

APPENDIX I: PERFORMANCE MEASURES

TRPA uses performance measures to track and report on the implementation and outcomes of the projects and programs proposed in the regional transportation plan. Performance measures provide consistent reporting, show transparency of publicly funded investments, and assess and demonstrate progress towards achieving the goals of the plan and the Regional Plan.

Results Chain

The performance measure framework uses a results chain approach. By assessing and tracking the “output” associated with the

strategies of the plan, future transportation plans can better link investments to desired outcomes. For example, if increased transit service results in more people using transit and results in an increase in the Non-Auto Mode Share, then additional transit service could be prioritized for funding.

The following figures display the results chain approach for each focus area of the plan and demonstrates the connection between proposed projects and programs to intermediate data collection and analysis and to the performance measures for each.

Transit Results Chain

TRANSIT RESULTS CHAIN

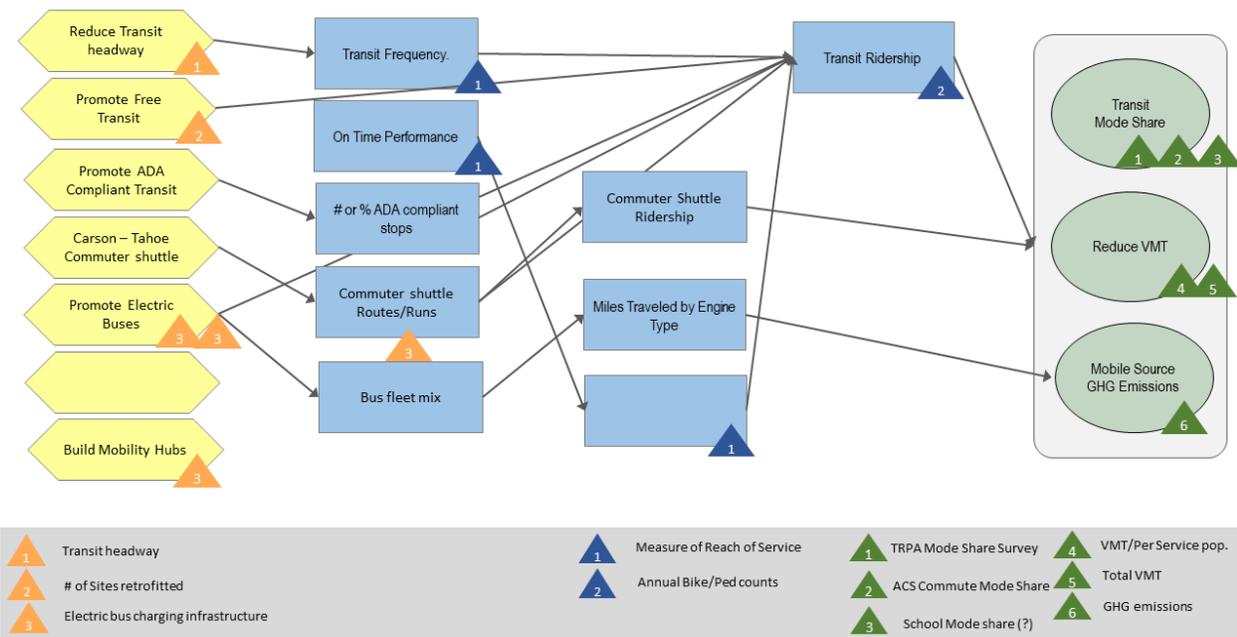


Figure 111: Transit Results Chain

TRAILS RESULTS CHAIN

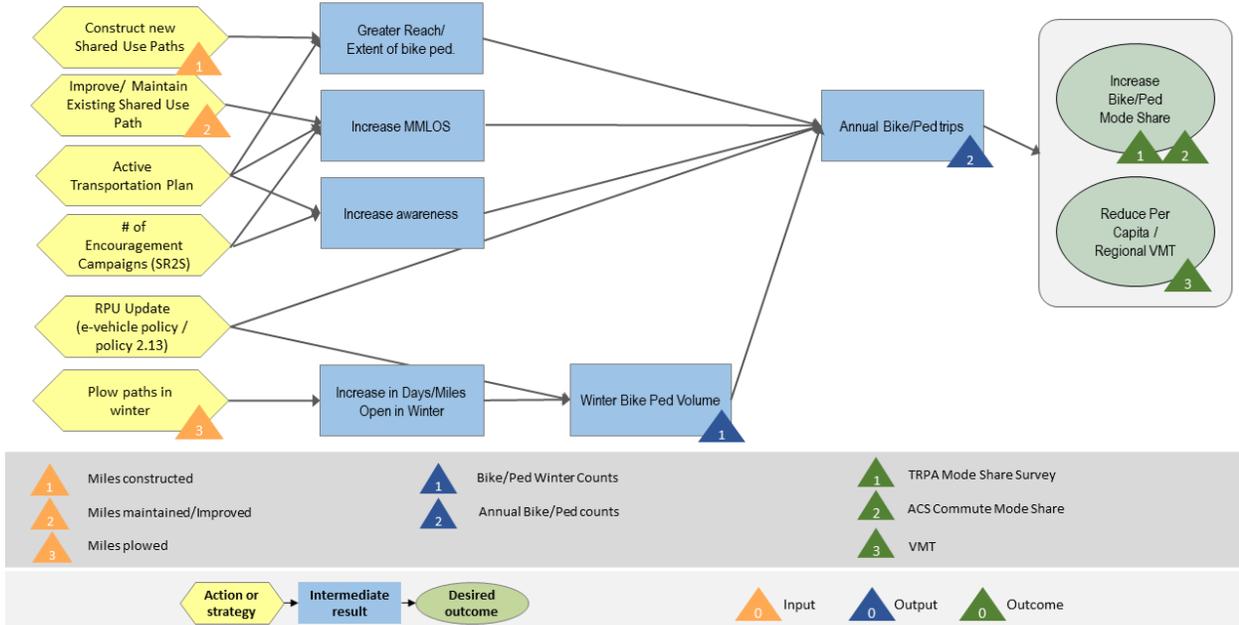


Figure 112: Trails Results Chain

TECHNOLOGY RESULTS CHAIN

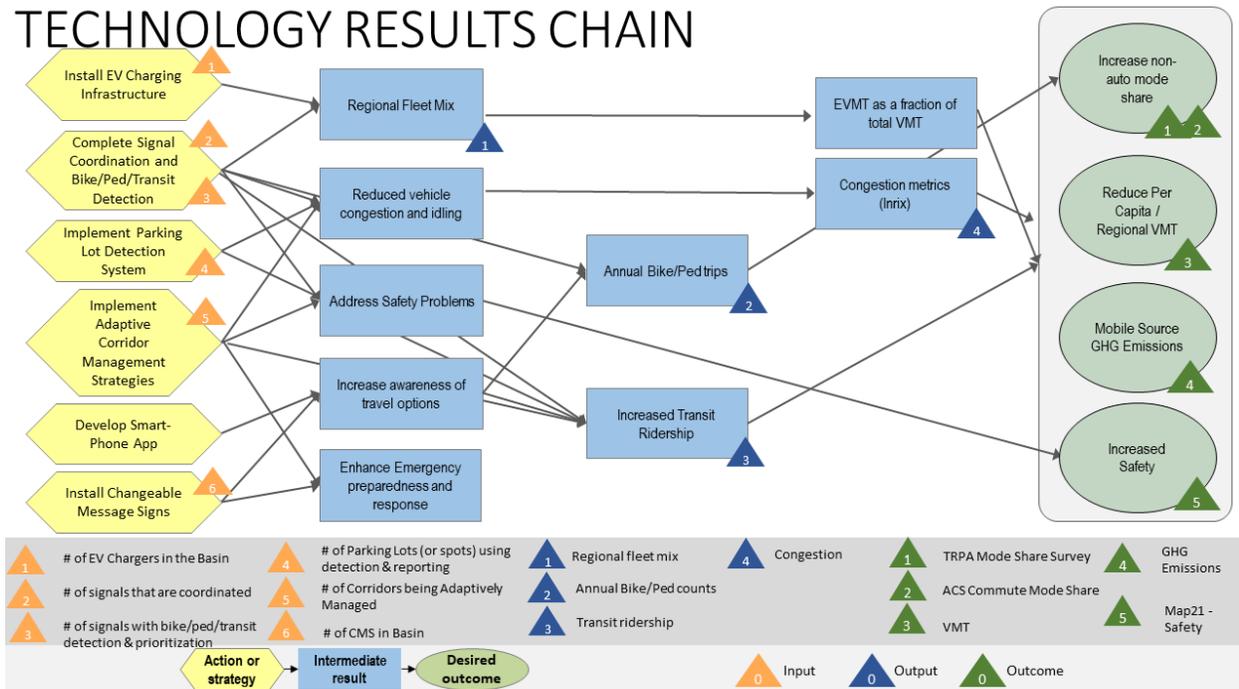


Figure 113: Technology Results Chain

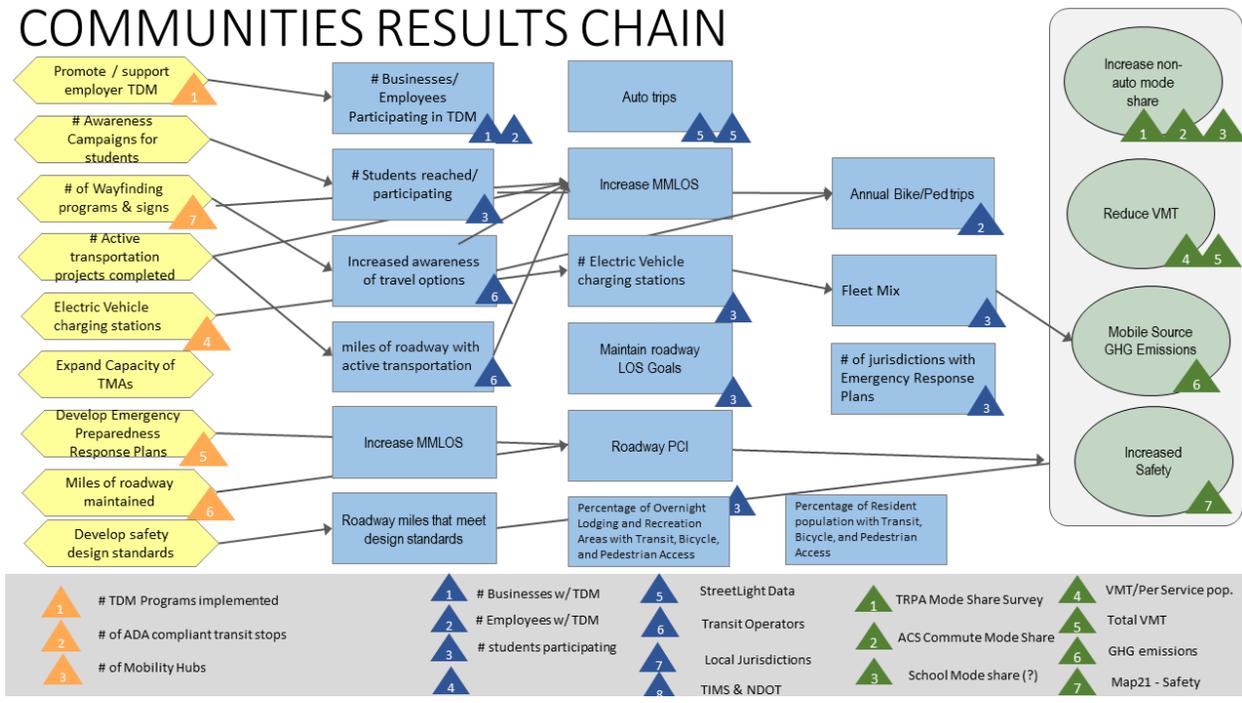


Figure 114: Communities & Corridors Results Chain

What Is Measured

TRPA collects and analyzes a variety of transportation data and information to better connect projects and investments to outcomes and performance measures, and to manage success by informing future planning and project design.

Some of this data measures inputs, such as miles of roadway maintained; other data measures outputs from implemented projects and programs, such as the pavement condition rating for the Region’s roadways; and other data measures the outcome, such as the Rate of Serious Injuries per 100 Million VMT.

Some of these measures are called for by regional goals, others by state and/or federal requirements, and some to support TRPA’s environmental thresholds for transportation.

Data is collected according to transportation industry best practices and standards, and for some modes of transportation, per TRPA developed monitoring protocols, such as the Lake Tahoe Region Bicycle and Pedestrian Monitoring Protocol, Transit Monitoring Protocol, and Safety Strategy. The following table summarizes the measures tracked for transportation planning in Tahoe.

Table 24: Performance Measures

Measure	TRPA Threshold	Regional Goal	State Requirement	Federal Requirement
<i>% of Overnight Lodging & Recreation Areas with Transit (1/4 mile), Bicycle (1/2 mile), & Pedestrian (1/4-mile, Class I) Access</i>		X		
<i>Average Travel Time to Work</i>		X		
<i>Bicycle and Pedestrian Trail Use (Mid-Week Average Hourly Count Volumes)</i>		X		
<i>Bicycle and Pedestrian Trail Use (Mid-Week Hourly Count Volumes)</i>				
<i>Bridge Condition in Good Condition (National Highway)</i>				X
<i>Bridge Condition in Poor Condition (National Highway)</i>				X
<i>Cost-Effectiveness</i>			X	X
<i>Daily VMT Traveled</i>	X			
<i>Deadhead Miles and Hours</i>		X		
<i>Environmental Justice Communities Transportation Access</i>				

<i>Equipment Condition (Transit)</i>			X
<i>Facilities (Transit)</i>			X
<i>Farebox Recovery</i>		X	
<i>GHG per capita</i>	X	X	X
<i>Interstate Travel Time Reliability</i>			X
<i>Miles of Bike/Ped Facilities Constructed</i>		X	
<i>Miles Traveled by (Transit) Engine Type</i>	X		
<i>Non-Auto Mode Share</i>		X	
<i>Non-Interstate Travel Time Reliability</i>			X
<i>Number of Fatalities per 100 million VMT</i>			X
<i>Number of Non-Motorized Fatalities and Serious Injuries</i>			X
<i>Number of Serious Injuries</i>			X
<i>On Time Performance (Transit)</i>		X	
<i>Pavement Condition</i>		X	X
<i>Rate of Fatalities per 100 million VMT</i>			X

<i>Rate of Serious Injuries per 100 million VMT</i>			X
<i>Regional Daily Average Annual Traffic Volume Percentage Variation</i>		X	
<i>Regional Monthly Average Annual Traffic Volume Percentage Variation</i>		X	
<i>Rolling Stock</i>			X
<i>Transit Cost per Revenue Hour</i>			X
<i>Transit Cost per Revenue Mile</i>			X
<i>Transit Farebox Recovery Rate</i>			X
<i>Transit Passengers per Revenue Hour</i>			X
<i>Transit Passengers per Revenue Mile</i>			X
<i>Transit Ridership</i>	X		X
<i>VMT per Capita</i>	X		

Transit Monitoring Protocol

TRPA implemented the transit productivity improvement program and adopted the Lake Tahoe Region Transit Monitoring Protocol. The protocol identifies transit performance measures, establishes targets, and outlines data collection methods for each transit operator, some of which are regulated per TDA Public Utilities Code (PUC) Section 99244.

Under this protocol, the Region’s transit operators must submit data to TRPA to inform the following transit performance measures which aid in the determination of federal funding allocations:

- **Deadhead Miles and Hours** – The miles and hours transit vehicles travel when out of revenue service
- **Ridership** – Unlinked passenger trips, or the number of total boardings not including transfers
- **Transit Mode Share** – The percentage of all daily trips that use public transit service
- **Productivity** – The number of transit users per hour or mile of the transit service
- **On Time Performance** – The frequency transit arrives or leaves on time, or within one minute early and five minutes late
- **Cost Effectiveness** – The total cost the operator must pay per revenue hour or mile
- **Farebox Recovery** – Revenue obtained by transit services, calculated by determining the ratio of fare and local revenue to operating costs
- **Rolling Stock** – Percentage of revenue vehicles (by type) that exceed useful life benchmarks
- **Equipment** – Percentage of non-revenue service vehicles (by type) that exceed useful life benchmarks
- **Facilities** – Percentage of facilities (by group) rated less than 3.0 on the Transit Economic Requirements Model (TERM) Scale

Bicycle and Pedestrian Monitoring Protocol

TRPA adopted the Lake Tahoe Region Bicycle and Pedestrian Monitoring Protocol to build on prior monitoring efforts and to create an on-going monitoring program to track changes in bicycle and pedestrian volumes in a consistent manner.

The protocol defines seasonal count periods, winter-spring and summer, and data collection procedures for existing manual and automatic count locations on sidewalks, Class I pedestrian/bicycle shared-use paths, and Class II facilities in the Region. The Bicycle and Pedestrian Monitoring Protocol has been in use for multiple years so that comparisons year-over-year are now possible.

The following performance measures are collected through the Bicycle and Pedestrian Monitoring Protocol:

- Average Hourly Bicycle and Pedestrian Trail Use by Season (automatic count locations only)
- Average Daily Bicycle and Pedestrian Trail Use
- Average Weekly Bicycle and Pedestrian Trail Use
- Average Monthly Bicycle and Pedestrian Trail Use
- Total Volume Bicycle and Pedestrian Trail Use

- Gender of Bicyclists and Pedestrians (manual count locations only)
- Individual Intersection Movement Counts (manual count locations only)

CARB GHG

CARB established new, more aggressive GHG reduction targets for the Tahoe Region. Under these new targets the Tahoe Region is required to meet GHG reduction targets of 8 percent by 2020 and 5 percent by 2035, based on 2005 emission levels. The projects and programs in the plan meet these reductions with an estimated 8.8 percent reduction in 2020 and a 5 percent reduction in 2035.

Table 25: Per Capita Carbon Dioxide Emission Comparison - Passenger Vehicles

	2005 Baseline (per SB 375)	2035	2045
Annual Average Daily Total VMT per Capita ¹	21.59	19.94	19.68
Passenger Vehicle GHG Emissions (tons/day)	388.8	345.5	352.9
Population ²	41,340	41,951	43,468
Per Capita Passenger Vehicle GHG Emissions (pounds/person/day)	18.81	16.47	16.24
Percent Change from in Per Capita GHG Emissions from 2005		-12.4%	-13.7%
SB 375 Target		-5%	n/a ³
SB 375 Target Met?		Yes	n/a ³

¹ Source: TRPA 2020a

² Source: TRPA 2020b

³ SB 375 targets have not been adopted for post-2035 years.
See Appendix D for SB 375 calculations.