

3.3 TRANSPORTATION

3.3.1 INTRODUCTION

This section evaluates the potential impacts on the vehicular, transit, bicycle, and pedestrian components of the transportation system that may result from implementation of each of the five Regional Plan Update alternatives. The regulatory framework and existing environmental setting with respect to transportation in the Region are described, and impacts of each alternative, with emphasis on significant and potentially significant effects, are identified and assessed. Where necessary and feasible, mitigation measures are identified to reduce these impacts to less-than-significant levels.

3.3.2 REGULATORY BACKGROUND

This section describes the relationship between the Regional Plan Update and the Regional Transportation Plan (RTP), an update for which is also underway. The environmental impact report/environmental impact statement (EIR/EIS) for the RTP is currently in circulation for public review and comment; it is incorporated by reference into the Regional Plan Update EIS. A description of other TRPA, federal, state, and local policies and regulations applicable to transportation in the Tahoe Region follows the RTP discussion.

RELATIONSHIP TO THE REGIONAL TRANSPORTATION PLAN

As described in Chapter 1, Introduction, preparation of the RTP and Sustainable Communities Strategy (SCS) are underway concurrently with the Regional Plan Update. Both a land use plan and a transportation plan are required by Article V of the Tahoe Regional Planning Compact (Public Law 96-551) and both are aimed at achieving the common goals of environmental improvement, sustainable development, and attainment of TRPA's environmental threshold standards. Specifically, Article V(c)(2) of the Compact requires that the Regional Plan include a "transportation plan for the integrated development of a regional system of transportation," including, but not limited to, parkways, highways, transit, waterways, public transportation, and bicycle facilities. Goals of the transportation plan are to: (a) to reduce dependency on the automobile by making more effective use of existing transportation modes and public transit, and (b) to reduce to the extent feasible air pollution caused by motor vehicles. Where increased capacity is required, the Compact calls for a preference to be given to public transportation and public programs and projects related to transportation.

The RTP serves multiple purposes; it serves as the required transportation plan element of the Regional Plan, and also serves purposes relative to the federal and California transportation planning laws and regulations. To receive federal transportation project funding, federal law requires preparation of a long-range transportation plan for designated metropolitan areas that is coordinated with statutory requirements to demonstrate conformity to air quality standards. California law also requires preparation of an RTP as part of the funding process for transportation projects. With the designation of TRPA in 1984 by the State of California as the Regional Transportation Planning Agency (RTPA) for the California side of the Basin, and in 1999 by the U.S. Congress as the Metropolitan Planning Organization (MPO) for the Lake Tahoe Region, TRPA assumed federal and state transportation planning responsibilities and authorities. The Tahoe Metropolitan Planning Organization (TMPO) is responsible for approval of the RTP, which addresses transportation strategies for the entire Region, consistent with federal law. Therefore, while the RTP remains an element of the comprehensive Regional Plan, it is produced and periodically updated as a stand-alone plan in keeping with its multiple purposes and authorities.

Passage of legislation in California, Senate Bills 375 (Statutes of 2008) and 575 (Statutes of 2009), further solidified the linkage between land use and transportation planning for the California side of the Basin, and thus the link between the Regional Plan Update and RTP. SB 375 requires, among other things, RTPs prepared by California MPOs to include a Sustainable Communities Strategy (SCS), designed to achieve certain targets set by the California Air Resources Board (ARB) for the reduction of greenhouse gas (GHG) emissions from cars and light trucks. The SCS is required to identify the general location of land uses, residential densities, and building intensities within a region and set forth a forecasted development pattern which, when integrated with the transportation network and other transportation measures and policies, will reduce GHG emissions from cars and light trucks to levels that achieve the targets. SB 575 clarifies SB 375 for the Lake Tahoe Region, requiring that TMPO use the TRPA Regional Plan as its SCS, if the Regional Plan achieves the Region's GHG reduction targets and air quality conformity. As a result, the SCS prepared by TMPO will be fully integrated with and ultimately included in the Regional Plan approved by TRPA.

Because the land use planning agency responsible for approval of the Regional Plan (i.e., TRPA) and the regional transportation planning agency responsible for preparation of the RTP and SCS in the Tahoe Region (i.e., TRPA, operating as the TMPO with the additional board member from the U. S. Forest Service) are nearly the same entity, and because the RTP and Regional Plan Update processes are occurring simultaneously, a unique opportunity is created in which the land use scenarios of the Regional Plan Update alternatives are closely linked to, and form the basis of, the alternative RTP transportation strategies. In other words, the Regional Plan Update alternatives reflect different land use themes and levels of allowable development; because the SCS includes these land use patterns and development criteria that form the foundation of the transportation strategies, the RTP and SCS alternatives consist of assemblages of transportation and land use features that are consistent with the Regional Plan Update alternatives.

For purposes of this EIS, each of the action alternatives includes transportation policies proposed as part of the Transportation Element of the Goals and Policies, and thus the Regional Plan, and also packages of capital projects and transportation strategies appropriate to each action alternative (defined through the RTP) that implement the policies. These "transportation strategy packages," their component projects, and rationale for linkage with specific Regional Plan Update alternatives are described in "Analysis Methods and Assumptions," below.

TAHOE REGIONAL PLANNING AGENCY

ENVIRONMENTAL THRESHOLD CARRYING CAPACITIES

The Tahoe Regional Planning Compact, as amended, charged TRPA with identifying Environmental Threshold Carrying Capacities, or threshold standards necessary to maintain certain environmental and other values, and to prepare and implement a Regional Plan to attain and maintain those threshold standards. Threshold standards have been established for water quality, air quality, scenic resources, soil conservation, fish habitat, vegetation, wildlife habitat, noise, and recreation. Although transportation is not a threshold program area, two Air Quality Threshold Standards pertain directly to the transportation system:

1. The winter traffic volume at US 50 and Park Avenue in South Lake Tahoe should be 7 percent less than the 1981 volume of 25,173 vehicles taken on the Saturday of the Presidents Day holiday from 4 PM to midnight. This threshold standard addresses carbon monoxide (CO), and is noted as the Winter Traffic Volume Threshold Standard in the 2011 Threshold Evaluation.
2. The daily vehicle miles of travel (VMT) shall be 10 percent less than the 1981 base year value of 2,297,300 for a peak summer day. This establishes the threshold at 2,067,600 VMT. This threshold standard addresses

visibility and nitrate deposition, and is noted in the VMT Threshold Standard for the visibility indicator category in the 2011 Threshold Evaluation.

Although the US 50 winter traffic volume standard was originally developed to target CO reductions, it remains an important indicator for other Air Quality Threshold Standards affected by traffic volumes, and has resulted in useful long-term traffic data. These data must be used with caution, however, because the traffic volume at one location during one specific winter day may be influenced in any given year by weather conditions (e.g., travel difficulty because of snowy conditions or excellent snow that attracts more skiers), non-recurring bottlenecks resulting from accidents or other incidents, fluctuations in casino gaming (gaming revenues and employees have been declining in recent years [TMPO 2010a: p. 8]), and random variation in travel demand. Also, while the winter US 50 standard may be a good representation of overall travel demand in the South Shore area, it does not necessarily reflect conditions elsewhere in the Tahoe Region. These details notwithstanding, *Mobility 2030: Transportation Monitoring Program 2010* indicates that volumes on US 50 at Park Avenue have been trending downward since 2002 (TMPO 2010a: p.21). For example, the 2009 traffic volume was approximately 10,000 vehicles from 4:00 PM to midnight on the Saturday of the Presidents Day holiday, which is much lower than the US 50 Threshold Standard.

The VMT Threshold Standard attainment value reported above has been updated from previously reported values using an analytical approach that considers measured changes in traffic levels on roadways throughout the Region. This updating method is summarized, as follows, and provides consistency between the VMT Threshold Standard and the current TRPA Travel Demand Model results. Since 1981, the TRPA has used a series of progressively more sophisticated travel models to estimate VMT. As the VMT models improved each year, the more current modeled VMT estimate became incomparable to previous VMT model estimates, because different input parameters are used and mapped traffic zones are different. To provide a comparable estimate for VMT across years, the 1981 modeled VMT was scaled based on the ratio of August peak weekday 1981 traffic counts to analogous August peak weekday 2010 traffic counts, with all other input parameters (e.g., persons per vehicle, average trip length) held constant. In 1981, the cumulative traffic volume at the 20 traffic monitoring locations was 15.7 percent higher than the 2010 cumulative volume. Modeled VMT in 2010 was 1,984,600. Therefore, 2010 VMT as factored by this ratio yields a 1981 value of 2,297,300 that can be compared to 2010 conditions. With a VMT Threshold Standard of attaining 10 percent less than 1981 values, the VMT Threshold Standard that is comparable to the current model is 2,067,600.

The updated VMT calculation method does not change the degree of attainment difficulty for this threshold, because the ratio between traffic counts taken in the Region and the modeled VMT values is the same in 1981 and 2010.

REGIONAL PLAN

Goals and Policies

TRPA's existing Goals and Policies (Goals and Policies, p. III-6) sets standards for vehicle "level of service" (LOS). LOS is a means of evaluating the speed at which traffic is flowing along a roadway. The Highway Capacity Manual (Transportation Research Board 2000) defines the different levels of service as:

- A = Free flow
- B = Reasonably free flow
- C = Stable flow
- D = Approaching unstable flow
- E = Unstable flow
- F = Forced or breakdown flow

More detail on the definition of level of service is provided in Section 3.3.3, Affected Environment. The TRPA Goals and Policies require that peak period traffic flow not exceed the following:

- ▲ 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
- ▲ LOS E may be acceptable during peak periods in urban areas, not to exceed four hours per day

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. A standard that takes into consideration all modes of transportation is proposed for development following the Regional Plan Update.

These policies may not necessarily be consistent with those of incorporated cities, adopted community plans, and state departments of transportation with jurisdiction over certain roadways. The significance criteria contained in Section 3.3.4 lists these inconsistencies and describes the process undertaken to arrive at a set of significance criteria for use in analyzing the significance of impacts.

FEDERAL

The primary federal requirements applicable to transportation components of the Regional Plan Update relate to transportation planning and funding through the RTP and conformity with federal air quality requirements. Requirements for RTPs, as described above, are addressed in the metropolitan transportation planning rules in 23 Code of Federal Regulations (CFR) 450 and 49 CFR 613. These federal regulations incorporate the most recent transportation statute affecting federal funding for transportation projects, i.e., Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users or SAFETEA-LU, enacted in 2005. The most recent regulatory changes, which comprehensively updated regulations to reflect the 2005 SAFETEA-LU provisions, were promulgated by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) and published in the February 14, 2007 Federal Register.

Federal Clean Air Act conformity requirements pursuant to the Amendments of 1990, apply to all MPOs in nonattainment areas. Section 176(c) of the Clean Air Act (CAA), as amended (42 U.S. Code [USC] 7506(c)), and the related requirements of 23 USC 109(j), pertaining to conformity of transportation plans, ensure that federal funding and approval are given to transportation plans, programs, and projects that are consistent with the air quality goals established by a State Implementation Plan (SIP).

STATE

CALIFORNIA TRANSPORTATION COMMISSION: RTP GUIDELINES

As described above, California law also requires preparation of an RTP as part of the funding process for transportation projects. State planning guidelines call for the adoption and submittal of an RTP to the California Transportation Commission and Caltrans every four years for regions in non-attainment with air quality standards. The California Government Code requires that the RTP address three distinct elements: a policy element, an action element, and a financial element. SB 375, Statutes of 2008, added a fourth element, the SCS.

In 2010, the California Transportation Commission adopted the *2010 Regional Transportation Plan Guidelines*, which provide additional technical direction for MPOs on a variety of technical topics including travel demand

forecasting. The RTP/SCS EIR/EIS describes the relevant policies from these guidelines and evaluates how the TRPA travel demand forecasting model complies with them. The transportation analysis for the Regional Plan Update adheres to the RTP Guidelines through use of analysis data, assumptions, and methods that are consistent with what is used in the RTP/SCS.

CALIFORNIA AIR RESOURCES BOARD: GLOBAL WARMING SOLUTIONS ACT (AB 32), AND SUSTAINABLE COMMUNITIES AND CLIMATE PROTECTION ACT (SB 375 AND SB 575)

In 2006, the California State Legislature passed Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, which requires California to reduce GHG emissions to 1990 levels by 2020. This legislation is relevant to MPOs because a large percentage of existing GHG emissions is from the transportation sector. According to ARB, the transportation sector contributes over 40 percent of the GHGs throughout the state.

In 2008, the State of California adopted Senate Bill (SB) 375. This bill is intended as an implementation tool for AB 32 to lower GHG emissions from passenger vehicles by reducing VMT through transportation and land use strategies. SB 375 is playing a key role in California's efforts to reach the GHG reduction goals set out in AB 32.

In September 2010, ARB adopted the following GHG reduction targets for the California portion of the Tahoe Region (*Regional Greenhouse Gas Emissions Targets Pursuant to SB 375*, Resolution 10-31, page 134):

- ▲ By 2020, GHG per capita is reduced by seven percent from 2005 levels.
- ▲ By 2035, GHG per capita is reduced by five percent from 2005 levels.

CALIFORNIA AND NEVADA DEPARTMENTS OF TRANSPORTATION

The California and Nevada Departments of Transportation (Caltrans and NDOT, respectively) are responsible for the operation and maintenance of the State Highway system in the Tahoe Region. Attachment A to Caltrans' September 23, 2011 letter in response to the Notice of Preparation for the RTP and SCS environmental impact report (EIR) and environmental impact statement (EIS) provided the following concept levels of service (LOS) for Caltrans facilities in the Tahoe Region:

- ▲ Concept LOS D: SR 89 (from Alpine County line to US 50, and from US 50/SR 89 intersection to El Dorado/Placer County line)
- ▲ Concept LOS E: SR 267
- ▲ Concept LOS F: US 50, SR 28, and SR 89 (from El Dorado/Placer County line to SR 28/89 intersection and from SR 28/89 intersection to Placer/Nevada County line)

NDOT's *2010 Performance Management Report* (NDOT 2010: p. 33) identifies a performance standard of 85 percent of urban roadways and 90 percent of rural roadways operating at LOS D or better.

LOCAL

TRPA COMMUNITY PLANS AND LOCAL GOVERNMENT PLANS

Community Plans for Tahoe City, Carnelian Bay, Stateline/Ski Run, Roundhill, Stateline, Kings Beach, Kingsbury, Bijou/Al Tahoe, Tahoe Vista, and South Y Industrial Tract all maintain a common LOS policy:

- ▲ Level of service on major roadways (i.e., arterial and collector routes) shall be LOS D, and signalized intersections shall be at LOS D. LOS E may be acceptable during peak periods, not to exceed 4 hours per day.

The remaining Community Plans have the following LOS policies:

- ▲ Kings Beach Industrial Community Plan - the LOS on roadways within the Plan area shall not be worse than LOS C.
- ▲ North Stateline Community Plan - LOS D shall be maintained at the following intersections: SR 28/Casino Crosswalk (pedestrian signal) and SR 28/Stateline Road
- ▲ Incline Village Tourist, Incline Village Commercial, and Ponderosa Ranch community plans – Attain and maintain LOS at key intersections in the Plan area consistent with the TRPA Regional Transportation Plan/Air Quality Plan.
- ▲ Meyers Community Plan - LOS D or better shall be maintained at the US 50/Pioneer Trail and US 50/SR 89 intersections.

PLACER COUNTY

The *Placer County General Plan* (1994) includes the following policies related to transportation and circulation that are relevant to this analysis:

Streets and Highways

- ▲ **Policy 3.A2:** Streets and roads shall be dedicated, widened, and constructed according to the roadway design and access standards generally defined in Section I of this Policy Document and, more specifically, in community plans and the County’s Highway Deficiencies Report. Exceptions to these standards may be necessary but should be kept to a minimum and shall be permitted only upon determination by the Public Works Director that safe and adequate public access and circulation are preserved by such exceptions.
- ▲ **Policy 3.A3:** The County shall require that roadway rights-of-way be wide enough to accommodate the travel lanes needed to carry long-range forecasted volumes (beyond 2010), as well as any planned bikeways and required drainage, utilities, landscaping, and suitable separations. Minimum right-of-way criteria for each class of roadway in the County are specified in Part I of this Policy Document.
- ▲ **Policy 3.A4:** On arterial roadways and thoroughfares, intersection spacing should be maximized. Driveway encroachments along collector and arterial roadways shall be minimized. Access control restrictions for each class of roadway in the County are specified in Part I of this Policy Document.
- ▲ **Policy 3.A5:** Through-traffic shall be accommodated in a manner that discourages the use of neighborhood roadways, particularly local streets. This through-traffic, including through truck traffic, shall be directed to appropriate routes in order to maintain public safety and local quality of life.
- ▲ **Policy 3.A6:** The County shall require all new development to provide off-street parking, either on-site or in consolidated lots or structures.
- ▲ **Policy 3.A7:** The County shall develop and manage its roadway system to maintain the following minimum levels of service (LOS):
 - ▲ LOS “C” on rural roadways, except within one-half mile of state highways where the standard shall be LOS “D.”
 - ▲ LOS “C” on urban/suburban roadways except within one-half mile of state highways where the standard shall be LOS “D.”

The County may allow exceptions to these levels of service standards where it finds that the improvements or other measures required to achieve the LOS standards are unacceptable based on established criteria. In allowing any exception to the standards, the County shall consider the following factors:

- ▲ The number of hours per day that the intersection or roadway segment would operate at conditions worse than the standard.

- /// The ability of the required improvement to significantly reduce peak hour delay and improve traffic operations.
- /// The right-of-way needs and the physical impacts on surrounding properties.
- /// The visual aesthetics of the required improvement and its impact on community identity and character.
- /// Environmental impacts including air quality and noise impacts.
- /// Construction and right-of-way acquisition costs.
- /// The impacts on general safety.
- /// The impacts of the required construction phasing and traffic maintenance.
- /// The impacts of quality of life as perceived by residents.
- /// Consideration of other environmental, social, or economic factors on which the County may base findings to allow an exceedance of the standards.

Exceptions to the standards will only be allowed after all feasible measures and options are explored, including alternative forms of transportation.

- ▲ **Policy 3.A.8:** The County's level of service standards for the State highway system shall be no worse than those adopted in the Placer County Congestion Management Program (CMP).
- ▲ **Policy 3.A.9:** The County shall work with neighboring jurisdictions to provide acceptable and compatible levels of service and joint funding on the roadways that may occur on the circulation network in the Cities and unincorporated area.
- ▲ **Policy 3.A.10:** The County shall strive to meet the level of service standards through a balanced transportation system that provides alternatives to the automobile.
- ▲ **Policy 3.A.11:** The County shall plan and implement a complete road network to serve the needs of local traffic. This road network shall include roadways parallel to regional facilities so that the regional roadway system can function effectively and efficiently. Much of this network will be funded and/or constructed by new development.
- ▲ **Policy 3.A.12:** The County shall require an analysis of the effects of traffic from all land development projects. Each such project shall construct or fund improvements necessary to mitigate the effects of traffic from the project. Such improvements may include a fair share of improvements that provide benefits to others.
- ▲ **Policy 3.A.13:** The County shall secure financing in a timely manner for all components of the transportation system to achieve and maintain adopted level of service standards.
- ▲ **Policy 3.A.14:** The County shall assess fees on new development sufficient to cover the fair share portion of that development's impacts on the local and regional transportation system. Exceptions may be made when new development generates significant public benefits (e.g., low income housing, needed health facilities) and when alternative sources of funding can be identified to offset foregone revenues.
- ▲ **Policy 3.A.15:** Placer County shall participate with other jurisdictions and Caltrans in the planning and programming of improvements to the State Highway system, in accordance with state and federal transportation planning and programming procedures, so as to maintain acceptable levels of service for Placer County residents on all State Highways in the County. Placer County shall participate with Caltrans and others to maintain adopted level of service (LOS) standards as follows:
 - a. For State Highways 49, 65, and 267 Placer County's participation shall be in proportion to traffic impacts from its locally-generated traffic.
 - b. The funding of capacity-increasing projects on I-80 shall utilize state and federal sources intended for the improvement of the regional and interstate system such as Flexible Congestion Relief (FCR). Placer County and local development shall not be required to participate financially in the upgrading of I-80 to provide additional capacity for through traffic.

- c. Placer County assumes no responsibility for funding roadway improvements to the street system within other jurisdictions. Each local jurisdiction shall be responsible for improvements necessary to sustain adopted LOS standards within its jurisdiction limits. Placer County may negotiate participation agreements with other jurisdictions for transportation improvement projects that provide mutual benefit.

Non-Motorized Transportation

- ▲ **Policy 3.D.1:** The County shall promote the development of a comprehensive and safe system of recreational and commuter bicycle routes that provides connections between the County's major employment and housing areas and between its existing and planned bikeways.
- ▲ **Policy 3.D.2:** The County shall work with neighboring jurisdictions to coordinate planning and development of the County's bikeways and multi-purpose trails with those of neighboring jurisdictions.
- ▲ **Policy 3.D.5:** The County shall continue to require developers to finance and install pedestrian walkways, equestrian trails, and multi-purpose paths in new development, as appropriate.
- ▲ **Policy 3.D.7:** The County shall, where appropriate, require new development to provide sheltered public transit stops, with turnouts.

EL DORADO COUNTY

- ▲ **Policy TC– 1K:** The County shall continue to work with the El Dorado County Transportation Commission, Sacramento Area Council of Governments, Caltrans, Tahoe Regional Planning Agency and other agencies to maintain a current regional transportation plan to identify funding priorities and to develop expenditure plans for available regional transportation funds in accordance with regional state and federal transportation planning and programming procedures. Such regional programming may include improvements to state highways, city streets, and county roads.
- ▲ **Policy TC – Xa:** The following policies shall remain in effect until December 31, 2018:
 1. Traffic from single-family residential subdivision development projects of five or more parcels of land shall not result in, or worsen, Level of Service F (gridlock, stop and go) traffic congestion during weekday peak hour periods on any highway, road, interchange, or intersection in the unincorporated areas of the county.
 2. The County shall not add any additional segments of US Highway 50 or any other roads to the County's list of roads that are allowed to operate a Level Service F without first getting the voters approval or by a 4/5 vote of the Board of Supervisors.
 3. Developer paid traffic impact fees combined with any other available funds shall fully pay for building all necessary road capacity improvements to fully offset and mitigate all direct, cumulative traffic impacts of new development upon any highways, arterial roads, and intersections during weekday peak hour periods in unincorporated areas of the county.
- ▲ **Policy TC – Xd:** Level of service (LOS) for County-maintained roads and state highways within the unincorporated areas of the county shall not be worse than LOS E in the community regions or LOS D in the Rural Centers and Rural Regions except as specified in table TC-2. The volume to capacity ratio of the roadway segments listed in table TC-2 shall not exceed the ratio specified in the table. Level of service will be defined in the latest edition of the Highway Capacity Manual and calculated using the methodologies contained in that manual. Analysis periods shall be based on the professional judgment of the Department of Transportation which shall consider periods including, but not limited to, weekday average daily traffic (ADT), a.m. peak hour, and p.m. peak hour traffic volumes.
- ▲ **Policy TC – Xp:** For the purposes of this Transportation and Circulation Element, "worsen" is defined as any of the following number of project trips using a road facility at the time of issuance of a use or occupancy permit for the development project:
 - a. A 2% increase in traffic during the a.m. peak hour PM peak hour or daily; or

- b. The addition of 100 or more daily trips, or
- c. The addition of 10 or more trips during the a.m. peak hour or the p.m. peak hour.

- ▲ **Policy TC – 2a:** The County shall work with the Tahoe Regional Planning Agency, Tahoe Transportation District, Caltrans, and transit service providers to pursue the development of waterborne transportation for transit services the Tahoe basin.

CITY OF SOUTH LAKE TAHOE

In May 2011, the City of South Lake Tahoe adopted its 2030 General Plan. According to the *South Lake Tahoe General Plan Circulation Element*, (City of South Lake Tahoe 2011: pp. TC-5 - TC-7), an overarching goal of the Circulation Element of that plan is to develop a transportation network that provides an efficient, comprehensive, and well maintained roadway system that accommodates vehicular travel while encouraging expanded use of alternative transportation modes. Key policies from that document that pertain to this study include:

- ▲ **Policy TC-1.1:** The City shall develop: all arterial streets to provide infrastructure for vehicles, transit, bicycles, and pedestrians; all collector streets to provide at a minimum infrastructure for vehicles, transit, bicycles, and pedestrians; and all local streets to provide adequate shared infrastructure for vehicles, bicycles, and pedestrians. The City shall develop a network of routes along collector and local streets for pedestrians and bicycles.
- ▲ **Policy TC-1.2:** The City shall establish a minimum LOS standard “D” for all city streets and intersections. Up to four hours per day of LOS E shall be considered acceptable. LOS shall be considered based on average delay of the intersection as a whole for signalized intersections, and for the worst approach for intersections controlled by stop signs or roundabouts. LOS shall be evaluated for a busy, but not peak, traffic day in the peak seasons.
- ▲ **Policy TC-1.10:** The City shall coordinate efforts with Caltrans to manage traffic flows along US Highway 50 and State Route 89.
- ▲ **Policy TC-2.1:** The City shall coordinate with BlueGO to increase transit service efficiency, availability, and convenience for all residents, employers, and visitors to the degree feasible with available resources. Opportunities to transport bicycles on buses should also be expanded.

3.3.3 AFFECTED ENVIRONMENT

This section describes the existing roadway, transit, bicycle, pedestrian, aviation, and goods movement networks in the Tahoe Region, including recent data pertaining to travel mode choice.

MODE CHOICE

Mobility 2030: Transportation Monitoring Program 2010 (TMPO 2010a: pp. 12-14) reported information related to travel mode choice based on a summer 2010 survey of persons at recreational areas and core commercial areas in the Tahoe Region. Surveys were also conducted at gateways to the Tahoe Region to assess mode split for travel into the Region. Survey results indicate that the vast majority of both intra-Region and inter-Region trips are made by automobile (Table 3.3-1).

Trip Type	Auto Mode	Walk Mode	Bike Mode	Transit Mode	Other Mode
Trips to/from Recreational Areas	86%	6%	5%	1%	2%
Trips to/from Commercial Core Areas	77%	14%	7%	1%	1%
Trips into/out of Tahoe Region	98%	0%	0%	1%	1%

Source: *Travel Mode Share Survey, Summer 2010*, and TMPO 2010a: pp. 12-14

Surveys were also conducted in winter 2008 and showed similar trends, with the private auto reportedly used for 84 percent of recreational area trips, 71 percent of core commercial area trips, and 91 percent of inter-Region trips. As noted also in *Mobility 2030: Transportation Monitoring Program 2010* (TMPO 2010a: p. 15), 42 percent of recreational areas in the Tahoe Region are accessible via fixed-route transit with a stop located within ¼-mile of the entrance, and 62 percent are accessible via a bicycle facility located within ½-mile of the site.

ROADWAY NETWORK

The Tahoe Region is situated in portions of El Dorado and Placer Counties in California, and Carson City, Washoe, and Douglas counties in Nevada. Roadways within the Region consist of state highways, arterials, collectors, and local/neighborhood streets. General descriptions of these roadways and their intended function are provided below.

Exhibit 3.3-1 displays arterials and highways including the number of lanes and facility type. As shown, highways range from a two-lane undivided facility to a five-lane facility consisting of two lanes in each direction separated by a two-way (center) left-turn lane.

STATE HIGHWAYS

Most vehicular travel in the Tahoe Region occurs on state highways including US 50, State Route (SR) 28, SR 89, SR 207, SR 267, and SR 431 (Table 3.3-1). Most highways in the Lake Tahoe Region 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 (TWLTL).

ARTERIALS

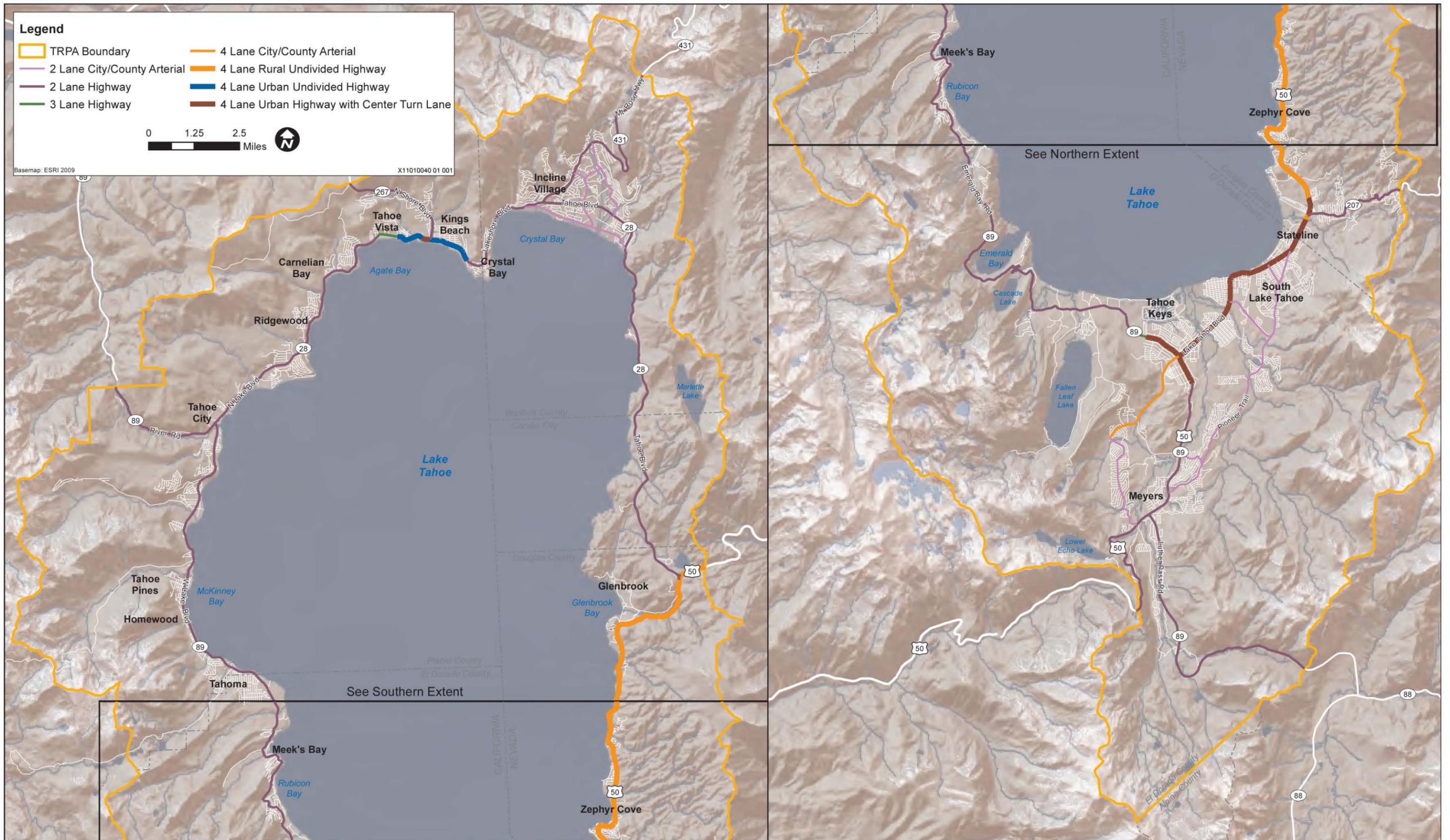
Arterial roadways carry moderate to high traffic volumes to and from local and collector roads to other arterials and highways. Although access to adjacent parcels is more limited from arterials than from collector and local streets, arterial roadways also provide direct access to properties, particularly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

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.

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 volumes.



Source: Data provided by Fehr & Peers in 2012 (Appendix E); TRPA 2011

Exhibit 3.3-1.

Existing Roadway Configurations



INTER-REGIONAL GATEWAYS

The Tahoe Region is accessed by seven state highway segments, listed below in descending order of weekday average daily traffic (ADT) volume from August 2010 (including both directions of travel):

1. US 50 west of Meyers (gateway from Sacramento) – 15,100 ADT
2. SR 89 north of Tahoe City (gateway from Truckee) – 13,600 ADT
3. US 50 east of SR 28 (gateway from Carson City) – 12,000 ADT
4. SR 267 north of Kings Beach (gateway from Truckee) – 10,600 ADT
5. SR 431 northeast of Incline Village (gateway from Reno) – 5,400 ADT
6. SR 207 east of US 50 (gateway from Minden/Gardnerville) – 5,000 ADT
7. SR 89 south of US 50 (gateway from Markleeville) – 3,400 ADT

The ADT volumes shown above are based on data from Caltrans or NDOT for the segment of each of the US highways or state routes at or near the Tahoe Region boundary.

TRAFFIC VOLUMES

Travel conditions are analyzed for a summer weekday peak-hour condition, which historical traffic volume trends show to be in August. Based on data published by Caltrans and TRPA, the busiest travel days during those months occur on Friday and Sunday. Friday traffic levels tend to peak in the afternoon/evening as visitors and part-time residents travel into the Region. While Sunday conditions are also busy, they have a less pronounced peak hour surge, meaning that intersections (for the Region as a whole) are typically at their busiest during the Friday evening peak hour. Existing traffic conditions are based on summer 2010 traffic counts. The use of this period enables the TRPA base year traffic model to be calibrated based on 2010 land use information, which is then validated against the 2010 census data and 2010 traffic counts. This results in a more accurate base year travel demand model, which also improves the accuracy of the future year modeling scenarios. NDOT and Caltrans are not expected to have 2011 traffic count data available until mid-2012, so those data were not available for use in this analysis.

It is recognized that travel conditions in the Tahoe Region in 2010 may have been influenced by the recession that began in 2008. However, a downturn in economic conditions began in the Region prior to the recession as a result of reductions in gaming revenues, gaming employees, school enrollment, hotel night stays, and full-time residents beginning in 1998-2003, according to *Mobility 2030: Transportation Monitoring Program 2010* (TMPO 2010a: pp. 8-10). These changes are unlike those in other suburban/urban settings, which may suffer temporarily from high levels of vacant residential or commercial inventories that will rebound with improved economic conditions. Rather, the changes in Tahoe may represent an enduring shift in the region's economy away from gaming. Therefore, it would not be appropriate to select a pre-recession year as an appropriate baseline condition for transportation analysis. As a baseline year, 2010 is appropriate, because it represented conditions at the time the Regional Plan Update analysis was undertaken.

Exhibit 3.3-2 displays the two-way evening peak hour volumes and ADT on various state highway segments in the Tahoe Region. These counts, which are representative of a peak summer weekday condition, are based on August 2010 Friday evening intersection turning movement counts, data published by Caltrans and NDOT and obtained by TMPO staff. The following state highways in the Tahoe Region have the greatest levels of traffic during summer weekday 2010 periods (in descending order of use):

- ▲ US 50 between the South Y and South Stateline: 34,000 to 40,000 ADT
- ▲ US 50 between South Stateline and Zephyr Cove: 27,000 to 33,000 ADT

- ▲ SR 89 north of the South Y: 6,000 to 26,000 ADT
- ▲ SR 28 in Kings Beach, Crystal Bay, and Incline Village: 17,000 to 23,000 ADT
- ▲ US 50 between Echo Summit and Pioneer Trail: 15,000 to 17,000 ADT

Turning movement counts were collected by TMPO during the Friday afternoon/evening peak period (3:30 to 5:30 PM) in August 2010 at seven key signalized intersections in the Tahoe Region. The peak hour at each intersection occurred from 3:30 to 4:30 PM or from 4:00 to 5:00 PM. Each intersection is listed below along with the observed PM peak hour traffic (in descending order of use):

- ▲ US 50/SR 89 (South Y): 3,828 PM peak hour vehicles
- ▲ US 50/SR 207 in Kingsbury: 3,414 PM peak hour vehicles
- ▲ US 50/Ski Run Boulevard in South Shore: 3,148 PM peak hour vehicles
- ▲ SR 28/SR 267 in Kings Beach: 2,651 PM peak hour vehicles
- ▲ US 50/Park Drive in South Shore: 2,617 PM peak hour vehicles
- ▲ SR 28/SR 89 in Tahoe City: 2,201 PM peak hour vehicles
- ▲ SR 28/Village Boulevard in Incline Village: 2,099 PM peak hour vehicles

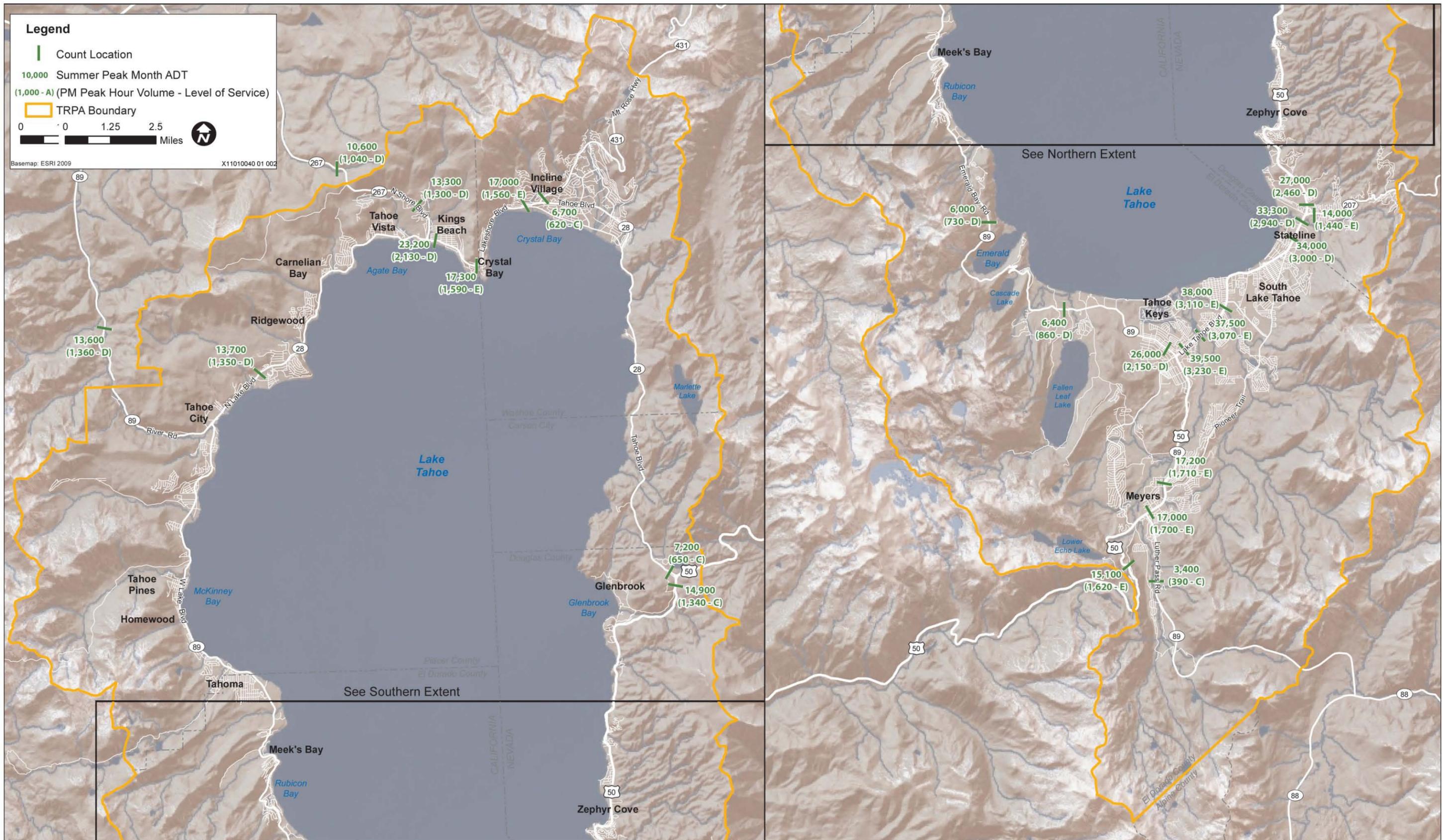
As shown, four of the five busiest study intersections in the Tahoe Region are located in the South Shore.

LEVEL OF SERVICE – INTERSECTIONS

LOS is a qualitative measure that describes the operating performance of transportation facilities. For roadways, LOS is an indicator of traffic flow from the perspective of motorists based on factors such as speed, travel time, delay, freedom to maneuver, volume, and capacity. It is defined on a scale from LOS A, the least congested operating conditions, to LOS F, the most congested operating conditions. Table 3.3-2 presents the average control delay standards for each LOS category at signalized intersections.

LOS	Delay Range for Signalized Intersections	Description
A	0 – 10.0 sec/veh	Free flow conditions; individual users are virtually unaffected by the presence of other vehicles.
B	10.1 – 20.0 sec/veh	Stable flow, but the presence of other vehicles in the traffic stream becomes noticeable.
C	20.1 – 35.0 sec/veh	Stable flow, but the operation of individual users becomes affected by interaction with other vehicles.
D	35.1 – 55.0 sec/veh	Stable flow, but higher density with maneuverability restricted by congestion and reduced travel speed.
E	55.1 – 80.0 sec/veh	Operating conditions at or near the capacity level.
F	> 80.0 sec/veh	Represents forced or a breakdown in traffic flow.

Note: LOS = level of service; sec/veh = seconds per vehicle.
Source: Transportation Research Board 2000



Source: Data provided by Fehr & Peers in 2012 (Appendix E); TRPA 2011

Exhibit 3.3-2.

Average Daily Traffic Volumes and Level of Service - Existing Conditions



Intersections were analyzed using procedures described in the *Highway Capacity Manual (HCM)* (Transportation Research Board 2000). Although an update to the HCM was released in late 2011, the associated software programs for analyzing intersections using the 2010 HCM were not available at the time this study was prepared.

Table 3.3-3 displays the existing average delay and LOS during the Friday PM peak hour at the seven study intersections (refer to Appendix E for technical calculations). Operations were in the LOS B to D range at all study intersections during the summer Friday PM peak hour.

#	Intersection	Jurisdiction	City/Community	Average Delay	Level of Service
1	SR 28/SR 267	Caltrans	Kings Beach	29 sec/veh	C
2	SR 28/Village Boulevard	NDOT	Incline Village	29 sec/veh	C
3	US 50/SR 89 (South Y)	Caltrans	South Lake Tahoe	25 sec/veh	C
4	US 50/Ski Run Boulevard	Caltrans	South Lake Tahoe	36 sec/veh	D
5	US 50/Park Drive	Caltrans	South Lake Tahoe	35 sec/veh	C
6	SR 28/SR 89	Caltrans	Tahoe City	19 sec/veh	B
7	US 50/SR 207	NDOT	Kingsbury	30 sec/veh	C

Notes: Existing conditions representative of a Friday afternoon/evening peak hour in August 2010.
Intersections analyzed using procedures from Highway Capacity Manual (Transportation Research Board 2000).

The following observations of traffic conditions in the Region are noted:

- ▲ Operations on US 50 along the South Shore can become congested during certain peak periods, resulting in vehicle spillbacks to upstream intersections. Although the US 50/Ski Run Boulevard and US 50/Park Drive intersections were operating in the range of LOS C to D during the Friday PM peak hour in August 2010, observations during other periods (e.g., holidays, special events) suggest further degraded operations can occur.
- ▲ The traffic operations results shown in Table 3.3-3 at the SR 28/SR 89 intersection in Tahoe City may not fully consider travel impedances caused by the Fanny Bridge including the pedestrian signal. Field observations suggest lengthy northbound SR 28 vehicle queues can develop, and the intersection may be perceived to operate at a lower LOS.
- ▲ The US 50/SR 89 (South Y) intersection operates at LOS C during the PM peak hour. This is partially because of the heavy northbound to eastbound right-turn movement, which is channelized and has minimal delay. Delays may be more substantial at this location during periods when a greater percentage of the traffic flow is exiting the South Shore (e.g., Sunday morning/mid-day conditions).

LEVEL OF SERVICE - ROADWAYS

The LOS of 24 roadway segments was determined for existing weekday peak hour conditions (Exhibit 3.3-2). These facilities were analyzed based on methods and data presented in Chapters 14 and 15 of the 2010 Update to the *Highway Capacity Manual*. This version of the HCM has been revised and upgraded substantially from the 2000 HCM for highway and urban street operations to reflect recent research findings. Table 3.3-4 displays the ADT standards for LOS C, D, E, and F operations for various facility types based on data from the 2010 HCM.

Table 3.3-4. Roadway Segment Level of Service Standards

Functional Class	Maximum Weekday Peak Hour Traffic Volume to Achieve Specified LOS		
	LOS C	LOS D	LOS E
Two-Lane Undivided Highway ¹	700	1,430	2,740
Two-Lane Arterial Highway with Center Turn Lane ²	660	1,480	1,790
Four-Lane Urban Undivided Arterial Highway ²	1,140	2,600	2,950
Four-Lane Urban Arterial Highway with Center Turn Lane ²	1,320	3,000	3,410
Four-Lane Urban Arterial Highway with Center Turn Lane and Coordinated Signal Control ³	1,390	3,150	3,580
Four-Lane Rural Undivided Highway ¹	3,380	4,490	5,300

Source: Transportation Research Board 2010

¹ 2010 Highway Capacity Software (HCS) (see Appendix E for calculations).

² Exhibit 16-14 of 2010 HCM based on interpolated speed of 35 mph, a 0.10 k-factor (to yield peak hour standards, and a 0.55 D-factor directional split based on observed conditions).

³ *Highway Capacity Manual* (Transportation Research Board, 2000: pp. 16-19 and 16-20) indicates that coordinated signal operations provide a minimum five percent capacity increase.

As shown on Exhibit 3.3-2, the following nine study roadway segments currently operate at LOS E during the summer Friday evening peak hour:

1. US 50 in Meyers – 1,700 PM peak hour vehicles, which exceeds the LOS D standard by 15 percent
2. US 50 east of Pioneer Trail – 1,710 PM peak hour vehicles, which exceeds the LOS D standard by 16 percent
3. US 50 east of the South Y– 3,230 PM peak hour vehicles, which exceeds the LOS D standard by 8 percent
4. US 50 at Tahoe Keys Blvd. – 3,070 PM peak hour vehicles, which exceeds the LOS D standard by 2 percent
5. US 50 at Al Tahoe Blvd. – 3,110 PM peak hour vehicles, which exceeds the LOS D standard by 4 percent
6. SR 28 west of Lakeshore Blvd. – 1,560 PM peak hour vehicles, which exceeds the LOS D standard by 9 percent
7. SR 28 at North Stateline – 1,590 PM peak hour vehicles, which exceeds the LOS D standard by 11 percent
8. US 50 at Echo Summit – 1,620 PM peak hour vehicles, which exceeds the LOS D standard by 13 percent
9. SR 207 east of US 50 – 1,440 PM peak hour vehicles, which exceeds the LOS D standard by 1 percent

As noted previously, TRPA LOS policies permit LOS E operations in urban areas not to exceed four hours per day. For purposes of this analysis, study intersections and roadway segments are defined as either urban or rural depending on the type and extent of adjacent land development. With the exception of US 50 over Echo Summit, the segments listed above qualify as being in urban areas based on the type of adjacent land use

To determine whether LOS E operations occur for more than four hours, hourly traffic volume data were obtained from Caltrans' PeMS database for a Friday in August 2010 for several segments of US 50. On segments between the South Y and Stateline, the fifth highest travel hour carried about 4 percent less traffic than the highest travel hour. Conversely, on segments that have a more pronounced peak hour surge (i.e., at Echo Summit and near Pioneer Trail), the fifth highest travel hour carried between 20 and 30 percent less traffic than the highest travel hour. Data was also obtained for SR 89 north of Tahoe City for a Friday in August 2011 (data on SR 28 were not available). On SR 89, the fifth highest travel hour carried about 7 percent less traffic than the highest travel hour. The following conclusions were derived based on the highest vs. fifth highest hour volume ratios, segment locations, and percentage exceedance of LOS D standard during the peak hour:

1. US 50 in Meyers – four hours or less of LOS E because fifth highest hour operates at LOS D
2. US 50 east of Pioneer Trail – four hours or less of LOS E because fifth highest hour operates at LOS D

3. US 50 east of the South Y – more than four hours of LOS E because fifth highest hour operates at LOS E
4. US 50 at Tahoe Keys Blvd. – four hours or less of LOS E because fifth highest hour operates at LOS D
5. US 50 at Al Tahoe Blvd. – four hours or less of LOS E because fifth highest hour operates at LOS D
6. SR 28 west of Lakeshore Blvd. – more than four hours of LOS E because fifth highest hour operates at LOS E
7. SR 28 at North Stateline – more than four hours of LOS E because fifth highest hour operates at LOS E
8. US 50 at Echo Summit – Operations currently exceed LOS D standard for rural areas.
9. SR 207 east of US 50 – four hours or less of LOS E because fifth highest hour operates at LOS D

Therefore, all study roadways currently operate within the TRPA LOS goals with the exception of the following:

- ▲ US 50 over Echo Summit (LOS E peak hour operations versus LOS D standard for rural areas). The Transportation Corridor Concept Report US Highway 50 (Caltrans 2010: p. 4) also reports LOS E existing operations for this segment.
- ▲ US 50 east of South Y (more than four hours of LOS E operations) The Transportation Corridor Concept Report US Highway 50 (Caltrans 2010: p. 7) reports LOS C conditions during weekday peak hours, but states that traffic during peak summer conditions causes significant congestion.
- ▲ SR 28 west of Lakeshore Blvd. – more than four hours of LOS E because fifth highest hour operates at LOS E.
- ▲ SR 28 at North Stateline – more than four hours of LOS E because fifth highest hour operates at LOS E. The State Route 28 Route Concept Report (Caltrans 2004: p. 4) reported LOS F conditions during weekday peak hours based on 2003 data.

While a number of study roadways currently operate at LOS D or E, the key intersections connecting those facilities generally operate at LOS C or better. This is because many of those intersections have been designed with additional travel lanes, channelized “free” right-turn movements, and other capacity enhancements to meet the travel demand.

VEHICLE MILES OF TRAVEL

Vehicle miles traveled (VMT) is defined as one vehicle traveling on a roadway for one mile. VMT has long been a primary indicator of travel for policymakers and transportation professionals. It is relatively easy to measure, bears a direct relationship to vehicle emissions, is generally correlated with congestion, and can be influenced by policymakers in a number of different ways. An accurate estimate of total VMT is required to evaluate TRPA’s compliance with the VMT Threshold Standard (for the air quality threshold), and VMT for the California side of the Region (to evaluate compliance with greenhouse gas emissions reductions targets set forth in SB 375).

Table 3.3-5 displays the existing VMT in the Tahoe Region for a peak summer weekday. These data were derived from the base year (2010) TRPA travel demand model, which is described in detail in Section 3.3.4. Modeling results indicate that on a peak summer weekday in 2010, approximately 1.95 million vehicle miles were driven on Tahoe Region roadways. Slightly more than half of the VMT is from internal (I-I) trips (i.e., trips begin and end within the Region), and approximately 42 percent of the VMT are internal-external (I-X) or external-internal (X-I) trips (i.e., trips that begin within the Region and end outside it, or vice versa). The remaining five percent are VMT resulting from through trips, which are external-external (X-X) trips that pass through but do not stop within the Region.

Table 3.3-5. Vehicle Miles of Travel within the Tahoe Region – Summer 2010 Conditions

Trip Type	VMT	Relative Percentage
Internal-Internal (I-I)	1,044,600	53%
Internal-External (I-X)	414,700	21%
External-Internal (X-I)	414,700	21%
External-External (X-X)	110,600	5%
Total	1,984,600	100%

Notes: Existing conditions representative of a peak summer weekday. VMT rounded to nearest 100.

The following illustrates how VMT is classified:

Origin to Destination

Meyers, CA to South Lake Tahoe, CA: I-I Trip

Truckee, CA to Incline Village, NV: X-I Trip

Truckee, CA to Carson City, NV: X-X Trip

Source: TRPA Travel Demand Model.

To evaluate compliance with California SB 375, the amount of VMT that occurs on the California side of the Region must be determined. Using the method approved (i.e., 100% of X-X VMT excluded, and 50% of X-I and I-X VMT excluded) by the California Regional Targets Advisory Committee (RTAC), approximately 62 percent of the resulting VMT is attributable to the California side of the Region, and 38 percent to the Nevada side. This calculation method assigns 50 percent of the VMT to a specific side of the Region, if one end of the trip begins/ends on that side of the Region, and the other end of the trip is external. For trips that begin and end on one side of the Region, 100 percent of the VMT are assigned to that side. VMT from through trips is excluded.

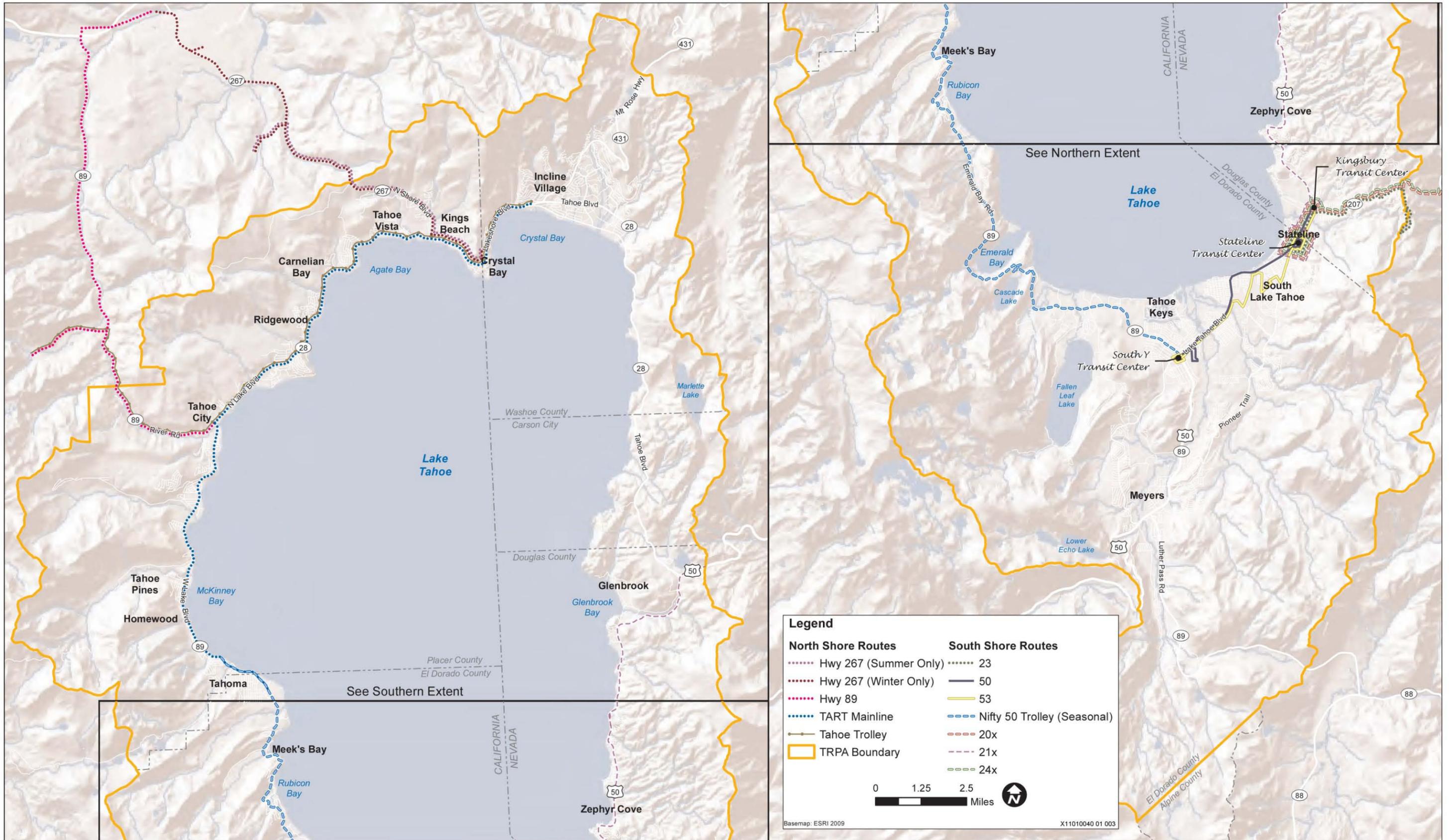
TRANSIT NETWORK

The Lake Tahoe Region has a variety of transit services. This section describes services in the North Shore and South Shore areas, and inter-regional services. The data presented below is based on the information posted by transit service providers. Exhibit 3.3-3 shows fixed bus routes within the Region.

NORTH SHORE TRANSIT SERVICES

The Tahoe Area Regional Transit (TART) provides the following service along the North Shore of Lake Tahoe seven days per week:

- TART Mainline** – operates between Incline Village and Tahoma along SR 28 and SR 89. Stops are provided at Sugar Pine State Park, Tahoma, Homewood, Tahoe Pines, Sunnyside, Tahoe City, Lake Forest, Dollar Hill, Cedar Flat, Carnelian Bay, Tahoe Vista, Kings Beach, Crystal Bay, and Incline Village. Service runs from Sugar Pine Point (south of Tahoma) to Tahoe City from 6:00 AM to 7:00 PM with one-hour headways (time between vehicles in the transit system). Between Tahoe City and Incline Village, service is provided with 30 minute headways. Current fares are \$1.75 for a single ride for adults, and \$0.85 per ride for youth/senior/disabled. TART buses are equipped with bicycle racks during the summer.



Source: Data provided by Fehr & Peers in 2012 (Appendix E); TRPA 2011

Exhibit 3.3-3.

SOUTH SHORE TRANSIT SERVICES

Services on the South Shore are consolidated into the BlueGO system, which provides transit service in the City of South Lake Tahoe and western Douglas County. The following bus routes operate within the South Shore:

- ▲ **BlueGO Route 50** – operates between the South Y and Kingsbury Transit Center along US 50 from 5:00 AM to 11:00 PM with one-hour headways. Stops are provided at a number of locations including Barton Memorial Hospital, the South Stateline Casinos, and the Heavenly Mountain Resort Gondola along this six-mile route. The current fare is \$2.00 for a single ride.
- ▲ **BlueGO Route 53** – operates between the South Y and Stateline Transit Center along US 50, and portions of several City streets including Al Tahoe Boulevard, Johnson Boulevard, and Pioneer Trail. This route, which includes a stop at Lake Tahoe Community College, operates from 7:00 AM to 11:00 PM Monday through Saturday. Special hours are offered on Sundays, holidays, and late nights.
- ▲ **BlueGO Route 23** – operates between the Stateline Transit Center, the Kingsbury Transit Center, and Ridge Resort/Heavenly Mountain Resort (Nevada) along portions of US 50 and SR 207. This route operates on one-hour headways from about 7:00 AM to 11:00 PM. Extended service hours are offered on Fridays and Saturdays.
- ▲ **Nifty Fifty Trolley** – operates between the South Y Transit Center and Tahoma on the west shore with one-hour headways. Stops are provided at a number of primarily recreational locations along the route. The service is operated between June and October with daily service during peak months, and weekend-only service occurring in June and after Labor Day. The current fare is \$2.00 for a single ride.
- ▲ **Ski Shuttle** – During winter months, BlueGO operates a free ski shuttle that serves the Heavenly Mountain Resort base facilities in California and Nevada.

BlueGO also offers demand responsive service within the city limits of South Lake Tahoe, to and from Christmas Valley and the Upper Truckee River neighborhoods, Meyers and other portions of El Dorado County. All vehicles are wheelchair accessible, and equipped with bicycle racks.

INTER-REGIONAL TRANSIT SERVICES

Inter-regional transit consists of several bus routes that connect the Tahoe Region to external destinations. The North Shore is served by the following inter-regional routes:

- ▲ **TART Hwy. 89** – operates year-round between Tahoe City and Truckee between 6:30 AM and 6:30 PM on one-hour headways with stops at Alpine Meadows, Squaw Valley, and several locations within the Town of Truckee. The terminus is the Truckee Depot, which connects with Truckee Transit and Amtrak.
- ▲ **TART Hwy. 267** – operates a winter route between Truckee and Crystal Bay with stops at Kings Beach, Northstar Village, and several other locations. During summer months, the route operates between Northstar Village and Crystal Bay. The routes operate on one-hour headways.
- ▲ **TART Tahoe Trolley** – offers free nightly service during summer months between Squaw Valley, Tahoe City, Kings Beach, and Incline Village.
- ▲ **North Lake Tahoe Express Airport Shuttle** – operates between key destinations on the North Shore and the Reno-Tahoe International Airport. Current rates are \$40 one-way, and \$75 round-trip.
- ▲ **South Tahoe Express Airport Shuttle** – operates between South Stateline casinos and the Reno-Tahoe International Airport. Current rates are \$27.50 one-way, and \$49 round trip.
- ▲ **BlueGO Routes 19X, 20X, 21X, and 24X** – operate peak period express service routes between the Kingsbury and Stateline Transit Centers and destinations in Douglas County including Carson City, Gardnerville, and Minden. Headways are one-hour or less depending on route, time, and day of the week.

As noted in *Mobility 2030: Transportation Monitoring Program 2010* (TMPO 2010a: pp. 28-31), South Shore transit annual ridership was approximately 750,000 riders in 2009. On the North Shore, TART service annual ridership was 340,000 riders in fiscal year 2009-2010. In 2009, inter-regional ridership (including shuttles to Reno-Tahoe International Airport, motor coaches, and Kingsbury Express to Carson Valley) was approximately 100,000 riders.

BICYCLE FACILITIES

The Tahoe Region has an extensive network of on-street and off-street bicycle facilities. However, the system is incomplete, lacking connections between some facilities, and between certain neighborhoods and commercial areas. The *Lake Tahoe Region Bicycle and Pedestrian Plan* was approved in 2010 (TMPO 2012b). This document provides a guide for planning, constructing, and maintaining a regional bicycle and pedestrian network, and describes the following types of facilities:

- ▲ **Class I (Shared-Use Path)** – provides a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross-flow from vehicles minimized. Class I paths are typically 10 feet wide with two-foot-wide graded shoulders.
- ▲ **Class II (Bike Lane)** – provides a striped lane for one-way bicycle travel on a street or highway. These lanes generally range from 4 to 5 feet wide depending on whether a gutter is present.
- ▲ **Class III (Bike Route)** – provides for shared use with bicycle or motor vehicle traffic, typically on lower volume roadways.

A map of these bicycle and pedestrian facilities is provided in Exhibit 3.3-4.

Class I trails/paths are located along portions of SR 89 (West, North, and South shores), SR 28 on the North Shore, and US 50 on the South Shore. Several City/County roads include adjacent Class I trails such as Lakeshore Drive, Al Tahoe Boulevard, Ski Run Boulevard, and Elk Point Road. Class II bike lanes are present on portions of SR 89, US 50 and SR 28 as well as various City/County roads such as Pioneer Trail, Lake Tahoe Boulevard, Tahoe Keys Boulevard, and Upper Truckee Road. Class III bike routes are present on portions of SR 267, SR 28, SR 431, and various City streets.

Bicycle volume data was collected in July 2009 for *Mobility 2030: Transportation Monitoring Program 2010* (TMPO 2010a: p. 33). Counts reveal the heaviest hourly bicycle trail volumes at Camp Richardson (190 bicycles per hour) and Incline Village (150 bicycles per hour). The majority of bicycles trail users start their trips from home (versus driving to a destination and then biking), and travel for recreational purposes.

PEDESTRIAN FACILITIES

Pedestrian travel is accommodated on Class I multi-use paths, sidewalks, and crosswalks located throughout the Tahoe Region. Crosswalks are provided at intersections and mid-block locations throughout the Region. Based on the August 2010 traffic counts, the following study intersections have the highest pedestrian activity (pedestrian volumes are for all legs of the intersection):

- ▲ US 50/Ski Run Boulevard: 200 pedestrians per hour
- ▲ SR 28/SR 267: 100 pedestrians per hour
- ▲ SR 89/SR 28 (Tahoe City Wye): 80 pedestrians per hour



Source: TRPA 2011

Exhibit 3.3-4.

Existing Bicycle Facilities



AVIATION

Lake Tahoe Airport is a year-around, all-weather facility located in the City of South Lake Tahoe, just east of US 50/SR 89. Currently, Lake Tahoe Airport serves as a general and corporate aviation facility. For commercial flights, the Tahoe Region is served by the Reno-Tahoe International Airport in Reno.

GOODS MOVEMENT

Trucks transport the vast majority of goods into and out of the Tahoe Region. According to the on-line *2009 Annual Average Daily Truck Traffic on the California State Highway System* (Caltrans 2010), trucks constitute from 2.1 to 7.4 percent of daily traffic on state highways on the California side of the Basin:

- ▲ SR 28 (along North Shore): 3.6 percent trucks
- ▲ US 50 (south of South Y): 4.0 percent trucks
- ▲ US 50 (at Stateline): 3.1 percent trucks
- ▲ SR 89 (along West Shore): 2.1 percent trucks
- ▲ SR 267 (north of SR 28): 3.2 percent trucks
- ▲ SR 89 (north of Tahoe City): 7.4 percent trucks

According to the on-line *2010 Vehicle Classification Distribution Report* (NDOT 2011) and count data in Exhibit 3.3-2, trucks constitute from 1.3 to 7.6 percent of daily traffic on state highways on the Nevada side of the Basin:

- ▲ US 50 (south of SR 28): 3.1 percent trucks
- ▲ SR 28 (north of US 50): 2.8 percent trucks
- ▲ SR 28 (west of Incline Village): 7.6 percent trucks
- ▲ SR 207 (east of US 50): 1.3 percent trucks
- ▲ SR 431 (north of SR 28): 4.9 percent trucks

The Union Pacific Railroad (UPRR) operates a rail line that parallels I-80 from west of Roseville, California to Reno, Nevada and beyond. However, no spur lines extend from this line into the Tahoe Region.

3.3.4 ENVIRONMENTAL CONSEQUENCES AND RECOMMENDED MITIGATION MEASURES

The impacts to transportation facilities from implementation of each of the five Regional Plan Update alternatives are analyzed in this section. As described in Chapter 2, Regional Plan Update Alternatives, each reflects different goals and policies, land use planning approaches, levels of allowable development, resultant development patterns, and packages of transportation strategies appropriate to the land use approach.

The Regional Plan Update has a planning horizon of approximately 20 years. Assuming adoption in late 2012, a 20-year look-ahead would correspond to 2032. The Regional Plan update incorporates analyses conducted for the RTP/SCS (TMPO 2012), which is mandated by SB 375, described above, to analyze conditions for 2020 and 2035 for greenhouse gas emissions compliance. Given that these documents are being prepared in parallel and have overlapping technical content, it was reasonable to assume that the 2035 analysis scenario from the RTP/SCS would correspond to the approximately 20-year planning horizon for the Regional Plan Update.

METHODS AND ASSUMPTIONS

This section describes the analytical methods and assumptions used to evaluate the transportation-related effects of the Regional Plan Update alternatives.

LAND USE/POPULATION PROJECTIONS

Fundamental to the transportation analysis are estimates of land use including existing and new residential and non-residential development, and population for each alternative. Existing (2010) development (residential units, tourist accommodation units [TAUs], and commercial floor area [CFA]) and resident population totals are shown in Table 3.3-6.

Resident Population	Total Housing Units	Tourist Accommodation Units	Commercial Floor Area
54,473	47,392	12,399	6,500,000 sq. ft.

Source: TMPO 2012

Because development of the 2010 version of the TRPA travel demand model began prior to full release of 2010 U.S. Census data, TRPA staff relied on data from other sources (e.g., 2010 Census Redistricting File) to estimate the resident population and housing units in the Tahoe Region. The 2010 U.S. Census data show 54,862 residents in the Region. This estimate is within one percent of those derived by TMPO. While it is clearly important that the TRPA model be calibrated to within an acceptable error tolerance for these land use inputs, it is even more important that the model accurately predict the amount of traffic using Tahoe Region roadways. A comprehensive set of tests were conducted, which determined that the model validates to actual traffic conditions. This evaluation procedure is discussed later in this section.

Each Regional Plan Update alternative would result in new development during the planning period. This is true even for Alternative 1, No Project, because unused development rights and allocations remaining from the 1987 Regional Plan would still be available. Numbers of new residential units, TAUs and square footage of CFA for each alternative are shown in Table 3.3-7.

Alternative	Housing Units	Tourist Accommodation Units	Commercial Floor Area
1	960	342	383,600 sq. ft.
2	3,560	342	583,600 sq. ft.
3	4,160	342	583,600 sq. ft.
4	4,960	542	783,600 sq. ft.
5	4,965	742	983,600 sq. ft.

Source: TMPO 2012

Table 3.3-8 displays the 2020 and 2035 population totals for each alternative. These data are derived from the TRPA travel demand model, which considers housing unit growth and demographic changes. As shown, the California side of the Region would accommodate between 75 and 77 percent of all year-round residents. This is similar to the 2010 population breakdown, in which 75.9 percent of residents live on the California side.

Alternative	2020			2035		
	California Side Population	Nevada Side Population	Tahoe Region Population	California Side Population	Nevada Side Population	Tahoe Region Population
1	41,709	13,423	55,132	42,005	13,682	55,687
2	42,735	13,506	56,241	44,102	13,711	57,813
3	43,934	14,115	58,049	45,468	14,897	60,365
4	43,737	13,582	57,319	45,950	13,823	59,773
5	44,277	13,619	57,896	46,129	13,823	59,952

Source: TMPO 2012

RESIDENTIAL TRANSFER ALLOCATIONS

Each alternative includes different numbers of allocations of residential units and residential bonus units, and each features different policies that would affect how residential land use is allocated throughout the Region in the future year scenarios. For example, some alternatives offer incentives to transfer existing residential development or development rights from areas less suitable for development (e.g., sensitive lands or lands distant from the community centers or transportation corridors) to those areas in which denser, more compact, mixed-use development is desired. (See Chapter 2, Regional Plan Update Alternatives, and Section 3.2, Land Use, for descriptions of each alternative and proposed transfer policies.)

For each alternative, TRPA modeled the likely transfers of residential uses into the community centers. While it is not possible to precisely predict the location, rate, or degree to which transfer incentives would be exercised, TRPA and TMPO used the best available information pertaining to parcel location, land capability, development trends, and results of other transfer programs to develop reasonable transfer scenarios.

Table 3.3-9 displays the existing and future distribution of residential units for each alternative. Appendix E includes a detailed description of model assumptions for each alternative.

The importance of placing residential uses in close proximity to commercial land uses that offer goods and services is well documented through academic research. *Travel and the Built Environment* (Ewing and Cervero 2001: pp. 87-94) suggests that per-capita VMT is affected to different degrees by the following factors: development density, diversity (mix), design, and regional accessibility (i.e., proximity to community center). The research introduces factors dubbed “VMT elasticity,” which express the percent per-capita decrease in VMT resulting from specified changes in development characteristics.

- ▲ Density: -5 percent VMT elasticity
- ▲ Diversity: - 5 percent VMT elasticity
- ▲ Design: -3 percent VMT elasticity
- ▲ Regional Accessibility: -20 percent VMT elasticity

Holding other factors unchanged, doubling (i.e., a 100 percent increase) of a project’s density would yield a 5 percent per capita reduction in VMT. These data indicate that regional accessibility (i.e., proximity to community centers) has a greater effect on VMT than the other three factors combined. In other words, regional accessibility plays a critical role in a region’s travel characteristics. Its metrics are often described in terms of decreases in vehicle trips (because of internalization and use of non-auto modes) and decreases in VMT (because of shorter trip lengths).

Table 3.3-9. Existing and Future Distribution of Residential Units					
Land Use	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Existing (2010) Conditions					
Units within Community Centers ¹	4,888	4,888	4,888	4,888	4,888
Total Units	47,392	47,392	47,392	47,392	47,392
Proportion (Community Center / Total)	10.3%	10.3%	10.3%	10.3%	10.3%
Growth in Units ²					
Remaining Residential Bonus Units from 1987 RP (All Within Community Centers)	874	874	874	874	874
Additional Residential Allocations Within Community Centers (Residential Allocations + Bonus Units)	0	260	760	400	400
Additional Residential Allocations + Remaining Existing Allocations (86) Outside of Community Centers	86	2,426	1,566	3,686	3,691
Additional Residential Within Community Centers Associated with Transfer of Development Rights	0	0	960	0	0
Total Units in Community Centers	874	1,134	2,844	1,274	1,274
Total New Units	960	3,560	4,160	4,960	4,965
Proportion (Community Center / Total)	91.0%	31.9%	62.4%⁴	25.7%	25.7%
2035 Conditions					
Units Within Community Centers	5,762	6,022	7,732	6,162	6,162
Total Units	48,352	50,952	51,552	52,352	52,357
Proportion (Community Center / Total)	11.9%	11.8%	15.0%⁴	11.8%	11.8%
Notes:					
1 <u>Source:</u> 2010 TRPA Travel Demand model. Urban centers represented by traffic analysis zones located in North Stateline, Stateline-Ski Run, South Stateline, Incline Village, Kingsbury, Tahoe City, South Y, Kings Beach, and Meyers.					
2 <u>Source:</u> TMPO 2012.					
3 Because of the transfer incentives offered in Alternative 3, Alternative 3 has a much higher proportion of development occurring in community centers than do the other alternatives. A detailed description of transfer ratios and the amount of development that is anticipated to be transferred to community centers is contained in Appendix E.					
4 Alternative 3 also offers incentives that transfer both existing constructed units and development rights from outside to within community centers. This includes 250 existing units which are anticipated to be transferred into community centers. These are not included in the "Growth in Units" section, however, because they are already captured in the "Existing Units" row.					

Compact development is frequently cited for its relationship to VMT reduction. However, the effects of density depend on where the project is located within a region (Niemeier, Bai, and Handy 2011; pp. 75-79). Other research has demonstrated that "regionally accessible, centrally located sites require shorter average trip distances than do sites along the regional periphery" (EPA 2001: p. 47). The 2010 Regional Transportation Plan Guidelines recognize that "urban and suburban infill, clustered development, mixed land uses, 'New Urbanist' design, transit-oriented development, and other 'smart-growth' strategies" are land use tools to reduce greenhouse gas emissions" (California Transportation Commission 2010).

TRANSPORTATION STRATEGY PACKAGES

As described in Chapter 2, Regional Plan Update Alternatives, transportation projects, programs, and operational actions of the RTP have been assembled into three distinct sets of transportation strategies (identified as Transportation Strategy Packages A, B, and C) based on relative certainty of implementation in the near-, medium-, or long-term, and based on whether funding is considered reliable (see Appendix C for detailed information). Projects on the financially "constrained" project list are those that can be funded with reasonably foreseeable revenues from a combination of federal funds (i.e., Congestion Mitigation and Air Quality Program, Federal Lands

Highway Program), California and Nevada state funds (i.e., State Transit Assistance and Local Transportation Fund, Nevada State Funds, California State Highway Operation and Protection Program), and local revenue (i.e., transit farebox revenues, hotel occupancy taxes, Regional Surface Transportation Program funds); those that are “unconstrained” are those that could be implemented only if additional funding is available in either the short or long term. Transportation Strategy Packages and their application to Regional Plan Update alternatives are described as follows:

▲ **Transportation Strategy Package A** – This strategy includes operations and maintenance of the existing system and construction of many of those projects on the constrained project list. No projects on the unconstrained project list would be included. Excluding operations and maintenance costs, this alternative would cost approximately \$535 million in 2012 dollars. Key projects that influence travel demand, capacity, and operational characteristics that are part of this package include:

- ▲ Kings Beach Commercial Core Improvement Project
- ▲ State Route 89/Fanny Bridge Community Revitalization Project
- ▲ Lake Tahoe Waterborne Transit Project
- ▲ City of South Lake Tahoe Aviation Capital Project
- ▲ Eight bicycle/pedestrian projects scattered throughout the Region
- ▲ US 50 Signal Synchronization
- ▲ Sierra ITS Traffic Operations System

Transportation Strategy Package A corresponds with Alternatives 1 and 5. Because Alternative 1, No Project, assumes continuation of existing goals, policies, regulations, and land use approaches with very little new development, it is reasonable to assume, for purposes of analysis, that transportation improvements under this scenario would include only those for which funding is secured or for which planning and environmental analysis is substantially underway. While Alternative 5 would authorize substantial new development, it too assumes continuation of the existing regulatory structure, with few new policies related to increasing non-auto mode share.

▲ **Transportation Strategy Package B** – includes all projects on the constrained project list (with the exception of the Waterborne Transit Project and City of South Lake Tahoe Aviation Capital Project), and all projects on the unconstrained project list. This strategy package corresponds with Regional Plan Update Alternative 2. It includes more aggressive strategies to encourage alternatives to automobile travel, including intercept lots at basin entry points coupled with transit shuttles and road user fees. Excluding operations and maintenance costs, this alternative would cost approximately \$903 million in 2012 dollars. Key projects that influence travel demand, capacity, and operational characteristics that are part of this package include:

- ▲ Kings Beach Commercial Core Improvement Project
- ▲ State Route 89/Fanny Bridge Community Revitalization Project
- ▲ U.S. 50 South Shore Community Revitalization Project Loop Road
- ▲ Sierra Boulevard Complete Streets Project
- ▲ BlueGO, TART, and East Shore Service Operational and Capital Transit Enhancements
- ▲ Inter-Regional Transit Service Operational and Capital Enhancements
- ▲ Intercept Parking Lots with Shuttles to Town centers
- ▲ 47 bicycle/pedestrian projects (e.g., Class I shared use paths, Class II bike lanes, sidewalks, Class III routes) located throughout the Region
- ▲ East Shore Parking Improvements
- ▲ US 50 Signal Synchronization
- ▲ Sierra ITS Traffic Operations System

- ▲ **Transportation Strategy Package C** – is the constrained projects list. It corresponds to Alternatives 3 and 4 of the Regional Plan, which include moderate levels of development focused on supporting walkable town centers. Excluding operations and maintenance costs, this alternative would cost approximately \$726 million in 2012 dollars. Key projects that influence travel demand, capacity, and operational characteristics that are part of this package include:
 - // Kings Beach Commercial Core Improvement Project
 - // State Route 89/Fanny Bridge Community Revitalization Project
 - // U.S. 50 South Shore Community Revitalization Project Loop Road
 - // Sierra Boulevard Complete Streets Project
 - // Lake Tahoe Waterborne Transit Project
 - // BlueGO, TART, and East Shore Service Operational and Capital Transit Enhancements
 - // Inter-Regional Transit Service Operational and Capital Enhancements
 - // City of South Lake Tahoe Aviation Capital Project
 - // 40 bicycle/pedestrian projects (e.g., Class I shared use paths, Class II bike lanes, sidewalks, Class III routes) located throughout the Region
 - // East Shore Parking Improvements
 - // US 50 Signal Synchronization
 - // Sierra ITS Traffic Operations System

Table 3.3-10 compares the relative investment in roadway, transit, bicycle/pedestrian, and systems management/enhancement for each of these transportation strategy packages.

Table 3.3-10. Comparison of Transportation Strategy Investments by Travel Mode						
Transportation Strategy Package	Roadway	Transit	Bicycle/ Pedestrian	TMDL/ Stormwater Strategies	TSM and ITS	Total
Constrained Project List						
A	\$52M	\$65M	\$50M	\$359M	\$9M	\$535M
B	\$120M	\$41M	\$140M	\$367M	\$11M	\$679M
C	\$120M	\$88M	\$140M	\$367M	\$11M	\$726M
Unconstrained Project List						
A	\$0	\$0	\$0	\$0	\$0	\$0
B	\$0	\$29M	\$35M	\$160M	\$0	\$224M
C	\$0	\$0	\$0	\$0	\$0	\$0
Constrained and Unconstrained Project List						
A	\$52M	\$65M	\$50M	\$359M	\$9M	\$535M
B	\$120M	\$70M	\$175M	\$527M	\$11M	\$903M
C	\$120M	\$88M	\$140M	\$367M	\$11M	\$726M
Notes: Amounts in 2012 dollars, rounded to nearest million dollars for comparison purposes. Excludes operations and maintenance costs, which are identical for all three packages TSM and ITS = Transportation Systems Management and Intelligent Transportation Systems Source: TMPO 2012.						

As shown in Table 3.3-10, Transportation Strategy Packages B and C provide more than twice as much funding for roadway improvements as compared to Transportation Strategy Package A. Transportation Strategy Package B places a greater infrastructure investment in intercept shuttles, and bicycle and pedestrian projects when compared to Package C. However, both packages include substantially more bicycle and pedestrian projects than Strategy A.

ANALYSIS PERIOD

Travel conditions in the Tahoe Region are often analyzed for both summer and winter conditions because they consist of significant differences in recreational activities, visitation patterns, and travel conditions. TMPO tracks average annual daily traffic (AADT) counts Region-wide, peak month counts Region-wide, and winter traffic volumes on US 50 at Park Avenue. Based on the AADT data, August has been identified as the peak month. As noted in *Mobility 2030: Transportation Monitoring Program 2010* (TMPO 2010a: p. 22), Region-wide traffic volumes from August 2009 were approximately 20 percent greater when compared to AADT volumes.

During summer peak months, conditions are often busiest during Friday afternoons as visitors and part-time residents travel into the Region. While Saturday and Sunday conditions are also busy, they have a less pronounced peak hour surge, meaning that intersections (for the Region as a whole) are typically at their busiest during the Friday evening peak hour. Therefore, study intersections and roadways are analyzed for August Friday PM peak hour conditions.

TRPA TRAVEL DEMAND MODEL

TRPA maintains an activity-based travel demand model for the Tahoe Region. This model is an enhancement over the more common four-step trip-based models because it considers non-home based travel and linked characteristics of a household's travel patterns in addition to planned land uses and transportation system. The travel demand model predicts travel based on the daily activities of persons, households, or traveler groups. Several distinct groups are modeled in the TRPA model including year-round residents, seasonal residents, external workers, day-use visitors, and overnight visitors. Separate algorithms are included within the model to simulate each group's population, demographic, socioeconomic characteristics, and travel preferences (e.g., mode split). One of the more challenging aspects of developing the TRPA travel demand model relates to visitor travel patterns, which vary in location, duration, and activity by season. The use of an activity-based model enables the use of visitor trip tours, which is an improvement over traditional four-step models. However, the inherent complexities in visitor travel patterns make travel forecasting in the Tahoe Region more challenging than in other areas.

The model aggregates the travel behavior of each travel group (known as tour types), estimates the expected mode split (auto, transit, walk, bike), and produces traffic projections for intersections and roadways on a daily basis, and for peak periods. Output from the base year version of the TRPA travel demand model was reviewed to determine the effect of residential unit location and household characteristics on trip generation rates. A subset of traffic zones from the model that included only residential uses was reviewed. For these selected zones, the model predicted daily vehicle trip rates ranging from 7.7 to 12.2 trips per occupied dwelling unit, with the rate varying based on unit location and home value. These results demonstrate that the model is sensitive to traffic analysis zone (TAZ) location, unit type, and other socioeconomic variables. They also show that the model is not using a single, fixed trip rate but a variable trip rate, which is appropriate for the Region given its varying socioeconomic, geographic, and housing characteristics. Exhibit 3.3-5 illustrates the traffic model limits and TAZ system. This figure also shows the substantial number of land use inputs for each TAZ. The model consists of seven external gateways and 289 TAZs.

Since the TRPA Travel Demand Model (and associated models of its type) is not designed to capture nuanced trip reductions from non-auto transportation strategies, the TRPA developed the Trip Reduction Impact Analysis (TRIA) tool, which was applied as a "post-processor" to the model outputs. This "post-processor" application is a common way to more accurately account for non-auto improvements and programs that travel demand models are not designed to pick up. Associated trip reductions were incorporated into the traffic volumes and vehicle miles traveled analyses which are evaluated below, in "Impact Analysis and Mitigation Measures." In order to ensure that it did not over-estimate trip reductions, the TRIA made conservative estimates based on the lower range of empirical studies. Data from peer regions provides evidence that actual trip reductions and non-auto mode splits from similar strategies may be greater than those shown through the TRIA (see Appendix E).

The 2010 Regional Transportation Plan (RTP) Guidelines require the following:

1. MPOs shall disseminate the methodology, results, and key assumptions of whichever models it uses in a way that would be useable and understandable to the public.
2. Post-processing of model results should be accompanied by an explanation of what model limitations are being overcome and how the limitations were identified.

With regard to Requirement 1, the model documentation report (Parsons Brinckerhoff 2007) is included in Appendix E. This section also provides an overview of the model. With regard to Requirement 2, post-processing of model results are necessary given the model's specific limitations on mode choice and on the effects of certain transportation strategies, such as parking management, transportation demand management, and transit service and facilities, that are not able to be reflected in the model.

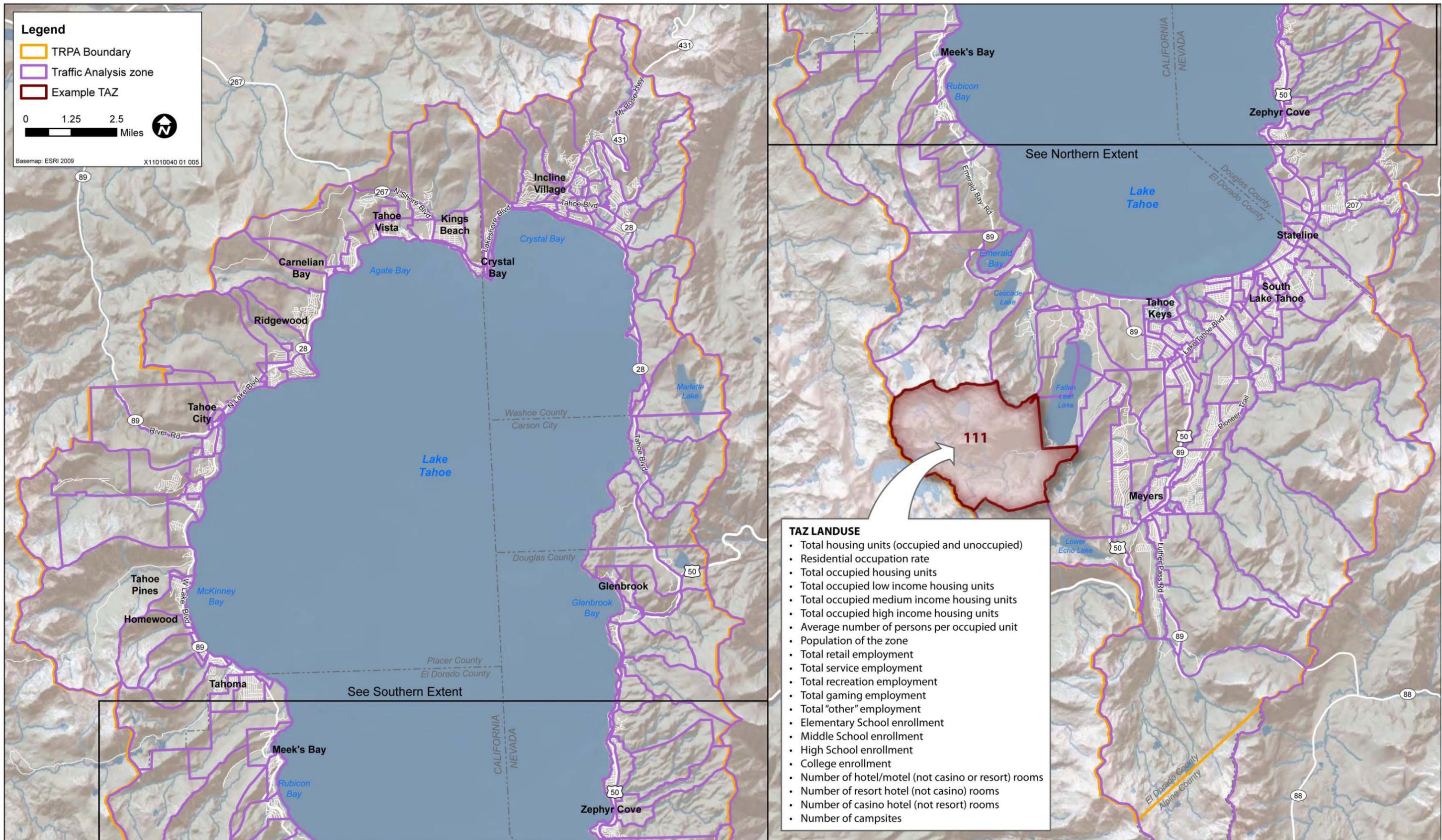
As described above, the updates of the Regional Plan and RTP for the Tahoe Region are occurring simultaneously and because of new requirements for RTPs in California resulting from SB 375, the land use and transportation planning efforts are closely linked and the transportation modeling for the two planning efforts are coordinated. Because preparation of the RTP is subject to the 2010 California RTP Guidelines, the analysis contained herein is, by extension, reflective of those requirements.

The 2010 RTP Guidelines address the planning requirements of SB 375, and specify that travel demand models used in the preparation of RTPs should undergo a series of diagnostic tests to determine their ability to accurately estimate traffic volumes and other travel parameters. In accordance with this guidance, the TRPA base year travel demand model was evaluated using the following three tests (refer to Appendix E for technical memoranda describing each test):

- ▲ *Static Validation Test*: evaluates the model's prediction of traffic against observed traffic volumes using a variety of statistical measures including volume-to-count ratio, percent of links within Caltrans deviation allowance, correlation coefficient, percent root mean square error.
Result: The TRPA model passed all three of the prescribed tests that have measurable acceptance criteria.
- ▲ *Dynamic Validation Test*: evaluates the model's response to a change in land use, such as adding/subtracting residential units or employment. Although changes in roadway network are also often tested, such tests were not necessary in this instance due to the lack of new capacity-increasing roadway infrastructure proposed in the basin.
Result: Eight model runs were conducted to test how it responds to changes in land use (both within and outside of urban centers). Change in land use resulted in differences in vehicle trips and VMT that were of the appropriate direction and magnitude. This suggests that the model does respond reasonably to changes in land use.
- ▲ *Model Sensitivity to Built Environment Variables*: evaluates the model's sensitivity to built environment variables, such as land use diversity, design, and density.
Result: A variety of model runs, followed by statistical evaluations of the results revealed that the TRPA Model is sensitive to the effects of built environment variables on trip-making. Therefore, no 'off-model' adjustments were necessary to account for the effects of these variables.

According to the above information, tests of the TRPA model have shown that it is sensitive to built environment variables. Tests have also shown that the model assigns walk and bike trips predominantly to urban (versus rural) areas as expected.

In summary, the TRPA travel model conforms to all requirements specified in the 2010 RTP Guidelines. It also meets many of the recommended (but not required) practices that are also outlined in the 2010 RTP Guidelines.



Source: Data provided by Fehr & Peers in 2012 (Appendix E); TRPA 2011

Exhibit 3.3-5.

TRIP REDUCTION IMPACT ANALYSIS (TRIA) ADJUSTMENTS

TRIA adjustments were developed to consider the effects of various land use and transportation strategies that are not otherwise accounted for in the TRPA model. The TRIA adjustments yield specific reductions in vehicle trips (expressed as percentages). The reductions vary depending on the type of strategy (e.g., paid parking vs. inter-regional transit), effectiveness of strategies based on geographic location within the model (e.g., urban center vs. rural), and trip type (e.g., visitor vs. work trip). Because the number of vehicle trips that travel from one TAZ to another forms the basis of the VMT and traffic calculations, the TRIA adjustments are reflected in both the future year VMT estimates and roadway segment ADT estimates for each project alternative.

Because the TRPA model has been shown to be responsive to changes in built environment variables, TRIA does not contain adjustments for land use density, design, diversity, or regional accessibility. However, adjustments for specific parking management actions, transportation demand management programs, transit services and facilities, and bicycle and pedestrian facilities are applied depending on whether the policy is included in a particular alternative. Accordingly, the process undertaken to develop the TRIA adjustments avoids “double-counting” of individual effects that would already be taken into account by the model.

Table 3.3-11 displays the trip reduction estimates for 2020 and 2035 conditions for each alternative (see Appendix E for detailed calculations). As shown in Appendix E, each of the individual vehicle trip reduction strategies has a unique percentage trip reduction based on academic studies, empirical data, and other research. For each alternative, the specified trip reduction percentage is applied to each TAZ based on the TAZ’s geographic location (i.e., within or outside of community centers). Adjustments are also made for internal-external and external-internal trips between TAZs within the Tahoe Region and gateway zones.

Area	2020					2035				
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Community Centers	2.28%	2.99%	3.71%	3.55%	2.34%	2.66%	3.50%	4.32%	4.12%	2.78%
Other Area	0.82%	1.06%	1.70%	1.63%	0.88%	1.28%	1.55%	2.19%	2.13%	1.40%
Internal-External & External-Internal Trips	0.78%	6.7%	0.78%	0.78%	0.78%	0.78%	6.7%	0.78%	0.78%	0.78%

Source: TRIA Spreadsheet (see Appendix E).

The data in this table yield the following conclusions:

- ▲ Vehicle trip reductions are greater in the community centers than elsewhere because these areas will experience greater levels of increased transit service and benefits from modified parking requirements, inter-Region transit capital projects, transit operational enhancements, improved transit coordination between providers, real-time transit information, employer vanpools/carpools, and other programs.
- ▲ These policies will have greater effects on new and redeveloped uses versus existing uses because they have an ability to be located and designed to accommodate travel by all modes. Accordingly, greater levels of vehicle trip reduction are achieved for a given alternative in 2035 versus 2020.
- ▲ Alternatives 1 and 5 are coupled with Transportation Strategy Package A, which has lower levels of investments in all travel modes than the other two packages. Consistent with this linkage, Table 3.3-11 shows that these alternatives also have the lowest TRIA reduction percentages of the five alternatives. This suggests that the TRIA adjustments are sensitive to the transportation investments and policies associated with each alternative.

- Strategy Package B, which is a part of Alternative 2, includes new policies that would encourage the Tahoe Transportation District (TTD) to implement a road user fee on Tahoe Region roadways, which would fund shuttles from intercept lots and other multi-modal transportation improvements. Although the effects of this policy are difficult to precisely predict, case studies of other tolling programs are available to assist in quantifying the likely effects of such a program in the Tahoe Region.

The shuttle program would primarily cater to day-use and overnight visitors. Shuttle operations (e.g., number of buses, size, operating hours, frequency) would depend on the level of demand. According to the *Lake Tahoe Origin-Destination Survey Report* (RSG 2012: p. 7), about 60 percent of motorists entering the Tahoe Region on a Friday in August 2011 were visitors. If road user fees were levied and the shuttle system was introduced, some of these visitors would then use the shuttle instead of driving into the Region. The proportion that would shift would depend on a variety of factors, including road fee cost, travel destination/purpose, and shuttle convenience. This analysis assumes that 10 percent of visitors entering the Tahoe Region park in an intercept lot and use the shuttle service. Research from CAPCOA and the Center for Clean Air Policy (CAPCOA 2010: p. 63) suggests that a 16- to 22-percent reduction in vehicle trips may be achieved through road cordon pricing. Another study indicated that a 10-percent traffic shift to off-peak periods may be brought about by variable tolling (LeCoffre 2003). Given the unique challenges (e.g., luggage space needs, intra-region travel) some Tahoe Region visitors may encounter when using a shuttle system, 10 percent was deemed to be a reasonable estimate. To ensure that a 10-percent visitor use of the shuttle program is achieved, TRPA could employ a “variable pricing” program, if necessary. To account for the effect of road pricing, the number of internal-external and external-internal trips assigned by the TRPA model was reduced by 6 percent (i.e., 60% visitors based on the August 2011 survey x 10% mode shift to the shuttle). It is acknowledged that the shuttle system will add new bus VMT to the region. However, this added VMT is more than offset by the elimination of visitor intra-region auto trips (e.g., auto trips from South Stateline hotel to restaurant) that would otherwise occur within the Tahoe Region.

Prior to any road user fee and shuttle system, US 50 over Echo Summit would be estimated to carry 16,500 ADT (both directions) in 2035 under Alternative 2. With 60 percent of daily trips being visitors and with 10 percent of visitors using the shuttle, then about 1,000 visitor vehicles would park and ride transit. These vehicles could yield a demand for 2,500 to 3,000 transit riders per day (both travel directions). If the peak direction generated 1,500 riders per day, then 38 inbound bus trips per day operating at a 40-person capacity would be generated. These trips would replace nearly 1,000 inbound private auto trips. This exercise illustrates the amount of potential VMT reduction this strategy could yield, but also emphasizes the substantial investment required in a bus shuttle system.

The TRIA adjustments resulted in VMT reductions under 2035 conditions that ranged from 1.3 percent under Alternative 1, to four percent under Alternative 2. Alternatives 3 and 4 each resulted in about a two percent reduction in VMT due to the TRIA adjustments. Alternative 5 achieved a 1.4 percent reduction.

The TRIA trip reductions shown in Table 3.3-11 were applied to the TRPA travel demand model output, which includes the total number of vehicle trips on a daily basis that travel from one TAZ to another. These adjustments were made to the output, and the resultant trips were then summarized to obtain VMT, ADT estimates, and other outputs. This process is consistent with recommendations from the 2010 RTP Guidelines (California Transportation Commission 2010: p. 41), in which post-processing should be used to augment current models to achieve reasonable levels of sensitivity.

TRAVEL FORECASTING PROCEDURE

The 2035 traffic forecasts were developed for roadways and intersections by applying the following “difference method” forecasting procedure, which is illustrated as follows:

$$2035 \text{ Forecast} = \text{Existing Traffic Volume} + [2035 \text{ Model Volume} - \text{Base Year Model Volume}]$$

This procedure is routinely applied when developing traffic forecasts because it accounts for potential inaccuracies in the base year model, which if not accounted for in this adjustment process, could also cause inaccuracies in the future year forecasts.

SIGNIFICANCE CRITERIA

Significance criteria were developed using the various policies described in Section 3.3.1. Implementation of a given Regional Plan Update alternative would result in a significant adverse effect on transportation if it would:

- ▲ Cause a study roadway within a rural to area to worsen from LOS D or better to LOS E or worse;
- ▲ Increase the volume-to-capacity (v/c) ratio by 0.05 or more on a study roadway within a rural area that is currently operating at LOS E or F;
- ▲ 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 five hours or more; or
 - /// worsen from LOS E (for four hours per day or less) to LOS E for five hours or more.
- ▲ Cause a study intersection to worsen from LOS D or better to LOS F;
- ▲ Cause a study intersection to worsen from LOS D or better to LOS E for five or more hours;
- ▲ Cause the Tahoe Region's VMT to not meet the standard for TRPA's Environmental Carrying Capacity Threshold for air quality, i.e., "Visibility: Vehicle Miles Traveled," Threshold Standard, hereafter called VMT Threshold Standard. To meet the standard, VMT must remain at least 10 percent below 1981 levels;
- ▲ Result in inadequate transit to meet demand;
- ▲ Create conflicts between bicycles, pedestrians, and vehicles; or
- ▲ Create inconsistencies with adopted plans, policies, or goals of other agencies.

A number of factors were considered in selecting the significance criteria for intersections and roadways. TRPA, as the planning agency responsible for the Tahoe Region, has established a more restrictive LOS policy for roadways than that of Caltrans, which submitted a comment letter in response to the notice of preparation for the RTP/SCS EIR/EIS. TRPA's policy is a minimum LOS D at intersections and roadways with LOS E considered acceptable for no more than four hours per day. Caltrans has indicated that significant impacts should be identified for facilities that do not meet its concept LOS (i.e., planned long-term operating condition), which for certain highways is LOS F. Therefore, to assure that this document does not understate impacts (and the need for mitigation), TRPA's more restrictive LOS policy has been applied.

For purposes of this analysis, roadway segments are defined as either urban or rural depending on the type and extent of adjacent land development. Rural areas include the SR 89 North, SR 89 South, SR 267, parts of US 50 west of Meyers, and SR 431 gateways to the Tahoe Region, SR 89 on the west shore, and SR 28 and US 50 on the east shore. The remaining study locations are situated in the vicinity of development within Meyers, the City of South Lake Tahoe, South Stateline, Kingsbury, Tahoe City, Kings Beach, North Stateline, and Incline Village. Accordingly, they are categorized as being in urbanized areas. All study intersections are situated in urban areas.

IMPACT ANALYSIS AND MITIGATION MEASURES

This section identifies the impacts of each project alternative. Mitigation measures are identified for all significant and potentially significant effects.

**Impact
3.3-1**

Roadway Segment Operations. Because implementation of any of the Regional Plan Update alternatives would cause at least one roadway segment to degrade from an acceptable to an unacceptable level, and/or substantially degrade the LOS of a roadway segment that is already operating at unacceptable levels, all Alternatives (1, 2, 3, 4, and 5), would result in **significant** adverse impacts on roadway operations. Alternatives 1 and 2 would each result in a significant impact to four study roadways. Alternative 3 would result in a significant impact to two study roadways, Alternative 4 would result in a significant impact to nine study roadways, and Alternative 5 would result in a significant impact to ten study roadways.

Roadways within the Tahoe Region are subject to the LOS policies of local, regional, and state agencies. Local streets, collectors, arterials, and highways that operate within the prescribed LOS standard generally meet the community's values in terms of acceptable levels of traffic and delay, road width, and environmental trade-offs (i.e., add a bike lane versus a travel lane). Conversely, those roadways that do not meet the LOS policy may be inconsistent with an applicable General Plan policy, and may carry more traffic or cause greater delays to motorists than the community or agency feels is reasonable. However, as noted in Section 3.3.3, Affected Environment, several roadways currently operate worse than the applicable LOS standard. The displayed data only account for the roadway function with respect to private vehicles, not all modes of travel in a corridor. All five alternatives assume traffic signal coordination on US 50 from the South Y to Stateline. Coordinated timing plans enable motorists to progress through multiple signals with few or no stops, resulting in reduced delays, queuing, and generally improved operations. As part of the impact analysis, a five percent increase in capacity was applied to study segments of US 50 to account for the operational benefits resulting from signal coordination. A five percent increase is supported by data from the *Highway Capacity Manual* (Transportation Research Board 2000: pp. 16-19 and 16-20). Table 3.3-12 summarizes this data in tabular format.

ALTERNATIVE 1: NO PROJECT

Alternative 1 includes implementation of Transportation Strategy Package A, which would include roadway improvements, community revitalization projects, construction of bicycle and pedestrian trails, and the Waterborne Transit Project. Transportation Strategy Package A includes relatively few other transit service upgrades. Land uses and development densities under Alternative 1 would continue to be implemented in the manner prescribed by the 1987 Regional Plan.

Alternative 1 would result in four significant impacts at the following study roadways under 2035 conditions:

1. US 50 at Pioneer Trail – operations degrade from an acceptable LOS E (for four hours or less) to LOS F.
2. US 50 south of SR 207 – operations degrade from an acceptable LOS D to LOS E for more than four hours.
3. SR 28 at Kings Beach – LOS F conditions are degraded¹.
4. SR 89 north of Tahoe City – operations degrade from an acceptable LOS D to LOS E, which is considered unacceptable in rural areas

Degraded roadway segment impacts under Alternative 1 would be **significant**.

¹ At its January 27, 2010 Governing Board meeting, the TRPA made a finding of over-riding consideration to allow degradation of roadway Level of Service below applicable standards at this location.

Table 3.3-12. Operations on Roadway Segments – 2035 Conditions

Segment	Facility Type	Applicable LOS	PM Peak Hour Traffic Volume– Level of Service (LOS)					
			Existing	2035 Conditions				
				Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
US 50 at Meyers	2-Lane Highway with TWLTL	E	1,700-E	1,790-E	1,840-F	1,780-E	1,920-F	2,040-F
US 50 west of Pioneer Trail	2-Lane Highway with TWLTL	E	1,710-E	1,800-F	1,840-F	1,790-E	1,930-F	2,050-F
US 50 east of South Y	4-Lane Highway with TWLTL	E	3,230-E	3,340-E	3,340-E	3,400-E	3,440-E	3,530-E
US 50 at Tahoe Keys	4-Lane Highway with TWLTL	E	3,070-E	3,160-E	3,180-E	3,250-E	3,330-E	3,430-E
US 50 at Al Tahoe Blvd.	4-Lane Highway with TWLTL	E	3,110-E	3,240-E	3,220-E	3,280-E	3,370-E	3,480-E
US 50 at South Stateline	4-Lane Highway with TWLTL	E	3,000-D	3,180-E	3,050-D	3,110-D	3,200-E	3,440-E
US 50 south of SR 207	4-Lane Highway with TWLTL	E	2,940-D	3,140-E	3,050-E	3,050-E	3,210-E	3,410-E
US 50 north of SR 207	4-Lane Highway with TWLTL	E	2,460-D	2,720-D	2,630-D	2,650-D	2,810-D	2,960-D
SR 28 north of US 50	2-Lane Undivided Highway	D	650-C	830-D	880-D	810-D	980-D	1,060-D
SR 28 west of Incline Village	2-Lane Undivided Highway	E	1,560-E	1,660-E	1,570-E	1,640-E	1,700-E	1,880-E
SR 28 at North Stateline	2-Lane Undivided Highway	E	1,590-E	1,600-E	1,600-E	1,600-E	1,610-E	1,690-E
SR 28 at Kings Beach	2-Lane Highway with TWLTL	E	2,130-D	2,210-F	2,180-F	2,230-F	2,370-F	2,450-F
SR 28 east of Tahoe City	2-Lane Undivided Highway	E	1,350-D	1,470-E	1,400-D	1,480-E	1,570-E	1,660-E
SR 89 north of Emerald Bay	2-Lane Undivided Highway	D	730-D	920-D	920-D	880-D	960-D	990-D
SR 89 west of Fallen Leaf Lake	2-Lane Undivided Highway	D	860-D	1,080-D	1,060-D	1,050-D	1,120-D	1,140-D
SR 89 north of US 50	2-Lane Undivided Highway	E	2,150-D	2,270-D	2,310-D	2,310-D	2,330-D	2,390-D
SR 267 north of SR 28	2-Lane Undivided Highway	E	1,300-D	1,390-D	1,370-D	1,400-D	1,450-E	1,520-E
SR 89 south of US 50	2-Lane Undivided Highway	D	390-C	420-C	440-C	420-C	460-C	470-C
US 50 at Echo Summit	2-Lane Undivided Highway	D	1,620-E	1,730-E	1,700-E	1,720-E	1,790-E	1,820-E
SR 207 east of US 50	2-Lane Undivided Highway	E	1,440-E	1,480-E	1,450-E	1,450-E	1,500-E	1,590-E
US 50 west of SR 28	4-Lane Rural Und. Highway	D	1,340-C	1,450-C	1,480-C	1,350-C	1,560-C	1,620-C
SR 431 north of SR 28	2-Lane Undivided Highway	D	620-C	660-C	630-C	650-C	690-C	740-D
SR 267 north of Kings Beach	2-Lane Undivided Highway	D	1,040-D	1,130-D	1,070-D	1,140-D	1,180-D	1,210-D
SR 89 north of Tahoe City	2-Lane Undivided Highway	D	1,360-D	1,530-E	1,450-E	1,500-E	1,590-E	1,640-E

Note: SR 28 through Kings Beach is assumed to be reconfigured from a four-lane undivided highway to a two-lane divided highway for all Alternatives under 2035 conditions, based on implementation of the Kings Beach Commercial Core Improvement Project. All alternatives assume signal coordination on US 50 from the South Y to Stateline.
 Note: Refer to the significance criteria and impact statements to determine which individual roadway segments are impacted to a significant degree.
 TWLTL = Two-way left-turn lane.
 Source: Existing counts from NDOT and Caltrans. Future year forecasts from TRPA travel demand model. LOS calculated based on facility type and peak hour volume ranges for LOS grades shown in Table 3.3-4.

ALTERNATIVE 2: LOW DEVELOPMENT, INCREASED REGULATION

Alternative 2 would implement Transportation Strategy Package B, which includes similar types of projects as Transportation Strategy Package A. However, it also includes intercept bus shuttle service and road user fees, substantially greater number of bicycle and pedestrian improvements, and inter-regional bus services.

Alternative 2 would cause significant impacts at the following four study roadway under 2035 conditions:

1. US 50 at Meyers – operations degrade from an acceptable LOS D (for four hours or less) to an unacceptable LOS F.
2. US 50 at Pioneer Trail – operations degrade from an acceptable LOS D (for four hours or less) to an unacceptable LOS F.
3. SR 28 at Kings Beach – LOS F conditions are degraded.
4. SR 89 north of Tahoe City – operations degrade from an acceptable LOS D to LOS E, which is considered unacceptable in rural areas.

Degraded roadway segment impacts under Alternative 2 would be **significant**.

ALTERNATIVE 3: LOW DEVELOPMENT, HIGHLY INCENTIVIZED REDEVELOPMENT

Alternative 3 would implement Transportation Strategy Package C, which includes new bicycle and pedestrian facilities, capital improvement projects, transit service and capital enhancements, and waterborne transit, but not as many new pedestrian/bicycle facilities as included in Alternative 2. Alternative 3 would cause significant impacts at the following two study roadways under 2035 conditions:

1. SR 28 at Kings Beach – LOS F conditions are degraded.
2. SR 89 north of Tahoe City – operations degrade from an acceptable LOS D to LOS E, which is considered unacceptable in rural areas.

Degraded roadway segment impacts under Alternative 3 would be **significant**.

ALTERNATIVE 4: REDUCED DEVELOPMENT, INCENTIVIZED REDEVELOPMENT

Like Alternative 3, Alternative 4 would also implement Transportation Strategy C. Transportation improvements would include new bicycle and pedestrian facilities, roadway improvement projects, transit service and capital enhancements, and waterborne transit. Alternative 4 would cause significant impacts at the following nine study roadways under 2035 conditions:

1. US 50 in Meyers – operations degrade from an acceptable LOS D (for four or less hours) to an unacceptable LOS F.
2. US 50 at Pioneer Trail – operations degrade from an acceptable LOS D (for four or less hours) to an unacceptable LOS F.
3. US 50 at Tahoe Keys Boulevard – operations degrade from four or less hours of LOS E (i.e., acceptable), to five or more hours of LOS E (i.e., unacceptable).
4. US 50 at Al Tahoe Boulevard – operations degrade from four or less hours of LOS E (i.e., acceptable), to five or more hours of LOS E (i.e., unacceptable).
5. US 50 south of SR 207 – operations degrade from an acceptable LOS D to LOS E for more than four hours
6. SR 28 at Kings Beach – LOS F conditions are degraded.

7. SR 28 east of Tahoe City – operations worsen from an acceptable LOS D, to LOS E for five or more hours (i.e., unacceptable).
8. US 50 at Echo Summit – currently unacceptable LOS E operations are degraded to a significant degree (v/c ratio increases by 0.06).
9. SR 89 north of Tahoe City – operations degrade from an acceptable LOS D to LOS E, which is unacceptable in rural areas.

Degraded roadway segment impacts under Alternative 4 would be **significant**.

ALTERNATIVE 5: SIMILAR RATE OF DEVELOPMENT AND REGULATORY STRUCTURE TO 1987 REGIONAL PLAN

Alternative 5 would include similar types and numbers of transportation projects as Alternative 1, because they both would implement Transportation Strategy Package A; however, there would be a greater amount of new development over time, because of the higher number of land use allocations included in the alternative. Alternative 5 would cause significant impacts at the following ten study roadways under 2035 conditions:

1. US 50 in Meyers – operations degrade from an acceptable LOS D (for four or less hours) to an unacceptable LOS F.
2. US 50 at Pioneer Trail – operations degrade from an acceptable LOS D (for four or less hours) to an unacceptable LOS F.
3. US 50 at Tahoe Keys Boulevard – operations degrade from four or less hours of LOS E (i.e., acceptable), to five or more hours of LOS E (i.e., unacceptable).
4. US 50 at Al Tahoe Boulevard – operations degrade from four or less hours of LOS E (i.e., acceptable), to five or more hours of LOS E (i.e., unacceptable).
5. US 50 at South Stateline – operations degrade from an acceptable LOS D to five or more hours of LOS E (i.e., unacceptable).
6. US 50 south of SR 207 – operations degrade from an acceptable LOS D to LOS E for more than four hours
7. SR 28 at Kings Beach – LOS F conditions are degraded.
8. SR 28 east of Tahoe City – operations worsen from an acceptable LOS D, to LOS E for five or more hours (i.e., unacceptable).
9. US 50 at Echo Summit – currently unacceptable LOS E operations are degraded to a significant degree (v/c ratio increases by 0.06).
10. SR 89 north of Tahoe City – operations degrade from an acceptable LOS D to LOS E, which is unacceptable in rural areas.

Degraded roadway segment impacts under Alternative 5 would be **significant**.

MITIGATION MEASURES

Mitigation Measure 3.3-1 applies to all alternatives.

Mitigation Measure 3.3-1: Phased Release of Allocations/ LOS Monitoring/ Travel Demand Management

The level of service standard under evaluation for Impact 3.3-1 is oriented toward alleviating congestion during the peak hour of peak travel times in the Region. The Compact directs TRPA to focus transportation improvements on transit investments and enhancements to non-auto modes, rather than new roadway capacity. Therefore, the mitigation measures below seek first to provide additional travel capacity in the form

of bicycle, pedestrian, and transit improvements, with an ongoing monitoring program. New roadway improvements beyond those already listed in the RTP/SCS, are proposed if other measures are not able to meet community needs during peak travel times.

TRPA will develop and implement a program for the phased release of land use allocations in four-year cycles in conjunction with future updates of the Regional Plan and RTP. Two years after each release, monitoring of existing and near-term LOS will occur at intersections and roadways to evaluate compliance with applicable LOS policies. Should LOS projections indicate that applicable LOS goals and policies will not be met, actions will be undertaken through TRPA-approved plans, project permitting, or projects/programs developed in coordination with local or other governments to maintain compliance. Actions may include, but are not limited to the following:

1. TRPA will prioritize, and cause to be implemented, if feasible, enhanced non-motorized and public transportation projects and services to accommodate the additional travel demand.
2. TRPA will modify the land use allocation releases to reduce travel demand,
3. To the extent that roadway capacity expansions do not result in significant, unavoidable environmental impacts, TRPA will investigate and cause to be implemented, if feasible, additional multi-modal corridor improvements (beyond those listed in the RTP project list). The following is an example list of potential candidate improvements based on the identified significant impacts of the RTP/SCS alternatives:
 - › US 50 between the South Y and South Stateline – modify US 50 to consist of enhanced access control (e.g., raised median with channelized turn lanes at selected locations, driveway consolidation to limit turning locations on the highway, etc.), to the extent that planned traffic signal coordination does not provide sufficient capacity increases.
 - › US 50 between SR 89 and Pioneer Trail – modify US 50 to consist of enhanced access control (e.g., raised median with channelized turn lanes, driveway consolidation, etc.) to increase the capacity of the highway.

Significance After Mitigation

After implementation of mitigation, transportation operation impacts to roadway segments would be **less than significant** for Alternatives 1, 2, 3, 4, and 5, because the monitoring and phased release of land use allocations, in conjunction with trip reducing and transportation system capacity increases would be able to maintain LOS of roadway segments at acceptable levels.

Impact 3.3-2	Intersection Operations. Alternatives 1, 2, 3, 4, and 5 would cause degradation of intersection operations at several intersections, but not to unacceptable (i.e., LOS D in rural areas, and LOS E for more than 4 hours or LOS F in urban areas) levels. For all alternatives, impacts to intersection operations would be less than significant .
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Intersections are the critical nodes within the roadway system. This is particularly true in the Tahoe Region where they serve to connect state and US highways. Similar to roadways, intersections are subject to the LOS policies of local, regional, and state agencies. Degraded intersection operations can result in a variety of adverse effects including unacceptable delay, lengthy vehicle queues that may block upstream intersections and driveways, increased vehicle emissions, and unsafe driver behavior. As noted in Section 3.3.3, Affected Environment, all seven study intersections currently operate at acceptable levels of service during the August Friday PM peak hour. Table 3.3-13 displays the 2035 intersection LOS and projected delays (see Appendix E for technical calculations).

Table 3.3-13. Intersection Operations –2035 Conditions									
#	Intersection	Jurisdiction	City/Community	Average Delay in seconds – LOS					
				Existing	2035 Conditions				
					Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1	SR 28/SR 267	Caltrans	Kings Beach	29 – C	40 – D	43 – D	51 – D	55 – E	55 – E
2	SR 28/Village Boulevard	NDOT	Incline Village	29 – C	30 – C	30 – C	27 – C	30 – C	30 – C
3	US 50/SR 89 (south Y)	Caltrans	South Lake Tahoe	25 – C	26 – C	28 – C	29 – C	30 – C	31 – C
4	US 50/Ski Run Boulevard	Caltrans	South Lake Tahoe	36 – D	37 – D	37 – D	42 – D	40 – D	42 – D
5	US 50/Park Drive	Caltrans	South Lake Tahoe	35 – C	37 – D	37 – D	38 – D	42 – D	41 – D
6	SR 28/SR 89	Caltrans	Tahoe City	30 – C	31 – C	32 – C	34 – C	36 – D	36 – D
7	US 50/SR 207	NDOT	Kingsbury	19 – B	21 – C	20 – C	19 – B	21 – C	22 – C

Notes: Existing conditions representative of a Friday afternoon/evening peak hour in August. 2035 analysis assumes same lane configurations as existing conditions at all study intersection given the policy-level nature of this document and uncertainty of exactly what type of future improvements (where planned) may be implemented. Source: Data provided by Fehr & Peers in 2012; see Appendix E.

ALTERNATIVE 1: NO PROJECT

Alternative 1 would include implementation of Transportation Strategy Package A (minimal improvements), which includes roadway improvements, community revitalization projects, construction of bicycle and pedestrian trails, and the Waterborne Transit Project. Transportation Strategy Package A includes relatively few other transit service upgrades. Land uses and development densities under Alternative 1 would continue to be implemented in the manner prescribed by the 1987 Regional Plan.

Alternative 1 would not cause any study intersections to degrade to LOS F. All intersections would continue to operate at LOS D or better. This alternative would cause two additional intersections (SR 28/SR 267 and US 50/Park Drive) to degrade from LOS C to LOS D, and the US 50/Ski Run Boulevard intersection would operate at LOS D, as it does under existing conditions. None of the resultant intersection levels of service would operate at unacceptable levels. Intersection impacts under Alternative 1 would be **less than significant**.

ALTERNATIVE 2: LOW DEVELOPMENT, INCREASED REGULATION

Alternative 2 would implement Transportation Strategy Package B (increased revenue scenario), which includes similar types of projects as Transportation Strategy Package A (minimal improvements), but with a substantially greater number of bicycle and pedestrian improvements, intercept lots and road user fees, and inter-regional bus services.

Alternative 2 would not cause any study intersections to degrade to LOS F. All intersections would continue to operate at LOS D or better. This alternative would cause two additional intersections (SR 28/SR 267 and US 50/Park Drive) to degrade from LOS C to LOS D, and the US 50/Ski Run Boulevard intersection would operate at LOS D, as it does under existing conditions. None of the resultant intersection levels of service would operate at unacceptable levels. Intersection impacts under Alternative 2 would be **less than significant**.

ALTERNATIVE 3: LOW DEVELOPMENT, HIGHLY INCENTIVIZED REDEVELOPMENT

Alternative 3 would implement Transportation Strategy Package C (Tier 1 projects only), which includes new bicycle and pedestrian facilities, capital improvement projects, transit service and capital enhancements, and waterborne transit, but not as many new pedestrian/bicycle facilities as included in Alternative 2.

Alternative 3 would not cause any study intersections to degrade to LOS F. All intersections would continue to operate at LOS D or better. As with Alternatives 1 and 2, this alternative would cause the intersections at SR 28/SR 267 and US 50/Park Drive to degrade from LOS C to LOS D, and the US 50/Ski Run Boulevard intersection would continue to operate at LOS D. Degraded intersection impacts under Alternative 3 would be **less than significant**.

ALTERNATIVE 4: REDUCED DEVELOPMENT, INCENTIVIZED REDEVELOPMENT

Like Alternative 3, Alternative 4 would implement Transportation Strategy C, but would include substantial additional development without the redevelopment incentives. Transportation improvements would include new bicycle and pedestrian facilities, roadway improvement projects, transit service and capital enhancements, and waterborne transit. Alternative 4 would cause the SR 28/SR 267 study intersection to worsen to LOS E. However, the resulting delay would be within one second of LOS D. If operations during the busiest hour of the weekday are at the LOS D/E cusp, it is reasonable to conclude that LOS E would not occur for four or more additional hours. This conclusion can be substantiated by review of hourly traffic volume data provided by Caltrans. For example, the busiest hour of a summer Friday weekday on SR 89 north of Tahoe City was seven percent greater than the fifth busiest hour, meaning traveler delays are reduced during the non-peak hours.

This alternative would also cause two additional intersections (SR 28/SR 89 and US 50/Park Drive) to operate at LOS D, and the US 50/Ski Run Boulevard intersection would continue to operate at LOS D. Intersection impacts under Alternative 4 would be **less than significant**.

ALTERNATIVE 5: SIMILAR RATE OF DEVELOPMENT AND REGULATORY STRUCTURE TO 1987 REGIONAL PLAN

Like Alternative 1, Alternative 5 would include Transportation Strategy Package A (minimal improvements), but would result in substantial additional development, implemented under existing policies and Code. Alternative 5 would cause the SR 28/SR 267 study intersection to worsen to LOS E. However, the resulting delay would be within one second of LOS D. If operations during the busiest hour of the weekday are at the LOS D/E cusp, it follows that LOS E would not occur for four or more additional hours. This alternative would also cause the intersections of SR 28/SR 89 and US 50/Park Drive to degrade from LOS C to LOS D, and the US 50/Ski Run Boulevard intersection would continue to operate at LOS D. Intersection impacts under Alternative 5 would be **less than significant**.

MITIGATION MEASURES

No mitigation is required for any of the alternatives.

Impact 3.3-3 Vehicle Miles Traveled Threshold Standard. Implementation of any of the Regional Plan Update alternatives would generate additional VMT. However, the degree of added VMT would vary by alternative. Because the VMT generated as a result of each alternative would exceed the Visibility: Vehicle Miles Traveled Threshold Standard, the impact of increased VMT would be **significant** for all alternatives.

VMT is a measure of automobile travel within the transportation system, and an indicator of the degree of integration between the transportation system and planned land uses (i.e., a lower VMT indicates greater beneficial integration of transportation systems and land uses to reduce personal vehicle travel). The 2011 Threshold Evaluation also recognized VMT as a proxy for regional traffic congestion, as well as for air quality (i.e., for nitrates, particulates, and visibility). For the Tahoe Region, VMT may be influenced by a number of variables including land use pattern, emphasis on facilities for certain travel modes over others, and implementation of vehicle trip reduction strategies. TRPA has adopted a VMT Threshold Standard for air quality purposes (see section 3.3.2, above, for an explanation of how the Threshold Standard is determined). Table 3.3-14 displays the VMT, VMT Threshold Standard, and population and VMT per capita for each alternative under 2035 conditions (see Appendix E for technical calculations).

Table 3.3-14. Tahoe Region VMT– 2035 Conditions					
Metric	2035 Conditions				
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Comparison of VMT with TRPA's VMT Threshold Standard					
Tahoe Region VMT for Given Regional Plan Update Alternative	2,141,100	2,094,300	2,131,000	2,244,800	2,321,100
VMT Threshold Standard	2,067,600	2,067,600	2,067,600	2,067,600	2,067,600
Standard Met?	No	No	No	No	No
VMT Per Capita					
Tahoe Region VMT for Given Regional Plan Update Alternative	2,141,100	2,094,300	2,131,000	2,244,800	2,321,100
Population	55,687	57,813	60,365	59,773	59,952
VMT per Capita	38.45	36.23	35.30	37.56	38.72
Notes: VMT calculation includes all miles driven within the Tahoe Region. VMT is estimated to nearest one hundred miles. Source: TRPA Travel Demand Model results, 2012.					

ALTERNATIVE 1: NO PROJECT

Alternative 1 includes implementation of Transportation Strategy Package A (minimal improvements), which would include roadway improvements, community revitalization projects, construction of bicycle and pedestrian trails, and the Waterborne Transit Project. Transportation Strategy Package A includes relatively few other transit service upgrades. Land uses and development densities under Alternative 1 would continue to be implemented in the manner prescribed by the 1987 Regional Plan.

Alternative 1 would result in a 2035 VMT estimate that is 6.8 percent less than the 1981 VMT of the Tahoe Region. Because the VMT Threshold Standard calls for a 10 percent reduction from 1981, Alternative 1 does not meet it. This would be a **significant** impact.

According to Tables 3.3-5 and 3.3-6, the VMT per capita was 36.43 in 2010. According to Table 3.3-14, Alternative 1 would cause the VMT per capita to increase to 38.45 in 2035, a 5.5 percent increase.

ALTERNATIVE 2: LOW DEVELOPMENT, INCREASED REGULATION

Alternative 2 would implement Transportation Strategy Package B (increased revenue scenario), which includes similar types of projects as Transportation Strategy Package A (minimal improvements), but with a substantially greater number of bicycle and pedestrian improvements and inter-regional bus services.

Alternative 2 would result in a 2035 VMT estimate that is 8.8 percent less than the 1981 VMT of the Tahoe Region. Because the VMT Threshold Standard calls for a 10 percent reduction from 1981, Alternative 2 does not meet it. This would be a **significant** impact.

According to Tables 3.3-5 and 3.3-6, the VMT per capita was 36.43 in 2010. According to Table 3.3-14, Alternative 2 would cause the VMT per capita to decrease to 36.23 in 2035, a 0.5 percent reduction.

ALTERNATIVE 3: LOW DEVELOPMENT, HIGHLY INCENTIVIZED REDEVELOPMENT

Alternative 3 would implement Transportation Strategy Package C (constrained project list), which includes new bicycle and pedestrian facilities, capital improvement projects, transit service and capital enhancements, and waterborne transit, but not as many new pedestrian/bicycle facilities as included in Alternative 2.

Alternative 3 would result in a 2035 VMT estimate that is 7.2 percent less than the 1981 VMT of the Tahoe Region. Because the VMT Threshold Standard calls for a 10 percent reduction from 1981, Alternative 3 does not meet it. This would be a **significant** impact.

According to Tables 3.3-5 and 3.3-6, the VMT per capita was 36.43 in 2010. According to Table 3.3-14, Alternative 3 would cause the VMT per capita to decrease to 35.30 in 2035, a 3.1 percent reduction. Alternative 3 results in the lowest VMT per capita in 2035 of any project alternative. This is due primarily to the placement of the majority of new dwelling units (62.4 percent) in community centers. In contrast, Alternatives 2, 4, and 5 place between 25 and 33 percent of new units in community centers. A number of academic studies have found that regionally accessible, centrally located sites result in shorter trip lengths and generate less VMT than do sites along the regional periphery.

ALTERNATIVE 4: REDUCED DEVELOPMENT, INCENTIVIZED REDEVELOPMENT

Alternative 4 would also implement Transportation Strategy Package C (constrained project list), which would include new bicycle and pedestrian facilities, roadway improvement projects, transit service and capital enhancements, and waterborne transit.

Alternative 4 would result in a 2035 VMT estimate that is 2.3 percent less than the 1981 VMT of the Tahoe Region. Because the VMT Threshold Standard calls for a 10 percent reduction from 1981, Alternative 4 does not meet it. This would be a **significant** impact.

According to Tables 3.3-5 and 3.3-6, the VMT per capita was 36.43 in 2010. According to Table 3.3-14, Alternative 4 would cause the VMT per capita to increase to 37.56 in 2035, a 3.1 percent increase.

ALTERNATIVE 5: SIMILAR RATE OF DEVELOPMENT AND REGULATORY STRUCTURE TO 1987 REGIONAL PLAN

Alternative 5 would include substantial new development, but similar types and numbers of transportation projects as Alternative 1, because both would implement Transportation Strategy Package A (minimal improvements).

Alternative 5 would result in a 2035 VMT estimate that is 1.0 percent greater than the 1981 VMT of the Tahoe Region. Because the VMT Threshold Standard calls for a 10 percent reduction from 1981, Alternative 5 does not meet it. This would be a **significant** impact.

According to Tables 3.3-5 and 3.3-6, the VMT per capita was 36.43 in 2010. According to Table 3.3-14, Alternative 5 would cause the VMT per capita to increase to 38.72 in 2035, a 6.3 percent increase.

MITIGATION MEASURE

Mitigation Measure 3.3-3: Implement Additional VMT Reduction.

Additional mitigation will be required for all alternatives to further reduce VMT to achieve the VMT Threshold Standard. The following percent reductions would be necessary for each alternative:

- › Alternative 1: 3.4 percent reduction
- › Alternative 2: 1.3 percent reduction
- › Alternative 3: 3.0 percent reduction
- › Alternative 4: 7.9 percent reduction
- › Alternative 5: 10.9 percent reduction

To ensure that the VMT Threshold Standard is achieved, TRPA will develop and implement a program for the phased release of land use allocations followed by monitoring and forecasting of actual roadway traffic counts and VMT. New CFA, TAUs, and residential allocations will be authorized for release by the TRPA Governing Board every four years, beginning with the approval of the Regional Plan. Approval of the release of allocations will be contingent upon demonstrating, through modeling and the use of actual traffic counts, that the VMT Threshold Standard will be maintained over the subsequent four-year period.

Significance After Mitigation

After implementation of mitigation, the VMT Threshold Standard would be met and the impact would be **less than significant** for Alternatives 1, 2, 3, 4, and 5.

Impact 3.3-4

Transit Service. Transit service enhancements are included in all five alternatives. Alternatives 1 and 5 would implement transit improvements contained in Transportation Strategy Package A, including the Waterborne Transit Project and operation and maintenance of the existing transit system. Alternatives 2 through 4 would implement Transportation Strategy Packages B and C, which include substantial transit improvements (including transit projects, programs, and efficiency strategies) that are expected to not only meet new demand, but offer substantial service improvements beyond those that exist today. Therefore, transit service impacts under all alternatives would be **beneficial**.

ALTERNATIVE 1: NO PROJECT

Alternative 1 would not authorize new development allocations beyond those remaining from the 1987 Regional Plan. New development over the planning period would be very low, as would Basin-wide population growth (approximately 2 percent Region-wide by 2035). Little to no new demand for transit would occur.

Alternative 1 includes implementation of Transportation Strategy Package A, which would include roadway improvements, community revitalization projects, construction of bicycle and pedestrian trails, and the

Waterborne Transit Project. Although Transportation Strategy Package A includes relatively fewer transit service upgrades, it includes waterborne transit and operations and maintenance for the existing transit system. This, coupled with little to no new demand, would result in transit service that is improved as compared to existing conditions. Transit service impacts under Alternative 1 would be **beneficial**.

ALTERNATIVE 2: LOW DEVELOPMENT, INCREASED REGULATION

Alternative 2 would authorize limited new allocations that would result in relatively low population growth (approximately 6 percent Region-wide by 2035). Alternative 2 would also implement Transportation Strategy Package B, which includes substantial improvements in BlueGO and TART Service and Capital Enhancements, new East Shore Transit Facilities, and new Inter-Regional Transit Services. Because service expansions would include transit service provider upgrades throughout the Tahoe Region, the expanded service is expected to more than meet the demand for additional transit and transit service would be improved as compared to existing conditions. Transit service impacts under Alternative 2 would be **beneficial**.

ALTERNATIVE 3: LOW DEVELOPMENT, HIGHLY INCENTIVIZED REDEVELOPMENT

Alternative 3 would authorize limited new allocations that would result in modest population growth (approximately 10 percent Region-wide by 2035, assuming increases in the average number of occupants per residence). Alternative 3 would implement Transportation Strategy Package C, which includes the Waterborne Transit Project, BlueGO and TART Service and Capital Enhancements, new East Shore Transit Facilities, and new Inter-Regional Transit Services. These projects would offer expanded fixed-route bus service as well as a longer-distance waterborne service. Because these service expansions would include transit service provider upgrades throughout the Tahoe Region, the expanded service would more than meet the demand for additional transit and transit service would be improved as compared to existing conditions. Transit service impacts under Alternative 3 would be **beneficial**.

ALTERNATIVE 4: REDUCED DEVELOPMENT, INCENTIVIZED REDEVELOPMENT

Alternative 4 would authorize new allocations that would also result in modest population growth (approximately 10 percent Region-wide by 2035), but less than under the 1987 Regional Plan. Like Alternative 3, Alternative 4 would implement Transportation Strategy C which includes the Waterborne Transit Project, BlueGO and TART Service and Capital Enhancements, new East Shore Transit Facilities, and new Inter-Regional Transit Services. These projects would offer expanded fixed-route bus service as well as a longer-distance waterborne service. Because these service expansions would include transit service provider upgrades throughout the Tahoe Region, the expanded service would more than meet the demand for additional transit and transit service would be improved as compared to existing conditions. Transit service impacts under Alternative 4 would be **beneficial**.

ALTERNATIVE 5: SIMILAR RATE OF DEVELOPMENT AND REGULATORY STRUCTURE TO 1987 REGIONAL PLAN

Alternative 5 would authorize the highest numbers of new development allocations and would also result in modest levels of population growth (approximately 10 percent Region-wide by 2035). Alternative 5 would implement Transportation Strategy Package A, which includes roadway improvements, community revitalization projects, construction of bicycle and pedestrian trails, and the Waterborne Transit Project. Transit service improvements for Alternative 5, while less than Alternatives 2, 3, and 4, would still be substantial. Even with higher levels of population and employment growth, transit improvements included in Transportation Strategy Package A would result in transit service that is improved over existing conditions. Transit service impacts under Alternative 5 would be **beneficial**.

MITIGATION MEASURES

Transit service impacts would be beneficial under all alternatives. No mitigation is required for any alternative.

Impact 3.3-5	Bicycle and Pedestrian Safety. All alternatives would enhance pedestrian and bicycle safety. Pedestrian and bicycle facility improvements are included in all five alternatives. Alternatives 1 and 5 would implement several pedestrian and bicycle improvements contained in Transportation Strategy Package A. Alternatives 2 through 4 would implement Transportation Strategy Packages B and C, which include substantial pedestrian and bicycle facility improvements that are expected to not only meet new demand, but offer substantial improvements beyond those that exist today. Facility improvements offer opportunities to separate pedestrian and bicycle travel from roadway travel lanes (such as separated trails or striped, designated lanes), thus reducing the potential for conflicts. Therefore, pedestrian and bicycle safety impacts under all alternatives would be beneficial .
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ALTERNATIVE 1: NO PROJECT

Alternative 1 would not authorize new development allocations beyond those remaining from the 1987 Regional Plan. New development over the planning period would be very low, as would Basin-wide population growth. No substantial increase in bicycle, pedestrian, and vehicle activity would occur.

Alternative 1 includes implementation of Transportation Strategy Package A, which would include roadway improvements, community revitalization projects, construction of bicycle and pedestrian trails, and the Waterborne Transit Project. Because this package would include new projects (and associated safety features) for all transportation modes, and no substantial increase in bicycle, pedestrian, and vehicle activity would occur, no transit mode conflicts are anticipated under Alternative 1. Safety conditions would be improved and potential for conflict would be reduced as compared to existing conditions. Impacts would be **beneficial**.

ALTERNATIVE 2: LOW DEVELOPMENT, INCREASED REGULATION

Alternative 2 would authorize limited new allocations that would result in relatively low population and employment growth. Alternative 2 would also implement Transportation Strategy Package B, which would include four community revitalization and complete streets projects, and the greatest number of bicycle/pedestrian projects throughout the Tahoe Region. These projects would include sidewalks, dedicated pedestrian and bike paths, and other amenities to enhance user safety. Because Alternative 2 would result in only a modest increase in bicycle, pedestrian, and vehicle activity (by virtue of low population growth), and substantial new projects and associated safety features would be implemented for all transportation modes, safety conditions would be improved and potential for conflict would be reduced under Alternative 2 as compared to existing conditions. Impacts would be **beneficial**.

ALTERNATIVE 3: LOW DEVELOPMENT, HIGHLY INCENTIVIZED REDEVELOPMENT

Alternative 3 would authorize limited new allocations that would result in modest population and employment growth. Alternative 3 would implement Transportation Strategy Package C, which includes new bicycle and pedestrian facilities, capital improvement projects, transit service and capital enhancements, and waterborne transit, but fewer new pedestrian/bicycle facilities as compared to Alternative 2.

Alternative 3 will result in fewer conflicts with vehicles by virtue of adding sidewalks, dedicated bike paths, and other amenities. Safety conditions would be improved and potential for conflict would be reduced under Alternative 3 as compared to existing conditions. Impacts would be **beneficial**.

ALTERNATIVE 4: REDUCED DEVELOPMENT, INCENTIVIZED REDEVELOPMENT

Alternative 4 would authorize new allocations that would also result in modest population growth. Like Alternative 3, Alternative 4 would implement Transportation Strategy C and would result in fewer conflicts with vehicles by virtue of adding sidewalks, dedicated bike paths, and other amenities. Impacts would be **beneficial**.

ALTERNATIVE 5: SIMILAR RATE OF DEVELOPMENT AND REGULATORY STRUCTURE TO 1987 REGIONAL PLAN

Alternative 5 would authorize the highest numbers of new development allocations and would result in modest population growth. Alternative 5 would implement Transportation Strategy Package A, which includes two community revitalization projects (i.e., Kings Beach and SR 89/Fanny Bridge), and eight bicycle/pedestrian projects which would result in improved bicycle/pedestrian facilities and fewer conflicts with vehicles in these areas. While Alternative 5 may result in increases in bicycle, pedestrian, and vehicle activity by virtue of population growth, transportation projects and safety improvements proposed under Package A would still be expected to result in improved safety and reduced conflict potential as compared to existing conditions. Impacts would be **beneficial**.

MITIGATION MEASURES

Impacts would be beneficial for all alternatives. No mitigation is required for any alternative.