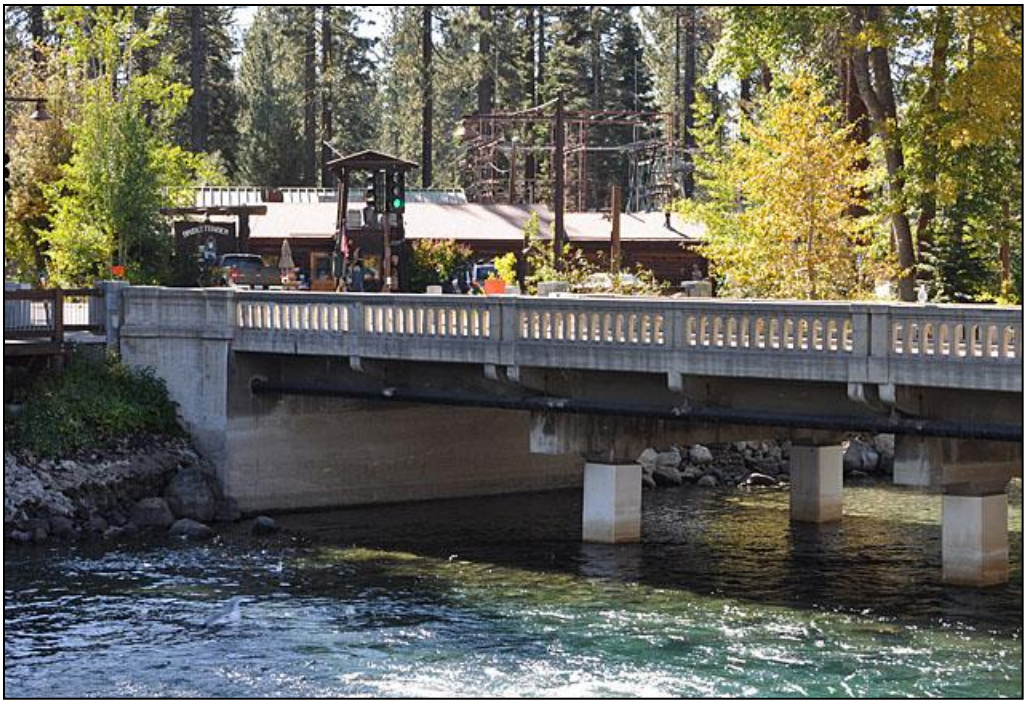
Appendix C

Air Quality Technical Report



Air Quality Impact Analysis
State Route 89/Fanny Bridge Community Revitalization Project

Tahoe City, California

District 3-Marysville-State Route 89-Bridge #19-0033

California Department of Transportation, District 3

April 2014

Caltrans

U.S. Department of Transportation
Federal Highway Administration

TAHOE REGIONAL PLANNING AGENCY

Tahoe Transportation DISTRICT

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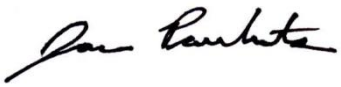
Prepared by:  Date: 4/18/2014
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Summary of Findings

The Tahoe Transportation District, in coordination with Placer County, U.S. Forest Service – Lake Tahoe Basin Management Unit (USFS), Tahoe City Public Utility District, California Department of Transportation (Caltrans), and the Federal Highway Administration (FHWA), is proposing improvements for the Fanny Bridge (Truckee River Bridge # 19-0033) across the Truckee River to improve traffic flow through the State Route (SR) 89/SR 28 intersection in Tahoe City, California. Caltrans bridge inspectors have identified structural deficiencies of the bridge. In addition, the proposed bridge improvements would be aimed at relieving traffic congestion, improving bicycle and pedestrian circulation, improving emergency access, and enhancing economic vitality.

Four new bridge alternatives are being considered for the project, along with two alternatives that replace and widen the existing bridge, and a no-build alternative. The four new bridge alternatives involve either reconstruction or rehabilitation of Fanny Bridge, construction of a new bridge across the Truckee River approximately 1,800 feet to the southwest, and construction on State Route SR 89 north of Granlibakken Road to the northwest of Fairway Drive and on SR 28 from just to the east of the SR 89 and SR 28 intersection to the SR 89 and SR 28 intersection. The proposed project is scheduled to start in 2015.

The proposed project is intended to achieve the following objectives:

- Reduce congestion on SR 89, and improve traffic safety, traffic operations, and emergency access on both highways, including the river crossing (Fanny Bridge) and associated intersections
- Improve connectivity, reliability, travel times, and operations of public transportation, including increased mobility and safety of bicycles and pedestrians
- Improve highway freight mobility and commerce needs
- Improve the structural integrity of Fanny Bridge
- Help improve and enhance the economic vitality of the Tahoe City area

Fanny Bridge has been classified as structurally deficient and received a sufficiency rating of 52.7 out of 100 (Wood Rodgers 2012). The existing structure also does not meet current seismic design standards and is vulnerable to failure in an earthquake.

The purpose of this air quality analysis is to describe the existing regional and local air quality of the project area and vicinity, identify the potential air quality impacts of the proposed project, and demonstrate air quality conformity of the project with state implementation plans (SIPs), as required by the federal Clean Air Act (CAA).

Impacts would be primarily from air pollutant emissions associated with construction of the proposed project and changes in vehicle traffic operation in future years. Construction emissions were estimated to be less than the Placer County Air Pollution Control District's significance thresholds. Operational emissions would include changes in vehicle activity (e.g., vehicle speeds, idling) in future years as a result of the proposed project. If the design concept and scope of a proposed transportation project are consistent with the project description in the Regional Transportation Plan (RTP), then the proposed project would conform to SIP. The Metropolitan Planning Organization (MPO) responsible for preparing RTPs and associated air quality analyses in the project area is the Tahoe Metropolitan Planning Organization (TMPO). The proposed project is included in *Mobility 2035: Lake Tahoe Regional Transportation Plan* (2035 RTP), finalized by TMPO on December 12, 2012 (TMPO 2012). Because the proposed project conforms to the SIP and is consistent with the assumptions in the regional emissions analysis in the RTP, it can be expected that operation of the project would not result in any adverse impacts on regional air quality. Furthermore, the proposed project is also included in Chapter 3, "Sustainable Communities Strategy," of the 2035 RTP (TMPO 2012) as a means to achieve greenhouse gas (GHG) emission targets required under California Senate Bill 375.

An analysis of impacts on local emissions of carbon monoxide (CO), particulate matter with an aerodynamic resistance diameter of 10 micrometers or less (PM_{10}), and fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less ($PM_{2.5}$) is also required to demonstrate conformity in federal nonattainment and/or maintenance areas. The proposed project is classified by the Environmental Protection Agency (EPA) as a Safety Improvement Project, which is exempt from a CO emissions analysis. To meet state requirements, the proposed project was assessed using the procedure outlined in the *Transportation Conformity Guidance for Qualitative Hot-Spot Analysis in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (FHWA 2006a) (PM Guidance). The proposed project would not exceed any of the thresholds or standards used to identify a project of air quality concern. The project would not create a new, or worsen an existing, PM_{10} or $PM_{2.5}$ violation.

In addition to emissions of criteria air pollutants, emissions of toxic air contaminants (TACs) are considered—specifically, a group of TACs known as mobile-source air toxics (MSATs), which are compounds emitted by highway vehicles and non-road equipment. The proposed project would not have a meaningful impact on traffic volumes or vehicle mix. Therefore, according to FHWA guidance, the proposed project is considered a project that would have no potential for meaningful MSAT effects and does not require further analysis.

All standard specifications from Caltrans for construction mitigation would be implemented, as well as Placer County Air Pollution Control District rules and as would Tahoe Regional Planning Agency's "Standard Conditions for Grading Projects" (TRPA 2013).

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Acronyms and Abbreviations

µg/m3	micrograms per cubic meter
AADT	annual average daily traffic
AB	Assembly Bill
ADT	average daily traffic
APCO	Air Pollution Control Officer
ARB	Air Resources Board
ASTM	American Society for Testing and Materials
CAA	Clean Air Act
CAAQS	California ambient air quality standards
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CO Protocol	*Transportation Project-Level Carbon Monoxide Protocol*
CO_2	carbon dioxide
diesel PM	diesel particulate matter
DOC	Department of Conservation
DOT	U.S. Department of Transportation
EPA	Environmental Protection Agency
Fanny Bridge	Truckee River Bridge
FHWA	Federal Highway Administration
FR	*Federal Register*
FTIP	Federal transportation improvement program
GHG	Greenhouse gas
HEI	Health Effects Institute
HEPA	High Efficiency Particulate Air
HFC	hydrofluorocarbon
HFC-134a	s,s,s,2 –tetrafluoroethane
HFC-152a	difluoroethane
HFC-23	fluoroform
ITS	Intelligent Transportation Systems
lb/day	pounds per day
LOS	Level of Service
LTAB	Lake Tahoe Air Basin
mg/m^3	Milligrams per cubic meter

MPO	Metropolitan Planning Organization
MSAT	Mobile source air toxics
NAAQS	National ambient air quality standards
NEPA	National Environmental Policy Act
NESHAP	national emissions standards for hazardous air pollutants
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
PCAPCD	Placer County Air Pollution Control District
PM	particulate matter
PM10	particulate matter with a diameter of 10 micrometers or less
PM2.5	particulate matter with a diameter of 2.5 micrometers or less
ppb	Parts per billion
ppm	Parts per million
proposed project	R 89/Fanny Bridge Community Revitalization Project
ROG	reactive organic gases
ROW	right-of-way
RTP	regional transportation plan
SB	Senate Bill
SIP	state implementation plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	sulfur dioxide
SR	State Route
TAC	toxic air contaminant
TCPUD	Tahoe City Public Utility District
TMPO	Tahoe Metropolitan Planning Organization
Transit Center	Tahoe City Transit Center
TRI	Truckee River Interceptor
TRPA	Tahoe Regional Planning Agency
TSM	transportation system management
TTSA	Tahoe Truckee Sanitation Agency
U.S. 50	U.S. Highway 50
USFS	U.S. Forest Service
VMT	Vehicle miles traveled

Chapter 1. Introduction

1.1. Introduction

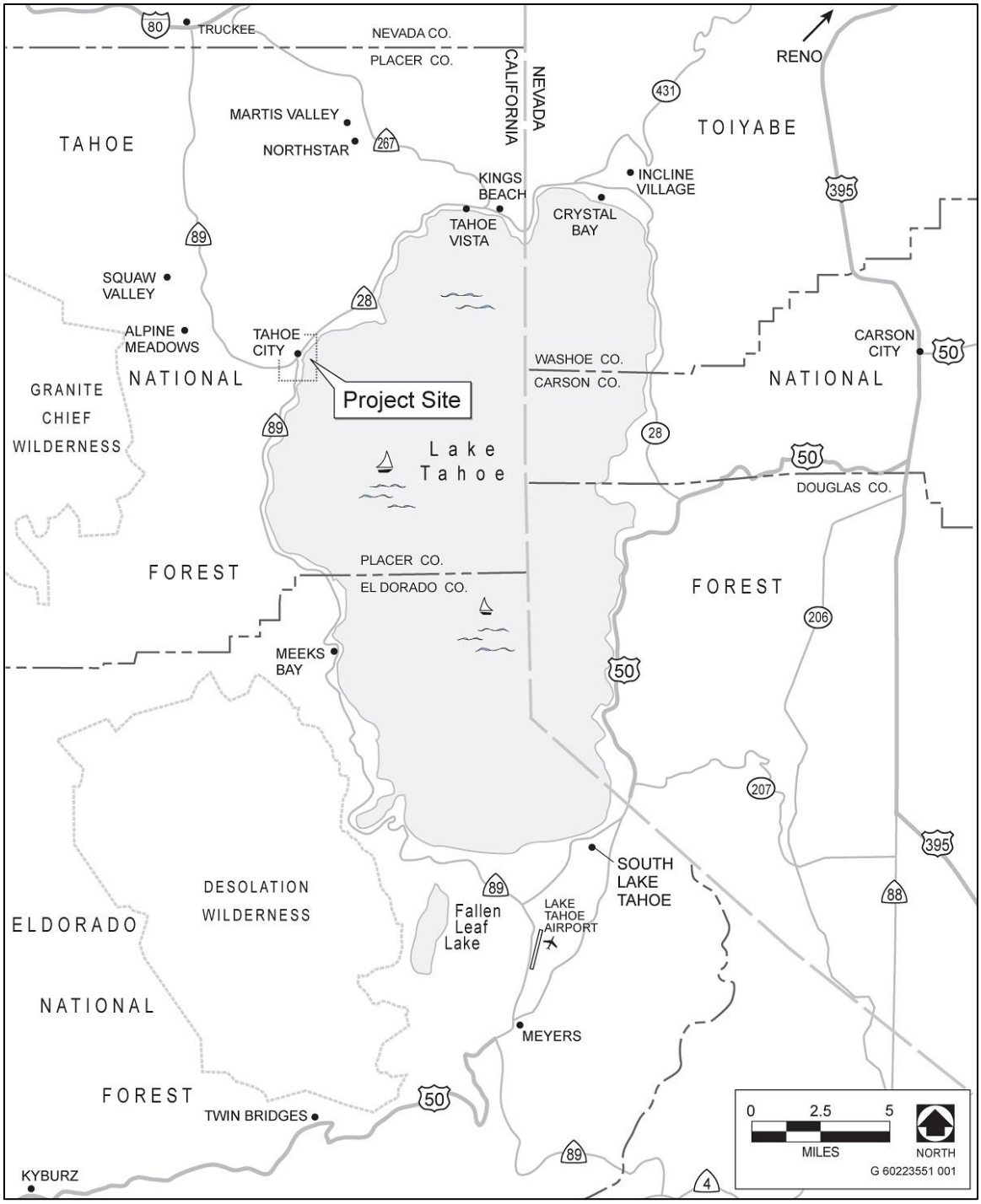
The Tahoe Transportation District is proposing improvements to the Truckee Bridge #19-0033 (locally known as Fanny Bridge). The existing two-lane bridge will be rehabilitated or widened. In addition, four alternatives propose constructing a new four-lane bridge to the east of the California Department of Transportation (Caltrans) Maintenance Facility, and completing construction on State Route (SR) 89 north of Granlibakken Road to northwest of Fairway Drive, and on SR 28 from just east of the SR 89/SR 28 intersection to the SR 89/SR 28 intersection.

The project area is located in Tahoe City, on the north shore of Lake Tahoe in Placer County. Fanny Bridge is currently the only vehicular bridge crossing over the Truckee River that provides access to the West Shore from the north. This bridge has one 12-foot vehicular travel lane in each direction with a 5-foot shoulder on the west side, and a 3-foot shoulder and a 5-foot sidewalk on the east side. Figures 1-1 and 1-2 show the project area boundary and regional location.

Pedestrians, cyclists, and drivers are put at risk by the existing conditions of Fanny Bridge, as well as traffic congestion heading into Tahoe City along SR 89 and at the southwest end of town. Seasonal traffic volumes cause periodic gridlock and delays in both directions; discourage transit ridership; and inconvenience residents, visitors, and businesses. The SR 89/Fanny Bridge Community Revitalization Project (proposed project) would address these deficits.

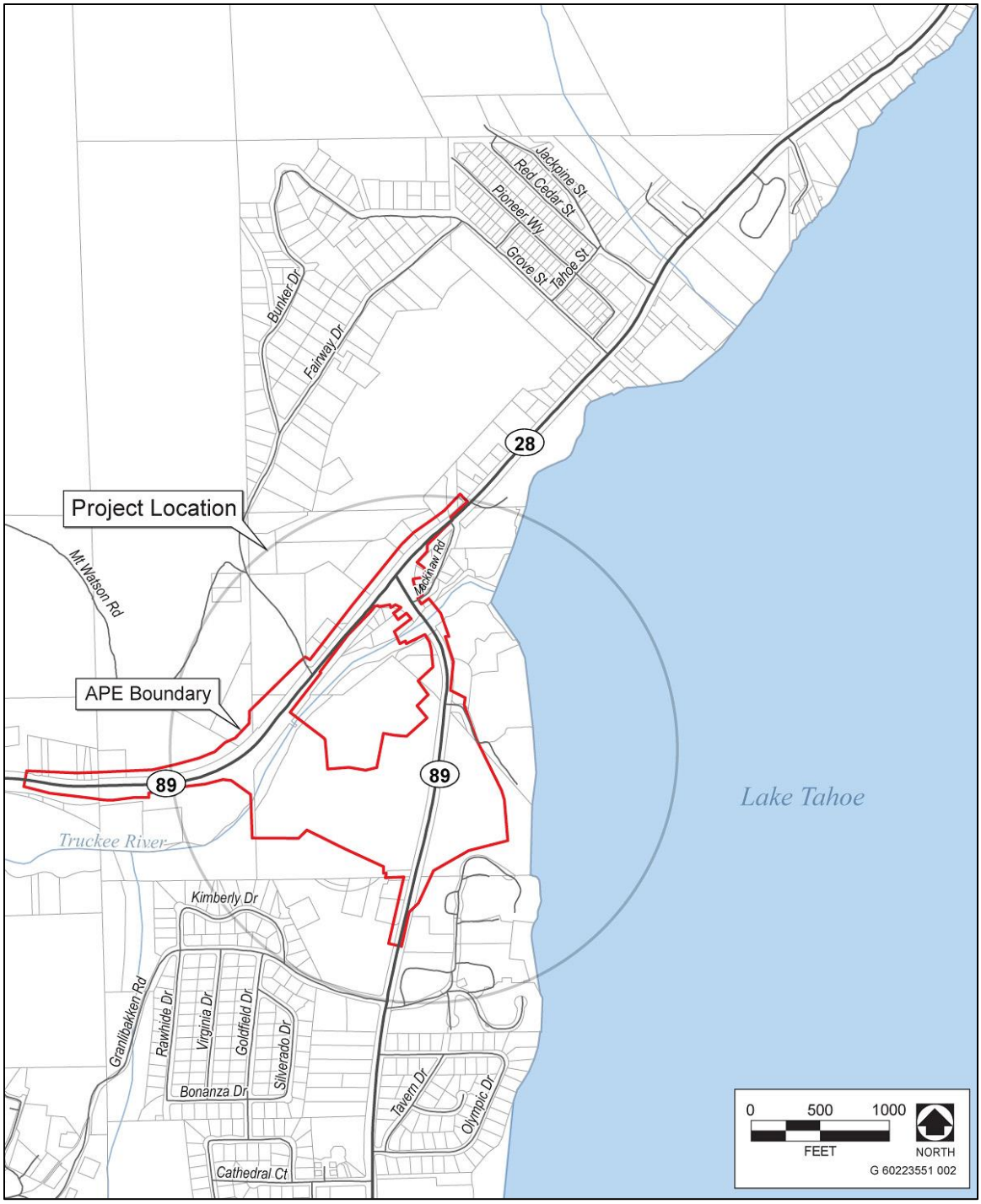
1.2. Project Description

There are seven project alternatives are being considered for implementation, consisting of six build and one no-build alternative (Alternative 5).



Source: Adapted by AECOM in 2014

Figure 1-1: Vicinity Map



Source: Adapted by AECOM in 2014

Figure 1-2: Project Area Map

Four build alternatives (Alternatives 1 through 4) would result in the construction of a new bridge over the Truckee River and realignment of SR 89. Two build alternatives (Alternatives 6 and 6A) would replace and widen Fanny Bridge and maintain the existing SR 89/ SR 28 intersection location. The build alternatives address the project needs of improving seasonal traffic congestion and air quality, providing bike/pedestrian connectivity, improving transit operations, improving bicycle and pedestrian safety, and addressing the structural integrity of Fanny Bridge. By relieving congestion on SR 89, the proposed project would improve vehicle mobility for commerce needs and for resident and visitor experiences. Alternatives 1 through 4 would also provide a second crossing over the Truckee River that would aid emergency evacuation from the west shore of Lake Tahoe.

1.2.1. Project Elements Common to Alternatives 1 through 4

The four new bridge alternatives would include the realignment of SR 89 to a point approximately 1,800 feet southwest of the existing SR 89/SR 28 intersection (known as the "wye"). SR 89 would be realigned from the Caltrans Maintenance Facility, over the Truckee River and east through the U.S. Forest Service (USFS) 64-Acre Tract, to reconnect to existing SR 89 near the existing changeable message sign and sled hill. SR 28 would be extended from the existing wye to the new SR89/SR 28 intersection. A portion of the existing SR 89 would become a local road for approximately 2,000 feet south of SR 28, or would be reconstructed as a cul-de-sac. Alternatives 1 through 4 would include either reconstruction or rehabilitation of Fanny Bridge and the potential removal of the free right-turn lanes at the existing wye.

In addition to the roadway realignment, all of the new bridge alternatives would also include modification to the Caltrans Maintenance Facility; relocation of the Tahoe-Truckee Sanitation Agency (TTSA) sewer line beneath SR 89 near the Caltrans Maintenance Facility; and realignment of portions of the existing Class I bike paths on both sides of the Truckee River. The existing bike path would be rerouted over the new bridge and reconnected with existing bike paths in the 64-Acre Tract.

These common elements are described in more detail below.

1.2.1.1. NEW BRIDGE OVER THE TRUCKEE RIVER

A new bridge over the Truckee River would be located approximately 1,800 feet southwest of the existing Fanny Bridge. The bridge would have three 12-foot through-traffic lanes (one eastbound and two westbound) and 8-foot shoulders on each side. The bridge would include a separated Class I bike path on the west side for the Truckee River bike trail. The bike path would be separated from vehicular traffic with a concrete barrier

and would be 10-feet wide with a 3-foot eastern shoulder and a 4-foot western shoulder. The width of the proposed bridge would range from 80 feet at the eastern abutment to 100 feet at the western abutment. The structure would widen on the western abutment, under Alternatives 1, 2, and 3, to accommodate the approach to the proposed western roundabout. The structure would use precast concrete girders and context sensitive railings would be constructed along each edge of the bridge. Aesthetic treatments would be included in the design and construction of the bridge to be compatible with the surrounding natural and human environments. A minimum 10 feet of clearance for non-motorized watercraft would be below the bridge under normal water level conditions, and 10 feet of clearance over the Tahoe Rim Trail on the eastern shore of the Truckee River.

Slope retaining structures with appropriate drainage would be constructed, as required, along the portions of SR 89 that would be widened.

1.2.1.2. FANNY BRIDGE

Following construction of the new bridge, Fanny Bridge would either be rehabilitated or replaced with a new structure to address structural and seismic deficiencies. A replaced Fanny Bridge would be the same width as the existing bridge and have similar architecture. With the bridge no longer serving as a state highway, a replaced bridge would allow for reduced 11-foot lanes, and 3-foot shoulders. This would allow for a sidewalk to be added to the west (downstream) side of the bridge. Rock slope protection may be required to provide scour protection..

1.2.1.3. FREE RIGHT-TURN LANE MODIFICATIONS

Alternatives 1 through 4 would include three options for the existing free right-turn lanes at the existing SR 89/SR 28 intersection.

Option 1 – Parking Spaces

Under Option 1, the existing free right-turn lanes would be replaced with approximately 55 parking spaces. The landscaped median at the southeast corner of the intersection would be removed and replaced with a parking lot, and the existing free right-turn lanes would be restriped with parking spaces. The free right turns would be closed to through traffic, and all right turns would be directed through the signalized intersection.

Option 2 – Landscaping

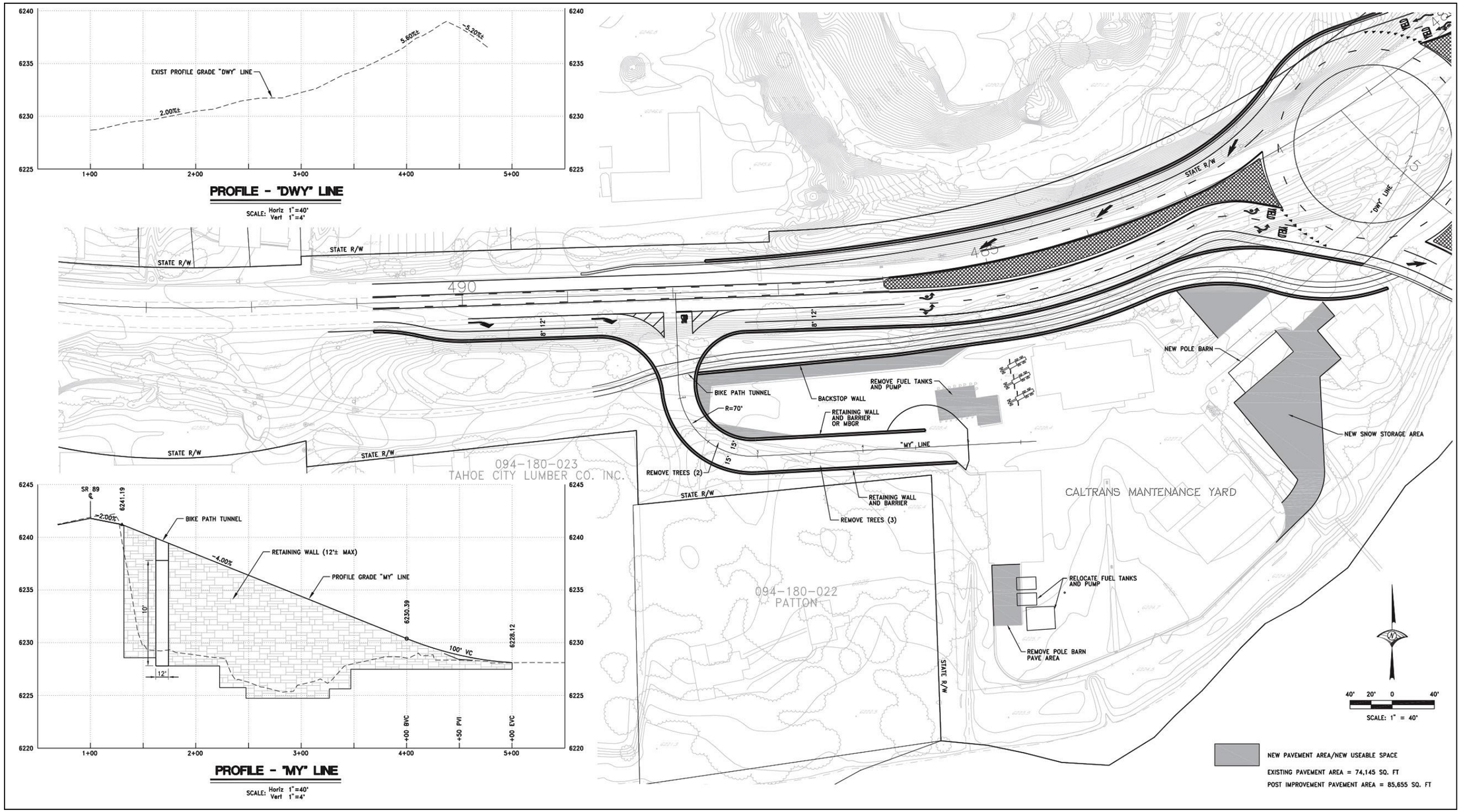
Under Option 2, the free right-turn lanes would be replaced with expanded landscaping. The landscaped medians at the southeast and southwest corners of the intersection would be expanded to include the existing free right turns. All right turns would be directed through the signalized intersection.

Option 3 – Minor Modifications

Under Option 3, minor modifications would be made to the existing free-right-turn lanes. The lanes would be reduced to 13 feet. The existing landscaped medians would be expanded and pedestrian facilities in the area would be enhanced.

1.2.1.4. MODIFICATIONS TO THE CALTRANS MAINTENANCE FACILITY

Under Alternatives 1 through 4, the primary ingress and egress to the Caltrans Maintenance Facility (the Caltrans Tahoe City Maintenance Station) would be relocated from its current location at the northeastern end of the maintenance yard to a modified entrance at the western end (Figure 1-3). The profile of the new western entrance would be raised 10 feet higher than the existing conditions, and a wall would be constructed at the existing entrance to prohibit access. Fuel tanks, pumping facilities, and a pole barn would be demolished and relocated within the maintenance yard. In addition, the entire area between the new driveway and SR 89 would be used as storage for snow or other materials.



Source: Wood Rodgers; Adapted by AECOM in 2014

Figure 1-3: Caltrans Maintenance Facility Configuration

The existing bike path would be realigned and a short tunnel would be constructed beneath the new entrance to accommodate bicycle traffic (i.e., through the embankment of the new entrance).

1.2.1.5. RELOCATION OF THE TAHOE TRUCKEE SANITATION AGENCY SEWER LINE

The Truckee River Interceptor (TRI) pipeline is a trunk sewer line that serves the North Tahoe Public Utility District, the Tahoe City Public Utility District (TCPUD), the Alpine Springs County Water District, the Squaw Valley Public Service District, and the Truckee Sanitary District. It is owned and operated by the TTSA. A portion of the TRI sewer line is located beneath the area of the proposed roundabout or intersection near the Caltrans Maintenance Facility and would require relocation.

Alternatives 1 through 4 would include installation of new manholes and relocation of the TRI sewer line, either beneath or around the western roundabout (or signalized intersection) at the western end of the new SR 89 alignment. Flow monitoring equipment would also be relocated to one of the new manhole locations. This relocation would be completed within existing disturbed areas (e.g., within roadway) and would be sized to maintain the existing flow capacity.

1.2.1.6. BIKE PATH REALIGNMENT

Portions of the existing Class I bike paths in the project area would be realigned as part of implementation of any of the new bridge alternatives, as described below.

1.2.1.7. SOUTH SIDE OF RIVER

Beginning at the "McClintock Building" on SR 89, north of Granlibakken Road, the existing bike path would turn west onto a new alignment for 580 feet. It would then rejoin the existing path and would continue toward the Truckee River. At the river, the path would shift closer to the river and would go underneath the new Truckee River Bridge before rejoining the existing path, near the existing recreational parking lot. The existing bike path, which runs parallel to SR 89 between the McClintock Building and the Tahoe City Transit Center (Transit Center), would remain. The segment of bike path along SR 89, between the Transit Center and Fanny Bridge, would be converted to sidewalk. Bicycles would be directed to use a new Class II bike lane on the existing SR 89, which would be relinquished by Caltrans and would be designated as a local Placer County road with implementation of the proposed project.

1.2.1.8. NORTH SIDE OF RIVER

Beginning east of the Tahoe City Lumber/Ace Hardware entrance on SR 89, the existing Truckee River Class I bike path would be shifted south towards the Caltrans Maintenance

Facility and would go underneath the new Maintenance Facility driveway in a short tunnel through the driveway embankment. At the new Truckee River Bridge, the bike path would go over the new bridge and join the trail on the south side of the Truckee River near the Tahoe Rim Trail. The bike trail would be separated from vehicle traffic over the bridge to improve safety. The existing segment of trail between the new Truckee River Bridge and the existing pedestrian bridge would be demolished.

1.2.1.9. CONSTRUCTION TECHNIQUES

Alternatives 1 through 4 would incorporate the following construction techniques and practices.

In-Water Construction and Groundwater

Construction of any new bridges across the Truckee River would require dewatering for construction activities that would encounter groundwater, including: installation of the bridge footings and utility demolition, replacement, and protection. As necessary during construction, water-tight coffer dams would be installed temporarily to prevent scour and to maintain soil- and water-free footings, to allow for pile driving. After the footings were constructed, the coffer dams would be removed and the remaining portion of the bridge would be constructed from outside the Truckee River. The river bottom would be restored to its original condition and elevation when work within the river is completed.

Water pumped from excavation activities would contain suspended sediments and other solids, as measured by total dissolved solids. The suspended sediments would not be discharged directly into the Truckee River, stream environment zones (as defined by Tahoe Regional Planning Agency [TRPA]), wetlands (as defined by the U.S. Army Corps of Engineers [USACE]), or municipal storm drains. Filtration devices and systems would be provided to remove suspended sediments that were generated during dewatering activities. Pumped water would be discharged in compliance with all applicable laws and permit requirements. If any groundwater to be dewatered or any accumulated stormwater runoff contained elevated levels of regulated constituents, the contaminated water would be pumped and disposed at a permitted waste disposal facility meeting all applicable laws and regulations.

Utility work is expected to take several weeks to complete. Bridge footing work within the Truckee River is anticipated to take approximately 2 to 3 months and would be completed during the summer months.

Construction best management practices (BMPs) would be implemented, in compliance with all permits and Caltrans requirements.

Traffic Control Measures

Traffic control would be required during construction of the project to minimize lane closure requirements, preserve access to businesses, and minimize travel delays. These strategies would be implemented in conformance with Caltrans and Placer County standards as they apply to each stage of construction. Rehabilitation or replacement of Fanny Bridge would require periods of reduced lane widths and lane closures on the existing bridge, and a short period of full bridge closure. Bridge closure would affect traffic and accessibility to and from the West Shore. The new Truckee River Bridge would be constructed prior to the construction on Fanny Bridge to allow for detour of traffic and to maintain a crossing over the Truckee River at all times. Closures could potentially be scheduled in late spring or early fall to reduce impacts on businesses, residents, and visitors during the summer peak season. However, this may not be feasible due to the short construction season within the Tahoe Basin (May 1 through October 15). As with Alternatives 1–4, emergency service providers would be notified about any planned lane closures and reduced lane widths, and a traffic management plan would be prepared to specify how emergency services would be provided during temporary closures. Traffic control measures would include: temporary signage, lane width reductions, reduced speeds, and detours over the new bridge.

1.2.2. Alternatives 1-4: New Bridge Alternatives Descriptions

While the components described above would be the same under each new bridge alternative, the configurations of the roadways and associated features would differ as described below.

1.2.2.1. ALTERNATIVE 1 – NEW ALIGNMENT – EXISTING SR 89 OPEN TO LOCAL TRAFFIC ONLY

Under Alternative 1, SR 89 would be realigned as a new two-lane segment of roadway that would cross through USFS's 64-Acre Tract. The western end of the new segment would begin at a new single-lane roundabout, which would serve as the new SR 89/SR 28 intersection. A new bridge over the Truckee River would be constructed immediately southeast of the roundabout on the new roadway segment. The new alignment would continue east and would reconnect to existing SR 89 at a single-lane roundabout near the existing changeable message sign and sled hill (see Figure 1-4). Retaining walls, 10 to 15 feet in height, would be required around the western roundabout because the roadway would need to be raised approximately 10 feet at the roundabout to provide sufficient clearance for the new bridge over the river. To implement Alternative 1, 4.117 acres would have to be acquired for right-of-way (ROW); however, no businesses or residences

would need to be relocated as a result of these acquisitions, and access would be maintained to all parcels affected by the alternative.

Fanny Bridge would be rehabilitated or replaced to address the existing structural deficiencies and resolve safety and community concerns related to the project objectives. The existing section of SR 89 between Fanny Bridge and the eastern roundabout would be relinquished to Placer County and would become a local street. Traffic calming and aesthetic features would be installed within this section of roadway (e.g., a reduced speed limit, bulb-outs, landscaped areas, raised landscaped median, on-street parking, sidewalks, street lighting, and benches). New parking or landscaping may replace the existing free right turns.

Alternative 1 would include signage to indicate to drivers the direction to Truckee, Tahoe City, and South Lake Tahoe. Signs would be placed near all entry points to the roundabouts. Signs for gas, food, lodging, public transportation, hiking trails, and other tourist amenities would direct travelers toward Tahoe City attractions and businesses. In addition, the entrance into the Transit Center would be realigned to allow for bus and vehicle access approximately 240 feet north of the eastern roundabout.

1.2.2.2. ALTERNATIVE 2 – NEW ALIGNMENT – CLOSE EXISTING SR 89 TO VEHICLE TRAFFIC

Under Alternative 2, the SR 89 realignment and signage would be the same as described under Alternative 1. Fanny Bridge would be rehabilitated or replaced to address the existing structural deficiencies and resolve safety and community concerns related to the project objectives. The existing section of SR 89 between Fanny Bridge and the new eastern roundabout would be relinquished to Placer County and would become a local street (see Figure 1-5). Similar to Alternative 1, under Alternative 2, 4.117 acres would have to be acquired for ROW; however, no businesses or residences would need to be relocated as a result of these acquisitions, and access would be maintained to all parcels affected by the alternative.

A new bridge, which would serve as the primary river crossing, would be constructed over the Truckee River near the east end of the Caltrans Maintenance Facility. Bollards would be placed to the north and south of Fanny Bridge to prohibit vehicular traffic. Access on this portion of the former SR 89 would be provided only for pedestrians, bicyclists, and emergency vehicles. New parking or landscaping may replace the existing free-right turns. Entry into the Transit Center would be allowed from the south only, at a point access approximately 240 feet north of the single-lane roundabout. Traffic calming improvements similar to those described for Alternative 1 would be constructed on the street south of Fanny Bridge.

Source: Data provided by Wood Rodgers and adapted by AECOM in 2014

Figure 1-4: Alternative 1 — New Alignment, Existing SR 89 Open to Local Traffic Only

Source: Data provided by Wood Rodgers and adapted by AECOM in 2014

Figure 1-5: Alternative 2 — New Alignment, Close Existing SR 89 to Vehicle Traffic

1.2.2.3. ALTERNATIVE 3 – NEW ALIGNMENT – EXISTING SR 89 BECOMES A CUL-DE-SAC ON THE SOUTH SIDE OF THE BRIDGE

Under Alternative 3, the SR 89 realignment and signage would be the same as described under Alternatives 1 and 2. Fanny Bridge would be rehabilitated or replaced to improve the existing structural integrity and resolve safety and community concerns related to the project objectives. The existing section of SR 89 between Fanny Bridge and the eastern roundabout would be relinquished to Placer County and would become a local street (see Figure 1-6). To implement Alternative 3, 4.6111 acres would have to be acquired for ROW; however, no businesses or residences would need to be relocated as a result of these acquisitions. Unlike Alternatives 1 and 2, Alternative 3 would affect access to several parcels, including the Tahoe Tavern Properties and the Bank of the West parcel.

A new bridge, which would serve as the primary river crossing, would be constructed over the Truckee River near the east end of the Caltrans Maintenance Facility. Access to Fanny Bridge would be available only from the north, via SR 28. A cul-de-sac would be constructed on the southern side of Fanny Bridge. The existing SR 89 would no longer allow access to Fanny Bridge from the south. It would provide access only to the Transit Center and would offer a secondary Truckee River crossing for emergency vehicles, if necessary. Buses would be allowed to enter the Transit center either from the cul-de-sac or the single-lane roundabout; vehicle entry to the Transit Center would be limited to the eastern roundabout.

New parking or landscaping may replace the existing free-right turns. The SR 89/28 intersection modifications and signage would be the same under Alternative 3 as described for Alternative 1 and 2.

1.2.2.4. ALTERNATIVE 4 – NEW ALIGNMENT, NO ROUNDABOUTS – EXISTING SR 89 BECOMES A CUL-DE-SAC ON THE SOUTH SIDE OF THE BRIDGE

Under Alternative 4, the SR 89 realignment would follow a similar alignment as described above under Alternative 1. However, the two-lane roundabout at the SR 89/SR 28 junction would be replaced with a traditional signalized intersection and a sweeping curve, diverting vehicles onto realigned SR 89, would replace the eastern roundabout (see Figure 1-7). To implement Alternative 4, 4.3756 acres would have to be acquired for ROW; however, no businesses or residences would need to be relocated as a result of these acquisitions. As under Alternative 3, access to several parcels from the south would be affected. Although the changes in access would reduce traffic congestion adjacent to these parcels, access to and from the south would be much longer and less direct.

A new bridge, which would serve as the primary river crossing, would be constructed over the Truckee River near the east end of the Caltrans Maintenance Facility. Fanny Bridge would be rehabilitated or replaced to improve the existing structural integrity and resolve safety and community concerns related to the project objectives. Fanny Bridge and the existing section of SR 89 south of Fanny Bridge would undergo the same rehabilitation as described under Alternative 3.

The SR 89/SR 28 intersection modifications and signage would be the same under Alternative 4 as described under Alternatives 1, 2, and 3. Buses would be allowed to enter the Transit Center, either from the cul-de-sac or the single-lane roundabout; car entry to the Transit Center would be limited to the new entrance off of the realigned segment.

1.2.3. Alternative 5: No-Build Alternative

Alternative 5 is the No-Build Alternative. Under this alternative, no improvements would be made to SR 89, the SR 89/SR 28 intersection, or Fanny Bridge. Any actions required to address the bridge's structural deficiencies would not be completed by the Tahoe Transportation District. Another agency (such as Caltrans or Placer County) could pursue a separate bridge rehabilitation or replacement project, or gradual upgrades may be implemented through routine maintenance by Caltrans. Alternatively, Caltrans could declare a more stringent vehicle weight restriction. At this time, no specific improvements to the bridge are planned by Caltrans or another agency. Because no roadway improvements to improve traffic circulation or safety would be made under Alternative 5, no land acquisitions for ROW would occur under this alternative.

1.2.4. Alternatives 6 and 6A: Replace and Widen Existing Bridge

Under Alternatives 6 and 6A, the existing Fanny Bridge structure would be replaced with a wider structure and changes to the profile may be required. These alternatives would not include the project components described in Section 1.1.1, "Project Elements Common to Alternatives 1 through 4." Although construction of Alternative 6 or Alternative 6A would not affect the existing bicycle paths or other facilities in the 64-Acre Tract, access to the 64-Acre Tract on either side of SR 89 could be blocked temporarily during construction. If Fanny Bridge was closed during construction, as would be likely to occur at times, access to the 64-Acre Tract by vehicle would not be possible from the north. Access to bicycle paths would still be possible by using the existing pedestrian/bicycle bridge.

Source: Data provided by Wood Rodgers and adapted by AECOM in 2014

Figure 1-6: Alternative 3 — New Alignment, Existing SR 89 Becomes a Cul-de-sac on the South Side of the Bridge

"WYE" INTERSECTION

NEW SR 89/28 INTERSECTION

TRANSIT CENTER ENTRANCE

Source: Data provided by Wood Rodgers and adapted by AECOM in 2014

Figure 1-7: Alternative 4 — New Alignment, No Roundabouts, Existing SR 89 Becomes a Cul-de-sac on the South Side of the Bridge

The following provides specifics related to Alternatives 6 and 6A.

1.2.4.1. ALTERNATIVE 6: REPLACE AND WIDEN EXISTING BRIDGE, MODIFIED LANE GEOMETRICS AT EXISTING WYE INTERSECTION

Alternative 6 would replace the existing Fanny Bridge with a wider structure having three northbound and two southbound travel lanes. The widened portion of the bridge would be constructed downstream from the existing structure, to comply with U.S Bureau of Reclamation distance restrictions related to the dam. Therefore, the new bridge would be 60 feet wider, and the centerline would be 28 feet downstream, as compared to the existing structure. The new Fanny Bridge would have 12-foot travel lanes, 8-foot shoulders, and 10-foot sidewalks on both sides. Under this alternative, the wye would remain in its existing location and configuration; however, the free right-turn lanes at the wye would be removed and replaced with right-turn lanes that would direct vehicles through the signalized intersection (Figure 1-8).

To implement Alternative 6, a total of 0.4452 acre of ROW would be acquired; however, three of these acquisitions could require full take of property. Should full take be needed for the acquisitions, the total ROW acquired would be 1.879 acres. In addition, an existing structure on the Liberty Power parcel would have to be relocated within that parcel. Access would be maintained to all parcels affected by this alternative.

1.2.4.2. ALTERNATIVE 6A – REPLACE AND WIDEN EXISTING BRIDGE, INSTALL ROUNDABOUT AT EXISTING WYE INTERSECTION

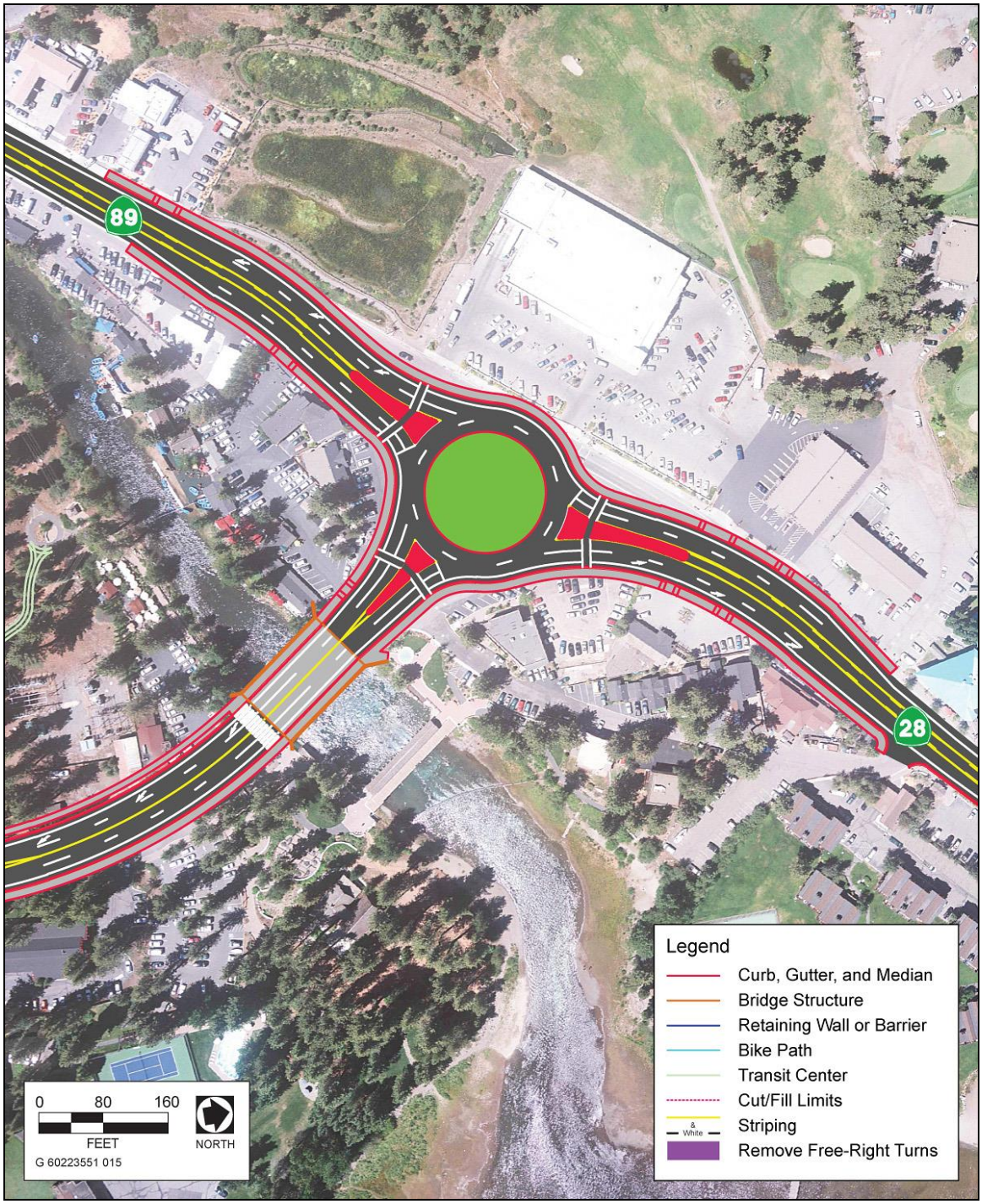
Under Alternative 6A, Fanny Bridge would be replaced at its current location with a new, wider four-lane structure built to current Caltrans design and safety standards. Similar to Alternative 6, the additional 49 feet in width would be downstream from the existing structure. The centerline of the new bridge would be 22 feet downstream from the centerline of the existing bridge.

The new Fanny Bridge would have 12-foot travel lanes, 8-foot shoulders, and 10-foot sidewalks on both sides. The existing signalized wye intersection would be replaced with a two-lane roundabout (Figure 1-9).

To implement Alternative 6A, a total of 0.3645 acre of ROW would be acquired. Two of these acquisitions could require full take of property. Should full take be needed for the acquisitions, the total ROW acquired would be 1.0037 acres. In addition, as under Alternative 6, an existing structure on the Liberty Power parcel would have to be relocated within that parcel. Access would be maintained to all parcels affected by this alternative.

Source: Data provided by Wood Rodgers and adapted by AECOM in 2014

Figure 1-8: Alternative 6 — Replace and Widen Existing Bridge, Modified Lane Geometrics at Existing Wye Intersection



Source: Data provided by Wood Rodgers and adapted by AECOM in 2014

Figure 1-9: Alternative 6A — Replace and Widen Existing Bridge, Install Roundabout at Existing Wye Intersection

1.3. Sensitive Receptors

Children, older adults, and persons with preexisting respiratory or cardiovascular illnesses are especially sensitive to emissions of air pollutants and should be given special consideration when the air quality impacts of projects are evaluated. Therefore, at-risk land uses sensitive to poor air quality include residences, schools, day care centers, playgrounds, medical facilities, and nursing homes within 500 feet of the project area. Recreational land uses such as parks are also considered moderately sensitive to air pollution. Exercise places a high demand on respiratory functions, which can be impaired by air pollution, even though exposure periods during exercise are generally short.

The project area is located near several sensitive air quality receptors, including residential and recreational areas (Table 1-1).

Table 1-1: Sensitive Receptors and Locations

Receptor Type	Location
Residential	Tahoe Tavern complex—adjacent to and east of SR 89, Patton Property—adjacent to Caltrans Maintenance Facility proposed SR 28/ SR 89 interchange under Alternatives 1–4
Recreational Areas	Tahoe Rim Trail, TCPUD bike trails, boating and other water sports on the Truckee River—throughout the project area
Notes: Caltrans = California Department of Transportation; SR = State Route; TCPUD = Tahoe City Public Utility District Source: Data compiled by AECOM in 2012	

As shown in Table 1-1, multifamily residential units (Tahoe Tavern complex) are located on Tahoe Tavern Road, east of the project area. These units are approximately 200 feet from the site of proposed project construction near the existing Fanny Bridge. In addition, the Patton Property located next to the Caltrans Maintenance Facility property would be adjacent to construction activities for Alternatives 1 through 4, which would include construction of a new alignment for the SR 28/SR 89 interchange. The Truckee River Bike Trail and associated pedestrians, cyclists, and water recreationists using the Truckee River are can be found within the project area and would also be affected by the proposed project.

Chapter 2. Air Pollutants

"Air pollution" is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants may adversely affect the health of humans or animals, reduce visibility, impact water quality, damage property, and reduce the productivity or vigor of vegetation. In the Lake Tahoe region, deposition of nitrogen from criteria air pollutants (e.g., nitrogen dioxide [NO_2]) can affect lake clarity and deposition of particulate matter emissions can contribute to the Lake Tahoe total maximum daily load (defined as maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards).

Six air pollutants have been identified by EPA as being of concern nationwide: CO, ozone, NO_2, sulfur dioxide (SO_2), lead; and particulate matter (PM). PM is subdivided into two classes based on particle size: fine particles and inhalable particles ($PM_{2.5}$ and PM_{10}, respectively). These pollutants, discussed in detail below, are collectively referred to as criteria pollutants. The sources of these pollutants, their effects on human health and the nation's welfare, and their final deposition in the atmosphere vary considerably. Table 2-1 presents the current National ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS) for criteria air pollutants.

In the LTAB, ambient concentrations of CO and ozone are influenced primarily by motor vehicle activity. Emissions of oxides of sulfur are associated mainly with various stationary sources. Emissions of oxides of nitrogen (NO_X) and PM come from both mobile and stationary sources.

The criteria pollutants that are most important to this analysis of air quality impacts are those that can be traced principally to motor vehicles and to earth-moving activities. Of these pollutants, CO, NO_X, and PM_{10} are evaluated on a regional or "meso-scale" basis for compliance with ambient air quality standards. However, CO is often analyzed on a localized or "micro-scale" basis in cases of congested traffic conditions at intersections. In addition, in March 2006, the Federal Highway Administration (FHWA) and EPA released joint guidance for conducting qualitative analyses to evaluate micro-scale impacts of $PM_{2.5}$ and PM_{10} (FHWA 2006a). FHWA and EPA are currently developing methods and modeling procedures for developing quantitative $PM_{2.5}$ and PM_{10} assessments; however, at the date of this report, no quantitative guidance has been issued by either agency.

Table 2-1: National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [a]	National Standards [b]	
		Concentration[c]	Primary[c,d]	Secondary [c,e]
Ozone	1 hour	0.09 ppm (180 µg/m^3)	–	Same as primary standard
	8 hours	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	
Respirable particulate matter (PM_{10})	24 hours	50 µg/m^3	150 µg/m^3	Same as primary standard
	Annual arithmetic mean	20 µg/m^3	–	
Fine particulate matter ($PM_{2.5}$)	24 hours	–	35 µg/m^3	Same as primary standard
	Annual arithmetic mean	12 µg/m^3	12 µg/m^3	15 µg/m^3
Carbon monoxide	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None
	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
	8 hours (Lake Tahoe)	6 ppm (7 mg/m^3)	–	–
Nitrogen dioxide[f]	Annual arithmetic mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as primary standard
	1 hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	None
Sulfur dioxide[g]	Annual Arithmetic Mean	–	0.030 ppm (for certain areas) [g]	–
	24 hours	0.04 ppm (105 µg/m^3)	0.14 ppm (for certain areas) [g]	–
	3 hours	—	–	0.5 ppm (1,300 µg/m^3)
	1 hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	–
Lead[h,i]	30-day average	1.5 µg/m^3	–	–
	Calendar quarter	–	1.5 µg/m^3 (for certain areas)[i]	Same as primary standard
	Rolling 3-month average	–	0.15 µg/m^3	
Visibility-reducing particles [j]	8 hours	See footnote j	No national standards	
Sulfates	24 hours	25 µg/m^3		
Hydrogen sulfide	1 hour	0.03 ppm (42 µg/m^3)		
Vinyl chloride [j]	24 hours	0.01 ppm (26 µg/m^3)		

Notes:
mg/m^3 = milligrams per cubic meter; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ppb = parts per billion; ppm = parts per million; µg/m^3 = micrograms per cubic meter

Table 2-1: National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [a]	National Standards [b]	
		Concentration[c]	Primary[c,d]	Secondary [c,e]

[a] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility-reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standards. Contact EPA for further clarification and current national policies.

[c] Concentration expressed first in the units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and reference pressure of 760 torr; parts per million (ppm) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[e] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[g] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
Note that the 1-hour national standard is in units of ppb. California standards are in units of ppm. To directly compare the 1-hour national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical of 0.075 ppm.

[h] The California Air Resources Board (ARB) has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[i] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.

[j] In 1989, ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and the “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: ARB 2013

In addition to the criteria pollutants, TACs, asbestos, and GHGs are air pollutants of concern.

2.1. Carbon Monoxide

CO is a colorless and odorless gas that, in the urban environment, is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. Relatively high concentrations are typically found near crowded intersections and along heavily used

roadways carrying slow-moving traffic. Even under the severest meteorological and traffic conditions, high concentrations of CO are limited to locations within a relatively short distance (300–600 feet) of heavily traveled roadways. Overall, CO emissions are decreasing as a result of the Federal Motor Vehicle Control Program, which has mandated increasingly lower emission levels for vehicles manufactured since 1973. CO concentrations are typically higher in winter. As a result, California has required the use of oxygenated gasoline in the winter months to reduce CO emissions.

2.2. Ozone

Ozone is the principal component of smog and is formed in the atmosphere through a series of reactions involving reactive organic gases (ROG) and NO_X in the presence of sunlight. ROG and NO_X are called precursors of ozone. NO_X includes various combinations of nitrogen and oxygen, including nitrogen oxide, NO_2, nitrate, and others. Ozone is a principal cause of lung and eye irritation in the urban environment. Substantial ozone concentrations are usually produced only in the summer, when atmospheric inversions are greatest and temperatures are high. ROG and NO_X emissions are both considered critical in ozone formation. Control strategies for ozone have focused on reducing emissions from vehicles, industrial processes using solvents and coatings, and consumer products.

2.3. Nitrogen Dioxide

NO_2 is a product of combustion and is generated by vehicles and stationary sources such as power plants and boilers. NO_2 can cause lung damage. As noted above, NO_2 is part of the NO_X family and is a principal contributor to ozone and smog.

2.4. Sulfur Dioxide

SO_2 is a combustion product, with the primary source being power plants and heavy industries that use coal or oil as fuel. SO_2 is also a product of diesel engine combustion. The health effects of SO_2 include lung disease and breathing problems for asthmatics. SO_2 in the atmosphere contributes to the formation of acid rain. Relatively little use of coal and oil occurs in the LTAB; therefore, SO_2 is of lesser concern in this area than in many other parts of the country.

2.5. Lead

Lead is a stable compound that persists and accumulates in the environment and in animals. Previously, the lead used in gasoline anti-knock additives represented a major

source of lead emissions to the atmosphere. Soon after its inception, EPA began working to reduce lead emissions, issuing the first reduction standards in 1973, which called for a gradual phase-down of lead to 0.1 gram per gallon of gasoline by 1986. The average lead content in gasoline in 1973 was 2 to3 grams per gallon, or about 200,000 tons of lead used in the United States per year. Beginning in 1975, passenger cars and light trucks were manufactured with more elaborate emission-control systems, which included catalytic converters that required lead-free fuel. In 1995, leaded fuel accounted for only 0.6% of total gasoline sales in the United States and less than 2,000 tons of lead per year. Effective January 1, 1996, the CAA banned the sale of the small amount of leaded fuel that was still available in some parts of the country for use in on-road vehicles (EPA 1996). Lead emissions have significantly decreased due to the near elimination of the use of leaded gasoline.

2.6. Particulate Matter

PM is a complex mixture of extremely small particles and liquid droplets. PM is made up of several components: acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. Natural sources of particulates include windblown dust and ocean spray.

The size of PM is directly linked to the potential for causing health problems. EPA is concerned about particles that are 10 micrometers in diameter or smaller because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. Health studies have shown a significant association between exposure to PM and premature death. Other important effects include aggravation of respiratory and cardiovascular disease, lung disease, decreased lung function, asthma attacks, and certain cardiovascular problems such as heart attacks and irregular heartbeat (EPA 2007). Individuals particularly sensitive to fine particle exposure include older adults, people with heart and lung disease, and children. EPA groups PM into two categories, $PM_{2.5}$ and PM_{10}, as described below.

2.6.1. Fine Particulate Matter

Fine particles, such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller (i.e., $PM_{2.5}$). Sources of fine particles include all types of combustion activities (e.g., motor vehicles, power plants, wood burning) and certain industrial processes. $PM_{2.5}$ is the major cause of reduced visibility (haze) in California. Control of $PM_{2.5}$ is achieved primarily through the regulation of emissions sources, through measures such as EPA's Clean Air Interstate Rule and Clean Air Visibility Rule for

stationary sources; the 2004 Clean Air Nonroad Diesel Rule, the Tier 2 Vehicle Emission Standards, and Gasoline Sulfur Program; and the California Air Resources Board's (ARB's) Goods Movement Reduction Plan.

2.6.2. Inhalable Particulate Matter

Inhalable particles (i.e., PM_{10}) include both fine and coarse dust particles; the fine particles are $PM_{2.5}$. Coarse particles, such as those found near roadways and dusty industries, are larger than 2.5 micrometers and smaller than 10 micrometers in diameter. Sources of coarse particles include crushing or grinding operations and dust from paved or unpaved roads. The health effects of PM_{10} are similar to those of $PM_{2.5}$. Control of PM_{10} is achieved primarily by controlling dust at construction and industrial sites, cleaning paved roads, and wetting or paving frequently used unpaved roads.

2.7. Toxic Air Contaminants

In addition to criteria air pollutants, EPA regulates TACs, also known as hazardous air pollutants. Concentrations of TACs are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in ambient air; however, their high toxicity 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 may not be expected to occur. This contrasts with the criteria air pollutants, for which acceptable levels of exposure can be determined and the ambient standards have been established (see Table 3-1). Most TACs originate from human-made sources, including on-road mobile sources, nonroad mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories and refineries).

2.7.1. Mobile-Source Air Toxics

The CAA identified 188 TACs. EPA assessed this expansive list of toxics and identified a group of 21 as MSATs. MSATs are compounds emitted from highway vehicles and nonroad equipment. Some toxic compounds are present in fuel and are emitted into the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline. EPA also extracted a subset of this list of 21 compounds that it now labels as the six priority MSATs: benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene. Although these MSATs are considered the

priority transportation toxics, EPA stresses that the lists are subject to change and may be adjusted in future rules (FHWA 2006a).

EPA has issued regulations that will dramatically decrease MSATs through cleaner fuels and cleaner engines. According to an FHWA analysis, even if vehicle miles traveled (VMT) increases by 145%, a combined reduction of 72% in total annual priority MSATs is projected from 1999 to 2050 (FHWA 2009). Project MSAT impacts are discussed in Section 5.1 of this report.

2.7.2. Diesel Exhaust Particulate

In 1998, ARB identified particulate emissions from diesel-fueled engines as a TAC. The majority of the estimated local health risk from TACs is from diesel particulate matter (diesel PM). The composition of diesel PM emissions from diesel-fueled engines varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Federal and state efforts to reduce diesel PM emissions have focused on the use of improved fuels, adding particulate filters to engines, and requiring the production of new-technology engines that emit fewer exhaust particulates.

The control of emissions from mobile sources is a statewide responsibility of ARB that has not been delegated to the local air districts. However, some air districts have issued preliminary project guidance for projects with large or concentrated numbers of trucks, such as construction and operation of warehouses and distribution facilities.

2.8. Asbestos

The CAA requires EPA to develop and enforce regulations to protect the public from exposure to airborne contaminants that are known to be hazardous to human health. In accordance with CAA Section 112, EPA established national emissions standards for hazardous air pollutants (NESHAP) to protect the public. Asbestos was one of the first hazardous air pollutants regulated under the NESHAP. On March 31, 1971, EPA identified asbestos as a hazardous pollutant, and on April 6, 1973, first promulgated the asbestos NESHAP in Title 40, Section 61 of the Code of Federal Regulations (40 CFR 61). In 1990, a revised NESHAP regulation was promulgated by EPA.

The asbestos NESHAP regulations protect the public by minimizing the release of asbestos fibers during activities involving the processing, handling, and disposal of asbestos-containing material. Accordingly, the asbestos NESHAP specifies work practices to be followed during demolition and renovation of structures, installations, and

buildings (excluding residential buildings that have four or fewer dwelling units). The regulations also require the project applicant to notify applicable state and local agencies and/or EPA regional offices before beginning a demolition or construction that contains a certain threshold amount of asbestos.

2.8.1. Naturally Occurring Asbestos–Bearing Serpentine

Serpentine is a mineral commonly found in seismically active regions of California, usually in association with ultramafic rocks and along associated faults. Certain types of serpentine occur naturally in a fibrous form known generically as asbestos. Asbestos is a known carcinogen, and inhaling asbestos may result in the development of lung cancer or mesothelioma. ARB has regulated the amount of asbestos in crushed serpentinite used in surfacing applications, such as for gravel on unpaved roads, since 1990. In 1998, new concerns were raised about health hazards from activities that disturb asbestos-bearing rocks and soil. In response, ARB revised its asbestos limit for crushed serpentines and ultramafic rock in surfacing applications from 5% to less than 0.25%, and adopted a new rule requiring best practices dust-control measures for activities that disturb rock and soil containing naturally occurring asbestos (ARB 2002).

According to the report *A General Location Guide for Ultramafic Rocks in California Area Likely to Contain Naturally Occurring Asbestos* published by the California Department of Conservation (DOC), naturally occurring asbestos is not typically found in the geological formations present on the site of the proposed project (DOC 2000). Thus, hazardous exposure to asbestos-containing serpentine materials would not be a concern in the project area.

2.9. 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 GHGs, particularly those generated by the production and use of fossil fuels.

Climate change has been a concern for several decades. The establishment of the Intergovernmental Panel on Climate Change by the United Nations and World Meteorological Organization in 1988 led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are concerned primarily with the emissions of GHGs related to human activity that include carbon dioxide (CO_2), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride,

hydrofluorocarbon (HFC)-23 (fluoroform), HFC-134a (s,s,s,2 –tetrafluoroethane), and HFC-152a (difluoroethane).

Two terms are typically used in discussions of the impacts of climate change. "Greenhouse gas mitigation" is a term for reducing GHG emissions to reduce or "mitigate" the impacts of climate change. "Adaptation" refers to the effort of planning for and adapting to impacts of climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).

In California and Nevada, transportation sources (passenger cars, light-duty trucks, other trucks, buses, and motorcycles) make up the largest source of GHG emissions, followed by electricity generation. Conversely, the main source of GHG emissions in the United States as a whole is electricity generation, followed by transportation. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are four primary strategies for reducing GHG emissions from transportation sources:

1. Improve system and operation efficiencies.
2. Reduce growth of VMT.
3. Transition to lower GHG fuels.
4. Improve vehicle technologies.

To be most effective, all four strategies should be pursued collectively. The discussion of regulations in Chapter 3.0 outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

Chapter 3. Applicable Standards

3.1. Federal and State Standards

The CAA (Title 42, Sections 7401–7671q of the U.S. Code) requires the adoption of NAAQS to protect the public health and welfare from the effects of air pollution. The NAAQS are updated as needed. Current standards are set for SO_2, CO, NO_2, ozone, PM_{10}, $PM_{2.5}$, and lead. ARB established CAAQS that are generally more restrictive than the NAAQS. Specific geographic areas are classified as either attainment or nonattainment areas for each pollutant based on the comparison of measured data with federal and state standards. If an area is redesignated from nonattainment to attainment, the CAA requires that a revision to the SIP called a maintenance plan demonstrate how the air quality standard will be maintained for at least 10 years. The region's attainment status with respect those standards are presented in Table 3-1.

Table 3-1: Federal and State Attainment Status for the Project area

Criteria Pollutant	Federal Attainment Status [1]	State Attainment Status
Ozone	Unclassified/Attainment	Nonattainment-Transitional
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Carbon Monoxide	Unclassifiable/Attainment	Attainment
Particulate Matter (PM_{10})	Unclassified	Nonattainment
Particulate Matter ($PM_{2.5}$)	Unclassifiable/Attainment	Attainment

Notes:
[1] In addition to "attainment " and "nonattainment," US Environmental Protection Agency also uses "unclassifiable," "unclassified/attainment," and "unclassified" to designate areas. Unclassifiable areas are those that have insufficient monitoring data to make a designation. Unclassified/attainment areas are those that are meeting the standard or expected to meet the standard despite lack of sufficient monitoring data. Unclassified areas are those areas where there is insufficient data to designate the area or a designation as simply not been made yet.
Sources: EPA 2011; ARB 2011

The site of the proposed project is located in the LTAB, which currently meets the federal standards for all criteria pollutants except PM_{10}, for which the region is unclassified (EPA 2011). The LTAB was classified as attainment/unclassified for the federal 8-hour ozone standard on April 30, 2012. Therefore, no SIP has been developed for the LTAB region. With respect to the state standards, the LTAB is classified as nonattainment for ozone and PM_{10}.

3.2. Regional Authority

In the LTAB, TRPA is the agency responsible for the administration of federal and state air quality laws, regulations, and policies. Therefore, the Air Quality subelement of the TRPA Goals and Policies focuses on achieving the NAAQS and CAAQS as well as special TRPA-adopted regional and subregional visibility standards, and on reducing the deposition of nitrate from NO_X emitted by vehicles. TRPA's Code of Ordinances and RTP contain specific measures designed to monitor and achieve the air quality objectives of the TRPA Regional Plan. TRPA is required by the Tahoe Regional Planning Compact to establish environmental threshold carrying capacities for the region and prepare and implement a plan (i.e., TRPA Regional Plan) designed to attain and maintain those thresholds. The environmental thresholds and standards include a variety of environmental resources such as noise, geology and soils, hydrology and water quality, and air quality, among others.

3.2.1. Placer County Air Pollution Control District

The Placer County Air Pollution Control District (PCAPCD) attains and maintains air quality conditions in Placer County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean-air strategy of PCAPCD includes the preparation of plans for the attainment of ambient air-quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. PCAPCD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the CAA, CAA Amendments, and California CAA.

All projects are subject to PCAPCD rules and regulations in effect at the time of construction. The following specific rules may be applicable to the construction of the proposed project:

- Rule 202—Visible Emissions. A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than 3 minutes in any one hour which is as dark or darker in shade as that designated as number 1 on the Ringelmann Chart, as published by the United States Bureau of Mines.
- Rule 217—Cutback and Emulsified Asphalt Paving Materials. A person shall not manufacture for sale nor use for paving, road construction, or road maintenance any:

rapid cure cutback asphalt; slow cure cutback asphalt containing organic compounds which evaporate at 500°F or lower as determined by current American Society for Testing and Materials (ASTM) Method D402; medium cure cutback asphalt except as provided in Section 1.2 (PCAPCD 2012a); or emulsified asphalt containing organic compounds which evaporate at 500°F or lower as determined by current ASTM Method D244, in excess of 3% by volume.

- Rule 228—Fugitive Dust.
  - *Visible Emissions Not Allowed Beyond the Boundary Line*: A person shall not cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area (including disturbance as a result of the raising and/or keeping of animals or by vehicle use), such that the presence of such dust remains visible in the atmosphere beyond the boundary line of the emission source.
  - *Visible Emissions from Active Operations*: In addition to the requirements of Rule 202, Visible Emissions, a person shall not cause or allow fugitive dust generated by active operations, an open storage pile, or a disturbed surface area, such that the fugitive dust is of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke as dark or darker in shade as that designated as number 2 on the Ringelmann Chart, as published by the United States Bureau of Mines.
  - *Concentration Limit*: A person shall not cause or allow PM_{10} levels to exceed 50 micrograms per cubic meter ($\mu g/m^3$) (24-hour average) when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high-volume particulate matter samplers or other EPA-approved equivalent method for PM_{10} monitoring.
  - *Track-Out onto Paved Public Roadways*: Visible roadway dust as a result of active operations, spillage from transport trucks, and the track-out of bulk material onto public paved roadways shall be minimized and removed.
  - The track-out of bulk material onto public paved roadways as a result of operations, or erosion, shall be minimized by the use of track-out and erosion control, minimization, and preventative measures, and removed within 1 hour from adjacent streets any time track-out extends for a cumulative distance of greater than 50 feet onto any paved public road during active operations.
  - All visible roadway dust tracked-out upon public paved roadways as a result of active operations shall be removed at the conclusion of each work day when active

operations cease, or every 24 hours for continuous operations. Wet sweeping or a High Efficiency Particulate Air (HEPA) filter equipped vacuum device shall be used for roadway dust removal.

- Any material tracked-out, or carried by erosion, and clean-up water, shall be prevented from entering waterways or storm water inlets as required to comply water quality control requirements.
- *Minimum Dust Control Requirements*: The following dust mitigation measures are to be initiated at the start and maintained throughout the duration of the construction or grading activity, including any construction or grading for road construction or maintenance.
  - Unpaved areas subject to vehicle traffic must be stabilized by being kept wet, treated with a chemical dust suppressant, or covered.
  - The speed of any vehicles and equipment traveling across unpaved areas must be no more than 15 miles per hour unless the road surface and surrounding area is sufficiently stabilized to prevent vehicles and equipment traveling more than 15 miles per hour from emitting dust exceeding Ringelmann 2 or visible emissions from crossing the project boundary line.
  - Storage piles and disturbed areas not subject to vehicular traffic must be stabilized by being kept wet, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile.
  - Prior to any ground disturbance, including grading, excavating, and land clearing, sufficient water must be applied to the area to be disturbed to prevent emitting dust exceeding Ringelmann 2 and to minimize visible emissions from crossing the boundary line.
  - Construction vehicles leaving the site shall be cleaned to prevent dust, silt, mud, and dirt from being released or tracked off-site.
  - When wind speeds are high enough to result in dust emissions crossing the boundary line, despite the application of dust mitigation measures, grading and earthmoving operations shall be suspended.
  - No trucks are allowed to transport excavated material off-site unless the trucks are maintained such that no spillage can occur from holes or other openings in cargo compartments, and loads are either covered with tarps; or wetted and loaded such that the material does not touch the front, back, or sides of the cargo compartment

at any point less than 6 inches from the top and that no point of the load extends above the top of the cargo compartment.

- *Wind-Driven Fugitive Dust Control:* A person shall take action(s), such as surface stabilization, establishment of a vegetative cover, or paving, to minimize wind-driven dust from inactive disturbed surface areas.

- Rule 501—General Permit Requirements. Any person operating an article, machine, equipment, or other contrivance, the use of which may cause, eliminate, reduce, or control the issuance of air contaminants, shall first obtain a written permit from the Air Pollution Control Officer (APCO). Stationary sources subject to the requirements of Rule 507, Federal Operating Permit Program, must also obtain a Title V permit pursuant to the requirements and procedures of that rule.

3.2.2. Tahoe Regional Planning Agency

TRPA has developed eight regional thresholds standards with the goal of protecting the air quality in the Lake Tahoe region. These threshold standards are summarized below. Project-related effects on TRPA threshold attainment are discussed in Appendix C.

- AQ-1: Carbon Monoxide. CO levels shall not meet or exceed the TRPA 8-hour 6.0-ppm [parts per million] standard. The indicative value for attainment of this standard is the second-highest CO concentration that is read at the Stateline, Nevada, station (ppm).

- AQ-2: Ozone. Ozone levels shall not exceed the TRPA 1-hour standard of 0.08 ppm. Attainment is based on the number of 1-hour periods, which equal or exceed the federal, Nevada, or TRPA standard at any of the permanent monitoring sites (unitless), and the number of 1-hour periods that exceed the California standard.

- AQ-3: Particulate Matter. Particulate matter concentrations shall not exceed the California and federal standards for 24-hour concentrations (50 and 150 $\mu g/m^3$, respectively) and the annual average (30 and 50 $\mu g/m^3$, respectively). Attainment is based on the number of 24-hour periods exceeding the applicable federal or state standards at any permanent monitoring station (unitless) and the annual average PM_{10} concentration at any monitoring station ($\mu g/m^3$).

- AQ-4: Visibility. TRPA's regional and subregional visibility standards shall not be violated. In addition, for regional and subregional visibility, wood smoke concentrations shall be reduced 15 percent below the 1981 levels for subregional visibility. Suspended soil particles shall be reduced 30 percent below the 1981 levels. For regional visibility, visual range is calculated from aerosol data gathered at the D.

L. Bliss State Park monitoring site. For subregional visibility, visibility is calculated from aerosol data gathered at the Lake Tahoe Boulevard station. For state visibility standards, visual range is calculated from nephelometer data collected at Bliss State Park and Lake Tahoe Boulevard for periods in which relative humidity is less than 70 percent (miles).

- AQ-5: Traffic Volume. There shall be a 7 percent reduction in traffic volume on the U.S. Highway 50 (U.S. 50) corridor from the 1981 values. The standard uses the average traffic volume from 4 p.m. to midnight from November through February. Traffic volumes on U.S. 50, recorded at a site immediately west of the intersection of Park Avenue in the City of South Lake Tahoe, include a count of both directions during an average day. TRPA selected this indicator because the threshold appears in TRPA Resolution 82-11, under the heading "Carbon Monoxide," and historically this has been the location of the only existing CO hotspot in the region, which occurred during the winter months.
- AQ-6: Wood Smoke. Annual emissions from wood smoke shall be reduced 15 percent from 1981 levels. There are currently no scientifically sound direct measurements for wood smoke; however, indicative aerosol constituents are used to analyze wood smoke trends.
- AQ-7: Vehicle Miles Traveled. Vehicle miles traveled (VMT) shall be reduced 10 percent below the 1981 levels (equivalent to 2,067,600 VMT). The indicator used to evaluate this threshold is peak daily VMT, which was most recently evaluated in 2010 using the TransCAD transportation model. Due to the change in transportation models, VMT has been calculated and modeled differently throughout the years and are not always comparable. Thus, to normalize historical VMT data from 1981 to 2011, the ratio of 2010 modeled VMT (from TransCAD) and peak daily traffic volumes (2^{nd} weekend of August) was used. This ratio was multiplied by the peak daily traffic volumes (2^{nd} week of August) from 1981 to 2009 to estimate annual peak daily VMT values.
- AQ-8: Atmospheric Nutrient Loading. Reducing nitrate deposition has been addressed in both the TRPA's Air Quality Thresholds as well as the Water Quality Thresholds. The Air Quality threshold pertaining to nitrate deposition requires that nitrate transport into the Basin and NO_X generation within the Basin is consistent with water quality thresholds. The Water Quality threshold pertaining to nitrate deposition states that dissolved inorganic nitrogen load on Lake Tahoe from atmospheric sources shall be reduced by approximately 20 percent of the 1973–1981 annual average. Indicators used to evaluate this threshold are twofold: The first

indicator evaluates whether the TRPA (and/or other agencies) adopted sufficient policies, ordinances, and programs in support of the management standards. The second indicator considers if there is empirical evidence that demonstrates a reduction in nitrogen deposition into Lake Tahoe.

3.2.3. Code of Ordinances

TRPA adopted Chapter 65.1, "Air Quality Control," and Chapter 65.2, "Traffic and Air Quality Mitigation Program," of the TRPA Code of Ordinances (TRPA 2011). The applicable provisions of these chapters are described below.

3.2.3.1. CHAPTER 65.1—AIR QUALITY CONTROL

The provisions of Chapter 65.1 apply to direct sources of air pollution in the Lake Tahoe region, including certain motor vehicles registered in the region, combustion heaters installed in the region, open burning and stationary sources of air pollution, and idling combustion engines:

- Section 65.1.3, "Vehicle Inspection and Maintenance Program," states that to avoid duplication of effort in implementing an inspection/maintenance program for certain vehicles registered in the CO nonattainment area, TRPA shall work with the affected state agencies to plan for applying state inspection/maintenance programs to the Lake Tahoe region.
- Section 65.1.4, "Combustion Appliances," establishes emissions standards for wood heaters, as well as natural gas– or propane-fired water heaters and central furnaces.
- Section 65.1.6.A, "Environmental Assessment," states that any new stationary source of air pollution that produces emissions for the peak 24-hour period beyond any of the limits in Table 65.1.6-2, reproduced as Table 3-2 below, shall be considered to have a significant adverse environmental impact. New stationary sources that have a significant adverse environmental impact shall be prohibited.

Table 3-2: TRPA Significant Emissions Limit for Peak 24-Hour Period

Pollutant	Kilograms	Pounds
Nitrogen Dioxide	11.0	24.2
PM_{10}	10.0	22.0
Volatile Organic Compounds (Reactive Organic Gases)	57.0	125.7
Sulfur Dioxide	6.0	13.2
Carbon Monoxide	100.0	220.5

Notes: PM_{10} = respirable particulate matter; TRPA = Tahoe Regional Planning Agency
Source: TRPA 2011

3.2.3.2. CHAPTER 65.2—TRAFFIC AND AIR QUALITY MITIGATION PROGRAM

The purpose of Chapter 65.2 of the TRPA Code of Ordinances is to establish fees and other procedures to offset impacts from indirect sources of air pollution. As part of the project application for any additional development that would result in an increase of more than 200 daily vehicle trips, a technically adequate analysis of potential traffic and air quality impacts must be prepared (Section 65.2.4.B). To offset regional and cumulative impacts, project proponents must contribute to the air quality mitigation fund, or they may provide mitigation measures that cost at least as much as the required contribution to the air quality mitigation fund (Section 65.2.4.C). Such regional and cumulative mitigation measures may include transportation systems management measures such as bicycle facilities and pedestrian facilities. For new residential units, the required contribution would be $325.84 per daily vehicle trip (Section 65.2.4.D).

3.2.4. TRPA Goals and Policies

The regional goals and policies as they pertain to air quality are contained in the Air Quality Subelement of the Land Use Element of the Goals and Policies. The Transportation Element of TRPA's Regional Plan also would affect air quality. The Air Quality and applicable Transportation goals and policies of the region include the following:

- Air Quality
  - Goal AQ-1: Attain and maintain air quality in the region at levels that are healthy for humans and the ecosystem, achieve and maintain environmental thresholds and do not interfere with residents' and visitors' visual experience.
    - **Policy AQ-1.1**: Coordinate with other agencies and jurisdictions to reduce emissions, exposure, and health and environmental risks when developing and implementing programs, plans, and projects.
    - **Policy AQ-1.2**: Reduce or limit sources of pollutants that degrade visibility.
    - **Policy AQ-1.3**: Encourage the reduction of emissions from motor vehicles and other motorized machinery in the region.
    - **Policy AQ-1.4:** Encourage the reduction of emissions from gas appliances.
    - **Policy AQ-1.5:** Encourage the reduction of emissions through building efficiency.
    - **Policy AQ-1.6:** Reduce emissions from wood burning stoves in the region, and require wood stoves to comply with current USEPA [EPA] emissions standards with a target compliance date of 2020.

- **Policy AQ-1.7**: Promote the reduction of air quality impacts from construction and property maintenance activities in the region.
- **Policy AQ-1.8**: Promote technologies that reduce the air quality impacts of prescribed burning, or non-burning methods of reducing hazardous forest fuels, where practical.

- Goal AQ-2: Maintain an effective air quality mitigation program for the region.
  - **Policy AQ-2.1:** In addition to other policies and regulations intended to minimize air quality impacts of development, collect and expend air quality mitigation fees to offset air pollution in coordination with the environmental improvement program. A portion of mitigation funds shall be expended in the local jurisdiction where the funds are generated and a portion of the funds may be used on the most cost effective and environmentally beneficial projects in the region.

- Transportation
  - Goal T-1: Promote walkable mixed-use centers, transportation enhancements and environmental improvements that increase the viability of transit systems.
    - **Policy T-1.2:** Mitigate the regional and cumulative traffic impacts of new, expanded, or revised developments or land uses.
    - **Policy T-1.3:** Consider non-automobile travel modes when mitigating traffic-related project impacts.
    - **Policy T-1.4:** Develop and implement a sustainable communities strategy to meet TRPA thresholds and other statutory requirements.
  - Goal T-2: Encourage bicycle and pedestrian usage as viable and significant modes of transportation at Lake Tahoe.
    - **Policy T-2.2:** Construction, upgrade, and maintain pedestrian and bicycle facilities consistent with the Lake Tahoe Region Bicycle and Pedestrian Plan.
    - **Policy T-2.3:** Prioritize constructing pedestrian and bicycle facilities in urbanized areas of the region, facilities that increase connectivity of the pedestrian and bicycle network, and facilities that can be constructed concurrently with other projects.
    - **Policy T-2.4:** Design and site intersections and driveways where feasible to minimize impacts on public transportation, adjacent roadways and intersections, and bicycle and pedestrian facilities.

- **Policy T-2.5:** Preserve the condition of sidewalks and bicycle facilities and where feasible, maintain their year-round use.
- **Policy T-2.7:** Implement safety awareness signage, road markings, educational programs, and programs that encourage bicycling and walking.

- Goal T-3: Implement new technology to increase the efficiency and effectiveness of the transportation network and promote the usage of alternative transportation modes.
  - **Policy T-3.2:** Implement measures consistent with the federal Intelligent Transportation Systems (ITS) program and the Tahoe Basin ITS Strategic Plan, including traffic management, traveler information services, and emergency management techniques.
- Goal T-4: Encourage efficient and effective expansion of public transit operation and use in the Lake Tahoe region.
  - **Policy T-4.2:** Provide transit facilities that encourage transit, bicycle, and pedestrian usage.
- Goal T-6: Support the economic vitality of the Lake Tahoe region by preserving and enabling an efficient system to move people and goods.
  - **Policy T-6.2:** Enhance the economic vitality of the region by efficiently connecting people to jobs, goods, services, and other communities.
  - **Policy T-6.3:** Support public-private partnerships and business improvement districts when planning, financing, and implementing transportation and air quality programs and projects.
- Goal T-7: Develop effective intermodal transportation facilities where three or more major modes of regional transportation system intersect and/or terminate (e.g., intersection of auto, bicycle/pedestrian trails, transit and/or waterborne modes).
  - **Policy T-7.1:** Require that area plans identify intermodal transportation facilities to serve each center and other major activity centers. Intermodal transportation facilities should incorporate planned regional transportation facilities, parking, connections between them (e.g., sidewalks, enclosed walkways) and should accommodate increased use of transit and non-motorized travel modes. Local agencies may need to coordinate with state departments of transportation when identifying intermodal facilities.

- **Policy T-7.2:** Require major commercial interests providing gaming, recreational activities, or excursion services to provide or participate in joint shuttle services or provide transit use incentives to their guests or patrons; and require connections with intermodal transportation facilities.

- Goal T-10: Upgrade regional roadways as necessary to improve safety and provide for a more efficient, integrated transportation system.

  - **Policy T-10.1:** Incorporate transit stops and bicycle and pedestrian facilities in roadway improvement projects.

  - **Policy T-10.2:** Use transportation system management (TSM) measures to improve the existing transportation system, while maintaining provision of bicycle and pedestrian facilities. TSM measures could include: dedicated turn lanes, intersection improvements, bicycle-activated signals, and roundabouts. Additionally, work with state departments of transportation and local transportation departments to improve signal synchronization.

  - **Policy T-10.5:** Consider quality of service for transit, pedestrians, and bicyclists in addition to motor vehicles when analyzing development impacts on the transportation system.

3.3. Conformity of Federal Actions

Section 176(c) of the CAA requires the following:

> No department, agency, or instrumentality of the Federal Government shall engage in, support in any way, or provide financial assistance for, license or permit, or approve any activity which does not conform to an implementation plan after it has been approved.
>
> Conformity to an implementation plan means
>
> (A) conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and
>
> (B) that such activities will not
>
> (i) cause or contribute to any new violation of any standard in any area;

(ii) increase the frequency or severity of any existing violation of any standard in any area; or

(iii) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The determination of conformity shall be based on the most recent estimates of emissions, and such estimates shall be determined from the most recent population, employment, travel, and congestion estimates as determined by the metropolitan planning organization or other agency authorized to make such estimates.

In November 1993, the U.S. Department of Transportation (DOT) and EPA developed guidance for determining conformity of transportation plans, programs, and projects. This guidance is denoted as the Transportation Conformity Rule (40 CFR 51.390 and 40 CFR 93.100–93.129).

The CAA requires a demonstration that federal actions conform to the SIP and similar approved plans in areas that are designated as nonattainment or have maintenance plans for criteria pollutants. Transportation measures, such as the proposed project, are analyzed for conformity with the SIP as part of the RTP and FTIP. If the design concept and scope of a proposed transportation project are consistent with the project description in the applicable RTP and FTIP and the assumptions in the regional emissions analysis for the RTP and FTIP, then the proposed project conforms to the SIP, and no adverse regional air quality impact would occur as a result of the project.

3.4. Climate Change Regulations

3.4.1. Federal

Although climate change and GHG reduction is a concern at the federal level, no regulations or legislation have been enacted to specifically address project-level reductions of GHG emissions and climate change. Climate change and its associated effects are being addressed through various efforts 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 focuses on reducing GHG emissions internally through the missions, programs, and operations of federal agencies. However, it also directs federal agencies to participate in the interagency Climate Change Adaptation Task Force, which is developing a United States strategy for adapting to climate change.

On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the U.S. Supreme Court found that GHGs are air pollutants covered by the CAA and that EPA has the authority to regulate GHGs. The court held that the EPA Administrator must determine (1) whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare; or (2) whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- Endangerment Finding: The current and projected atmospheric concentrations of the six key well-mixed GHGs—CO_2, methane, nitrous oxide, HFCs, perfluorocarbons, and sulfur hexafluoride—threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The combined emissions of these well-mixed GHGs from new motor vehicles and engines of new motor vehicles contribute to GHG 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 EPA's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles, published on September 15, 2009. On May 7, 2010, the Final Rule for Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards was published in the *Federal Register* (FR) (75 FR 25323–25728).

EPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable automakers to produce a new generation of clean vehicles that emit fewer GHGs and offer improved fuel efficiency. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional GHG regulations for light-duty vehicles. These steps were outlined by President Barack Obama in a memorandum on May 21, 2010.

The final combined EPA/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 2012–2016. The standards require that these vehicles meet an estimated combined average emissions level of 250 grams of CO_2 per mile, which would be equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO_2 level solely through fuel-economy improvements. Together, these standards will cut

GHG 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, EPA along with DOT and the State of California announced a single time frame for proposing fuel-economy and GHG standards for model year 2017–2025 cars and light trucks. Proposal of the new standards in the same time frame (September 1, 2011) signals continued collaboration among these agencies, which could lead to an extension of the current National Clean Car Program.

3.4.2. State

With the passage of several Senate and Assembly bills and issuance of several executive orders, as described below, California launched an innovative and proactive approach to dealing with GHG emissions and climate change.

3.4.2.1. ASSEMBLY BILL 1493

Assembly Bill (AB) 1493 (Chapter 200, Statutes of 2002) requires that ARB develop and implement regulations to reduce GHG emissions from automobiles and light trucks. 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 California Clean Air Act waiver of preemption to the State of California, which allowed the state to implement its own GHG emissions standards for motor vehicles beginning with model year 2009. California agencies will work with federal agencies to conduct joint rulemaking to reduce GHG emissions for passenger car model years 2017–2025.

3.4.2.2. EXECUTIVE ORDER S-3-05

The goal of Executive Order S-3-05, signed by Governor Arnold Schwarzenegger on June 1, 2005, is to reduce California's GHG emissions to year 2000 levels by 2010, 1990 levels by 2020, and 80% below the 1990 levels by the year 2050. In 2006, this goal was reinforced with the passage of AB 32, described below.

3.4.2.3. ASSEMBLY BILL 32

AB 32, the Global Warming Solutions Act of 2006, sets the same overall goals for GHG emissions reduction as outlined in Executive Order S-3-05, and further mandates that ARB create a plan that 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.

3.4.2.4. EXECUTIVE ORDER S-01-07

Governor Schwarzenegger set forth the low-carbon fuel standard for California in Executive Order S-01-07, signed January 18, 2007. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10% by 2020.

3.4.2.5. SENATE BILL 97

Senate Bill (SB) 97 (Chapter 185, Statutes of 2007) required the Governor's Office of Planning and Research to develop recommended amendments to the California Environmental Quality Act Guidelines (State CEQA Guidelines) for addressing GHG emissions. The amendments became effective on March 18, 2010.

1.1.1.1 Senate Bill 375

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires each MPO to adopt a sustainable communities strategy or alternative planning strategy that will prescribe land use allocation in that MPO's RTP. On September 23, 2010, ARB adopted regional GHG targets for passenger vehicles and light trucks for 2020 and 2035 for the 18 MPOs in California. Should an MPO not meet the GHG reduction targets, transportation projects in the region served by that MPO would not be eligible for funding programmed after January 1, 2012. ARB accepted the GHG determination for the TMPO Sustainable Communities Strategy on April 25, 2013, and is therefore in compliance with SB 375.

SB 375 also extends the minimum time period for the regional housing needs allocation cycle from 5 years to 8 years for local governments located within an MPO that meet certain requirements. City or county land use policies (including general plans) are not required to be consistent with the RTP (and associated sustainable communities strategy or alternative planning strategy). However, new provisions of the California Environmental Quality Act would incentivize qualified projects that are consistent with an approved sustainable communities strategy or alternative planning strategy, categorized as "transit priority projects."

Chapter 4. Existing Conditions

4.1. Environmental Setting, Climate, and Meteorology

The project area is located in the LTAB, which comprises the easternmost portions of Placer and El Dorado Counties. Lake Tahoe lies in a depression between the crests of the Sierra Nevada and the Carson Range on the California-Nevada border at a surface elevation of approximately 6,260 feet above sea level. The LTAB is defined by the 7,000-foot contour, which is continuous around the lake, except near Tahoe City. The project area is located within the 7,000-foot contour and the LTAB. The mountains surrounding the lake are approximately 8,000 to 9,000 feet in height on average, with some reaching 10,000 feet.

The water temperature of Lake Tahoe has remained constant at 600 feet below the surface, at approximately 39 degrees Fahrenheit. This characteristic, in combination with the topographic location of the lake, defines one of the LTAB's most important atmospheric regimes. In the absence of strong synoptic weather systems (large-scale systems of 620 miles or more), the LTAB develops shallow subsidence and radiation inversions throughout the year (air temperature variations relative to surrounding areas that are unique to the basin). In addition, rapid radiation cooling at night regularly generates gentle nocturnal downslope winds that blow from the mountain ridges down to the shore, then fan across the lake (Cahill and Cliff 2000).

Pollutants from local sources are trapped by frequent atmospheric inversions in the LTAB, which greatly limits the volume of air into which the pollutants are mixed (e.g., diluted), thus resulting in pollutant accumulation and elevated concentrations. Furthermore, each night the downslope winds transport local pollutants from nearby developed areas out over the lake, increasing the opportunity for pollutants to deposit into the lake. This meteorological regime, characterized by weak or calm winds and a strong inversion, is the most common pattern at all times of the year (Cahill and Cliff 2000).

4.2. Regional and Local Air Quality

Ambient air pollutant concentrations are measured at air quality monitoring stations in the LTAB. The monitoring station that most closely represents the project area is the North Sunrise Blvd., Roseville, CA, Monitoring Station Table 4-1 summarizes the excesses of standards and the highest pollutant levels recorded at this station or the nearest monitoring station from 2008 through 2011. The Roseville monitoring station

Table 4-1: Summary of Ambient Air Quality

Pollutant Standards	2009	2010	2011	2012
Carbon Monoxide—Monitoring Data Obtained from Blackfoot Way, North Highlands, CA, Monitoring Station				
Maximum 8-hour concentration (ppm)	1.66	1.16	1.87	1.54
Number of days standard exceeded				
NAAQS 8-hour (> 9 ppm)	0	0	0	0
CAAQS 8-hour (> 6 ppm)	0	0	0	0
Nitrogen Dioxide—Monitoring Data Obtained from North Sunrise Blvd., Roseville, CA, Monitoring Station				
Maximum 1-hour concentration (ppb)	61.0	71.0	66.0	55.5
Annual average (ppb)	10.0	10.0	11.0	10.0
Number of days standard exceeded				
CAAQS 1-hour	0	0	0	0
Ozone—Monitoring Data Obtained from North Sunrise Blvd., Roseville, CA, Monitoring Station				
Maximum 1-hour concentration (ppm)	0.113	0.124	0.109	0.108
Maximum 8-hour concentration (ppm)	0.101	0.105	0.094	0.092
Number of days standard exceeded				
CAAQS 1-hour (> 0.09 ppm)	13	9	11	9
CAAQS 8-hour (> 0.070 ppm)	32	21	23	28
NAAQS 8-hour (> 0.075 ppm)	19	15	15	13
Particulate Matter (PM_{10})[a]—Monitoring Data Obtained from North Sunrise Blvd., Roseville, CA, Monitoring Station				
National maximum 24-hour concentration ($\mu g/m^3$)	33.5	36.3	56.5	43.2
State maximum 24-hour concentration ($\mu g/m^3$)	33.6	35.1	58.8	44.8
National annual average concentration ($\mu g/m^3$)	17.5	15.2	17.3	15.1
State annual average concentration ($\mu g/m^3$)	17.9	15.4	17.5	15.3
Number of days standard exceeded				
NAAQS 24-hour (> 150 $\mu g/m^3$)	0	0	0	0
CAAQS 24-hour (> 50 $\mu g/m^3$)	0	0	1	0
Particulate Matter ($PM_{2.5}$)[a]—Monitoring Data Obtained from North Sunrise Blvd Roseville, CA Monitoring Station				
National maximum 24-hour concentration ($\mu g/m^3$)	22.6	27.3	42.3	16.1
State maximum 24-hour concentration ($\mu g/m^3$)	38.5	60.1	50.4	28.0
National annual average concentration ($\mu g/m^3$)	8.5	6.6	8.5	6.4
State annual average concentration ($\mu g/m^3$)	10.8	10.9	10.7	9.5
Number of days standard exceeded				
NAAQS 24-hour (> 35 $\mu g/m^3$)[b]	0	0	1	0

Notes:
CAAQS = California ambient air quality standard; NAAQS = national ambient air quality standard; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter
[a] Measurements usually collected every 6 days.
[b] National $PM_{2.5}$ standard reduced from 65 $\mu g/m^3$ to 35 $\mu g/m^3$ in December 2006.
Source: ARB 2013, 2014

does not measure CO; therefore, data from other stations were used to represent typical pollutant levels, where necessary.

4.1. Roadways and Traffic

The primary roadways are SR 89 and SR 28, which are classified as two-lane minor arterials within the project area. The average daily traffic (ADT) volumes during peak summer months for the proposed project segments of SR 89 are 14,800 vehicles west of the wye intersection and 22,300 vehicles just south of Fanny Bridge. The annual average daily traffic (AADT) volumes for this portion of SR 89 are 10,600 vehicles west of the wye and 13,200 vehicles south of Fanny Bridge. The peak-month ADT and AADT volumes for the proposed project segments of SR 28 east of the wye are 12,400 vehicles and 17,000 vehicles, respectively. All street segments in the project vicinity currently operate at Level of Service (LOS) C or better under existing conditions, which includes summer peak-hour conditions (Wood Rodgers 2011).

Under 2009–2010 existing conditions, all signalized intersections in the project area currently operate at LOS D or better during the a.m. and p.m. peak hours under annual-average and peak summer months. Under 2009–2010 existing conditions, the unsignalized, two-way-stop-controlled intersections in the project vicinity all operate at LOS D or better, with the exception of SR 89/Granlibakken Road, which operates at LOS F during annual-average and summer peak-hour conditions.

Chapter 5. Air Quality Impacts

5.1. Construction Impacts

5.1.1. Regional Emissions

Site preparation and other project construction activities would generate ROG, NO_X, CO, and PM_{10} emissions. Construction emissions are described as short term or temporary in duration; such emissions, especially emissions of fugitive dust (PM_{10}), may result in a significant impact on air quality. The source of the pollutants would be fugitive dust created during clearing, grubbing, excavation, and grading of land areas for roadway widening, and during demolition or repair of existing bridge structures and demolition of pavement; construction vehicle travel on paved and unpaved roads; and material blown from unprotected graded areas, stockpiles, and haul trucks. Generally, the distance that particles drift from their source depends on their size, emission height, and wind speed.

A secondary source of pollutants during construction would be engine exhaust from construction equipment during all construction activities. The principal pollutants of concern would be ROG and NO_X emissions that would contribute to the formation of ozone, which is a regional pollutant (i.e., not directly generated, rather formed through photochemical reactions of pollutants that are generated within the region or transported to the region).

PCAPCD does not provide any specific models or methodology for analyzing project-related emissions. Therefore, short-term construction-generated emissions were modeled using project-specific data and the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Road Construction Emissions Model, Version 7.1.5.1 (SMAQMD 2013). The use of this model is accepted in other air districts throughout the state, including PCAPCD. The model was developed to provide timelines and equipment necessary to estimate the emissions from linear projects, such as roadways. The design characteristics of the proposed project were input into the Road Construction Emissions Model to develop estimates of construction emissions. It should be noted that Alternatives 1 through 4 would involve constructing a new alignment for SR 89, which was used to model construction emissions because these construction activities would represent the maximum daily emissions. Therefore, the daily construction emissions shown in Table 5-1 represent the maximum daily construction emissions that would occur under any project alternative. For Alternatives 6 and 6A, which would replace and expand Fanny Bridge, construction emissions shown in Table 5-1 represent a conservative estimate of construction emissions.

Table 5-1: Estimated Maximum Daily Regional Construction Emissions

	Estimated Emissions (lb/day)				
Construction Phase	**ROG**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Grubbing/Land Clearing	2.6	23.2	14.2	24.1	5.8
Grading/Excavation	5.7	54.2	28.1	25.6	7.1
Drainage/Utilities/Subgrade	4.4	38.9	19.6	25.1	6.7
Paving	2.9	22.3	14.7	1.5	1.4
Maximum Daily Emissions	5.7	54.2	28.1	25.6	7.1
Significance Threshold	82	82	550	82	NA
Exceed Significance?	No	No	No	No	NA

Notes: CO = carbon monoxide; lb/day = pounds per day; NA = not applicable; NO_X = oxides of nitrogen; $PM_{2.5}$ = particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ROG = reactive organic gases
Source: Data compiled by AECOM in 2014 (see Appendix B for complete model outputs)

The proposed project would result in a potentially significant impact on air quality if construction-generated emissions of criteria air pollutants or precursors would exceed the PCAPCD-recommended threshold of 82 pounds per day (lb/day) for ROG, NO_X, or PM_{10}, or 550 lb/day for CO. As shown in Table 5-1, the proposed project would not exceed the applicable construction emissions thresholds.

Based on the updated modeling conducted, construction in the worst-case scenario would result in maximum unmitigated daily emissions of approximately 5.7 lb/day of ROG, 54.2 lb/day of NO_X, 28.1 lb/day of CO, 25.6 lb/day of PM_{10}, and 7.1 lb/day of $PM_{2.5}$. Emissions of ROG, NO_X, CO, and PM_{10} would not exceed applicable mass emission thresholds established by PCAPCD; therefore, using the PCAPCD thresholds, construction-related impacts would be less than significant. No project-specific mitigation is required. However, it is recommended that specific measures to control dust and particulates be incorporated into project specifications. These measures are identified in Chapter 6.0.

Federal conformity regulations require analysis of construction impacts for projects when construction activities will last for more than 5 years (40 CFR 93.123[5]). Construction of the proposed project is anticipated to commence in 2015 and would be completed to allow for operations by 2018. Because construction of the project is expected to last less than 5 years, construction-related emissions were not considered in the conformity analysis.

In addition, as noted above, implementation of Alternatives 6 and 6A would involve replacing and expanding Fanny Bridge. Therefore, during construction of Alternative 6 or 6A, it is anticipated that a partial or complete shutdown of Fanny Bridge could occur, which would result in additional congestion and idling. Although this impact would be temporary, congestion and idling could be extensive when the bridge is completely shut down as there are no current alternative routes between the West Shore and Tahoe City. This effect could be exacerbated by the short construction season of the Tahoe Basin (May 1–October 15), which often coincides with peak tourist periods. Alternatives 1 through 4 would involve constructing a new SR 89/SR 28 alignment, which would allow continued operation of Fanny Bridge during construction activities, and thus would minimize idling and congestion during construction. Although it is anticipated that implementing Alternative 1, 2, 3, or 4 would result in some additional idling and congestion because partial bridge shutdowns would occur, the degree of idling and congestion would be less than that for Alternative 6 or 6A. Furthermore, activities proposed on Fanny Bridge that could potentially cause shutdown of the bridge would be completed after the new bridge became operable.

5.1.1.1. LOCAL EMISSIONS

According to 40 CFR 93.123(5), analyses of CO, PM_{10}, and $PM_{2.5}$ "hot spots" are not required for construction-related activities that create a temporary increase in air emissions. Construction activities would occur primarily during the construction season (May 1–October 15) and would total less than 3 years. Thus, no local hot spot is anticipated and a hot-spot analysis is not required for construction of the proposed project.

Diesel PM is a pollutant of concern, as described in Section 2.7 of this report. Although no formal guidance is available for analyzing the construction impacts of diesel PM emissions, potential adverse impacts would increase if construction equipment and truck staging areas were located near schools, active recreation areas, or areas of higher population density. As described in Section 1.4, active recreational areas (bicycle and pedestrian trails and boating facilities) and a low-density vacation home community are located approximately 200 feet south of Fanny Bridge. The recreational receptors and the residential units would warrant control of construction-related TAC emissions.

It should be noted that Alternatives 6 and 6A would not involve constructing a new alignment for SR 89 and would involve repairing and expanding Fanny Bridge, which would require a partial or complete shutdown of the existing bridge during construction. Therefore, although the project is classified as a Safety Improvement Program, which is

exempt from all emissions analyses, implementing Alternative 6 or 6A would cause considerable congestion and delay during construction activities at Fanny Bridge. Therefore, additional idling and congestion would expose nearby receptors to additional TAC and PM concentrations. The amount of additional idling and congestion during construction would be reduced under Alternatives 1 through 4; however, some degree of idling and congestion would occur under any of these alternatives because partial bridge shutdowns would occur. Thus, a measure to reduce this potential impact has been identified in Chapter 6.0.

5.2. Long-Term Emissions

5.2.1. Regional Air Quality

The CAA of 1970, as amended, requires a demonstration that federal actions conform to the SIP and similar approved plans in areas that are designated as nonattainment or have maintenance plans for criteria pollutants. Transportation measures, such as the proposed project, are analyzed for conformity with the SIP as part of the RTP and FTIP. If the design concept and scope of a proposed transportation project are consistent with the project description in the applicable RTP and FTIP, as well as the assumptions in the regional emissions analysis for the RTP and FTIP, then the proposed project would conform to the SIP and would not result in an adverse impact on regional air quality.

TMPO, as the area's MPO, and DOT must make a determination that the applicable RTP and FTIP conform to the applicable SIP. Conformity to the SIP means that transportation activities will not create new air quality violations, worsen existing violations, or delay the attainment of the NAAQS. Federal regulations also require TMPO to conduct an air quality conformity analysis of all regionally significant projects that increase the capacity of the transportation system. All regionally significant capacity-increasing transportation projects, regardless of funding sources, must be included in the FTIP.

TMPO adopted the 2035 RTP on December 12, 2012 (TMPO 2012) and the 2013 FTIP on September 26, 2012 and amended on January 23, 2013. The proposed project is included in the 2035 RTP in the "Planned Corridor Revitalization Projects" section (TMPO 2012). The proposed project is also included in the Final 2013 FTIP on page 40 as MPO ID TTD03 (Fanny Bridge/SR89 Community Revitalization Project[Address traffic congestion and improve pedestrian and bicycle safety access]) (TMPO 2013) (see Appendix A for FTIP listing). Furthermore, it should be noted that the proposed project is also included in Chapter 6, "Funding and Implementation Strategy," of TMPO's *Mobility 2035: Lake Tahoe Regional Transportation Plan* (TMPO 2012). The proposed project is considered a Safety Improvement Program under the EPA Table II and III Exempt

Category. The 2013 FTIP was adopted by TMPO on September 26, 2012, and amended on January 23, 2013. DOT made a CAA conformity determination for the 2013 FTIP on January 29, 2013 (DOT 2013).

Therefore, the design concept and scope of the proposed transportation project are consistent with the descriptions of the proposed project in the 2035 RTP and the 2013 FTIP, and the assumptions in TMPO's regional emissions analysis. The proposed project would conform to the SIP, and no adverse regional air quality impact would occur as a result of the proposed project.

5.2.2. Local Air Quality (Hot Spots)

The Transportation Conformity Rule requires that federal projects not cause or contribute to any new localized CO, PM_{10}, and/or $PM_{2.5}$ violations or increase the frequency or severity of any existing CO, PM_{10}, and/or $PM_{2.5}$ violations in CO, PM_{10}, and $PM_{2.5}$ nonattainment and maintenance areas.

5.2.2.1. CARBON MONOXIDE

The CO portion of the Transportation Conformity Rule is intended to ensure that projects eliminate or reduce the potential for CO violations in the areas substantially affected by the proposed project. As discussed above, the LTAB is unclassifiable/attainment for the federal CO standard.

Procedures and guidelines for use in evaluating the potential local level CO impacts of a project are contained in the *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol) (UCD ITS 1997). The CO Protocol provides a methodology for determining the level of analysis, if any, required for a project. The guidelines comply with the CAA, federal and state conformity rules, the National Environmental Policy Act (NEPA), and CEQA.

The CO Protocol states that the determination of project-level CO impacts should be carried out in accordance with the Local CO Analysis flow charts shown as Figures 1 and 3 in the CO Protocol. Figure 1 of the CO Protocol applies to the evaluation of new projects.

The procedures in Figure 1 of the CO Protocol are provided for the proposed project to determine the level of analysis (if any):

> Question 3.1.1: Is the project exempt from all emissions analyses?

Answer: Yes. The proposed project is classified as a Safety Improvement Program, which is a project type listed under Table 1-1, Project Exempt from All Emissions Analyses of the CO Protocol.

According to the CO Protocol, the proposed project is considered a project that would be exempt from all CO emissions analyses. The proposed project would not generate additional traffic in the region or contribute to existing congestion. Rather, the intent of the proposed project is to reduce congestion in the project vicinity as well as improve safety. In addition, after completion of Alternative 6 or 6A, it is anticipated that the wider structure would reduce long-term congestion at the SR 89/SR 28 intersection (Wood Rodgers 2011). Therefore, no localized CO impacts would occur.

5.2.2.2. PARTICULATE MATTER

On March 10, 2006, EPA published a final rule that established the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for impacts on local air quality in federal $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas. Based on that rule, EPA and FHWA published the PM Guidance (FHWA 2006a), which described how to qualitatively evaluate a project's potential to cause a PM hot spot. In December 2010, EPA released its final PM Guidance for quantitative hot-spot analyses for new or expanded highway projects with significant increases in diesel traffic in federal $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas (EPA 2010). Following a 2-year grace period, quantitative hot-spot analyses are now required for these types of projects in federal $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas, effective December 2012.

The LTAB is not a federally designated $PM_{2.5}$ and PM_{10} nonattainment or maintenance area and, therefore, is not subject to either guidance document. However, the LTAB is designated as a state nonattainment area for PM_{10}. To meet state requirements, the proposed project is assessed qualitatively using the procedure outlined in the 2006 PM Guidance.

The 2006 PM Guidance describes a qualitative hot-spot analysis method that does not involve dispersion modeling. This qualitative method of analyzing $PM_{2.5}$ and PM_{10} hot spots involves a more streamlined review of local factors, such as project design features that qualify the project as a "project of air quality concern," or local monitoring data near the location of a proposed project.

5.2.2.3. PROJECTS OF AIR QUALITY CONCERN

The method of analyzing $PM_{2.5}$ and PM_{10} hot spots presented in the March 2006 PM Guidance involves two steps: determining whether a project is a "project of air quality concern" and, if so, preparing a qualitative (emissions analysis only) but more detailed analysis of the proposed project.

The PM Guidance defines the following types of projects as projects of air quality concern:

- new or expanded highway projects that have a significant number of, or significant increase in, diesel vehicles;
- projects affecting intersections that are LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
- new bus and rail terminals, and transfer points, that have a significant number of diesel vehicles congregating at a single location;
- expanded bus and rail terminals, and transfer points, that significantly increase the number of diesel vehicles congregating at a single location; or
- projects in, or affecting locations, areas, or categories of, sites that are identified in the PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

A significant volume for a new highway or expressway is defined as an AADT volume of 125,000 or more, and a significant number of diesel vehicles is defined as 8% or more of that total AADT or more than 10,000 trucks AADT. A significant increase in diesel truck traffic is usually considered to be approximately 10% (EPA 2006).

The proposed project's improvements would benefit projected future traffic operations by reducing congestion. The proposed project would not generate additional traffic. The maximum AADT volume in the design year (2038) with the proposed project is 17,600 vehicles (Wood Rodgers 2011), which is less than the volume significance criterion of 125,000 AADT. The maximum AADT for all build scenarios in the design year (2038) would also be 17,600 vehicles along the new (Alternative 1, 2, 3, or 4) or upgraded (Alternative 6 or 6A) Fanny Bridge (Wood Rodgers 2011).

It should be noted that under Alternative 1, which would involve constructing a new SR 89 alignment, the existing SR 89 intersection would continue to serve as a local street to allow access to the existing recreational parking area and businesses south of the existing

Fanny Bridge. During the design year (2038), this street would have an AADT of 6,700. Therefore, even if the new volumes were added, the total AADT would not exceed the 125,000 AADT threshold.

Diesel-fueled trucks make up approximately 3.6% of total existing AADT along SR 28 and 6.8% of total AADT along SR 89 within the limits of the project area (Caltrans 2010). Implementing the proposed project would reduce congestion on the current Fanny Bridge, and this project is not a land use project that would generate truck trips or otherwise affect the number of truck trips in the project vicinity. However, it is anticipated that the proposed project would result in improved movement of vehicles and trucks, which would reduce PM emissions associated with low travel speeds and idling (Wood Rodgers 2011).

Considering the above, the proposed project would not exceed any of the thresholds or standards used to identify a project of air quality concern. Therefore, the project meets the requirements of the CAA and 40 CFR 93.116 without an explicit hot-spot analysis. The project would not create a new, or worsen an existing, PM_{10} or $PM_{2.5}$ violation.

5.2.2.4. MOBILE-SOURCE AIR TOXICS

In February 2006, FHWA issued its FHWA Interim Guidance (FHWA 2006b) to advise when and how to analyze MSATs in the NEPA process for highways. However, EPA recommends following the report, *Analyzing, Documenting, and Communicating the Impacts of Mobile Source Air Toxic Emissions in the NEPA Process* (AASHTO 2007). In September 2009, FHWA released an update to the FHWA Interim Guidance (FHWA 2009). The 2009 Guidance did not change any project analysis thresholds, recommendations, or guidelines; however, seven updated primary MSATs were identified as having significant contributions from mobile sources that are among the national- and regional-scale cancer risk drivers. In December 2012, FHWA released Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA, as an update to the 2009 FHWA Interim Guidance (FHWA 2012).

This 2012 update reflects recent changes in methodology for conducting emissions analysis and updates of research in the MSAT arena. The interim guidance update reflects recent regulatory changes, addresses stakeholder requests to broaden the horizon years of emission trends, and updates stakeholders on the status of scientific research on air toxics. The guidance is described as interim because MSAT science is still evolving. As the science progresses, FHWA will update the guidance. The 2012 update supersedes the September 2009 Interim Guidance and should be referenced in air quality analyses. This analysis follows the most recent FHWA guidance update.

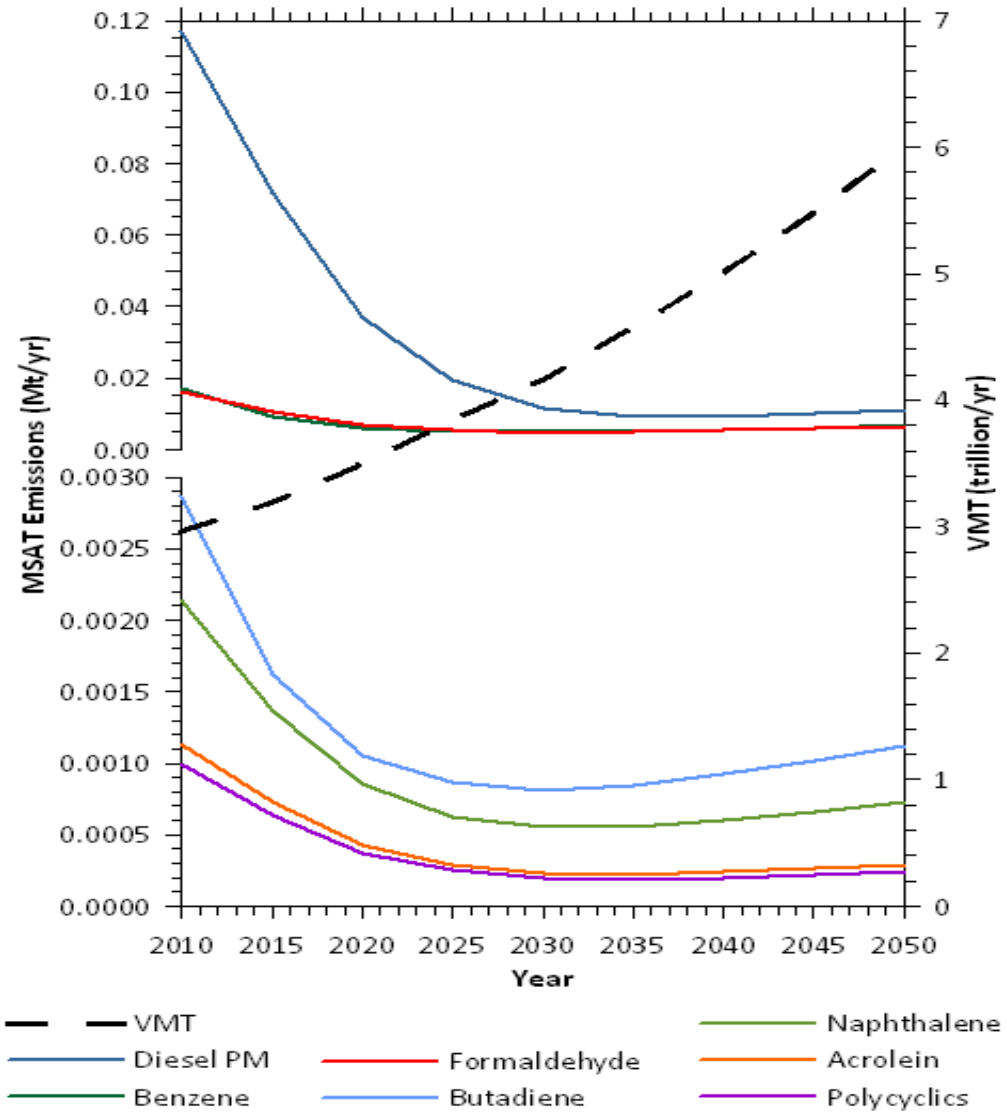
Regulation and Analysis of Emissions of Mobile-Source Air Toxics

EPA is the lead federal agency for administering the CAA and has certain responsibilities regarding the health effects of MSATs. EPA regulates 188 air toxics, known as hazardous air pollutants, under the CAA. EPA assessed this expansive list in its latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8430, February 20, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in its Integrated Risk Information System (http://cfcpub.epa.gov/ncea/iris/index.cfm). In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from its 1999 National Air Toxics Assessment (http://www.epa.gov/ttn/atw/nata1999/). These are acrolein, benzene, 1,3-butadiene, diesel PM plus diesel exhaust organic gases, formaldehyde, naphthalene, and polycyclic organic matter. Although FHWA considers these the priority MSATs, the list is subject to change and may be adjusted in consideration of future EPA rules.

The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis, even if VMT increases by 102% as assumed from 2010 to 2050, a combined reduction of 83% in the total annual emissions for the priority MSAT is projected for the same time period (Figure 5-1).

Air toxics analysis is a continuing area of new research. Much work has been done to assess the overall health risk of air toxics, but many questions remain. In particular, the tools and techniques for assessing project-specific health outcomes from lifetime MSAT exposure remain limited. These limitations reduce the ability to determine how to factor the potential health risks from MSAT exposure into project-level decision-making under NEPA.

Nonetheless, concerns about air toxics continue to be raised as highway projects go through the environmental review process. Even as the science emerges, FHWA is expected by the public and other agencies to address MSAT impacts in environmental documents. FHWA, EPA, the Health Effects Institute (HEI), and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions and associated with highway projects. FHWA will continue to monitor the developing research in this emerging field.



Notes:

Source: FHWA 2012

Figure 5-1: National MSAT Emission Trends 1999–2050

Incomplete or Unavailable Information for Project-Specific Analyses of MSAT Impacts

This air quality analysis includes a basic assessment of the likely impacts of the proposed project related to MSAT emissions. However, the project-specific health impacts of the emission changes associated with project implementation cannot be predicted using available technical tools. Because of these limitations, the following discussion of incomplete or unavailable information is included in accordance with 40 CFR 1502.22[b].

In FHWA's view, a credible prediction cannot be made of project-specific health impacts from changes in MSAT emissions associated with a proposed set of highway alternatives, because the necessary information is incomplete or unavailable. The outcome of such an assessment, adverse or not, would be influenced more by assumptions and speculation than by any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed project.

EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. The lead authority for administering the CAA and its amendments, EPA has specific statutory obligations to regulate hazardous air pollutants and MSATs. EPA is continually assessing human health effects, exposures, and risks posed by air pollutants. It maintains the Integrated Risk Information System, which is a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects (http://www.epa.gov/ncea/iris/index.html). Each report assesses the noncancerous and cancerous effects of individual compounds and quantitatively estimates the risk levels from lifetime oral and inhalation exposures, with uncertainty spanning perhaps an order of magnitude.

Other organizations, including HEI, are also active in research and analyses of the human health effects of MSAT. Two HEI studies are summarized in Appendix D of FHWA's memorandum "Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents." Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious are the adverse human health effects of MSAT compounds at current environmental concentrations (HEI 2007) and in the future as vehicle emissions substantially decrease (HEI 2009).

The methodologies for forecasting health impacts include emissions modeling, dispersion modeling, exposure modeling, and final determination of health impacts. Each of these is a step in the process of building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70-year) assessments, particularly because unsupportable assumptions would have to be made about changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, because such information is unavailable.

Regarding air dispersion modeling, EPA's guideline CAL3QHC model was evaluated extensively in a National Cooperative Highway Research Program study (http://www.epa.gov/scram001/dispersion_alt.htm#hyroad), which documents poor model performance at 10 sites across the country. Intensive monitoring was conducted at three of the sites, and less-intense monitoring occurred at the other seven sites. The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this bias is a tendency to overstate the air quality benefits of mitigating congestion at intersections.

Such poor model performance is less difficult to manage for demonstrating compliance with NAAQS for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially because some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways and to determine the portion of time that people are actually exposed at a specific location.

There are considerable uncertainties about the existing estimates of toxicity of the various MSATs because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (2007). As a result, no national consensus has been reached on air dose-response values assumed to protect the public health and welfare for MSAT compounds, particularly for diesel PM. EPA (http://www.epa.gov/risk/basicinformation.htm#g) and HEI (2007) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

A national consensus also does not exist on an acceptable level of risk. EPA, as provided by the CAA, determines whether more stringent controls on industrial sources subject to the maximum achievable control technology standards (e.g., benzene emissions from

refineries) are required to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect. The decision framework is a two-step process. First, EPA must determine a "safe" or "acceptable" level of risk from a source's emissions, which is generally no greater than approximately 100 in 1 million. EPA then considers additional factors in an effort to maximize the number of people with risks less than 1 in 1 million caused by emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics will be less than 1 in 1 million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in 1 million.

In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two-step decision framework. There is not enough information to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties involved in predicting the impacts. Consequently, the results of such assessments would not be useful to decision-makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities, plus improved access for emergency response, which are better suited for quantitative analysis.

5.2.3. Evaluation of the Project's Mobile-Source Air Toxics Potential

FHWA has developed a tiered approach for analyzing MSATs in NEPA documents. Depending on the specific project circumstances, FHWA identifies three levels of analysis:

- Category 1: No analysis for projects with no potential for meaningful MSAT effects.
  - Projects qualifying as a categorical exclusion under 23 CFR 771.117(c);
  - Projects exempt 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.
- Category 2: Qualitative analysis for projects with low potential MSAT effects.
  - Projects that serve to improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions.

- Project examples 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 AADT.
- Any projects not meeting the criteria in Category (1) or Category (3) should be included in this category.

- Category 3: Projects with higher potential MSAT effects.
  - Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location, involving a significant number of diesel vehicles for new projects or accommodating with a significant increase in the number of diesel vehicles for expansion projects; or
  - Create new capacity or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000 or greater by the design year; and
  - Proposed to be located in proximity to populated areas.

The proposed project would involve adding a second bridge and structural improvements to Fanny Bridge (Alternatives 1 through 4) or replacing and widening Fanny Bridge (Alternatives 6 and 6A), which currently experiences substantial congestion and is not seismically or structurally sufficient. The proposed project would also provide intermodal connectivity in the region for transit, pedestrians, and bicyclists, which could reduce vehicle trips and VMT. Furthermore, the 2038-design-year AADT and maximum ADT during summer peak tourist months would be 17,600 and 23,900 vehicles, respectively (Wood Rodgers 2011), which would be substantially less than the FHWA threshold value of 140,000 AADT, the minimum volume for higher potential MSAT effects (FHWA 2006a).

The proposed project is exempt under the CAA conformity rule under 40 CFR 93.126 and would not have a meaningful impact on traffic volumes or vehicle mix. Therefore, the proposed project is considered a Category (1) project that would have no potential for meaningful MSAT effects and does not require further analysis.

5.3. Climate Change

5.3.1. Construction Emissions

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction-related GHG emissions

include emissions produced as a result of material processing, emissions produced by on-site construction equipment, and emissions arising from traffic delays caused by construction.

GHG emissions generated by construction would be primarily in the form of CO_2. Emissions of other GHGs, such as methane and nitrous oxide, are also important with respect to global climate change; however, the emission levels of these other GHGs from on- and off-road vehicles used during construction are relatively small compared with the level of CO_2 emissions, even when factoring in the relatively larger global warming potential of methane and nitrous oxide.

These emissions are produced at different levels throughout the construction phase of a project. Their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by increasing the intervals between maintenance and rehabilitation events.

Because exhaust emissions from the construction equipment fleet are expected to decrease over time as stricter standards take effect, maximum daily construction emissions were estimated using the earliest calendar year when construction could begin (i.e., 2015) to generate conservative estimates. If construction were to occur in later years, advancements in engine technology, retrofits, and turnover in the equipment fleet would likely result in lower levels of emissions.

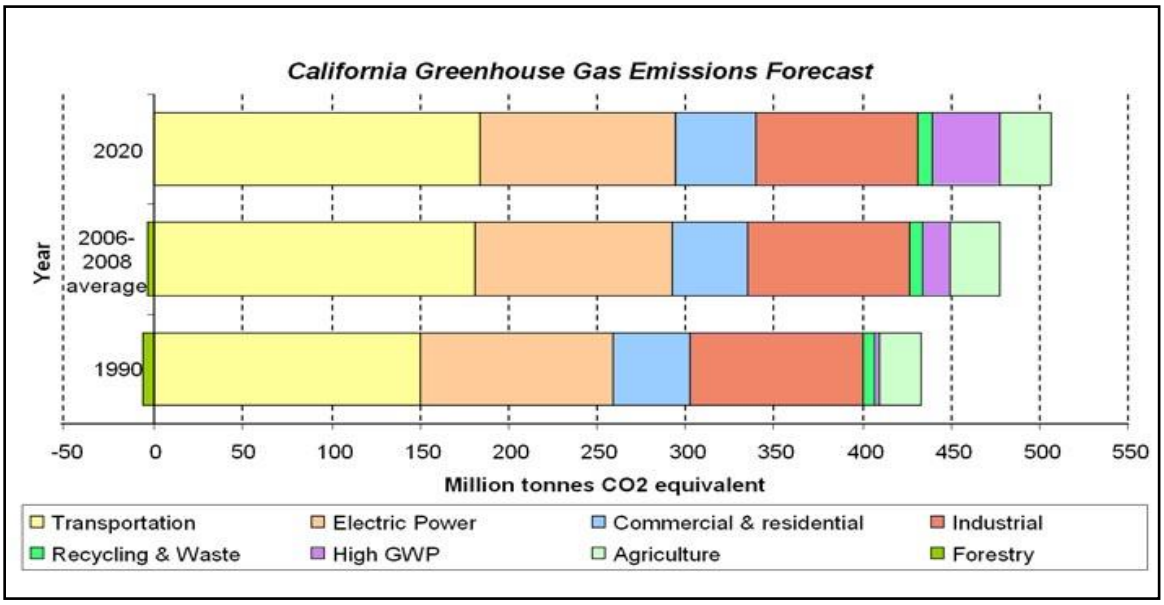
Construction emissions were estimated for the project using SMAQMD Road Construction Emissions Model, Version 7.1.5.1. Total CO_2 emissions for construction of the project are estimated at 515 metric tons. At this time, PCAPCD has not adopted policies or recommended performance measures to address specific GHG emission reductions related to construction.

5.3.2. Operational Emissions

An individual project does not generate enough GHG 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 GHGs. The assessment of cumulative impacts must determine whether a project's incremental effect is "cumulatively considerable." See Sections 15064(h)(1) and 15130 of the State CEQA

Guidelines. To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. Gathering sufficient information on a global scale of all past, current, and future projects to make this determination is not feasible or required for this analysis.

The AB 32 Scoping Plan contains the main strategies that California will use to reduce GHGs. As part of its supporting documentation for the Draft Scoping Plan, ARB released the GHG inventory for California (forecast last updated October 28, 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 GHG inventory for 2006, 2007, and 2008. Figure 5-2 presents California's 1990 base year, 2006–2008 average, and projected 2020 GHG emissions.

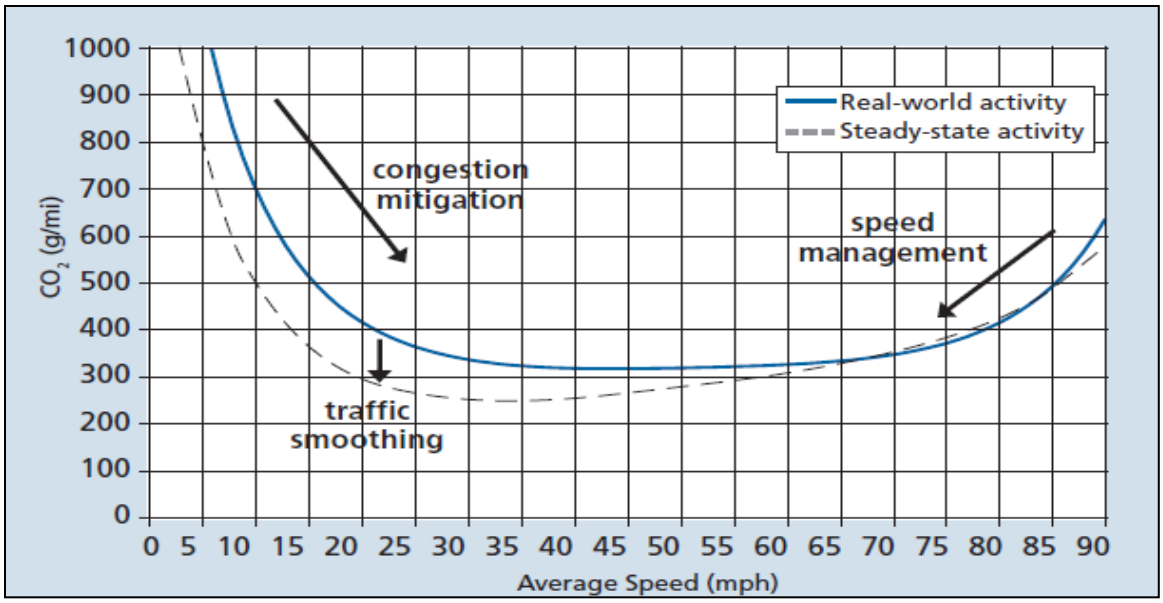


Source: Caltrans 2011

Figure 5-2: California Greenhouse Gas Inventory Forecast

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

One of the main strategies in the *Climate Action Program at Caltrans* to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of CO_2 emissions from mobile sources, such as automobiles, occur at stop-and-go speeds (0–25 miles per hour [mph]) and speeds exceeding 55 mph; the most severe emissions occur from 0 to 25 mph (Figure 5-3).



Source: Caltrans 2011

Figure 5-3: Possible Effect of Traffic Operation Strategies in Reducing On-Road Carbon Dioxide Emissions

The purpose of this project is to reduce congestion and improve the safety and operations on SR 89 through Tahoe City by addressing present and future automobile travel demands, pedestrian and bicycle mobility, public transit needs, the structural integrity of the Truckee River Bridge (Fanny Bridge), and emergency access to the West Shore within the Fanny Bridge Influence Area. As discussed in more detail in the traffic analysis, average roadway speeds would increase 1–9 mph after implementation of the proposed project, which would also reduce the rate of CO_2 generated by vehicle traffic on local roadways (Wood Rogers 2011). Therefore, the project would likely reduce the region's overall CO_2 emissions and is not expected to have an impact related to climate change.

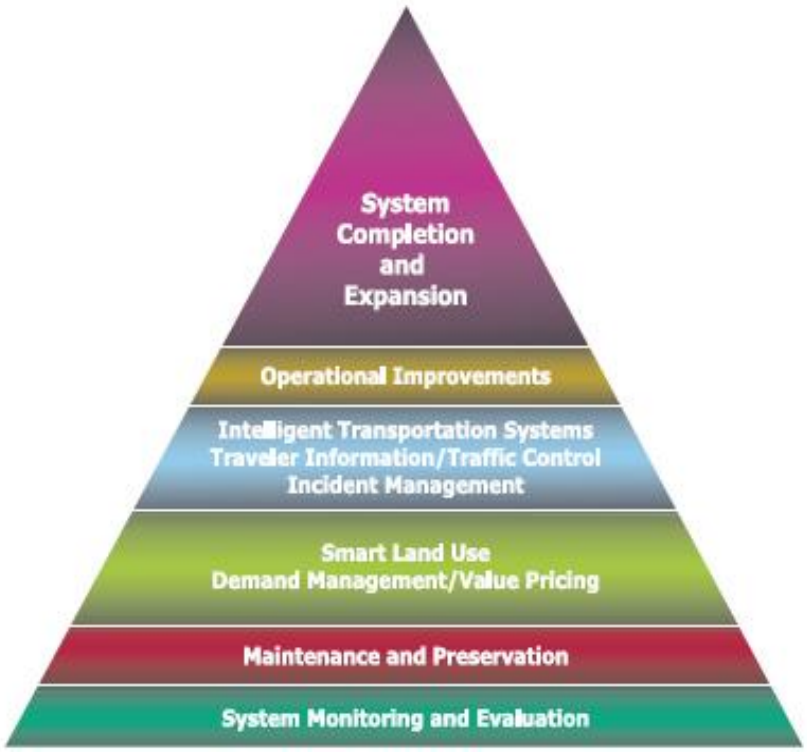
5.3.2.1. ASSEMBLY BILL 32 COMPLIANCE

California Department of Transportation

Caltrans continues to be actively involved on the Governor's Climate Action Team as California ARB works to implement 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 AB 32 targets 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 GHG emissions. The plan proposes to achieve these goals while accommodating growth in population and the economy. A suite of investment options has been created that, when combined, 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 (Figure 5-4).



Source: Caltrans 2011

Figure 5-4: Mobility Pyramid

Caltrans and TRPA are supporting efforts to reduce VMT by planning and implementing smart land use strategies, such as job/housing proximity, and promoting alternate modes of transportation and mobility strategies. Caltrans is working closely with local

jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Table 5-2 summarizes programs by Caltrans and statewide efforts being implemented to reduce GHG emissions. More detailed information about each strategy is included in the *Climate Action Program at Caltrans* (Caltrans 2006).

To the extent that it is applicable or feasible for the project, the following measures will also be included in the project to reduce project-related GHG emissions and potential climate change impacts:

- Landscaping reduces surface warming and, through photosynthesis, decreases CO_2. Landscaping would be provided where necessary within the corridor to provide aesthetic treatment, replacement planting, or mitigation planting for the project. The landscape planting would help offset any potential CO2 emissions increase.
- According to Caltrans Standard Specification Provisions, idling time for lane closure during construction is restricted to 10 minutes in each direction. In addition, the contractor must comply with Title 13, Section 2449(d)(3) of the California Code of Regulations, which was adopted by ARB on June 15, 2008. This regulation restricts idling of construction vehicles to no longer than 5 consecutive minutes. Compliance with this regulation would reduce harmful emissions from diesel-powered construction vehicles.

TRPA Regional Plan and Sustainable Communities Strategy

Both the Transportation Element of the TRPA Regional Plan and the TMPO 2035 RTP have been developed to meet the statutory requirements of the sustainable communities strategy for the region. The sustainable communities strategy requirements, which stem from SB 375, mandate MPOs to demonstrate how the region will achieve their assigned GHG reduction targets through a coordinated effort of both local and regional transportation and land use planning. The GHG emission reductions targets for sustainable communities strategy were assigned to MPOs by ARB pursuant to the requirements of SB 375 and are part of the state's strategy to achieve the emissions reduction goals of AB 32. ARB accepted the GHG determination for the sustainable communities strategy on April 25, 2013. Therefore, the TMPO sustainable communities strategy is in compliance with SB 375 and required GHG reduction goals. Thus, because the TRPA Regional Plan and 2035 RTP are consistent with the TMPO sustainable communities strategy, the plans are also consistent with the GHG emission reduction goals of SB 375 and AB 32.

Table 5-2: Climate Change Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review	Caltrans	Local governments	Review of and efforts to mitigate effects of development proposals	Not estimated	Not estimated
	Planning Grants	Caltrans	Local and regional agencies and 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 and Intelligent Transportation System Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; congestion management plan	0.07	2.17
Mainstream Energy and GHG into Plans and Projects	Office of Policy Analysis and Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not estimated	Not estimated
Educational and Information Program	Office of Policy Analysis and Research	Interdepartmental, Cal/EPA, ARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not estimated	Not estimated
Fleet Greening and Fuel Diversification	Division of Equipment	California Department of General Services		Fleet replacement B20 B100	0.0045	0.0065 0.045 0.0225
Nonvehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy conservation opportunities	0.117	0.34
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**

Notes:
ARB = California Air Resources Board; BT&H = Business, Transportation, and Housing Agency; Cal/EPA = California Environmental Protection Agency; Caltrans = California Department of Transportation; CEC = California Energy Commission; CO_2 = carbon dioxide; GHG = greenhouse gas; ITS = Intelligent Transportation System; MMT = million metric tons; MPO = metropolitan planning organization.
Source: Caltrans 2011

Local Area Plans

The proposed project is located within Tahoe City; the most recent Plan Area general plan and community plan for Tahoe City were completed in 1994. At the time of community/general plan development, AB 32 had not yet been established and there were

no existing state-mandated GHG reduction targets for planning documents. Currently, Placer County is developing an updated community/general plan for the LTAB that includes the West Shore Plan Area, Greater Tahoe City Plan Area (which includes Tahoe City), North Tahoe West Plan Area, and North Tahoe East Plan Area. It is anticipated the Tahoe Basin Community/General Plan will incorporate the sustainable communities strategy concepts established as part of the 2035 RTP and TRPA Regional Plan.

5.3.2.2. ADAPTATION STRATEGIES

"Adaptation strategies" refer to how Caltrans and others can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, more intense storm surges, and increased frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways. For example, longer periods of intense heat may damage roadbeds, flooding and erosion may increase storm damage, and rising sea levels may inundate transportation facilities. These effects will vary by location; in the most extreme cases, they may require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts on the transportation infrastructure.

The federal Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality, the Office of Science and Technology Policy, and the National Oceanographic and Atmospheric Administration, released its interagency report on October 14, 2010. The report outlined recommendations to President Obama on how federal agencies' policies and programs can better prepare the United States to respond to the impacts of climate change. The Progress Report of the Interagency Climate Change Adaptation Task Force recommends that the federal government implement actions to expand and strengthen the nation's capacity to better understand, prepare for, and respond to climate change.

Climate change adaptation must also involve the natural environment. Statewide efforts are under way to develop strategies to cope with impacts on habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, Governor Schwarzenegger signed Executive Order S-13-08, which directed several state agencies to address California's vulnerability to sea level rise caused by climate change. The California Natural Resources Agency was directed to coordinate with local, regional, state, and federal public and private entities to develop

the *2009 California Climate Adaptation Strategy* (CNRA 2009). Numerous other state agencies were also involved in the creation of this document, including California Environmental Protection Agency; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture.

The *2009 California Climate Adaptation Strategy* summarizes the best known science on climate change impacts on California, assesses California's vulnerability to the identified impacts, and then outlines solutions that can be implemented within and across state agencies to promote resiliency. The document is broken down into strategies for different sectors that include Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. The state's adaptation strategy will be updated to reflect current findings as data continue to be developed and collected.

All projects that have filed a notice of preparation and/or are programmed for construction funding from 2008 through 2013, or that are routine maintenance projects as of the date of Executive Order S-13-08, may consider these planning guidelines; however, they are not required to do so. The notice of preparation for the proposed project was submitted in December 2011 and is not subject to this provision. Furthermore, Executive Order S-13-08 directed the Business, Transportation, and Housing Agency to prepare a report to assess the vulnerability of transportation systems to sea level rise that affects safety, maintenance, and operational improvements of the system, and the economy of the state. Caltrans continues to work on assessing the transportation system's vulnerability to climate change, including the effect of a rise in sea level.

Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change impacts, Caltrans has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, Caltrans will be able to review its current design standards to determine what changes, if any, may be warranted to protect the transportation system from sea level rise.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding, the increased frequency and intensity of storms and wildfires, rising temperatures, and rising sea levels. Caltrans is an active participant in the

efforts being conducted in response to Executive Order S-13-08 and is mobilizing to respond to the National Academy of Science's report on sea level rise assessment.

5.4. Cumulative Impacts

The analysis of the proposed project's impacts on regional air quality, as performed by TMPO and TRPA in conjunction with the RTP and RTIP process, is a cumulative analysis. The proposed project would conform to the assumptions in the conformity analyses for the 2035 RTP (TMPO 2012) and 2013 RTIP (TMPO 2010), which are long-range planning documents that include roadway projects throughout the region. Therefore, the proposed project would not result in a cumulative impact on air quality.

Chapter 6. Avoidance, Minimization, and/or Mitigation Measures

6.1. Permanent Impacts

No adverse air quality impacts were identified for project operations. No mitigation measures would be required.

6.2. Temporary Impacts

Based on the analysis above, the air quality impacts of the proposed project would be short term and temporary. The project would be required to comply with regional rules that assist in reducing short-term air pollutant emissions. The following mitigation measures were identified for project construction impacts. These measures are recommended for inclusion in the project as best management practices to minimize cumulative construction impacts in the region.

AQ-1 Project activities would comply with Caltrans Standard Specifications (2010) Section 14-9, including:

- Comply with air pollution control rules, regulations, ordinances, and statutes, including air pollution control rules, regulations, ordinances, and statutes provided in Government Code §11017 (Public Contract Code §10231).
- Prevent and alleviate dust by applying water, dust palliative, or both (Section 14-9.02) and by covering active and inactive stockpiles (Sections 13-4.03C[3] and 14-9.02).

AQ-2 Project activities would comply with all requirements of Attachment Q, Standard Conditions of Approval for Grading Projects, as appropriate. The standard conditions that must be met in all projects involving grading include Pre-Grading Conditions, Construction/Grading Conditions, and General Conditions/Design Standards.

AQ-3 PCAPCD rules and regulations are required for all projects. The following list of construction control measures is an "all-inclusive" list from Appendix B of the PCAPCD CEQA Air Quality Handbook (PCAPCD 2012) and therefore not all measures listed below would be applicable to the proposed project.

- Construction equipment exhaust emissions shall not exceed District Rule 202 Visible Emissions limitations. Operators of vehicles and equipment found to exceed opacity limits are to be immediately notified by the District to cease operations and the equipment must be repaired within 72 hours. (Based on PCACPD Rule 202)
- The contractor shall suspend all grading operations when fugitive dust exceeds District Rule 228 Fugitive Dust limitations. The prime contractor shall be responsible for having an individual who is ARB-certified to perform Visible Emissions Evaluations . This individual shall evaluate compliance with Rule 228 on a weekly basis. It is to be noted that fugitive dust is not to exceed 40% opacity and not go beyond the property boundary at any time. Lime or other drying agents utilized to dry out wet grading areas shall not exceed District Rule 228 – Fugitive Dust limitations. Operators of vehicles and equipment found to exceed opacity limits will be notified by the District and the equipment must be repaired within 72 hours. (Based on PCAPCD Rule 228)
- The prime contractor shall be responsible for keeping adjacent public thoroughfares clean of silt, direct, mud, and debris, and shall "wet broom" the streets (or use another method to control dust as approved by the individual jurisdiction) if silt, dirt, mud, or debris is carried over to adjacent public thoroughfares. (Based on PCAPCD Rule 228 Section 401.5)
- During construction, traffic speeds on all unpaved surfaces shall be limited to 15 miles per hours or less. (Based on PCAPCD Rule 228 Section 401.5)
- In order to minimize wind driven dust during construction, the prime contractor shall apply methods such as surface stabilization, establishment of a vegetative cover, paving, (or use another method to control dust as approved by the individual jurisdiction).
- The prime contractor shall suspend all grading operations when wind speeds (including instantaneous gusts) are excessive and dust is impacting adjacent properties. (Based on PCAPCD Rule 228 Section 402)
- The contractor shall apply water or use other method to control dust impacts offsite. Construction vehicles leaving the site shall be cleaned to prevent dust, silt, mud, and dirt from being released or tracked off-site. (Based on PCAPCD Rule 228 Section 401.1 and 401.4)

- During construction, no open burning or removed vegetation shall be allowed unless permitted by the District. (Based on District Regulation 3)
- A person shall not discharge into the atmosphere volatile organic compounds caused by the use of manufacture of Cutback or Emulsified asphalts for paving, road construction or road maintenance, unless such manufacture or use complies with the provisions Rule 217. (Based on PCAPCD Rule 217)
- Any device or process that discharges 2 lbs per day or more of air contaminants into the atmosphere, as defined by Health and Safety Code Section 39013, may require a District permit. Permits may be required for both construction and operation. Developers/contractors should contact the District prior to construction and obtain any necessary permits prior to the issuance of a Building Permit. (Based on the California Health and Safety Code Section 39013)
- Prior to the approval of grading or improvement plans, the applicant shall retain a qualified geologist or geotechnical engineer to conduct additional geological evaluations of the project site to determine the presence or absence of naturally-occurring asbestos onsite. These evaluations shall include the project site and each offsite parcel where infrastructure construction or installation would occur. These evaluations shall be completed and submitted to the District prior to issuance of any grading and/or improvement plans. In the event that naturally-occurring asbestos is located onsite, the following measures shall be implemented prior to the approval of grading/improvement plans:
    - The applicant shall prepare an Asbestos Dust Mitigation Plan pursuant to CCR Title 17 Section 93105 ("Asbestos Airborne Toxic Control Measures for Construction, Grading, Quarrying, and Surface Mining Operations") and obtain approval by the District. The plan shall include all measures required by the State of California and the District.
    - If asbestos is found in concentrations greater than 5 percent, the material shall not be used as surfacing material as stated in state regulation CCR Title 17 Section 93106 ("Asbestos Airborne Toxic Control Measure-Asbestos Containing Serpentine"). The material with naturally-occurring asbestos can be reused at the site for subgrade material covered by other non-asbestos-containing material. (Based on District Rule 228 and Section 93105, Title 17, CCR by the ARB per Health and Safety Code Section 39666)

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Appendix A Regional Transportation Plan and Federal Transportation Improvement Plan Project Listings

Figure 6-3 Tier 1 Constrained Scenario Project List: Cost and Implementation Steps

No.	Trans Alt A	Trans Alt B	Trans Alt C	Project Strategies	Cost 2013 Dollars	Project Objective	Location	Implementing Agency	Est. Year Complete	Est. Cost in Year of Expenditure Dollars
Corridor Revitalization										
1	A	B	C	Kings Beach Commercial Core Improvement Project	$35,000,000	Bike/Ped/WQ	Placer	Placer	2015	$36,414,000
2	A	B	C	State Route 89/Fanny Bridge Community Revitalization Project	$20,000,000	Bridge/ Intersection	Placer	Placer	2018	$22,081,616
3		B	C	US 50 South Shore Community Revitalization Project	$75,000,000	Bike/Ped/WQ	El Do/Douglas	TTD	2017	$81,182,412
4		B	C	Sierra Boulevard Complete Streets Project from US HWY 50 to Barbara Avenue (includes US 50 and Sierra Boulevard intersection improvements)	$3,155,000	Safety/Bike/Ped/WQ	CSLT	CSLT	2015	$3,282,462
Corridor Revitalization Total					**$133,155,000**					**$142,960,490**
Transit Strategies										
5	A		C	Lake Tahoe Waterborne Transit Project	$42,200,000	Transit Capital	NV/CA	TTD	2015	$43,904,880
6	A		C	Lake Tahoe Waterborne Transit Operations	$4,600,000	Transit Operations	NV/CA	TTD	2015-2023	$41,400,000
									2024-2035	$55,200,000
7		B	C	BlueGo Service Operational Enhancements	$749,500	Transit Operations	El Do/Douglas	TTD	2016-2023	$7,009,091
									2024-2035	$12,748,825
8		B	C	BlueGo Transit Capital Enhancements	$9,940,000	Transit Capital	El Do/Douglas	TTD	2016	$2,122,416
									2018	$3,312,242
									2022	$5,903,757
9		B	C	TART Service Operational Enhancements	$734,867	Transit Operations	Placer	Placer	2016-2023	$6,872,248
									2024-2035	$12,499,921
10		B	C	TART Transit Capital Enhancements	$1,896,300	Transit Capital	Placer	Placer	2016	$2,012,369
11		B	C	East Shore Service Operational Enhancement	$518,000	Transit Operations	Various locations	Various	2016-2023	$4,845,927
									2024-2035	$8,811,062
12		B	C	East Shore Transit Capital Enhancement	$5,200,000	Transit Capital	Various locations	TTD	2016	$5,518,282
13		B	C	Inter-Regional Service Operational Enhancement (cost shown is annual subsidy required, not total cost)	$560,512	Transit Operations	Various locations	Various	2016-2023	$5,241,734
									2024-2035	$9,534,182
14		B	C	Inter-Regional Transit Capital Enhancement	$3,793,751	Transit Capital	Various locations	Various	2016	$4,025,959
15	A		C	City of South Lake Tahoe (TVL) Aviation Capital	$17,850,000	AIP Capital	CSLT	CSLT	2024	$22,194,231
Transit Strategies Total					**$88,042,930**					**$253,157,127**

Tahoe Regional Planning Agency - Federal Transportation Improvement Program
(Dollars in Whole)
Local Highway System

DIST:	PPNO:	EA:	CTIPS ID:
03			220-0000-0107
CT PROJECT ID:			MPO ID: TTD03

COUNTY: Placer County | ROUTE: 89 | PM: 7.5 / 9.4

TITLE (DESCRIPTION): State Route 89/Fanny Bridge Community Revitalization Project (Address traffic congestion and improve pedestrian and bicycle safety and access)

MPO Aprv:
State Aprv:
Federal Aprv:

EPA TABLE II or III EXEMPT CATEGORY: Safety Improvement Program.

IMPLEMENTING AGENCY: Tahoe Transportation District

PROJECT MANAGER: ALFRED KNOTTS PHONE: (775) 589-5503 EMAIL: aknotts@tahoetransportation.org

PROJECT VERSION HISTORY *(Printed Version is Shaded)* *(Dollars in whole)*

Version	Status	Official Date	Updated By	Change Reason	Amend No.	Prog Con	Prog RW	PE
3	Active	07/02/2012	JWEBER	Adoption - Carry Over		16,000,000		2,375,000
2	Official	10/14/2010	JWEBER	Adoption - Carry Over				2,375,000
1	Official	05/27/2010	JWEBER	Amendment - New Project	17			1,525,000

- Federal Disc: -
- Fund Source 1 of 3
- Fund Type: FEDERAL LANDS HIGHWAYS PROGRAM
- Funding Agency:

	PRIOR	12/13	13/14	14/15	15/16	16/17	17/18	BEYOND	TOTAL
PE	2,375,000								2,375,000
RW									
CON									
TOTAL	2,375,000								2,375,000

- Federal Disc: -
- Fund Source 2 of 3
- Fund Type: Public Land Hwys
- Funding Agency:

	PRIOR	12/13	13/14	14/15	15/16	16/17	17/18	BEYOND	TOTAL
PE									
RW									
CON				12,800,000					12,800,000
TOTAL				12,800,000					12,800,000

- Other State: -
- Fund Source 3 of 3
- Fund Type: State Cash
- Funding Agency:

	PRIOR	12/13	13/14	14/15	15/16	16/17	17/18	BEYOND	TOTAL
PE									
RW									
CON				3,200,000					3,200,000
TOTAL				3,200,000					3,200,000

Project Total

	PRIOR	12/13	13/14	14/15	15/16	16/17	17/18	BEYOND	TOTAL
PE	2,375,000								2,375,000
RW									
CON				16,000,000					16,000,000
TOTAL	2,375,000			16,000,000					18,375,000

Comments:

******** Version 3 - 03/21/2012 ********
Carry over from 2010
added PLH $12,800 and CA State $3,200
updated project cost $20M and project title

Carry Over from 2008
Estimated project cost $50 million
******** Version 2 - 06/21/2010 ********
Add FLH funds of $1,525,000 to PE FY09/10
RTP 3, EIP#954, 955
******** Version 1 - 04/27/2010 ********

Product of CTIPS Page 1 07/02/2012

Appendix B Road Construction Emissions Model

Road Construction Emissions Model, Version 7.1.5.1

Emission Estimates for -> Fanny Bridge Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	2.6	14.2	23.2	24.1	1.1	23.0	5.8	1.0	4.8	2,682.0
Grading/Excavation	5.7	28.1	54.2	25.6	2.6	23.0	7.1	2.3	4.8	5,718.1
Drainage/Utilities/Sub-Grade	4.4	19.6	38.9	25.1	2.1	23.0	6.7	1.9	4.8	3,897.3
Paving	2.9	14.7	22.3	1.5	1.5	-	1.4	1.4	-	2,520.5
Maximum (pounds/day)	5.7	28.1	54.2	25.6	2.6	23.0	7.1	2.3	4.8	5,718.1
Total (tons/construction project)	0.6	2.9	5.4	2.9	0.3	2.6	0.8	0.2	0.5	567.3

Notes:	
Project Start Year ->	2015
Project Length (months) ->	12
Total Project Area (acres) ->	9
Maximum Area Disturbed/Day (acres) ->	2
Total Soil Imported/Exported (yd^3/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> Fanny Bridge Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	1.2	6.4	10.5	11.0	0.5	10.5	2.6	0.5	2.2	1,219.1
Grading/Excavation	2.6	12.8	24.7	11.6	1.2	10.5	3.2	1.1	2.2	2,599.1
Drainage/Utilities/Sub-Grade	2.0	8.9	17.7	11.4	0.9	10.5	3.0	0.9	2.2	1,771.5
Paving	1.3	6.7	10.1	0.7	0.7	-	0.6	0.6	-	1,145.7
Maximum (kilograms/day)	2.6	12.8	24.7	11.6	1.2	10.5	3.2	1.1	2.2	2,599.1
Total (megagrams/construction project)	0.5	2.6	4.9	2.6	0.3	2.3	0.7	0.2	0.5	514.5

Notes:	
Project Start Year ->	2015
Project Length (months) ->	12
Total Project Area (hectares) ->	4
Maximum Area Disturbed/Day (hectares) ->	1
Total Soil Imported/Exported ($meters^3$/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model Version 7.1.5.1

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells C10 through C25.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

To begin a newproject, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

Input Type		
Project Name	Fanny Bridge	
Construction Start Year	2015	Enter a Year between 2009 and 2025 (inclusive)
Project Type	3	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	12.00	months
Predominant Soil/Site Type: Enter 1, 2, or 3	1	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
Project Length	1.00	mile
Total Project Area	9.00	acres
Maximum Area Disturbed/Day	2.30	acres
Water Trucks Used?	1	1. Yes 2. No
Soil Imported		yd^3/day
Soil Exported		yd^3/day
Average Truck Capacity	20	yd^3 (assume 20 if unknown)

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells C34 through C37.

Construction Periods	User Override of Construction Months	Program Calculated Months
Grubbing/Land Clearing		1.20
Grading/Excavation		4.80
Drainage/Utilities/Sub-Grade		4.20
Paving		1.80
Totals	0.00	12.00

2005	%	2006	%	2007	%
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00

NOTE: soil hauling emissions are included in the Grading/Excavation Construction Period Phase, therefore the Construction Period for Grading/Excavation cannot be zero if hauling is part of the project.

Hauling emission default values can be overridden in cells C45 through C46.

Soil Hauling Emissions	User Override of Soil Hauling Defaults	Default Values
User Input		
Miles/round trip		30
Round trips/day		0
Vehicle miles traveled/day (calculated)		0

Hauling Emissions	ROG	NOx	CO	PM10	PM2.5	CO2
Emission rate (grams/mile)	0.25	9.41	1.09	0.22	0.15	1694.67
Emission rate (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day	0.00	0.00	0.00	0.00	0.00	0.00
Tons per contruction period	0.00	0.00	0.00	0.00	0.00	0.00

Worker commute default values can be overridden in cells C60 through C65.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values
Miles/ one-way trip		20
One-way trips/day		2
No. of employees: Grubbing/Land Clearing		6
No. of employees: Grading/Excavation		29
No. of employees: Drainage/Utilities/Sub-Grade		19
No. of employees: Paving		9

	ROG	NOx	CO	PM10	PM2.5	CO2
Emission rate - Grubbing/Land Clearing (grams/mile)	0.164	0.219	1.956	0.047	0.020	443.518
Emission rate - Grading/Excavation (grams/mile)	0.164	0.219	1.956	0.047	0.020	443.518
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.164	0.219	1.956	0.047	0.020	443.518
Emission rate - Paving (grams/mile)	0.164	0.219	1.956	0.047	0.020	443.518
Emission rate - Grubbing/Land Clearing (grams/trip)	0.558	0.363	4.666	0.004	0.003	95.528
Emission rate - Grading/Excavation (grams/trip)	0.558	0.363	4.666	0.004	0.003	95.528
Emission rate - Draining/Utilities/Sub-Grade (gr/trip)	0.558	0.363	4.666	0.004	0.003	95.528
Emission rate - Paving (grams/trip)	0.558	0.363	4.666	0.004	0.003	95.528
Pounds per day - Grubbing/Land Clearing	0.105	0.131	1.206	0.026	0.011	246.858
Tons per const. Period - Grub/Land Clear	0.001	0.002	0.016	0.000	0.000	3.259
Pounds per day - Grading/Excavation	0.485	0.601	5.546	0.120	0.051	1135.547
Tons per const. Period - Grading/Excavation	0.026	0.032	0.293	0.006	0.003	59.957
Pounds per day - Drainage/Utilities/Sub-Grade	0.316	0.392	3.617	0.078	0.033	740.574
Tons per const. Period - Drain/Util/Sub-Grade	0.015	0.018	0.167	0.004	0.002	34.215
Pounds per day - Paving	0.148	0.183	1.688	0.036	0.015	345.601
Tons per const. Period - Paving	0.003	0.004	0.033	0.001	0.000	6.843
tons per construction period	0.045	0.055	0.509	0.011	0.005	104.273

Water truck default values can be overriden in cells C91 through C93 and E91 through E93.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Day	Default Values Miles Traveled/Day
Grubbing/Land Clearing - Exhaust		1		40
Grading/Excavation - Exhaust		1		40
Drainage/Utilities/Subgrade		1		40

	ROG	NOx	CO	PM10	PM2.5	CO2
Emission rate - Grubbing/Land Clearing (grams/mile)	0.25	9.41	1.09	0.22	0.15	1694.67
Emission rate - Grading/Excavation (grams/mile)	0.25	9.41	1.09	0.22	0.15	1694.67
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.25	9.41	1.09	0.22	0.15	1694.67
Pounds per day - Grubbing/Land Clearing	0.02	0.83	0.10	0.02	0.01	149.31
Tons per const. Period - Grub/Land Clear	0.00	0.01	0.00	0.00	0.00	1.97
Pound per day - Grading/Excavation	0.02	0.83	0.10	0.02	0.01	149.31
Tons per const. Period - Grading/Excavation	0.00	0.04	0.01	0.00	0.00	7.88
Pound per day - Drainage/Utilities/Subgrade	0.02	0.83	0.10	0.02	0.01	149.31
Tons per const. Period - Drainage/Utilities/Subgrade	0.00	0.04	0.00	0.00	0.00	6.90

Fugitive dust default values can be overridden in cells C110 through C112.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		2.3	23.0	0.3	4.8	0.1
Fugitive Dust - Grading/Excavation		2.3	23.0	1.2	4.8	0.3
Fugitive Dust - Drainage/Utilities/Subgrade		2.3	23.0	1.1	4.8	0.2

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles		ROG	CO	NOx	PM10	PM2.5	CO2
Override of Default Number of Vehicles	*Program-estimate*	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
		Cranes	0.00	0.00	0.00	0.00	0.00	0.00
	1	Crawler Tractors	0.74	4.47	9.67	0.37	0.34	825.35
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
	2	Excavators	0.88	5.58	9.81	0.48	0.45	1145.60
		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
		Graders	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Pavers	0.00	0.00	0.00	0.00	0.00	0.00
		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
		Pumps	0.00	0.00	0.00	0.00	0.00	0.00
		Rollers	0.00	0.00	0.00	0.00	0.00	0.00
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
	2	Signal Boards	0.81	2.81	2.74	0.21	0.20	314.87
		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
		Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00
		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
		Welders	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing	pounds per day	2.4	12.9	22.2	1.1	1.0	2285.8
	Grubbing/Land Clearing	tons per phase	0.0	0.2	0.3	0.0	0.0	30.2

Grading/Excavation	Default Number of Vehicles		ROG	CO	NOx	PM10	PM2.5	CO2
Override of Default Number of Vehicles	*Program-estimate*	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
	1	Cranes	0.77	3.01	8.75	0.40	0.37	601.78
0.00	2	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
1.00	4	Excavators	0.44	2.79	4.90	0.24	0.22	572.80
		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2	Graders	1.11	3.49	10.87	0.61	0.56	671.98
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Pavers	0.00	0.00	0.00	0.00	0.00	0.00
		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
		Pumps	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3	Rollers	0.00	0.00	0.00	0.00	0.00	0.00
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3	Rubber Tired Loaders	0.54	3.12	6.84	0.23	0.21	662.67
1.00	4	Scrapers	1.52	7.26	18.70	0.76	0.70	1609.12
	2	Signal Boards	0.81	2.81	2.74	0.21	0.20	314.87
		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00
		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
		Welders	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation	pounds per day	5.2	22.5	52.8	2.5	2.3	4433.2
	Grading	tons per phase	0.3	1.2	2.8	0.1	0.1	234.1

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	CO2 pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
		Cranes	0.00	0.00	0.00	0.00	0.00	0.00
		Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Excavators	0.00	0.00	0.00	0.00	0.00	0.00
		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2	Graders	1.11	3.49	10.87	0.61	0.56	671.98
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Pavers	0.00	0.00	0.00	0.00	0.00	0.00
		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
	1	Plate Compactors	0.04	0.21	0.25	0.01	0.01	34.45
		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1	Pumps	0.00	0.00	0.00	0.00	0.00	0.00
		Rollers	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
1.00	4	Scrapers	1.52	7.26	18.70	0.76	0.70	1609.12
	2	Signal Boards	0.81	2.81	2.74	0.21	0.20	314.87
		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00
1.00		Trenchers	0.61	2.10	5.13	0.40	0.37	377.01
		Welders	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage	pounds per day	4.1	15.9	37.7	2.0	1.8	3007.4
	Drainage	tons per phase	0.2	0.7	1.7	0.1	0.1	138.9

Paving	Default Number of Vehicles		ROG	CO	NOx	PM10	PM2.5	CO2
Override of Default Number of Vehicles	*Program-estimate*	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
		Cranes	0.00	0.00	0.00	0.00	0.00	0.00
		Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Excavators	0.00	0.00	0.00	0.00	0.00	0.00
		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
		Graders	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
	1	Pavers	0.47	2.84	5.10	0.26	0.23	481.54
	1	Paving Equipment	0.35	2.69	4.06	0.20	0.18	426.17
		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
		Pumps	0.00	0.00	0.00	0.00	0.00	0.00
	1	Rollers	0.38	1.51	3.34	0.25	0.23	279.55
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
	2	Signal Boards	0.81	2.81	2.74	0.21	0.20	314.87
		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
	2	Tractors/Loaders/Backhoes	0.76	3.15	6.89	0.54	0.50	672.79
		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
		Welders	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	pounds per day	2.8	13.0	22.1	1.5	1.3	2174.9
	Paving	tons per phase	0.1	0.3	0.4	0.0	0.0	43.1
Total Emissions all Phases (tons per construction period) =>			0.6	2.3	5.3	0.3	0.2	446.3

Equipment default values for horsepower and hours/day can be overridden in cells C289 through C322 and E289 through E322.

Equipment		Default Values Horsepower		Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		106		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		10		8
Concrete/Industrial Saws		64		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		142		8
Excavators		163		8
Forklifts		89		8
Generator Sets		66		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		26		8
Pumps		53		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		20		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		45		8

0

END OF DATA ENTRY SHEET

Appendix C TRPA Regional Threshold Analysis

1.0 TRPA Regional threshold standards

The Tahoe Regional Planning Agency (TRPA) adopted environmental quality standards in 1982, known as Threshold Standards, to better focus environmental quality objectives and to address the impacts resulting from urban development and different land uses through the implementation of a regional land use plan (TRPA 2012). The thresholds include goals to improve and maintain air quality to protect human health, scenic values, and environmental quality, and to reduce vehicle traffic volume.

TRPA has developed eight regional threshold standards with the goal of protecting the air quality in the Lake Tahoe region. These standards are organized into four Indicator Reporting Categories, including carbon monoxide (CO), ozone, visibility, and nitrate deposition, in the *2011 Threshold Evaluation Report* (TRPA 2012). Thresholds considered to be in "attainment" are those that meet the adopted TRPA standard, and thresholds considered to be in "nonattainment" are those not meeting the TRPA standard. Thresholds are designated as "unknown" when TRPA did not have adequate data to make a determination of attainment. An evaluation of the effects of each of the project alternatives on the thresholds is provided below. For each threshold, it is stated whether the threshold is applicable to the project and, if so, what the consequences of implementing each alternative would be on each applicable threshold.

2.1 Carbon Monoxide

CO is a colorless and odorless gas that, in the urban environment, is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. Relatively high concentrations are typically found near crowded intersections and along heavily used roadways carrying slow-moving traffic. Even under the severest meteorological and traffic conditions, high concentrations of CO are limited to locations within a relatively short distance (300 to 600 feet) of heavily traveled roadways.

The status and trends of three indicators, including the 1-hour CO standards, 8-hour CO standards, and winter traffic volumes, were evaluated to characterize the overall status and trend of the Carbon Monoxide Indicator Reporting Category. The *2011 Threshold Evaluation Report* indicates that the status of the threshold is "considerably better than target," and the trend is moderately or rapidly improving (TRPA 2012).

AQ-1: Carbon Monoxide. *Maintain carbon monoxide concentrations at or below 9 parts per million (ppm) averaged over 8 hours provided that each state shall review and certify to TRPA by February 28, 1983, as to what their carbon monoxide standards are as of that date, and this TRPA threshold standard shall be changed effective February 28, 1983, if necessary, to be the*

applicable state carbon monoxide standard applicable to the respective portions of the region in accordance with Article V (d) of the Compact. (Attainment)

The Lake Tahoe Region has been in compliance with the 8-hour CO standard since 2003. The first and second highest 8-hour average CO concentration values recorded within the Lake Tahoe Region in 2010 were 3.3 ppm and 2.7 ppm, respectively. The highest 8-hour average concentration is equal to 55% of the most stringent standard of 6 ppm.

As discussed in more detail in the Air Quality Impact Analysis, procedures and guidelines for use in evaluating the potential CO impacts of a project are contained in the *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol) (UCD ITS 1997). According to the CO Protocol, the proposed project would be exempt from all CO emissions analyses. The proposed project would not generate additional traffic in the region or contribute to existing congestion. Rather, the intent of the proposed project is to reduce congestion in the project vicinity as well as improve safety. Therefore, no localized CO impacts would occur. The proposed project would not contribute to an effect on attainment of the AQ-1: Carbon Monoxide threshold standard.

AQ-5: Traffic Volume. *Reduce traffic volumes on the U.S. 50 Corridor by 7 percent during the winter from the 1981 base year between 4:00 p.m. and 12:00 midnight, provided that those traffic volumes shall be amended as necessary to meet the respective state standards. (Attainment)*

Traffic volumes on U.S. 50 are recorded at a site immediately west of the intersection of Park Avenue in the City of South Lake Tahoe. Historically, this has been the location of the only potential CO hotspot in the region, which occurred during the winter months. Data from winter 2012 indicate that average daily traffic (ADT) volume was 18,294 vehicles per day, or 22% lower than traffic volumes measured over the same period in 1981 (TRPA 2012). The region is "considerably better than the target" to reduce traffic volumes by 7% from the 1981 traffic volume levels (i.e., goal of 23,411 vehicles per day).

The study area for the proposed project consists of the area within the immediate vicinity of Fanny Bridge in Tahoe City, located in the North Shore area of Lake Tahoe in Placer County. The proposed project primarily affects SR 89 and SR 28. SR 89 is a state highway that traverses north-south through the study area. Within the project area, SR 89 is generally a two-lane arterial with left-turn pockets at major intersections. SR 28 also serves as a critical roadway for traffic circulation within the Tahoe Basin. Implementation of the proposed project would not affect traffic volumes on U.S. 50.

In general, all "build" alternatives associated with the proposed project provide improved traffic operations within/through the study area. In addition, because the proposed project would not involve construction of any new land use, no increase in ADT is anticipated from implementation of the proposed project. Therefore, the proposed project would not contribute to an effect on attainment of the AQ-5: Traffic Volume threshold standard.

2.2 Ozone

Ozone is the principal component of smog and is formed in the atmosphere through a series of reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO_X) in the presence of sunlight. ROG and NO_X are called precursors of ozone. NO_X includes various combinations of nitrogen and oxygen, including nitrogen oxide, nitrogen dioxide, nitrate, and others. Substantial ozone concentrations are usually produced only in the summer, when atmospheric inversions are greatest, and temperatures are high.

The status and trends of four indicators, including the highest 1-hour ozone concentration, highest 8-hour ozone concentration, the 3-year average of the fourth highest ozone concentration, and NOx emissions (tons per day), were evaluated to characterize the overall status and trend of the Ozone Indicator Reporting Category. The *2011 Threshold Evaluation Report* indicates that the status of the threshold is "at or somewhat better than the target" with "little or no change" in trend (TRPA 2012).

AQ-2: Ozone

Maintain ozone concentrations at or below 0.08 parts per million averaged over 1 hour. Maintain oxides of nitrogen (NOx) emissions at or below the 1981 level. (Attainment)

The highest 1-hour average ozone concentration measured in the Lake Tahoe Region in 2011 was measured at the Incline Village monitoring site, reporting a value of 0.077 ppm. This measurement is 4% below the most stringent TRPA standard of 0.080 ppm. The region has been in attainment with the one-hour ozone standard since 2009. Based on the Air Resources Board (ARB) Emission Inventory for the California portion of Lake Tahoe Region, NOx emissions were estimated at 4.95 tons per day in 2010, which is about 11% lower than the 1980 estimate of 5.56 tons per day (TRPA 2012).

The proposed project would result in the generation of ROG and NOx emissions during construction, but at levels that do not exceed any of the Placer County Air Pollution Control District (PCAPCD) air quality thresholds. These thresholds are designed to identify those projects that would result in significant levels of air pollution and to assist the region in attaining

the applicable state and federal ambient air quality standards. Since the proposed project would not exceed the thresholds of significance, it would not impede attainment and maintenance of ambient air quality standards for ozone.

As discussed in more detail in the Air Quality Impact Analysis, transportation measures, such as the proposed project, are analyzed for conformity with the State Implementation Plan (SIP) as part of the Regional Transportation Plan (RTP) and Federal Transportation Improvement Program (FTIP). If the design concept and scope of a proposed transportation project are consistent with the project description in the applicable RTP and FTIP, then the proposed project would conform to the SIP and would not result in an adverse impact on regional air quality.

The Tahoe Metropolitan Planning Organization (TMPO) adopted the 2035 RTP on December 12, 2012 (TMPO 2012) and the 2013 FTIP on September 26, 2012 (amended on January 23, 2013). The proposed project is included in the 2035 RTP and the Final 2013 FTIP as a Safety Improvement Program. Therefore, the design concept and scope of the proposed transportation project are consistent with the descriptions of the proposed project in the 2035 RTP and the 2013 FTIP, and the assumptions in TMPO's regional emissions analysis, including ozone and ozone precursor emissions. Based on the above discussion regarding construction and operational emissions, the proposed project would not contribute to an effect on attainment of the AQ-2: Ozone threshold standard.

2.3 Visibility

The Visibility Indicator Reporting Category includes indicators related to particulate matter, regional and subregional visibility, wood smoke, and vehicle miles traveled (VMT). The *2011 Threshold Evaluation Report* indicates that the status of the threshold is "at or somewhat better than the target" with "little or no change" in trend (TRPA 2012).

AQ-3: Particulate Matter. *Reduce suspended soil particles by 30% of the 1981 base values through technology, management practices and educational programs. (Nonattainment)*

Particulate matter is a complex mixture of extremely small particles and liquid droplets. The size of particulate matter is directly linked to the potential for causing health problems. The U.S. Environmental Protection Agency (EPA) is concerned about particles that are 10 micrometers in diameter or smaller because those are the particles that generally pass through the throat and nose and enter the lungs. Particulate matter is subdivided into two classes based on particle size: particulate matter equal to or less than 10 microns in diameter (PM_{10}) and particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$).

Both ARB and EPA designate regional areas according to their attainment status for national and California ambient air quality standards. The purpose of these designations is to identify the areas where pollutant concentrations exceed the ambient air quality standards and thereby initiate planning efforts for improvement. The Lake Tahoe Air Basin is considered a nonattainment area for the state 24-hour PM_{10} standard.

The proposed project would result in the generation of PM_{10} and $PM_{2.5}$ emissions during construction, but at levels that do not exceed any of the PCAPCD air quality thresholds. Since the proposed project would not exceed the thresholds of significance, it would not impede attainment and maintenance of ambient air quality standards for particulate matter.

Implementing the proposed project would also reduce congestion on the current Fanny Bridge. It is anticipated that the proposed project would result in improved movement of vehicles and trucks, which would reduce particulate matter emissions associated with low travel speeds and idling (Wood Rodgers 2011). As discussed in the Air Quality Impact Analysis, $PM_{2.5}$ and PM_{10} hot-spot analyses are not required for the proposed project. Therefore, the proposed project would not contribute an effect on attainment of the AQ-3: Particulate Matter threshold standard.

AQ-4: Visibility. Regional: (1) Achieve an extinction coefficient of 25 Mm^{-1} at least 50 percent of the time as calculated from aerosol species concentrations measured at the Bliss State Park monitoring site (visual range of 156 kilometer [97 miles]), and (2) Achieve an extinction coefficient of 34 Mm^{-1} at least 90 percent of the time, as calculated from aerosol species concentrations measured at the Bliss State Park monitoring site (visual range of 115 kilometers ([71 miles]). Subregional: (1) Achieve an extinction coefficient of 50 Mm^{-1} at least 50 percent of the time as calculated from aerosol species concentrations measured at the South Lake Tahoe monitoring site (visual range of 78 kilometers [48 miles]), and 2) Achieve an extinction coefficient of 125 Mm^{-1} at least 90 percent of the time as calculated from aerosol species concentrations measured at the South Lake Tahoe monitoring site (visual range of 31 kilometers [19 miles]). (Attainment)

TRPA's regional and subregional visibility standards are intended to improve and maintain air quality at a level that is dominated by haze-free or high-visibility days. The regional visibility threshold establishes objectives for the entire Lake Tahoe Air Basin, while the subregional visibility threshold establishes objectives for the South Lake Tahoe portion of the Air Basin. According to TRPA, the region has been in compliance with regional standards since 1996.

The *2011 Threshold Evaluation Report* indicates that particulate matter in the atmosphere is the primary pollutant responsible for affecting visibility in the region. The main sources of particulate matter in the basin are smoke and entrained roadway dust. As discussed earlier, the

proposed project would not result generate significant levels of particulate matter. Therefore, the proposed project would not contribute to an effect on attainment of the AQ-4: Visibility threshold standard.

AQ-6: Wood Smoke. Reduce wood smoke emissions by 15% of the 1981 base values through technology, management practices and educational programs. (Unknown)

Increased levels of wood smoke result in high particulate concentrations, causing both health-based and visibility concerns (TRPA 2012). The major sources of wood smoke in the Lake Tahoe Air Basin are residential combustion in fireplaces, wood stoves, and forest fuels reduction techniques. TRPA continues to develop a suitable indicator for wood smoke. The *2011 Threshold Evaluation Report* recommends the use of PM_{10} and $PM_{2.5}$ concentrations as a proxy measure of wood smoke and suspended soil particles. However, the status of AQ-6 according to the 2011 Threshold Report is still designated as "unknown."

The proposed project would not include any sources of wood smoke emissions. Therefore, the proposed project would not contribute to an effect on attainment of the AQ-6: Wood Smoke threshold standard.

AQ-7: Vehicle Miles Traveled. Reduce vehicle miles of travel in the Basin by 10% of the 1981 base year values. (Attainment)

This threshold was developed on the assumption that more vehicle miles traveled (VMT would result in increased traffic congestion, increased nitrate loading, and an increase in concentrations of particulate matter. Due to the change in transportation models, regional VMT has been modeled differently over the years and is not always comparable. The most recent VMT estimate for 2011 exceeded the standard (i.e., 10% reduction from the 1981 base year values) by 1.5%, and the region has been in compliance with this standard since 2007.

Programs to reduce VMT can include improved public transportation systems, pedestrian sidewalks and bikeways projects, automobile trip reduction programs and transportation improvement projects. The proposed project would provide intermodal connectivity in the region for transit, pedestrians, and bicyclists, which could reduce vehicle trips and VMT. Since the project alternatives would be consistent with programs and actions that could improve existing VMT conditions, the proposed project would not violate Threshold AQ-7.

2.4 Nitrate Deposition

AQ-8: Atmospheric Nutrient Loading. Reduce the transport of nitrates into the Basin and reduce NOx produced in the Basin consistent with the water quality thresholds. (Attainment)

As stated in the *2011 Threshold Evaluation Report*, excessive nitrate discharge can negatively impact both air quality and water quality. Atmospheric sources of nitrogen have been linked to declines in lake transparency (TRPA 2012). TRPA has adopted air quality policies that support the use of alternative modes of transportation to reduce atmospheric sources of air pollutants, such as nitrate.

As discussed earlier related to Threshold AQ-2, the proposed project would not generate significant levels of NOx as a result of construction or operational activities. The purpose of the project is also to continue the use of alternative modes of transportation, including public transit and increased mobility for bicycles and pedestrians. Therefore, the proposed project would not contribute to an effect on attainment of the AQ-8: Atmospheric Nutrient Loading threshold standard.

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