



Tahoe
Metropolitan
Planning
Organization



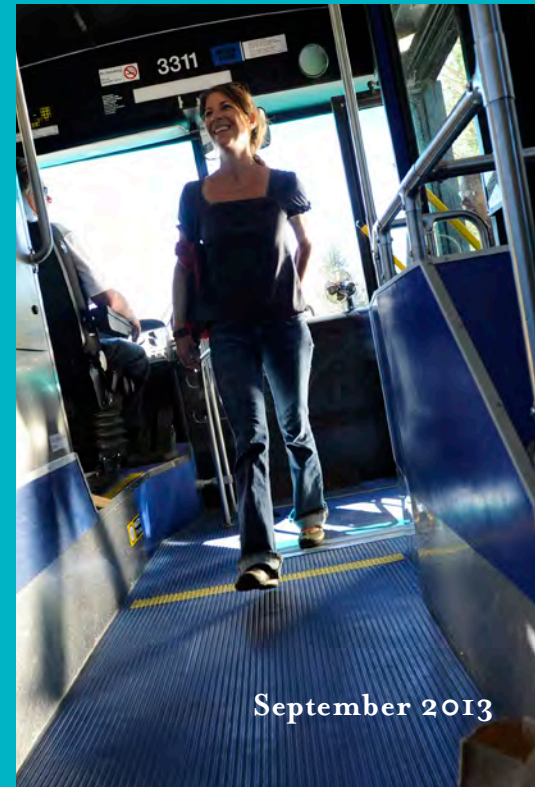
TAHOE
REGIONAL
PLANNING
AGENCY



2012 TRANSPORTATION MONITORING REPORT

TAHOE METROPOLITAN PLANNING ORGANIZATION
TAHOE REGIONAL PLANNING AGENCY

|| *Lake Tahoe*



September 2013

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Introduction

The Tahoe Metropolitan Planning Organization (TMPO) and Tahoe Regional Planning Agency (TRPA) conduct on-going monitoring to inform transportation policy and programs, with the goal of providing a successful multi-modal transportation system that appeals to users, supports mobility needs and decreases dependency on the private automobile. The Mobility 2035: Transportation Monitoring Program Report brings together the results of performance indicator monitoring since the early 1970s—from traffic counts, travel mode choice, demographic and air quality trends so that transportation trends can be evaluated and applied to policy-making. Due to the “Data Lag” associated with quality control and assurances from the agencies and jurisdictions collecting much of this information a common year is not possible for all of the information provided. TMPO and TRPA staff utilized the most current year information that was available to compile this report.

Performance Measures

Identifying and analyzing these trends are at the core of any planning effort. The TRPA and TMPO, in cooperation with other state and local agencies monitor a number of performance indicators and also maintain data sets on demographic information in the Lake Tahoe Region. In December of 2012, the TRPA Governing Board approved the Lake Tahoe Regional Transportation Plan and Sustainable Communities Strategy (Mobility 2035). Part of this effort included identifying a number of performance indicators to assess the transportation system as shown in Table 1. This document is intended to report on the status of these indicators, as well as the other transportation and demographic data sets the TRPA and TMPO have tracked over time.

Table 1. Transportation Performance Measures

Trend Measured	Target
System Usage & Mode Share	
Mode share (within, to, and from the region)	Increase non-auto mode share
Mode share (to commercial and recreation sites)	Increase non-auto mode share
Access	
Share of dwelling units with access to transit, bike, and pedestrian facilities	Increase
Share of recreation areas served by transit, bike, and pedestrian facilities	Increase
Share of commercial core areas meeting pedestrian and transit-oriented development design standards	Increase
Quality of Service	Consider for all modes, not just automobiles
Environmental Impact	
Vehicle Miles Traveled	10 percent reduction from 1981 levels
Traffic Volume	7 percent reduction from 1981 levels on U.S. Highway 50

Greenhouse Gas Emissions	7 percent per capita reduction by 2020; 5 percent per capita reduction by 2035
Safety	
Vehicle Collisions	Decrease
Bicycle and Pedestrian Collisions	Decrease

Demographic Trends

Transportation trends are often influenced by many demographic factors, such as school enrollment hotel-motel occupancies, employment opportunities, or changes in the nation’s economy, which can affect visitation to the Basin. Local population levels, school enrollment, gaming revenues and hotel-motel occupancies are important factors that give an indication of local changes that could impact the transportation system.

Currently an estimated 55,000 people reside year-round in the Lake Tahoe Region. Figure 1 below illustrates the current (2010) population estimate as tabulated by the U.S. Census Bureau and the historical population estimates dating back to 1980. In interim years when Census Information is not available, TRPA estimates population based on the number of residential allocations utilized by the respective counties and City of South Lake Tahoe. Over the next decade, the population of the Lake Tahoe Region is expected to grow moderately, rising from a current (2010) population of 55,000 to approximately 60,000 by 2035. These projections account for residents and do not include temporary workers or those who own vacation and second homes in the Lake Tahoe Region.

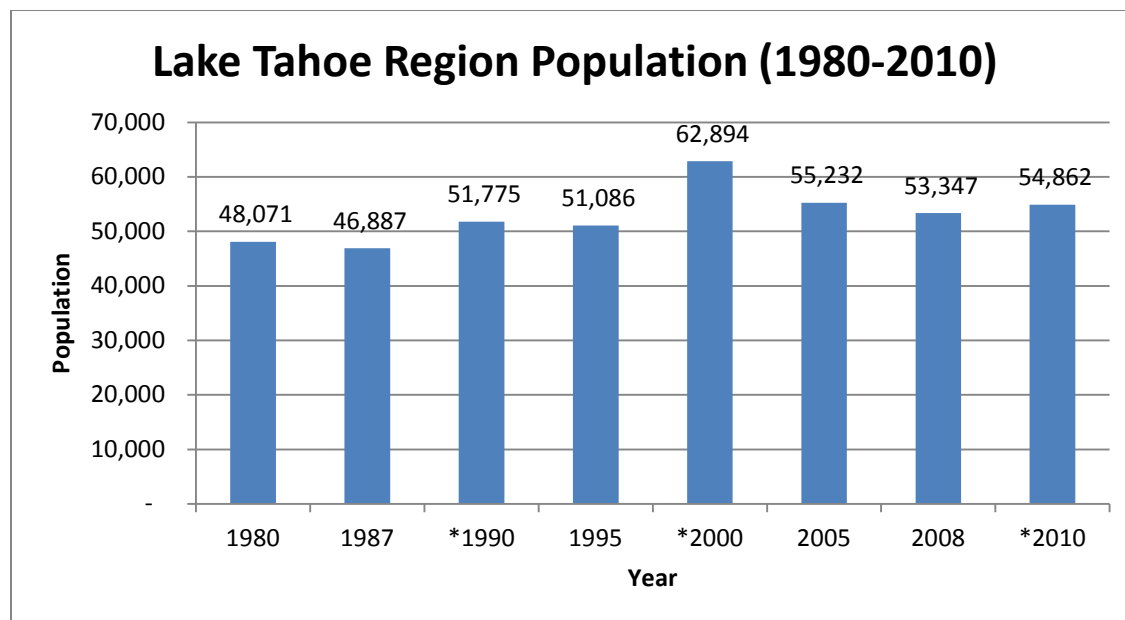


Figure 1. Sources: U.S. Census Bureau- TMPO TransCAD Model. *Data from U.S. Census.

Second Home Ownership

All Lake Tahoe jurisdictions have a relatively high percentage of housing that is used seasonally, as well as high rates of second home ownership. Based on the 2010 Census Bureau Tabulation, Placer County is estimated to have the greatest percentage of second home ownership.

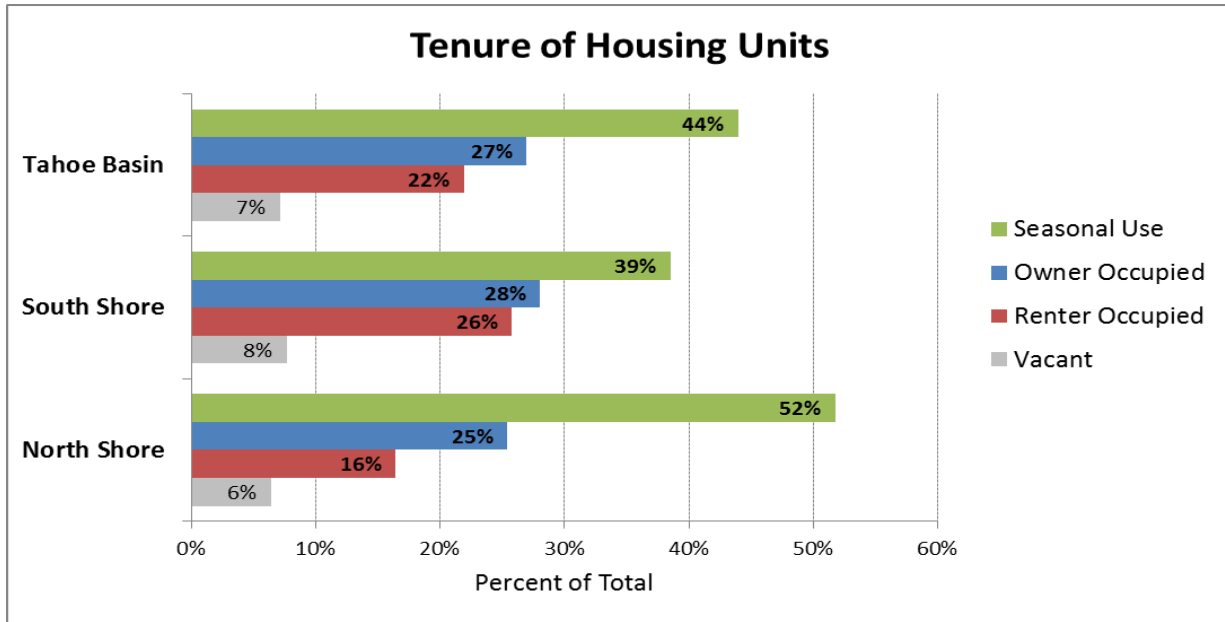


Figure 2. Source: U.S. Census Bureau, 2010

School Enrollment

Similar to the population decline, Figure 3 shows the school enrollment in grades K-12 for the Lake Tahoe Region. As this figure illustrates, school enrollment in the Region has declined significantly over the last decade causing the closure of two elementary schools and two middle schools.

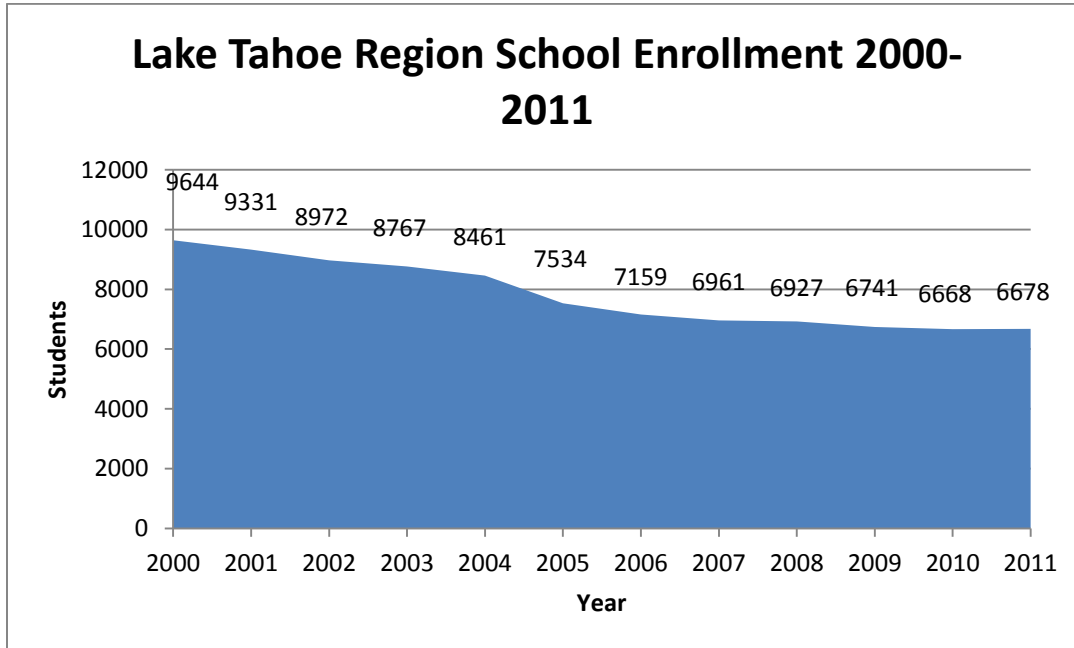


Figure 3. Sources: Lake Tahoe Unified School District, Truckee Tahoe School District, Washoe and Douglas School District

Home Values

In addition to the significant losses in school enrollment, another factor contributing to the changes in population is related to the housing market conditions. As a result of the accelerated housing values in the middle of the decade, many long-term residents decided to “cash out” the equity in their homes and sold to second homeowners. The housing “bubble” in the early part of the decade also increased the cost of housing beyond the levels that many workers in the Tahoe Region could afford. While the recent housing market has helped reduce the cost of housing in some areas, the loss of jobs has also created ongoing challenges of affordability.

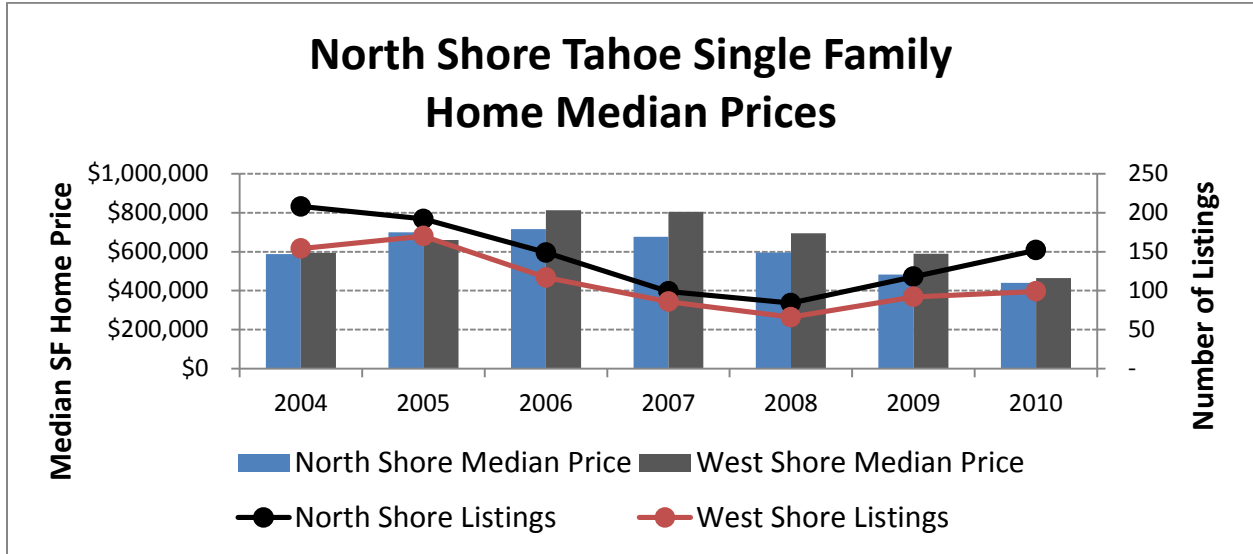


Figure 4. Source: Tahoe Sierra Board of Realtors

Traditionally Underserved Populations

Lake Tahoe communities have a high proportion of Latino and Filipino residents, particularly in South Lake Tahoe and Kings Beach. TMPO and the Census Bureau monitors concentrations of these population groups in order to ensure they are equitably served by new and existing transportation investments. In addition, TMPO monitors locations of seniors and households that lack access to a private vehicle, because they are more likely to depend on public transportation than the population as a whole.

Table 2: Transit-Dependent and Historically Underserved Populations

	Latino	Filipino	Zero-car households [1]	Seniors (65+)
South Lake Tahoe	31%	4%	8%	10%
Stateline	33%	4%	N/A	8%
Kings Beach	56%	0%	N/A	6%
Incline Village, Nevada	18%	0%	N/A	18%
Sunnyside-Tahoe City CDP, CA	5%	0%	N/A	11%
Tahoe Vista CDP, CA	5%	0%	N/A	11%

Source: U.S. Census Bureau, 2010 Census

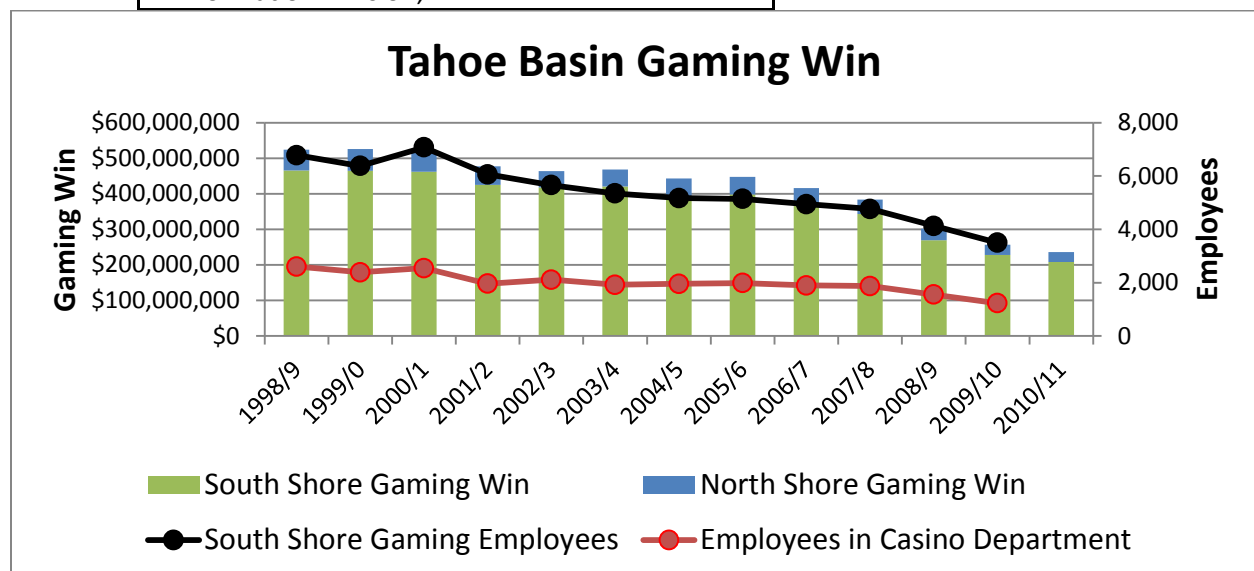
[1] Source: U.S. Census Bureau, 2008-2010 American Community Survey (3-year estimate)

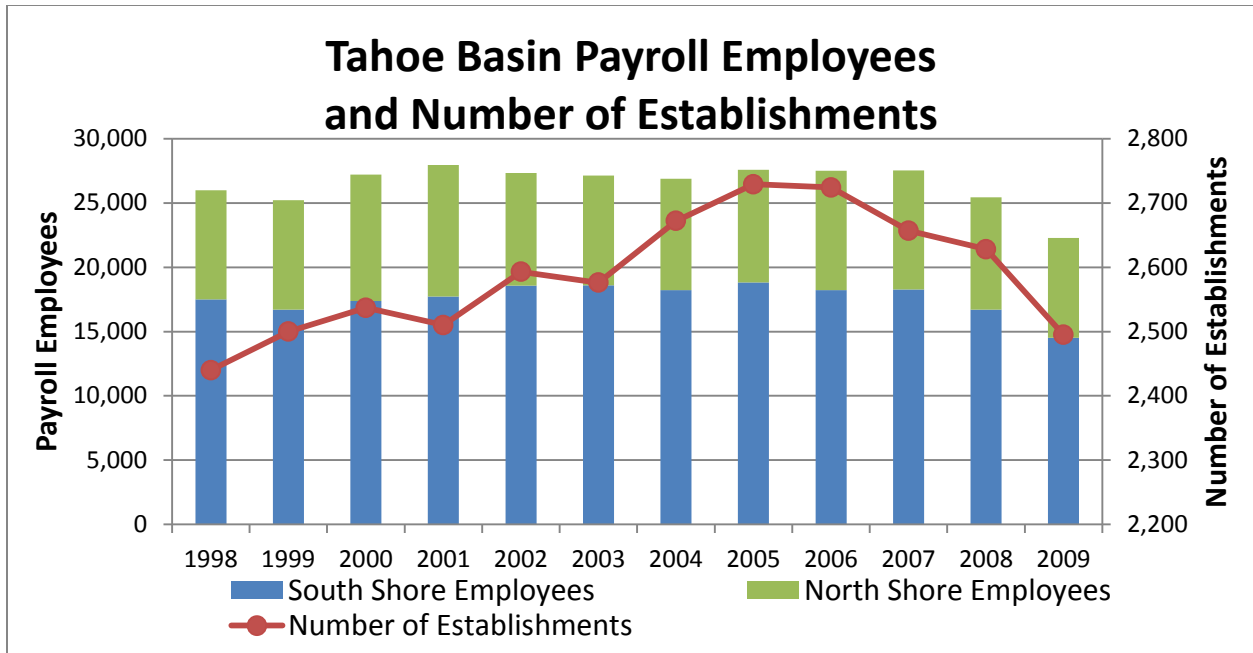
Employment

The Tahoe Region's economy is experiencing a decline that predates the recession that began in early 2008. The Region lost nearly 2,000 non-gaming related jobs (or 5.7 percent of all employment) between 2000 and 2010. The unemployment rate in the Region in 2010 was between 13 and 19 percent. Based on information provided by the Nevada Gaming Control Board, Gaming Employment on the South Shore has declined by 49 percent from FY 2001. Additional information indicates that Regional Gaming Revenues have declined by 19 percent (adjusted for inflation) from the FY 1999-2000 time period, with competition from California Indian Gaming playing a major factor in gaming revenue decline.

<u>Jurisdictions</u>	<u>Unemployment Rate (2010)</u>
El Dorado County:	12.60%
City of South Lake Tahoe	17.20%
Placer County:	11.60%
Dollar Point CDP*	15.40%
Kings Beach	12.90%
Sunnyside Tahoe City CDP	15.00%
Tahoe Vista CDP	18.80%
Carson City County	13.20%
Douglas County	15.00%
Washoe County	13.30%

*CDP = Census Designated Place
 Source: CA. Employment Development Dept. Information Division; NV. DETR





Figures 5 and 6. Source Department of Training and Rehabilitation (Nevada); U.S. Census Bureau

Hotel-Motel Occupancies

Visitor occupancies have declined on the south shore with hotel room nights rented and vacation rentals down by 28.8 percent and 10.9 percent respectively over a 5-year period. The number of rooms occupied in 2010 at Stateline Casinos represents the lowest number of rooms occupied since 1998.

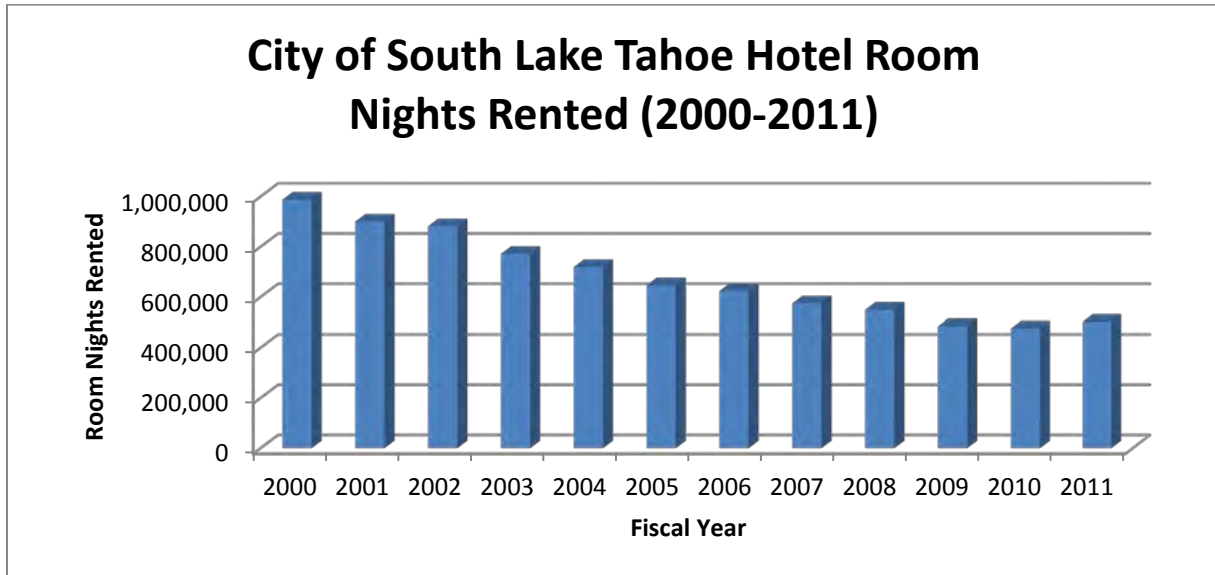


Figure 7. Source: City of South Lake Tahoe

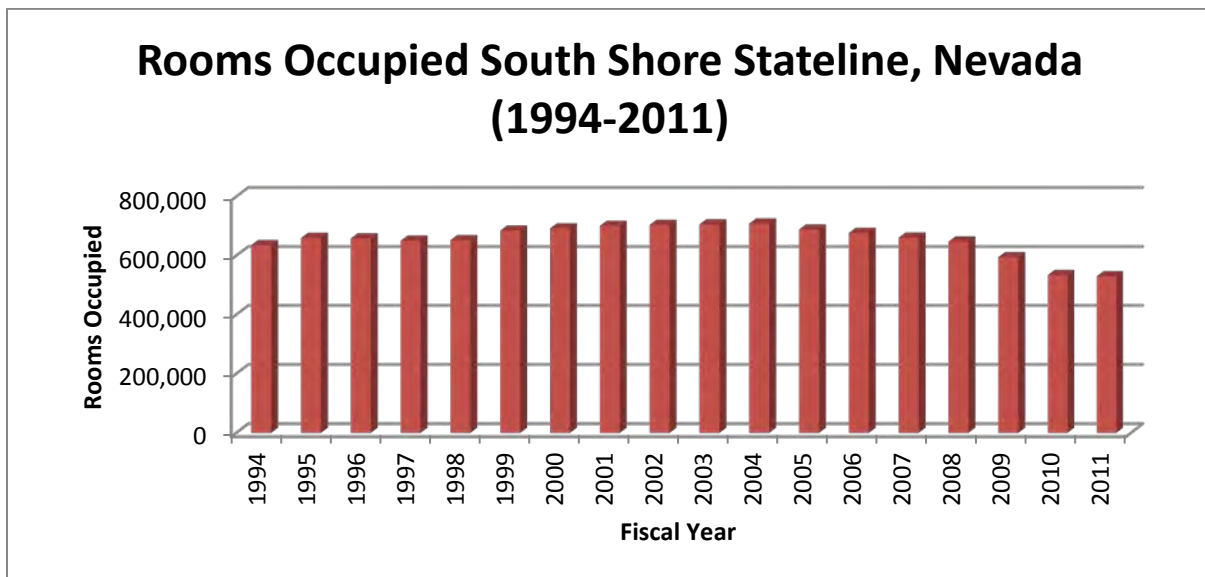


Figure 8. Source: Nevada Gaming Abstract

Sales Tax and Transient Occupancy Tax (TOT)

The decline in visitor levels and hotel-motel occupancies has also had a significant impact on tax collections and on revenues budgeted by local government jurisdictions. Sales tax collected on both the North Shore and South Shore indicates an overall decrease of 6.9 percent from FY 1999-2000.

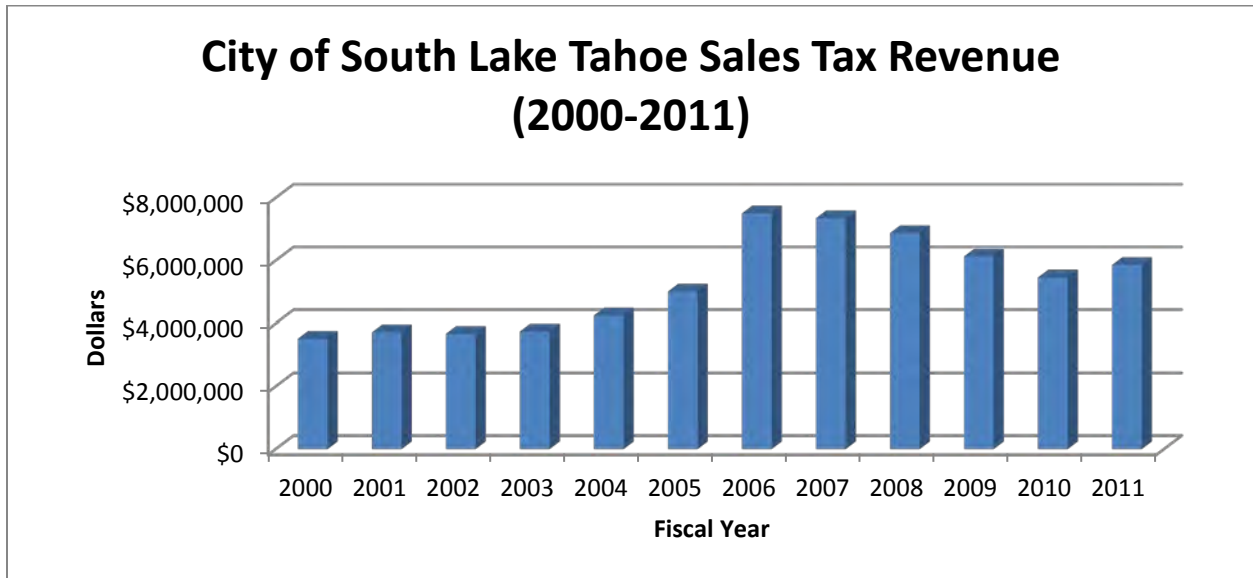


Figure 9. Source: City of South Lake Tahoe

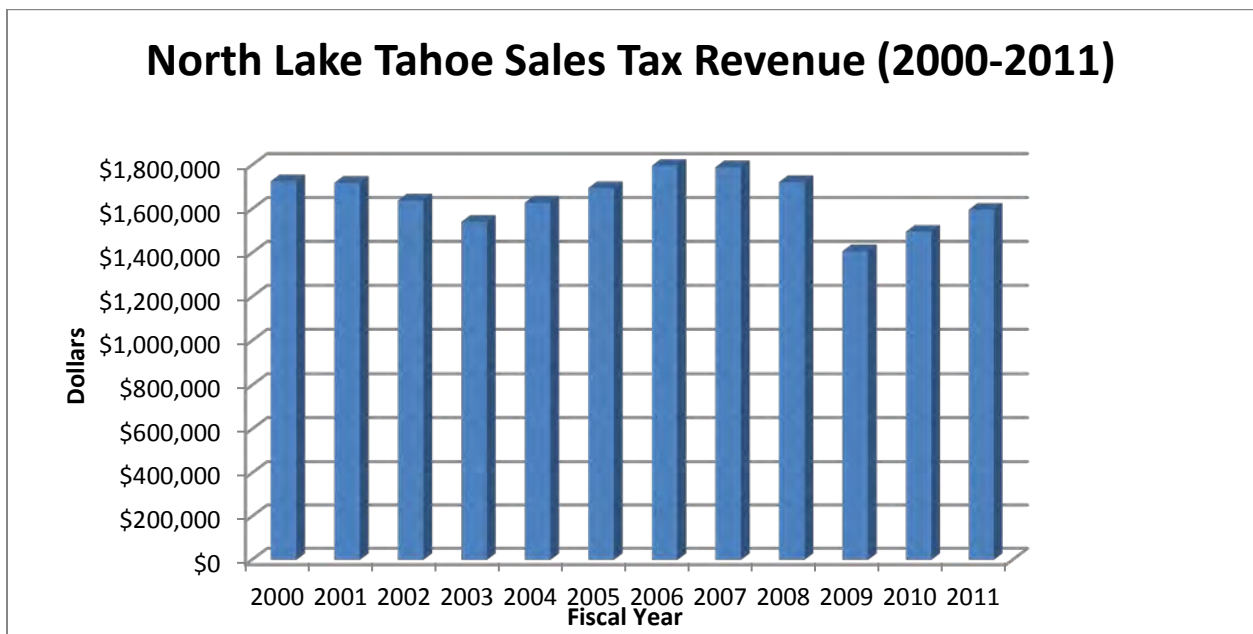


Figure 10. Source: Placer County

City of South Lake Tahoe Transient Occupancy Tax (2003-2011)

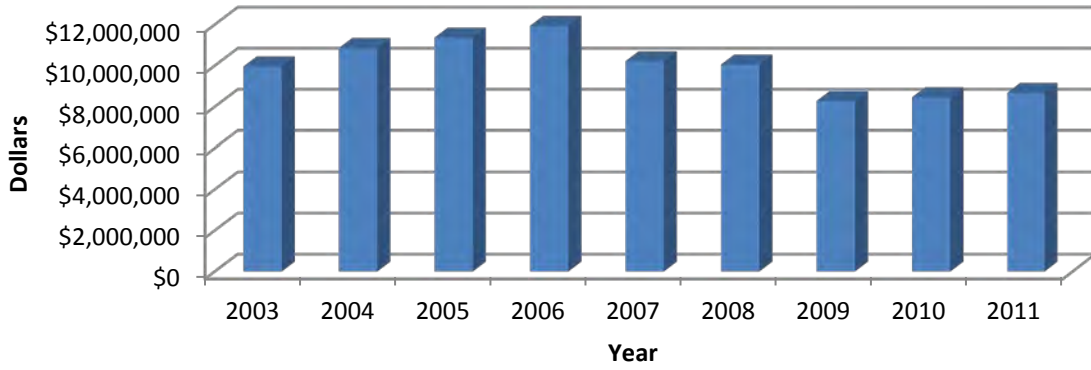


Figure 11. Source: City of South Lake Tahoe; Revenues do not include Measure Z Proceeds

Transportation Trends

Traffic volume is measured with automatic counters placed in the roadway. Within the Lake Tahoe Basin there are 23 count stations. These stations are owned and managed by the California Department of Transportation (Caltrans) and the Nevada Department of Transportation (NDOT). The TMPO tracks several kinds of traffic volumes: Annual Average Daily Traffic (AADT), Peak Month, and Winter Traffic Volumes at Park Avenue. As shown in Figure 12, Average Annual Traffic Volumes (AADT) and Peak Month Traffic Volumes (PMADT) have decreased by 21.6 and 17.6 respectively from their previously recorded high values in 1986 and 1990.

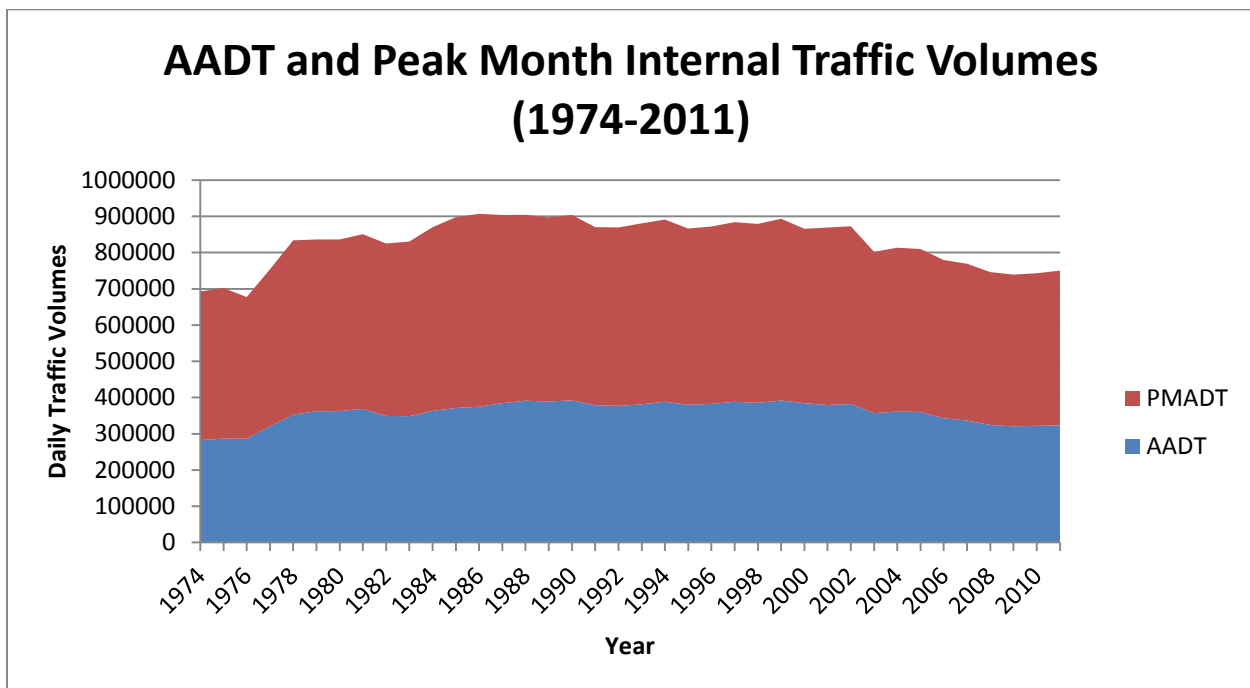


Figure 12. Source: Caltrans and NDOT

One of the TRPA Air Quality threshold indicators is winter traffic counts at the intersection of U.S. 50 and Park Avenue. TRPA tracks and analyzes the traffic volumes recorded at Park Avenue and U.S. 50 from 4 p.m. to 12 a.m. (midnight) for all days during the winter months of November through February, coinciding with previous episodic monitoring of CO standards. Figure 13 shows the traffic volumes on the Saturday of Presidents' Day Weekend. The traffic counter was out of operation from 1998 to 2002 and November and December of 2004, so data for those times are not available.

Benchmark: Reduce traffic volumes on the U.S. 50 Corridor by 7 percent during the winter from the 1981 base year between 4 p.m. and 12 p.m (midnight).

Monitoring Frequency: Annually.

Traffic Counts Saturday of Presidents Day Holiday - U.S. 50 at Park Avenue

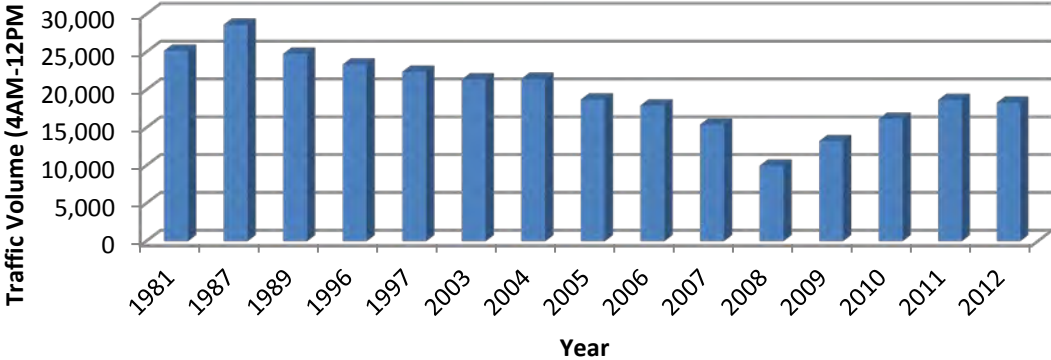


Figure 13. Source: Caltrans

Traffic - Seasonal and Daily Variations

Seasonal and daily variations in traffic volumes reflect the elastic nature of the Tahoe Region’s tourist economy. As shown in Figures 14 and 15, July and August represent the busiest travel months with Friday and Saturday representing the busiest days of the week.

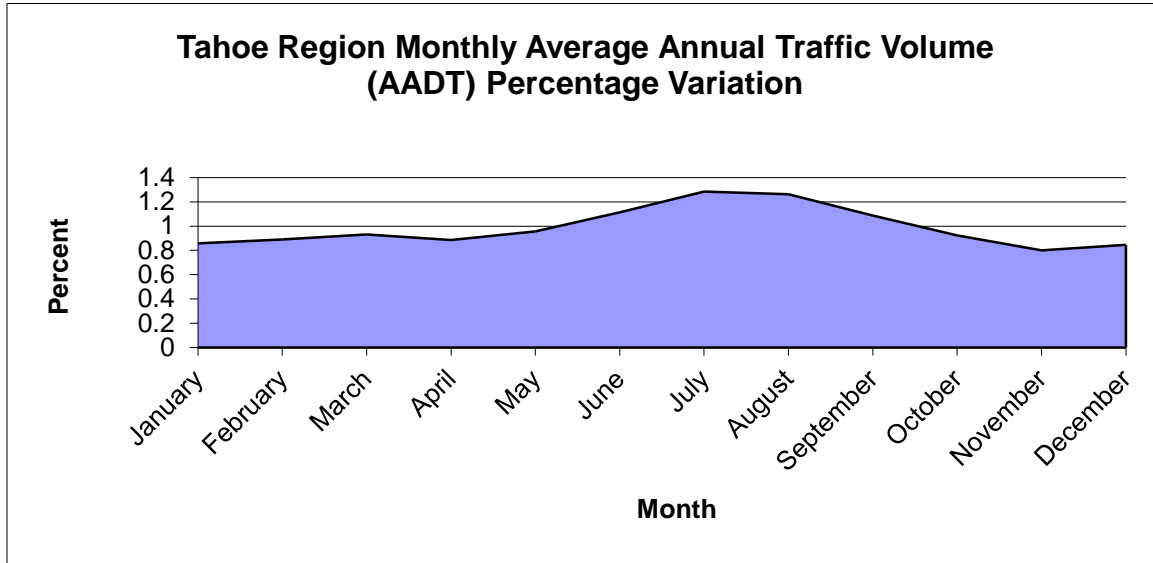


Figure 14. Source: Nevada Department of Transportation (NDOT)

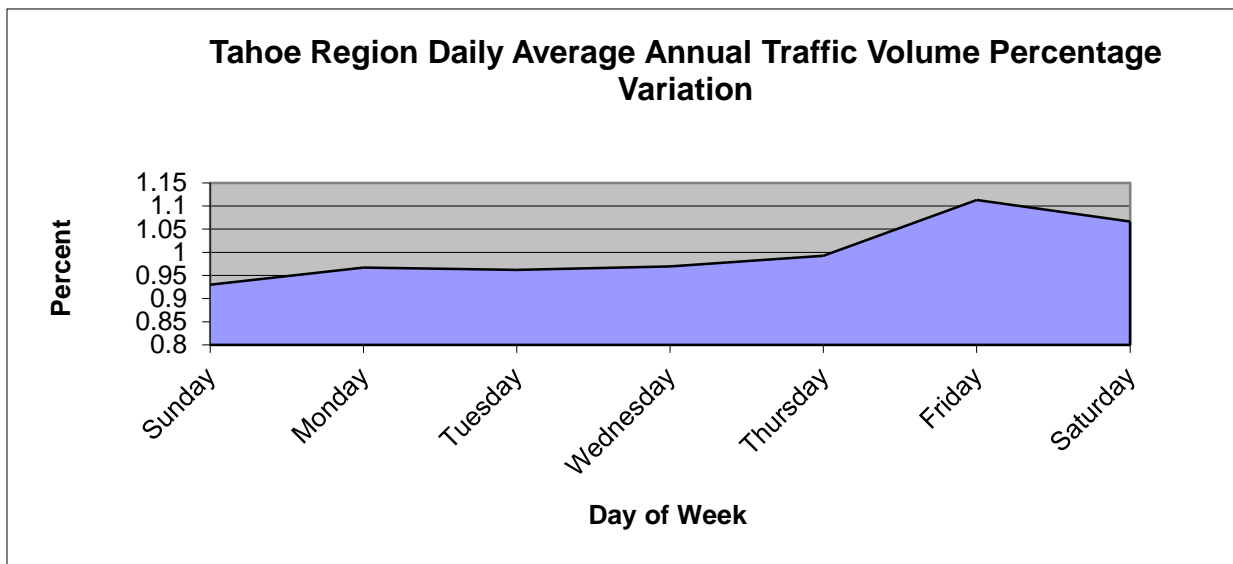


Figure 15. Source: NDOT

Vehicle Miles Traveled (VMT)

VMT is a computed value that measures the extent of travel characteristics for a given area. Since 1981, the TRPA has used a series of progressively more sophisticated models to estimate VMT. As the models improve and old software becomes obsolete, it is not possible to update previous VMT estimates to be comparable with more recent model estimates. The new TransCAD model uses a “tour-based” modeling approach in order to account for the propensity of many drivers to link their trips. In order to determine compliance with the TRPA water quality and air quality visibility threshold indicator to reduce Vehicle Miles Traveled (VMT) by 10 percent from the 1981 estimate and to determine compliance on an annual basis, August traffic counts are used to gauge vehicle activity and compliance with the VMT threshold. Based on these annual changes in traffic count volumes TRPA estimates that VMT for 2012 is 1,983,499 indicating a 14 percent decrease from the 1981 VMT estimate threshold standard.

Benchmark: Reduce VMT to 10 percent below 1981 values (or reduce to 2,067,600 VMT per day).

Monitoring Frequency: Annually.

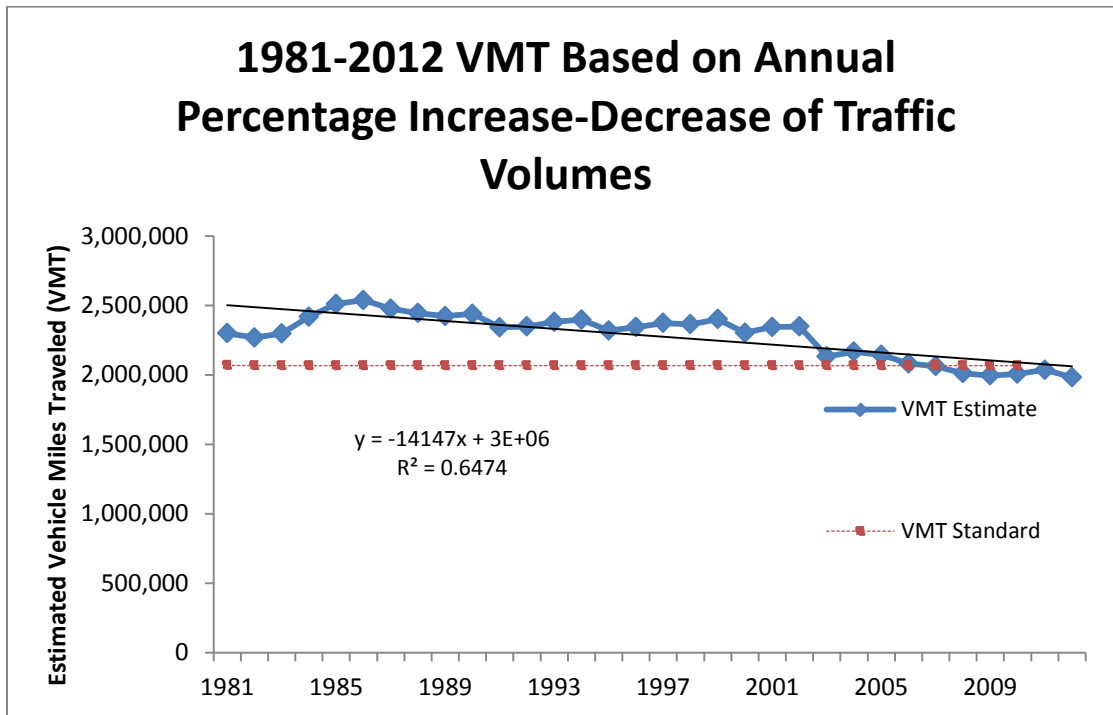


Figure 16. Source: TMPO

Travel Mode

The travel mode indicators described in this section show the percentages of people using the different transportation modes available at Lake Tahoe to reach their destinations. Recreation and commercial core areas were chosen as survey locations for these indicators because they represent areas to which the majority of travel is made. Commercial core areas generally cover large areas of land that capture many businesses and employment establishments. Because travel mode is influenced by weather conditions, the TMPO and TRPA conduct surveys during summer and winter.

Since the travel mode monitoring program is relatively new, strong conclusions cannot yet be drawn from the data. However, these travel mode indicators are important because they demonstrate over time where there is a shift among residents and visitors out of their cars and into other travel modes.

Summer Travel Mode Results

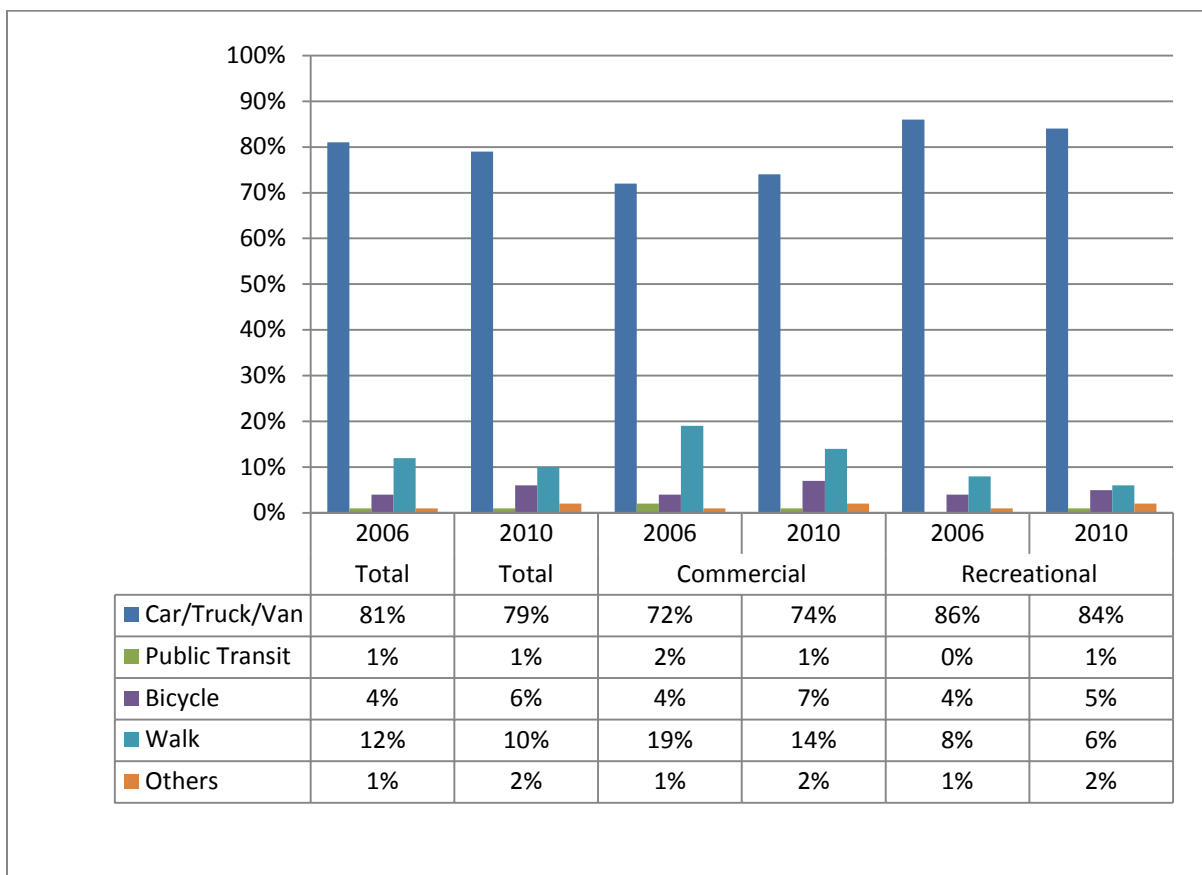


Figure 17. Source: Tahoe Regional Planning Agency Travel Mode Share Survey (Summer), 2006 and 2010

Winter Travel Mode Results

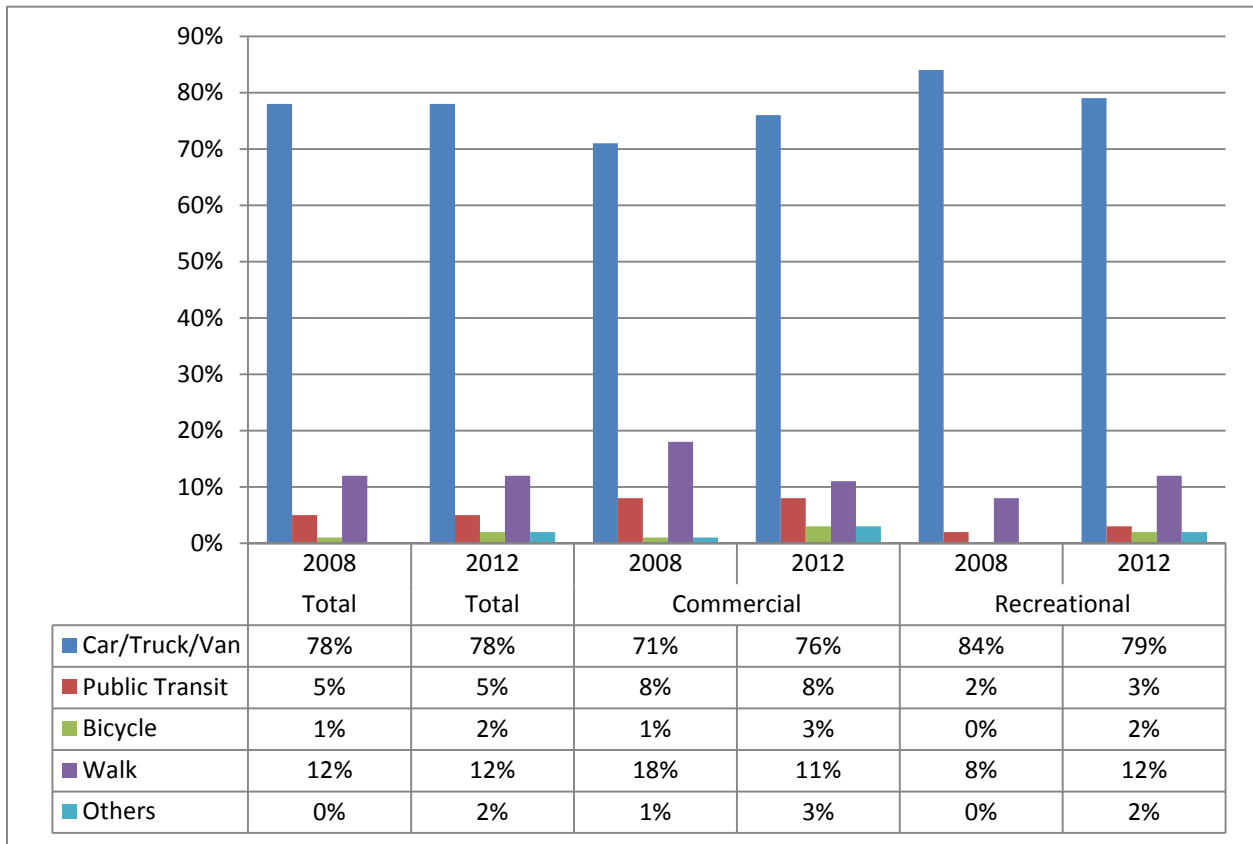


Figure 18. Source: Tahoe Regional Planning Agency, Travel Mode Share Survey (Winter), 2008 and 2012

Commercial Core Areas - Transit-Oriented Development Design Standards

A critical facet of shifting residents and visitors out of their cars is to design land uses in such a way that they are easily accessible by transit, walking, and bicycling. This can be accomplished through mixed-use development with high density residential uses within close proximity to transit, and is most often called Transit-Oriented Development (TOD). Shown in Figure 19 below are five areas that are considered “target” areas for TOD development (in blue). It also shows the density needed to meet the TOD standards (in red), and the density needed to be considered a “target” area (in green).

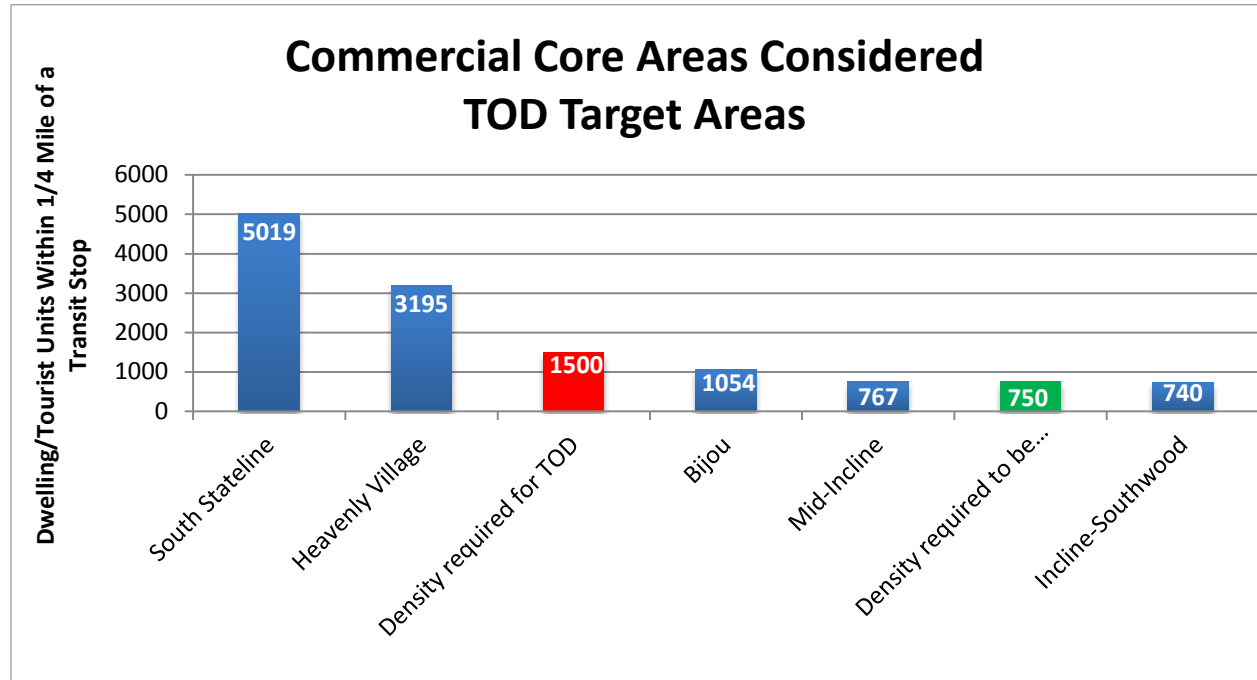


Figure 19. Source: Tahoe Metropolitan Planning Organization (TMPO)

Overnight Population Served by Transit, Bicycle and Pedestrian Facilities

The Transit, Bicycle and Pedestrian Access to Recreation Areas indicators rough measures of how many people in general are close to transit, bicycle and pedestrian facilities. As shown, the percentage of dwelling units (including tourist units) that are within ¼ mile of a transit stop, or are within ½ mile of a bicycle path, lane or route are illustrated below. As with the recreation access indicators, many nuances related to good access that may be important to cyclists or transit users are not accounted for, such as frequency of service or quality of path.

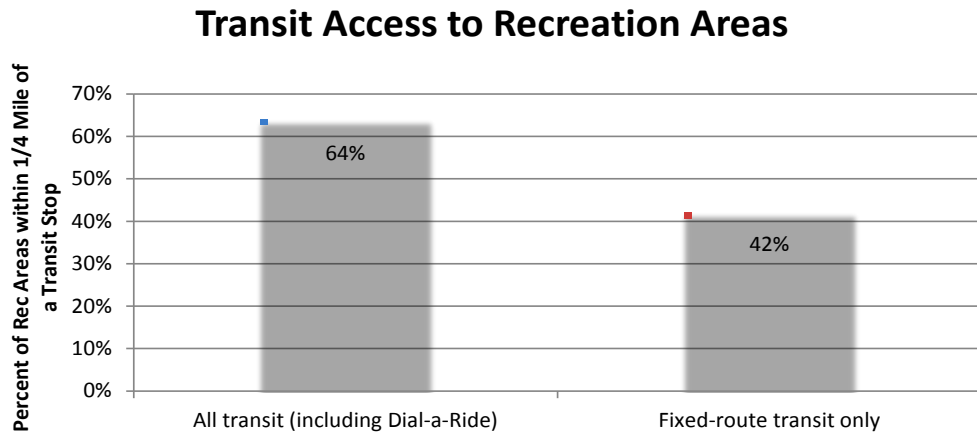


Figure 20. Source: TMPO

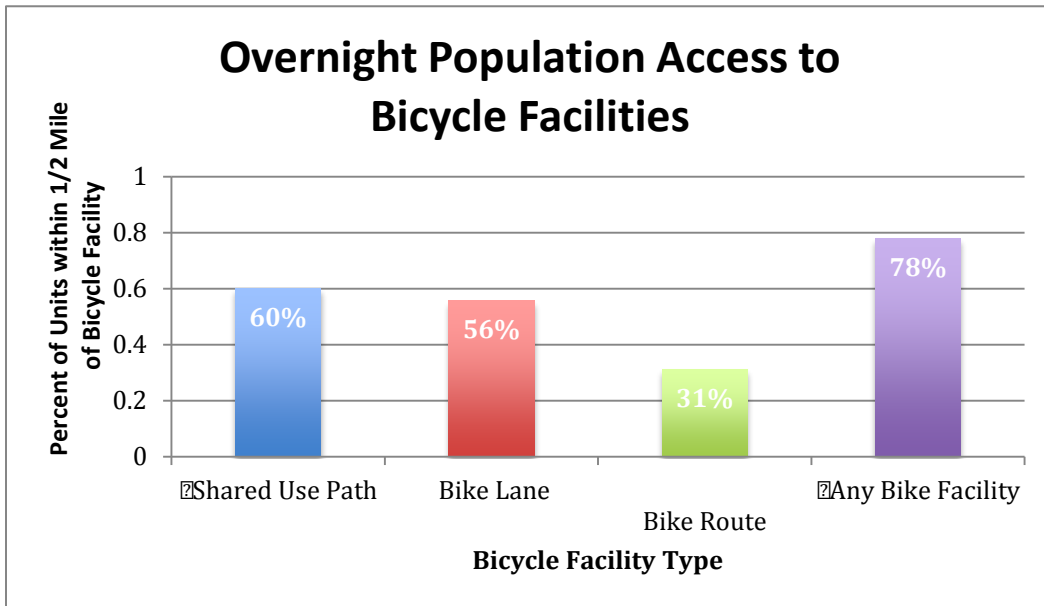
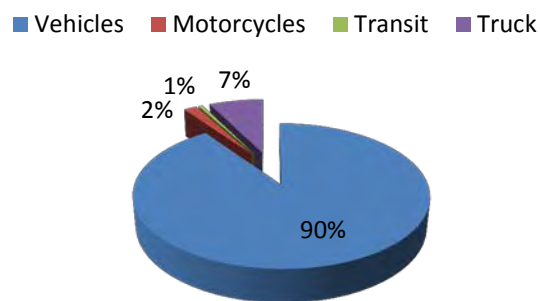


Figure 21. Source: TMPO

Intraregional Travel

With funding assistance from the Strategic Growth Council and a Proposition 84 Modeling Incentive Award, the Tahoe Metropolitan Planning Organization (TMPO) was able to update and recalibrate their TransCAD tour-based travel model to better account for the travel behaviors within the Tahoe Region. A License Plate Survey at the Region's seven entry points was beneficial toward characterizing the origin and destinations of travelers entering and exiting the Region and to better understand the overall percentage of full-time homeowners, secondary homeowners, and visitors to the region which are all primary characteristics of travel in the Tahoe Region and are important variables in the TMPO modeling efforts. The results of the License Plate Survey shown in the following Figures 22-24, indicate that an estimated 90 percent of people entering the Region utilized a private vehicle, with the majority of those arriving from California (71 percent) and Nevada (27.6 percent). Additional Information provided through the survey suggest that visitors to the Region accounted for 60 percent of the vehicles surveyed, with seasonal visitors and residents accounting for 22 percent and 18 percent respectively.

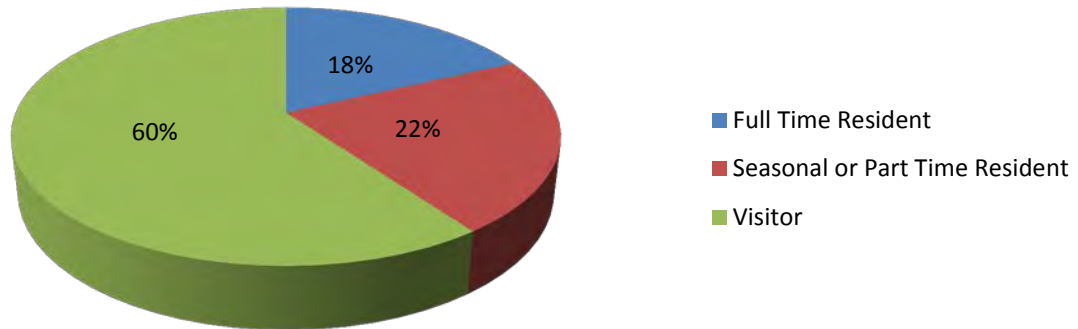
Lake Tahoe License Plate Survey August , 2010 and 2011 Travel Mode



Lake Tahoe License Plate Survey August 2010 and 2011 Vehicle Percentage by State



Lake Tahoe Region Residency Status, 2010 and 2011 License Plate Survey



Figures 22-24. Source: "Lake Tahoe Origin Destination Survey" TMPO, January 2012

Public Transit

South Shore transit ridership has experienced a downward trend since 2003. This corresponds with a decrease in traffic counts over the same period. The transit services are now consolidated under the Tahoe Transportation District (TTD), also called BlueGO. Historical transit ridership provided by the Tahoe Area Regional Transit (TART) transit ridership is also shown. As indicated, ridership on TART has seen relative ridership increases over the past five years.

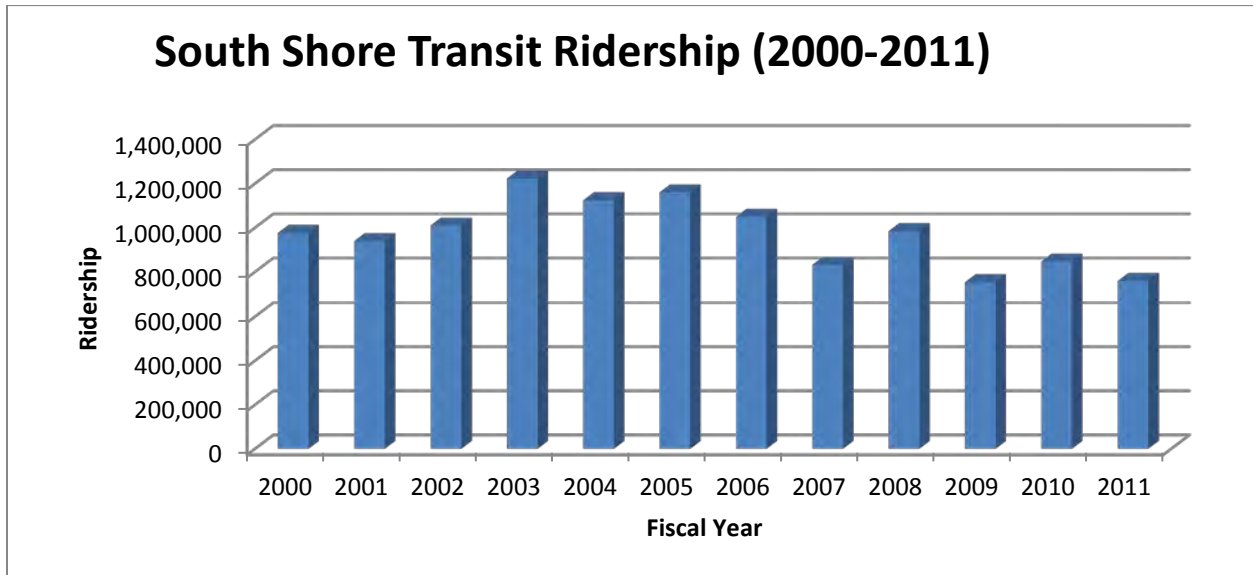


Figure 25. Source: Tahoe Transportation District (TTD)

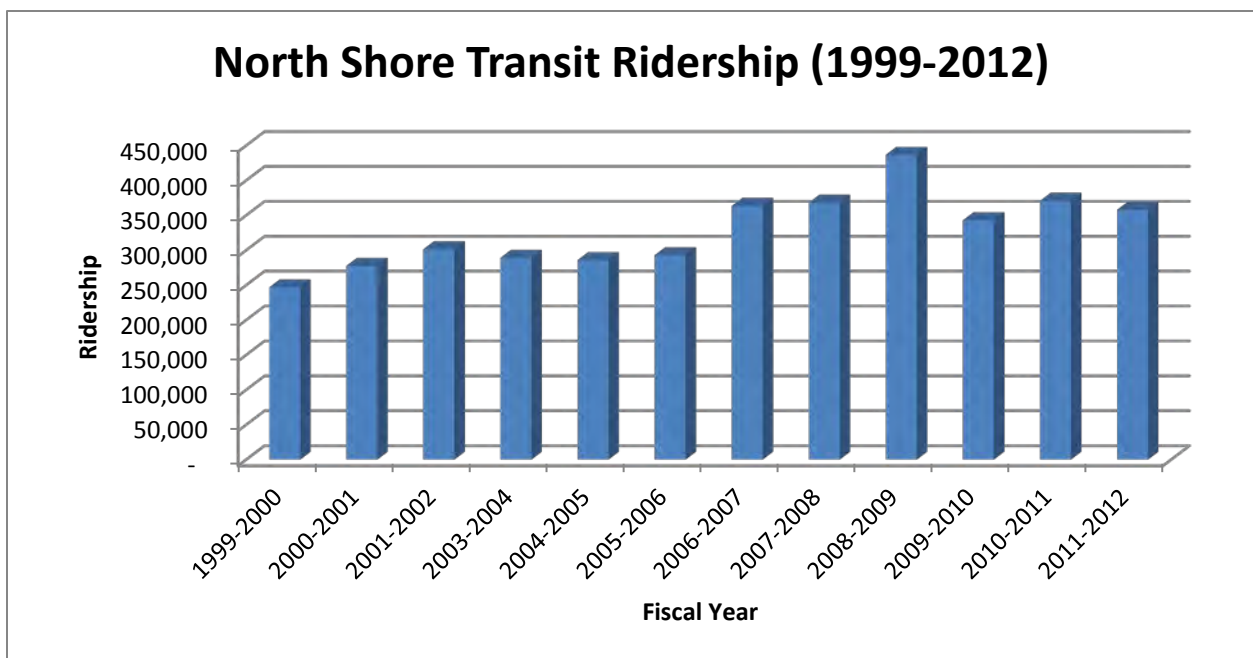
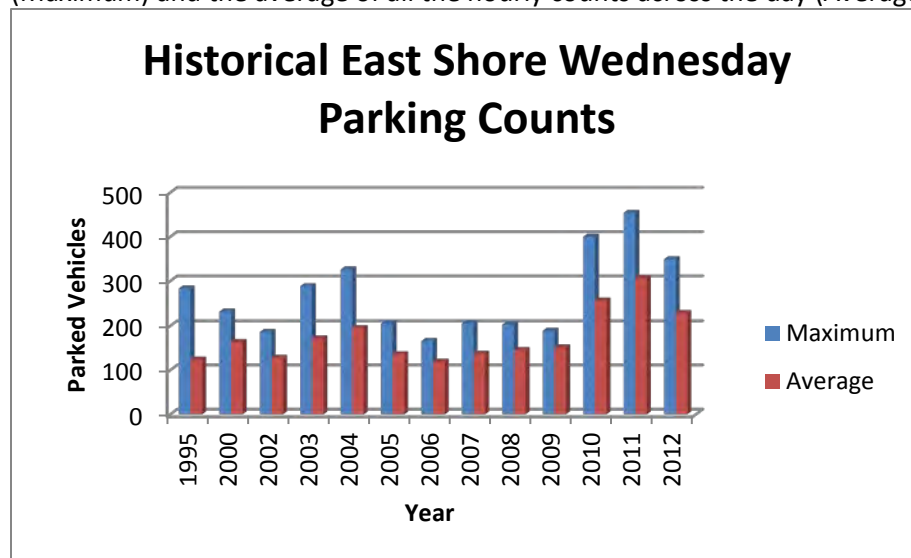


Figure 26. Source: Tahoe Area Regional Transit (TART)

East Shore Parking Counts

In 1996, the Federal Highway Administration (FHWA) designated the major travel route around the east side of Lake Tahoe (from South Stateline to North Stateline) as the East Shore Drive National Scenic Byway. Part of the action/implementation section of the designation included annual parking counts to measure the amount of parking demand for the east shore corridor, and to monitor the effects of any changes in parking policies or other transportation improvements over time.

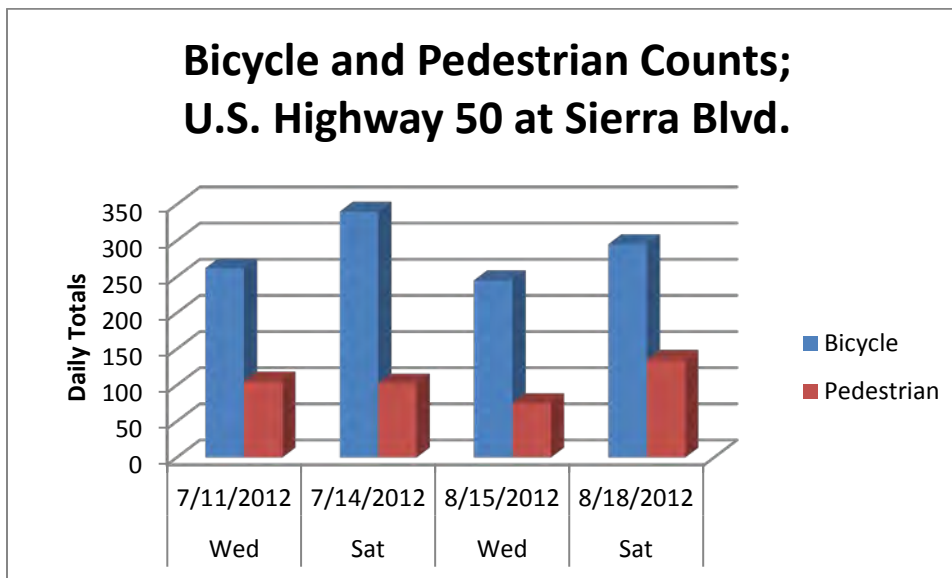
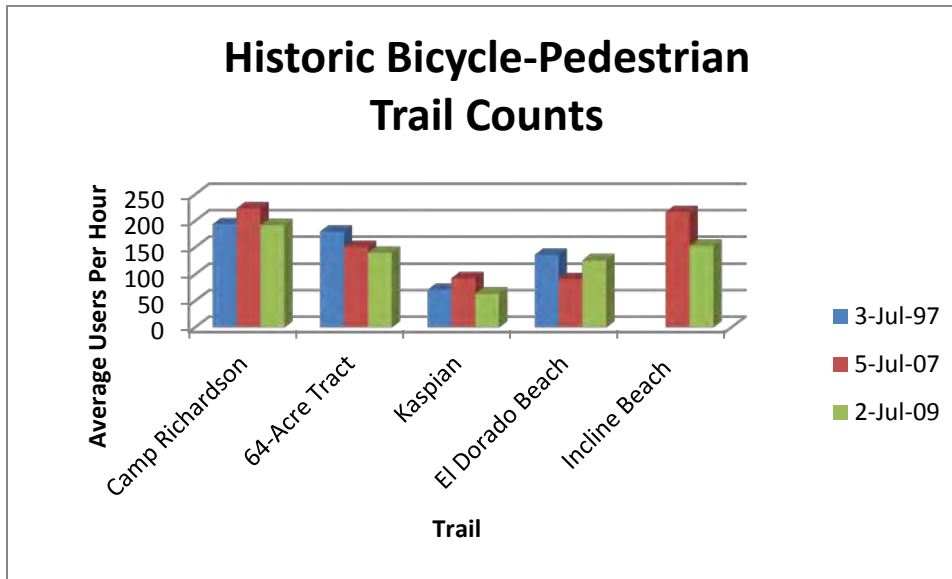
Parking counts are taken annually the first Saturday and following Wednesday of August. Counts are collected hourly beginning 10 a.m. and ending after 5 p.m. The east shore corridor, from Incline Village to the intersection of State Route 28 and US Highway 50, is split into 12 segments and parking lots, each of which receives an individual count of parked cars and motorcycles each hour. The data reported in Figures 27 and 28 below illustrate the maximum number of parked cars reported in any one hour (Maximum) and the average of all the hourly counts across the day (Average).



Figures 27-28. Source: TMPO

Bicycle-Pedestrian

Bike trail user surveys were first conducted Basin-wide in July of 1997 by the Tahoe Coalition of Recreation Providers (TCORP) and also in 2007 and 2009 by TCORP and TRPA. As shown, bike trail user counts were the highest per hour at the Camp Richardson survey location in all survey years. In order to gauge the non-motorized activity along U.S. Highway 50 at Sierra Boulevard, Bicycle and Pedestrian counts were conducted along both sides of U.S. Highway 50. As shown, Saturday use along the roadway has been estimated to be 30 percent higher than midweek counts (Wednesday).



Figures 29-30. Source: TMPO

Vehicle Collisions

From 2008 to 2010 automobile-only collisions increased slightly as a proportion of all collisions, while bicycle and pedestrian collisions have remained relatively constant over the three years shown in Figure 31. Roadways with a relatively high rate of collisions include the U.S. 50 Corridor, State Route 28 and State Route 89.

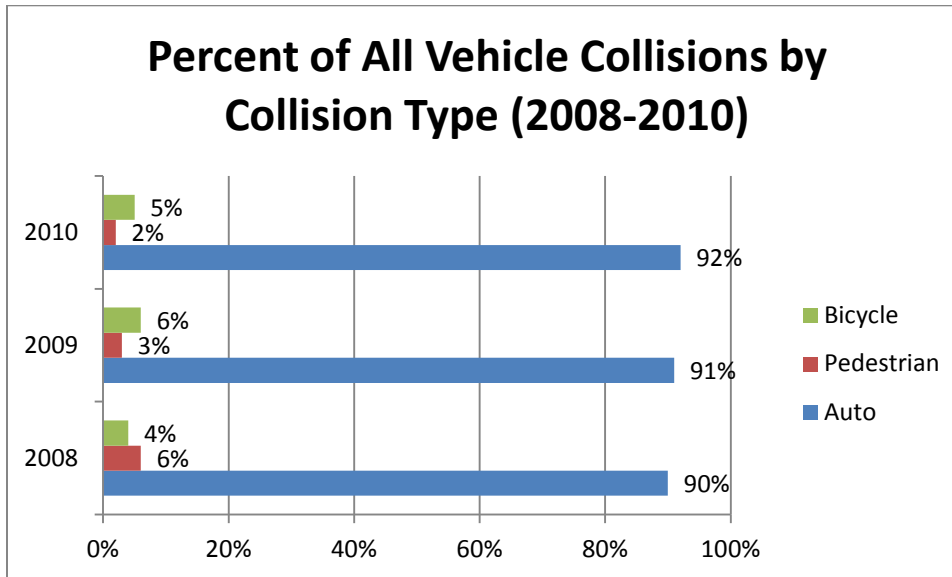


Figure 31. Source: Statewide Integrated Traffic Records System (SWITRS)

Air Quality

Since mobile source emissions are one of the largest contributors to the estimated annual average of air pollutant levels, it is important to monitor and track their trends in relation to our transportation trends. TRPA's thresholds, National Ambient Air Quality Standards (NAAQS) and California and Nevada state standards establish multiple air quality standards including carbon monoxide, ozone and particulate matter. Following is a historic evaluation of those trends:

Carbon monoxide (CO)

One-hour maximum concentration and 2nd high 1-hour maximum.

There were no violations of the state or federal standards in 2010. The 2010 first high and second high 1-hour carbon monoxide concentration values are 5.8 and 5.7 ppm, respectively. The first high value is 23 percent of the CA standard of 20 ppm. The second high value is 16 percent of the federal and Nevada (NV) standards of 35 ppm.

A long-term history of highest and second highest 1-hour average CO is shown below in Figure 32.

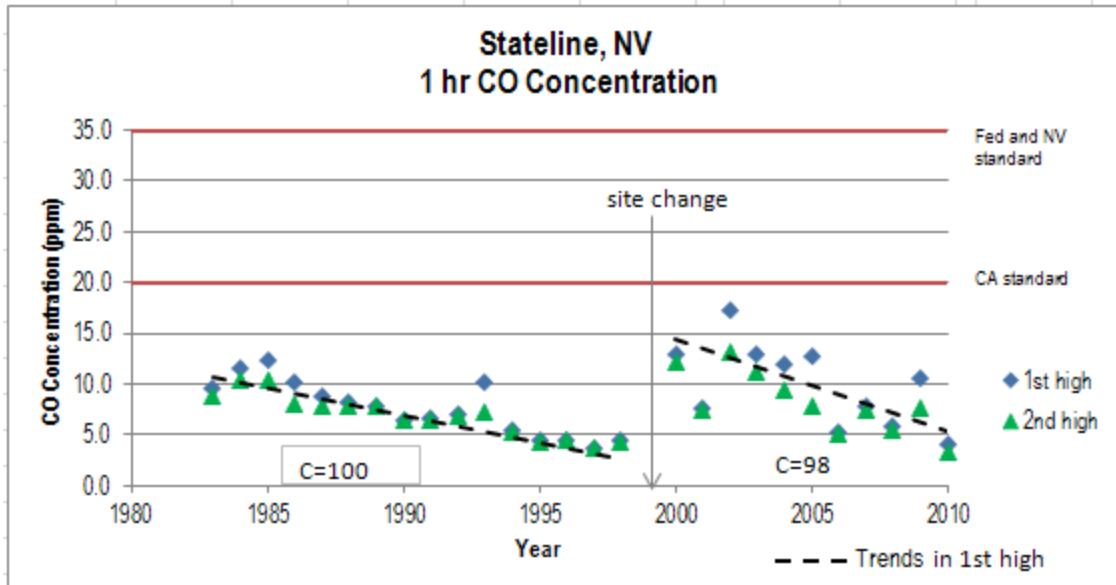


Figure 32. Source: TRPA 2011 Threshold Evaluation

Highest and second highest 8-hour average

The 2010 first high and second high 8-hour avg. carbon monoxide (CO) concentration values are 3.2 and 3.1 ppm, respectively. The first high 8-hour average value is equal to 53 percent of the CA standard of 6 ppm. The second high value is equal to 52 percent of the NV standard of 6 ppm.

A long-term history of highest and second highest 8-hour average CO is shown below.

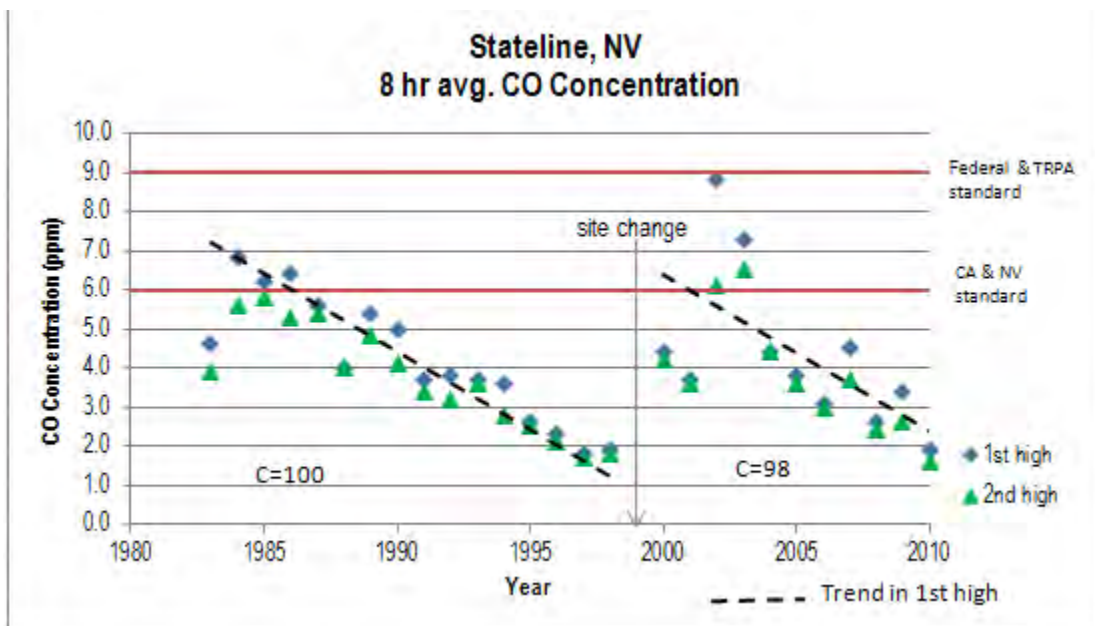


Figure 33. Source: TRPA 2011 Threshold Evaluation

Ozone (O₃)

1-hour maximum concentration

The highest 1-hour ozone concentrations measured at the Incline Village and South Lake Tahoe sites for 2009 were 0.073 and 0.077 ppm, respectively. These measurements are 91 percent and 96 percent of the most stringent (TRPA) standard of 0.08 ppm. A long-term history of highest 1-hour average ozone measured at any site is shown in Figure 34 below.

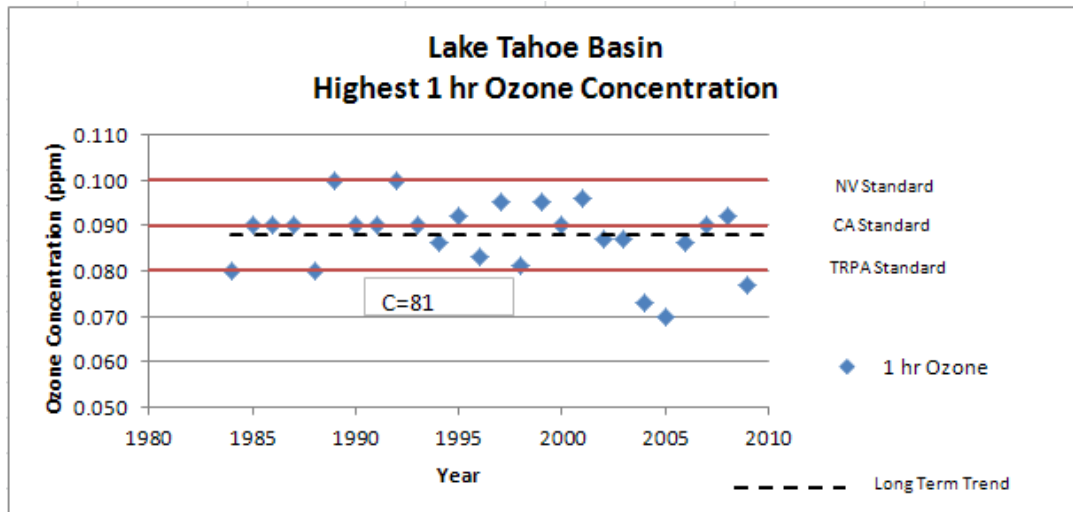


Figure 34. Source: TRPA 2011 Threshold Evaluation

8-hour maximum concentration

The highest 8 hour average ozone concentrations measured at the Incline Village and South Lake Tahoe sites for 2009 were 0.068 and 0.071 ppm, respectively. The South Lake Tahoe measurement for 2009 of 0.071 ppm is equal to 101 percent of the CA standard of 0.070 ppm. A long-term history of highest 8-hour average ozone is shown below in Figure 35.

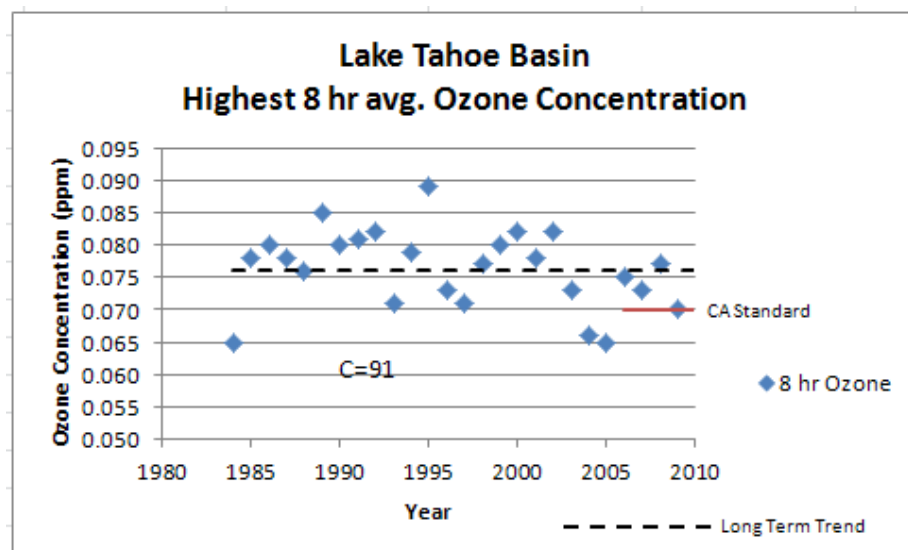


Figure 35. Source: TRPA 2011 Threshold Evaluation

Number of violations of standards over the calendar year.

There was one violation of the California 8-hour standard during 2009. The graph below shows the number of violations of the 8-hour average standard for ozone by year since 1984.

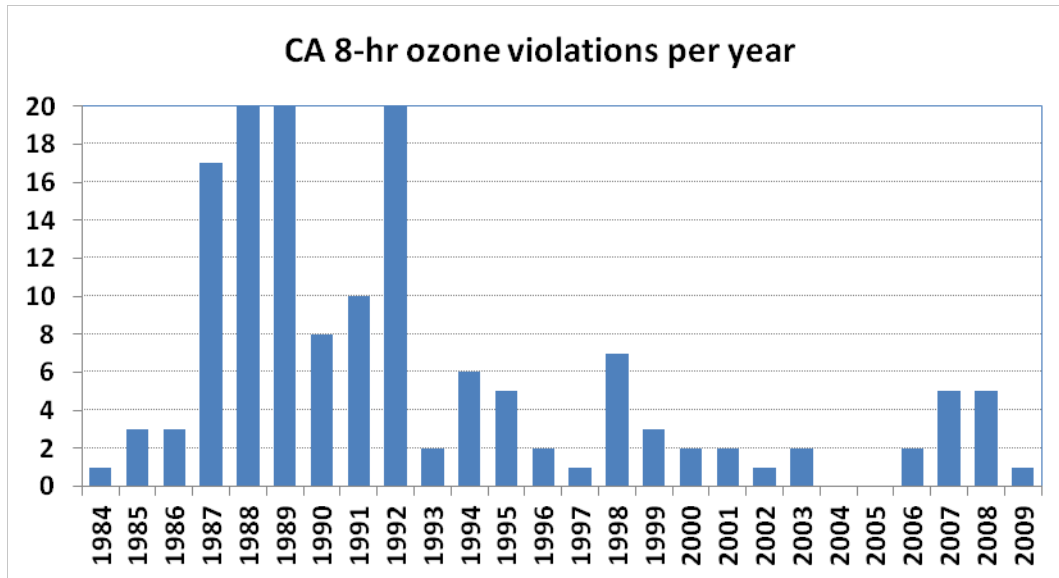


Figure 36. Source: TRPA 2011 Threshold Evaluation

Particulate Matter (PM₁₀)

Highest 24-hour average concentration

The highest 24-hour average PM₁₀ concentration monitored in 2009 was 52.8 µg/m³ (at the Sandy Way site in South Lake Tahoe). This value is equal to 106 percent of the most stringent (CA) standard of 50µg/m³. The trend in annual maximum 24-hour average PM10 concentration is shown below in Figure 37.

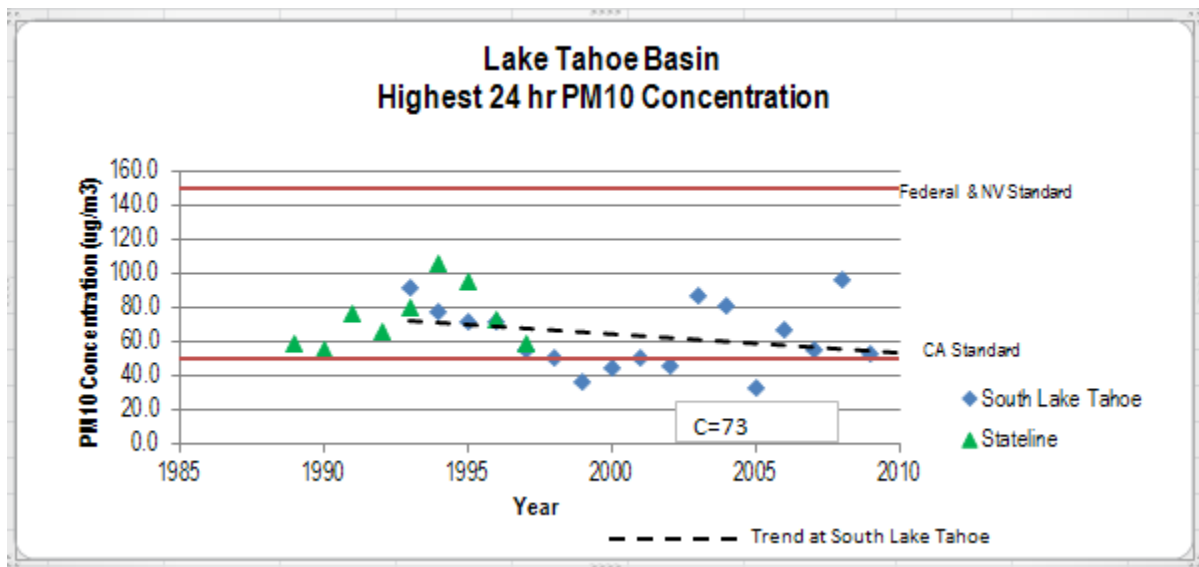


Figure 37. Source: TRPA 2011 Threshold Evaluation

Annual average PM₁₀

The California Air Resource Board (CARB) reports that insufficient data was collected in 2007, 2008 and 2009 to determine the annual average PM₁₀ concentration at the Sandy Way site¹. The most recent (2006) annual average PM₁₀ concentration was 17.1 μg/m³, which is 86 percent of the California standard of 20 μg/m³. A long-term history of annual average PM₁₀ is shown below. The long-term trend is downward and is statistically significant at the 95 percent confidence level.

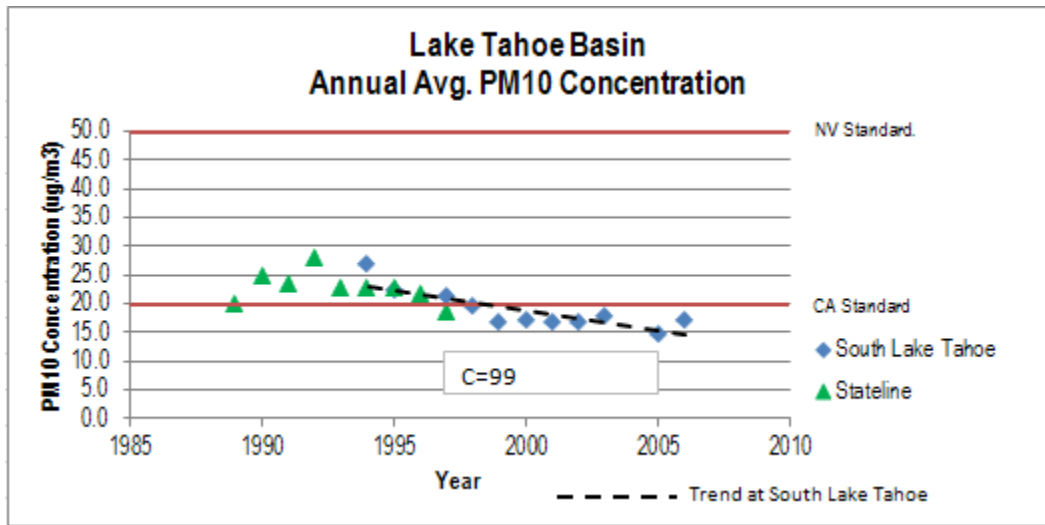


Figure 38. Source: TRPA 2011 Threshold Evaluation

The number of violations of the California PM₁₀ standard in the California portion of the Lake Tahoe Basin by year since 1992 is shown in Figure 38 below. There were no violations for the years 1998-2002. All violations were at the Sandy Way, South Lake Tahoe site. There were no violations of the Federal or Nevada 24-hour standard.

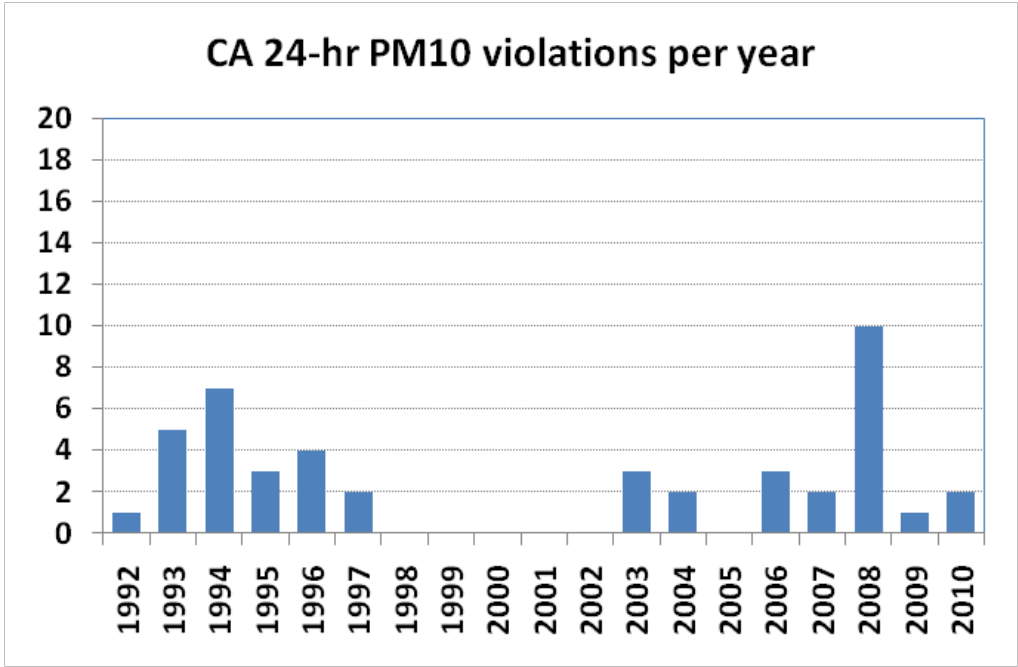


Figure 39. Source: TRPA 2011 Threshold Evaluation

California Legislation SB-375 – Greenhouse Gases (GHG)

On September 23, 2010, the California Air Resources Board approved a 7 and 5 percent reduction target in mobile greenhouse gas emissions from 2005 for the years 2020 and 2035 for the California portion of the Lake Tahoe Basin. The targets are intended to comply with California Legislation SB-375 and are designed to help coordinate land use and transportation planning through the development of a Sustainable Communities Strategy (SCS). Based on future investments in sustainable transportation systems and land use patterns, it is estimated that mobile sources GHG would be reduced from 2005 values by 12.1 percent by the year 2020 and 7.2 percent by 2035.