proposed. The FHWA and FTA determined the 2013 FSTIP conforms to the SIP on December 14, 2012. The 2013 FSTIP incorporated by reference those projects included in the 2012/2013 Federal Transportation Improvement Programs (FTIP) adopted by the MPOs in California. This conformity determination includes Fresno COG 2013 FTIP Amendment #1, which lists the project

2.1.4 - Pollutants of Concern

As described above, the Project area is designated nonattainment for the federal and State ozone and $PM_{2.5}$ standards. Because the area exceeds these health-based ambient air quality standards, ozone is the main criteria pollutants of concern for the Project area. The Project area is in attainment/ maintenance of the federal PM_{10} standards, but is nonattainment for the state's PM_{10} standard. In addition, asbestos and MSAT are generally a concern for construction projects. Other pollutants of concern are TACs and greenhouse gases.

The Project, as a 0.74-mile road reconstruction project, is not considered a source of potentially significant quantities of nitrogen dioxide, sulfur dioxide, lead, hydrogen sulfide, sulfates, or vinyl chloride; therefore, those pollutants are not included as "pollutants of concern" for the Project and are not included in the impact analysis.

The emissions sources and potential health effects of the pollutants of concern are described below. The discussions of properties and health effects below are based on sources including the Environmental Protection Agency and the California Air Resources Board.

Ozone

Ozone is not emitted directly into the air, but is a regional pollutant formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (ROG) and NO_X, react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. Often, the effects of emitted ROG and NO_X are felt a distance downwind of the emission sources. Ozone is subsequently considered a regional pollutant. Ground-level ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials.

Ozone can irritate lung airways and cause inflammation much like sunburn. Other symptoms include wheezing, coughing, pain when taking a deep breath, and breathing difficulties during exercise or outdoor activities. People with respiratory problems are most vulnerable, but even healthy people who are active outdoors can be affected when ozone levels are high. Chronic ozone exposure can induce morphological (tissue) changes throughout the respiratory tract, particularly at the junction of the conducting airways and the gas exchange zone in the deep lung. Anyone who spends time outdoors in the summer is at risk, particularly children and other people who are more active outdoors. Even at very low levels, ground-level ozone triggers a variety of health problems, including aggravated asthma, reduced lung capacity, and increased susceptibility to such respiratory illnesses as pneumonia and bronchitis.

Ozone also damages vegetation and ecosystems. It leads to reduced agricultural crop and commercial forest yields; reduced growth and survivability of tree seedlings; and increased susceptibility to diseases, pests, and other stresses such as harsh weather. In addition, ozone causes damage to buildings, rubber, and some plastics.

Nitrogen Oxides

During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides or NO_X. This occurs primarily in motor vehicle internal combustion engines and fossil fuel-fired electric utility facilities and industrial boilers. The pollutant NO_X is a concern because it is an ozone precursor, which means that it helps form ozone. When NO_X and ROG are released in the atmosphere, they can chemically react with one another in the presence of sunlight and heat to form ozone. NO_X can also be a precursor to PM_{10} and $PM_{2.5}$.

Because NO_X and ROG are ozone precursors, the health effects associated with ozone (as discussed above) are also indirect health effects associated with significant levels of NO_X and ROG emissions.

Reactive Organic Gases and Volatile Organic Compounds

ROG, also known as volatile organic compounds (VOC) are defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participate in atmospheric photochemical reactions. ROG consist of nonmethane hydrocarbons and oxygenated hydrocarbons. Hydrocarbons are organic compounds that contain only hydrogen and carbon atoms. Nonmethane hydrocarbons are hydrocarbons that do not contain the unreactive hydrocarbon methane. Oxygenated hydrocarbons are hydrocarbons with oxygenated functional groups attached.

There are no state or national ambient air quality standards for ROG because they are not classified as criteria pollutants. They are regulated, however, because a reduction in ROG emissions reduces certain chemical reactions that contribute to the formulation of ozone. ROG also are transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} levels and lower visibility.

Particulate Matter (PM_{10} and $PM_{2.5}$)

PM is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.

Particle pollution includes "inhalable coarse particles," with diameters larger than 2.5 micrometers and smaller than 10 micrometers and "fine particles," with diameters that are 2.5 micrometers and smaller. For reference, $PM_{2.5}$ is approximately one-thirtieth the size of the average human hair.

These particles come in many sizes and shapes and can be made up of hundreds of different chemicals. Some particles, known as primary particles, are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks, or fires. Others form in complicated reactions in the atmosphere from chemicals such as sulfur dioxides and nitrogen oxides that are emitted from power plants, industrial activity, and automobiles. These particles, known as secondary particles, make up most of the fine particle pollution in the United States.

Particle exposure can lead to a variety of health effects. For example, numerous studies link particle levels to increased hospital admissions and emergency room visits—and even to death from heart or lung diseases. Both long- and short-term particle exposures have been linked to health problems. Long-term exposures, such as those experienced by people living for many years in areas with high particle levels, have been associated with problems such as reduced lung function, the development of chronic bronchitis, and even premature death. Short-term exposures to particles (hours or days) can aggravate lung disease, causing asthma attacks and acute bronchitis, and may increase susceptibility to respiratory infections. In people with heart disease, short-term exposures have been linked to heart attacks and arrhythmias. Healthy children and adults have not been reported to suffer serious effects from short-term exposures, although they may experience temporary minor irritation when particle levels are elevated.

Carbon Monoxide

CO is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion.

CO is a public health concern because it combines readily with hemoglobin, reducing the amount of oxygen transported in the bloodstream. High levels of CO can affect even healthy people. At extremely high levels, CO is poisonous and can cause death.

Motor vehicles are the dominant source of CO emissions in most areas. CO is described as having only a local influence because it dissipates quickly. High CO levels develop primarily during winter, when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Because CO is a product of incomplete combustion, motor vehicles exhibit increased CO emission rates at low air temperatures. High CO concentrations occur in areas of limited geographic size, sometimes referred to as hot spots.

Toxic Air Contaminants

In addition to the above-listed criteria pollutants, toxic air contaminants (TACs), also known as hazardous air pollutants, are another group of pollutants of concern. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts are not expected to occur. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the state and federal governments have set ambient air quality standards.

According to the California Almanac of Emissions and Air Quality, the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being diesel particulate matter (DPM) from diesel-fueled engines (ARB 2009). Asbestos is a concern for construction projects. However, City of Fresno does not contain known potential for naturally occurring asbestos (NOA). Therefore, NOA is not a concern for the Project, and is not discussed in this section.

Mobile Source Air Toxics

MSAT are a subset of the 188 air toxics defined by the CAA. The MSATs are compounds emitted from highway vehicles and non-road equipment. Of the 21 identified MSAT compounds, the EPA has listed seven as "priority" MSATs: benzene, formaldehyde, DPM/diesel exhaust organic gases, acrolein, 1,3-butadiene, naphthalene, and polycyclic organic matter.

Diesel Particulate Matter

The ARB identified the PM emissions from diesel-fueled engines as a TAC in August 1998 under California's TAC program. The State of California, after a 10-year research program, determined in 1998 that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic (long-term) health risk. The California Office of Environmental Health Hazard Assessment recommends using a 70-year exposure duration for determining residential cancer risks. DPM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute approximately 40 percent of the statewide total, with an additional 57 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units.

2.2 - Climate Change and Greenhouse Gases

2.2.1 - Federal

Although climate change and greenhouse gas reduction is a concern at the federal level; currently there are no regulations or legislation that have been enacted specifically addressing greenhouse gas emissions reductions and climate change at the project level for transportation projects. Neither the United States Environmental Protection Agency (EPA) nor Federal Highway Administration (FHWA) has promulgated explicit guidance or methodology to conduct project-level greenhouse gas analysis. As stated on FHWA's climate change website (http://www.fhwa.dot.gov/hep/climate/index.htm), climate change considerations should be integrated throughout the transportation decision-making process—from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project level decision-making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

The four strategies set forth by FHWA to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours traveled.

Climate change and its associated effects are also being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and Executive Order 13514- Federal Leadership in Environmental, Energy and Economic Performance.

Executive Order 13514 is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also direct federal agencies to participate in the interagency

Climate Change Adaptation Task Force, which is engaged in developing a U.S. strategy for adaptation to climate change.

On April 2, 2007, in Massachusetts v. EPA, 549 U.S. 497 (2007), the Supreme Court found that greenhouse gases are air pollutants covered by the Clean Air Act and that the EPA has the authority to regulate greenhouse gases. The Court held that the EPA Administrator must determine whether or not emissions of greenhouse gases from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator found that the current and projected concentrations of the six key well-mixed greenhouse gases--carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)--in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator found that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the EPA's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles, which was published on September 15, 2009. On May 7, 2010 the final Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards was published in the Federal Register.

EPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced greenhouse gas emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever greenhouse gas regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle greenhouse gas regulations. These steps were outlined by President Obama in a memorandum on May 21, 2010.

The final combined EPA and NHTSA standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards will cut greenhouse gas emissions by an estimated 960

million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

On January 24, 2011, the EPA along with the U.S. Department of Transportation and the State of California announced a single timeframe for proposing fuel economy and greenhouse gas standards for model years 2017-2025 cars and light-trucks. Proposing the new standards in the same timeframe (September 1, 2011) signals continued collaboration that could lead to an extension of the current National Clean Car Program.

Council on Environmental Quality. On February 18, 2010, the Council on Environmental Quality (CEQ) provided a draft guidance memorandum for public consideration and comment on the ways in which federal agencies can improve their consideration of the effects of greenhouse gas emissions and climate change in evaluations of proposals for federal actions under NEPA (CEQ 2010).

CEQ proposes to advise federal agencies to consider, in scoping their NEPA analyses, whether analysis of the direct and indirect greenhouse gas emissions from their proposed actions may provide meaningful information to decision makers and the public. Specifically, if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of carbon dioxide equivalent greenhouse gas emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. For long-term actions that have annual direct emissions of less than 25,000 metric tons of carbon dioxide equivalent, CEQ encourages federal agencies to consider whether the action's long-term emissions should receive similar analysis. CEQ does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of greenhouse gas emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of greenhouse gases.

2.2.2 - State

There have been significant legislative and regulatory activities that affect climate change and greenhouse gases in California. Legislative and regulatory activities pertinent to transportation are discussed below.

Assembly Bill 1493 (AB 1493), Pavley. Vehicular Emissions: Greenhouse Gases (AB 1493), 2002: requires the ARB to develop and implement regulations to reduce automobile and light truck greenhouse gas emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year. In June 2009, the EPA Administrator granted a Clean Air Act waiver of preemption to California. This waiver allowed California to implement its own greenhouse gas emission standards for motor vehicles beginning with model year 2009. California agencies will be working with Federal agencies to conduct joint rulemaking to reduce greenhouse gas emissions for passenger cars model years 2017-2025.

Executive Order S-3-05: (signed on June 1, 2005, by Governor Arnold Schwarzenegger) the goal of this Executive Order is to reduce California's greenhouse gas emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32.

AB32 (AB 32), the Global Warming Solutions Act of 2006: AB 32 sets the same overall greenhouse gas emissions reduction goals as outlined in Executive Order S-3-05, while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the State's Climate Action Team.

Executive Order S-01-07: Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this Executive Order, the carbon intensity of California's transportation fuels is to be reduced by at least ten percent by 2020.

Senate Bill 97 (Chapter 185, 2007): required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the State CEQA Guidelines for addressing greenhouse gas emissions. The Amendments became effective on March 18, 2010.

Senate Bill 375: SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 contains the following:

- Requires MPOs to include sustainable community strategies in their regional transportation plans for reducing greenhouse gas emissions,
- Aligns planning for transportation and housing, and
- Creates specified incentives for the implementation of the strategies. Concerning CEQA, SB 375, section 21159.28 states that CEQA findings determinations for certain projects are not required to reference, describe, or discuss growth inducing impacts or any project-specific or cumulative impacts from cars and light-duty truck trips generated by a project on global warming or the regional transportation network if the project:
  - Is in an area with an approved sustainable communities strategy or an alternative planning strategy that the ARB accepts as achieving the greenhouse gas emission reduction targets;
  - Is consistent with that strategy (in designation, density, building intensity, and applicable policies); and
  - Incorporates the mitigation measures required by an applicable prior environmental document.

Caltrans

Caltrans continues to be actively involved on the Governor's Climate Action Team as ARB works to implement the Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in AB 32.

Many of the strategies Caltrans is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Former Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a $222 billion infrastructure improvement program to fortify the state's transportation system, education, housing, and waterways, including $100.7 billion in transportation funding during the next decade. The Strategic Growth Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in greenhouse gas emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together are expected to reduce congestion. The Strategic Growth Plan relies on a complete systems approach to attain CO_2 reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements.

Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans is working closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks; Caltrans is doing this by supporting on-going research efforts at universities, by supporting legislative efforts to increase fuel economy, and by its participation on the Climate Action Team. It is important to note, however, that the control of the fuel economy standards is held by EPA and ARB. Lastly, the use of alternative fuels is also being considered; Caltrans is participating in funding for alternative fuel research at the UC Davis.

Table 9 summarizes Caltrans and statewide efforts that Caltrans is implementing in order to reduce greenhouse gas emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

Table 9: Caltrans Climate Change / CO_2 Reduction Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Uses	Intergovernmental Review (IGR)	Caltrans	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Trans. System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	.07	2.17
Mainstream Energy & Greenhouse Gas into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, CalEPA, ARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.045 0.0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 0.36	4.2 3.6
Goods Movement	Office of Goods Movement	Cal EPA, ARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.18

Acronyms:
$MMTCO_2e$ = Million metric tons of carbon dioxide equivalent
Source: Caltrans 2006.

2.2.3 - Local Agencies

San Joaquin Valley Air Pollution Control District

On December 17, 2009, the SJVAPCD Governing Board adopted "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" and the policy: "District Policy - Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency." The SJVAPCD concluded that the existing science is inadequate to support quantification of the impacts that project-specific greenhouse gas emissions have on global climatic change. The SJVAPCD found that the effects of project-specific emissions to be cumulative, and without mitigation, their incremental contribution to global climatic change could be considered cumulatively considerable. The SJVAPCD found that this cumulative impact is best addressed by requiring all projects to reduce their greenhouse gas emissions, whether through project design elements or mitigation.

The SJVAPCD's approach is intended to streamline the process of determining if project-specific greenhouse gas emissions would have a significant effect. Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less than significant cumulative impact. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources and have a certified Final CEQA document.

For non-exempt projects, those projects for which there is no applicable approved plan or program, or those projects not complying with an approved plan or program, the lead agency would evaluate the project against a performance-based standards and would require the adoption of design elements, known as a Best Performance Standard, to reduce greenhouse gas emissions. The Best Performance Standards have not yet fully been established, though they must be designed to effect a 29-percent reduction when compared with the "business-as-usual" projections identified in ARB's AB 32 Scoping Plan.

"Business-as-usual" is the emissions occurring in 2020 if the average baseline emissions during the 2002-2004 period were grown to 2020 levels, without control. These standards thus would carry with them pre-quantified emissions reductions, eliminating the need for project specific quantification. Therefore, projects incorporating Best Performance Standards would not require specific quantification of greenhouse gas emissions, and automatically would be determined to have a less than significant cumulative impact for greenhouse gas emissions.

For stationary source permitting projects, Best Performance Standards means, "The most stringent of the identified alternatives for control of greenhouse gas emissions, including type of equipment, design of equipment and operational and maintenance practices, which are achieved-in-practice for the identified service, operation, or emissions unit class." The SJVAPCD has identified Best Performance Standards for the following sources: boilers; dryers and dehydrators; oil and gas

extraction, storage, transportation, and refining operations; cogeneration; gasoline dispensing facilities; volatile organic compound control technology; and steam generators.

For development projects, Best Performance Standards means, "Any combination of identified greenhouse gas emission reduction measures, including project design elements and land use decisions that reduce project specific greenhouse gas emission reductions by at least 29 percent compared with business as usual."

Projects not incorporating Best Performance Standards would require quantification of greenhouse gas emissions and demonstration that business-as-usual greenhouse gas emissions have been reduced or mitigated by 29 percent. Quantification of greenhouse gas emissions would be required for all projects for which the lead agency has determined that an environmental impact report is required, regardless of whether the project incorporates Best Performance Standards.

Fresno Council of Governments

Fresno COG is currently working on the 2014 Regional Transportation Plan Sustainable Communities Strategy (SCS), which addresses greenhouse gas emissions reductions and other air emissions. SCS regional plans consider long-term housing, transportation and land use needs, and are being coordinated by the 8 San Joaquin Valley Air Basin MPOs.

City of Fresno

The City is working with a consultant to prepare a Climate Action Plan for municipal and community-wide sources. Although the City has made progress in the preparation of the Climate Action Plan, a draft plan has not been released as of the date of this document.

2.2.4 - Pollutants of concern

Gases that trap heat in the atmosphere are greenhouse gases, analogous to the way a greenhouse retains heat. The accumulation of greenhouse gases in the atmosphere regulates the earth's temperature. However, human activities have increased the amount of greenhouse gases in the atmosphere. Some greenhouse gases can remain in the atmosphere for hundreds of years. The following greenhouse gases are defined under Assembly Bill 32 but are not expected to be generated by the Project: chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Individual greenhouse gas compounds have varying global warming potential and atmospheric lifetimes. The global warming potential of a greenhouse gas is a measure of how much a given mass of a greenhouse gas is estimated to contribute to global warming. To describe how much global warming a given type and amount of greenhouse gas may cause, use is made of a metric called the carbon dioxide equivalent.

The calculation of the carbon dioxide equivalent is a consistent methodology for comparing greenhouse gas emissions since it normalizes various greenhouse gas emissions to a consistent

reference gas, carbon dioxide. Carbon dioxide, the reference gas for global warming potential, has a global warming potential of one. For example, methane's warming potential of 21 indicates that methane has a 21 times greater warming affect than carbon dioxide on a molecule per molecule basis. A carbon dioxide equivalent is the mass emissions of an individual greenhouse gas multiplied by its global warming potential. The following is a brief description of the most common greenhouse gases that may be emitted by the Project.

Carbon dioxide. Carbon dioxide (CO_2) is an odorless, colorless natural greenhouse gas. CO_2 is emitted from natural and anthropogenic sources. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, gasoline, and wood. As discussed above, CO_2 has a global warming potential of 1.

Methane. Methane is a flammable greenhouse gas. A natural source of methane is from the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain methane, which is extracted for fuel. Other sources are from landfills, fermentation of manure, and ruminants such as cattle. Methane has a global warming potential of 21.

Nitrous oxide. Nitrous oxide, also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. Nitrous oxide is a highly potent greenhouse gas with a global warming potential of 310.

SECTION 3: PHYSICAL SETTING

The Project is located in the City of Fresno, in Fresno County, in the San Joaquin Valley Air Basin (Air Basin). The Air Basin consists of Kings Madera, San Joaquin, Merced, Stanislaus, and Fresno counties; as well as a portion of Kern County. The local agency with jurisdiction over air quality in the Basin is the San Joaquin Valley Air Pollution Control District (SJVAPCD). Regional and local air quality is impacted by topography, dominant airflows, atmospheric inversions, location, and season.

3.1.1 - Regional Air Quality

The information in this section is primarily from the SJVAPCD's Guide for Assessing and Mitigating Air Quality Impacts and the accompanying Technical Document (San Joaquin Valley Air Pollution Control District 2002).

The Air Basin has an "inland Mediterranean" climate and is characterized by long, hot, dry summers and short, foggy winters. Sunlight can be a catalyst in the formation of some air pollutants (such as ozone); the Air Basin averages over 260 sunny days per year.

The Air Basin is generally shaped like a bowl. It is open in the north and is surrounded by mountain ranges on all other sides. The Sierra Nevada mountains are along the eastern boundary (8,000 to 14,000 feet in elevation), the Coast Ranges are along the western boundary (3,000 feet in elevation), and the Tehachapi Mountains are along the southern boundary (6,000 to 8,000 feet in elevation).

Dominant Airflow

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. The mountains surrounding the Air Basin form natural horizontal barriers to the dispersion of air contaminants. The wind generally flows south-southeast through the valley, through the Tehachapi Pass and into the Southeast Desert Air Basin portion of Kern County. As the wind moves through the Air Basin, it mixes with the air pollution generated locally, generally transporting air pollutants from the north to the south in the summer and in a reverse flow in the winter.

Inversions

Generally, the temperature of air decreases with height, creating a gradient from warmer air near the ground to cooler air at elevation. This gradient of cooler air over warm air is known as the environmental lapse rate. Inversions occur when warm air sits over cooler air, trapping the cooler air near the ground. These inversions trap pollutants from dispersing vertically, and the mountains surrounding the San Joaquin Valley trap the pollutants from dispersing horizontally. Strong temperature inversions occur throughout the Air Basin in the summer, fall, and winter. Daytime temperature inversions occur at elevations of 2,000 to 2,500 feet above the San Joaquin Valley floor during the summer and at 500 to 1,000 feet during the winter.

The result is a relatively high concentration of air pollution in the valley during inversion episodes. These inversions cause haziness, which in addition to moisture may include suspended dust, a variety of chemical aerosols emitted from vehicles, particulates from wood stoves, and other pollutants. In the winter, these conditions can lead to CO "hot-spots" along heavily traveled roads and at busy intersections. During summer's longer daylight hours, stagnant air, high temperatures, and plentiful sunshine provide the conditions and energy for the photochemical reaction between ROG and NO_x, which results in the formation of ozone.

Location and Season

Because of the prevailing daytime winds and time-delayed nature of ozone, concentrations are highest in the southern portion of the Air Basin, such as around Bakersfield. Summers are often periods of hazy visibility and occasionally unhealthful air, while winter air quality impacts tend to be localized and can consist of (but are not exclusive to) odors from agricultural operations; soot or smoke around residential, agricultural, and hazard-reduction wood burning; or dust near mineral resource recovery operations.

Emissions Inventory

Background

An emissions inventory is an account of the amount of air pollution generated by various emissions sources. To estimate the sources and quantities of pollution, ARB, in cooperation with local air districts, other government agencies, and industry, maintains an inventory of California emission sources. Sources are subdivided into the four major emission categories: mobile, stationary, area-wide, and natural sources.

Mobile sources include on-road sources and off-road mobile sources. The on-road emissions inventory, which includes automobiles, motorcycles, and trucks, is based on an estimation of population, activity, and emissions of the on-road motor vehicles used in California. The off-road emissions inventory is based on an estimate of the population, activity, and emissions of various off-road equipment, including recreational vehicles, farm and construction equipment, lawn and garden equipment, forklifts, locomotives, commercial marine ships, and marine pleasure craft.

Stationary sources are large, fixed sources of air pollution, such as power plants, refineries, and manufacturing facilities. Stationary sources also include aggregated point sources. These include many small point sources, or facilities, that are not inventoried individually but are estimated as a group and reported as a single-source category. Examples include gas stations and dry cleaners. Each of the local air districts estimates the emissions for the majority of stationary sources within its jurisdiction. Stationary source emissions are based on estimates made by facility operators and local air districts. Emissions from specific facilities can be identified by name and location.

Area-wide sources include source categories associated with human activity that take place over a wide geographic area. Emissions from area-wide sources may be either from small, individual

sources, such as residential fireplaces, or from widely distributed sources that cannot be tied to a single location, such as consumer products, and dust from unpaved roads or farming operations (such as tilling).

Natural, or non-anthropogenic, sources include source categories with naturally occurring emissions such as geogenic (e.g., petroleum seeps), wildfires, and biogenic emissions from plants.

Emissions Inventory

The 2008 emissions inventory for the Fresno County portion of the Air Basin is available in ARB's 2009 Almanac Emission Projection Data. In the Project area, mobile emissions are the primary source of local pollution, accounting for approximately 63 percent of CO, 79 percent of oxides of nitrogen (NO_x), and 21 percent of reactive organic gases (ROG). For PM_{10} and $PM_{2.5}$, the majority of emissions are generated by area sources. Table 10 summarizes the estimated 2008 emissions for the main pollutants of concern in the area.

Table 10: 2008 Inventory Fresno County

Emission Category	Tons per Day				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Stationary Sources	16.7	8.9	16.6	4.2	2.9
Area-wide Sources	36.3	110.3	6.9	72.0	21.7
Mobile Sources	30.6	232.0	88.9	4.4	3.7
Natural Sources	63.9	14.6	0.5	1.5	1.3
Total	147.4	365.9	112.9	82.1	29.5
Source: ARB 2013.					

3.1.2 - Local Air Quality

Climate and Meteorology

The Fresno meteorological station is located in the Project vicinity. Weather data from this station shows an annual average temperatures in the area from an average monthly high of 98.3 degrees Fahrenheit (ºF) in June to an average monthly low of 37.3 ºF in December and January. The average annual rainfall in the Project area, as recorded between 1948 and 2013, is 10.89 inches (WRCC 2013).

Air Quality

The local air quality can be evaluated by reviewing relevant air pollution concentrations near the Project area. The SJVAPCD operates an air monitoring station on Drummond Street, located south of East Jenson Avenue Bypass between Maple Avenue and Chestnut Avenue, approximately 3.2 miles southeast of the Project. The Drummond Street ambient air monitoring station (Drummond Station) measures 1 hour and 8-hour ozone, daily PM_{10}, 8-hour CO, and 1-hour NO_2. As CO is a highly localized pollutant, the data from the Drummond station would not be applicable to the Project area.

The North 1st Street and Garland Avenue monitoring stations measure PM2.5 and are located approximately 3.5 miles northeast of the project site. The North 1st Street monitoring station was recently closed and replaced by the Garland Avenue monitoring station. Table 11 summarizes 2010 through 2010 published monitoring data from ARB's Aerometric Data Analysis and Management System (iADAM) for the Drummond Station, North 1st Station and Garland Avenue Station. The PM2.5 measurements for 2010 and 2011 are from the North 1st Station, and the 2012 measurement is from the Garland Station. .

Table 11: Air Quality Monitoring Summary

Air Pollutant	Averaging Time	Metric	Year		
			2010	2011	2012
Ozone	1 Hour	Max 1 Hour (ppm)	0.108	0.129	0.127
		Days > CAAQS (0.09 ppm)	5	27	9
	8 Hour	Max 8 Hour (ppm)[1]	0.092	0.105	0.108
		Days > CAAQS (0.07 ppm)	24	73	75
		Days > NAAQS (0.075 ppm)	13	52	46
Particulate matter (PM_{10})	24 Hour	Federal Annual Average ($\mu g/m^3$)	26.9	31.4	42.9
		Max 24 Hour ($\mu g/m^3$)	66.5	91.3	114.3
		Est. Days > CAAQS (50 $\mu g/m^3$)	*	72.0	*
		Est. Days > NAAQS (150 $\mu g/m^3$)	*	0.0	*
Fine particulate matter ($PM_{2.5}$)	Annual	Annual Average ($\mu g/m^3$)	13.0	15.4	14.0
	24 Hour	Max 24 Hour ($\mu g/m^3$)[2]	62.0	78.5	88.8
		Est. Days > National Standard (35 $\mu g/m^3$)	21.7	39.0	29.4
Carbon monoxide (CO)	8 Hour	Max 8 Hour (ppm)	1.45	1.73	*
		Days > State Standard (9.0 ppm)	0	0	0
		Days > National Standard (9 ppm)	0	0	0
Nitrogen dioxide (NO_2)	Annual	Annual Average (ppm)	*	0.013	*
	1 Hour	Max 1 Hour (ppm)	0.062	0.069	*
		Days > State Standard (0.18 ppm)	0	0	0

Abbreviations:
> = exceed ppm = parts per million $\mu g/m^3$ = micrograms per cubic meter
* = Insufficient/No Data Max = maximum Est. = Estimated
CAAQS = California ambient air quality standards
NAAQS = National ambient air quality standards
[1] From the California Measurement
[2] Federal Annual Average
Source: ARB 2013.

Local Sources of Air Pollution

The adjacent land uses are dominated by commercial, retail development, and government facilities which generate mobile and area source emissions. State Route 99 is located approximately 0.4 mile west of the Project's western terminus. State Route 41 is located approximately 0.3 mile south and southeast of the project's southern terminus.

Sensitive Receptors

Those individuals who are sensitive to air pollution include children, the elderly, and persons with pre-existing respiratory or cardiovascular illness. The SJVAPCD considers a sensitive receptor to be a location that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools. There are three apartment buildings in the vicinity of the project. The residential locations the Masten Towers, Hotel Californian, and the Pacific Southwest Building.

- **Masten Towers** is located at the northeast corner of Fresno Street and Broadway Street includes 200 units with one bedroom and studio apartments. Ten percent of the apartments (20 units) accommodate persons with physical disabilities (Masten Towers 2013).
- The **Hotel Californian** is at the southwest corner of Kern Street and Van Ness Avenue has 217 rooms. Currently, the building provides housing for low-income seniors (Balch 2013).
- The **Pacific Southwest Building** is located at the southeast corner of Mariposa Mall and Fulton Mall accommodates approximately 12 people in 8 units. Currently, the housing is provided to above moderate income persons. Residential units are located on the 10th floor and greater (Balch 2013).

3.1.3 - Greenhouse Gas Emissions and Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization's in 1988, has led to increased efforts devoted to greenhouse gas emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of greenhouse gases related to human activity that include carbon dioxide (CO_2), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (s, s, s, 2 -tetrafluoroethane), and HFC-152a (difluoroethane)..

Transportation sources (passenger cars, light duty trucks, other trucks, buses and motorcycles) in the state of California make up the largest source (second to electricity generation) of greenhouse gas emitting sources. Conversely, the main source of greenhouse gas emissions in the United States (U.S.) is electricity generation followed by transportation. The dominant greenhouse gas emitted is CO_2, mostly from fossil fuel combustion.

There are four primary strategies for reducing greenhouse gas emissions from transportation sources: 1) improve system and operation efficiencies, 2) reduce growth of vehicle miles traveled (VMT) 3) transition to lower greenhouse gas fuels and 4) improve vehicle technologies. To be most effective all four should be pursued collectively. The following regulatory setting section outlines state and federal efforts to comprehensively reduce greenhouse gas emissions from transportation sources.

Potential Environmental Effects

Worldwide, average temperatures are likely to increase by 1.8 degrees Celsius (°C) to 4°C, or approximately 3 °F to 7°F by the end of the 21st century (IPCC 2007). However, a global temperature increase does not translate to a uniform increase in temperature in all locations on the earth. Regional climate changes are dependent on multiple variables, such as topography. One region of the Earth may experience increased temperature, increased incidents of drought and similar warming effects, whereas another region may experience a relative cooling. According to the Intergovernmental Panel on Climate Change's Working Group II Report, climate change impacts to North America may include diminishing snowpack, increasing evaporation, exacerbated shoreline erosion, exacerbated inundation from sea level rising, increased risk and frequency of wildfire, increased risk of insect outbreaks, increased experiences of heat waves, and rearrangement of ecosystems, as species and ecosystem zones shift northward and to higher elevations (IPCC 2007).

For California, climate change has the potential to incur/exacerbate the following environmental impacts (CAT 2006):

- Reduced precipitation;
- Changes to precipitation and runoff patterns;
- Reduced snowfall (precipitation occurring as rain instead of snow);
- Earlier snowmelt;
- Decreased snowpack;
- Increased agricultural demand for water;
- Intrusion of seawater into coastal aquifers;
- Increased agricultural growing season;
- Increased growth rates of weeds, insect pests and pathogens;
- Inundation of low-lying coastal areas by sea level rise;
- Increased incidents and severity of wildfire events; and,
- Expansion of the range and increased frequency of pest outbreaks.

Although certain environmental effects are widely accepted to be a potential hazard to certain locations, such as rising sea level for low-laying coastal areas, it is currently infeasible to predict all environmental effects of climate change on any one location.

SECTION 4: IMPACT ANALYSIS

4.1 - Transportation Conformity Impacts

4.1.1 - Regional Conformity

To determine if a project is exempt from regional conformity, 40 CFR 93.127 contains a list of projects that are except from regional emissions analyses. The Project is not exempt from regional emissions analysis. Therefore, the Project's consistency with the applicable Regional Transportation Plan (RTP) and Federal Transportation Improvement Program (FTIP) is provided below.

Regional Transportation Plan

The Project was included in the regional emissions analysis conducted by Fresno COG for the conforming 2011 Regional Transportation Plan (2011 RTP), under the RTP ID FRE500768, as identified in the 2011 RTP Amendment #2. The description of RTP ID FRE500768 in the RTP projects list is:

> In the City of Fresno, at 4 locations; reintroduce 2-lane undivided complete streets.
>
> 1) Fulton Mall between Tuolumne and Inyo Streets
> 2) Merced Mall from Congo Alley to Federal Alley
> 3) Mariposa Mall from Broadway Street to Federal Alley
> 4) Kern Mall from Fulton Mall to Federal Alley

FHWA determined the 2011 RTP to conform to the SIP on December 14, 2010. This analysis found that the 2011 RTP and, therefore, the individual projects contained in the 2011 RTP, are conforming projects, and will have air quality impacts consistent with those identified in the state implementation plans for achieving the NAAQS. The FHWA's conformity determination letter is contained in Appendix A.

The 2011 RTP Amendment #2 was adopted by Fresno COG . and the 2011 RTP Amendment #2 conformity was approved by FHWA on December 14, 2012. The Project's design concept and scope have not changed significantly from what was analyzed in the 2011 RTP Amendment #2. Therefore, the Project is consistent with Amendment #2 of the 2011 RTP. The relevant page of Amendment #2 modeling list and the FHWA's conformity determination are provided in Appendix A.

Federal Transportation Improvement Program

The Project is also included as project FRE130069 in the 2013 Federal Transportation Improvement Program (2013 FTIP) prepared by Fresno COG. The description of FRE13069 in the FTIP projects list is:

In the City of Fresno, at 4 locations; reintroduce 2-lane undivided complete streets.

1) Fulton Mall between Tuolumne and Inyo Streets
2) Merced Mall from Congo Alley to Federal Alley
3) Mariposa Mall from Broadway Street to Federal Alley
4) Kern Mall from Fulton Mall to Federal Alley

The Project is also listed in the 2013 FTIP Amendment #1 as project FRE130069, with the following project description and narrative:

Project Description. Fulton Mall and Mariposa Mall Street Reconstruction

Narrative. New Project TCSPPP: ► Add funds in 12/13 in ENG for $1,000

The Project's open to the public year is consistent with (within the same regional emission analysis period as) the construction completion date identified in the FTIP and the RTP. The FTIP gives priority to eligible Transportation Control Measures (TCMs) identified in the SIP and provides sufficient funds to provide for their implementation.

FHWA determined the 2013 FSTIP, including the MPO 2013 FTIPs and related 2013 FTIP Amendments, to conform to the SIP on December 14, 2012. The FHWA's conformity determination letter is contained in Appendix A. As with the RTP, the FTIP may be amended with new projects or revisions to project descriptions, costs or schedule. The FTIP's amendments include Amendments 1 through 6. Amendments were adopted by Fresno COG on various dates between August 2012 and May 2013, with FHWA December 2012 approval includes approval of 2013 FTIP Amendment 1, which was adopted in August 2012. The Project is included in the 2013 FTIP projects, including Amendment 1. The relevant page from the 2013 FTIP projects list is provided in Appendix A.

Conclusion

Therefore, because the Project is contained in the 2011 RTP and 2013 FTIP, because both plans have been determined to be in conformity, and because the Project's design concept and scope have not changed significantly from what was analyzed in the plans, the Project is consistent with regional conformity. Additional regional conformity analysis is not required.

4.1.2 - Project-Level Conformity

PM_{10} and $PM_{2.5}$

As discussed in 40 CFR 93.102(b), *Geographically applicability*, the provisions of Subpart A (Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Developed, Funded or Approved Under Title 23 U.S.C. or the Federal transit Laws) apply in nonattainment and maintenance areas for transportation criteria pollutants for which the area is designated nonattainment or has a maintenance plan. As described in the Regulatory Setting, the

Project area is in attainment or unclassified for the federal PM_{10} standards. Therefore, PM_{10} hot-spot analysis is not required. However, a $PM_{2.5}$ hot-spot analysis is required. As stated by 40 CFR §93.123:

> (b) PM10 and PM2.5 hot-spot analyses.
>
> (1) The hot-spot demonstration required by §93.116 must be based on quantitative analysis methods for the following types of projects:
> (i) New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles;
> (ii) Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
> (iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
> (iv) Expanded bus and rail terminals and transfer points that significantly increase the single location; and
> (v) Projects in or affecting locations, areas, or categories of sites which are identified in the PM10 or PM2.5 applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.
> (2) Where quantitative analysis methods are not available, the demonstration required by §93.116 for projects described in paragraph (b)(1) of this section must be based on a qualitative consideration of local factors.
> (3) DOT, in consultation with EPA, may also choose to make a categorical hot-spot finding that §93.116 is met without further hot-spot analysis for any project described in paragraph (b)(1) of this section based on appropriate modeling. DOT, in consultation with EPA, may also consider the current air quality circumstances of a given PM2.5 or PM10 nonattainment or maintenance area in categorical hot-spot findings for applicable FHWA or FTA projects.
> (4) The requirements for quantitative analysis contained in this paragraph (b) will not take effect until EPA releases modeling guidance on this subject and announces in the Federal Register that these requirements are in effect.

Furthermore, the $PM_{2.5}$ hot-spot analysis requirement of 40 CFR 93.116(a) contains the statement:

> … This criterion is satisfied without a hot-spot analysis in PM_{10} and $PM_{2.5}$ nonattainment and maintenance areas for FHWA/FTA projects that are not identified in §93.123(b)(1).

The EPA and the FHWA issued joint guidance on how to perform qualitative hot-spot analyses in $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas. This guidance provides information for State and local agencies to meet the $PM_{2.5}$ and PM_{10} hot-spot analysis requirements established in the March 10, 2006, final transportation conformity rule (71 FR 12468). The 2006 guidance supersedes FHWA's September 12, 2001, "Guidance for Qualitative Project-Level: Hot-spot Analysis in PM10 Nonattainment and Maintenance Areas" (Qualitative $PM_{2.5}$ and PM_{10} Guidance).

The Qualitative $PM_{2.5}$ and PM_{10} Guidance states that the guidance is to be used to complete qualitative $PM_{2.5}$ hot-spot analyses only for "projects of air quality concern" (POAQC) as defined in 40 CFR 93.123(b)(1). Specifically:

> For all $PM_{2.5}$ 5 areas, this guidance would be used to complete qualitative $PM_{2.5}$ hot-spot analyses only for "projects of air quality concern" as defined in the final rule by 40 CFR 93.123(b)(1). The final rule specifies that projects of air quality concern are certain highway and transit projects that involve significant levels of diesel traffic, or any other project that is identified by the $PM_{2.5}$ SIP as a localized air quality concern.
>
> A qualitative $PM_{2.5}$ hot-spot analysis is not required for projects that are not an air quality concern. For these types of projects, state and local project sponsors should briefly document in their project-level conformity determinations that Clean Air Act and 40 CFR 93.116 requirements were met without a hot-spot analysis, since such projects have been found to not be of air quality concern under 40 CFR 93.123(b)(1).

The project would be reintroducing a 2-lane surface streets in the City of Fresno; the project is not a new or expanded highway project. In addition, the project would not involve trip-generating land uses or otherwise involve a significant number of diesel vehicles. Therefore, the project would not affect intersections at a LOS D, E, or F with a significant number of diesel vehicles. The project does not include a new or expanded bus or rail terminal or transfer points. Finally, the project site is not in the 2012 $PM_{2.5}$ Plan as a site of violation or possible violation. Therefore, the project does not meet the criteria listed in §93.123(b)(1) which identifies "projects of air quality concern" that must prepare a hot-spot analysis.

An Interagency Consultation Memo was circulated by Caltrans on July 30, 2013, requesting concurrence that the project was not a POAQC. The FHWA provided concurrence that the project is not a POAQC on August 5, 2013. The Interagency Consultation Memo and FHWA's concurrence letter are provided in Appendix B. As such, a quantified PM2.5 hot-spot analysis is not required. As specified in 40 CFR 93.116(a) and the Qualitative $PM_{2.5}$ and PM_{10} Guidance, the requirement is satisfied without further qualitative hot-spot analysis. The project would not cause or contribute to any new localized $PM_{2.5}$ violations, increase the frequency or severity of any existing $PM_{2.5}$ violations, or delay timely attainment of the $PM_{2.5}$ NAAQS or any required interim emission reductions or other milestones in the $PM_{2.5}$ nonattainment area.

CO Hot-spot

A CO hot spot is a localized concentration of CO that is above the state or national 1-hour or 8-hour CO ambient air standards. Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles.

The Air Basin is in maintenance of the federal CO standards, therefore a CO analysis is not required for the conformity analysis.

4.2 - Project-Level Air Quality Impacts

4.2.1 - CO Hot-spot

This analysis utilizes the Transportation Project-Level Carbon Monoxide Protocol (CO Protocol) to determine if the Project would significantly contribute to a localized exceedance of the state or national CO ambient air standards, starting with Section 3 (Determination of Project Requirements), of the CO Protocol. The Protocol is the standard method for project-level CO analysis by Caltrans. The steps of analysis listed below are available in Figure 1 (Requirements for New Projects) of the CO Protocol (UCD 1997). In addition, a copy of the CO Protocol's Figure 1, highlighted to illustrate the Project's analysis, is provided in Appendix C. As shown below, the project would not result in a CO hot-spot; therefore, project-generated impacts to CO, a Clean Air Act criteria pollutant, would be minimal.

Protocol Question 1: 3.1.1. Is this project exempt from **all** emissions analyses? (see Table 1)

Project Answer 1: No.

Protocol Question 2: 3.1.2. Is project exempt from regional emissions analyses? (see Table 2)

Project Answer 2: No.

Protocol Question 3: 3.1.3. Is project defined as regionally significant?

40 CFR 93.101 defines 'regionally significant' as:

> 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 would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.

Project Answer 3: Yes. The project is not identified in the 2013 FTIP as a regionally significant project. The project would not involve access to and from an area outside the region, to major activity centers in the region, major planned development, or transportation terminals. The project alignment is not a principal arterial highway or fixed guideway transit facility.

The project as proposed would be classified as a "collector" roadway under the City of Fresno's current General Plan (2025 General Plan), as well as the draft Fresno General Plan Update. However, the project would reintroduce a 2-lane collector roadway in the Primary Center of the City.

Protocol Question 4: 3.1.4. Is project in a federal attainment area? (classified as attainment of all transportation-related criteria pollutants, which are ozone, CO, NO_2, PM_{10} and $PM_{2.5}$)

Project Answer 4: No. The Project area is designated nonattainment of the federal 8-hour ozone standard and the federal $PM_{2.5}$ standard. The Project area is designated attainment for all other transportation-related criteria pollutants.

Protocol Instruction: Continue on to next page Box 3.1.5.

Protocol Question 5: 3.1.5. Is there a currently conforming RTP and TIP?

Project Answer 5: Yes. FHWA determined the 2013 Federal Statewide Transportation Improvement Program (2013 FSTIP), including the 2013 FTIPs and related FTIP amendments, to conform to the SIP on December 14, 2012. The Project is included in the 2013 FTIP projects, Amendments 1. In addition, the Project was included in the conformity modeling list for Amendment #2 of the 2011 RTP, which as approved by FHWA on December 14, 2012. See Appendix A for conformity documentation.

Protocol Question 6: 3.1.6. Is the project included in the regional emissions analysis supporting the currently conforming RTP and TIP?

Project Answer 6: Yes. The Project is included in the 2011 RTP and 2013 FTIP as project FRE500768 and FRE130069, respectively. See Appendix A.

Protocol Question 7: 3.1.7. Has project design concept and/or scope changed significantly from that in the regional analysis?

Project Answer 7: No.

Protocol Instruction: 3.1.9. Examine local impacts. Proceed to Section 4.

The following questions are from Section 4 of the CO protocol. The steps of analysis listed below are available in Figure 3 (Local CO Analysis) of the CO Protocol. In addition, a copy of the CO Protocol's Figure 3, highlighted to illustrate the project's analysis, is provided in Appendix C.

Protocol Question 8: Is the project in a CO nonattainment area?

Project Answer 8: No.

Protocol Question 9: Was the area redesignated as "attainment" after the 1990 Clean Air Act? (see Section 4.1.2)

Project Answer 9: No.

Protocol Instruction: Proceed to Level 7.

Protocol Question 10: Does the project worsen air quality? (see Section 4.7.1)

Per Section 4.7.1 of the CO Protocol, there are three criteria to use to determine whether a project is likely to worsen air quality for the area substantially affected by the project. Those criteria are provided below:

Protocol Criterion 1: The project significantly increases the percentage of vehicles operating in cold start mode.

Protocol Criterion 2: The project significantly increases traffic volumes. Increases in traffic volumes in excess of 5 percent should be considered potentially significant. Increasing the traffic volume by less than 5 percent may still be potentially significant if there is also a reduction in average speeds.

Protocol Criterion 3: The project worsens traffic flow. For uninterrupted roadway segments, a reduction in average speeds (within a range of 3 to 50 mph) should be regarded as worsening traffic flow. For intersection segments, a reduction in average speed or an increase in average delay should be considered as worsening traffic flow.

Project Answer 10: Yes. According to the CO Protocol, only projects that are likely to worsen air quality necessitate further analysis. The Project answers to the Question 5 criteria are provided below:

Answer Criterion 1: The Project would not increase the percentage of vehicles operating in cold start mode. As shown in the Traffic Impact Analysis and in Table 3 of this document, the Project (identified in the Traffic Impact Analysis as Build Alternatives) would result in reassignment of

existing daily trips through the area above the no build scenario (identified as in the Traffic Impact Analysis No Build Alternative). Although the table appears to show a minor (0.1 percent in 2015 and 1.2 percent in 2035) increase in trips through the project area, there is not a trip increase from Build Scenarios but a reassignment of existing trips through the project area. Alternative 1 and Alternative 2 would not increase the number of trips on the project area roadways compared to Alternative 3.

Answer Criterion 2: The Project would not increase traffic volumes. As shown in the Traffic Impact Analysis and in Table 3 of this document, the Project (identified in the Traffic Impact Analysis as Build Alternatives) would not increase daily trips above the no build scenario (identified as in the Traffic Impact Analysis No Build Alternative). Although the table appears to show a minor (0.1 percent in 2015 and 1.2 percent in 2035) increase in trips through the project area, there is not a trip increase from Build Scenarios but a reassignment of existing trips through the project area. Alternative 1 and Alternative 2 would not increase the number of trips on the project area roadways compared to Alternative 3. Therefore, the Project would not result in a substantial increase the peak-hour trips above the No Build Scenario.

Answer Criterion 3: As identified in Table 5, the Build Alternatives would result in a minor 2-second increase in delay at the Fresno Street/Van Ness Avenue intersection in year 2015, which would result in a change of LOS from C to D. In addition, the Build Alternatives would reduce the LOS at the Tuolumne Street/Fulton Street intersection from B to C in year 2035 (see Table 6). The project would result in an improvement of intersection operation at multiple intersections, including: Tuolumne Street/Van Ness Avenue, Tulare Street/Fulton Street, Ventura Avenue/ H Street (PM Hour) in 2015; Fresno Street/ H Street (AM Hour) Tulare Street /Fulton Street, Inyo Street/ H Street (PM Hour) in 2035. However,

Because further analysis is warranted, a microscalae emissions analysis was prepared for the Build Alternatives. This analysis follows guidelines recommended by the CO Protocol (University of California, Davis 1997) and the SJVAPCD. According to the CO Protocol, intersections with Level of Service (LOS) E or F require detailed analysis. Using the CALINE4 model, potential CO hot spots were analyzed at the following intersections:

- Intersection 9 Fresno Street/Van Ness Avenue, Baseline Plus Project Conditions, PM Peak Hour

- Intersection 16 Ventura Avenue /H Street, Cumulative Plus Project Conditions, PM Peak Hour

There are several inputs to the CALINE4 model. One input is the traffic volumes, which is from the project-specific traffic report. The traffic volumes with the project were used for the buildout scenario as well as emission factors generated using the EMFAC2007 model for the year 2015 and 2035.

As shown in Table 12, the estimated 1-hour and 8-hour average CO concentrations at build-out in combination with background concentrations are below the state and federal standards. No CO hot spots are anticipated because of reassigned traffic emissions by the project in combination with other anticipated development in the area. Therefore, the mobile emissions of CO from the project are not anticipated to contribute substantially to an existing or projected air quality violation of CO.

Table 12: Localized Carbon Monoxide Concentrations

Intersection	Peak Hour	Estimated CO Concentration (ppm)		Significant Impact?
		1 Hour	8 Hour	
9) Fresno Street/Van Ness Avenue, Baseline Plus Project Conditions	PM	3.0	2.1	No
16) Ventura Avenue /H Street, Cumulative Plus Project Conditions	PM	2.8	1.9	No

Notes:
The 1-hour concentration is the CALINE4 output (see Appendix D for model output) plus the 1-hour background concentration of 2.47 ppm (Calculated by dividing the 8-hour measurement from Table 11 by the persistence factor of 0.7).
The 8 hour project increment was calculated by multiplying the 1 hour CALINE4 output by 0.7 (persistence factor), then adding the 8 hour background concentration of 1.73 ppm (from Table 11).
A significant impact would occur if the estimated CO concentration is over the 1-hour state standard of 20 ppm or the 8-hour state/federal standard of 9 ppm.

4.2.2 - Construction-Generated Criteria Pollutants

Thresholds

The San Joaquin Valley Air Pollution Control (SJVAPCD) provides recommended significance thresholds in their Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI). The SJVAPCD's thresholds are provided in Table 13. The SJVAPCD's thresholds are utilized for the majority of CEQA impact analysis, as requested by the CEQA Lead Agency.

Table 13: Significant Emissions Thresholds

Pollutant	Annual Threshold (tons)
Oxides of nitrogen (NO_x)	10
Reactive organic gases (ROG)	10
Particulate matter (PM_{10})	15
Particulate matter ($PM_{2.5}$)	15
Note: Source: SJVAPCD 2002	

Construction Emissions

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of activity, and the prevailing weather conditions. The methodology developed for the purposes of this quantitative air quality analysis was based on information available at the time of analysis; actual equipment and activity intensity at the time of construction may vary from those analyzed in this document. However, it is anticipated that the level of activity analyzed is representative of activities that will occur during construction. The main sources of air pollutants associated with the Project include off-road construction equipment exhaust, worker trips, and fugitive PM_{10} and $PM_{2.5}$ emissions. The annual emissions for project demolition activity were estimated using CalEEMod. The annual emissions for project construction were estimated using the Roadway Construction Emissions Model, version 7, developed by Sacramento Metropolitan Air Quality Management District. The assumed construction phase durations are shown in Table 14 and Table 15.

Table 14: Construction Duration - Fulton Mall

Phase	Duration		
	Weeks	Working Days	Months
Demolition	3 weeks	15 days	0.75 months
Soil Excavation and Export	6 weeks	30 days	1.5 months
Storm Drain Replacement	12 weeks	60 days	3 months
Curb and Gutter	6 weeks	30 days	1.5 months
Asphalt and Rock	6 weeks	30 days	1.5 months
Sidewalk	12 weeks	60 days	3 months

Table 15: Construction Duration - Cross Malls

Phase	Duration		
	Weeks	Working Days	Months
Demolition	2 weeks	10 days	0.5 months
Soil Excavation and Export	3.75 weeks	19 days	0.94 months
Storm Drain Replacement	6 weeks	30 days	1.5 months
Curb and Gutter	3 weeks	15 days	0.75 months
Asphalt and Rock	3 weeks	15 days	0.75 months
Sidewalk	5 weeks	25 days	1.25 months

Based on the roadway widths and lengths to be improved, as discussed in the Project description, and the Project layout, the emissions analysis assumed the following construction activity:

Fulton Street

- Approximately 2,747 feet of length (0.52 mile) would be paved,
- Approximately 5.0 acres would be disturbed during the course of the Fulton Street construction,
- A maximum of 0.1 acre would be disturbed on any one day,
- Project construction would begin in 2014,
- Demolition would result in 6,867 tons of material removed; 18 tons per truck, 382 one-way trips for materials hauling; average 8-miles per one-way trip for a total of 6,112 truck trip miles
- Soils Excavation
  - Option 1 soils excavation would result in 4,477 cubic yards (cyd) of materials; 16 cyd per truck at 8 miles per one-way trip for a total of 4,480 soils hauling truck miles.
  - Option 2 soils excavation would result in 4,070 cyd of materials; 16 cyd per truck at 8 miles per one-way trip for a total of 4,070 soils hauling truck miles.
- Storm Drain replacement would result in 2,440 cyd of onsite materials movement with no export or import,
- Curb and Gutter would result in 286 cyd of soils removal, at 8 cyd per truck and 8 miles per one-way trip for a total of 288 on-road hauling miles,
- Asphalt and Rock

  Rock
  - Option 1 asphalt and rock would result in emplacement of 3,000 cyd (5,264 tons) of rock; 20 tons per truck at 8 miles per one-way trip for 4,208 miles of rock hauling trips.
  - Option 2 asphalt and rock would result in emplacement of 2,727 cyd (4,785 tons) of rock; 20 tons per truck at 8 miles per one-way trip for 3,840 miles of rock hauling trips.

Asphalt

- Option 1 asphalt and rock would result in emplacement of 1,522 cyd (2,979 tons) of asphalt; 22 tons per truck at 8 miles per one-way trip for 2,160 miles of asphalt hauling trips.
- Option 2 asphalt and rock would result in emplacement of 1,384 cyd (2,708 tons) of asphalt; 22 tons per truck at 8 miles per one-way trip for 1,968 miles of asphalt hauling trips.

- Sidewalks
  - Option 1 sidewalks would result in 1,394 cyd of concrete emplacement; 8 cyd per truck at 8 miles per one-way trip for a total of 2,784 concrete hauling truck miles.
  - Option 2 sidewalks would result in 1,549 cyd of concrete emplacement; 8 cyd per truck at 8 miles per one-way trip for a total of 3,104 concrete hauling truck miles.

Cross Malls

- Approximately 1,410 feet of length (0.27 mile) would be paved,
- Approximately 2.6 acres would be disturbed during the course of the Cross Malls street construction,
- A maximum of 0.1 acre would be disturbed on any one day,
- Project construction would begin in 2014,
- Demolition
  - Mariposa Mall demolition would result in 25,335 cubic yards (1,900 tons) of materials removed; 18 tons per truck at 8 miles per one-way trip for a total of 1,696 materials hauling truck miles.
  - Kern and Merced Malls demolition would result in 47,004cubic yards (3,525 tons) of materials removed; 18 tons per truck at 8 miles per one-way trip for a total of 3,136 materials hauling truck miles.
- Soils Excavation
  - Mariposa Mall soils excavation would result in 1,239 cubic yards (cyd) of materials; 16 cyd per truck at 8 miles per one-way trip for a total of 1,232 soils hauling truck miles.
  - Kern and Merced Streets soils excavation would result in 991 cubic yards (cyd) of materials; 16 cyd per truck at 8 miles per one-way trip for a total of 992 soils hauling truck miles.
- Storm Drain replacement would result in 1,253 cyd of onsite materials movement with no export or import,
- Curb and Gutter would result in 141 cyd of soils removal, at 8 cyd per truck and 8 miles per one-way trip for a total of 144 on-road hauling miles,

- Asphalt and Rock

  Rock

  - Mariposa Mall asphalt and rock would result in emplacement of 830 cyd (1,456 tons) of rock; 20 tons per truck at 8 miles per one-way trip for 1,168 miles of rock hauling trips.
  - Kern and Merced Streets asphalt and rock would result in emplacement of 664 cyd (1,166) of rock; 20 tons per truck at 8 miles per one-way trip for 944 miles of rock hauling trips.

  Asphalt

  - Mariposa Mall asphalt and rock would result in emplacement of 421 cyd (824 tons) of asphalt; 22 tons per truck at 8 miles per one-way trip for 592 miles of asphalt hauling trips.
  - Kern and Merced Streets asphalt and rock would result in emplacement of 337 cyd (660 tons) of asphalt; 22 tons per truck at 8 miles per one-way trip for 480 miles of asphalt hauling trips.
- Sidewalks would result in 918 cyd of concrete emplacement; 8 cyd per truck at 8 miles per one-way trip for a total of 1,840 concrete hauling truck miles.

Demolition activity was estimated using CalEEMod. For the purposes of modeling the on-road hauling emission for soils export, rock import, asphalt import, and concrete export, for the non-demolition phases in the Roadway Construction Emissions Model, a summary of hauling miles was prepared. Summaries of hauling miles for Fulton Mall Alternative 1, Fulton Mall Alternative 2, and the Cross Malls construction are provided in Table 16, Table 17, and Table 18, respectively. The CalEEMod and Roadway Construction Emissions Model output is provided in Appendix E.

Table 16: Hauling Miles- Fulton Mall Alternative 1

Phase	Hauling Parameter		
	Round Trip Length (Miles)	Total Round Trips	Total Miles
Soil Excavation and Export	16	280	4,480
Curb and Gutter	16	18	288
Rock	16	263	4,208
Asphalt	16	135	2,160
Sidewalk	16	174	2,784
Total	-	870	13,920

Table 17: Hauling Miles- Fulton Mall Alternative 2

Phase	Hauling Parameter		
	Round Trip Length (Miles)	Total Round Trips	Total Miles
Soil Excavation and Export	16	254	4,070
Curb and Gutter	16	18	288
Rock	16	240	3,840
Asphalt	16	123	1,968
Sidewalk	16	196	3,140
Total	-	832	13,306

Table 18: Hauling Miles - Cross Malls

Phase	Hauling Parameter		
	Round Trip Length (Miles)	Total Round Trips	Total Miles
Soil Excavation and Export - Mariposa	16	77	1,232
Soil Excavation and Export - Kern and Merced	16	62	992
Curb and Gutter	16	9	144
Rock - Mariposa	16	73	1,168
Rock - Kern and Merced	16	59	944
Asphalt - Mariposa	16	37	592
Asphalt - Kern and Merced	16	30	480
Sidewalks	16	155	1,840
Total	-	462	7,392

Results

The Project's construction emissions (equipment exhaust and dust generation) during construction are compared with the SJVAPCD's significance thresholds and are summarized in Table 19. As shown in Table 19, unmitigated emissions during construction do not exceed the daily or annual significance thresholds. However, the following mitigation is added to minimize the project's potential impacts from fugitive dust and equipment exhaust emissions:

Table 19: Annual Construction Emissions (Alternative 1)

Activity	Emissions (tons per day)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Fulton Mall Demolition	0.07	0.57	0.15	0.04
Fulton Mall Soils Excavation, Storm Drain Replacement Curb and Gutter, Rock and Asphalt, Sidewalks	0.60	5.30	0.40	0.30
Subtotal Fulton Mall	*0.67*	*5.87*	*0.55*	*0.34*
Cross Malls Demolition	0.05	0.39	0.10	0.03
Cross Malls Soils Excavation, Storm Drain Replacement Curb and Gutter, Rock and Asphalt, Sidewalks	0.30	2.70	0.20	0.10
Subtotal Cross Mall	*0.35*	*3.09*	*0.30*	*0.13*
Total Project Construction	1.02	8.96	0.85	0.47
SJVAPCD Threshold	10	10	10	15
Exceed Threshold?	No	No	No	No
Source: MBA 2013, Appendix E				

Table 20: Annual Construction Emissions (Alternative 2)

Activity	Emissions (tons per day)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Fulton Mall Demolition	0.07	0.57	0.15	0.04
Fulton Mall Soils Excavation, Storm Drain Replacement Curb and Gutter, Rock and Asphalt, Sidewalks	0.60	5.30	0.40	0.30
Subtotal Fulton Mall	*0.67*	*5.87*	*0.55*	*0.34*
Cross Malls Demolition	0.05	0.39	0.10	0.03
Cross Malls Soils Excavation, Storm Drain Replacement Curb and Gutter, Rock and Asphalt, Sidewalks	0.30	2.70	0.20	0.10
Subtotal Cross Mall	*0.35*	*3.09*	*0.30*	*0.13*
Total Project Construction	1.02	8.96	0.85	0.47
SJVAPCD Threshold	10	10	10	15
Exceed Threshold?	No	No	No	No
Source: MBA 2013, Appendix E				

The Project would not exceed the SJVAPCD's thresholds for ROG, NO_X, PM_{10} or $PM_{2.5}$ during construction. In addition, the Project's construction activities are estimated to last approximately 14 months. Therefore, the project would result in minimal air quality impacts for Clean Air Act criteria pollutants.

Construction Emissions Mitigation

Fugitive Dust

MM AIR-1 During construction, in addition to San Joaquin Valley Air Pollution Control District Regulation VIII requirements for dust control, the project shall also implement the following additional dust control measures:

- Limit traffic speeds on unpaved roads to 15 mph;
- Limit area subject to excavation, grading, and other construction activity at any one time. (Construction area limited to 10 acres per day);
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.
- Install wheel washers for all exciting trucks, or wash off all trucks and equipment leaving the site;

- Install wind breaks at windward sides(s) of construction areas; and
- Suspend excavation and grading activity when winds exceed 20 mph. Regardless of wind speed, an owner/operator must comply with Regulation VIII's 20 percent opacity limitation.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The San Joaquin Valley Air Pollution Control District's phone number shall also be visible to ensure compliance with applicable regulations.

Construction Equipment Exhaust

MM AIR-2 During construction, the project shall also implement the following additional construction equipment exhaust control measures:

- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
- The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NO_X reduction and 45 percent PM_{10} reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.

4.2.3 - Operational Particulate Matter Hot-spot

The SJVAPCD does not have a qualitative or quantitative threshold or methodology of analysis for operational PM_{10} or $PM_{2.5}$ hot-spot analysis. Furthermore, the project is exempted from PM hot-spot analysis under the conformity analysis, as shown in Section 4.1.2.

The purpose of the proposed project is to improve parking and vehicle access to local businesses on Fulton Street in order to maximize sustainable development and economic productivity in conjunction with other downtown redevelopment projects. The proposed project would also be intended to lower

crime and improve safety for people walking between parking areas and businesses located on the Fulton Mall and for people who live in, work in, and visit the project area.

The project does not propose any additional traffic generating land uses. The alternatives are not expected to affect traffic volumes. Since the Build Alternatives propose narrow, two-way vehicular streets, it is anticipated that the reintroduced roadways associated with these alternatives would serve existing traffic by providing access to existing businesses along the pedestrian malls, but would not induce additional travel upon opening (Fehr and Peers, 2013). As shown in Table 1, Table 2, and Table 3, the Build Alternatives would appear to result in slightly more Average Daily Trips than the No Build scenario. Per the Transportation Impact Report:

> … it is anticipated that the reintroduced roadways associated with these alternatives would serve existing traffic by providing access to existing businesses along the pedestrian malls, but would not induce additional travel upon opening.

And

> The Open to Traffic alternatives may cause some shifts in local traffic patterns by opening the existing Fulton Mall and its cross streets to vehicle traffic. However, since these alternatives would create narrow, two-way vehicular streets, these new roadways would primarily carry local trips to access adjacent businesses. Therefore, these changes in traffic patters would be localized to roadways in the project study area.

The apparent increase is not a trip increase from Build Scenarios, but is a result of reassignment of existing trips through the project area. Alternative 1 and Alternative 2 would not increase the number of trips on the project area roadways compared to Alternative 3.

This project is estimated to generate minimal air quality impacts for the Clean Air Act criteria pollutants, as detailed in Sections 4.2.1 and 4.2.2, and has not been linked with any special PM_{10} or $PM_{2.5}$ concerns. Re-entrained road dust was estimated for the project using CalEEMod emissions model for Fresno County for years 2010, 2015 and 2035. The emissions output are provided in Appendix F. The analysis contains the following analysis scenarios:

- 2010 Conditions, with 210 AADT, 165.27 daily VMT, and 60,323.55 annual VMT
- 2015 Conditions, with 210 AADT, 165.27 daily VMT, and 60,323.55 annual VMT
- 2035 Conditions, with 2,310 AADT, 1,817.97 daily VMT, and 663,559.05 annual VMT

Each scenario listed above is relevant to the Alternative 1, Alternative 2 and Alternative 3 scenario occurring within that year, as further illustrated in Table 21.

Table 21: Annual Vehicle Miles Traveled by Alternative

Year	Alternative 1 (Build Alternative)	Alternative 2 (Build Alternative)	Alternative 3 (No Project/No Build Alternative)
2010	60,323.55	60,323.55	60,323.55
2015	60,323.55	60,323.55	60,323.55
2035	663,559.05	663,559.05	663,559.05
Source: Fehr and Peers, 2013.			

The annual VMT from Table 21 were used to calculate the operational re-entrained road dust by alternative. The operational PM10 from re-entrained road dust is for each alternative is provided in Table 22.

Table 22: Operational Re-entrained Road Dust by Alternative

Year	Annual Tons PM10		
	Alternative 1 (Build Alternative)	Alternative 2 (Build Alternative)	Alternative 3 (No Project/No Build Alternative)
2010	0.00	0.00	0.00
2015	0.00	0.00	0.00
2035	0.00	0.00	0.00
Notes: Source: MBA 2013.			

As such, this Project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in PM_{10} or $PM_{2.5}$ impacts of the project from that of the no-build alternative.

4.2.4 - Toxic Air Contaminant Analysis

The three toxic air contaminants/hazardous air pollutant categories applicable to the Project are MSAT, NOA, and DPM. Each subject is addressed below:

Mobile Source Air Toxics

The 2009 Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA documents (2009 Interim MSAT Guidance), published by the FHWA, was utilized to determine the project's potential for MSAT impacts. The FHWA has developed a tiered approach for analyzing MSAT, which are based on three levels of analysis:

1. No analysis for projects with no potential for meaningful MSAT effects;

2. Qualitative analysis for projects with low potential MSAT effects; or

3. Quantitative analysis to differentiate alternatives for projects with higher potential for MSAT effects.

Under the first level, Projects with no potential for meaningful MSAT effects, the types of projects included are:

- Projects qualifying as a categorical exclusion under 23 CFR 771.117(c)
- Projects except under the Clean Air Act conformity rule under 40 CFR 93.126; or
- Other projects with no meaningful impacts on traffic volumes or vehicle mix.

Analysis shows that this project would have no meaningful impacts on traffic volumes or vehicle mix for the project area, as detailed below. However, the project would reassign existing trips in the project area. The project does not propose any additional traffic generating land uses. Since the Build Alternatives propose narrow, two-way vehicular streets, it is anticipated that the reintroduced roadways associated with these alternatives would serve existing traffic by providing access to existing businesses along the pedestrian malls, but would not induce additional travel upon opening (Fehr and Peers, 2013). As shown in Table 1, Table 2, and Table 3, the Build Alternatives would appear to result in slightly more Average Daily Trips than the No Build scenario. Per the Transportation Impact Report:

> … it is anticipated that the reintroduced roadways associated with these alternatives would serve existing traffic by providing access to existing businesses along the pedestrian malls, but would not induce additional travel upon opening.

And

> The Open to Traffic alternatives may cause some shifts in local traffic patterns by opening the existing Fulton Mall and its cross streets to vehicle traffic. However, since these alternatives would create narrow, two-way vehicular streets, these new roadways would primarily carry local trips to access adjacent businesses. Therefore, these changes in traffic patters would be localized to roadways in the project study area.

The apparent increase is not a trip increase from Build Scenarios, but is a result of reassignment of existing trips through the project area. All trips would be existing in the project area under the Build and No Build Alternatives. Under the Build Alternatives, existing trips within the project area would be rerouted from existing travel paths through the project segments. Therefore, the apparent increase

on roadway segments identified in Table 1, Table 2, and Table 3 result from a decrease of trips on other project area roadways due to the reassignment of existing trips.

The Build Alternatives would not increase the number of trips on the project area roadways compared to No Build Alternative. However, the Build Alternatives would reassign existing trips to a new location, the Fulton Mall. As shown in Table 1 and Table 2, the build alternatives would result in 210 AADT and 2,310 AADT on the Fulton segment under the 2015 and 2035 scenarios, respectively. Under the No Build Alternative, the Fulton Mall would remain a pedestrian mall, and existing trips would remain in the project area. The relocation of existing trips may have a low potential for MSAT emissions.

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at: www.fhwa.dot.go/environment/air_quality/air_toxics/research_and_analysis/methodology/methodology00.cfm.

The 2009 Interim MSAT Guidance provides examples of qualitative MSAT analyses for different types of projects. Each project is different, and some projects may contain elements covered in more than one of the examples below. Analysts can use the example language as a starting point, but should tailor it to reflect the unique circumstances of the project being considered. The types of example projects include minor widening projects; new interchanges, replacing a signalized intersection on a surface street; or projects where design year traffic is projected to be less than 140,000 to 150,000 annual average daily traffic (AADT). The Build Alternatives are estimated to facilitate 210 existing AADT in 2015, and 2,310 AADT in 2035 conditions.

For each alternative in this report the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for each of the Build Alternatives is the same as for the No Build Alternative, however, the Build Alternatives increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. Refer to Table 21. This relocation of VMT would lead to higher MSAT emissions for the Build Alternatives along the project alignment, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOVES2010b model, emissions of all of the priority MSAT decrease as speed increases. Because the estimated VMT under each of the Alternatives are the same, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, 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 annual MSAT emissions by over 80 percent between 2010 and 2050. Local conditions may differ from these national projections

in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The reintroduced travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby residences; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain Build Alternatives than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built at Fulton Mall, under the Build Alternatives. However, the magnitude and the duration of these potential increases compared to the No-Build alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a roadway is reintroduced, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion in the project area (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Furthermore, analysis shows this project would generate minimal air quality impacts for the Clean Air Act criteria pollutants, as detailed in Sections 4.2.1 and 4.2.2, and has not been linked with any special MSAT concerns.

Moreover, EPA regulations for the vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOBILE6.2 model forecasts a combined reduction of 72 percent in the total annual emission rate for the priority MSAT from 1999 to 2050 while vehicle miles of travel are projected to increase by 145 percent. This will both reduce the background levels of MSAT as well as the possibility of even minor MSAT emissions from this project.

Naturally Occurring Asbestos

During construction in areas that contain NOA-containing rock formations, asbestos can be released into the air and pose a health hazard. The Department of Conservation, Division of Mines and Geology (DMG) has a published guide for generally identifying areas that are likely to contain NOA (DMG 2000). A review of DMG's map showing areas more likely to have rock formations containing NOA indicates that the Project site is not in an area that is likely to contain NOA. In addition, the DMG map indicates that there are no areas within City of Fresno are likely to contain NOA. Therefore, disturbance of NOA is not a concern for the Project.

Diesel Particulate Matter

Construction activities would also involve the use of diesel-powered construction equipment, which emit DPM. Risk assessments for residential areas exposed to TACs are generally based on a 70-year period of exposure. Construction emissions would occur in 2014 and 2015, and construction is anticipated to be completed within 12 months. Since the use of construction equipment would be temporary and would not be close to the 70-year timeframe, exposure of sensitive receptors to TACs would not be substantial. Emissions of DPM would not be substantial enough to be considered a health risk.

4.2.5 - Air Quality Attainment Plan Conformity

The SJVAPCD specifies that a project is conforming to the applicable attainment or maintenance plan if it:

1. Complies with all applicable SJVAPCD rules and regulations,
2. Complies with all applicable control measures from the applicable plans, and
3. Is consistent with the growth forecast in the applicable plans.

Compliance with adopted SJVAPCD rules and regulations is a requirement under the law. The Project will implement and comply with all applicable SJVAPCD rules and regulations. In addition, the project must comply with all applicable control measures from the applicable SJVAPCD attainment plans. Therefore, the Project complies with the second criterion.

Finally, the Project is consistent with the growth forecast in the Plan. The Fulton Mall has been designated as a collector street by the City of Fresno, which has planned the roadway to be built to two-lanes. In addition, the project does not propose any additional traffic generating land uses. The alternatives are not expected to affect traffic volumes. Since the Build Alternatives propose narrow, two-way vehicular streets, it is anticipated that the reintroduced roadways associated with these alternatives would serve existing traffic by providing access to existing businesses along the pedestrian malls, but would not induce additional travel upon opening (Fehr and Peers, 2013).

The proposed improvements (i.e., Alternatives 1 and 2) would implement that plan, and accommodate projected buildout traffic conditions. Without implementation of the build alternatives (i.e., Alternative 3 - No Project/No Action), the buildout traffic conditions would result in congestion and a reduced LOS on the project area roadways.

4.2.6 - Greenhouse Gases and Climate Change

Greenhouse gas emissions would occur during project construction, and operation. The following greenhouse gas significance thresholds are contained in Appendix G of the CEQA Guidelines. A significant impact would occur if the Project would:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

An individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of greenhouse gases. In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable." See CEQA Guidelines sections 15064(h)(1) and 15130. To make this determination the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

The AB 32 Scoping Plan contains the main strategies California will use to reduce greenhouse gases. As part of its supporting documentation for the Draft Scoping Plan, ARB released the greenhouse gas inventory for California (Forecast last updated: 28 October 2010). The forecast is an estimate of the emissions expected to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the greenhouse gas inventory for 2006, 2007, and 2008.

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing greenhouse gas emission reduction and climate change. Recognizing that 98 percent of California's greenhouse gas emissions are from the burning of fossil fuels and 40 percent of all human made greenhouse gas emissions are from transportation, Caltrans has created and is implementing the Climate Action Program at Caltrans that was published in December 2006 (see Climate Action Program at Caltrans (December 2006).

Generate Greenhouse Gas Emissions

Greenhouse gas emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction greenhouse gas emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

Construction

The Project would emit greenhouse gases from upstream emission sources and direct sources (combustion of fuels from worker vehicles and construction equipment). An upstream emission source (also known as life cycle emissions) refers to emissions that were generated during the manufacture of products to be used for construction of the Project. Upstream emission sources for the Project include but are not limited to the following: emissions from the manufacture of steel and/or emissions from the transportation of construction materials in other countries. The upstream emissions were not estimated because they are not within the control of the Project and to do so would be speculative at this time. Additionally, the California Air Pollution Control Officers Association (CAPCOA) White Paper on CEQA & Climate Change supports this conclusion by stating, "The full life-cycle of GHG [greenhouse gas] emissions from construction activities is not accounted for … and the information needed to characterize [life-cycle emissions] would be speculative at the CEQA analysis level" (CAPCOA 2008). Therefore, pursuant to CEQA Guidelines Section 15144 and 15145, upstream/life cycle, emissions are speculative and no further discussion is necessary.

The emissions of CO_2 from Project construction equipment and worker vehicles were calculated using the Road Construction Emissions Model, Version 7, and the CalEEMod emissions model. The Project would result in approximately 910.62 metric tons of CO_2 ($MTCO_2e$) in 2014 for Alternative 1, and 909.53 $MTCO_2e$ in 2014 for Alternative 2. The Project would also emit methane and nitrous oxide from construction equipment; however, emissions of methane and nitrous oxide are negligible compared to CO_2 emissions.

Table 23: Greenhouse Gas from Construction

Construction Phase	Alternative 1		Alternative 2	
	Metric Tons CO_2e	English Tons	Metric Tons CO_2e	English Tons
Fulton Mall Demolition	51.20	-	51.20	-
Fulton Mall Soils Excavation, Storm Drain Replacement Curb and Gutter, Rock and Asphalt, Sidewalks	549.13	605.3	548.04	604.1
Subtotal Fulton Mall	600.33	-	599.24	-
Cross Malls Demolition	34.14	-	34.14	-
Cross Malls Soils Excavation, Storm Drain Replacement Curb and Gutter, Rock and Asphalt, Sidewalks	276.15	304.4	276.15	304.4
Subtotal Cross Mall	310.29	-	310.29	-
Total Construction Emissions	910.62	-	909.53	-
Source: MBA 2013, Appendix E				

Construction emissions would be short term in nature and would occur before the year 2020. AB 32 requires that annual emissions in the State of California be reduced to 1990 levels by the year 2020. Although some greenhouse gases can remain in the atmosphere for long periods, AB 32 does not regulate concentrations.

Operation

Greenhouse gas emissions were estimated using the web-based data access EMFAC2011, the AADT contained in for Roadway Segment 4 (Fresno Street; Tuolumne Street to Inyo Street) from Table 1 and Table 2, and a trip length of 0.787 mile. Because the AADT in Table 1 and Table 2 are for the volume for the Fulton Street roadway segment, and because the cross-malls do not connect with other collectors, and because the AADT for the cross malls are unknown, the analysis is conservative by applying the AADT to the entire Project length. Therefore, multiplying the AADT by the project trip length of 1.5 miles produces the daily vehicle miles traveled (VMT) for the Project segment.

The project does not propose any additional traffic generating land uses. The alternatives are not expected to affect traffic volumes. Since the Build Alternatives propose narrow, two-way vehicular streets, it is anticipated that the reintroduced roadways associated with these alternatives would serve existing traffic by providing access to existing businesses along the pedestrian malls, but would not induce additional travel upon opening (Fehr and Peers, 2013). As shown in Table 1 and Table 2, the

Build Alternatives would appear to result in slightly more Average Daily Trips than the No Build scenario. Per the Transportation Impact Report:

> … it is anticipated that the reintroduced roadways associated with these alternatives would serve existing traffic by providing access to existing businesses along the pedestrian malls, but would not induce additional travel upon opening.

And

> The Open to Traffic alternatives may cause some shifts in local traffic patterns by opening the existing Fulton Mall and its cross streets to vehicle traffic. However, since these alternatives would create narrow, two-way vehicular streets, these new roadways would primarily carry local trips to access adjacent businesses. Therefore, these changes in traffic patters would be localized to roadways in the project study area.

Therefore, the AADT of Roadway Segment 4 (Fresno Street; Tuolumne Street to Inyo Street) are not new trips, but a reassignment of existing trips from the project area. Alternative 1 and Alternative 2 would not increase the number of trips on the project area roadways compared to Alternative 3. Therefore, under Alternative 3 (No Build) the same number of AADT would be occurring in the project area, just not physically located on Fulton Mall.

The EMFAC2011 emission factors for Fresno County for years 2010, 2015 and 2035 are provided in Appendix G. The analysis contains the following analysis scenarios:

- 2010 Conditions, with 210 AADT, 165.27 daily VMT, and 60,323.55 annual VMT
- 2015 Conditions, with 210 AADT, 165.27 daily VMT, and 60,323.55 annual VMT
- 2035 Conditions, with 2,310 AADT, 1,817.97 daily VMT, and 663,559.05 annual VMT

Each scenario listed above is relevant to the Alternative 1, Alternative 2 and Alternative 3 scenario occurring within that year, as further illustrated in Table 24.

Table 24: Annual Vehicle Miles Traveled by Alternative

Year	Alternative 1 (Build Alternative)	Alternative 2 (Build Alternative)	Alternative 3 (No Project/No Build Alternative)
2010	60,323.55	60,323.55	60,323.55
2015	60,323.55	60,323.55	60,323.55
2035	663,559.05	663,559.05	663,559.05
Source: Fehr and Peers, 2013.			

The tons per mile emission factors for CO_2 from EMFAC2011 were used to calculate the $MTCO_2$ for two emissions scenarios. The first scenario is 'Without Regulation', and does not include the calculated emission reductions attributable to implementation of State regulation. The second scenario is with State regulation; specifically, Pavley I and the Low Carbon Fuel Standard. The emission factors in EMFAC2011 are provided by vehicle class. The emission factors by vehicle class and VMT distribution by vehicle type were used to determine a weighted average emission factor. The weighted average emission factors for years 2010, 2015, and 2035 for the two scenarios are provided in Table 25.

Table 25: CO_2 Emission Factors for Fresno County

Year	Average Tons Per Mile	
	Without Regulation	With Regulation (Pavley I and LCFS)
2010	0.000609986	0.000608045
2015	0.000625816	0.000569272
2035	0.000637624	0.000472034

Notes:
LCFS = Low Carbon Fuel Standard
Source: MBA 2013.

The emission factors from Table 25 and the annual VMT from Table 24 were used to calculate the operational $MTCO_2e$ by alternative. The Without Regulation scenario operational $MTCO_2e$ for each alternative is provided in Table 26. . The With Regulation scenario operational $MTCO_2e$ for each alternative is provided in Table 27.

Table 26: Operational CO_2 by Alternative - Without Regulation

Year	Annual Tons CO_2 ($MTCO_2$)		
	Alternative 1 (Build Alternative)	Alternative 2 (Build Alternative)	Alternative 3 (No Project/No Build Alternative)
2010	36.80	36.80	36.80
2015	37.75	37.75	37.75
2035	423.10	423.10	423.10

Notes:
Source: MBA 2013.

Table 27: Operational CO_2 by Alternative - With Regulation

Year	Annual Tons CO_2 ($MTCO_2$)		
	Alternative 1 (Build Alternative)	Alternative 2 (Build Alternative)	Alternative 3 (No Project/No Build Alternative)
2010	36.68	36.68	36.68
2015	34.34	34.34	34.34
2035	313.22	313.22	313.22
Notes: Source: MBA 2013.			

Although emissions estimates are the same for all alternatives, the Project is expected to improve the LOS intersections along the Project area. The Project would create additional travel pathways through the project area, and provide more direct routes through the project area, thereby improving mobility and potentially reducing regional VMT. Improvement in traffic flow would reduce criteria pollutants and greenhouse gas emissions because emissions on a grams-per-mile basis decrease while the speed increases, with a peak efficiency at about 45 to 50 miles per hour. Therefore, emissions of greenhouse gases would be lower with the build alternatives (Alternatives 1 and 2) and higher with the No Project/No Action alternative (Alternative 3).

One of the main strategies in Caltrans's Climate Action Program to reduce greenhouse gas emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0-25 miles per hour) and speeds over 55 mph; the most severe emissions occur from 0-25 miles per hour. To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors greenhouse gas emissions, particularly CO_2, may be reduced.

Plan Consistency

Caltrans's overall approach to lowering fuel consumption and carbon dioxide from transportation is twofold: (1) reducing congestion and improving efficiency of transportation systems through smart land use, operational improvements, and Intelligent Transportation Systems and (2) institutionalizing energy efficiency and greenhouse gas emission reduction measures and technology into planning, project development, operations, and maintenance of transportation facilities, fleets, buildings, and equipment.

As shown above, the Project would likely reduce the future-year greenhouse gas emissions generated by trips through the Project area. Therefore, the Project would also lower fuel consumption associated with travel in the area. In addition, the Project would improve safety in the Project area, install curbs, gutters and sidewalks, as well as handicap accessible curb ramps throughout the Project limits.

SECTION 5: REFERENCES

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Appendix A:
2011 RTP and 2013 FTIP Documentation

Appendix B:
IAC Memo and FHWA Concurrence

Appendix C:
CO Protocol Flow Charts

Appendix D:
CO Hotspot Analysis

Appendix E:
Roadway Construction Emissions Model Output

Appendix F:
CalEEMod Output

Appendix G:
EMFAC2011 Output