

13 ROADWAY TRANSPORTATION AND CIRCULATION

13.1 INTRODUCTION

This chapter describes existing transportation conditions in the Region, identifies the applicable regulations and policies governing transportation, identifies significance criteria for land use impacts, and assesses the environmental effects of each alternative with respect to automotive transportation and circulation.

The primary issues raised during scoping that pertain to transportation included:

- ▲ changes in recreation patterns and their effect on transportation,
- ▲ traffic by new public piers,
- ▲ parking capacity and demand,
- ▲ roadway erosion from increased usage, and
- ▲ transit access to marinas and shorezone facilities.

This analysis is based on consultation with TRPA, review of the Regional Transportation Plan and other agency documents, boat use monitoring and survey data, and buoy inventory data (see Appendix A). Watercraft on Lake Tahoe are used primarily for recreational purposes rather than for transportation, however some water taxi services are in operation, and may become more prevalent as projects identified in the 2017 Regional Transportation Plan and Sustainable Communities Strategy are implemented. Therefore, the effects of the Shoreline Plan and associated alternatives on recreational navigation are addressed in Chapter 8, “Recreation,” and the transportation section focuses on effects to onshore transportation systems, including motor vehicles and transit.

The widespread geography to which the Shoreline Plan applies, the long horizon over which it will be implemented, and the policy-oriented nature of its guidance are such that the automotive transportation and circulation analysis is prepared at a program level. As such, the analysis focuses on the potential effects of policies and ordinances, which—because they are to be implemented through yet unknown projects—do not provide a high level of detail or degree of specificity. Assumptions about projects at a general level, such as their broad location, timing, and magnitude are projected in this analysis, but individual shorezone facility projects are not identified or assumed. The Shoreline Plan alternatives do not propose site-specific changes to ingress or egress routes, travel route alignments, parking configurations, transit service and operations, or bicycle and pedestrian facilities. It is not possible to speculate on the precise site-specific characteristics of future projects that would be proposed over the planning horizon of the Shoreline Plan alternatives. Consequently, this analysis is not intended to replace project-specific environmental review and transportation analysis required to implement site-specific projects that may be proposed in the future consistent with the adopted alternative.

Chapter 3 of the TRPA Code of Ordinances requires that TRPA review any proposed project, including those projects that could be proposed pursuant to the Shoreline Plan alternatives, to determine if it would result in a significant environmental effect. The site-specific effects of individual projects proposed pursuant to the Shoreline Plan alternatives would appropriately be reviewed when individual projects are proposed, and when the site-specific characteristics of those projects are known. Prior to approving any project authorized under a Shoreline Plan alternative, TRPA would require feasible mitigation measures to reduce or avoid significant adverse environmental effects, including effects on site-specific circulation patterns, safety hazards, parking impacts, transit service and operations, and bicycle and pedestrian facilities. Because the effects of individual future projects that could be proposed pursuant to the Shoreline Plan alternatives (including effects on site-specific circulation patterns, vehicular safety hazards, parking, and bicycle and pedestrian facilities) cannot be known now and would be evaluated at a project-level at the time they are proposed, they are not evaluated in this environmental impact statement (EIS).

The structures that could be developed under the Shoreline Plan alternatives are predominately boating facilities, which generally require the use of private vehicles. For example, the use of a boat ramp would require a personal vehicle to transport the boat to and from the shorezone, and thus, it is unlikely that any transit demand would be generated from a new boat ramp. It is likely that some transportation to new public shorezone facilities accommodated under the plan (e.g., public piers) could involve use of transit, bicycles, or pedestrian infrastructure. However, it is unlikely that such facilities would create such a demand for transit or active transportation such that it would result in the need for increased transit service or bike and pedestrian facilities. Therefore, effects on transit demand and operations, and bicycle and pedestrian infrastructure are not evaluated in detail in this chapter.

The Shoreline Plan alternatives would not propose new airports or rail lines, nor would they interfere with or alter existing air or rail travel patterns. Because the alternatives would not affect air or rail travel patterns, the effects on the respective transportation systems are not evaluated within this EIS.

13.2 REGULATORY SETTING

13.2.1 Tahoe Regional Planning Agency

THRESHOLDS

TRPA has adopted threshold standards pertaining to air quality that are expressed in terms of regionwide vehicle miles traveled (VMT). These thresholds are also applicable to transportation analyses. VMT is a computed value, which correlates to the volume of traffic, the length of vehicle trips, and the extent of an area's reliance on the private automobile for travel. The TRPA TransCAD Travel Demand Model provides a forecast of the number of trips made on the highway network and the distance between trip origins and destinations for each trip purpose. Total VMT is the sum of all these trip lengths.

The adopted air quality management TRPA threshold standard that relates to traffic and transportation facilities in the Region calls for reducing VMT in the basin by 10 percent of the 1981 base year values.

The VMT threshold is periodically updated whenever TRPA updates its transportation model. The most recent VMT threshold was calculated at 2,030,938 for a peak summer day. Additional background on VMT, an overview of TRPA's transportation model and threshold updates, details on the VMT threshold, and a discussion of the use of the VMT threshold as a significance criterion in an EIS is provided on pages 3.1-2 through 3.1-7 of the Placer County Tahoe Basin Area Plan and Tahoe City Lodge Project Final EIR/EIS (Placer County and TRPA 2017) and is incorporated by reference into this EIS.

Over the last decade VMT has declined significantly, by roughly nine percent, within the Region, (2017a). Based on the most recent modeling completed in support of the Regional Transportation Plan, existing VMT in the Tahoe Region over the course of a peak summer weekday is approximately 1,937,070, indicating that the Region is currently in attainment (TRPA 2016).

LAKE TAHOE REGIONAL PLAN

Chapter 3, the Transportation Element includes transportation goals, policies, and implementation measures that address multiple aspects of transportation planning and interact to create a successful multi-modal transportation system. TRPA's Goals and Policies sets standards for vehicle level of service (LOS). The TRPA Goals and Policies related to LOS are listed below.

- ▲ **Policy T-4.6.** LOS Criteria for the region's highway system and signalized intersections during peak periods shall be:
 - LOS C on rural recreational/scenic roads;
 - LOS D on rural developed area roads;

- LOS D on urban developed area roads;
- LOS D for signalized intersections; and
- LOS E may be acceptable during peak periods in urban areas, not to exceed 4 hours per day.

These vehicle LOS standards may be exceeded when provisions for multi-modal amenities and/or services (such as transit, bicycling, and walking facilities) are adequate to provide mobility for users at a level that is proportional to the project-generated traffic in relation to overall traffic conditions on affected roadways. While the Tahoe Regional Planning Compact looks to “reduce the dependency on the private automobile” there are currently no adopted requirements or standards regarding the quality of service of other travel modes (i.e., transit, biking, or walking) that could potentially reduce the demand on the roadway system. TRPA has no standards specific to unsignalized intersections.

REGIONAL TRANSPORTATION PLAN

The Tahoe Metropolitan Planning Organization (TMPO) and TRPA jointly developed the *Lake Tahoe Regional Transportation Plan and Sustainable Communities Strategy: Mobility 2035* (TRPA 2012) (2012 RTP/SCS) as Lake Tahoe’s blueprint for a regional transportation system that enhances the quality of life in the Tahoe Region, promotes sustainability, and offers improved mobility options for people and goods. Important objectives of the 2012 RTP/SCS are to reduce the overall environmental impact of transportation in the Region, create walkable and vibrant communities, and provide real alternatives to driving. The 2012 RTP/SCS included an SCS, in accordance with California Senate Bill 375, statutes of 2008 (Sustainable Communities and Climate Protection Act). The 2012 RTP/SCS presents 14 goals consistent with regional and federal requirements that focus on reducing dependency on the automobile and giving preference to projects that increase the capacity of the Region’s transportation system through public transportation projects and programs.

The 2012 RTP/SCS focuses on long-range transportation planning and has established LOS criteria (see Policy 4.6, below) consistent with those in the Regional Plan. These vehicle LOS standards may be exceeded when provisions for transit, bicycling, and walking facilities would provide a mobility level proportional to the mobility level that would be provided in the existing plus project condition on affected roadways.

- ▲ **Policy 4.6.** Level of service (LOS) criteria for the Region’s highway system and signalized intersections during peak periods shall be:
 - Level of service “C” on rural recreational/ scenic roads.
 - Level of service “D” on rural developed area roads.
 - Level of service “D” on urban developed area roads.
 - Level of service “D” for signalized intersections.
 - Level of service “E” may be acceptable during peak periods in urban areas, not to exceed four hours per day.

These vehicle LOS standards may be exceeded when provisions for multimodal amenities and/ or services (such as transit, bicycling, and walking facilities) are adequate to provide mobility for users at a level that is proportional to the project-generated traffic in relation to overall traffic conditions on affected roadways.

The 2012 RTP/SCS was updated in 2017, tiering from the 2012 RTP/SCS EIS through an expanded checklist. The 2017 RTP/SCS, *Linking Tahoe: Regional Transportation Plan and Sustainable Communities Strategy* (TRPA 2017a) builds on the 2012 RTP/SCS, focusing on providing frequent and prioritized multi-modal connections between town centers and neighborhoods and easy and convenient access to high demand recreation sites. The 2017 RTP/SCS contains new goals and policies that draw from stakeholder feedback, detailed goals in the 2015 Intelligent Transportation Systems Strategic Plan, and the 2016 Active

Transportation Plan. The 2017 RTP/SCS envisions a first-class transportation system that prioritizes bicycling, walking, and transit, and serves residents and visitors while contributing to the environmental and socioeconomic health of the Region (TRPA 2017a). The plan offers strategies to jump start innovation through electric vehicle infrastructure, address the routine travel demands of residents and commuters, and the recreational travel demands of visitors that during peak periods stress and cause congestion on Lake Tahoe's transportation system (TRPA 2017a). Strategies detailed within the 2017 RTP/SCS focus on projects and programs that dynamically meet the needs of all roadway users by:

- ▲ offering better travel mode options;
- ▲ creating incentives that spread out the times, places, and ways people travel to improve traffic flow;
- ▲ providing environmentally innovative infrastructure;
- ▲ improving safe and equitable access to the places people want to go; and
- ▲ prioritizing funding for projects that fulfill TRPA objectives in transit, active transportation, transportation demand management, and other programs and directly support identified TRPA transportation performance outcomes.

CODE OF ORDINANCES

Chapter 4, "Required Findings," of the TRPA Code of Ordinances includes mandatory findings and sets forth procedures describing how TRPA shall make the required findings. Section 4.4, "Threshold-Related Findings," of the Code of Ordinances requires the following findings applicable to this project:

- A. The project is consistent with and will not adversely affect implementation of the Regional Plan, including all applicable Goals and Policies, plan area statements and maps, the Code, and other TRPA plans and programs;
- B. The project will not cause the environmental threshold carrying capacities to be exceeded.

Chapter 50, "Allocation of Development," of the TRPA Code of Ordinances sets forth the requirements for regulating the rate and timing of growth within the region. Section 50.4, "Allocation of Commodities and Development Rights Accounting," of the Code of Ordinances includes LOS and VMT monitoring requirements that shall be implemented by TRPA as follows:

50.4.3. LOS and VMT Monitoring - Two years after each release, TRPA shall monitor existing and near-term LOS to evaluate compliance with applicable LOS policies. Should LOS projections indicate that applicable LOS policies will not be met, TRPA shall take action to maintain compliance with LOS standards. TRPA shall also monitor VMT and only release commodity allocations upon demonstrating, through modeling and the use of actual traffic counts, that the VMT Threshold Standard shall be maintained over the subsequent four-year period.

Chapter 65, "Air Quality/Transportation," of the TRPA Code of Ordinances addresses how to protect air quality; and thus, attain and maintain applicable standards and thresholds, including limits on direct sources of air pollution, and new and modified stationary source review; and establishment of programs to maintain and improve air quality, including a traffic and air quality mitigation program, a rental car mitigation program, and an employer-based trip reduction program. Additionally, Section 65.2, "Traffic and Air Quality Mitigation Program," of the Code of Ordinances includes standards for new or transferred development in which requirements related to transportation are detailed.

13.2.2 California

CALTRANS TRANSPORTATION CORRIDOR CONCEPT REPORT

The California Department of Transportation (Caltrans) prepares Transportation Corridor Concept Reports for each highway in the state system which include a “20 Year Concept LOS” for each segment. Reflecting forecast conditions and the limited opportunities to expand capacity in the Tahoe Region, the most recent Transportation Corridor Concept Reports (2012) for the three state highways identify the following:

Roadway	Segment	20-Year Concept LOS
SR 28	All	E
SR 89	El Dorado County Line to SR 28	E
SR 89	SR 28 to Nevada County Line	E
SR 267	All	D

Although this report provides LOS standards for intersection and roadway operations, the standards set forth by the TRPA typically govern over the state standards for projects located within the Tahoe Region, but any projects affecting a state highway are also subject to Caltrans review.

13.3 AFFECTED ENVIRONMENT

13.3.1 Roadway Network

The Tahoe shorezone includes portions of El Dorado and Placer Counties in California, and Carson City, Washoe, and Douglas counties in Nevada. Roadways within the Tahoe Region, which can be used to access the shorezone, consist of state highways, arterials, collectors, and local/neighborhood streets. General descriptions of these roadways and their intended function are provided below. Exhibit 13-1 shows the roadway network in the Tahoe Region.

STATE HIGHWAYS

Most vehicular travel in the Tahoe Region occurs on state highways including U.S. Route (US) 50, State Route (SR) 28, SR 89, SR 207, SR 267, and SR 431. Most highways are two-lane facilities; however, portions of US 50, SR 28, and SR 89 have wider cross-sections such as four-lane roadways with center two-way left-turn lanes.

ARTERIALS

Arterial roadways carry moderate to high traffic volumes to and from local and collector roads to other arterials and highways. Although access to adjacent parcels is more limited from arterials than from collector and local streets, arterial roadways also provide direct access to properties, particularly in commercial areas.

COLLECTORS

Collector roadways serve as transition facilities, distributing traffic from arterials and highways to their ultimate destination, and collecting traffic from local roadways to roads higher in the street classification hierarchy, such as arterials and state highways. Collector roads serve a dual function by providing access to properties on the roadway and moving moderate traffic volumes for medium-length trips.

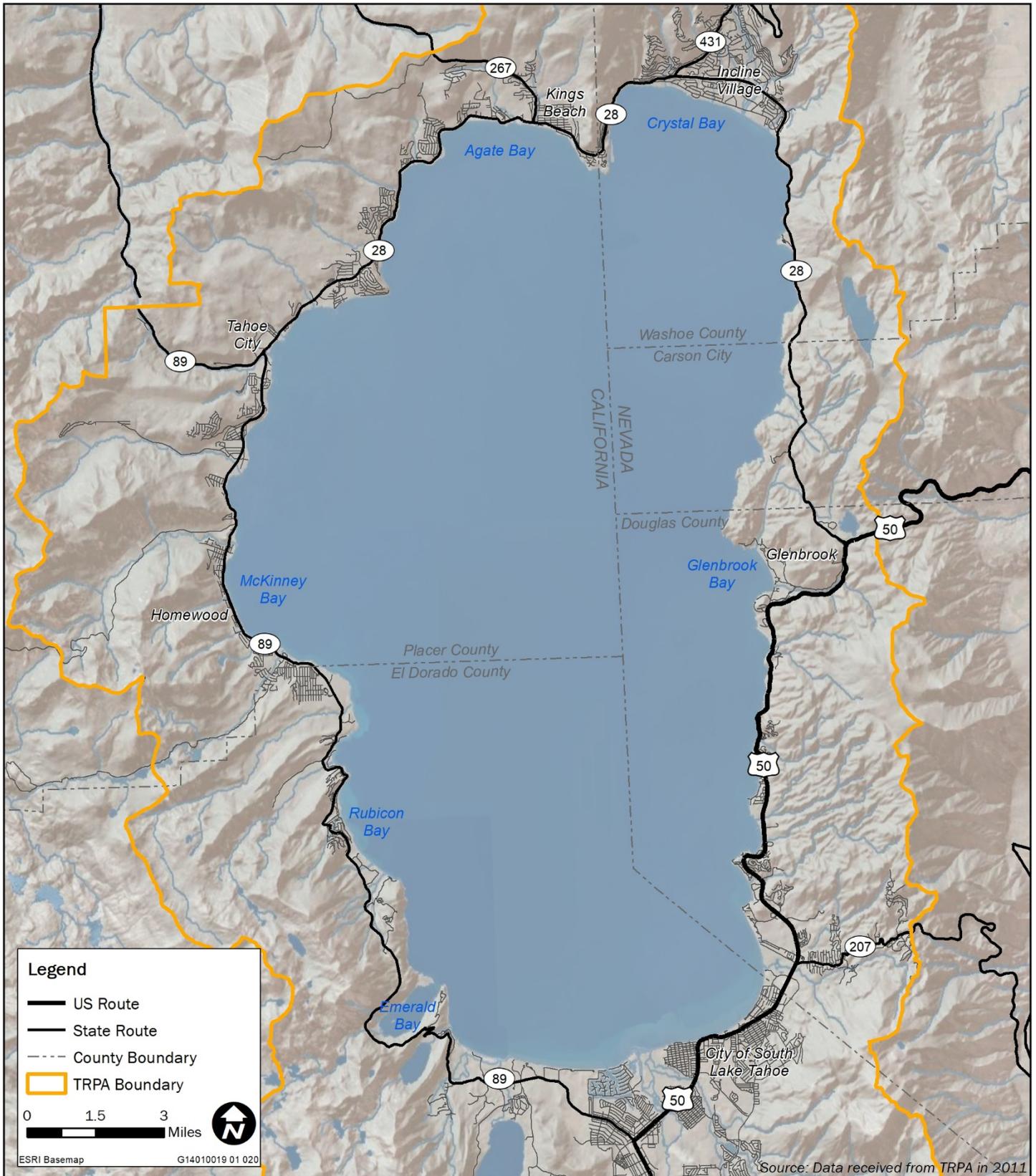
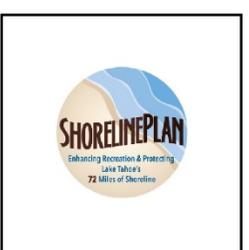


Exhibit 13-1 Roadway Network



LOCAL/NEIGHBORHOOD STREETS

Local roadways are intended to serve as access roads to adjacent properties only. They provide connections to higher order roadways, carry little if any through traffic, and generally have low traffic volumes.

13.3.2 Existing Traffic Volumes and Levels of Service

ROADWAY SEGMENT LEVEL OF SERVICE

The 2017 RTP/SCS Initial Study/Initial Environmental Checklist (IS/IEC) included updated LOS modeling for major roadway segments within the Tahoe Region. These roadways provide connections throughout the Tahoe Region and access to the shorezone and Lake Tahoe. The existing average daily traffic (ADT) volumes and LOS for these major roadway segments are shown in Table 13-1.

Table 13-1 Existing Roadway Segment Operations

Roadway	Roadway Segment	ADT	LOS	PM Peak Hour Volume	PM Peak Hour LOS
US 50	SR 89 (Luther Pass Rd.) to Navahoe Dr.	17,600	C or better	1,760	E
US 50	Pioneer Trail to Arapahoe St.	17,200	C or better	1,710	E
US 50	SR 89 to Dunlap Dr.	39,500	D	3,230	E
US 50	Tahoe Keys Blvd. to Winnemucca Ave.	37,500	D	3,070	E
US 50	Edgewood Cir. to Al Tahoe Blvd.	39,000	D	3,190	E
US 50	Pioneer Trail to Park Ave. / Heavenly Village Way	36,500	D	3,220	E
US 50	Lake Parkway to SR 207 (Kingsbury Grade Rd.)	33,738	C or better	2,980	D
US 50	SR 207 (Kingsbury Grade Rd.) to Kahle Dr.	25,980	C or better	2,370	D
SR 28	West of US 50	6,805	C or better	610	C or better
SR 28	Red Cedar Dr. to W. Lakeshore Blvd.	16,494	E	1,510	E
SR 28	SR 28 Cal Neva Dr. to Stateline Rd.	17,900	E	1,650	E
SR 28	SR 28 Brassie Ave. to SR 267 (N Shore Blvd.)	21,500	C or better	1,970	D
SR 28	N Lake Blvd. to Lake Forest Rd.	13,700	D	1,350	D
SR 89	South of Lester Beach Rd.	6,000	C or better	730	D
SR 89	Fallen Leaf Rd. / Heritage Way to Valhalla Rd.	6,400	C or better	860	D
SR 89	Tucker Ave. to US 50 (Lake Tahoe Blvd.)	18,200	C or better	1,720	D
SR 267	North Ave. to Tiger Ave.	13,100	D	1,280	D
SR 89	US 50 to Pomo St.	3,400	C or better	390	C or better
US 50	North of Lincoln Hwy	15,100	E	1,620	E
SR 207	US 50 to Kahle Dr.	13,153	D	1,350	D
US 50	SR 28 to Kings Canyon Rd.	14,349	C or better	1,290	C or better
SR 431	SR 28 to 2nd Creek Dr.	6,700	C or better	620	C or better
SR 267	Tahoe Rim Trail to Gas Line Rd.	10,600	D	1,040	D
SR 89	West of Fairway Dr.	16,600	E	1,660	E

Source: TRPA 2017b: Table 18, p 3-61.

As indicated in Table 13-1, all study roadway segments currently operate at acceptable LOS. A number of these roadway segments operate at LOS E; however, these segments are considered to operate at acceptable LOS because they do not operate at this level for 5 hours or more.

INTERSECTION LEVELS OF SERVICE

The 2017 RTP/SCS IS/IEC included updated LOS modeling for existing conditions of major intersections within the Tahoe Region as shown in Table 13-2.

Table 13-2 Existing Intersection Operations

Intersection	Jurisdiction	City/Community	LOS/Average Delay (seconds)
SR 28 / SR 267	Caltrans	Kings Beach	D / 43
SR 28 / Village Boulevard	NDOT	Incline Village	C / 31
US 50 / SR 89 (south Y)	Caltrans	South Lake Tahoe	C / 25
US 50 / Ski Run Boulevard	Caltrans	South Lake Tahoe	C / 24
US 50 / Park Avenue	Caltrans	South Lake Tahoe	D / 39
SR 28 / SR 89	Caltrans	Tahoe City	C / 23
US 50 / SR 207	NDOT	Kingsbury	C / 23

Notes: Existing conditions representative of a Friday afternoon/evening peak hour in August.

Source: TRPA 2017b: Table 16

As shown in Table 13-2, all intersections listed currently operate at LOS D or better; and thus, meet applicable LOS standards.

13.3.3 Transit Network

Transit service within the vicinity is provided by a mix of public and private transit services. Tahoe Transportation District (TTD) and Tahoe Truckee Area Regional Transit (TART) are the regional transit providers. These two transit providers operate year-round and seasonal services on the North, East, South and West Shores. They also provide commute services to nearby areas such as Truckee to the North, and Carson valley to the East. Washoe Regional Transportation Commission, the Town of Truckee, State Departments of Transportation, and private entities such as ski-resorts also partner with transit providers to offer transit service through cost sharing agreements, formula funding allotments, and private shuttles and taxi services (TRPA 2017a).

LOCAL AND REGIONAL TRANSIT SERVICE

TART connects the North and West shores of Tahoe to the Town of Truckee year-round and runs a free night shuttle service during summer. TTD provides year-round service throughout the South Shore and connects to the neighboring communities of Gardnerville and Minden. The TTD also connects parts of the West and East shores during the summer with the Emerald Bay Trolley and the East Shore Express. Some local buses also provide connections to trailheads, such as at Spooner Summit. Though many parts of the Lake are served with transit, year-around connections from North to South do not exist.

SHUTTLES AND ON-DEMAND SERVICE

TART and TTD supply on-demand services to qualified individuals with special needs who are unable to independently use the fixed-route transit system. Location-specific shuttle service is provided by private companies and public/private partnerships. Many major ski resorts also provide shuttle services. Additionally, some private shuttle companies focus on the needs of the recreational hiker and biker by providing point-to-point pick-up and drop-off. Private providers include Flume Trail Bikes and Over the Edge Tahoe (TRPA 2017a).

INTER-REGIONAL TRANSIT SERVICES

Amtrak and Greyhound provide connections to Lake Tahoe from surrounding areas of California and Nevada, including Sacramento, San Francisco, Sparks, and Reno. These services run three times daily from the Bay Area/Sacramento to and from the Town of Truckee and one time daily to and from Lake Tahoe's South Shore. Trips may require transfers to regional rail or bus service to reach the destination. Charter services are available by commercial companies. Shuttles to the Reno/Tahoe airport from both the North and South shores are available. The North Lake Tahoe Express is managed by the Truckee-North Tahoe Transportation Management Association and the South Tahoe Express is a public/private partnership between the South Tahoe Alliance of Resorts and Amador Stage Lines (TRPA 2017a).

13.3.4 Pedestrian and Bicycle Network

The current network includes roughly 50 miles of shared-use path, 44 miles of bicycle lanes, 23 miles of sidewalks, and four enhanced crosswalks that include a pedestrian active beacon or rapid flashing beacon (TRPA 2017a). The United States Forest Service also operates and maintains 350 miles of National Forest System Trails and 250 miles of National Forest System Roads (TRPA 2017a).

The Region has over 70 miles in separated class-I shared-use paths and sidewalks. These routes are well-connected in some areas and have gaps in others. Caltrans and local jurisdictions have constructed sidewalks along the state highway system through town centers and more are planned. Local jurisdictions are connecting Class-I shared-use paths around the lake, providing links across communities and to neighboring areas (TRPA 2017a).

13.4 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

13.4.1 Methods and Assumptions

The geographic area addressed by the Shoreline Plan alternatives is the 72-mile-long shoreline of Lake Tahoe, including portions of Placer and El Dorado Counties in California, and Washoe and Douglas Counties and Carson City in Nevada. The primary types of shorezone structures addressed by the alternatives include piers, moorings for motorized watercraft (i.e., buoys, slips, and boat lifts), boat ramps, and marinas. Many of these structures would be associated with private residences.

Access to moorings associated with private residences would be restricted at the discretion of the property owner. Additionally, the inherent nature of locating moorings at private residences is to increase accessibility to boating on Lake Tahoe by removing the necessity to transport boats to a remote facility (i.e., boat ramp, marina, public mooring) to access the Lake. Thus, private moorings eliminate the generation of automobile trips from these private residences to a boat ramp, or to public moorings or marinas to access the Lake for boating activities. Thus, the addition of buoys, slips, or boat lifts at private residences would not generate additional vehicle trips beyond those already associated with private residences.

Piers are categorized as private multiple-use, individual private, or public. The private multiple-use piers are privately-owned piers that serve either a homeowners association (HOA) or two or more private parcel owners. Individual private piers are privately-owned piers that serve a single private parcel. Thus, due to the restrictive access to these types of piers, and the limited number of permissible users to private piers, this category of structure would not generate new vehicular trips that are in addition to those already generated by the residence(s). Public piers are defined as piers owned and operated by a public agency that provide public access or another public service, or piers that are owned or operated by a private organization and provide access to the public free of charge. In general, public piers are accessory structures within a multiple-use facility (e.g., marina) or park and not the primary land use that would generate vehicular trips (e.g., public beach, public park). Thus, public piers would function as accessory structures that would not generate additional vehicle trips beyond those trips already generated by the marina, public beach, or other primary land use.

The specific shorezone structures that would result in the generation of new vehicular trips are public buoys and slips, including any buoys or slips associated with a new or expanded marina, and public boat ramps.

PROJECT TRIP GENERATION

The first step in the analysis of traffic impacts is to identify the trip generation rates and resulting traffic volumes that could occur as a result of the project. Peak-day trip generation rates for the shorezone structures that generate additional vehicular trips (i.e., public buoys, slips, and boat ramps) were developed based on boating use activity on Lake Tahoe and the maximum number of shorezone structures allowed under each alternative. The level of boat usage on Lake Tahoe associated with individual shorezone structures was calculated based on observed and collected data on Lake Tahoe. A description of boat activity is provided in Chapter 2, "Project Description." The maximum number of shorezone structures that could be developed under each alternative are also summarized in Chapter 2, "Project Description." Additional detail on the data sources, assumptions, and calculations of boating activity and structure buildout are provided in Appendix A. The calculated trip generation rates for the vehicle trip-generating shorezone structures are shown in Table 13-3. These trip generation rates are based on the assumption that each new boat trip generated by a public structure would result in two automobile trips (i.e., one trip to the structure prior to the boat trip, and one trip from the structure after the boat trip).

Table 13-3 Trip Generation Rates

	Boat Trips Per Structure/Unit (Peak-day)	Vehicle Trips Per Structure/Unit (Peak-day)
Moorings		
Buoy	0.25	0.50
Slip	0.36	0.72
Launch Points		
Public Boat Ramp	113	226
Source: Joint Fact-Finding Committee 2017 (see Appendix A)		

ROADWAY AND INTERSECTION OPERATIONS

The location, site-specific design, and timing of development under the proposed alternatives over the planning horizon of the Shoreline Plan are not known at this time. Therefore, the specific location of vehicle trips and travel patterns resulting from implementation of the Shoreline Plan alternatives cannot be known. Thus, project-related trips cannot be accurately distributed within the project area or assigned to specific roadway segments or intersections. The existing operation of roadway segments and intersections, as shown in Table 13-1 and 13-2, respectively, are used to qualitatively analyze potential impacts of individual Shoreline Plan alternatives on vehicular transportation operations.

VEHICLE MILES TRAVELED

VMT is defined as one vehicle traveling on a roadway for one mile and has long been a primary indicator of travel. A reasonable estimate of total VMT is required to evaluate compliance with the TRPA VMT Threshold Standard, with number of trips and trip length being the two main components needed for calculating VMT.

For the purpose of this analysis, average trip length is based on recreation trip lengths for visitors and seasonal residents, which is approximately 18 miles per trip within the Tahoe Region (Haefer, pers. comm., 2018). This data was derived from the TRPA travel demand model and the trip length is based on the 2014 base year model run conducted as part of the 2017 RTP and 2015 Threshold Evaluation. The trip length used for this analysis does not account for trips by permanent residents (approximately a 5-mile average trip length) because of the lack of refinement for this trip length category (i.e., includes variety of trip types such as work, school, and shopping in addition to recreation trips). However, the permanent resident average trip length is lower than that of the visitors and seasonal residents (i.e., 5 miles compared to 18 miles); and thus, by applying the recreation visitor and seasonal resident trip length to all Shoreline Plan alternative generated trips, the analysis provides a conservative estimate of VMT.

Project-related VMT for each alternative was calculated using the number of project trips generated by each of the Shoreline Plan alternatives, and the estimated average trip length of 18 miles, detailed above.

13.4.2 Significance Criteria

Significance criteria relevant to automotive transportation and circulation are summarized below. The applicable TRPA threshold standards, the transportation and circulation criteria from the TRPA Initial Environmental Checklist, and other relevant information were considered in the development of the significance criteria. An impact would be considered significant if it would:

- ▲ substantially impact existing highway systems or alter present patterns of circulations, defined here as:
 - cause a study roadway within a rural area to worsen from LOS D or better to LOS E or worse;
 - cause a study roadway within an urban area to degrade as follows:
 - worsen from LOS E or better to LOS F;
 - worsen from LOS D or better to LOS E for 5 hours or more;
 - worsen from LOS E (for 4 hours per day or less) to LOS E for 5 hours or more; or
 - worsen an LOS F condition.
 - cause a study intersection controlled by signal or roundabout to worsen from LOS A through D or less than 5 hours per day of LOS E to LOS F or to LOS E for 5 or more hours per day;
 - cause a study intersection not controlled by signal or roundabout to worsen from LOS A through E to LOS F, or to increase delay where LOS F currently exists; or
- ▲ cause total VMT within the Tahoe Region to exceed the TRPA Air Quality Threshold value of 2,030,938.

13.4.3 Environmental Effects of the Project Alternatives

Impact 13-1: Roadway and intersection operations

Under Shoreline Plan Alternatives 1, 2, and 3 future development of shorezone structures would result in additional vehicular trips being added to the transportation network in the Region. It is not known at this time where any of these structures would be developed; and therefore, the addition of vehicle trips associated with the development of these alternatives (Alternatives 1, 2, and 3) could result in an increase in delay and degradation of LOS at intersections and along roadway segments in the project area if concentrated in such a way that a large portion of the trips affect a single roadway segment or intersection. However, Chapter 3 of the TRPA Code of Ordinances requires that TRPA review any proposed project, including projects that could result in new trips such as a marina expansion or public boat ramp, to determine if it would result in a significant environmental effect. This project-level environmental review would include an evaluation of the project-generated trips and effects on LOS. Therefore, any potential impacts would be evaluated and mitigated on the project-level; and thus, this would be a **less-than-significant** impact for Shoreline Plan Alternatives 1, 2, and 3. Alternative 4 would not generate any new vehicle trips; and thus, would result in **no impact**.

Structures that could be developed under the Shoreline Plan (i.e., public buoys, slips, and boat ramps) could result in additional vehicle trips that would be added to the circulation network within the Tahoe Region. The timing, location, and intensity of development under the Shoreline Plan alternatives would dictate the roadway segments and intersections that project-generated trips would affect. However, the location of potential future public buoys, slips, and boat ramps is not known at this time; and thus, the analysis of potential roadway and intersection operation impacts is qualitative in nature.

The trip generation analysis for the Shoreline Plan alternatives is shown in Table 13-4.

Table 13-4 Trip Generation

Structure/ Unit Type	Vehicle Trips Per Structure (Peak-day)	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
		Number of Structures	Peak Summer Day Vehicle Trips						
Moorings									
Public Buoy	0.50	265	133	–	–	300	150	–	0
Public Slip	0.72	65	47	1,897	1,366	65	47	–	0
Launch Points									
Public Boat Ramp	226	2	452	6	1,357	1	226	–	0
Total Peak Summer Day Vehicle Trips¹		632		2,723		423		0	

Source: Joint Fact-Finding Committee 2017 (see Appendix A)

¹ Values rounded to the nearest whole number. Exact values for total peak summer day vehicle trips are shown in Appendix A.

Alternative 1: Proposed Shoreline Plan

As shown in Table 13-4 above, Alternative 1 could generate approximately 632 additional vehicle trips on a peak summer day. The major roadway segments and intersections within the Tahoe Region shown in Tables 13-1 and 13-2 are all currently operating at acceptable LOS; however, several facilities are operating at LOS just above (e.g., LOS D for intersections, LOS E for roadway segments) that which is considered acceptable under TRPA LOS standards. Thus, if a large percentage of the trips generated by Alternative 1 were concentrated in an area where roadways and/or intersections are operating narrowly above an acceptable

LOS, the addition of project generated trips could result in an increase in delay and degradation of LOS such that a significant impact would result.

However, Chapter 3 of the TRPA Code of Ordinances requires that TRPA review any proposed project, including a marina expansion or public boat ramp, to determine if it would result in a significant environmental effect. This project-level environmental review would include an evaluation of the project-generated trips and effects on LOS (see TRPA Initial Environmental Checklist Section 13, and Code of Ordinances Section 65.2). Prior to approving a marina expansion, public boat ramp, or other project TRPA would require feasible mitigation measures to reduce or avoid significant adverse environmental effects, including effects on LOS. Furthermore, Code Section 4.4.1.A requires that, prior to approving any project, TRPA must make a finding, based on evidence, that the project "...will not adversely affect implementation of the Regional Plan, including all applicable Goals and Policies..." This finding would prevent TRPA from approving a marina expansion, public boat ramp, or other project that would exceed the LOS standards identified in Regional Plan Policy T-4.6. Therefore, effects on LOS would be analyzed and mitigated, if necessary, at the project level. Thus, this impact would be **less than significant**.

Alternative 2: Maintain Existing TRPA Shorezone Regulations (No Project)

As shown in Table 13-4 above, Alternative 2 could generate approximately 2,700 additional vehicle trips on a peak summer day. The major roadway segments and intersections within the Tahoe Region shown in Tables 13-1 and 13-2 are all currently operating at acceptable LOS; however, several facilities are operating at LOS just above (e.g., LOS D for intersections, LOS E for roadway segment) that which is considered acceptable under TRPA LOS standards. Thus, if many of the trips generated by Alternative 2 were concentrated in an area where roadways and/or intersections are operating just above an acceptable LOS, the addition of project generated trips could result in an increase in delay and degradation of LOS such that a significant impact would result.

However, as described for Alternative 1 above, Chapter 3 of the TRPA Code of Ordinances requires that TRPA review any proposed project to determine if it would result in a significant environmental effect. This project-level environmental review would include an evaluation of the project-generated trips and effects on LOS; and TRPA would be required to make a finding that would prevent TRPA from approving a marina expansion, public boat ramp, or other project that would exceed the LOS. For the same reasons described for Alternative 1, this impact would be **less than significant**.

Alternative 3: Limit New Development

As shown in Table 13-4 above, Alternative 3 could generate approximately 400 additional vehicle trips on a peak summer day. The major roadway segments and intersections within the Tahoe Region shown in Tables 13-1 and 13-2 are all currently operating at acceptable LOS; however, several facilities are operating at LOS just above (e.g., LOS D for intersections, LOS E for roadway segment) that which is considered acceptable under TRPA LOS standards. Thus, if a large percentage of the trips generated by Alternative 3 were concentrated in an area where roadways and/or intersections are operating just above an acceptable LOS, the addition of project generated trips could result in an increase in delay and degradation of LOS such that a significant impact would result.

However, as described for Alternative 1 above, Chapter 3 of the TRPA Code of Ordinances requires that TRPA review any proposed project to determine if it would result in a significant environmental effect. This project-level environmental review would include an evaluation of the project-generated trips and effects on LOS; and TRPA would be required to make a finding that would prevent TRPA from approving a marina expansion, public boat ramp, or other project that would exceed the LOS. For the same reasons described for Alternative 1, this impact would be less than significant.

Alternative 4: Expand Public Access and Reduce Existing Development

As shown in Table 13-4 above, Alternative 4 would not generate any new vehicle trips. Therefore, Alternative 4 would not increase delay along any roadway segment or at any intersection within the Tahoe Region. Thus, this would result in **no impact**.

Mitigation Measures

No mitigation is required.

Impact 13-2: Vehicle miles traveled

Each Shoreline Plan alternative would include ordinances that would affect the location and intensity of future shorezone structure development, which would affect travel patterns, the number of new vehicle trips generated, and VMT. Alternatives 1, 2, and 3 would result in an increase in VMT but would maintain VMT levels below the adopted TRPA threshold standard. This would be a **less than significant** impact for Alternatives 1, 2, and 3. Alternative 4 would not increase VMT and would maintain summer daily VMT levels below the adopted TRPA VMT threshold. Alternative 4 would result in **no impact**.

The target value for the TRPA VMT threshold is a 10 percent reduction from 1981 levels, or no more than 2,030,938 daily VMT (TRPA 2016). 2017 RTP/SCS projects that VMT in the Region is anticipated increase to 2,168,384 VMT/day by 2040 (TRPA 2017b).

The VMT generated in the Tahoe Region on a peak summer day under each Shoreline Plan alternative is calculated based on the trip generation estimates by facility as shown in Table 13-3, and the average trip length within the Region for visitors/seasonal residents recreation trips (approximately 18 miles). The total peak summer day vehicle trips shown in Table 13-4 are rounded to the nearest whole number; however, calculation of the VMT for each alternative uses the exact calculated mathematical value of the total peak summer day vehicle trips. Additional details are provided in Appendix A.

The VMT estimates reflect those generated from buildout of Shoreline Plan in addition to the 2040 VMT forecast for the 2017 RTP/SCS. The methodology for calculating project-related VMT is described in more detail in Section 13.4, “*Methods and Assumptions*.” Table 13-5 below shows the baseline regional VMT as well as the regional VMT for each alternative.

Table 13-5 Region-Wide Daily Summer VMT Under Buildout by Alternative

	Alternative 1 (2040)	Alternative 2 (2040)	Alternative 3(2040)	Alternative 4(2040)
Project Generated Region-wide VMT	11,368	49,007	7,613	0
Baseline Region-wide VMT (2040)	2,168,384	2,168,384	2,168,384	2,168,384
Baseline Plus Project Region-wide VMT	2,179,752	2,217,391	2,175,997	2,168,384
TRPA Threshold Standard	2,030,938	2,030,938	2,030,938	2,030,938
Standard Met	No	No	No	No

Notes: Additional details provided in Appendix A

Source: TRPA 2016; TRPA 2017b; data provided by Ascent Environmental in 2018.

Alternative 1: Proposed Shoreline Plan

Alternative 1 would result in a total of 2,179,752 region-wide peak-daily summer VMT under buildout conditions. When compared to the projected 2040 summer daily VMT in the Tahoe Region of 2,168,384 (TRPA 2017b), Alternative 1 is estimated to increase region-wide VMT from baseline 2040 conditions by 11,368, or approximately 0.5 percent. Thus, the total VMT under Alternative 1 would exceed the TRPA threshold standard of 2,030,938 by 148,814 VMT.

However, as described in Chapter 50 of the TRPA Code of Ordinances, two years after each release of land use commodities (which are released in 4-year cycles), TRPA is required to monitor VMT and only release commodity allocations upon demonstrating through modeling and the use of traffic counts that the TRPA VMT threshold standard shall be maintained over the subsequent four-year period (see Code of Ordinances Section 50.4). Therefore, the monitoring of VMT, and release of commodity allocations contingent on

achievement of the TRPA VMT threshold standard would prevent region-wide VMT from exceeding the threshold standard of 2,030,938. This is consistent with the findings of the 2017 RTP/SCS IS/IEC which determined that the mitigation presented in the 2012 RPU EIS (and subsequently incorporated into the TRPA Code of Ordinances as Section 50.4) would be applicable to the current RTP and would adequately resolve the impact. Thus, this impact would be **less than significant**.

Alternative 2: Maintain Existing TRPA Shorezone Regulations (No Project)

Alternative 2 would result in a greater increase in VMT than Alternative 1. Alternative 2 would result in a total of approximately 2,217,391 region-wide peak-daily summer VMT under buildout conditions. When compared to the projected 2040 summer daily VMT in the Tahoe Region of 2,168,384 (TRPA 2017b), Alternative 2 is estimated to increase region-wide VMT from baseline 2040 conditions by 49,007, or approximately 2.3 percent. Thus, the total VMT under Alternative 2 would exceed the TRPA threshold standard of 2,030,938 by 186,453 VMT.

However, as described for Alternative 1 above, Chapter 50 of the TRPA Code of Ordinances requires TRPA to monitor VMT and only release commodity allocations upon demonstrating through modeling and the use of actual traffic counts that the TRPA VMT threshold standard shall be maintained over the subsequent four-year period. This would prevent region-wide VMT from exceeding the threshold standard of 2,030,938. For the same reasons described for Alternative 1, this impact would be **less than significant**.

Alternative 3: Limit New Development

Alternative 3 would result in a total of approximately 2,175,997 region-wide peak-daily summer VMT under buildout conditions. When compared to the projected 2040 summer daily VMT of 2,168,384 (TRPA 2017b), Alternative 3 is estimated to increase region-wide VMT from baseline 2040 conditions by 7,613, or approximately 0.4 percent. Thus, the total VMT under Alternative 2 would exceed the TRPA threshold standard of 2,030,938 by 145,059 VMT.

However, as described for Alternatives 1 and 2 above, Chapter 50 of the TRPA Code of Ordinances requires TRPA to monitor VMT and only release commodity allocations upon demonstrating through modeling and the use of actual traffic counts that the TRPA VMT threshold standard shall be maintained over the subsequent four-year period. This would prevent region-wide VMT from exceeding the threshold standard of 2,030,938. For the same reasons described for Alternative 1, this impact would be **less than significant**.

Alternative 4: Expand Public Access and Reduce Existing Development

Alternative 4 would not include the development of vehicular trip generating structures and would result in no increase in region-wide VMT. The 2017 RTP/SCS IS/IEC projected that the 2040 summer daily VMT in the Tahoe Region (2,168,384) would exceed the threshold standard of 2,030,938 (TRPA 2017b). However, the 2017 RTP/SCS IS/IEC determined that the mitigation presented in the 2012 RPU EIS (and subsequently incorporated into the TRPA Code of Ordinances as Section 50.4) would be applicable to the current RTP/SCS and would adequately resolve the impact. The projected 2040 summer daily VMT would remain below the TRPA threshold standard of 2,030,938 with the implementation of TRPA Code requirements. Therefore, with implementation of Alternative 4, there would be no increase in region-wide VMT and VMT would remain below the TRPA threshold standard of 2,030,938. Alternative 4 would result in **no impact**.

Mitigation Measures

No mitigation is required.

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