

Chapter 8 – TRANSPORTATION

Figure 8-1. Pathway Recommendations for Transportation

Transportation Vision

An innovative multimodal transportation system is in place that gives priority to viable alternatives to the private automobile, appeals to users and serves mobility needs, while improving the environmental and socioeconomic health of the Lake Tahoe Basin.

Desired Conditions

Mobility/Socio-Economic Vitality

A multimodal transportation system that promotes viable alternatives for mobility needs, encourages alternative mode use, and decreases dependency on the private automobile.

Environmental Impacts

The transportation system is integrated with environmental goals.

Proposed Indicators

Mobility/Socioeconomic Indicator

An index that includes “usage” and “access” indicators such as:

Usage

1. Percentage of Travel to Recreation Sites via Non-Auto Modes
2. Percentage of Travel to Commercial Core Areas via Non-Auto Modes.
3. Non-Auto Mode Share within and into the Basin.

Access

1. A Measure or Measures of Transit, Bicycle, and Pedestrian Access to Recreation Facilities.
2. Number of Commercial Core Areas Meeting Transit-Oriented Design (TOD) Standards.
3. A Measure or Measures of Overnight Population (resident and visitor) served by Transit, Bicycle, and Pedestrian Facilities.

Transportation Environmental Impact Indicator

The Vehicle Miles Traveled (VMT) indicator and standard will be replaced by a **Vehicle Impact** indicator and standard. This will be either: an indicator directly relating vehicle impacts to water quality goals, based on targets identified by the TMDL; OR a traffic volume or vehicle-miles traveled indicator, with a standard based on technically feasible but challenging reductions identified through the traffic model, which will be ready by the end of 2007.

Other **Environmental Indicators** for Transportation will be housed in other environmental resource areas. Specific attention will be given to the integration with **Water Quality, Air Quality, Wildlife, Vegetation, Noise, Scenic, and SEZ.**

Proposed Standards

Usage

1. Percentage of Travel to Recreation Sites via Non-Auto Modes. Standard to be proposed after 2007.

2. Percentage of Travel to Commercial Core Areas via Non-Auto Modes. Standard to be proposed after 2007.

3. Non-Auto Mode Share within the Basin. Standard to be proposed after 2007.

Non-Auto Mode Share into the Basin. Standard to be proposed after 2007.

Access

1. A Measure or Measures of Transit, Bicycle, and Pedestrian Access to Recreation Facilities:

- Percentage of Recreation Areas Accessible by Transit in 20 years: 75%
- Percentage of Recreation Areas Accessible by Bicycle in 20 years: 90%
- Percentage of Recreation Areas with Pedestrian-Friendly Access: To be determined

2. Number of Commercial Core Areas Meeting Transit-Oriented Design (TOD) Standards: Five

3. A Measure or Measures of Overnight Population (resident and visitor) served by Transit, Bicycle, and Pedestrian Facilities:

- Percentage of Overnight Population served by Transit: 80%
- Percentage of Overnight Population served by Bicycle: 95%
- Percentage of Overnight Population in Pedestrian-Friendly Neighborhoods: To be determined.

Numeric standards for Transportation Environmental Impact Indicator to be set after 2007.

8.0 Transportation Overview

Mobility is a significant concern in the Lake Tahoe Basin. Communities and businesses are not sufficiently connected to allow for ease of travel and congregation. Peak visitation times during both the summer and winter are regularly marked by traffic delays of up to an hour or more. Access to transit, bicycle and walking facilities is somewhat limited and many users do not consider these modes to be viable alternatives to the automobile. There is no consistent transit connection between the North and South Shores of the lake.

In addition to the inconvenience of traffic congestion and delays, the environmental impacts of transportation are a major concern in the fragile Lake Tahoe Basin. Vehicle emissions and road dust are major factors in air and water pollution. Traffic delays contribute to high levels of carbon monoxide in populated areas, in addition to frustrating travelers and reducing their enjoyment of the Lake Tahoe Basin as a vacation destination. Transportation facilities and users have impacts on other resource areas as well, including wildlife, vegetation, recreation and noise.

The majority of trips in the Lake Tahoe Basin are currently made by the private automobile, but there is limited capacity in the basin to accommodate more trips by this mode. Rapid growth in population centers outside the Lake Tahoe Basin, such as Sacramento and the Sierra foothills, threatens to increase travel demand to Lake Tahoe as a vacation get-away. Improvements to the transportation system must focus on alternative modes to bring people to the Lake Tahoe Basin, and get them from place to place within it.

To reduce negative environmental impacts and provide high levels of mobility to visitors and residents, a well-connected, exceptional multi-modal transportation system is desired.

8.1 Transportation Vision

Transportation Vision

An innovative multimodal transportation system is in place that promotes viable alternatives to the private automobile, appeals to users and serves mobility needs, while improving the environmental and socioeconomic health of the Lake Tahoe Basin.

“Viable alternatives” are defined as those that are attractive, sustainable, and user-friendly. From the point of view of the user this includes frequent and reliable service that goes where users want to travel, that is low-cost or free, provides a comfortable and enjoyable ride, and that is well-publicized. From the point of view of the transit provider, this includes service that is cost-effective, has an ongoing source of operating funds, and serves routes that will attract a baseline number of riders.

8.2 Need For Change

The goals and policies of existing planning and regulatory agencies in the Lake Tahoe Basin, particularly the TRPA and Tahoe Metropolitan Planning Organization (TMPO), already recognize the necessity of improving transportation options. This is reflected in federal and state-required planning documents.

Despite the recognized need for improvement in the transportation system, there is currently no basin-wide transportation standard directly related to mobility or to congestion¹ - two of the public's gravest concerns. The only existing transportation-related standards for the Lake Tahoe Basin are TRPA air quality thresholds, specifically AQ-5 (Traffic Volume) and AQ-7 (Vehicle-Miles Traveled).

These thresholds currently have limited effect as either environmental or mobility management tools. AQ-5 (Traffic Volume) was intended to be an indicator of carbon monoxide emissions. The AQ-7 (Vehicle-Miles Traveled (VMT)) threshold was intended to reduce nitrogen oxides (NOx) and re-entrained dust. The link between traffic and these emissions is complex, however, and is not captured by the existing threshold standards. Since these standards were set, there has been some reduction in air quality pollutants of concern, specifically in carbon monoxide, ozone and particulate matter (TRPA 2001 Threshold Evaluation; Pathway Air Quality Chapter). This, however, is due in large part to the substantial reduction in emissions per VMT due to technological improvements associated with modern motor vehicles, rather than actual reductions in VMT and traffic volumes. Thus the current numeric standards for Traffic Volume and VMT have become less applicable for air quality-related planning. Also, while they measure reduction in use of automobiles, they do not measure improvements in any other mode.

Vehicle emissions also impact water quality, particularly Lake clarity, and these impacts should also be measured. VMT and Traffic Volume are too simplistic to capture the range of impacts on water quality from motor vehicles.

Considering the importance of water quality and other environmental resource areas to the public and overall goals for the Lake Tahoe Basin, a concerted effort to determine the true impacts of vehicle travel is necessary. Further research is required to propose accurate, measurable standards for these indicators, and to bring about appropriate planning and enforcement.

It is proposed that specific desired conditions and standards be designed for transportation (instead of being grouped with air quality). The links between vehicle travel and air and water quality should be studied as a means to reduce the pollutants of concern that may impact these resource areas. Also, new desired conditions are proposed to address mobility—a concern that resides entirely under the transportation topic.

¹ TRPA does have vehicle Level of Service (LOS) standards, but these apply at the intersection or road-segment level only.

8.3 Desired Condition 1: Transportation and Mobility

Mobility is the ability to move. In the Lake Tahoe Basin, mobility influences where people can go, what transportation options they have, how fast these options get them to their destination, and how they travel into and out of the Lake Tahoe Basin itself. Mobility also includes the ability to travel by private automobile as well as on alternatives to the private automobile, such as on transit², by bicycle, walking, waterborne ferry, air and other alternatives.

Although the public has cited both the need for increased alternatives to the private automobile as well as the need to reduce vehicle congestion, the indicators we have chosen focus primarily on the provision of alternatives to the private automobile, with the hope that this will also result in reduction of congestion levels. In order to meet the goals set for the Mobility indicator, some measures will probably need to be taken that should reduce congestion levels as well, such as institution of disincentives to driving or alleviating bottlenecks that benefit transit users, cyclists and pedestrians as well as drivers.

There are several important attributes that influence the quality of mobility in the Lake Tahoe Basin:

- Public transit that connects population centers and activity centers inside and outside of the Lake Tahoe Region;
- Bicycle and pedestrian facilities;
- Traffic congestion; and
- Public information for all transportation options.

8.3.1 Proposed Indicators for Transportation Mobility/Socio-Economic

Mobility/Socioeconomic Indicators

An index that includes “usage” and “access” indicators such as:

Usage

1. Percentage of Travel to Recreation Sites via Non-Auto Modes

2. Percentage of Travel to Commercial Core Areas via Non-Auto Modes

3. Non-Auto Mode Share within and into the Basin (individual travel modes measured separately, “within” and “into” measured separately).

Access

1. A Measure or Measures of Transit, Bicycle, and Pedestrian Access to Recreation Facilities (each access mode measured separately)

2. Number of Commercial Core Areas Meeting Transit-Oriented Design (TOD) Standards (also part of the Scenic Indicator: Built Environment Quality Index)

3. A Measure or Measures of Overnight Population (resident and visitor) served by Transit, Bicycle, and Pedestrian Facilities (each access mode measured separately)

² Includes bus, rail, and gondola, among other modes.

“Usage” indicators measure how people are traveling within and to the Lake Tahoe Basin, and “Access” indicators measure what kinds of transportation modes and land-use designs are available.

The “Usage” and “Access” indicators will direct the development of management strategies. Resources for measuring each individual indicator will be allocated as necessary to assist in attainment of the overarching goal associated with Non-Auto Mode Share, as measurement of all of the proposed indicators could prove to be financially infeasible. Ideally, an economically feasible method should be developed to measure as many of these indicators as possible, so that resources are not taken away from the actual improvement of the modes themselves.

For reporting on progress towards goals, the individual mobility indicators can be combined into an index, with one overall standard for the combined indicators.

Usage Indicators

1. Percentage of travel to recreation sites via non-auto modes:

This indicator measures the percentage of people entering selected recreation sites via non-auto modes. It is measured by surveying visitors at recreation areas to determine their mode of travel to that site. This is a Type III indicator because it has been measured for the first time in the Lake Tahoe Basin in summer 2006, and another year of data is needed to verify effectiveness. The indicator itself must still be evaluated, and a standard must be developed. A numeric standard will be proposed after 2007.

2. Percentage of travel to commercial core areas via non-auto modes:

This indicator measures the percentage of people entering or using commercial core areas via non-auto modes. This will involve surveying visitors as they use commercial core areas to determine their mode of travel. This is a Type III indicator because it has been implemented for the first time in the Lake Tahoe Basin in summer 2006, and another year of data is needed to verify effectiveness. The indicator itself must still be evaluated, and a standard must be developed. A numeric standard will be proposed after 2007.

3. Non-auto mode share within and into the Lake Tahoe Basin:

Non-auto mode share, as described here, is the percentage of trips made by modes other than the private automobile within the Lake Tahoe Basin. This indicator could be measured either by survey, by screenline, or by modeling. More investigation into the best method is needed. “Non-auto” modes consist of bus, waterborne, air, gondola, pedestrian, and bicycle travel modes, as well as any future non-auto modes such as rail that may be developed. Usage of individual travel modes will be reported on independently, as well as in combination. Also, non-auto mode share within and into the Lake Tahoe Basin will be reported on independently. This indicator will provide needed data to resource managers about bicycle and pedestrian use of facilities, and will demonstrate the extent to which management strategies, such as transit improvements or construction of new bike trails, are effective in shifting users out of automobiles.

Development and testing of this Type III indicator is necessary as it has not been used in the Lake Tahoe Basin in the past. A standard will be set after 2007.

Access Indicators

1. A Measure or Measures of Transit, Bicycle, and Pedestrian Access to Recreation Facilities:

This could be an index that combines measurements for separate modes like “Percent of Recreation Areas Served by Transit” or “Percent of Recreation Areas with Appropriate Bicycle Access”. Recreation areas considered in this indicator will be based off the existing list of 183 recreation areas used by the TRPA for recreation studies. This list includes:

- All state park and state recreation areas
- All public and private campgrounds
- All US Forest Service (USFS) beaches
- All USFS visitor centers
- All designated sites maintained by a regional recreation provider³
- Downhill and cross-country ski areas
- Public marinas

Additional sites can be added if necessary.

Any area that has a transit stop within ¼ mile of a main access point, with transit that operates during all seasons that the recreation area operates could count towards attainment of the goal. This is a Type II indicator because although a numerical standard is proposed for transit and bicycle access, pedestrian access current condition and standard must still be developed. This will not be complete until after 2007.

2. Number of Commercial Core Areas Meeting Transit-Oriented Design (TOD) Standards:

Basic criteria for qualifying commercial areas have been developed using standards and definitions from other areas as resources⁴. They are:

- Total density (dwelling units plus tourist units) of at least 1,500 DU within ¼ mile of a transit stop (this is equivalent to 12 DU per acre, assuming all land around transit stop is developable).
- Served by transit with a frequency of at least 15 minute headways year-round, connecting the TOD with other major destinations in the sub-region (North Shore sub-region and South Shore sub-region).

³ Tahoe City Public Utility District, North Tahoe Public Utility District, Incline Village General Improvement District, South Tahoe Public Utility District, local jurisdictions.

⁴ General description of TOD can be found at the Victoria Transport Policy Institute website: <http://www.vtpi.org/tod/tod45.htm>. Design guidelines used in California and the U.S. can be found in *Transit-Oriented Development Study: Factors for Success in California*, <http://www.dot.ca.gov/hq/MassTrans/tod.htm> and *TCRP Report 102. Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects*. http://www.tcrponline.org/publications_home.html.

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- A mix of land uses should be provided. At a minimum, a TOD should consist of residential/lodging and retail/employment uses. Preferably, recreational and public uses would also be provided.
- A minimum employment density will be required, but is still to be determined.
- A pedestrian path or system of paths exists, maintained year-round, with lighting, that connects the transit stop to major housing and retail areas.
- Shelters and bike parking/lockers at major transit stops.
- Policy to exclude auto-oriented land uses.
- Policy related to parking space limits.

In setting the 20-year standard for Number of Commercial Core Areas Meeting Transit-Oriented Design (TOD) Standards, “target” commercial core areas will be identified. A target commercial core area must meet the following criteria:

- Total density (dwelling units plus tourist units) of at least 750 DU within $\frac{1}{4}$ mile of a transit stop.
- Must be in a Community Plan Area.

In addition to being a Transportation indicator, this indicator will also be part of the Scenic Indicator: Built Environment Quality Index. This Scenic Index will specify target design standards for different landscape areas within the Lake Tahoe Basin on a continuum from urban to rural. The TOD standards that are developed by the Transportation Technical Working Group will be included in this Scenic Index.

This is considered a Type I indicator.

3. A Measure or Measures of Overnight Population (resident and visitor) served by Transit, Bicycle, and Pedestrian Facilities.

This will be a set of measures including “Percent of Overnight Population (Dwelling Units plus Lodging Units) Served by Transit” and “Percent of Overnight Population Served by Appropriate Bicycle Facilities”. For transit, it could be a measure of the total housing and lodging units that are within one-quarter mile of a transit stop that operates year-round. Transit, bicycle and pedestrian access will be measured separately, with separate standards. This is a Type II indicator because although a numerical standard is proposed for transit and bicycle access, pedestrian access current condition and standard must still be developed. This will not be complete until after 2007.

8.3.2 Current Conditions and Trends Related to Mobility, Socio-Economic Vitality, and Transportation

Complete current condition data for the Usage and Access indicators are not available, although data for some elements are. Data for Non-Auto Mode Share within the Lake Tahoe Basin will be collected after 2007, as funds allow.

Usage of non-auto modes is primarily influenced by the level of transit service; the length, connectivity, and location of bicycle and pedestrian facilities; and the cost, including the time cost, of using these modes in comparison to the private automobile. With a few exceptions, most transit service around the Lake is provided on hourly or half-hourly schedules, with the best services running from approximately 6 am to midnight. There is no consistent public transit connection between the North and South Shore areas of the Lake, although a new shuttle linking the two was started in summer 2006. Although many new bicycle paths have been built in the last several years, enhancing the potential for increased biking and walking, gaps still exist in the path system, especially in urbanized areas of the South Shore.

There are no existing standards for Usage or Access Indicators. Partial data for these indicators are described below.

Usage

1. Percentage of Travel to Recreation Sites via Non-Auto Modes:

In the future this indicator will likely be measured by on-location surveys at recreation sites. Data collected during the summer of 2006 using this method are presented in Table 8-1.

Table 8-1
Mode Share for Recreation Trips⁵

Private Vehicle	88 %
Walk	7 %
Bike	4 %
Transit	1 %

Source: 2006 Tahoe Mode Share Survey

2. Percentage of Travel to Commercial Sites via Non-Auto Modes:

In the future this indicator will likely be measured by on-location surveys at commercial sites. Data collected during the summer of 2006 using this method are presented in Table 8-2.

⁵ The Tahoe Mode Share survey reports a walk proportion of 8% for recreation trips. Examination of the raw data suggests that not all of these were true walk trips. All walk trips that were not initiated from work or home were discarded from the data set.

Table 8-2
Mode Share for Commercial Trips⁶

Private Vehicle	77 %
Walk	15 %
Bike	4 %
Transit	3 %

Source: 2006 Tahoe Mode Share Survey.

3. Non-Auto Mode Share within the Lake Tahoe Basin

There are some existing sources of Non-Auto Mode Share data for the Lake Tahoe Basin. Data was collected in 2005 through a survey of residents (not visitors) of the Lake Tahoe Basin. Table 8-3 presents the results of the survey and data from U.S. Census Journey to Work.

Table 8-3
Mode Share from Past Surveys

Travel Mode	1990 Census Journey to Work	2000 Census Journey to Work	NuStats 2005 Household Travel Survey (all trip types)
Drive Alone/ Carpool	80%	82%	88%
Walk	7%	5%	7%
Bike	1%	1%	2%
Transit	5%	4%	2%

Sources: U.S. Bureau of the Census. 2005 Tahoe Regional Household Travel Survey.

In the North Lake Tahoe Resort Association Master Plan, two locations were evaluated by screenline as examples for the North Tahoe region: SR 28 just east of Tahoe City, and SR 28 in central Kings Beach. Table 8-4 presents the results of the screenline evaluations. The results of the screenline data are significantly different from the survey data presented in Table 8-3, based on different measurement methodologies. It should be noted that the screenline data were taken at only two locations.

⁶ The Tahoe Mode Share survey reports a walk proportion of 19% for commercial trips. Examination of the raw data suggests that not all of these were true walk trips. All walk trips that were not initiated from work or home were discarded from the data set.

**Table 8-4
Mode Share Measured by Screenline**

Travel Mode	East of Tahoe City	Central Kings Beach
Private Vehicle	97.6%	98.6%
Walk	0.6%	0.4%
Bike	0.9%	0.1%
Transit	1.0%	0.9%

Source: North Lake Tahoe Tourism Development Master Plan, 1995.

4. Non-Auto Mode Share into the Lake Tahoe Basin

Data on Non-Auto Mode Share into the Lake Tahoe Basin was collected over four days in July 2006 by counting traffic at all 7 entry roads, collecting ridership data from transit and air service agencies, and estimating bicycle and pedestrian usage through spot checks. The results are presented in Table 8-5.

**Table 8-5
Mode Share into the Lake Tahoe Basin**

Travel Mode	July 2006 Data (TRPA)
Drive Alone/ Carpool	97.8%
Walk	0.0%
Bike	0.4%
Transit ⁷	1.4%
Air	0.3%

Source: TRPA Travel Mode Share Survey, 2006.

Access

1. Transit, Bicycle, and Pedestrian Access to Recreation Facilities:

This indicator can be broken into separate elements for transit, bicycle, and pedestrian access. By making these indicator elements simple enough to easily measure, many nuances are lost such as quality of path, frequency of service, or appropriateness of path access. However, these details can be addressed as management strategies are developed.

2. Transit Access to Recreation Areas

- Percent of recreation areas with entrance within ¼ mile of a transit stop (including Dial-a-Ride): 64%
- Bicycle Access⁸ to Recreation Areas.

⁷ Includes public, private, and charter bus ridership.

⁸ “Bicycle Facilities” here refers to Class I/Shared Use paths, Class II/Bicycle Lanes, and Class III/Bicycle Routes.

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- Percent of recreation areas with entrance within ½ mile of a Class I/Shared Use Path: 53%
- Percent of recreation areas with entrance within ½ mile of a Class II/Bike Lane: 27%
- Percent of recreation areas with entrance within ½ mile of a Class III/Bike Route: 19%
- Percent of recreation areas with entrance within ½ mile of any type of bicycle facility: 62%

Source: TRPA GIS data.

3. Pedestrian-Friendly Access to Recreation Areas: Still to be determined.

4. Number of Commercial Core Areas Meeting Transit-Oriented Design (TOD) Standards:

There are no commercial core areas meeting the criteria established for Transit-Oriented Design. While two commercial core areas have enough residential/tourist density to serve transit, nowhere around the lake is there transit service as frequent as every 15 minutes year-round.

5. Overnight Population (resident and visitor) served by Transit, Bicycle, and Pedestrian Facilities:

This indicator can be broken into separate elements for transit, bicycle, and pedestrian access, as presented below. As with the recreation access indicators, by making these indicator elements simple enough to easily measure, many nuances are lost such as quality of path, frequency of service, or appropriateness of path access.

- Overnight population served by transit
- Overnight lodging units (resident and visitor) within ¼ mile of a transit stop (including Dial-a-Ride): 76%
- Overnight population served by bicycle facilities⁹.
- Overnight lodging units (resident and visitor) within ½ mile of a Class I/Shared Use Path: 60%
- Overnight lodging units (resident and visitor) within ½ mile of a Class II/Bike Lane: 56%
- Overnight lodging units (resident and visitor) within ½ mile of a Class III/Bike Route: 31%
- Overnight lodging units (resident and visitor) within ½ mile of any type of bicycle facility: 78%

Source: TRPA GIS data.

6. Pedestrian-Friendly Neighborhoods: Still to be determined.

⁹ “Bicycle Facilities” here refers to Class I/Shared Use paths, Class II/Bicycle Lanes, and Class III/Bicycle Routes.

8.3.3 Technical Range of Feasibility Regarding Mobility, Socio-Economic Vitality, and Transportation

The technical range of feasibility for the Usage indicators must still be established, after baseline data and potential management strategies are analyzed. A very rough estimate of technical range of feasibility for Non-Auto Mode Share within the Lake Tahoe Basin is included in the Transportation Technical Supplement, however this estimate must also be revised after more baseline data is collected, and a more in-depth analysis on feasibility can be conducted.

The technical range of feasibility for two of the Access Indicators - Percent of Recreation Areas Served by Transit and Percent of Overnight Population Served by Transit - is basically 100% . It would be technically feasible to serve all of these areas with a Dial-A-Ride service, but financial constraints make this unlikely.

For Percent of Recreation Areas Served by Bicycle Facilities, a technically feasible estimate is 92%, based on planned facilities in the Lake Tahoe Region Bicycle and Pedestrian Master Plan (BPMP), as well as those that are not in the plan but could accommodate a bicycle route or path, based on topography and potential bicycle use.

The technically feasible range for Percentage of Overnight Population Served by Bicycle is somewhere between 94% and 98%. Ninety-four percent would be served if all facilities in the BPMP are built, however most neighborhoods could probably accommodate additional Class III/Bicycle Routes. This would bring the number up to almost 100%. Only those neighborhoods with extremely narrow roads or steep topography would not be considered.

The technical range of feasibility for Number of Commercial Core Areas that Meet Transit-Oriented Design Standards is difficult to determine until policies regarding allocations and transfers of development rights for the next 20 years are established. While four locations within Community Plan Areas¹⁰ are currently at least halfway to the density standard proposed for TOD in Lake Tahoe (at least 1,500 dwelling units within ¼ mile of a transit stop), demonstration projects proposed through the Place-Based Planning process may take place at other locations around the lake. Taking into account these two indicators of possible future high density centers, there are approximately 6 areas that could achieve TOD standards by 2027.

8.3.4 Proposed Desired Condition & Standards for Mobility/Socio-Economic Vitality

DC 1: Transportation Mobility/Socio-Economic Vitality

A multimodal transportation system that promotes viable alternatives for mobility needs, encourages alternative mode use, and decreases dependency on the private automobile.

¹⁰ South Stateline, Heavenly Village, Bijou (Hwy 50 and Johnson Blvd), and mid-Incline Village at the east intersection of Hwy 28, Northwood and Southwood Blvd.

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“*Multi-modal*” includes all alternatives to the private automobile that currently exist in the Lake Tahoe Basin, as well as future modes that could be added. This includes bus, bicycle, walking, waterborne, air, aerial guideway such as gondola, and rail, among others.

Proposed Standards for Mobility / Socio –Economic Vitality

Usage

1. Percentage of Travel to Recreation Sites via Non-Auto Modes. Standard to be proposed after 2007.

2. Percentage of Travel to Commercial Core Areas via Non-Auto Modes. Standard to be proposed after 2007.

3. Non-Auto Mode Share within the Basin. Standard to be proposed after 2007.

Non-Auto Mode Share into the Basin. Standard to be proposed after 2007.

Access

1. A Measure or Measures of Transit, Bicycle, and Pedestrian Access to Recreation Facilities:

-Percentage of Recreation Areas Accessible by Transit in 20 years: 75%

-Percentage of Recreation Areas Accessible by Bicycle in 20 years: 90%

-Percentage of Recreation Areas with Pedestrian-Friendly Access: To be determined

2. Number of Commercial Core Areas Meeting Transit-Oriented Design (TOD) Standards: Five

3. A Measure or Measures of Overnight Population (resident and visitor) served by Transit, Bicycle, and Pedestrian Facilities:

-Percentage of Overnight Population served by Transit: 80%

-Percentage of Overnight Population served by Bicycle: 95%

-Percentage of Overnight Population in Pedestrian-Friendly Neighborhoods: To be determined.

Further baseline data must be collected and strategies analyzed before numeric goals will be set for any of the Mobility indicators. A previous goal of 10% Non-Auto Mode Share within the Lake Tahoe Basin has been proposed, but this must be further refined. Regardless of the final goal set, transportation has been identified as a priority topic in all basin planning efforts.

The Access standard for Percent of Recreation Areas Accessible by Transit in 20 years is based on the idea that the three most likely new transit services will be implemented and/or made permanent: service to Sand Harbor and along the east shore of Lake Tahoe, service to Meek’s Bay on the West Shore (began service in summer 2006), and an Incline Village Recreation Shuttle. The standard for Percent of Recreation Areas Accessible by Bicycle in 20 years is based on the planned improvements currently in the Lake Tahoe Region Bicycle and Pedestrian Master Plan. The standard for Percent of

Overnight Population Served by Transit is based on presumed implementation of the same three transit services assumed for the recreation standard, with the addition of transit along State Route 267 providing service from Crystal Bay to the Truckee Train Depot. Percent of Overnight Population Served by Bicycle is based on the Bicycle and Pedestrian Master Plan. The Number of Commercial Core Areas Meeting Transit-Oriented Design Standards is based on the number of commercial core areas that qualify as “target” TOD areas—that is, those that are halfway to the density standard of 1,500 units within a quarter mile of a transit stop.

8.4 Desired Condition 2: Environmental Impacts Of Transportation

One of the primary issues associated with transportation is its impact on the environment. Transportation systems affect every environmental resource area. They impact wildlife through noise and habitat fragmentation, reducing the viability of wildlife populations. Runoff from roads contributes to water quality degradation and mortality or alteration of nearby vegetation. The most significant and most commonly cited impacts of transportation are its impacts on air and water quality. Vehicles emit carbon monoxide (CO), nitrogen oxides (NOx), Volatile Organic Compounds (VOCs) and particulates. These pollutants affect both environmental and human health.

Vehicles contribute pollutants through exhaust emissions and through re-entrainment of road dust. Different types of exhaust emissions are contributed when vehicles cover distance at normal to high speeds (vehicle miles traveled), versus by idling or accelerating (vehicle delay). Regular operation of a vehicle in free-flowing traffic is associated with Nox and VOCs emissions and also contributes to re-entrainment of road dust. Idling and accelerating contributes CO. Transportation indicators that support environmental goals must address these different types of emissions.

8.4.1 Proposed Indicators for Transportation Environmental Impact

Proposed Indicators for Transportation Environmental Impact

The Vehicle Miles Traveled (VMT) indicator and standard will be replaced by a Vehicle Impact indicator and standard. This will be either: an indicator directly relating vehicle impacts to water quality goals, based on targets identified by the TMDL; OR a traffic volume or vehicle-miles traveled indicator, with a standard based on technically feasible but challenging reductions identified through the traffic model, which will be ready by the end of 2007.

Other **Environmental Indicators** for Transportation will be housed in other environmental resource areas. Specific attention will be given to the integration with **Water Quality, Air Quality, Wildlife, Vegetation, Noise, Scenic, and SEZ.**

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The existing VMT standard (10% reduction below 1981 levels) should be replaced by either a different indicator, or a different standard. While VMT definitely has an impact on water quality and air quality, there is not a direct correlation between reduction of VMT and reduction of air and water quality impacts. The correlation is a complex relationship between miles traveled, road maintenance practices, proximity of road segments to the lake, weather, type of vehicle used, and other factors. An effort is underway to replace the VMT indicator with something that can be more directly related to environmental impacts. This could be a combination of a reduction in VMT and changes to road sweeping practices, for instance, as identified by the TMDL. While waiting for this target, we will develop either a different traffic impact indicator or index, or develop a different standard for the VMT indicator. This standard would be something that is realistically achievable based on available strategies, but which is also a challenge and would result in improvements to the environmental condition.

While the Vehicle Miles Traveled indicator is not ideal for measuring the environmental impacts of transportation, no new indicator is sufficiently developed to replace it at this time. Until such time as a new indicator is developed based on new information from upcoming models, the current indicator and standard can remain to ensure that strategies are developed to reduce the impact of automobiles on the environment. Because of limitations of the VMT measure, however, emphasis will be placed on developing a new Vehicle Impact indicator as discussed above.

In addition, since two environmental indicators (Vehicle-Miles Traveled (VMT) and Vehicle-Hours of Delay (VHD)) are directly tied to the goals of other resource areas, their impacts should be represented in those resource areas. VMT and VHD are unlikely to appear explicitly within plans for other resource areas, however. Instead another resource area such as Water Quality may have an indicator such as “Pollutant Loading Sources”, of which VMT is a contributing factor.

The following indicators from other resources are closely related to Transportation:

- Water Quality: Pollutant Loading Sources;
- Soils/SEZ: Pollutant Loads, Hard and Soft Land Coverage;
- Air Quality: Visibility, Human and Ecosystem Health;
- Noise: Noise Events, Cumulative Noise Levels, Effects on Wildlife; and
- Scenic: Scenic Integrity Levels, Built Environment Quality Index Level

When information is obtained from the other resource areas on what changes transportation needs to make in order to meet environmental goals, these will be incorporated into the transportation proposal through management strategies. It is unlikely that there will be a clear directive on a possible transportation indicator—such as reduction in VMT. It is more likely that a set of management strategies that cross different resource areas will be proposed, and different combinations of management strategies could meet the same goal. One example could be to *either* reduce VMT by a certain percentage, or remove a certain percentage of road salts before drying occurs.

The importance of vigilant integration with other resource areas must be emphasized. The Transportation staff will work closely with other resource areas to design management strategies and to make sure that transportation impacts are accounted for through the indicators of other resource areas. The Transportation staff will also support

the development of and investment in models that will accurately determine the impacts of transportation on the environment, including a Tahoe-specific emissions inventory and emissions model, and the Total Maximum Daily Load (TMDL) or Tahoe water clarity model.

8.4.2 Current Condition and Trend for Environmental Impacts of Transportation

The condition and trend for VMT is presented in Figure 8-2. These results demonstrate that VMT is not in attainment with the current threshold of 1.5 million average daily VMT.

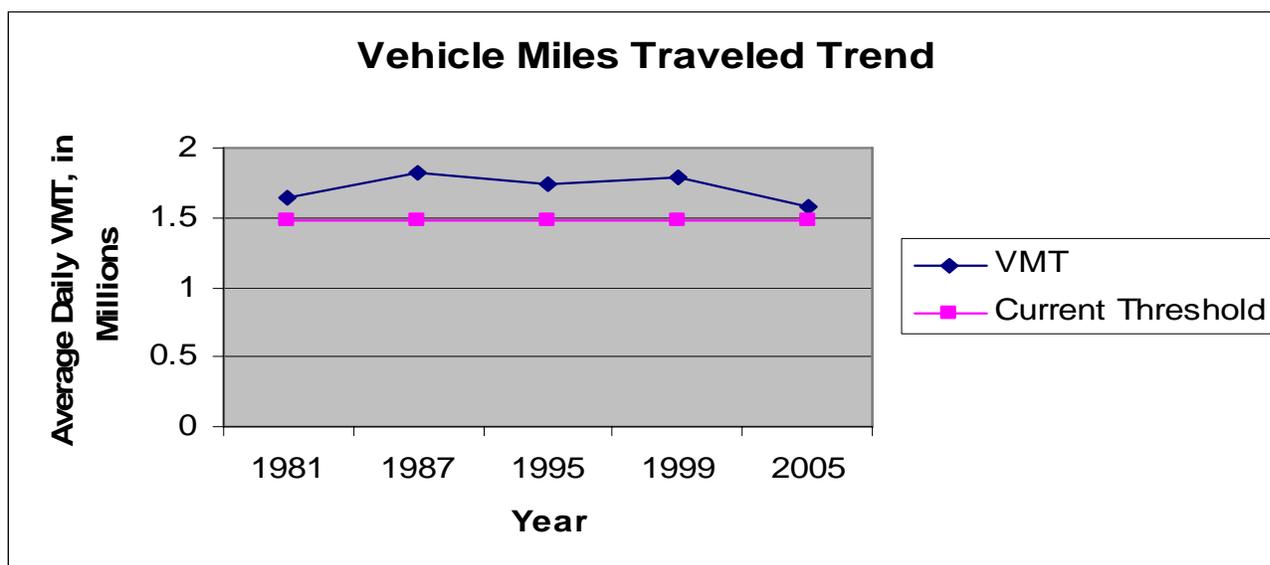


Figure 8-2. Vehicle-Miles Traveled Trend and Current TRPA Threshold Standard (Source: TRPA Threshold Evaluation Reports).

8.4.3 Technical Range of Feasibility Regarding Environmental Impacts of Transportation

Since the Vehicle Impact Indicator is still under development, no technical range of feasibility has been determined. The most recent estimate for current VMT is an approximate 4% reduction from 1981 levels. This estimate must be verified in the next model update. VMT appears to be on the decline due to demographic shifts brought about by changes in housing costs, gaming availability, employment opportunities and redevelopment strategies. Much more intensive forecasting is necessary to make a prediction as to how both internal and external forces would affect VMT in the future.

8.4.4 Proposed Desired Condition & Standard: Environmental Impacts

Proposed Desired Condition: Environmental Impacts

The transportation system is integrated with environmental goals.

Proposed Standard for Environmental Impacts:

The Vehicle Miles Traveled (VMT) indicator and standard will be replaced by a Vehicle Impact indicator and standard. This will be either: an indicator and standard directly relating vehicle impacts to water quality goals, based on targets identified by the TMDL; OR a traffic volume or vehicle-miles traveled indicator, with a standard based on technically feasible reductions identified through the traffic model. The existing VMT standard will remain in place until the recommended standard is further developed and adopted.

8.5 Further Considerations Regarding Transportation

Monitoring and reporting for the Mobility/Socio-Econ “Access” and “Usage” indicators will provide greater insight into the state of transportation in the Lake Tahoe Basin than has previously been revealed by the Air Quality Thresholds. Changes in Non-Auto Mode Share from year to year will demonstrate whether projects such as new bike trails, transit investment, and information campaigns are resulting in higher usage of alternative modes.

The impacts of vehicle use on the environment, especially on water quality, must be quantified more concisely so that strategies can directly address these impacts. Emphasizing the importance of this link should help bring needed resources to research and modeling of impacts, eventually resulting in standards that, if made legally binding, would contribute substantially to maintaining the health of Lake Tahoe.

All of the transportation indicators need further development, ranging from the relatively straightforward baseline data collection and testing in the case of the Mobility “Access” and “Usage” indicators, to the more intensive emissions modeling development in the case of the Vehicle Impact indicator.

Finally, as the Pathway agencies develop their resource plans, the outstanding concerns of the public must be addressed. These concerns are related to improvements in options for personal vehicles, alternatives for transportation planning agency infrastructure, regional revenue sources for transportation, and the importance of emphasizing the high priority of good transportation in the Lake Tahoe Basin.