

Appendix A:

Transportation Needs, Revenues, and Shortfalls

Transportation Needs, Revenues, and Shortfalls

Prepared for the Tahoe Transportation District

Under contract with Morse Associates Consulting, LLC

By Greg Krause, KrauseConsult

1. Purpose

The purpose of the TTD Revenue Action Plan project is to determine the most appropriate and effective transportation funding strategy (or strategies) necessary to implement the community's Transportation Vision for the Lake Tahoe Basin as articulated in the Linking Tahoe Regional Transportation Plan 2017-2040 (Tahoe RTP) and related documents. The first step in the process is to determine the amount of funding that is needed to implement the Transportation Vision. This first step is addressed in this memo, which evaluates the adopted transportation planning documents developed for the Lake Tahoe Basin to affirm needs and existing revenues, and quantify funding shortfalls. If documents and existing data allow, the funding shortfall will be analyzed by mode of travel.

The challenge of the planning process is to provide a clear vision of a distant future and describe a blueprint on how to get to this distant future. The transportation planning process has to make a number of assumptions about how much growth will occur, where it will occur, and how and where people will choose to travel for the next 20+ years. If this were not enough of a challenge, it is important to realize we live in a dynamic world with constant change, and sometimes change can be rapid and disruptive. Given these challenges, our review of adopted planning documents includes recommendations for adjustments to projected needs and expected revenues if available data suggests that an adjustment will provide a better estimate of the funding shortfall facing the Lake Tahoe Basin.

2. Review of Adopted Transportation Planning Documents

The multi-modal transportation needs for the Lake Tahoe Basin have been identified in the *Linking Tahoe Regional Transportation Plan 2017-2040* (Tahoe RTP). The Tahoe RTP was approved by the Tahoe Regional Planning Agency Board on April 26, 2017. The Tahoe RTP plans for a complex region in terms of environment needs, political jurisdictions, geographical constraints, and transportation demands. The political jurisdictions include the State of California, with the Counties of El Dorado and Placer and the City of South Lake Tahoe, and the State of Nevada, with the Counties of Douglas, Carson City and Washoe. Nevada County and the Town of Truckee, while not in the Lake Tahoe Basin, are important partners in the planning process because of the importance of the linkage to I-80, passenger rail service, and the Resort Triangle linkage with the Lake Tahoe Basin via SR 89, SR 28 and SR 267. In addition to the political jurisdictions, there are large public land holdings managed by the United States Forest Service in the Lake Tahoe Basin.

The public transportation needs for the Lake Tahoe Basin have been identified in additional detail in the *Linking Tahoe: Corridor Connection Plan* (LTCCP) and the companion document, *Linking Tahoe: Lake Tahoe Basin Transit Master Plan* (LTTMP). The LTCCP was approved by the Tahoe Transportation District in August 2017, and provided important research, analysis and recommendations for the Tahoe RTP. The LTCCP focused on public transportation and multi-modal detailed implementation approaches which, combined with the Tahoe RTP, is intended to transform Tahoe from an auto-centric environment to a destination rich with multi-modal options for visitors, residents and commuters. In addition, other appropriate transportation plans and studies will be reviewed to ensure the evaluation of needs and revenues has considered all of the relevant information. One other key needs

analysis that was reviewed was the TTD 10 year priority project list, a list of multi-modal transportation priorities developed by TTD staff for internal use in medium term planning and project prioritization. This project listing is not directly comparable to the Tahoe RTP, and also contains more projects and services than the California/Nevada Bi-State Transportation Plan. The TTD 10 year priority project list was also reviewed to ensure it could be accommodated within the RTP costs.

3. Transportation Needs

The Tahoe RTP is the primary source for identification of multimodal transportation needs and estimated costs for the period 2017 -2040. The Tahoe RTP represents an extensive planning effort, with input from all of the affected local, state and federal entities, to ensure a complete and accurate picture of what is needed to implement the transportation vision for the Lake Tahoe Basin. The following analysis reviews both the estimated costs and revenues at high level; the intent is not to critique or even refine the numbers, although that may occur where recent improvements to estimates have been developed and are acceptable to the TTD and other affected entities. Instead, this review is being conducted to ensure that there are no major exclusions, inconsistencies between the Tahoe RTP and the LTCCP/LTTMP, or questionable assumptions that could cause the estimated funding shortfall in the Tahoe RTP to be substantially under or over estimated. The analysis also reviews the 10 year timeframe of the Tahoe RTP revenues to determine whether the TTD 10 year priority project list can be accommodated with expected revenues.

Constant Versus Nominal Dollars

One of the important questions that must be addressed with any long range planning process is whether to show costs and revenues in constant dollars or nominal dollars that are inflated over time. A constant dollar is a value of currency identified for a certain year, in this analysis 2017, and no inflation is applied to either costs or revenues in order to simplify the analysis. The alternative approach is to convert both costs and revenues to nominal dollars that are adjusted to assumed inflation rates on an annual basis. The conversion of constant dollars to inflation-adjusted nominal dollars is critical to financial investment and other types of economic analysis which evaluate income and price data over longer time periods. The availability of consumer price index and other inflation indicators make the conversion of constant to nominal dollars fairly straightforward in simple economic analysis.

Long range transportation planning processes often use inflation-adjusted nominal dollars. The Tahoe RTP was developed with costs described in inflation-adjusted dollars and revenues were assigned growth factors. The cost inflation assumptions were:

- Capital projects inflated at 3.5% year
- Transit Operations costs inflated at 2.7% year
- Other Operations/Maintenance/Rehabilitation costs inflated at 3.5% year

The growth factor assumption for revenues was an annual 2 percent growth rate to continuing revenue streams. If a specific amount of funding was secured for the future, some revenues were not adjusted by the growth factor. The determination of the inflation rates for costs and growth rates for revenues was made through consultation and agreement with the Nevada and California DOTs and MPOs. These inflation and growth

assumptions seem reasonable, although it is difficult to predict anything for 20+ years into the future.

An alternative approach to making inflation and growth assumptions necessary to develop nominal dollars in the future is to simply use constant, or unadjusted dollars.

The problem of trying to guess inflation and growth rates 10-20 years into the future can be avoided, and more importantly, constant 2017 dollars (2017\$) can show the magnitude of financial need very accurately, even 20 years in the future, with one major proviso.

The proviso is that all funding mechanisms that are planned to generate revenues to meet future needs, including both existing and new funding mechanisms, must be periodically adjusted as necessary to account for the loss of purchasing power through inflation as it occurs. It is highly desirable to have these adjustments made automatically so that they do not become political issues. This critical concept is addressed, to varying degrees, by many public funding mechanisms: sales tax revenues which increase as inflation increases the cost of goods, property tax revenues increase as valuations increase, and fuel taxes that are indexed for construction inflation. Flat fees or taxes that do not automatically adjust for inflation (for example the Federal fuel tax, which has not been increased in several decades) are problematic and constantly lose purchasing power to inflation over time. Ideally, a transportation funding mechanism will adjust annually based upon actual transportation cost inflation; a good example of this kind of mechanism is a fuel tax to fund roads indexed to highway construction costs. While no transportation funding mechanism is perfect in its response to inflation, it is critical that periodic, and ideally, annual automatic adjustments occur in response to inflation.

In order to test the impact of using constant (2017\$) and inflation-adjusted nominal dollars for the Tahoe RTP analysis, the projected costs and revenues are shown below for each scenario:

	Constant 2017\$ (\$billion)	Nominal \$ (\$billion)
Constrained Revenues	\$1.684	\$2.055
Constrained Costs	<u>\$1.602</u>	<u>\$2.050</u>
Constrained Surplus	\$.082	\$.005
Unconstrained Costs	<u>\$2.521</u>	<u>\$3.805</u>
Unconstrained Shortfall	\$2.439	\$3.8

As shown above, the constant 2017\$ and nominal dollar analysis is very similar for the Constrained scenario, with both showing a minimal surplus. The Constrained scenario completes many of the projects in the next 10 years, and has fewer projects in future due to financial constraints. However, when the larger costs contained in the Unconstrained scenario are inflated for 20+ years, the shortfall becomes much larger for the nominal dollar analysis, **\$3.8 billion**, compared to the constant (2017\$) shortfall of **\$2.439 billion**.

It is possible that all of the cost inflation factors and revenue growth factors are accurate assumptions, but as shown above, they do create a very different answer to the question of what is the size of the funding shortfall for the next 20+ years. The consultant recommended that the funding analysis proceed with the constant (2017\$) dollar analysis to remove the uncertainty regarding the cost inflation and revenue growth assumptions. The Project Delivery Team (PDT), made up of federal, state and local government staff working on transportation issues in the

Tahoe Basin, reviewed the use of constant (2017\$) for this analysis. In addition, the TTD Board approved the use of constant (2017\$) for this analysis.

The following discussion of costs and revenues are all shown as constant 2017 dollars (2017\$).

As previously mentioned, this approach requires that any funding mechanisms, both existing and new, be adjusted for inflation, ideally on an annual basis.

The following evaluates the costs for each major project category in the Tahoe RTP in 2017 constant dollars (2017\$), as described in both the “Constrained” and “Unconstrained” scenarios.

The transit capital and operating costs and farebox revenues of the Tahoe RTP are compared to the LTTCP costs. In addition, the TTD 10 year priority list of projects is compared to both the “Constrained” and “Unconstrained” scenarios in 2017\$ constant dollars. All “Recommended Adjustments” listed below have been reviewed by the PDT and approved by the TTD Board.

Corridor Revitalization

The Corridor Revitalization projects cover a variety of improvements to the major highways in the basin, including intersection improvements, complete street improvements and recreation/tourist facility improvements. The majority of these projects are planned for implementation in the next five years, and all are planned for completion within 10 years. All projects are included in the “Constrained” scenario and the majority of these projects have had at least some design or preliminary engineering work completed with the estimated total cost of \$227 million.

Comparison of Tahoe RTP Corridor Revitalization and TTD 10 Year Priority Projects

The TTD 10 Year Priority Project List includes \$125 million in Complete Street expenditures although no specific projects are identified. This total is well within the Tahoe RTP estimate so it is assumed all projects can be funded as planned by TTD.

Recommended Corridor Revitalization Adjustment: None

Transit Improvements

Transit Operations

The transit component of the Tahoe RTP contains extensive service improvements both within and extending outside of the Tahoe Basin. The general description of the transit vision in the Tahoe RTP is consistent with the LTTMP. The LTTMP document provides a detailed service implementation plan for three possible future alternative scenarios to increase transit mode share from the existing 1.4% to some higher mode share over a span of 12 years (2016-2028). The “Easily Achievable” scenario would increase mode share to 5%; the “Progressive” scenario would increase the mode share to 10%; and the “Aggressive” scenario would increase mode share to 20%. The TTD Board has officially adopted the “Aggressive” scenario as its goal. In addition to building upon the quality of the existing service (expanding frequency of service and adding more days and hours of service), major new services are described in the LTTMP in three implementation phases:

Implementation phases

The LTTMP describes the immediate phase (0-1 years) as focused on changes to routes and frequencies already planned for by TTD and TART. Short term improvements (1-5 years) are seen as the transformation of the individual systems to a regional transit network that includes additional infrastructure and the linking of the north and south shores. Route changes and new services along with a significant investment in infrastructure will be the main features of this phase. The goal is to create the basic structure from which the network can grow and expand in the future with little further disruption to the routes. The medium-term improvements (5-10 years) will strengthen the system by adding more frequent service to additional routes and the

improvement of regional connections as well as establishing trans-Sierra connections to Reno-Tahoe International Airport from Incline Village and from Truckee to Sacramento.

A new Frequent Ferry will link Tahoe City and South Lake Tahoe. Additional Mobility Hubs and fleet maintenance facility capital projects will be needed. TTD staff has updated the RTP Ferry costs to add \$45 million in capital and \$30.6 million in operating to reflect the addition costs of purchasing and operating hydrogen fuel cell ferry vessels as well as other cost adjustments. The LTTMP describes the long-term implementation phase (10+ years) as focusing on the trans-Sierra movements and a new route to Meyers. New service will be implemented from South Lake Tahoe to Stockton and from Sacramento to South Lake Tahoe. There would also be funding to increase regional rail service between Sacramento and Reno.

The “Aggressive” scenario is expected to achieve a 20% mode share by year 12 at which time operations will require 174 peak buses with an annual operating cost of \$57 million/year by the twelfth year of the ramp up..

The “Aggressive” scenario of the LTTMP is generally consistent with the Tahoe RTP “Unconstrained” and “Constrained” cumulative transit service scenario, which has an annual estimated operating cost of \$66 million by 2040. There is not sufficient detail in the RTP operating costs to identify the differences from the LTTMP estimates, but it would seem prudent to utilize the Tahoe RTP “Constrained and Unconstrained” estimate of \$66 million per year (in 2040) to ensure all transit services can be implemented

Comparison of Tahoe RTP Transit Operations and TTD 10 Year Priority Projects

The TTD 10 Year Priority Project List includes an annual transit operation cost (bus and ferry) of \$29,442,000 in year 10. The list of services and capital projects is not detailed, but the transit

projects and services generally conform with the LTCCP/LTTMP “Easily Achievable” scenario would increase mode share to 5%. This annual operating cost total is well within the Tahoe RTP Constrained and Unconstrained estimate of \$66 million in 2040 so it is assumed all projects can be funded as planned by TTD.

Transit Capital

The transit capital costs included in the Tahoe RTP are \$193 million in the “Constrained” scenario and an additional \$132 million in the “Unconstrained” scenario for a total of \$325 million. This total appears consistent with implementation of the short, medium and long-term service levels in the “Aggressive” scenario of the LTTMP, which notes that 174 peak hour buses are required to provide the services, although there is no detailed capital plan associated with the service level.

Comparison of Tahoe RTP Transit Capital and TTD 10 Year Priority Projects

The TTD 10 Year Priority Project List includes transit capital costs of \$201 million (bus and ferry). The Tahoe RTP total of \$325 million in transit capital is sufficient to fund all projects listed in the TTD 10 Priority Projects. The TTD project list did identify specific expenditures for individual projects, and it appears that there are some variations with the Tahoe RTP project costs which should be reviewed and reconciled in future updates to planning documents.

Transit Administration Costs

There is currently no Transit Administrative support included in the Tahoe RTP associated with the massive expansion in operations and capital described above. It will be impossible to complete the capital procurements, conduct the operational planning and service monitoring, and conduct the needed support services (human resources, marketing, finance, information

technology, facilities maintenance) without a major expansion of Transit Administrative support. The TTD has estimated that \$5 million annually would be necessary to fund the needed Transit Administration.

Transit Fare Revenue

One major difference between the Tahoe RTP assumptions and the LTTMP is the treatment of transit fare revenue. The Tahoe RTP assumes that as of 2020, TTD services will implement a “Free to the User” policy that will result in fare revenue loss which was shown as an expense totaling \$14 million from 2020 to 2040. Similarly, the Tahoe RTP assumes that TART services will implement a “Free to the User” policy that will result in fare revenue loss which was shown as an expense totaling \$16 million from 2022 to 2040. The “Free to User” expense of \$14 million for TTD and \$16 million for TART were intended to represent lost revenue, not an additional expense associated with moving to a free fare. In fact, transit expenses would be reduced in a free fare environment, due to the elimination of fareboxes on local service vehicles and associated road call and maintenance costs. Operational efficiency would also improve with faster passenger boarding times in a no fare environment, but no financial impact has been estimated for this improvement in operational efficiency.

In contrast, the LTTMP assumes that fare revenue and the farebox recovery ratio will increase substantially even as the amount of service hours are increased eightfold (20% mode share scenario). It is extremely difficult to maintain the current farebox recovery ratio as service levels are expanded by such a large order of magnitude; it is extremely unlikely that the farebox recovery could be increased with such a large service level increase.

In discussions with TTD staff, it was determined that local service within the Tahoe Basin would be fare free in the future and the planned inter-regional service expansions and the north to south

shore ferry service would be charged a fare. Consistent with recent TTD actions regarding fare policy, the consultant has made the assumption for new inter-regional services that fares would capture a 15% farebox recovery ratio. The revenue generated by these services (rail, bus and ferry) would total \$65 million for the 2020-2040 timeframe, assuming the service implementation schedule in the RTP.

Recommended Transit Adjustments:

Expenses:

1. Reduce Expense \$30 million (eliminate assumed “cost” of Free Fare on local service)
2. Increase Expense \$100 million (add 20 years of Transit Administration at \$5 million/yr)
3. Increase Expense \$76 million (for Ferry add \$45 million for capital and \$31 million for operations)

Revenues:

1. Increase Revenues \$66 million (add inter-regional fare revenues, rail \$11 million, bus \$43 million and ferry \$12 million)

Active Transportation

The active transportation network is a complex system of shared-use paths, sidewalks, bicycle lanes, bicycle boulevards, crosswalks, ADA facilities and much more. Bicycling and walking facilities attract people for both transportation and recreation travel. Both residents and visitors will use the active transportation network itself, and as a means to access transit services. The Tahoe RTP identified \$111 million in active transportation projects in the “Constrained” scenario, with the vast majority planned for completion in the next three years. The “Unconstrained” scenario included \$173 million in projects, for a total of \$284 million.

Comparison of Tahoe RTP Active Transportation and TTD 10 Year Priority Projects

The TTD 10 Year Priority Project List includes Class I Trail project capital costs of \$75 million. The Tahoe RTP total of \$284 million for Active Transportation projects is sufficient to fund all projects planned by the TTD.

Recommended Active Transportation Adjustment: None

Technology and Transportation System Management

The technology and transportation system management projects in the Tahoe RTP include informational kiosks at activity centers, various intelligent transportation systems, wayfinding and parking management technology and adaptive traffic management on major highway corridors. The Tahoe RTP identified \$6 million in the technology and transportation system management projects in the “Constrained” scenario and the “Unconstrained” scenario included \$19 million in projects, for a total of \$25 million. Transportation demand programs operations were only programmed for four years at \$180,000. Transportation demand programs are typically low cost but can be very effective, particularly in an area like the Tahoe Basin where converting personal vehicle travel to transit is a high priority. It is suggested that this program (\$200,000) be continued from 2021 to 2040, totaling \$4 million.

Comparison of Tahoe RTP Technology and Transportation System Management and TTD 10 Year Priority Projects

The TTD 10 Year Priority Project List includes capital costs of \$80 million for a Backbone Telecom Network. The Tahoe RTP total of \$26 million for Technology and TSM projects does not include any funding for the Telecomm Network planned by the TTD. The current lack of telecommunications service is a serious problem in the Tahoe Basin. Parts of the Basin lack wireless communication access and larger areas lack sufficient digital bandwidth. TTD and

emergency service organizations have identified lack of telecom access and bandwidth as a serious impediment to communications during an emergency, in addition to the everyday problem of poor or no access in parts of the Basin. This project can be added to the Tahoe RTP costs but it should be recognized that many transportation funding sources would not allow for a Telecom Network as an eligible cost.

Recommended Technology/TSM Adjustment:

Expenses:

1. Increase expense by \$4 million (for 20 years of TSM program)
2. Increase expense by \$80 million (for Backbone Digital Telecom Network)

Water Quality/Total Maximum Daily Load Projects

In the Lake Tahoe Basin, protecting water quality and minimizing the amount of sediment and pollutants that reach the lake is extremely important. Total Maximum Daily Load (TMDL) is a regulatory term in the U.S. Clean Water Act, describing a plan for restoring impaired waters that identifies the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards. The importance of protecting Lake Tahoe water quality demands implementation of TMDL projects as a high priority. The water quality/total maximum daily load projects include roadway stormwater runoff and non-roadway water quality capital projects. The Tahoe RTP identified \$112 million in the “Constrained” scenario and the “Unconstrained” scenario included \$15 million in projects, for a total of \$127 million in capital projects. The majority of projects are designed and under construction and will be completed in the next two years. In addition, the Tahoe RTP includes \$1.3 million annual expense for local

government storm water treatment operations and maintenance in the “Constrained” Operations and Maintenance funding category. The Tahoe Resource Conservation District completed the “Tahoe Stormwater Funding Partnership Financial Outlook” in December 2015 which identified an annual operations shortfall of \$848,000 for Placer and El Dorado Counties and the City of South Lake Tahoe. In addition, the KrauseConsult estimated the annual local street stormwater operations shortfall for Carson, Douglas, and Washoe County at \$296,000.

Recommended Adjustment for Water Quality/Total Maximum Daily Load:

Expenses:

1. Increase expense by \$29 million for TMDL operations shortfall

Operations and Maintenance (Roads/Bike&Ped/Stormwater Treatment)

The Tahoe RTP identified \$369 million in the “Constrained” scenario, including \$56 million in capital projects and \$313 million in operations/maintenance costs. The projects include snow plowing, sanding, preventive maintenance and pavement repairs for roads and paved multi-use paths, and maintenance and operation of stormwater facilities which are part of the transportation system. These projects are done by the City of South Lake Tahoe, the five counties, General Improvement Districts, and Caltrans and NDOT for facilities that they own and operate within the Tahoe Basin.

The “Unconstrained” scenario included \$1.64 billion in projects, all of which were labeled as Deferred Maintenance projects. This represents the single largest cost item by far, and it was reported by local governments as follows for the 2017-2040 period:

Washoe County: \$47 million

Placer County: \$24 million

City of South Lake Tahoe: \$1.176 billion

Douglas County: \$48 million

El Dorado County: \$345 million

The City of South Lake Tahoe has 137 centerline road miles. In order to better understand the cost for the City of South Lake Tahoe roadway maintenance needs, the consultant utilized the 2018 California Statewide Local Streets and Roads Needs Assessment supplemented by additional data sources to estimate a cost for all El Dorado County roadway pavement preservation, operations and maintenance, essential elements and bridge needs for the period of 2017-2040 of \$1.255 billion (2017\$). This cost estimate included complete replacement of worn pavements in the first 10 years, creating an average Pavement Condition Index (PCI) of 87 in the 10th year, and then maintaining this level of PCI until 2040. Prorating this cost to the portion of roadways within the City of South Lake Tahoe resulted in an estimate of \$123 million to repair, operate and maintain these roadways and appurtenant items for the period 2017-2040. In order to recognize the higher operations cost (additional snow removal and sanding/wear and tear due to freeze thaw cycles) in the Tahoe Basin compared to lower elevations in El Dorado County, the City of South Lake Tahoe estimate of \$123 million was increased by 10% to \$135 million.

A similar estimation of needs was done for the portion of El Dorado County roads that are located within the Tahoe Basin but not in the City of South Lake Tahoe. This resulted in an estimate of \$143 million to repair, operate and maintain these roadways and appurtenant items for the period 2017-2040. In order to recognize the higher operations cost (additional snow

removal and sanding/wear and tear due to freeze thaw cycles) in the Tahoe Basin compared to lower elevations in El Dorado County, the estimate of \$143 million was increased by 10% to \$157 million. The recommended adjustment to the City of South Lake Tahoe and El Dorado County “Unconstrained Deferred Maintenance” costs were reviewed by Public Works staff (Ray Jarvis at City of South Lake Tahoe, and Rafael Martinez at El Dorado County) and approved prior to the review by the PDT and approval by the TTD Board.

Recommended Adjustment:

1. Reduce City of South Lake Tahoe Deferred Maintenance from \$1.176 billion to \$135 million.
2. Reduce El Dorado County Deferred Maintenance from \$345 million to \$157 million.

Transit Oriented Development

The Tahoe RTP has an extensive policy discussion regarding the need to provide a transportation system that prioritizes bicycling, walking, and transit that serves residents while contributing to the environmental and socioeconomic health of the region. Transit oriented development (TOD) is one of the most effective tools to achieve all of these policy objectives, particularly if the TOD helps address the need for affordable housing for service employees in the basin. There is no funding for TOD included in the Tahoe RTP, but after discussion with TTD staff, an increment of TOD funding is recommended. The TOD funding assumes 200 units at \$59 million, with 70% privately funded and 30% publicly funded.

Recommended Adjustment:

1. Add TOD funding of \$18 million (30% public share of \$59 million)

Discretionary/Competitive Revenue

In discussions with the Project Delivery Team, (PDT) it was explained that the amount of discretionary/competitive State and Federal revenues in the Tahoe RTP was probably optimistic. The practical reason for this optimism was that the inclusion of these discretionary funds in the RTP avoided the need to amend the RTP each time a discretionary grant was obtained, saving time and money on the amendment process. This was a reasonable approach, and the past success of the Tahoe Basin in winning competitive grants also justified inclusion of these funds. However, the Project Delivery Team agreed, in terms of trying to best estimate the amount of funding that will be available in the future, that the optimistic scenario should be reduced for the discretionary and competitive fund sources. The Tahoe MPO staff was consulted regarding the most appropriate State and Federal discretionary/competitive funding categories to reduce, and the specific amount of reduction. It was recommended that a 25% reduction in the following discretionary/competitive RTP fund sources be used in estimating the funding shortfall, as shown below.

Table 1: 2017-2040 Tahoe RTP Discretionary/Competitive Revenue Adjustments in 2017\$

	2017-2040 (2017\$ in millions)	25% Reduction
State Discretionary Funds		
Affordable Housing Sustainable Comm.	\$25	\$19
CA Active Transportation Program (50% discretionary per Nick Haven)	\$20	\$15
California SHOPP	\$116	\$87
Nevada State Funds	\$38	\$29
Subtotal State Discretionary Funds	\$199	\$149
Federal Discretionary Funds		
Federal Lands Transportation Program	\$29	\$22
Federal Lands Access Program	\$139	\$104
Highway Safety Improvement Program	\$33	\$25
FHWA Ferry Program	\$26	\$20
Subtotal Federal Discretionary Funds	\$227	\$170
Total State and Federal Discretionary Funds Available	\$426	\$319
Reduction in Discretionary \$	\$0	\$106

Summary of Tahoe RTP Adjustments

The summary impact of the recommended adjustments for the 2017-2040 Tahoe RTP are summarized in the Table 1:

Table 2: 2017-2040 Tahoe RTP Expense and Revenue Adjustments in 2017\$

Adjustments to RTP Costs and Revenues		2017-2040 RTP Costs (2017\$)
Change in Costs		
1. Add TTD Admin and Inter-regional fares		\$5,000,000
2. Reduce Roadway Operations/Maintenance cost		-\$1,229,000,000
3. Add Telecom Network cost		\$80,000,000
4. Add Transportation System Management cost		\$4,000,000
5. Add TMDL cost		\$29,000,000
6. Add Ferry Capital and Operating cost		\$75,600,000
7. Add Transit Oriented Development (30% of \$59.1 mil)		\$18,000,000
Change in Revenues		
1. Reduce Discretionary/Competitive Revenue 25%		\$106,000,000
Total Adjustments to RTP Cost and Revenue		-\$911,400,000

2. Transportation Revenue by Modal Use

The Tahoe RTP lists the projected revenues expected to be available to fund all of the projects and services identified in the plan. It is a complex mix of federal, state and local sources. The analysis of the Tahoe RTP revenues by modal use is complicated because some fund sources are flexible between modes. However, there are a number of fund sources that are dedicated to specific modes or uses (State STA, Federal FTA for transit; Nevada State Funds, California SHOPP, Federal Lands for Highway/Bike/Ped; and Stormwater, Ferry and Airport funds for each type of use) that have simplified this analysis. In addition, the Local Operation and Maintenance revenue category has been specifically assigned to Street/Bike&Ped/Stormwater operations and maintenance costs so there is a clear indication of what fund sources are allocated to each

mode/use for the majority of revenue categories. For the Local On-Going revenues, \$3 million per year was assumed to be available for Transit, based upon the current \$3 million provided to TART. The remainder was allocated to the Street/Bike/Ped project cost. For Private Funding, \$50,000 per year was assumed to be available for Transit, based upon the current \$50,000 provided to TART, with remainder allocated to Street/Bike/Ped project cost.

Revenue Assumptions

Local Revenues

The local sources total just over \$797 million and include a large number of different fees, taxes and funds, but the largest contributions come from the Local Funds (on-going) at \$165 million and Local Operations and Maintenance (roadway, stormwater, bike/ped facilities) at \$313 million. Local Funds (on-going) are comprised of a large number of existing sources, including Placer County traffic impact fees, North Lake Tahoe, City of South Lake Tahoe, Tahoe Douglas Transportation District Transient Occupancy Taxes, PUDs, GIDs and other Transit local funds. These funds were all assumed to continue into the future at current levels. Local Operations and Maintenance revenues were matched to the reported costs (\$313 million for stormwater, bike/ped and road operations and maintenance) in the “Constrained” scenario.

The other notable local source is the Ferry Partnership (\$129 million); this is the only revenue source **that is not currently implemented** and will obviously not be realized until the Ferry program has been implemented.

As previously mentioned, all transit farebox revenue has been deleted as of 2022 due to the free fare policy planned for TART and TTD local services. However, the addition of future inter-regional services as well as the north/south shore ferry will have fares. With fares assumed to

achieve the current 15% farebox recovery rate, these services (bus, rail and ferry) are expected to generate \$66 million during the 2022-2040 timeframe.

State Revenues

The State revenues totaled \$393 million, and were assumed to continue at current levels with the exception of several programs that were competitive grants/or were being phased out, including the California Proposition 1B, and Nevada Question 1 revenues.

Federal Revenues

The Federal revenues totaled \$494 million, and were assumed to continue at current levels with the exception of several programs that were based on competitive grants. The discretionary revenues include the Federal Lands Transportation Program and Federal Lands Access Program, Highway Safety Improvement Program, FHWA Ferry Program, FAA Airport Improvement Program and the High Priority Projects Program revenues.

Analysis of Tahoe RTP Revenues by Modal Use

The estimate of Tahoe RTP 2017-2040 revenues in 2017\$ by mode/use is shown in Table 3. While this may not end up being the exact allocation of funding by mode/use, it provides an order of magnitude comparison of funds likely to be available for each mode/use. Note that Technology/TSM and the TOD Housing unit projects have not been identified as receiving specific revenues, but will need to be funded from the categories shown or the new revenue sources that are approved.

Table 3: Tahoe RTP Revenues Estimated By Mode/Use for 2017-2040 in 2017\$

Source \$2017 by GK	Bus	Street/Ped/Bike	Water Quality	Ferry	Total
LOCAL SOURCES					
Farebox Revenues	\$4,459,085				\$4,459,085
TRPA Rental Car Mitigation Fund	\$2,925,507				\$2,925,507
TRPA Air Quality Mitigation Fund		\$9,769,944			\$9,769,944
TRPA Water Quality Mitigation Fund			\$11,641,513		\$11,641,513
Local Funds (on-going)	\$69,000,000	\$96,044,160			\$165,044,160
Local Funds (project specific)		\$13,253,350			\$13,253,350
Private Funds	\$1,150,000	\$35,450,000			\$36,600,000
Ferry Partnership				\$128,800,000	\$128,800,000
O&M (bike trail, ped facilities, roadway, stormwater)		\$280,757,176	\$32,000,000		\$312,757,176
Environmental Stormwater Capital			\$112,241,793		\$112,241,793
Total Local	\$77,534,592	\$435,274,630	\$155,883,306	\$128,800,000	\$797,492,527
STATE SOURCES	Bus	Street/Ped/Bike	Water Quality	Ferry	Total
State Transit Assistance and Local Transportation Fund	\$97,848,060				\$97,848,060
Regional Improvement Program (STIP)		\$57,572,847			\$57,572,847
Low Carbon Transit Operations	\$4,284,000				\$4,284,000
Affordable Housing Sustainable Communities		\$25,140,000			\$25,140,000
California Proposition 1B		\$75,431			\$75,431
California Tahoe Conservancy		\$14,155,400			\$14,155,400
Active Transportation Program (CA)		\$34,714,800			\$34,714,800
Emergency Road Repair		\$2,448,000			\$2,448,000
California SHOPP		\$116,226,000			\$116,226,000
Nevada Question 1		\$2,700,000			\$2,700,000
Nevada State Funds		\$37,623,000			\$37,623,000
Total State	\$102,132,060	\$290,655,478	\$0	\$0	\$392,787,538
FEDERAL SOURCES	Bus	Street/Ped/Bike	Water Quality	Ferry	Total
Surface Transportation Block Grant		\$72,557,544			\$72,557,544
Surface Transportation Block Grant Set-Aside (TAP)		\$3,922,332			\$3,922,332
Federal Lands Transportation Program		\$4,896,000			\$4,896,000
Federal Lands Access Program		\$138,568,000			\$138,568,000
Congestion Mitigation & Air Quality Program	\$20,000,000	\$25,266,256			\$45,266,256
National Highway Performance Program		\$18,000,000			\$18,000,000
Highway Safety Improvement Program		\$32,870,859			\$32,870,859
FHWA Ferry Program				\$25,500,000	\$25,500,000
FTA 5307 Urbanized Area Formula Program	\$105,264,000				\$105,264,000
FTA 5310 Mobility of Seniors and Disabled	\$2,007,360				\$2,007,360
FTA 5311 Rural Area Formula Grants (NV)	\$30,082,000				\$30,082,000
FTA 5339 Bus and Bus Facilities	\$6,120,000				\$6,120,000
FAA Airport Improvement Program	\$7,293,150				\$7,293,150
High Priority Projects Program		\$1,655,000			\$1,655,000
Total Federal	\$170,766,510	\$297,735,992	\$0	\$25,500,000	\$494,002,502
Total Local/State/Federal	\$350,433,162	\$1,023,666,100	\$155,883,306	\$154,300,000	\$1,684,282,567

3. Summary of RTP Cost/Revenue Adjustments By Mode/Use

The Tahoe RTP cost and revenue adjustments recommended earlier in this memo are shown in Table 4 according to the mode/use category. This analysis shows that Bus/Ferry Transit (\$1.34 billion) and Street/Bike/Ped (\$1.26 billion) make up the vast majority of total needs (\$3.1 billion) after costs and revenues have been adjusted.

Table 4: Tahoe RTP Cost/Revenue Adjustments By Mode/Use for 2017-2040 in 2017\$

Mode/Use Category	RTP Costs + Adjustments
Transit Capital + Operations + Admin	\$ 1,344,000,000
Street/Bike/Ped Capital + Operations	\$ 1,257,000,000
Stormwater TMDL W Q Cap + Ops	\$ 189,000,000
Technology TSM Capital + Operations	\$ 110,000,000
Ferry and Water Taxi Capital +Ops	\$ 189,000,000
Transit Oriented Development (30% of \$59.1 million)*	\$ 18,000,000
Totals	\$ 3,107,000,000

4. Tahoe RTP Shortfalls By Mode/Use

The Tahoe RTP adjusted costs, projected revenues available and estimated shortfall are shown in Table 5 according to each mode/use category. The modal revenues are taken from Table 3 and the modal costs are taken from Table 4. While this may not end up being the exact allocation of funding by mode/use, it provides an order of magnitude comparison of the shortfalls likely for each mode/use. Note that Technology/TSM projects have not been identified as receiving specific revenues, but will need to be funded from the other categories shown. The Bus/Ferry

Transit category has by far the largest shortfall, and the search for revenue sources will need to recognize the importance of funding transit necessary to address this shortfall. Similarly, the importance of Water Quality/TMDL and Technology investments in the Tahoe Basin will require more flexibility than traditional transportation funding sources, which are typically limited to transit and/or street/bike/ped costs. In addition, the Transit Oriented Development (TOD) project costs are included in the shortfall, and will also require a flexible fund source if it is to be paid out of transportation revenue sources.

The Street/Bike/Ped shortfall is large, and will need to be addressed, but it is worth noting that this mode appears to have the largest proportion of total costs met by projected revenues.

Table 5: Tahoe RTP Shortfalls by Mode/Use

Mode/Use Category	RTP Costs + Adjustments	RTP Revenues + Adjustments	Shortfall by Mode/Use
Transit Capital + Operations + Admin	\$ 1,344,000,000	\$ 350,000,000	\$ (994,000,000)
Street/Bike/Ped Capital + Operations	\$ 1,257,000,000	\$ 924,000,000	\$ (333,000,000)
Stormwater TMDL W Q Cap + Ops	\$ 189,000,000	\$ 156,000,000	\$ (33,000,000)
Technology TSM Capital + Operations	\$ 110,000,000	\$ -	\$ (110,000,000)
Ferry and Water Taxi Capital +Ops	\$ 189,000,000	\$ 148,000,000	\$ (41,000,000)
Transit Oriented Development (30% of \$59.1 million)*	\$ 18,000,000	\$ -	\$ (18,000,000)
Totals	\$ 3,107,000,000	\$ 1,578,000,000	\$ (1,529,000,000)
*Note: Private sector funding will cover remaining \$41 million needed to complete TOD project; assumed 200 units total			\$ (1,529,000,000)

5. Tahoe RTP Shortfalls By Capital versus Operating

Using the Tahoe RTP adjusted costs, shown in Table 5, we also determined the allocation of capital versus operating costs shown in Table 6. As shown, operating costs are the majority of all costs, and the vast majority of the operating cost shortfall is projected in Transit services.

Table 6: Tahoe RTP Shortfalls by Mode/Use and Capital versus Operating

Mode/Use Category	RTP Capital +Adjustments	RTP Operations +Adjustments	RTP Revenues + Adjustments	Shortfall by Mode/Use
Transit	\$ 285,000,000	\$ 1,059,000,000	\$ 350,000,000	\$ (994,000,000)
Street/Bike/Ped	\$ 566,000,000	\$ 691,000,000	\$ 924,000,000	\$ (333,000,000)
Stormwater TMDL W Q	\$ 128,000,000	\$ 61,000,000	\$ 156,000,000	\$ (33,000,000)
Technology TSM	\$ 105,000,000	\$ 5,000,000	\$ -	\$ (110,000,000)
Ferry and Water Taxi	\$ 85,000,000	\$ 104,000,000	\$ 148,000,000	\$ (41,000,000)
Transit Oriented Development (30% of \$59.1 million)*	\$ 18,000,000		\$ -	\$ (18,000,000)
Totals	\$ 1,187,000,000	\$ 1,920,000,000	\$ 1,578,000,000	\$ (1,529,000,000)
*Note: Private sector funding will cover remaining \$41 million needed to complete TOD project; assumed 200 units total				

Upon further review of the RTP shortfalls by mode, in particular the Transit/Ferry/Water Taxi shortfall of over \$1 billion, it became apparent that the Transit/Ferry Water Taxi shortfall exceeded the value of all of the projects and services in Unconstrained RTP for this use, herein after referred to as “Transit”. Initially, it was believed that all of the projects and services in the Constrained RTP could be funded. But utilizing the modal allocation of funds presented in Table 3 above, it became clear that there were some Transit projects and services in the Constrained scenario that would not be funded, given the current assumptions about the modal allocation of funds. In addition, we wanted to understand the impact of the adjustments to costs and revenues described earlier in this memo on projected shortfalls in the Constrained Scenario. Table 7 shows the projected shortfalls by mode/use assuming all adjustments are applied to the Constrained scenario. The total shortfall for all mode/uses is \$236 million, and given the assumed revenue use constraints, the Transit shortfall is \$359 million. The fact that the total shortfall is lower than the projected Transit shortfall is the result of an expected excess of funding for Street/Bike/Ped pavement projects, which generally have revenue streams that are not

eligible for use on Transit projects/services. Even if some funding can be flexed to Transit use, there will be many Transit projects in the Constrained scenario that will not be funded with the current revenue stream. It is therefore critical that any new funding source be fungible across all modes, and ideally, political jurisdictions, to prevent the optimal allocation of resources to each mode and jurisdiction.

Table 7: Tahoe RTP Shortfalls by Mode/Use for Constrained Scenario, including all Adjustments

2017-2040 RTP Constrained Costs and Revenues by Mode/Use, with Adjustments (2017\$)				
Broken out by Capital and Operations				
Mode/Use Category	RTP Capital +Adjustments	RTP Operations +Adjustments	RTP Revenues + Adjustments	Shortfall by Mode/Use
Transit	\$ 152,843,100	\$ 516,915,929	\$ 350,000,000	\$ (319,759,029)
Street/Bike/Ped	\$ 393,572,056	\$ 280,421,976	\$ 924,000,000	\$ 250,005,968
Stormwater TMDL W Q	\$ 112,241,793	\$ 61,335,200	\$ 156,000,000	\$ (17,576,993)
Technology TSM	\$ 85,575,000	\$ 4,720,000	\$ -	\$ (90,295,000)
Ferry and Water Taxi	\$ 85,000,000	\$ 103,200,000	\$ 148,000,000	\$ (40,200,000)
Transit Oriented Development (30% of \$59.1 million)*	\$ 18,000,000		\$ -	\$ (18,000,000)
Totals	\$ 847,231,949	\$ 966,593,105	\$ 1,578,000,000	\$ (235,825,054)
*Note: Private sector funding will cover remaining \$41 million needed to complete TOD project; assumed 200 units total				

6. Tahoe RTP Expenditures by Entity

Using the Tahoe RTP adjusted expenditure data shown in Tables 6 and 7, we estimated which projects and services would be possible if new funding were found to address the \$1.529 billion dollar shortfall. Further, we analyzed the location of these projects and services and allocated them to the entities that would benefit.

The allocation of projects and services to political entities made possible by a new fund source also required assumptions about where to assign the expenditures. The allocation of capital projects was relatively simple; built projects were located in that entity. Capital rolling stock was allocated between the entities that were served by the rolling stock. Operating costs were allocated across all of the entities that were served, generally on the ratio of total miles of service

located within each entity. The allocation of inter-regional rail and the Tahoe Ferry was based on the location of terminals/stations. In some cases, e.g., local government expenditures on road and stormwater maintenance, the allocation of funding to the entity was also obvious. The results are shown in Table 8.

Table 8: Tahoe RTP Expenditures by Entity

2017-2040 RTP Expenditures by Entity, with Adjustments to Constrained and Unconstrained Scenarios (2017\$)							
Scenarios	El Dorado exclude CSLT	CLST	Placer includes RT and TT	Washoe	Carson	Douglas	Total All Years
Constrained	\$332,155,000	\$ 460,830,000	\$ 465,520,000	\$ 125,010,000	\$ 56,542,000	\$ 138,577,000	\$ 1,578,634,000
UnConstrained	\$395,509,000	\$ 449,728,000	\$ 218,850,000	\$ 239,992,000	\$ 65,100,000	\$ 157,960,000	\$ 1,527,139,000
Total	\$727,664,000	\$ 910,558,000	\$ 684,370,000	\$ 365,002,000	\$ 121,642,000	\$ 296,537,000	\$ 3,105,773,000

7. RTP Revenues from Resident versus Non-Resident Sources

In addition to the analysis of RTP shortfalls, the payment of RTP revenues from residents versus non-residents was reviewed. This analysis was based upon projected revenues contained in the RTP as shown in Table 3. In some cases, the RTP made explicit assumptions regarding non-resident contributions to transportation funding, e.g., the North Lake Tahoe and South Lake Tahoe Transient Occupancy Tax (TOT) revenues included in the RTP “Local Funds On-Going” category. In other cases, reasonable assumptions were made for estimating the proportion of revenue coming from residents versus non-residents based upon available data.

In order to develop reasonable assumptions for non-resident contributions to local funding shown in the RTP, we reviewed studies of local taxes paid by non-residents. The only data regarding non-resident payment of local sales taxes was contained in the North Lake Tahoe Resort

Association (NLTRA) publication “The Economic Significance of Travel to the North Lake Tahoe Area” by Dean Runyan Associates dated October 2017.

The more difficult category of non-resident contribution to assess are local sales and property taxes since there is not a break out of these revenues in the RTP. Local sales and property taxes are typically allocated to local government general funds, which are included in the “Local Funds” category in the RTP. The challenge in estimating non-resident contributions to Local Funds in the Tahoe RTP are three-fold:

1. The five counties that comprise the Tahoe Basin all have major population centers outside of the Tahoe Basin, thus both revenues collected and expenditures within the Tahoe Basin cannot be isolated from revenues and expenditures for the entire county, at least within the constraints of this study. As a result, this analysis attempts to identify reasonable percentages of public works funds that can attributed to non-residents and apply it to all local government spending identified in the RTP.

The one local government exception is the City of South Lake Tahoe (CSLT), which lies within the Tahoe Basin. The local sales and property tax contributions of non-residents were estimated to determine the percentage of public works funding that can be attributed to non-residents based upon the CLST 2016 Budget document and visitor expenditure data developed by the South Lake Tahoe Visitors Authority.

2. Local sales and property taxes are only a portion of local government general funds; in the case of Placer County and the CSLT, they make up 56 percent of the total general fund averaging the two entity budgets together.
3. General funds are only a portion of the local government Public Works budgets; other revenues and fees fund significant portions of the public works projects and services. For

Placer County and the CSLT, general funds make up 10 percent of the Public Works funding, averaging the two entity budgets together.

Table 9 shown below documents the resident and non-resident RTP revenue assumptions by funding category. In summary, utilizing the assumptions described below, the total RTP revenue stream for 2017-2040 (in 2017\$) of \$1.578 billion can be attributed 94.5 percent to residents, and 5.5 percent to non-residents. There is very limited data currently available to assess the local government tax contributions from non-residents/visitors to the Tahoe Basin. This is an area that would benefit greatly from further research and data collection to further refine these estimates.

Table 9: Tahoe RTP 2017-2040 Revenue Payments: Residents versus Non-Residents

Source	Bus	Street/Bike/Ped	Water Quality	Ferry	Total	Non-Resident	Resident
LOCAL SOURCES							
Farebox Revenues	\$4,459,085				\$4,459,085	\$1,337,726	\$3,121,359
TRPA Rental Car Mitigation Fund	\$2,925,507				\$2,925,507	\$2,925,507	
TRPA Air Quality Mitigation Fund		\$9,769,944			\$9,769,944		\$9,769,944
TRPA Water Quality Mitigation Fund			\$11,641,513		\$11,641,513		\$11,641,513
Local Funds (on-going)	\$69,000,000	\$96,044,160			\$165,044,160	\$42,324,247	\$122,719,913
Local Funds (project specific)		\$13,253,350			\$13,253,350	\$74,219	\$13,179,131
Private Funds	\$1,150,000	\$35,450,000			\$36,600,000		\$36,600,000
Ferry Partnership				\$128,800,000	\$128,800,000	\$38,640,000	\$90,160,000
O&M (bike trail, ped facilities, roadway, stormwater)		\$280,757,176	\$32,000,000		\$312,757,176	\$1,751,440	\$311,005,736
Environmental Stormwater Capital			\$112,241,793		\$112,241,793		\$112,241,793
Total Local	\$77,534,592	\$435,274,630	\$155,883,306	\$128,800,000	\$797,492,527	\$87,053,139	\$710,439,388
STATE SOURCES							
State Transit Assistance and Local Transportation Fund	\$97,848,060				\$97,848,060		\$97,848,060
Regional Improvement Program (STIP)		\$57,572,847			\$57,572,847		\$57,572,847
Low Carbon Transit Operations	\$4,284,000				\$4,284,000		\$4,284,000
Affordable Housing Sustainable Communities Note: reduced \$6 million per adjust		\$19,140,000			\$19,140,000		\$19,140,000
California Proposition 1B		\$75,431			\$75,431		\$75,431
California Tahoe Conservancy		\$14,155,400			\$14,155,400		\$14,155,400
Active Transportation Program (CA) Note: reduced \$6 million per adjust		\$28,714,800			\$28,714,800		\$28,714,800
Emergency Road Repair		\$2,448,000			\$2,448,000		\$2,448,000
California SHOPP Note: reduced \$29 million per adjust		\$87,226,000			\$87,226,000		\$87,226,000
Nevada Question 1		\$2,700,000			\$2,700,000		\$2,700,000
Nevada State Funds Note: reduced \$9 million per adjust		\$28,623,000			\$28,623,000		\$28,623,000
Total State	\$102,132,060	\$240,655,478	\$0	\$0	\$342,787,538		\$342,787,538
FEDERAL SOURCES							
Surface Transportation Block Grant		\$72,557,544			\$72,557,544		\$72,557,544
Surface Transportation Block Grant Set-Aside (TAP)		\$3,922,332			\$3,922,332		\$3,922,332
Federal Lands Transportation Program Note: reduced \$1million per adjusts		\$3,896,000			\$3,896,000		\$3,896,000
Federal Lands Access Program Note: reduced \$41million per adjusts		\$97,568,000			\$97,568,000		\$97,568,000
Congestion Mitigation & Air Quality Program	\$20,000,000	\$25,266,256			\$45,266,256		\$45,266,256
National Highway Performance Program		\$18,000,000			\$18,000,000		\$18,000,000
Highway Safety Improvement Program Note reduced \$8 million per adjusts		\$24,870,859			\$24,870,859		\$24,870,859
FHWA Ferry Program Note reduced by \$6 million per adjusts				\$19,500,000	\$19,500,000		\$19,500,000
FTA 5307 Urbanized Area Formula Program	\$105,264,000				\$105,264,000		\$105,264,000
FTA 5310 Enhancement Mobility of Seniors and individuals with Disabilities	\$2,007,360				\$2,007,360		\$2,007,360
FTA 5311 Rural Area Formula Grants (NV)	\$30,082,000				\$30,082,000		\$30,082,000
FTA 5339 Bus and Bus Facilities	\$6,120,000				\$6,120,000		\$6,120,000
Federal Aviation Administration Airport Improvement Program	\$7,293,150				\$7,293,150		\$7,293,150
High Priority Projects Program		\$1,655,000			\$1,655,000		\$1,655,000
Total Federal	\$170,766,510	\$247,735,992	\$0	\$19,500,000	\$438,002,502		\$438,002,502
Total Local/State/Federal	\$350,433,161	\$923,666,099	\$155,883,306	\$148,300,000	\$1,578,282,567	\$87,053,139	\$1,491,229,428
					% of Total	5.5%	94.5%

The key assumptions utilized in this analysis include the following:

1. Local Sources: \$797 million total: \$87 million Non-Resident, \$710 million Resident

Residents were assumed to pay all of the local government funded during 2017-2040, with the exception of the following:

- Farebox Revenue (30% Non-Resident, 70% Resident)

- TRPA Rental Car Mitigation Fund (100% Non-Resident)

- Local Funds On-Going: Non Residents pay:

 - \$41.4 million (North Lake Tahoe & Douglas TOT \$1.8 million annual)

 - \$924,000 of Public Works (.56% of total PW expenditures *\$165 million)

- Local Funds Project Specific: Non-Residents pay:

 - \$74,000 of Public Works (.56% of total PW expenditures *\$13.25 million)

- Ferry Partnership Revenue (30% Non-Resident, 70% Resident)

- Local O & M

 - \$1.75 million of Public Works (.56% of total PW expenditures *\$312.8 million)

The determination of non-resident payment of .56% of the local government public works expenditures is based upon an analysis of the following:

- Payment of local sales tax by visitors/non-residents in North Lake Tahoe (NLT)

 - portion of Placer County and the CLST

- Payment of local property tax by visitors/non-residents in NLT portion of Placer

 - County and the CLST

The payment of local sales and property tax by visitors/non-residents to NLT portion of Placer County and CSLT was then converted into:

- The portion of the Placer County and the CLST general fund resultant from local sales and property tax
- The portion of the Placer County and the CLST public works budget resultant from the general fund
- The portion of the Placer County and the CLST public works budget resultant from local sales (.2%) and property tax (.36%) attributed to visitor/non-residents, totaling .56% of all public works expenditures.

The computations of these estimates are shown in the following Table 10 and 11, along with the sources for the data utilized. Note that Placer County and CLST budgets reference the 2015-2016 budget documents.

Table 10: Non Resident Payment of Local Sales Tax to Public Works in NLT of Placer County and the CSLT

1. Non Resident Payment of Sales Taxes to Public Works Budget	
In Runyan 2016 Report, Visitors pay \$2.2 million in local sales taxes in NLT portion of Placer p. 22	\$2,200,000
In CSLT, Visitors pay 117%(\$754 mil in SLT (Mike Fry email)/ \$647 mil in NLT (p.9 Runyan+A19) *\$2.2 mil=	\$2,570,000
Total Visitor Sales tax payments in CSLT and NLT portion of Placer	\$4,770,000
A. Percent of Total Sales Tax paid by Visitors	
Total sales tax paid to GF in CSLT in 2016 p. 52	\$4,900,000
Total sales tax paid to GF in Placer Co in 2016 p. 227	\$12,500,000
Total sales tax paid to GF in Placer and CLST	\$17,400,000
Percent of total sales tax paid by SLT/NLT Visitors to Placer Co and SLT GF (\$4.77/\$17.4)	27.4%
B. Percent of Total General Fund (GF) from Sales Tax for Placer & CSLT	
Total GF for Placer Co p.227	\$197,300,000
Total GF for CSLT p.52	\$34,300,000
Total GF	\$231,600,000
Percent of total GF from sales tax (\$17.4/\$231.6)	7.5%
C. Percent of Public Works Budget paid from GF for Placer & CSLT	
Placer Co PW Budget p.341-2	\$ 143,900,000
CSLT PW Budget: p.50	7,900,000
Placer Co and CSLT PW Total:	\$151,800,000
Placer Co GF revenues for PW p.341	\$10,600,000
CLST GF revenues for PW p. 50	\$ 4,500,000
Total GF in PW Budgets for Placer Co & CSLT	\$15,100,000
Percent of total PW budget from GF (\$15.1/\$151.8)	9.9%
D. Percent of Public Works Budget paid from Visitor Sales Tax	
% sales tax paid by visitors* % sales tax in GF* %GF in PW budget (27.4%*7.5%*9.9%)	0.20%

Table 11: Non-Resident Payment of Local Property Tax to Public Works in NLT of Placer

2. Non Resident Payment of Property Taxes to Placer Co and CSLT Public Works Budget	
All Placer Co and CLST data from 2015-16 budgets	
Tahoe Prosperity Report shows ave 69% of homes owned by non-residents	
in Tahoe Basin even though Placer Co estimate is 59%, use 69% for TB average	
A. Total Property Tax Revenue for Placer & CSLT	
Total Property Tax for Placer Co p.227	\$ 105,000,000
Total Property Tax for CLST p.52	\$ 6,400,000
Total Property Tax for Placer and CLST	\$ 111,400,000
B. Property Tax paid by non-residents in Placer Co and CLST	
Total Placer County Dwelling Units p. 6	161500
Placer County Dwelling Units in Tahoe Basin	12,106
Placer County Dwelling Units in Tahoe Basin owned by non-residents (69%)	8353
Percent of Total Placer Co Property Tax paid by Non-residents in TB (8353/161500)	5%
Total Placer Co Property Tax paid by Tahoe Non-Residents (5%*\$105,000,000)	\$5,430,834
B. Percent of Property Tax paid by non-residents in CSLT	
CLST Total housing units p. 21	15878
CLST Occupied housing units p. 21	8628
CLST Non-Occupied housing units p. 21	7250
% CLST housing units owned by non-residents	46%
Total CLST Property Tax paid by Non-Residents (46%*\$6,400,000)	\$2,922,282
Total Property Tax paid by non residents in Placer Co and CLST	\$8,353,116
Percent of total property tax paid by Placer Co & CLST Non Residents	7.5%
(\$8.35/\$111.4)	
Total General Fund for Placer Co p.227	\$ 197,300,000
total General Fund for CLST p. 52	\$ 34,300,000
Total General Fund for Placer and CLST	\$ 231,600,000
Percent of total GF from Property Tax	48.1%
(\$111.4/\$231.6)	
C. Percent of Public Works Budget paid from GF for Placer & CSLT	
Placer Co PW Budget p.341-2	\$ 143,900,000
CSLT PW Budget: p.50	7,900,000
Placer Co and CSLT PW Total:	\$151,800,000
Placer Co GF revenues for PW p.341	\$10,600,000
CLST GF revenues for PW p. 50	\$ 4,500,000
Total GF in PW Budgets for Placer Co & CSLT	\$15,100,000
Percent of total PW budget from GF	9.9%
(\$15.1/\$151.8)	
D. Percent of Public Works Budget paid from Non Residents Property Tax in Placer & CLST	
% prop tax paid by Non-Res* % prop tax in GF* %GF in PW budget	0.36%
(7.5%*48.1%*9.9%)	

2. State Sources: \$343 million total, \$343 million Resident

The payment of state funds expended on transportation in the Tahoe Basin was assumed to be 100% Resident. This assumption implies that the payment of total state taxes and transportation fees by Tahoe Residents is commensurate with total state transportation funding received in the Tahoe Basin. Analyzing state transportation revenues collected solely in the Tahoe Basin would be very complex and involve many revenue sources, including fuel taxes and some general fund sources, particularly the sales tax, which are paid by Non-Residents. It would be difficult to determine the amount of fuel tax paid by Residents versus Non-Residents in the Tahoe Basin; and it is likely that high fuel costs in the mountains cause drive-up visitors to fuel outside of the Tahoe Basin when possible. In the case of California state sales taxes, it probably has a small impact, given only a small portion of state sales taxes are allocated to transportation. In addition, there would need to be an accounting of Tahoe Basin Resident transportation fees and state taxes paid outside of the Basin to accurately assess Resident versus Non-Resident contributions within the Tahoe Basin.

In order to check the reasonableness of this assumption, we reviewed California per capita state transportation expenditures for 2018/19 and found \$370 expended per person for the entire state. For comparison, the Tahoe RTP data estimates state transportation funding per capita per year averages \$329 per Tahoe Basin Resident, thus it appears this assumption is reasonable, if Tahoe Basin Residents contribute state funding at rate similar to the statewide average. . It should also be noted that the Tahoe RTP estimate of expected state discretionary funds was reduced by \$50 million as one of the adjustments made to determine the final Tahoe RTP shortfall.

3. Federal Sources: \$438 million total, \$438 million Resident

The payment of federal funding sources expended on transportation in the Tahoe Basin was assumed to be 100% Resident, and was based upon considerations similar to those described above for the state fund sources. In the case of federal funds, there are no general fund contributions by Non-Residents to consider. It should also be noted that the Tahoe RTP estimate of expected federal discretionary funds was reduced by \$56 million as one of the adjustments made to determine the final Tahoe RTP shortfall.

Appendix B:

Screening and Evaluation Process for Potential Funding Mechanisms

Effective Regional Revenue Sources to Address Regional and Local Transportation Projects, Services, and Operations in the Lake Tahoe Region

Subtask 5.4: Tiered Screening Process for the Development and Evaluation of Funding Strategies

Subtask 6.4: Establish Evaluation Criteria for Funding Strategies

prepared for

Tahoe Transportation District

Morse Associates Consulting, LLC

prepared by

Cambridge Systematics, Inc.

Table of Contents

1.0	Introduction	1-1
2.0	Traditional Transportation Revenue Sources.....	2-1
2.1	State Motor Fuel Taxes and Fees.....	2-2
2.2	State Motor Vehicle Registration Fees.....	2-4
2.3	State Motor Vehicle Sales Taxes.....	2-5
2.4	Tolls	2-5
2.5	Other Sources of State Revenue	2-8
2.6	Local Funding Sources	2-9
3.0	Existing Transportation Revenue Sources in the States of Nevada and California.....	3-1
3.1	Revenue Sources Authorized by State Constitution or Statute.....	3-1
3.2	Local Revenue Sources Authorized in Nevada State Law.....	3-4
3.2.1	Fuel Taxes	3-4
3.2.2	Local Indexed Fuel Taxes.....	3-4
3.2.3	Sales & Use Taxes.....	3-6
3.2.4	Property Taxes.....	3-7
3.2.5	Impact Fees for New Development.....	3-8
3.2.6	Improvement Districts	3-9
3.2.7	Road Utility.....	3-10
3.2.8	Supplemental Governmental Services Tax.....	3-11
3.2.9	Other Taxes	3-11
3.3	Constrained Local Revenue Sources in the Linking Tahoe Regional Transportation Plan	3-11
4.0	Proposed Approach.....	4-14
4.1	Revenue Evaluation Criteria and Rating Ranges.....	4-15
4.2	Tiered Screening Process.....	4-20

List of Tables

Table 1:	Gasoline Motor Fuel Tax Rates (cents per gallon) Effective 10/01/2018	2-2
Table 2:	Diesel Motor Fuel Tax Rates (cents per gallon) Effective 10/01/2018	2-3
Table 3:	Gasoline and Diesel Motor Fuel Tax Rates (cents per gallon) in Nevada in 2017	2-3
Table 4:	Vehicle Registration and Title Fees for Selected States	2-4
Table 5:	States Using Oversize/Overweight Truck Permit Fees, Sales Taxes on Rental Vehicles and Driver's License Fees to Finance Roads and Bridges	2-8
Table 6:	Sample of Public Agencies that use Local Options Sales Tax to Fund Transportation Projects	2-10
Table 7:	Sample of Public Agencies that use Payroll/Occupational Taxes to Fund Public Transit Operating and Capital Expenditures	2-10
Table 8:	A Comparison of Three European Road Charge Schemes: London, Stockholm and Milan	2-14
Table 9:	Nevada Revenue Sources Authorized by State Constitution or Statute in Current Use	3-1
Table 10:	California Revenue Sources Authorized by State Constitution or Statute in Current Use	3-2
Table 11:	County Optional Sales Taxes Collected In Nevada, FY 2015 and FY 2016	3-6
Table 12:	Number and Total Value of Local General Improvement Districts Active in Nevada, FY 2016-17	3-10
Table 13:	Constrained Local Revenue Sources Identified in the Linking Tahoe Regional Transportation Plan	3-12
Table 14:	Rating Definition for Revenue Evaluation Criteria (Draft)	4-18

List of Figures

Figure 1:	Toll Mileage Trends, 2003 to 2017	2-7
Figure 2:	Comparison of Impact Fees for new Office, Retail and Industrial Development using a Representative Sample of Data at the National, State, City and Regional Level, 2011	2-12
Figure 3:	Proposed Approach to Develop and Evaluate Funding Strategies for the Lake Tahoe Region (Draft)	Error! Bookmark not defined.
Figure 4:	Three-Tiered Screening Process for the Assessment of Potential Revenue Options for the Lake Tahoe Region (Draft)	4-22

1.0 Introduction

The Tahoe Transportation District (TTD), working in conjunction with federal, state, local, and private sector partners, has the authority and responsibility for providing a safe, environmentally-positive, multi-modal transportation system for the Lake Tahoe region. Unfortunately, the TTD cannot completely fulfill this responsibility for the region due to a lack of sustainable, adequate funding. The permanent population in the Tahoe Basin is currently estimated at 55,000 residents, so it is a very small base population that cannot afford to pay for all of the needed transportation projects and services, nor should it. Much of the transportation needs in the Tahoe Basin are the result of the many visitors that come to enjoy its natural beauty and many recreational opportunities.

To effectively evaluate potential funding solutions for the region, it is important to understand that the Tahoe Basin is facing a number of transportation challenges because the majority of travel in the Basin is the result of visitors. Visitors come from all across the United States, as well as around the world, to see the beauty of Tahoe and enjoy the many summer and winter recreational opportunities. The majority of these visitors reside in California and Nevada. Of all trips entering the Basin, 87 percent are visitors, 6 percent are commuters, and 7 percent are residents/home workers. There are winter and summer peak travel seasons, but the summer travel is twice the volume of winter travel. In many ways, the visitor travel to Lake Tahoe is similar to travel to a National Park.

One of the typical mechanisms to capture visitor contributions for needed services is the room tax, but at Tahoe 43 percent of the visitors are day visitors and do not spend the night. Funding mechanisms that target the resident population (fuel taxes, property taxes, sales taxes) will probably not be effective, given the small population that lives within the Tahoe Basin.

The high proportion of visitor trips to the Basin, including a substantial percentage that do not spend the night, will require a funding mechanism that can effectively collect contributions from daily and long term travelers. The purpose of this technical memorandum is to describe a proposed tiered screening process, including the evaluation criteria, for the development and evaluation of funding strategies that can ensure adequate funding is provided from existing and new sources to implement the transportation vision for the Lake Tahoe region. To help frame the process, this memo presents a high-level overview of traditional revenue sources to support transportation investments, and existing transportation revenue sources in the region.

2.0 Traditional Transportation Revenue Sources

Existing funding for transportation in the Lake Tahoe region is a complex mix of federal, state, local and private/public partnerships. In addition to the State of California and State of Nevada, there are five Counties (Placer, El Dorado, Washoe, Carson City, and Douglas) and one incorporated City (South Lake Tahoe) within the Lake Tahoe region. The large tracts of federal lands within the Basin, principally administered by the US Forest Service, are a key driver for recreational travel demand. Each of these entities provides funding for various components of the transportation system within the region. With the exception of South Lake Tahoe, these jurisdictions have responsibilities that extend well beyond the Lake Tahoe region. Like the TTD, these entities are all facing unmet needs within their jurisdiction and there is constant pressure to try and find new resources to meet these needs.

Traditional methods of financing highway construction and maintenance include revenues from state motor fuel taxes, oversize/overweight vehicle permits, motor vehicle sales and use tax, motor vehicle registration fees and sales taxes. Other financing methods used by State Departments of Transportation to support transportation investments include toll revenues, bond proceeds, and public private partnerships.

Local funding sources used by counties or cities to fund transportation includes sales and use taxes, development taxes, vehicle registration fees, income/payroll/employer taxes, and property taxes. Examples of local financing methods allowed in the state of Nevada are described below.

- NRS 377A enables counties in Nevada to impose a 0.5 percent sales and use tax to fund public transit and road projects.¹ The counties of Washoe and Clark have imposed sales and use taxes at the rates of 0.375 percent and 0.5 percent, respectively.²
- NR 278.170 enables counties in Nevada to impose a tax for the improvement of transportation on the privilege of new residential, commercial, industrial and other development.³ The proceeds of this tax are dedicated to the construction and maintenance of highways, avenues, boulevards, streets, sidewalks, as well as overpass and underpass projects. At this time, only the counties of Clark and Douglas have levied this tax to increase transportation funding.⁴
- A supplemental governmental service tax rate of 1 cent, based upon the depreciated value of the vehicle and collected with the vehicle registration fee, may be levied in all counties for transportation projects within that county. At this time, Clark County is the only county in the state levying the additional supplemental rate.⁵

This section provides an overview of these funding mechanisms.

¹ Nevada Revised Statute (NRS). 2016c. "Nevada Revised Statutes, Title 32, Chapter 377A", Nevada Legislature Law Library: 2016.

² Ibid.

³ Nevada Revised Statute (NRS). 2016f. "Nevada Revised Statutes, Title 32, Chapter 278", Nevada Legislature Law Library: 2016.

⁴ Ibid.

⁵ Nevada Revenue Reference Manual, Fiscal Analysis Division, January 2017.

2.1 State Motor Fuel Taxes and Fees

Motor fuel taxes provide approximately one-third of all state transportation funding for roads.⁶ For many states, the state motor fuel taxes represent the largest single source of dedicated revenue for transportation programs. These include per-gallon gasoline and diesel excise taxes and ad valorem sales taxes levied on fuel. Each state sets its own motor fuel tax rates. As of December 2017, tax rates ranged from approximately 12 to 59 cents per gallon for gasoline and 12 to 75 cents per gallon for diesel fuel.⁷ Other taxes are often included with the state motor fuel excise tax, including sales taxes, environmental fees, fees for underground storage tank and other funds, and local taxes and fees. Several states have either all or a portion of their motor fuel tax indexed to a local consumer price index or the wholesale price of fuel.

Table 1 summarizes the federal and state excise taxes and other taxes on gasoline motor fuel by U.S. region effective October 1, 2018. The average state gasoline excise tax is 23.06 cents per gallon. Other taxes account for 11.15 cents per gallon. Adding these other taxes and fees to the state excise taxes results in an average state and local tax of 34.21 cents per gallon. Adding the federal tax on gasoline is 18.40 cents per gallon results in a nationwide average tax on gasoline of 52.61 cents per gallon.

Table 2 summarizes the federal and state excise taxes and other taxes on diesel motor fuel by U.S. region effective October 1, 2018. The average state diesel fuel excise tax is 23.04 cents per gallon. Other state and local taxes average 13.24 cents per gallon. Adding these other taxes and fees to the state excise taxes results in an average state and local tax of 36.27 cents per gallon. Adding the federal tax on diesel is 24.4 cents per gallon, results in a nationwide average tax on motor diesel fuel of 60.67cents per gallon.

Table 3 summarizes the federal, state and county taxes on gasoline and diesel motor fuel for the state of Nevada in 2017. The county mandatory tax can be used for bond service, road construction, maintenance and repair, except 1 cent that can only be used to repair or restore existing county/city roads and streets.⁸

Table 1: Gasoline Motor Fuel Tax Rates (cents per gallon) Effective 10/01/2018

Region	State Excise Tax (a)	Other State Taxes/Fees (b)	Total State Taxes/Fees (c) = (a) + (b)	Total State and Federal Taxes (c) + 18.40
Northeast	24.72	6.49	31.22	49.62
Mid Atlantic	9.71	36.15	45.86	64.26
South Atlantic	18.12	14.61	32.73	51.13
Midwest	24.99	6.30	31.30	49.70
South	19.58	0.52	20.10	38.50
Mountain	26.20	0.30	26.50	44.90
West	37.64	10.10	47.74	66.14
U.S. (Average)	23.06	11.15	34.21	52.61

Source: American Petroleum Institute (API). Rates effective 10/01/2018

Notes:

⁶ National Conference of State Legislatures. Available at <http://www.ncsl.org/research/transportation/recalibrating-the-motor-fuel-tax.aspx>

⁷ National Conference of State Legislatures. Available at <http://www.ncsl.org/bookstore/state-legislatures-magazine/deep-dive-transportation-funding.aspx>

⁸ State of Nevada Transportation. State of Nevada Transportation Facts and Figures 2017.

1. Other taxes includes applicable sales taxes, gross receipts taxes, oil inspection fees, county and local taxes, underground storage tank fees and other miscellaneous environmental fees.
2. Federal excise tax = 18.40 cents per gallon.

Table 2: Diesel Motor Fuel Tax Rates (cents per gallon) Effective 10/01/2018

Region/State	State Excise Tax (a)	Other State Taxes/Fees (b)	Total State Taxes/Fees (c) = (a) + (b)	Total State and Federal Taxes (c) + 24.40
Northeast	30.82	1.37	32.18	56.58
Mid Atlantic	9.04	45.06	54.09	78.49
South Atlantic	20.95	10.38	31.33	55.73
Midwest	24.95	6.38	31.43	55.83
South	20.02	0.49	20.51	44.91
Mountain	25.81	0.43	26.24	50.64
West	33.84	28.05	61.89	86.29
U.S. (Average)	23.04	13.24	36.27	60.67

Source: American Petroleum Institute (API). Rates effective 10/01/2018

Notes:

1. Other taxes include applicable sales taxes, gross receipts taxes, oil inspection fees, county and local taxes, underground storage tank fees and other miscellaneous environmental fees.
2. Federal excise tax = 24.40 cents per gallon.

Table 3: Gasoline and Diesel Motor Fuel Tax Rates (cents per gallon) in Nevada in 2017

Fuel	Federal Tax	State Tax	County Mandatory Tax	County Optional Tax	Total
Gas	18.4	18.455	6.35	Up to 9	52.21*
Diesel	24.4	27.75			52.15

Source: State of Nevada Transportation. State of Nevada Transportation Facts and Figures 2017.

Note: *Up to 52.205 cents per gallon of gas statewide.

The disposition of state-imposed fuel taxes varies by state. A state may direct motor fuel tax revenue to numerous sources, including its department of transportation, special road or bridge funds, county governments, or even state general funds. States have taken the lead in raising fuel taxes to support transportation. While Congress has not increased the federal gas tax since 1993, 23 states and D.C. have raised their gas tax or adjusted their tax formula since 2013 to bring in more revenue for transportation.⁹

⁹ National Conference of State Legislatures. Available at <http://www.ncsl.org/bookstore/state-legislatures-magazine/deep-dive-transportation-funding.aspx>

2.2 State Motor Vehicle Registration Fees

State motor vehicle registration fees are another significant source of dedicated revenue for transportation programs. All states levy motor vehicle registration fees for passenger cars and commercial vehicles. Many states assess a flat fee while other states use a scale based on several metrics such as gross vehicle weight, vehicle age or even fuel efficiency. In some states, county and/or local registration fees are collected either with the state fee or separately.¹⁰

As an example, **Table 4** shows the registration and title fees for selected states in the West region. It should be noted that in some states, vehicle registration fees are not available for programs administered by the state DOTs. For example, in California, vehicle registration fees are earmarked to support the Department of Motor Vehicles and the California Highway Patrol, which are not part of the California Department of Transportation (Caltrans).

Table 4: Vehicle Registration and Title Fees for Selected States

State	Base Registration Fee	Time Frame	Additional Fees	Source
California	\$46	Annual	<ul style="list-style-type: none"> An additional Transportation Improvement Fee ranges from \$25 to \$175 is charged based on vehicle value, and beginning in 2020 will be readjusted annually based on the California Consumer Price Index. Plus a \$24 California Highway Patrol fee, and additional fees based on the type of vehicle, license plate type, and the owner's county of residence and driving record. Most vehicles are assessed a vehicle license fee (VLF) of 0.65% of value, in lieu of property tax, based on the purchase price/value when acquired and funds go to cities and counties. The VLF decreases for the first 11 renewal years. Beginning July 1, 2020, an additional fee of \$100 will be required on electric vehicles. 	Cal. Vehicle Code §§9250 et seq., Cal. Revenue and Taxation Code §§11052 et seq., and California Department of Motor Vehicles
Nevada	\$33	Annual	<ul style="list-style-type: none"> The state charges an additional governmental service tax based on the value of the vehicle. Some counties charge a supplemental governmental services tax. 	Nevada Department of Motor Vehicles

¹⁰ National Conference of State Legislatures. Available at http://www.financingtransportation.org/funding_financing/funding/state_funding/motor_vehicle_registration_fees.aspx

State	Base Registration Fee	Time Frame	Additional Fees	Source
Oregon	\$43	Biennial	<ul style="list-style-type: none"> • Additional county fees may apply. • Brand new vehicles are assessed two registration periods at once for a total of four years at \$172. • In addition to the registration fees additional fees based on MPG will be required for all vehicles. Vehicles with a rating of 0-19 MPG must pay \$20, 20-39 MPG \$25, and 40 MPG or greater \$35. • Beginning January 1, 2020 an additional fee of \$110 will be required on electric vehicles (H.B. 2017 (2017)). 	Ore. Rev. Stat. §803.420., H.B. 2017
Washington	\$30 (for passenger vehicles but increased fees apply depending on several factors such as vehicle type and weight, location, plate type and more.)	Annual	<ul style="list-style-type: none"> • Additional fee of \$150 is required on electric vehicles. 	Wash. Rev. Code §46.17.350 and Washington State Department of Licensing

Source: National Conference of State Legislatures (NCSL), Vehicle Registration Fees 2017.

2.3 State Motor Vehicle Sales Taxes

State with sales taxes imposed on motor vehicle sales dedicated to transportation purposes include Connecticut, Kentucky, Massachusetts, Minnesota, Missouri, Nebraska, New Jersey, North Carolina, South Carolina, South Dakota, Vermont, Virginia, Washington and West Virginia. In Minnesota, for example, the motor vehicle sales tax is a 6.5 percent tax applied to the sale of new and used motor vehicles registered.¹¹ The tax, based on the purchase price, is imposed instead of the state general sales tax and collected by auto dealers at the time of sale or by registrars when the vehicle is registered (for private sales).¹²

2.4 Tolls

Many state transportation agencies see toll facilities as a way to close funding gaps for transportation projects in a time of constrained public resources to support transportation investment. Interest in this funding mechanism today is mainly due to the supportive federal tolling regulations beginning in 1991 with the Intermodal Surface Transportation Efficiency Act (ISTEA). The use of Federal-aid in conjunction with private resources for road development purposes has been expanded through subsequent Federal-aid authorization acts, including the 2012 Moving Ahead for Progress in the 21st Century (MAP-21) and the 2015 Fixing America Surface Transportation (FAST) Act. Public-private partnership development of toll roads has been the focus of most state Departments of Transportation activities in privatization.

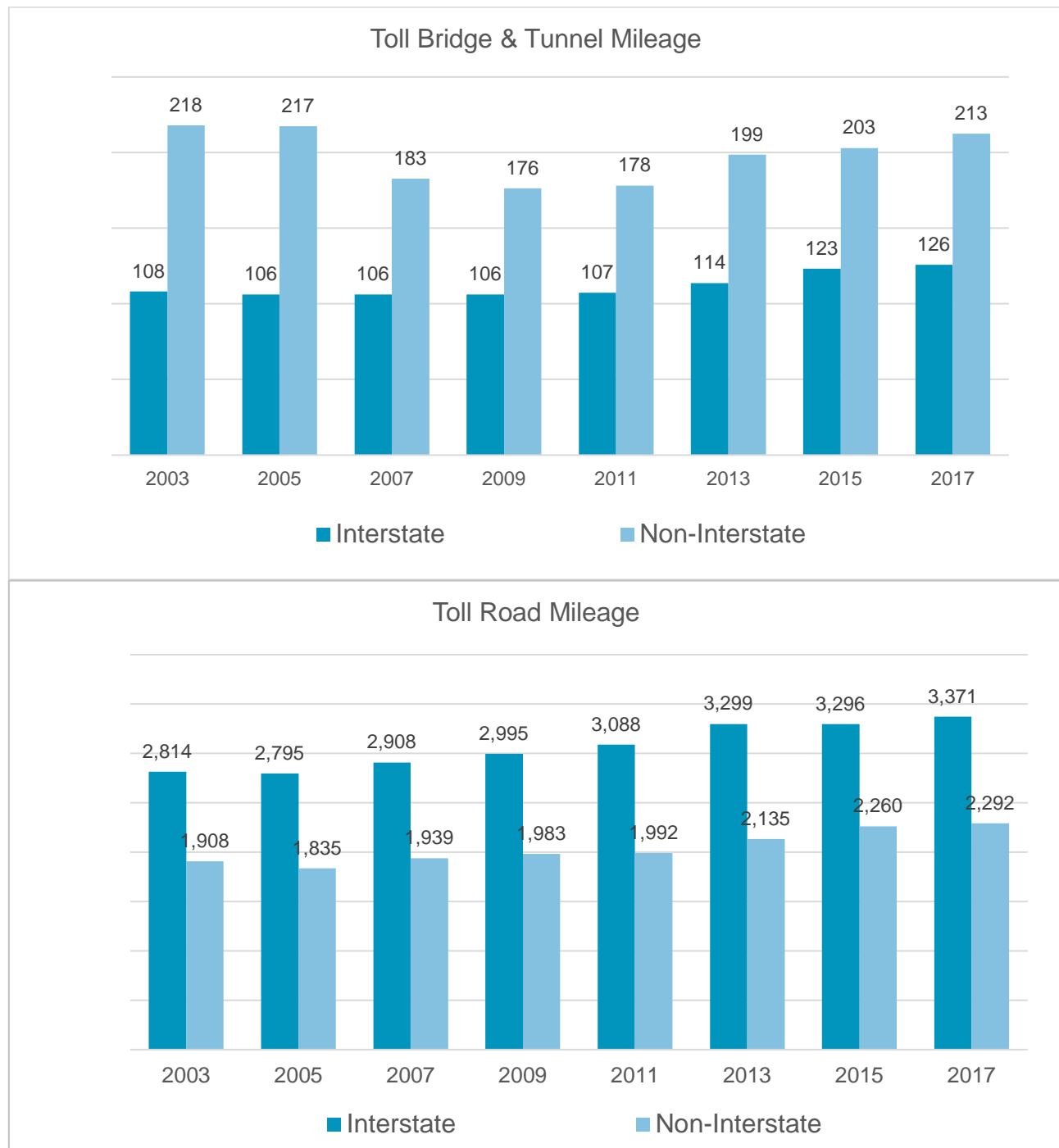
¹¹ American Association of State Highway and Transportation Officials (AASHTO). Transportation Governance and Finance. A 50-State Review of State Legislatures and Departments of Transportation (November 2016).

¹² Minn. Stat. §§ 297B.02, 297B.13.

Figure 1 shows tolled mileage trend in the last 14 years. Tolled mileage has grown by about 19 percent, from 5,047.86 miles in 2003 to 6,000.66 miles in 2017, and this trend is expected to continue as many states have initiatives in place to make tolls a viable highway funding option. Some of the densest metropolitan areas in the U.S. have implemented tolled express lanes either for traffic management purposes, or as a means of raising a small amount revenue (or both). However, traffic management/encouraging efficient usage is generally the main reason for tolling lanes. It is generally accepted that newly constructed tolled lanes will never generate sufficient revenue to cover the entire cost of the full lane of infrastructure (tolled lanes generally generate somewhat more revenue than the cost of operations and maintenance for those lanes, but the revenue generated will not be sufficient to cover bond payments for the construction of the lanes).

Nationwide, tolled-lane revenues are generally dedicated to pay for construction, operations and maintenance of the lanes themselves, and in some instances for investment in supporting transportation facilities or services within the same corridor, such signalization of on-ramps, widening arterials, or increased transit service within the corridor.

Figure 1: Toll Mileage Trends, 2003 to 2017



Data Source: U.S. Department of Transportation. Federal Highway Administration. Office of Highway Policy Information. Toll Facilities in the United States. Available at <https://www.fhwa.dot.gov/policyinformation/tollpage/>.

2.5 Other Sources of State Revenue

Other sources of state transportation revenue include general fund appropriations, bond proceeds, inspection fees, driver license fees, advertising, rental car taxes, state lottery/gaming proceeds, oil company taxes, vehicle excise taxes, vehicle weight fees, investment income, and other licenses, permits, and fees.

Table 5 shows the states using oversize/overweight truck permit fees, sales taxes on rental vehicles and driver's license fees to finance transportation projects.

Table 5: States Using Oversize/Overweight Truck Permit Fees, Sales Taxes on Rental Vehicles and Driver's License Fees to Finance Roads and Bridges

State	Oversize/overweight truck permit fees	Sales Taxes on Rental Vehicles	Driver's License Fees
Alabama	x		
Alaska		x	
Arizona	x	x	x
Arkansas	x		
Colorado	x	x	
Delaware	x		
Florida	x	x	
Hawaii		x	
Idaho	x		
Illinois	x		
Indiana	x		x
Iowa	x	x	
Kansas	x		x
Kentucky	x		x
Louisiana	x		
Maine	x		x
Maryland	x	x	x
Massachusetts	x		x
Michigan	x		
Minnesota	x	x	
Mississippi	x		
Missouri			x
Montana	x		
Nebraska	x		
Nevada			x
New Mexico	x	x	x
New York	x	x	x
North Carolina	x		x
North Dakota			x
Oklahoma	x		
Oregon	x		x

State	Oversize/overweight truck permit fees	Sales Taxes on Rental Vehicles	Driver's License Fees
Pennsylvania	x		x
Rhode Island		x	x
South Dakota		x	
South Carolina	x		x
Tennessee	x		
Texas	x		x
Utah	x	x	
Vermont		x	
Virginia	x	x	
Washington		x	
West Virginia	x	x	
Wisconsin	x	x	x
Wyoming	x		x

Source: American Association of State Highway and Transportation Officials (AASHTO). Transportation Governance and Finance. A 50-State Review of State Legislatures and Departments of Transportation (November 2016).

2.6 Local Funding Sources

Sources of local funding for transportation purposes include local option fuel taxes, sales taxes and fees, vehicle registration fees, income/payroll/employer taxes, property taxes, advertising revenue, naming rights revenue, impact fees and transportation utility fees. This section provides examples of some of these funding mechanisms.

Local Option Sales Taxes

Sales taxes levied at the local level devote a percentage of a local sales tax to transportation purposes generally or to a prescribed program of projects with a defined expenditure plan. The states of Nevada and California provide metropolitan planning organizations (MPOs) with direct authority over local option taxes. Nevada has given MPOs control over local option gasoline and transit sales taxes in its two major metropolitan counties. In California, three single-county MPOs directly administer programs for half-percent sales taxes.¹³ A 0.5 percent tax is available to all counties in Nevada to establish and maintain a public transit system; for construction, maintenance and repair of public roads; and/or for the improvement of air quality.¹⁴ **Table 6** provides a sample of public agencies that use local options sales tax to fund transportation projects.

¹³ A Quiet Revolution in Transportation Finance: The Rise of Local Option Transportation Taxes. *Transportation Quarterly*, Vol. 57, No.1, Winter 2003 (19–32).

¹⁴ Afonso, W.B. Local sales tax laws: State by State Details. Comprehensive overview of state local sales tax laws.

Table 6: Sample of Public Agencies that use Local Options Sales Tax to Fund Transportation Projects

Public Agency	Sales Tax
TransNet, California	½ cent sales tax levied in San Diego County to fund local transportation projects
Capital Metro, Texas	1% sales tax levied on 9 jurisdictions in Williamson and Travis Counties to help fund Capital Metro budget
Metropolitan Atlanta Rapid Transit Authority (MARTA), Georgia	1% sales tax levied in Fulton and DeKalb Counties to help fund MARTA budget
Dallas Area Rapid Transit (DART), Texas	1 cent sales tax levied on 13 cities in the metropolitan area to fund DART budget

Source: U.S. DOT, Federal Highway Administration. Center for Innovative Finance Support. Local Revenue. Available at https://www.fhwa.dot.gov/ipd/value_capture/sources_tools/local.aspx.

Vehicle Registration Fees - Many states authorize local governments to levy local vehicle registration fees that can be used for local transportation needs.

Income/Payroll/Employer Taxes – Some states have provided authority to local governments to levy income, payroll, or employer taxes specifically dedicated to transportation. **Table 7** provides a sample of public agencies that use this mechanism to fund operating and capital expenditures of transit systems.

Table 7: Sample of Public Agencies that use Payroll/Occupational Taxes to Fund Public Transit Operating and Capital Expenditures

Public Agency	Sales Tax
Transit Authority of River City (TARC), Louisville, KY	Nearly 60 percent of TARC's funding is from an occupational tax levied on residents of Jefferson County, Kentucky. A tax of 0.2% of taxable income is levied annually. The taxes are collected by the Revenue Commission of the Louisville Metro Government and deposited into the Mass Transit Trust Fund (MTTF). TARC is authorized to draw MTTF funds for operating and capital expenditures. For the year ended June 30, 2017, TARC recorded revenues of \$51,077,933 and
Lake Transit District Boundary, Oregon	Payroll and self-employment taxes, which provide revenue for mass transit in Oregon and elsewhere, are administered and collected by the Oregon Department of Revenue (DOR). The payroll and self-employment tax rates are a percentage of the wages paid by an employer and the net earnings from self-employment for services performed within the Lane Transit District (LTD) boundary. The tax rate for calendar year 2018 is 0.0073.

Sources:

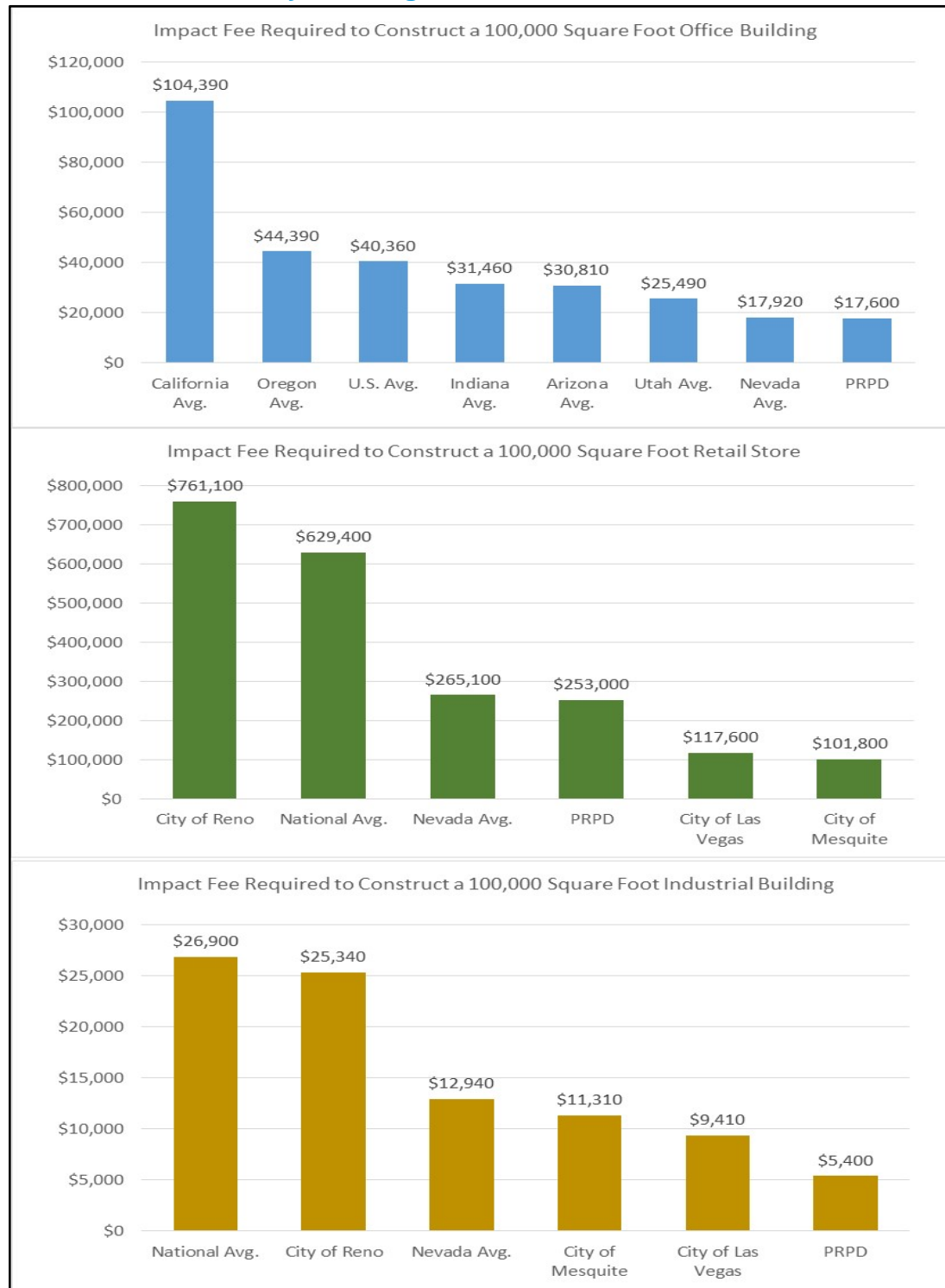
1. Transit Authority of River City (A Component Unit of Louisville/Jefferson County Metro Government). Notes To Financial Statements, June 30, 2017
2. The Lane Transit District (LTD). Payroll and Self-Employment Tax Information. Available at <https://www.ltd.org/payroll-self-employment-tax-information/>

Property Taxes - Dedicated property taxes are generally used for local road and street capital and maintenance needs, although some states have authorized dedicated property taxes for transit. Cities that use property taxes to fund transportation projects include Reno (Nevada), Tempe (Arizona), Ann Arbor (Michigan), and Madison (Wisconsin). Reno uses this property tax revenue to finance city road and street improvements.¹⁵

Impact Fees for New Development - Impact fees for new development are fairly common in many cities, counties and metropolitan areas as a way of assessing real-estate developers for the direct public infrastructure costs incurred by new development, so that those costs are not borne by existing residents. For example, if a new retail store requires that the access road connecting the store to the existing highway network be expanded to accommodate the traffic to be generated by the new development, the impact fee would be a way of ensuring that the developer will pay for the expansion of the access road. Impact fees may also go toward capital costs incurred by schools, libraries, parks, fire stations, police stations, storm water drainage improvements and sewer and water systems. In general, impact fee rates vary with traffic generated by the type of development. Using impact fees data at the national, state, city and regional level, **Figure 2** provides a comparison of the impact fees required to construct a 100,00 square foot of office, retail and industrial development.

¹⁵ Nevada Department of Taxation. Division of Local Government Services. Nevada Property Tax: Elements and Application.

Figure 2: Comparison of Impact Fees for new Office, Retail and Industrial Development using a Representative Sample of Data at the National, State, City and Regional Level, 2011



Source: Comparison of Development Impact Fees, Pahrump Regional Planning District, Nye County Planning Department, Nevada (July 8, 2011).

Note: PRPD stands for Pahrump Regional Planning District.

Urban Road Pricing – Road pricing schemes charging private vehicles have been introduced by municipal authorities mainly in an attempt to price the externalities caused by traffic. The three largest European urban road pricing systems started over a decade ago, first in London in 2003, then in Stockholm in 2006, and finally in Milan in 2008. The three cordon pricing schemes have some commonalities as well as differences features (**Table 8**), including:

- All of them applied the charge schemes to central city areas served by an extended and dense transit network.
- The size of the charged area varies from 8 square km in Milan, to 21 square km in London (not considering the temporary western extension) to 30 square km in Stockholm.
- All of them use similar technologies where cameras automatically control access to central areas and recognize car plates.
- While London and Milan set daily entrance charges, allowing for unlimited entrances, exits and travels during the time of charge application, Stockholm adopted a “pay as you drive” toll to be paid at every single crossing of the area, differentiated for the time. Charges are applied to entrance vehicle crossings in Milan, to entrance and exit vehicle crossings in Stockholm, and to all trips (even inside the cordon) in London.
- The main aim for all systems is reducing congestion. A secondary aim is to reduce air pollution (this aim was prevalent in the first phase in Milan).
- In all systems a flat rate is imposed: at present it amounts to £11,50 in London (USD \$14.88), SEK 20 in Stockholm (USD \$2.20) and € 5 in Milan (USD \$5.66). In the first phase in Milan charge was differentiated (€0, 2, 5 and 10) on the basis of PM10 emission factors.
- Charges are on daily basis in London and Milan and on number of accesses in Stockholm (with a daily maximum of SEK 60). In London circulation in the area is charged, while in Milan access to the area is charged and in Stockholm crossing of the area is charged.
- Charges operate only in the daytime (11 hours a day in London, 12 hours a day in Stockholm and Milan) during working days.
- All systems present several exemptions and reduced charges for specific types of vehicles (e.g., public transportation vehicles, “clean vehicles”) and residents of the charged area.
- Political and public debate were relevant factors in setting up and decide permanency of the systems. In the cases of Stockholm and Milan a referendum was a key factor at that purpose. In the three cities, even when polls showed constituents were not in favor when the charge was announced, after implementation the majority of constituents turned in favor.
- The ratio between operating costs and revenues amount to 39% for London (in 2008; falling from initially 65%), 28% for Stockholm and over 100% for Milan’s Ecopass scheme and 65% for Milan’s Area C (increasing from initially 46%).

- In all cases a robust increase of public transportation was announced and implemented in coincidence with the introduction of the charge and a substantial part of revenues are invested for sustainable mobility (in Stockholm indirectly through an agreement with national governments).
- In all cases the following trend effects, though in different measures, are demonstrated: traffic reduction and modal shift, mainly through increase of passengers of public transport. A relevant pollution emission reduction happened in the three cities. An accident reduction was also experienced in Milan and at a minor level in London.

Table 8: A Comparison of Three European Road Charge Schemes: London, Stockholm and Milan

Feature	London	Stockholm	Milan
Starting year	February 2003 (Source 1)	January 2006 (7 months trial) Permanent from August 2007 (Source 2)	Pollution charge from January 2008 Congestion charge from January 2012 (formally a trial until April 2013) (Source 4)
Area and Metropolitan Population	21 square km (8.1 square mile) or 1.3% of the city surface Western extension from February 2007 to January 2011 Metropolitan area population = 14 million inhabitants (Source 1)	30 square km (11.6 square mile) or 16% of the city surface. Stockholm County population = 1.9 m inhabitants (Source 2)	8 square km (3.1 square mile) or 4.5% of the city surface Metropolitan area population = 3 million inhabitants (Source 4)
Charge level	£ 5 £ 8 from July 2005 £ 10 from January 2011 £ 11.50 (USD \$14.88) since June 2014 (Source 1)	SEK 20 (USD \$2.20) during peak periods (7:30-8:30, 16:00-17:30), SEK 15 (USD \$1.65) 30 minutes before and after the peak periods and SEK 10 (USD \$1.10) during the rest of the period 6:30- 18:30. The total charge per day is capped at SEK 60 (USD \$6.61) (Source 2)	<u>Pollution charge:</u> proportional to vehicles' emission class of € 0, €2 (USD \$2.27), €5 (USD \$5.66) or €10 (USD \$11.33) per day. <u>Congestion charge:</u> flat charge of € 5 per day (USD \$5.66) (Source 4)
Application of charge	Cordon pricing Daily fee Pay for entrance, exit, intra-area trips (Source 1)	Cordon pricing Single passage fee (with daily limit) Pay for entrance and exit of the area (Source 2)	Cordon pricing Daily fee Pay for entrance in the area (Source 4)
Time of application	Weekdays, 7:00-18:00 (Source 1)	Weekdays, 6:30-18:30 (Source 2)	Weekdays, 7:30-19:30 (Source 4)
Set up investment	160 m £ (203.5 m €) (Source 1)	1,900 m SEK (207.2 m €) (Source 2)	7 m € (excluding sunk costs) (Source 4)

Feature	London	Stockholm	Milan
Gross revenues per year (excluding fines)	from 138 m £ to 227 m £ in 2012 (from 175.5 m £ to 288.6 m £ in 2012) (Source 1)	763 m SEK (83.2 m €) (Source 2)	from 12 m € in 2008 to 5.9 m € in 2011 (Ecopass) (Source 4) 30 m € in 2012 (Area C) (Source 4) 29.9 m € in 2013 (Area C – provisional data) (Source 5) 21.4 m € in 2014 (Area C – provisional data) (Source 6)
Ratio operating costs / revenues	39% in 2008; falling from initially 65% (Source 1) 95% in 20YY? (Source 7)	28% in 2011 (Sources 2 and 3) 8% in 20YY? Source 7)	Over 100% for Ecopass in 2011. 65% for Area C in 2014 (increasing from initially 46%) (Source 4)

Sources:

1. Transport for London. Congestion Charge. Available at <http://tfl.gov.uk/modes/driving/congestion-charge>. Accessed October 8, 2018.
2. Björn Hårsman and John M. Quigley. Political and Public Acceptability of Congestion Pricing: Ideology and Self-Interest in Sweden, 2016. Available at http://www.accessmagazine.org/wp-content/uploads/sites/7/2016/01/access38_congestion_pricing_sweden.pdf. Accessed October 9, 2018
3. Erdmenger, C., Frey, K., 2010. Urban road charge in European cities: A possible means towards a new culture for urban mobility?. Report of the Joint Expert Group on Transport and Environment on urban road pricing schemes in European cities of the EU Commission.
4. Edoardo Croci (IEFE-Bocconi University, Milan) and Aldo Ravazzi Douvan (Italian Ministry of Environment, Rome). Urban road pricing: the experience of Milan (2016). Available at http://ic-sd.org/wp-content/uploads/sites/4/2016/06/Milan-Urban-Road-Pricing_07.08.15.pdf. Accessed November 9, 2018
5. Comune di Milano, 2014. Rendiconto della gestione. Esercizio 2013.
6. Comune di Milano, 2015. Relazione sulla gestione 2014.
7. Tri-State Transportation Campaign. Road Pricing in London, Stockholm and Singapore. A Way Forward for New York City (Jan 4, 2018). Available at http://nyc.streetsblog.org/wp-content/uploads/2018/01/TSTC_A_Way_Forward_CPreport_1.4.18_medium.pdf. Accessed November 9, 2018

Recreational Fees - The Federal Lands Recreation Enhancement Act (FLREA) allows the National Park Service (NPS) revenue generated by entrance and recreation fees to be used to enhance the visitor experience at national parks. Specifically, the NPS is authorized to use entrance and recreation fees for (1) repair, maintenance, and enhancement of the park that improve visitor enjoyment, visitor access, and health and safety; (2) habitat restoration directly related to wildlife-dependent recreation including hunting, fishing, wildlife observation, and photography; (3) law enforcement related to public use and recreation; and (4) direct capital or operating costs associated with the recreation fee program to pay for entrance station and campground staff.¹⁶ Under the FLREA, at least 80 percent of the entrance fees remains in the park where it

¹⁶ National Park Service. Your Fee Dollars at Work. Available at <https://www.nps.gov/aboutus/fees-at-work.htm>. Accessed Nov 12, 2018.

is collected while the remaining 20 percent is used to fund projects in other national parks that do not collect entrance fees.¹⁷

Only 118 of 417 park sites nationwide charge an entrance fee. As part of its ongoing efforts to address aging park infrastructure and improve national parks visitor experience, the NPS has raised the entrance fees charged at 77 national parks. The new fee structure, which went into effect June 1, 2018, increases entrance fees by 10 percent, rounded up to the nearest \$5 or \$10 increment. The raise in entrance fees excludes visitors under 16 years of age or holders of Senior, Military, Access, Volunteer, or Every Kid in a Park (EKIP) passes. The additional revenue to be generated by the new fee structure is expected to address the \$11.6 billion in deferred maintenance across the 417 park sites, generating the needed resources for improvements to the aging infrastructure of national parks such as roads, bridges, campgrounds, waterlines, bathrooms, and other visitor services.¹⁸

The new fee structure applies to the 17 busiest national parks, that is, Arches, Bryce Canyon, Canyonlands, Denali, Glacier, Grand Canyon, Grand Teton, Olympic, Sequoia & Kings Canyon, Yellowstone, Yosemite, Zion, Acadia, Mount Rainier, Rocky Mountain, Shenandoah National Parks, and Joshua Tree National Parks. These 17 parks collect 70 percent of the total of all entrance fees throughout the country.¹⁹ Estimates indicates that the new price structure applied to the top 17 fee-charging parks will increase national park revenue by \$70 million per year, representing a 34 percent increase over the \$200 million collected in Fiscal Year 2016.²⁰

This is not accurate; the NPS lifetime senior pass costs \$80; it was raised in August 2017.

¹⁷ Ibid.

¹⁸ National Park Service. National Park Service Announces Plan to Address Infrastructure Needs and Improve Visitor Experience. April 12, 2018. Available at <https://www.nps.gov/orgs/1207/04-12-2018-entrance-fees.htm>. Accessed Nov 12, 2018.

¹⁹ Targeted Fee Increases at Parks to Address Maintenance Backlog Fact Sheet. Available at <https://parkplanning.nps.gov/document.cfm?documentID=83652>. Accessed Nov 12, 2018.

²⁰ Ibid.

3.0 Existing Transportation Revenue Sources in the States of Nevada and California

3.1 Revenue Sources Authorized by State Constitution or Statute

Nevada and California use a variety of taxes and fees to support roads and bridges, public transit, rail, aviation, ports, and pedestrian and bicycle projects in the states. These revenue sources include state fuel taxes, vehicle fees, sales taxes, tolls, mode-specific revenues, and other sources. In addition to revenues used by DOTs and other state agencies, turnpike or port authorities collect and use revenues to support specific elements of the transportation system. State-level revenue sources authorized by state constitution or statute currently being use by the states of Nevada and California are summarized in **Table 9** and **Table 10**, respectively.

Table 9: Nevada Revenue Sources Authorized by State Constitution or Statute in Current Use

State-Level Revenue Sources	Eligible Transportation Activities			
	Roads and Bridges	Public Transit	Ports and Waterways	Pedestrian and bicycle projects
Fuel Taxes: gasoline and diesel (fixed rate)	X			
Fuel taxes: alternative fuels	X			
Fuel taxes: recreational boating			X	
Vehicle registrant and title fees	X			
Truck registration fees (based on gross vehicle weight)	X			
Driver's license and state ID card fees	X			X
Passenger carrier excise taxes	X			
Petroleum cleanup fees	X			
Occupational and business licensing fees	X			
Governmental services taxes	X			
Interest income		X (includes commuter rail and light rail)		

Source: American Association of State Highway and Transportation Officials (AASHTO). Transportation Governance and Finance. A 50-State Review of State Legislatures and Departments of Transportation (November 2016).

Notes:

1. Authorized by state constitution or statute means that the revenue source is specifically authorized in law, not just permitted under more general authorizations or powers.
2. Eligible transportation activities include the state-level development and operation of transportation facilities and services. They do not include administrative costs, DMV or highway patrol functions, enforcement or regulatory activities, education programs, or distributions to local governments.

Table 10: California Revenue Sources Authorized by State Constitution or Statute in Current Use

State-Level Revenue Sources	Eligible Transportation Activities						
	Roads and Bridges	Public Transit	Rail	Airports and aviation	Ports and Waterways	Pedestrian and bicycle projects	Other
Fuel Taxes: gasoline and diesel , excise taxes (fixed rate)	X	X	X (Passenger only)				
Fuel taxes: gasoline, excise taxes (variable rate- percentage of price)	X	X	X				
Fuel taxes: diesel, sales taxes		X	(Passenger only)				
Fuel taxes: alternative fuels	X	X					
Fuel taxes: aviation fuels				X			
Fuel taxes: watercraft					X		
Truck registration fees (based on gross vehicle weight)	X	X	X (Passenger only)				
Boat launch fees					X		
Off-highway motor vehicles service fees							X (off-highway motor vehicle activities)
Tolls	X						
Cap-and-Tarde Program revenues	X	X	X	X	X	X	X (traffic light synchronization)
Property leases or sales	X	X	(Passenger only)				
Interest income	X	X	X (Passenger only)			X	

Source: American Association of State Highway and Transportation Officials (AASHTO). Transportation Governance and Finance. A 50-State Review of State Legislatures and Departments of Transportation (November 2016).

Notes:

1. Authorized by state constitution or statute means that the revenue source is specifically authorized in law, not just permitted under more general authorizations or powers.
2. Eligible transportation activities include the state-level development and operation of transportation facilities and services. They do not include administrative costs, DMV or highway patrol functions, enforcement or regulatory activities, education programs, or distributions to local governments.

Nevada statute authorizes counties to levy local option fuel taxes, which may be indexed to inflation, for road and street uses.²¹ Counties may also levy sales taxes or lodging taxes for transportation purposes,²² development privilege taxes for growth-related transportation improvements,²³ local option aviation fuel taxes for airport purposes,²⁴ and for counties with populations under 100,000, vehicle privilege taxes for road and street projects.²⁵ Counties with a population of 100,000 or more must allocate a portion of their property taxes to the State Highway Fund for highway projects in that county²⁶. At Nevada Department of Transportation's request, counties with a population of 700,000 or more (currently Clark County) must issue bonds for up to \$300 million to assist with highway projects in that county. These bonds may be backed by local revenues from recreational facilities, lodging taxes, or other sources.²⁷ Road maintenance districts may levy special assessments.²⁸ Counties and cities may charge developers impact fees to pay for development-related capital improvements.²⁹

California statute authorizes counties, transit districts, and the Metropolitan Transportation Commission to levy local option fuel taxes.³⁰ Counties may also assess county sales taxes and locally implemented state sales taxes for transportation purposes.³¹ A number of transit districts or transportation authorities are authorized to levy property and sales taxes³² and some of them are authorized to operate high-occupancy toll (HOT) lanes.³³ Cities, counties, and local agencies may charge development impact fees to pay for capital improvements.³⁴

Although the existing federal and state revenue sources available in Nevada and California are important and the level of funding must be sustained and adjusted for inflation and other factors to maintain their purchasing power, it is unlikely that a significant portion of new funding to address the Tahoe funding shortfall will come from these sources. The Linking Tahoe Regional Transportation Plan (RTP) forecasts 50 percent of the projected 2017-2040 revenue will come from local sources (or \$1,025 million), with 30 percent will come from federal sources (\$595.7 million) and 20 percent from state sources (\$434.3 million).³⁵ Therefore, the most likely revenue sources to address the Tahoe funding shortfall are expected to be local.

²¹ Nev. Rev. Stat. §§373.010 et seq.

²² Nev. Rev. Stat. §377A.020 and §§244.3351 et seq.

²³ Nev. Rev. Stat. §278.710

²⁴ Nev. Rev. Stat. §365.203, §365.545, and §365.565

²⁵ Nev. Rev. Stat. §371.045

²⁶ Nev. Rev. Stat. §354.59815 and §408.235

²⁷ Nev. Rev. Stat. §244A.637

²⁸ Nev. Rev. Stat. §320.110

²⁹ Nev. Rev. Stat. §§278B.010 et seq.

³⁰ Cal. Revenue and Taxation Code §8502 and §9501; Cal. Public Utilities Code §99500

³¹ Cal. Public Utilities Code §§180000 et seq.; Cal. Government Code §§29530 et seq.

³² Cal. Public Utilities Code div. 10.

³³ Cal. Streets and Highways Code §§149.4 et seq.

³⁴ Cal. Government Code §§66000 et seq.).

³⁵ Tahoe Regional Planning Agency. Linking Tahoe: Regional Transportation Plan and Sustainable Communities Strategy. Horizon Year 2017-2040.

3.2 Local Revenue Sources Authorized in Nevada State Law

This section summarizes the most significant sources of local revenue being used to fund transportation projects in the state of Nevada. Potential revenue sources to address regional and local transportation projects, services and operations in the Lake Tahoe Region will be developed in **Task 7 Identify, Analyze and Screen Options for Additional Funding**.

3.2.1 Fuel Taxes

Under Nevada Revised Statutes (NRS) 365, the state collects a mandatory tax of 6.35 cents per gallon (CPG) on gasoline sold within the state which is then distributed to the counties.³⁶ Some of the revenue is returned to the county of origin while other portions of the revenue are allocated to the counties based upon such factors as miles of roadways and population, among others. Some portions of this take are further sub allocated to cities within each county.³⁷ In addition to the gas taxes enacted under NRS 365, NRS 373 authorizes counties in Nevada to enact additional taxes on motor vehicle fuels.³⁸ NRS 373.030 enables each county to levy an additional tax on gasoline of up to 9 CPG.³⁹

Current yield: In FY2017, the yield from the mandatory county gas taxes in Nevada was \$74.0 million and the yield from the optional county gas taxes in the state was \$104.9 million.⁴⁰

3.2.2 Local Indexed Fuel Taxes

Nevada Revised Statutes prior to 2015 allow counties within certain population criteria to index fuel taxes to recover the loss of purchasing power caused by inflation. (N.R.S. 373.066, 373.0663).

Assembly Bill (AB) 516 took effect Oct. 1, 2003 requiring all motor fuels sold in Washoe County be subjected to fuel tax inflation indexing using the Consumer Price Index (CPI). Although the Regional Transportation Commission of Washoe County (RTCWC), the primary proponent of the indexing legislation, requested that a construction oriented inflation indicator such as the Producer Price Index for Highway and Street Construction (PPI) be used to make the indexing adjustments, the Nevada legislature adopted the broader Consumer Price Index (CPI).⁴¹

Senate Bill (SB) 201 took effect Jan 1, 2010 allowing all motor fuels and special fuels delivered in Washoe County be subjected to fuel tax indexing using the Producer Price Index (PPI) instead of the previous CPI. While indexing the rates of the NRS 365 and NRS 373.030 taxes in Washoe County using the CPI helped recover the loss in purchasing power due to inflation, it was demonstrably short of mitigating all inflationary erosion for two main reasons. First, indexing using the CPI did not accurately reflect the much higher rates of

³⁶ Nevada Revised Statutes, Title 32, Chapter 365, Nevada Legislature Law Library: 2016.

³⁷ Ibid.

³⁸ Nevada Revised Statutes, Title 32, Chapter 373, Nevada Legislature Law Library: 2016

³⁹ Ibid.

⁴⁰ State of Nevada Transportation. State of Nevada Transportation Facts and Figures 2017.

⁴¹ State of Nevada. Department of Motor Vehicles (DMV). Motor Carrier Division. Fuel Tax Rate and FY19 Washoe County Indexed Taxes Changes. June 8, 2018. Available at <http://dmv.nv.com/pdf/forms/mcfy19rateswashoe.pdf>

inflation that were being experienced in the construction costs of street and highway. Second, inaction by the state and federal governments to address the impacts of inflation on state and federal motor vehicle fuels, meant that the purchasing power of these taxes paid by motorists in Washoe County was also being eroded.

AB413 took effect Jan 1, 2014 allowing Clark County to start indexing all fuel types including special fuel but excluding jet and aviation fuels using the PPI for the period January 1, 2014, through December 31, 2016.⁴²

AB191 signed by the governor in 2015, required counties to include a question for the voters in the November 8, 2016 ballot on fuel tax indexing for the period beginning January 1, 2017 and ending December 31, 2026.⁴³ In 2026 another ballot question will be required that will ask county voters whether they would like the annual increases to continue. The fuel tax indexing question will be a county by county question (it can pass in one county but not another).⁴⁴ Only Clark County voters voted in favor.⁴⁵

Both Clark and Washoe Counties indexing are based on passage of advisory questions and subsequent legislation.⁴⁶

Collections of the PPI indexed fuel taxes began on January 1, 2010, and the local governments and the RTC of Washoe County received the first proceeds in March 2010.

Current yield: In FY 2017, the yield from the indexed fuel taxes in Washoe County was \$48.8 million and the yield from these taxes in Clark County was \$80.6 million.⁴⁷

The total revenue from indexed fuel taxes distributed to the RTC of Washoe County including CPI from inception to December 2017 is estimated at \$302.5 million.⁴⁸ This amount along with other fuel tax revenues has been used for project implementation and as the pledged revenue for debt service for four revenue bond sales totaling \$435 million that were implemented to fund road projects. Indexed fuel tax revenues serve as the main instrument for repayment of the debt service. As of August 2016, all the proceeds from the revenue bond sales have been expended and the RTC of Washoe County is back to primarily funding road projects with indexed fuel tax revenues.

⁴² Guinn Center. Fact Sheet: Clark County-5 Fuel Revenue Indexing. September 2016. Available at https://guinncenter.org/wp-content/uploads/2014/01/Guinn-Center_FRI-Fact-Sheet-2016.pdf. Accessed Nov 13, 2018.

⁴³ Nevada Association of Counties. 2016 Nevada Economic Development Conference. Fuel Tax Indexing.

⁴⁴ Ibid.

⁴⁵ State of Nevada Transportation. Facts and Figures 2017.

⁴⁶ Nevada Association of Counties. 2016 Nevada Economic Development Conference. Fuel Tax Indexing.

⁴⁷ State of Nevada Transportation. State of Nevada Transportation Facts and Figures 2017.

⁴⁸ Regional Transportation Commission (RTC), Metropolitan Planning Organization of Washoe County, Nevada. Report Regaining Indexed Fuel Taxes. April 20, 2018.

3.2.3 Sales & Use Taxes

The Nevada Department of Revenue administers the local sales and use taxes.⁴⁹ Sales tax is measured by the gross receipts from retail sales, while use tax is measured by the sales price of the property.⁵⁰ Sales and use taxes are levied by the state and local governments for both general and specific uses. Although sales and use tax revenues have not been used historically by the state to fund transportation, they are the largest single revenue source for the state and these taxes have the significant potential for additional revenue generation.

The combined minimum rate of sales taxes across Nevada is 6.85 percent and consists of the following four components: 2 percent for the state's general fund, 2.6 percent for school districts, 0.5 percent for basic city–county tax relief, and 1.75 percent for supplementary city–county tax relief.⁵¹ Depending on local municipalities, the total tax rate can be as high as 8.265 percent.

Counties may also levy optional sales and use taxes for a range of purposes prescribed by statute. As of January 1, 2017, the following counties impose the respective optional sales tax: 1.30 percent tax in Clark county; 0.875 percent tax in Washoe and White Pine Counties; 0.75 percent tax in Carson City, Churchill, Nye, and Storey Counties; and 0.25 percent tax in Douglas, Elko, Lander, Lincoln, Lyon, and Pershing Counties.⁵² NRS 377A enables all counties to impose a 0.5 percent sales and use tax to fund public transit and/or roads.⁵³ For instance, Washoe and Clark counties have imposed sales and use taxes under 377A at the rates of 0.375 percent and 0.5 percent, respectively. In addition, Washoe County was enabled by the legislature and did approve a 0.125 percent sale and use tax to fund the railroad grade separation of the UPRR mainline through downtown Reno. A breakdown of the county optional sales tax rates imposed by Nevada counties, including their purposes and amounts collected in fiscal years 2016 and 2017, is provided in **Table 11**.

Table 11: County Optional Sales Taxes Collected In Nevada, FY 2015 and FY 2016

County	Purpose	Tax Rate	FY2015	FY 2016	Change (%)
Carson City	Open Space	0.25%	\$2,190,782	\$2,363,277	7.9%
Carson City	Road Repair	0.25%	\$2,190,778	\$2,363,332	7.9%
Carson City	V&T Railroad	0.125%	\$1,095,148	\$1,181,643	7.9%
Carson City	Infrastructure Improvements	0.125%	\$821,866	\$1,176,414	43.1%
Churchill	Local Government Tax Act	0.25%	\$620,633	\$665,110	7.2%
Churchill	Road Repair	0.25%	\$620,650	\$665,093	7.2%
Churchill	Infrastructure Improvements	0.25%	\$620,639	\$665,084	7.2%
Clark	Flood Control	0.25%	\$91,030,101	\$94,473,117	3.8%
Clark	Mass Transit/Air Quality	0.50%	\$182,069,982	\$188,924,093	3.8%

⁴⁹ NEV. REV. STAT. § 360B.120(1)(e).

⁵⁰ Nevada Department of Taxation, Sales & Use Tax General Information. Available at https://tax.nv.gov/Publications/Sales_and_Use_Tax_Publications/. Accessed Nov 12, 2018.

⁵¹ Nevada Department of Taxation, Components of Sales and Use Tax Rates. Available at https://tax.nv.gov/Publications/Sales_and_Use_Tax_Publications/. Accessed Nov 12, 2018.

⁵² Revenue Reference Manual, Fiscal Analysis Division, January 2017.

⁵³ NSR. 2016. Nevada Revised Statutes, Title 32, Chapter 377A, Nevada Legislature Law Library: 2016.

County	Purpose	Tax Rate	FY2015	FY 2016	Change (%)
Clark	Southern Nevada Water Authority	0.25%	\$91,023,954	\$94,458,852	3.8%
Clark County	Police Support	0.003	\$91,050,238	\$103,810,700	14.0%
Clark	Crime Prevention Act	0.10%	NC	NC	NA
Douglas	Tax Ordinance	0.25%	\$1,614,104	\$1,633,836	1.2%
Elko	Infrastructure	0.25%	NC	NC	NA
Lander	Water Treatment	0.25%	\$663,478	\$672,936	1.4%
Lincoln	School/Public Utilities	0.25%	\$70,557	\$69,152	-2.0%
Lyon	Public Safety/Infrastructure	0.25%	\$895,880	\$943,962	5.4%
Nye	Public Safety	0.50%	\$2,429,141	\$2,631,487	8.3%
Nye	Road Repair	0.25%	\$1,222,394	\$1,315,089	7.6%
Pershing	Public Safety/Infrastructure	0.25%	\$200,999	\$221,211	10.1%
Storey	Railway	0.25%	\$282,829	\$285,039	0.8%
Storey	Tourism	0.25%	\$282,829	\$284,830	0.7%
Storey	School/Public Utilities	0.25%	\$282,829	\$285,039	0.8%
Washoe	Flood/Public Safety	0.125%	\$8,227,877	\$8,864,540	7.7%
Washoe	Local Government Tax Act	0.25%	\$16,455,711	\$17,728,891	7.7%
Washoe	Mass Transit	0.375%	\$24,684,442	\$26,593,615	7.7%
Washoe	Railroad Grade Project	0.125%	\$8,227,820	\$8,864,540	7.7%
Washoe	School Infrastructure	0.54%			
White Pine	Road Repair	0.25%	\$663,702	\$541,719	-18.4%
White Pine	School Capital Improvements	0.125%	\$331,854	\$270,862	-18.4%
White Pine	Infrastructure Improvements	0.25%	\$663,530	\$541,545	-18.4%
White Pine	Swimming Pool/Rec. Facility	0.25%	\$664,295	\$541,535	-18.5%
N/A	All Other Collections		\$107	\$175	63.6%
Total Collections			\$531,199,149	\$563,036,718	

Source: Revenue Reference Manual, Fiscal Analysis Division, January 2017.

Note: NC = Not Collected. NA = Not Applicable.

Current yield: In FY2017, state and local business sale taxes in Nevada yielded about \$2.5 billion in revenue.⁵⁴ In FY 2016, county optional sales taxes collected in Nevada accounted for \$563 million, an increase of 6 percent compared to the previous fiscal year.

3.2.4 Property Taxes

Property taxes are the primary source of general fund revenues for Nevada's local governments. Although property taxes do not currently contribute a significant amount of transportation revenue in Nevada general fund revenues have been used for transportation investments by a number of local governments establishing

⁵⁴ Total State and Local Business Taxes. State-by-State Estimates for Fiscal Year 2017. November 2018. Available at <https://www.cost.org/globalassets/cost/state-tax-resources-pdf-pages/cost-studies-articles-reports/FY16-State-And-Local-Business-Tax-Burden-Study.pdf.pdf>. Accessed Nov 13, 2018.

a precedent. Furthermore, property taxes are capable of generating significant amounts of revenue and are, in fact, the single largest source of revenue for most general purpose local government entities in Nevada.

Nevada's constitution caps the total property tax rate at \$5 per \$100 of valuation. In 1979, the Nevada Legislature further limits the total property tax rate to \$3.64 per \$100 of valuation. In 2003, the Legislature passed SB 507 which authorized an additional 2 cents for capital projects and conservation of natural resources.⁵⁵ The 2 cents is outside the tax rate limit, so that a total of \$3.66 per \$100 of assessed value may actually be assessed. There are, however, many exceptions including increments of property tax that are outside of the \$3.64 cap, a significant number of whole or partial abatements, and percentage caps on how much tax bills on real property may increase year to year.⁵⁶ For example, Assembly Bill 489 established a partial abatement such that the property tax bill cannot increase by more than 3 percent over the prior year's tax levy for owners of single-family residences that are the primary residence of the owner.⁵⁷ Assembly Bill 489 also established a partial abatement on the property taxes levied upon residential rental dwellings that qualify as low-income housing under the standards of the U.S. Department of Housing and Urban Development (HUD), such that the property tax bill on these dwellings cannot increase by more than 3 percent over the prior year's tax levy.⁵⁸

Pursuant to NRS 354.59811, the revenue a local government entity receives from property taxes is allowed to be increased by a maximum of 6 percent per year.

Current yield: In FY2017, state and local business property taxes in Nevada yielded about \$1.5 billion in revenue.⁵⁹

3.2.5 Impact Fees for New Development

Local governments, either municipalities or counties, in Nevada are authorized to implement impact fees for new development per NRS 278B. The impact fees can be used to finance the costs of new infrastructure, a capital improvement, or a facility expansion necessitated and attributable to the new development. Impact fees are a one-time contribution towards road capacity and cannot be spent on operations, maintenance or reconstruction of the infrastructure. A local government may charge an impact fee to cover the costs associated with the provision of eight separate and defined capital improvement needs, including: a drainage project, a fire station project, a park project, a police station project, a sanitary sewer project, a storm sewer project, a street project, or a water project.⁶⁰

Transportation impact fees have been implemented in the urbanized area of Washoe County (including Reno and Sparks), and several cities in southern Nevada. The Regional Transportation Commission of Washoe County (RTC) administered the Regional Road Impact Fee (RRIF) program, a special revenue fund for road projects funded with impact fees. The fees consist of two components, cash impact fees and impact fee

⁵⁵ Nevada Department of Taxation. Division of Local Government Service. Nevada Property Tax: Elements and Application. Updated November 10, 2016.

⁵⁶ NTA 2013. "Nevada Tax Facts", Nevada Taxpayers Association: 2013.

⁵⁷ Revenue Reference Manual, Fiscal Analysis Division, January 2017.

⁵⁸ Revenue Reference Manual, Fiscal Analysis Division, January 2017.

⁵⁹ Total State and Local Business Taxes. State-by-State Estimates for Fiscal Year 2017. November 2018. Available at <https://www.cost.org/globalassets/cost/state-tax-resources-pdf-pages/cost-studies-articles-reports/FY16-State-And-Local-Business-Tax-Burden-Study.pdf.pdf>. Accessed Nov 13, 2018.

⁶⁰ NRS Chapter 278B

credits.⁶¹ Credits are given to developers for the construction of major arterial roads during development. Credits are booked as a revenue and expenditure with a net zero effect on the financial statements, therefore, they are not included in analysis of fund balance. Since 1995, the Regional Road Impact Fee (RRIF) Program has constructed regional improvements in the form of new roads, road widening and intersection improvements totaling \$276 million.⁶² Clark County also used impact fees to help fund a beltway around Las Vegas.⁶³

Current Yield: Impact fee revenues tend to mirror economic activity so revenues may vary considerably on a year-to-year basis. For example, the Regional Road Impact Fee (RRIF) administered by the RTCWC collected about \$2.7 million in FY2016⁶⁴ whereas revenues in FY2006, prior to the great recession, were about \$29 million.⁶⁵

Impact Fees have little potential to provide transportation revenue given that very limited growth is expected within the Tahoe Basin over the next 20 years. In addition, very little new capacity will be added to the roadway system, given the environmental and geographical constraints in the Tahoe Basin. Impact Fees that can be utilized to build public transit facilities would

3.2.6 Improvement Districts

NRS 271 authorizes cities and counties to create improvement districts to undertake various types of improvements, including street projects. Owners of properties within such districts are assessed for the cost of the improvements in proportion to the benefits they receive. As an alternative, owners representing more than 90 percent of the property that would be included in a proposed improvement district may petition the municipality for the creation of an improvement district. As a practical matter, the improvement district mechanism allows the construction of street improvements by a municipality with the cost being financed and the debt serviced by the assessments collected from the benefitting properties. This mechanism could be used for constructing such public improvements as new interchanges, by-passes, grade separations, and access roads serving commercial, industrial or recreational development. There is no limit on the size of these districts or on the size of the projects undertaken although the municipality does reserve the right to not undertake such improvement districts if it determines this in the public interest.⁶⁶

Nevada Revised Statutes Chapter 271A, known as the Tourism Improvement District Law established by the approval of S.B. 306 by the 2005 Legislature. Nevada Revised Statutes 271A.070, establishes the provisions for the creation of a Tourism Improvement District (TID) and the pledge of sales tax revenues to develop a project in the TID. A municipality may create a TID and define by ordinance the boundaries of the district and describe the types of projects that may be financed within the TID. The municipality may, without election, acquire, improve, equip, operate, and maintain a project within the TID established by ordinance and the

⁶¹ Regional Transportation Commission of Washoe County (RTC). Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2016. Regional Transportation Commission Reno, Sparks and Washoe County, Nevada.

⁶² Regional Transportation Commission of Washoe County (RTC). Regional Road Impact Fee Program. Available at <https://www.rtcwashoe.com/engineering-fees/regional-road-impact-fee/>. Accessed Nov 14, 2018.

⁶³ A Quiet Revolution in Transportation Finance: The Rise of Local Option Transportation Taxes. *Transportation Quarterly*, Vol. 57, No.1, Winter 2003 (19–32).

⁶⁴ Regional Transportation Commission of Washoe County (RTC). Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2016. Regional Transportation Commission Reno, Sparks and Washoe County, Nevada.

⁶⁵ Regional Transportation Commission of Washoe County (RTC). Comprehensive Annual Financial Report Fiscal Year Ended June 30, 2007. Regional Transportation Commission Reno, Sparks and Washoe County, Nevada.

⁶⁶ Nevada Revised Statutes, Title 32, Chapter 271.

project may be owned by the municipality, another governmental entity, any other person, or any combination thereof.

Current yield: An estimate of current yield from improvement districts is not available. The yield would be the sum of such districts currently established that are constructing transportation improvements.

3.2.7 Road Utility

In Nevada, a road utility can be established as a General Improvement District under NRS 318.⁶⁷ The primary purpose of a General Improvement District is to provide local county and municipal governments in Nevada a financing tool with enough flexibility and capability to finance a variety of infrastructure projects designed to stimulate private sector investment.⁶⁸ The local authorizing government legislative body (a county commission or city council) is responsible for the creation of the General Improvement District and a designated authority (a department or division of the county or municipality, a non-profit organization, an entity other than the county or municipality) to administer and manage the General Improvement District. In concept, road utilities are created in specific geographic areas to build and maintain roadway infrastructure. This is somewhat different from the improvement district where improvements are constructed and then subsequently maintained and operated by a local government as part of ongoing governmental services.

Nevada has a significant number of General Improvement Districts established (**Table 12**) that are providing one or more of the twenty-one services allowed by statute. Such districts may collect ad valorem (property tax) revenues, assessed at a rate that is above the state constitutionally set cap of \$3.64 per \$100.00 of assessed value, and issue debt for a wide range of projects ranging from the development and maintenance streets, alleys, curbs, gutters, sidewalks, swimming pools and cemeteries to the supplying of fencing, facilities needs for the protection from fire, and the control and eradication of noxious weeds. A General Improvement District may also use tolls and charges for services as a mechanism to finance the administration, operations, and maintenance of these programs and projects.⁶⁹ A road utility could be an appropriate mechanism for raising revenue for constructing and maintaining roadways in a large industrial park or a similar facility located outside of an incorporated area.

Table 12: Number and Total Value of Local General Improvement Districts Active in Nevada, FY 2016-17

County	Number of Active General Improvement Districts	Total Assessed Value of Active General Improvement District (in Millions of USD)
Douglas	15	\$991.3
Eureka	1	\$3.1
Humboldt	1	\$6.2
Lincoln	2	\$20.1
Lyon	3	\$50.2
Mineral	1	\$6.9
Nye	1	\$12.1
Storey	2	\$293.5
Washoe	4	\$1,601.5

⁶⁷ Nevada Revised Statutes, Title 32, Chapter 318.

⁶⁸ Nevada Revised Statutes, Title 32, Chapter 318.

⁶⁹ Nevada Revised Statutes, Title 32, Chapter 318.

County	Number of Active General Improvement Districts	Total Assessed Value of Active General Improvement District (in Millions of USD)
Total	30	\$2,985.0

Source: Nevada Department of Taxation, Division of Local Government Services, Property Tax Rates for Nevada Local Governments Fiscal Year 2016-2017 (REDBOOK)

Current yield: An estimate of current yield from of General Improvement Districts functioning as Road Utilities constructing, operating, and maintaining roads is not available. The yield would be the sum of such districts currently undertaking this function.

3.2.8 Supplemental Governmental Services Tax

The basic Governmental Service Tax rate is 4 cents on each dollar of the valuation of the vehicle. The Supplemental Governmental Services Tax, enacted by Nevada Legislature in 1991, is an additional tax levied annually based upon the depreciated value of the vehicle and collected with vehicle registration fees.

⁷⁰ The current rate is a maximum of 1 cent per each dollar of vehicle valuation. The proceeds of the Supplemental Governmental Services Tax are collected by the Department of Motor Vehicles (DMV) and returned to the counties to be used for the construction and maintenance of transportation projects or expenditures related to governmental functions of the county.⁷¹ Currently, Clark, Churchill and White Pine counties are the only counties in the state levying the additional supplemental rate.⁷²

3.2.9 Other Taxes

Certain localities in Nevada may impose (1) 0.25 percent tax to promote tourism for counties with a population under seven hundred thousand; (2) 0.25 percent tax to support the operation and maintenance of a county swimming pool and recreational facility for counties with a population under fifteen thousand; or (4) a 0.25 percent tax to acquire, develop, construct, equip, operate, maintain, improve, and manage parks, and recreational facilities and programs.⁷³

3.3 Constrained Local Revenue Sources in the Linking Tahoe Regional Transportation Plan

The Linking Tahoe Regional Transportation Plan (RTP) addresses needs in the 2017 to 2040 timeframe.⁷⁴ The RTP includes a funded and unfunded project list over the 2017-2040 period. An estimated \$2 billion in

⁷⁰ Nevada Revenue Reference Manual, Fiscal Analysis Division, January 2017.

⁷¹ Assembly Bill 543.

⁷² State of Nevada Transportation. State of Nevada Transportation Facts and Figures 2017.

⁷³ Afonso, W.B. Local sales tax laws: State by State Details. Comprehensive overview of state local sales tax laws.

⁷⁴ Tahoe Regional Planning Agency. Linking Tahoe: Regional Transportation Plan and Sustainable Communities Strategy. Horizon Year 2017-2040.

revenue is anticipated over the life of the plan.⁷⁵ The funding sources that support the constrained project list forecasts 50 percent of the projected revenue will come from local sources, 30 percent will come from federal sources and the remaining 20 percent will come from state sources.⁷⁶ Even achieving the \$2 billion revenue estimate will be challenging because it assumes major new local funding sources will be implemented in the near term and the continuation of existing funding sources at the local, state, and federal levels. **Table 13** shows the constrained local revenue sources identified in the plan. TTD has estimated that new local revenue sources are needed during the RTP timeframe just to meet the constrained scenario revenue estimate.

Further, the Linking Tahoe RTP has both a Constrained and Unconstrained project list that will need to be implemented to achieve the vision for Lake Tahoe. Analyzing the Linking Tahoe RTP in 2017\$, and making appropriate adjustments in both needed projects and expected revenues, the funding shortfall between 2017 and 2040 is estimated at \$1.53 billion in 2017\$.

Table 13: Constrained Local Revenue Sources Identified in the Linking Tahoe Regional Transportation Plan

Funding Source	Description	Source
Farebox Revenues	Revenues collected by transit operators from passenger fees.	TART Short Range Transit Plan and South Shore transit actuals for 2015
TRPA Rental Car Mitigation Fund	Cars rented in the Region are assessed a mitigation fee of \$5.50 per day. This fee is used for transit operations. Mitigation fees found in the Rules of Procedure Section 10.8.5.	TRPA: Average of past four years
TRPA Air Quality Mitigation Fund	This fee offsets impacts from indirect sources of air pollution in the Basin. The current program charges \$325.84 per daily vehicle trip for new tourist accommodations units or for new campground site or recreational site.	TRPA: Average of past four years
TRPA Water Quality Mitigation Fund	This fee is assessed for each square foot of additional land coverage created. The current fee is \$1.86 per square foot.	TRPA: Average of past four years
Local Funds (On-Going)	Funds that local jurisdictions generate and use towards transportation capital and operations.	Placer County Traffic Impact Fees, North Lake Tahoe Resort Association Transient Occupancy Tax, City of South Lake Tahoe, Tahoe Douglas Transportation District Transient Occupancy Tax, PUDs, GIDs, and others, Transit local funds

⁷⁵ Ibid.

⁷⁶ Ibid.

Funding Source	Description	Source
Local Funds (Project Specific)	Funds that local jurisdictions generate and use towards transportation capital.	Placer County, Tahoe City Public Utility District, Nevada Department of Transportation, City of South Lake Tahoe
Private Funds	Private funding consists of revenue from South Shore Transit operations, skier shuttles, the Tahoe Fund, and mitigation fees from large projects in the Region.	South Shore Transit, Tahoe Fund, Mitigation Fees from large projects
Ferry Partnership	Public and private funds to operate waterborne transit.	Tahoe Transportation District
Operations and Maintenance	Estimates of funding expenditures to maintain active transportation facilities, roadways, and stormwater in the Region. This amount is adjusted to match the costs reported by local jurisdictions.	Jurisdiction consultation and confirmation through Environmental Improvement Program Tracker.
Environmental Stormwater Capital	Funding for Environmental Improvement Program projects in the Region from 2017 - 2019. This amount is adjusted to match the costs reported by local jurisdictions.	Jurisdiction consultation and confirmation through Environmental Improvement Program Tracker.

Source: Tahoe Regional Planning Agency. Linking Tahoe: Regional Transportation Plan and Sustainable Communities Strategy. Horizon Year 2017-2040, Appendix B, page B-20.

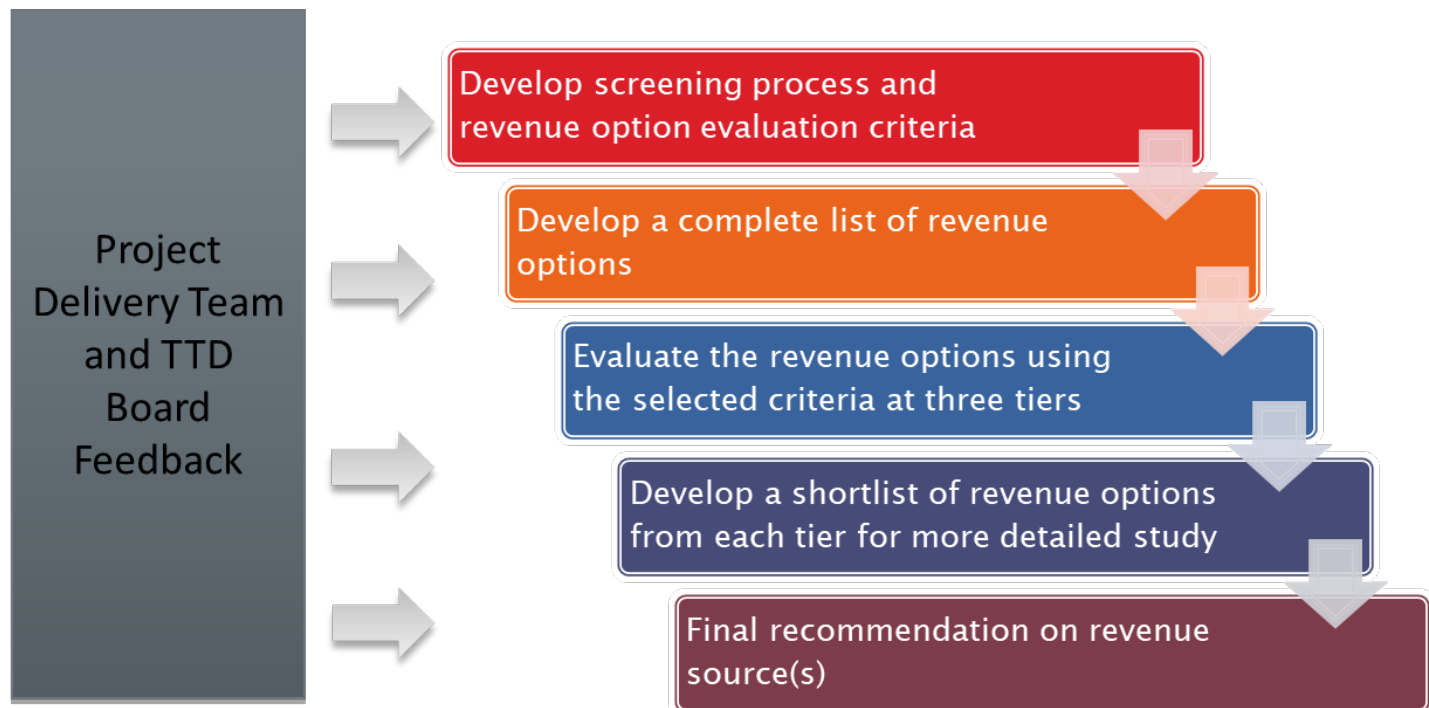
Since a large portion of the funding shortfall in the RTP will be in transit operations and capital improvements, it is important to recognize the modal limitations of existing and future funding sources (i.e., gas taxes that cannot be expended on transit). The importance of modal flexibility for transportation revenues is critical and therefore, will be analyzed in **Task 7 Identify, Analyze and Screen Options for Additional Funding**. In addition, new funding sources should be flexible in terms of where funds can be expended; ideally, the Tahoe Basin should be considered as a single jurisdiction with funds collected in the Basin eligible for expenditure throughout the Basin.

4.0 Proposed Approach

The proposed approach to develop and assess potential revenue and financing options that can help to both fill the transportation funding gap for the Tahoe Basin and the Resort Triangle and advance the transportation vision for the Lake Tahoe Region includes:

- Developing screening process and revenue option evaluation criteria;
- Developing a complete list of potential revenue options for evaluation (merging those that are very similar or have slight variations);
- Evaluating the revenue options using the selected criteria; and
- Developing a shortlist of revenue options for more detailed study.

The proposed approach will be reviewed and ultimately approved by the TTD Project Delivery Team and TTD Board prior to developing and evaluating the funding strategies for the Lake Tahoe region.



4.1 Revenue Evaluation Criteria and Rating Ranges

There are many different methods to increase transportation funding, but only certain funding strategies will meet the specific needs of the Lake Tahoe region and have the highest probability of success. When considering potential revenue sources for transportation, there are common criteria that are employed to evaluate advantages and disadvantages of each source. These criteria can be used as a guide when determining the feasibility of the revenue sources for application to the transportation needs and improvements in the Lake Tahoe Region:

- **Constitutional Amendments/Statewide Vote** - If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.
- **Revenue Adequacy and Predictability** – This criterion refers to both the overall magnitude of funds or yield a funding source is capable of generating and to how reliable this yield is predicted to be over time.
 - **Revenue Adequacy** – Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.
 - **Revenue Predictability** – A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.
- **Economic Efficiency** – This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.
- **Equity** – This criterion refers to the extent that each strategy places inequitable burdens on different groups of people financially, or unfairly restricts access to basic transportation services. Excise and sales taxes and user fees are all regressive, since they require those with lower incomes to expend a disproportionately higher share of their incomes to pay the tax or fee. The only funding strategies that are likely to receive a “high” rating are those that levy different fees *based on income levels*, including income or payroll taxes, property taxes, and vehicle personal property.

- **Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses** – The Lake Tahoe Region is an area of regional and statewide significance serving both interstate and intrastate travel. Tahoe experiences a high percentage of visitor use from adjacent urban centers in California and Nevada, in part, as a result of Lake Tahoe's central location in the Northern California Megapolitan, a basin of growing metropolitan areas that extends from San Francisco Bay area to Reno, Nevada. More than 14 million people live in the Northern California Megapolitan and many of them drive to Lake Tahoe to enjoy its world-class recreation opportunities. Overnight and day use visitors can exceed the Basin's capacity with the peak visitation in summer and winter, putting significant pressures on the transportation system, which consists primarily of six two-lane roadways leading into Tahoe and a bi-state 2 lane highway that loops around the Lake, thus contributing to some of the region's largest water quality, air quality, and emergency management challenges. This criterion considers the potential to share the tax burden with out-of-basin residents/businesses, or if the tax burden is carried by Tahoe residents and businesses. Tolling would be rated "high" because out-of-basin travelers would pay their share for using the roadways, whereas property taxes would be rated "low" because the tax is paid by residents and businesses where the additional property tax is imposed to pay for the project.
- **Supports Attaining Environmental Thresholds** – The Tahoe Regional Planning Agency (TRPA) operates at a regional level under the authority of the Bi-State Compact (Public Law 96-551) between the states of California and Nevada.⁷⁷ The Bi-State Compact states that the TRPA's Regional Plan shall promote walking, biking, public transit use, and environmental innovation technologies can help preserve a healthy environment. Specifically, the plan shall (a) reduce private vehicles dependency by making more effective use of existing transportation modes and public transit to move people and goods within the Region and (b) to the extent possible, reduce the air pollution that is caused by motor vehicles.⁷⁸ The Bi-State Compact requires TRPA establish environmental threshold that measure the Region's performance in the areas of air quality, water quality, soil conservation, vegetation, noise, recreation, scenic resources, fisheries, and wildlife. This criterion measures the degree to which a given revenue mechanism help achieve TRPA established thresholds. Some revenue mechanisms discourage behavior that causes harmful side effects such as congestion or air pollution. A congestion charge, for example, discourages travel at times and places where congestion may occur and as a result, may contribute to improve air quality. In contrast, other revenue mechanisms simply generate revenue, for example, an income tax.
- **Business Climate Friendliness** - Business climate friendliness is the way the business community will perceive a given mechanism. As with the Political Feasibility/Public Acceptability criterion, very few (if any) taxes are popular with businesses since they reduce profits. Given this general opposition to taxes, this criterion focuses on the degree of difficulty that might be encountered in gaining acceptance among Tahoe business community to initially implement the revenue mechanism, compared to other revenue options. The business community in particular disfavors taxes that are burdensome or complicated to comply with or that substantially increase the costs of doing business (especially if they target one business more than its competitors). Of course, there will be variability among the views of specific industrial sectors. For example, the automotive industry is likely to oppose burdensome taxes on auto purchases, while the retail industry is likely to oppose sales taxes. This criterion will consider the business community *as a whole*.

⁷⁷ Tahoe Regional Planning Agency. Linking Tahoe: Regional Transportation Plan and Sustainable Communities Strategy, Horizon Year 2017-2040.

⁷⁸ Ibid.

- **Revenue Potential** – This criterion measures the ability of the funding mechanisms to generate the needed revenue during the life of the TRPA's Regional Plan. Task 2 has estimated that new local and regional sources will be needed to generate \$1.53 billion so that the fully envisioned TRPA's Regional Plan addressing all needs in the region can be implemented over the 23-year forecast period. For each revenue mechanism, this criterion will estimate the funding to be generated over the life of the TRPA's Regional Plan. Revenue mechanisms will be categorized as low, medium or high if they have the potential to generate low, medium or high gross revenues, over the life of the TRP.
- **Administrative Effectiveness** – This criterion refers to the cost and ease of administering each fee or tax system; that is, minimizing evasion and minimizing the logistical difficulties imposed on the public in the process of paying the fee or tax in a cost-effective way. The easiest fee-collection systems, designated as having "high" administrative effectiveness are those that piggyback on other payments at the point of sale, including fuel taxes and sales taxes. Strategies are designated as "medium" if they require the user to make a unique payment solely for the purpose of paying fees or taxes, but where this process has been reasonably streamlined. New funding sources or those with high administrative costs are designated as "low."
- **Political Feasibility/Public Acceptance** - Because all of the funding sources require the public to pay more, it is likely that they will all have some public opposition. Funding sources that are somewhat removed from the transportation project or service they are supporting tend to be particularly unpopular, such as property and income taxes and general revenue. This criterion measures the degree of difficulty that might be encountered in gaining public acceptance to initially implement the revenue mechanism, compared to other revenue options. Public acceptance of revenue mechanisms may improve over time as individuals become more accustomed to the means of collection and how the mechanism impacts their finances, travel patterns, or other activities. Therefore, the acceptability of a new mechanism is measured comparatively, recognizing that some methods will initially be more acceptable than others. This measure will be largely informed through stakeholder input.
- **Fungibility Across Modes and Jurisdictions in Tahoe Basin**-The fact that funding shortfalls are identified for all of the major travel modes and other priority needs requires that any new funding mechanism not be limited to a single mode and ideally would be fungible across all modes of travel and priority needs. In addition, given the many jurisdictions within the Tahoe Basin, it will be critical that any new funding mechanism have the ability to fund projects and services across the entire Tahoe Basin and not be limited to use within the jurisdiction of collection.
- **Impacts to the Regional Economy** - Money collected through a revenue mechanism is no longer available to the tax/fee payer for other purposes such as investment, saving, or spending. This could be a deterrent to tax/fee payers to visit Lake Tahoe. These impacts could, however, be offset by increased spending on transportation projects and services which can stimulate the regional economy. Improvements to the transportation system may also improve the quality-of-experience for visitors and quality-of-life for residents, thus stimulating additional spending in the region.

Table 14 defines the proposed rating ranges for the evaluation criteria. For each potential revenue sources and each criterion, the following scores will be assigned to each rating:

- A rating of low will score 1 point which means that the potential source has a low probability of meeting the screening criteria

- A rating of medium will score 2 points which means that the potential source has a moderate probability of meeting the screening criteria
- A rating of high will score 3 points which means that the potential alternative has a strong probability of meeting the screening criteria

The sum of the scores in the tier 1 (tier 2 and tier 3) criteria will determine the overall rating and ranking of each potential revenue source. It is likely that not all of the identified criteria will be of equal importance in assessing the suitability of proposed funding mechanisms and will thus need to be weighted. Proposed weightings were discussed with the Project Delivery Team on 3 Dec 2018 and presented to the TTD Board on 14 Dec 2018. The TTD Board approved the proposed weightings with one change as noted below in Table 15.

Table 14: Rating Definition for Revenue Evaluation Criteria (Draft)

Criterion	Low	Medium	High
Constitutional Amendment/State wide Vote	If any of these actions is required, mechanism is considered fatally flawed and eliminated from further consideration.		If none of these actions is required, mechanism is considered viable in this regard and will be eligible for further consideration.
Adequacy	Revenue streams are low and may not provide sufficient funding to support a project or program, or can only be implemented over the short term, or do not provide modal flexibility. It may also have flat or negative future growth. Examples: Transportation impact fees	Revenue streams are significant and predicted to grow, although it may be at slower rate than transportation demand or do not provide modal flexibility. Levies may partially support a project or program, and could be leveraged through finance. Examples: Hotel/lodging taxes, motor fuel gas taxes that cannot expended to fund transit projects	Revenue streams sufficient that will grow with transportation demand and can be used to fund transit operations and capital improvements. Levies can support a project and program over the long term. Example: Motor fuel taxes.
Predictability	Revenue fluctuations are uncertain and highly volatile, making it difficult to predict future revenue streams. Fluctuations in revenues are highly variable year-to-year, and specific factors affecting stability cannot be identified. Example: motor fuel taxes not indexed to inflation.	Revenue fluctuations are generally consistent over time or more predictable, and the factors affecting stability are generally known, such as economic downturns. Example: motor fuel taxes indexed to inflation but affected by lower travel demand.	Revenue streams are highly predictable, with a long history of receipts for which trends can be easily identified. Fluctuations in revenues are low or nonexistent.
Economic Efficiency	The revenue source and the use of the system are unrelated, thus it does not provide clear pricing signals, leading to inefficient use of the system. Example: Property taxes.	The revenue source and the use of the system are indirectly related, yet pricing signals are not clear and users are not encourage to make efficient use of the system. Example: Rental car taxes.	There is a strong relationship between the revenue source and the use of the system, sending clear pricing signals, and encouraging the efficient use of the system. The revenue option reflects the true cost of using the system. Example: tolls

Criterion	Low	Medium	High
Equity	Low-income populations have to spend a higher share of their income to pay the tax or fee compared to other groups, or are unfairly restricted from using basic transportation services. Example: Sales taxes	The burden on low-income populations is lower, but they still spend a higher share of their income to pay the tax and fee compared to other groups. Example: Real property tax	The tax or fee is based on income levels. Example: Income taxes
Share of tax paid by out-of-basin versus in-basin residents and businesses	Tax paid primarily in-basin. Example: property taxes paid by local residents and businesses.	A portion of the tax burden is transferred out-of-basin.	. The tax/fee burden is reasonably shared among in-basin residents/businesses and out-of-basin residents/businesses based on use of the transportation infrastructure Example: road tolling. Example: road tolling, cordon line vehicle entry fee.
Supports attaining Tahoe Basin environmental quality thresholds	The mechanism has little direct or significant impact on achieving VMT reduction, GHG emissions, or TMDL standards.	The mechanism has moderate impact on achieving VMT reduction, GHG emissions, or TMDL standards.	The mechanism has very direct and significant impact on achieving VMT reduction, GHG emissions, or TMDL standards.
Business climate friendliness	The mechanism is not perceived as friendly by the business community. It may be burdensome to comply with and pay, or it may place significant disproportionate costs on business activities, or both.	The mechanism is perceived as somewhat business climate friendly. It may be somewhat inconvenient to comply with and pay, or it places some additional costs on business activities, or both.	The mechanism is perceived as business climate friendly. It is simple to comply with and pay, and places generally acceptable costs on business activities.
Revenue potential	The mechanism generates low gross revenues over the life of the RTP (low revenue potential mechanism).	The mechanism generates medium gross revenues over the life of the RTP (medium revenue potential mechanism).	The mechanism generates high gross revenues over the life of the RTP (high revenue potential mechanism).
Administrative Effectiveness	Administrative and compliance costs account for a significant share) of total revenues, require new collection systems and/or technologies or are difficult to enforce. Example: Sales and use tax on internet sales	Administrative and compliance costs account for a reasonable share (e.g., about 10 to 50 percent) of total revenues. The collection system is streamlined, reducing the administrative costs. Example: Tolls	Administrative and compliance costs are low (e.g., less than 10 percent of total revenues), and collection and monitoring can be piggy-backed under existing collection systems. Example: Sales tax
Political /Feasibility/Public Acceptability	Highly unpopular and low support from public and decision-makers.	Medium support from public and decision-makers.	High support from public and decision-makers.
Fungibility across uses and/or jurisdictions	Revenue has severe use restrictions and/or cannot be used outside of jurisdiction of collection.	Revenue can be flexed to multiple uses and be used outside of jurisdiction of collection with moderate administrative effort.	Revenue can be flexed to multiple uses and be used outside of jurisdiction of collection with little or no administrative effort.
Impacts to regional economy	Estimates of economic impact indicate a negative impact compared to status quo	Estimates of economic impact indicate a neutral impact compared to status quo	Estimates of economic impact indicate a positive impact compared to status quo

Table 15: Revenue Evaluation Criteria Weighting Factors (Draft)

Criterion	Weighting Factor
Constitutional Amendment/Statewide Vote	Fatal flaw
Adequacy	2
Predictability	2
Economic Efficiency	1
Equity	2*
Share of tax paid by out-of-basin versus in-basin residents and businesses	2
Supports attaining Tahoe Basin environmental quality thresholds	3
Business climate friendliness	2
Revenue potential	3
Administrative Effectiveness	1
Political /Feasibility/Public Acceptability	2
Fungibility across uses and/or jurisdictions	3
Impacts to regional economy	2

*Originally proposed weighting was 1; TTD Board amended to 2

There are a number of future technology changes that could affect transportation needs, and revenue generation and collection such as continued fleet economy improvements, increased use of electric vehicles, the expansion of real time ride sharing services, and the implementation of “smart cities” technologies. **Task 12 Review Future Technology Changes that could Affect Transportation Needs and Funding** will conduct a high level review of these trends in technological change and provide an assessment as to how each trend could affect future transportation needs, including the need for expanded communications and digital infrastructure and funding in the Lake Tahoe Basin. If any of the trends are expected to have a significant impact, they will be considered in the evaluation of the funding shortfalls as well as the evaluation criteria used to review possible funding strategies.

4.2 Tiered Screening Process

The proposed tiered screening process to evaluate the potential revenue options based on the proposed evaluation criteria is shown in **Figure 3**. It is a three-tiered process where the analysis of options becomes more rigorous as the process progresses. The process is as follows:

- At the **first tier screening** level, the potential revenue sources will be examined in terms of their need for a constitutional amendment and/or statewide public vote, revenue adequacy and predictability, and economic efficiency. If the potential revenue source requires an amendment of either the California or Nevada constitutions, or a state-wide vote of the people in either state, it will be eliminated from further consideration. This first screening will then yield a score for each of the other criteria for each examined potential revenue source. A rating of high will score 3 points, a medium rating will score 2 points; and a

low rating will score 1 point. The weights for each criterion will be applied and the scores will be summed across all criteria. The higher the total score, the better fit the revenue option will be for TTD.

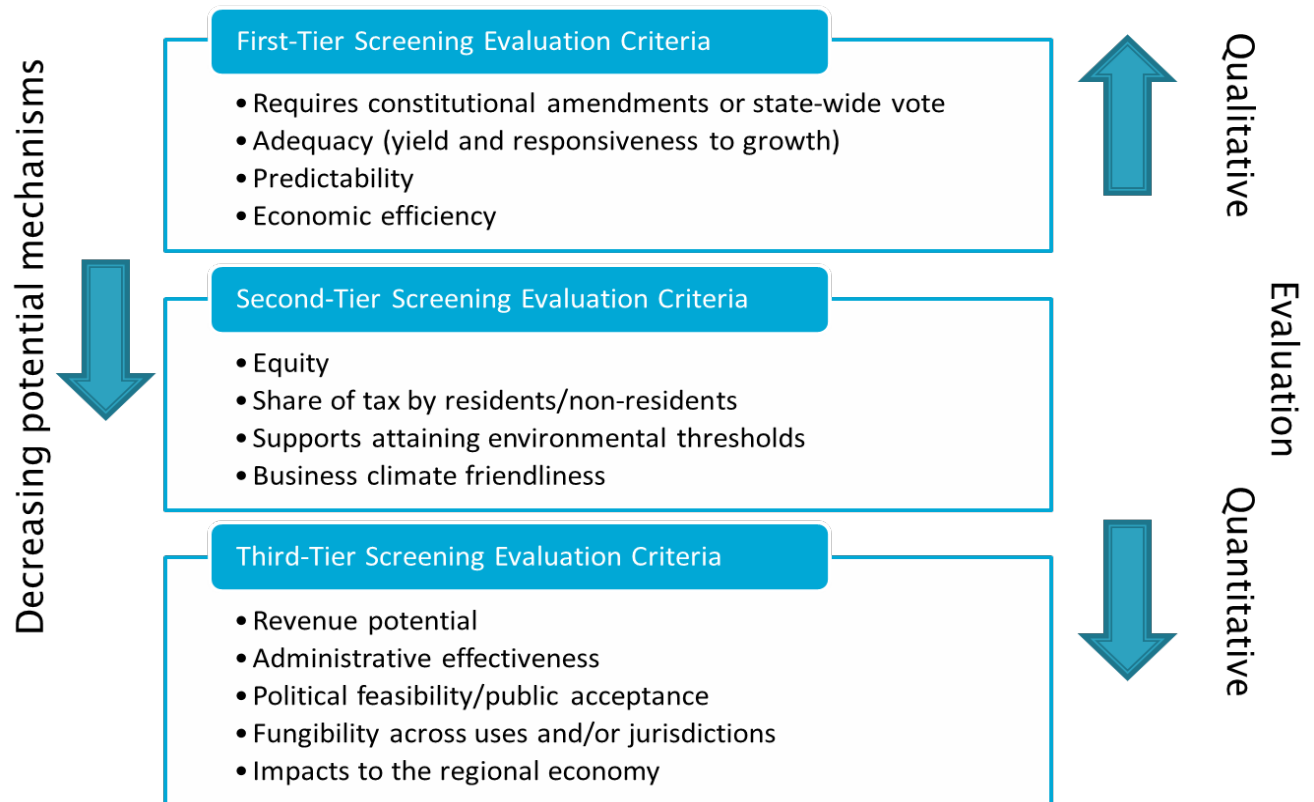
The revenue sources passing through to the **second tier screening** will be examined in terms of their equity, share of tax paid by out-of-basin versus in-basin residents and businesses, support of environmental thresholds, and business climate friendliness. This second screening will yield qualitative estimates for each criterion for each examined potential revenue source. These scores will be informed through stakeholder input as well as literature research.

- The funding sources passing through to the **third tier screening** will be evaluated in terms of their potential to generate the needed revenue during the life of the TRPA's Regional Plan, administrative efficiency, political feasibility/ public acceptance, fungibility across uses and jurisdictions, and impacts to the regional economy. Tier 3 screening criteria reflect the unique conditions of the Lake Tahoe region. Specifically, these criteria are expected to support:
 - The environmental goals of the Lake Tahoe region, including those designed to reduce private auto travel, both into and around the region, by making more effective use of existing transportation modes and public transit to move people and goods within the Region, and to help achieve TRPA established environmental thresholds;.
 - Lake Tahoe's long-term transportation vision by identifying successful revenue mechanisms for significant funding shortfalls; and.
 - Acceptability to the public and policy makers of Lake Tahoe region.

This third screening will provide estimates of annual revenues to be generated by the third tier funding options. These estimates are intended only as a high-level comparison prior to a more comprehensive financial analysis. As such, this analysis cannot be relied upon for final market financial purposes and is intended solely for management decision-making purposes with respect to next steps.

With the proposed tiered evaluation process, many of the revenue options may be screened out using fundamental criteria and gross analysis at the first tier. At the second tier, additional screening criteria will be introduced and the remaining revenue options will be further screened with more rigorous analysis. The revenue options passing through the second tier screening are then subject to the third and final screening process based upon the full gamut of screening criteria and subject to the highest level of analysis. Emerging from this third tier would be final recommendations on funding strategies. The proposed tiered screening process, evaluation criteria and weighting were reviewed by the Project Delivery Team on 3 Dec 2018, and approved by the TTD Board on 14 Dec 2018.

Figure 3: Three-Tiered Screening Process for the Assessment of Potential Revenue Options for the Lake Tahoe Region (Draft)



Appendix C:

Evaluation of Potential Funding Mechanism Ideas

Evaluation of potential funding mechanism ideas

Funding mechanism ideas were evaluated by an interdisciplinary team that included engineers, planners, economists, and legal counselors.

All evaluations were discussed by the entire team. Preliminary results were shared with the ONE TAHOE Project Delivery Team composed of representatives from the governmental agencies with members on the Tahoe Transportation District.

Broad general directions were given by the client to the team:

1. No funding mechanism ideas were “off the table” except where they would require an amendment to the constitutions of either Nevada or California or a mandatory statewide vote of the people in either state.
2. All ideas could be considered whether there was existing legislative authority or not, or if existing statutory or policy language specifically prohibited the proposed mechanism.
3. For evaluation purposes, it should be assumed that funding mechanisms would be applied uniformly across the Tahoe Basin regardless of governmental jurisdiction boundaries.

Since there were a very large number of variations possible within many of the funding ideas, the evaluation team adopted a reasonable scenario for each mechanism for the purposes of evaluation.

Where funding mechanism ideas were duplicative or very similar, the consultant chose to combine these for evaluation.

The evaluation process was conducted to inform the final recommendations made by the consultant to the TTD on the most appropriate funding mechanism(s) given Tahoe’s unique circumstances. The consultant was at liberty to blend and mix elements of the funding mechanisms to achieve this.

The notes on the evaluation process for all three tiers of the screening process follow.

Tier 1 Screening

1. Name of proposed mechanism: Sales Tax Increase

Description: This mechanism would add an additional increment of sales tax within the Tahoe Basin dedicated to funding projects and services contained in the Tahoe RTP.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw) - If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There appears to be no outright prohibition in either the California or Nevada constitutions against the imposition of such a tax. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Yield would be dependent on the tax rate and taxable sales; an additional 1% sales tax increment is estimated to yield \$3.3 million in 2019.

Rating: Low

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The level of taxable sales is largely driven by economic conditions and level of visitation in the Tahoe Basin. The Tahoe Basin is projected to have continued growth in visitation.

Rating: Medium

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: There is no relationship between sales tax and the price of transportation infrastructure or services.

Rating: Low

Summary rating: Low

Go/no go decision to advance to next tier: No go

Notes: Tahoe Prosperity reports Tahoe Basin sales tax revenue of \$23 million in 2015-16 on p. 73. Sales tax rates currently are: City of South Lake Tahoe 7.75%, El Dorado County is 7.5%, Incline Village is 8.2%, Douglas County is 7.1%

Tier 1 Screening

2. Name of proposed mechanism: Income Tax

Description: This mechanism would impose a personal income tax within the Tahoe Basin dedicated to funding projects and services contained in the Tahoe RTP.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw) - If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: Article 10, Section 9 of the Nevada Constitution specifically prohibits a personal income tax.

Rating: Fail

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: NA due to fatal flaw.

Rating: NA

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: NA due to fatal flaw.

Rating: NA

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that

distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: NA due to fatal flaw.

Rating: NA

Summary rating: NA

Go/no go decision to advance to next tier: No go.

Notes:

Tier 1 Screening

3. Name of proposed mechanism: Property Tax

Description: This mechanism would add a property tax increment over the current rates within the Tahoe Basin with proceeds from this increment dedicated to funding projects and services contained in the Tahoe RTP.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There is no prohibition in the California or Nevada Constitution against the property tax. The impact of this funding mechanism on specific limitations on property tax rates and the designation of the property tax to specific uses would be subject to further review.

Rating: Pass

Adequacy (2) - Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Although property taxes are capable of generating significant amounts of revenue and are, in fact, the single largest source of revenue for most general-purpose local government entities in California and Nevada, the ability to increase tax rates is limited and typically difficult. A greater challenge is the reality that local governments are attempting to meet a very large number of budget priorities that are funded by the property tax. Therefore, it seems unlikely that, now or in the future, additional property tax revenue would be dedicated solely to meet Tahoe Basin transportation needs.

Rating: Low

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles

become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The property values within the Tahoe Basin are projected to increase and should result in a relatively steady and predictable yield of funds through property taxes.

Rating: High

Economic efficiency (1) - This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: The use of the transport system and property value related levies are unrelated. No behavioral or pricing signals exist and thus property taxes do not contribute to efficient use of the transportation system.

Rating: Low

Summary rating: Low

Go/no go decision to advance to next tier: No go

Tier 1 Screening

4. Name of proposed mechanism: Local Option Fuel Taxes

Description: This mechanism would add a local option motor vehicle fuel tax with an indexing provision, over the current local fuel tax rates within the Tahoe Basin with proceeds from this increment dedicated to funding projects and services contained in the Tahoe RTP.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There appears to be no outright prohibition in either the California or Nevada constitutions against the use of VMT fees. Article 9, Section 5 of the Nevada Constitution would appear to limit the use of these revenues to the public highway system. Limitations on the use of revenue in California would be dependent upon whether the revenue mechanism was imposed at the state or local level. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature.

Rating: Pass

Adequacy (2) - Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: There is limited fuel sales in the Tahoe Basin, and the availability of refueling nearby but outside the Tahoe Basin (Truckee, Reno, Carson City, Minden/Gardnerville, Placerville) would likely reduce fuel sales with the Tahoe Basin if there is a significant cost savings in purchasing outside the Tahoe Basin.

Rating: Low

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles

become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The revenue generation of this measure is based upon the volume of fuel sold and rate of the fuel tax. This measure would be generally stable, but would be negatively affected by the decision to refuel outside the Tahoe Basin.

Rating: Medium

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: There is a strong correlation between this revenue source and the use of the system. However, this relationship is threatened in the long run with the advent of alternative fuels and growing fuel efficiency.

Rating: High

Summary rating: Low

Go/no go decision to advance to next tier: No-go

Notes:

Tier 1 Screening

5. Name of proposed mechanism: Gross Receipts Tax

Description: This mechanism would add a gross receipts tax on all businesses within the Lake Tahoe Basin dedicated to funding projects and services contained in the Tahoe RTP.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw) - If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There appears to be no outright prohibition in either the California or Nevada constitutions against the imposition of a gross receipts tax. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature.

Rating:

Adequacy (2) - Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Assuming minimal exemptions, the revenue from a gross receipts tax on businesses within the Tahoe Basin could raise substantial revenue.

Rating: High

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The revenue generation of this measure is based upon the volume of economic activity and rate of the gross receipts tax. This measure would be generally stable, as the level of economic activity is projected to grow in the Tahoe Basin.

Rating: Medium

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: The use of the transport system and a gross receipt tax are unrelated. No behavioral or pricing signals exist and thus a gross receipt tax does not contribute to efficient use of the transportation system.

Rating: Low

Summary rating: Medium

Go/no go decision to advance to next tier: Go

Notes: If the gross receipts tax is limited to business associated with tourism, there will be a loss of revenue as well as a reduction in the predictability of revenue.

Tier 1 Screening

6. Name of proposed mechanism: Employee Payroll Tax

Description: This mechanism would add a payroll tax increment on wages paid by employers within the Tahoe Basin with proceeds from this increment dedicated to funding projects and services contained in the Tahoe RTP.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: If this tax is paid by the employer, it may not be subject to the prohibition on personal income tax in Article 10, Section 9 of the Nevada Constitution. There appears to be no Constitutional prohibition against such a tax in California. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature.

Rating: Pass.

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: The proceeds of a payroll tax on all wages paid in the Tahoe Basin would raise substantial revenue. Some employers might try to avoid the payroll tax by shifting some wages to non-cash benefits.

Rating: High

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The revenue generation of this measure is based upon the total wages paid in the Tahoe Basin and rate of the payroll tax. This measure would be generally stable, as the level of economic activity is projected to grow in the Tahoe Basin.

Rating: Medium

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: The use of the transport system and a payroll tax are unrelated. No behavioral or pricing signals exist and thus a payroll tax does not contribute to efficient use of the transportation system.

Rating: Low

Summary rating: Medium

Go/no go decision to advance to next tier: Go

Notes: Tahoe Prosperity report (p.35) shows that per capita income in the Tahoe Basin was \$30,000 in 2015, thus total income for Basin residents is \$30,000 X 55,000 residents equals \$1.65 billion in income. This is very rough-obviously some income received by residents in the Tahoe Basin is not paid by employers in the Basin, some wages paid by employers in the Basin goes to employees living outside the Basin, and some portion of this income may not be from wages.

Tier 1 Screening

7. Name of proposed mechanism: New sustained Federal funding

Description: This mechanism would add a new Federal funding allocation dedicated to funding projects and services contained in the Tahoe RTP.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There is no prohibition in the California or Nevada Constitution against Congress allocating funds for projects and services contained in the Tahoe RTP.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Although Congress budgets and appropriates hundreds of billions in revenues each year, it would be extremely difficult to have an annual appropriation set aside for Tahoe transportation needs. In fact, Congress is dealing with annual deficits of more than \$700 billion at this point in time. Even if Congress does find more money through additional taxation, which seems very unlikely, there are many pressing needs across the nation that are currently underfunded or unfunded. What is much more likely is Congressional cost-cutting in the current level of Federal funding for transportation, environmental quality, and National forests, just to name a few of the federal funding categories currently benefitting the Tahoe Basin. Tahoe has had past success obtaining federal discretionary funding, particularly for environmental projects, but these funds are becoming more difficult to obtain each year, and seeming impossible to obtain on a consistent basis moving forward.

Rating: Low

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles

become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: Should a Tahoe Basin program be part of a reauthorized Federal-aid Highway Program or Federal transit program, annual appropriations would still be necessary. While predictability during the multi-year authorization periods covered by Federal legislation is better than most other Federal programs, it is not guaranteed. Additionally, the typical Federal re-authorization only covers 6 years, after which the struggle to maintain the Tahoe authorization would begin again. Further, federal funding has been focused on capital and capital maintenance, thus the pressing need for operations funding in Tahoe would not be addressed.

Rating: Low

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: The use of the transport system and a federal funding allocation for the Tahoe Basin are unrelated. No behavioral or pricing signals exist and thus this funding measure does not contribute to efficient use of the transportation system.

Rating: Low

Summary rating: Low

Go/no go decision to advance to next tier: No go

Notes: Long range strategy is needed to try and protect current federal funding levels that benefit the Tahoe Basin, given the high probability of Congress trying to cut back current funding levels as it attempts to resolve the huge budget deficits.

Tier 1 Screening

8/9. Name of proposed mechanism: New sustained State funding

Description: This mechanism would add a new State (California and/or Nevada) funding allocation dedicated to funding projects and services contained in the Tahoe RTP.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There is no prohibition in the California or Nevada Constitution against allocating funds for projects and services contained in the Tahoe RTP.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Although the California and Nevada state budgets appropriate billions in revenues each year, it seems unlikely that either state would be able to set aside an annual appropriation for Tahoe transportation needs. Similar to the funding challenges facing the federal government, there are many unfunded needs that would be competing with Tahoe in the event that new funding was to become available. Tahoe has had past success obtaining state discretionary funding, particularly for environmental and trail projects, but these funds continue to be difficult to obtain, and very unlikely to obtain on a consistent basis moving forward.

Rating: Low

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: Funding for needs in the Tahoe Basin from either or both states will be welcome, but it seems unlikely that it will exceed the assumed continuation of funding from discretionary sources already contained in the Tahoe RTP.

Rating: Low

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: The use of the transport system and a state funding allocation for the Tahoe Basin are unrelated. No behavioral or pricing signals exist and thus this funding measure does not contribute to efficient use of the transportation system.

Rating: Low

Summary rating: Low

Go/no go decision to advance to next tier: No go

Notes: Long range strategy is needed to try and protect current state funding levels that benefit the Tahoe Basin, given the high probability of states trying to cut back current funding levels as they deal with many unfunded needs and difficulty in raising new revenues.

Tier 1 Screening

10. Name of proposed mechanism: Increase Local Government General Fund Contributions

Description: The local governments that lie in whole or in part within the Tahoe Basin (El Dorado, Placer, Washoe, and Douglas Counties, Carson City, and the City of South Lake Tahoe) would increase their funding for Tahoe Basin transportation needs from their General Fund.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There appears to be no outright prohibition in either the California or Nevada constitutions against this proposed mechanism.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Given the size of the local government general funds, there is theoretical potential for this mechanism to generate substantial funding. However, the practical reality is that local governments face many competing demands for available funding, and diverting existing general funds to Tahoe Basin transportation would defund other priorities. Local governments are already facing funding shortfalls in the Tahoe Basin as evidenced by the operations/maintenance funding shortfall in the Tahoe RTP Unconstrained funding scenario.

Rating: Low

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The predictability of this revenue source is theoretically high, given the general fund will perform similar to the regional economy. However, the reality is that the general fund is used to fund a wide variety of needs, including emergency services, so it is possible that even with stable revenue growth, the competing needs could reduce or eliminate the funding available for Tahoe Basin transportation.

Rating: Low

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: The use of the transport system and a local government general fund allocation for the Tahoe Basin are unrelated. No behavioral or pricing signals exist and thus this funding measure does not contribute to efficient use of the transportation system

Rating: Low

Summary rating: Low

Go/no go decision to advance to next tier: No Go

Notes: While the local government General Fund has some potential, it is generally recognized that revenue sources that have a much closer connection to transportation needs and use (fuel taxes, transportation impact fees) are preferable as a funding source. In the Tahoe Basin, much of the transportation need is the result of vehicles utilized by visitors so other revenue mechanisms that target visitor activity (transient occupancy fee, sales tax, visitor trip fee) would be more appropriate than the General Fund.

Tier 1 screening

11. Name of proposed mechanism: Cordon pricing (also includes basin entry fee [item 23])

Description: All users would be required to pay a fee for entering the Lake Tahoe Basin. The revenue from the fee would be dedicated to supporting the multimodal transportation system within the basin. Similar to cordon pricing systems elsewhere in the world (e.g., London, Stockholm) basin resident and businesses would be allowed a number of free entries annually. Fees would be billed to users using license plate capture technology and/or transponders. Fee rates would be adjusted annually for inflation.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There appears to be no outright prohibition in either the California or Nevada constitutions against the imposition of such a fee. In Nevada, the language would need to be precisely crafted so that the fee is not interpreted as being subject to Article 9, Section 5, of the Nevada Constitution. Limitations on the use of revenue in California would be dependent upon whether the revenue mechanism was imposed at the state or local level. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Given the characteristics of travel into the basin, this mechanism is capable of raising significant amounts of revenue at relatively modest fee rates.

Rating: High

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time

because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The predictability of this revenue source is enhanced with the assumption of annual fee rate adjustments to address purchasing power lost due to inflation. The revenues could be impacted by lower demand (i.e., visitation). This is expected to be offset to some degree by the improved quality of the transportation system which should make Tahoe a more desirable destination.

Rating: High

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: Since this fee would be collected from travelers and is directly related to the provision of transportation and transportation related projects and services included in the Regional Transportation Plan, this mechanism would have a high degree economic efficiency.

Rating: High.

Summary rating: High

Go/no go decision to advance to next tier: Go

Notes:

Tier 1 screening

12. Name of proposed mechanism: Vehicle Miles Traveled (VMT) Fees

Description: Users would be required to pay a fee for each mile driven within the Lake Tahoe Basin. Revenue would be dedicated to supporting transportation and transportation related projects and services included in the Regional Transportation Plan. Per mile fee rates would be set to generate a targeted amount of revenue and adjusted annually for inflation. Deployment of a pay-at-the-pump VMT fee system in the Tahoe Basin alone would probably not be feasible given the large number of day visitors that would be fueling outside of the Basin. Collection of VMT fees as a separate transaction from fueling would involve significant deployment of new technology onboard the motor vehicles to record and capture odometer readings of mileage driven within the basin or GPS type technology to track vehicles and record mileage.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There appears to be no outright prohibition in either the California or Nevada constitutions against the use of VMT fees. Article 9, Section 5 of the Nevada Constitution would appear to limit the use of these revenues to the public highway system. Limitations on the use of revenue in California would be dependent upon whether the revenue mechanism was imposed at the state or local level. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Given the characteristics of travel within the basin, this mechanism is theoretically capable of raising significant amounts of revenue. However, there would also be substantial costs to install

technology onboard vehicles participating in the system unless these costs are spread over implementation for a much broader geographic area (e.g., state, region, etc.). In addition, the use restrictions on these revenues imposed by the Nevada Constitution, and potential use restrictions imposed by the California Constitution could severely limit the adequacy of this funding source for addressing the overall transportation funding shortfall.

Rating: Medium

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The predictability of this revenue source is enhanced with the assumption of annual fee rate adjustments to address purchasing power lost due to inflation. The revenues could be impacted by lower demand (i.e., visitation). This is expected to be offset to some degree by the improved quality of the transportation system which should make Tahoe a more desirable destination. Use restrictions on the revenues may also negatively impact predictability.

Rating: Medium

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: VMT fees are directly related to the use of the transportation system. Since fee rates would be set at levels to support implementation of eligible transportation projects and services identified in the plan, this mechanism would have a high degree economic efficiency.

Rating: High

Summary rating: Medium

Go/no go decision to advance to next tier: Go

Notes: Extensive, detailed legal research and consultation with state and federal agencies would need to be undertaken to assess the impacts of use restrictions on the usefulness of this proposed revenue mechanism.

DRAFT

Tier 1 screening

13. Name of proposed mechanism: Transportation Utility Special District (combination of “special district” [item 13] and “road utility” [item 27])

Description: A “special district” is a form of government not a revenue mechanism per se. Both California and Nevada have an extensive history with a variety of special districts providing a wide range of services. The scenario considered in this analysis is a special district established across the Tahoe Basin empowered to provide, operate and maintain transportation and transportation related facilities and services. The funding mechanism would be an annual transportation fee levied against each parcel of land within the basin based upon the trip generation of the land use. Fee rates would be set to generate a targeted amount of revenue supporting transportation and transportation related projects and services included in the Regional Transportation Plan. Fee rates would be automatically adjusted annually for inflation.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw) - If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There appears to be no outright prohibition in either the California or Nevada constitutions against the creation of a Transportation Utility Special District nor the imposition of a fee as described in the concept. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Given the characteristics of trip generation within the basin, this mechanism is capable of raising significant amounts of revenue.

Rating: High

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The predictability of this revenue source is enhanced with the assumption of annual fee rate adjustments to address purchasing power lost due to inflation. The revenues could be impacted significant net changes in land use to uses generating fewer trips but this would also tend to lower the revenue needed for building, operating, and maintaining, the transportation system. This is expected to be offset to some degree by the improved quality of the transportation system which should make Tahoe a more desirable destination.

Rating: High

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: For residents, there is a reasonably direct connection between this fee and use of the transportation system. Presumably, commercial property uses would charge their customers indirectly for the fee to recoup the expense making the connection to use of the transportation system less direct. Considering both these aspects, this mechanism is rated as having a high degree of economic efficiency.

Rating: High.

Summary rating: High

Go/no go decision to advance to next tier: Go

Notes: A significant portion of land within the basin is owned by the federal and state governments which are often significant generators or trips. It is likely that federal and state lands would be exempt from a transportation utility special district fees.

Tier 1 screening

14. Name of proposed mechanism: Tolling

Description: Users would be required to pay a toll for travel into or through specified toll zones on the major arterial roadways in the Basin. Trips made entirely within a single toll zone would not be charged. Revenue would be dedicated to supporting transportation and transportation related projects and services included in the Regional Transportation Plan. Toll rates would be set to generate a targeted amount of revenue and adjusted annually for inflation.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There appears to be no outright prohibition in either the California or Nevada constitutions against the use of tolls. Article 9, Section 5 of the Nevada Constitution would appear to limit the use of these revenues to the public highway system. Limitations on the use of revenue in California would be dependent upon whether the revenue mechanism was imposed at the state or local level. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature. (Tolling of US-50, because it is a federal-aid highway, creates additional restrictions administratively and on the use of revenues.)

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Given the characteristics of travel within the basin, this mechanism is theoretically capable of capable of raising significant amounts of revenue at relatively modest fee rates. However, this is offset by what would appear to be significant use restrictions in the Nevada and California constitutions constitution, and federal statutes.

Rating: Medium

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The predictability of this revenue source is enhanced with the assumption of annual fee rate adjustments to address purchasing power lost due to inflation. The revenues could be impacted by lower demand (i.e., visitation). This is expected to be offset to some degree by the improved quality of the transportation system which should make Tahoe a more desirable destination. Use restriction on the revenues may also negatively impact predictability.

Rating: Medium

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: Tolls are directly related to the provision of transportation projects and services. Since toll rates would be set at levels to support implementation of eligible transportation projects and services identified in the plan, this mechanism would have a high degree economic efficiency.

Rating: High.

Summary rating: Medium

Go/no go decision to advance to next tier: Go

Notes: Extensive, detailed legal research and consultation with state and federal agencies would need to be undertaken to assess the impacts of use restrictions on the usefulness of this proposed revenue mechanism.

Tier 1 screening

15. Name of proposed mechanism: Joint Powers Authority

Description: A “joint powers authority” (JPA) is a form of governance not a revenue mechanism per se. In a JPA, existing entities (usually governmental) come together and pool their existing powers to accomplish a specific set of purposes. JPAs do not create any new powers but rely upon the existing powers of the JPA members. In regards to revenue generation in the Lake Tahoe Basin, a JPA would have only the revenue mechanisms at its disposal that the individual members have, (e.g. property taxes, sales taxes, etc.). Since these existing mechanisms are being analyzed individually in the Tier 1 screening process, a JPA will not be evaluated as a separate proposed mechanism. In the event that a JPA is particularly advantageous as a governance structure for one or more promising revenue mechanisms, this can be considered within the context of the final recommendations.

Go/no go decision to advance to next tier: No go

Tier 1 screening

16. Name of proposed mechanism: Zoned transportation user fee (also includes hourly transportation fee [item 20])

Description: All users would be required to pay a fee dedicated to supporting the multimodal transportation system within the basin. Basin residents and resident businesses would pay a flat fee for one of six community transportation zones plus a daily fee for travel within the basin outside of the community transportation zone where they reside when such trips are made. Non-residents would pay a daily fee. The resident flat rate fee could be billed by piggybacking on the collection of residential and commercial property taxes or by a utility service type billing. Fees for non-resident use and for resident use outside of the community transportation zone could be billed through license plate capture technology and/or transponders. Fee rates would be adjusted annually for inflation.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There appears to be no outright prohibition in either the California or Nevada constitutions against the imposition of such a fee. In Nevada, the language would need to be precisely crafted so that the fee is not interpreted as being subject to Article 9, Section 5. Limitations on the use of revenue in California would be dependent upon whether the revenue mechanism was imposed at the state or local level. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Given the characteristics of travel within the basin and duration of visitor stays, this mechanism is capable of raising significant amounts of revenue at relatively modest fee rates.

Rating: High

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The predictability of this revenue source is enhanced with the assumption of annual fee rate adjustments to address purchasing power lost due to inflation. The revenues could be impacted by lower demand (i.e., visitation). This is expected to be offset to some degree by the improved quality of the transportation system which should make Tahoe a more desirable destination.

Rating: High

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: This fee is directly related to the provision of transportation projects and services. The revenue from this fee would be dedicated to supporting the robust multimodal transportation system envisioned by the community in the Regional Transportation Plan. Since fee rates would be set at levels to support implementation of transportation projects and services identified in the plan, this mechanism would have a high degree economic efficiency.

Rating: High.

Summary rating: High

Go/no go decision to advance to next tier: Go

Notes: Flat resident user fees could be varied by land use as it relates to trip generation. These fees could vary from community transportation zone or could be uniform. This proposed mechanism would lend itself to congestion pricing, if desired by the community. Accommodations could be made to discount fee rates for commuters, incidental and short term through trips, etc. Accommodations would need to be made for vehicles that are spending a short time within the basin (e.g. straight through travelers on US 50); this could be done by not charging the fee unless the user dwell time in the basin exceeds one hour.

Tier 1 screening

17. Name of proposed mechanism: Transportation fee collected with vehicle registration

Description: Users with vehicles registered in the Tahoe Basin would be required to pay an annual Tahoe Transportation Fee. Revenue would be dedicated to supporting transportation and transportation related projects and services included in the Regional Transportation Plan. Fee rates would be set to generate a targeted amount of revenue and adjusted annually for inflation.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There appears to be no outright prohibition in either the California or Nevada constitutions against the use of tolls. Article 9, Section 5 of the Nevada Constitution would appear to limit the use of these revenues to the public highway system. Limitations on the use of revenue in California would be dependent upon whether the revenue mechanism was imposed at the state or local level. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Given the number of vehicles registered within the basin, these fees would need to be hundreds of dollars annually to raise any appreciable revenue.

Rating: Low

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles

become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: This revenue should be fairly predictable but will probably be diminished if the level of the fee incents owners to try and register their vehicles outside of the Tahoe Basin.

Rating: Low

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: Since fees are directly related to the provision of transportation projects and services, and collected at the time of vehicle registration, they would have a high degree economic efficiency.

Rating: High.

Summary rating: Low

Go/no go decision to advance to next tier: No go

Notes:

Tier 1 Screening

18. Name of proposed mechanism: Paid Parking

Description: Add a fee for existing recreation parking spaces around Tahoe Basin to be dedicated to funding projects and services contained in the Tahoe RTP. This proposal would not affect any privately owned parking or the public parking available in Tahoe residential areas.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There appears to be no outright prohibition in either the California or Nevada constitutions against this proposed mechanism. There may be limitations, especially in California, for the parking fee not to exceed the costs to operate and maintain the parking spaces. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: The ability of paid parking to generate revenue is a function of the level of utilization, price paid for parking and cost to operate the parking spaces. There is not a substantial amount of information available on the potential to add or increase parking fees in the Tahoe Basin, but the Linking Tahoe Corridor Connection Plan did identify approximately 5600 existing recreation parking spaces in the Tahoe Basin. It should be noted that some of these spaces already have parking fees charged for their use. Assuming these spaces are in high demand areas, and could net an additional charge of \$5 per use, with 2 uses per day, for six months of the year, the annual revenue potential is approximately \$10 million per year. Obviously, the actual cost of parking would exceed \$5 per use in order to capture the operating cost of collection and monitoring the parking spaces. Depending on the location, the cost of monitoring and collection could vary. In addition, depending upon the location, parking evasion could become an unintended problem. Both commercial and residential parking could become a target

for those trying to evade the paid parking spaces, creating problems, particularly for businesses that require customer access to their parking.

Rating: Low

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The predictability of this revenue is a function of visitor trips as well as the pricing structure, so there would be some ability to adjust prices to reach revenue targets. The number of visitors to the Tahoe Basin is growing, absent a major economic downturn. However, the higher the price, the higher the likelihood of attempts to evade paid parking. In addition, raising parking charges to generate revenue over and above operating costs will be subject to tax approval requirements at least in the state of California.

Rating: Low

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: The revenue from this source would be dedicated to supporting the robust multimodal transportation system envisioned by the community in the Regional Transportation Plan. Charging vehicles brought into the Tahoe Basin by visitors for parking results in a funding mechanism with a direct relationship to the cost of using the transportation system.

Rating: High

Summary rating: Low

Go/no go decision to advance to next tier: No Go

Tier 1 Screening

19. Name of proposed mechanism: Increase Developer Impact Fees

Description: Development impact fees are charged to new development to generate funds that pay for new infrastructure necessary to mitigate their impacts. Typically, impact fees are a one-time fee and are used for capacity expansion. This funding measure would be an additional increment of impact fees that are dedicated to the transportation needs identified in the Tahoe RTP.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: The California and Nevada constitutions do not prohibit this proposed mechanism. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: New development is limited in the Tahoe Basin, due to environmental and other constraints. Developer impact fees are already charged for new development in the Tahoe Basin, by TRPA as well as the local governments. The TRPA vehicle impact fee is currently \$325 per daily vehicle trip and is estimated to generate \$400,000 per year in the Tahoe RTP. Assuming a new impact fee increment that is 50 percent of the existing TRPA fee, it would generate approximately \$200,000 per year

Rating: Low

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles

become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The predictability of this revenue is a function of the rate of development in the Tahoe Basin. Growth in the Tahoe Basin is projected, absent a major economic downturn. However, the exact timing of the development can be difficult to predict.

Rating: Medium

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: The revenue from this source would be dedicated to supporting the robust multimodal transportation system envisioned by the community in the Regional Transportation Plan. Charging new development a new increment of impact fees does not directly assess the user of the transportation system for the cost of using the system.

Rating: Low

Summary rating: Low

Go/no go decision to advance to next tier: No go

Tier 1 screening

21. Name of proposed mechanism: Congestion pricing

Description: Congestion pricing incents transportation users to make discretionary trips at time when there is less demand on the transportation system by charging them a higher rate for trips made during peak times versus off-peak times. The intent is to reduce peak travel congestion and provide more efficient use of the facility. As such, congestion pricing is not a revenue collection mechanism but could be incorporated into the fee structure of a revenue mechanism. Congestion pricing could be applicable to a number of the revenue mechanisms under consideration including: tolls, VMT fees, cordon pricing, paid parking, etc. Since these mechanisms are being analyzed individually in the Tier 1 screening process, congestion pricing will not be evaluated as a separate proposed mechanism. In the event that congestion pricing is particularly advantageous when incorporated into the fee structure for one or more promising revenue mechanisms, this can be considered within the context of the final recommendations.

Go/no go decision to advance to next tier: No go

Tier 1 Screening

22. Name of proposed mechanism: Increase Transit Fares

Description: Transit fares are paid by passengers on the public transit systems serving the Tahoe Basin. Tahoe Area Regional Transit (TART) serves the north shore of Tahoe and BlueGo serves the south shore of Tahoe. It should be noted that the adopted policy of the Tahoe RTP and the Tahoe Transportation District is to eliminate fares when a new public transit funding source is adopted.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: The California and Nevada constitutions allow this proposed mechanism.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: The current fare structure generates a relatively small revenue stream (approximately \$1 million/year) for Tahoe public transit. An increase in fares will have two effects, increase revenue per fare, but also reduce demand due to the higher price; the difference between the ridership loss versus the fare increase represents the elasticity of demand. TTD staff has estimated that a 25% fare increase might increase revenue approximately 9 percent, thus generating approximately \$100,000 per year.

Rating: Low

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The predictability of this revenue mechanism is a function of the level of ridership on transit services in the Tahoe Basin. This should be fairly stable, although an economic downturn, or a lower elasticity of demand than projected would reduce revenue from this mechanism.

Rating: Low

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: The revenue from this source would be dedicated to supporting the robust multimodal transportation system envisioned by the community in the Regional Transportation Plan. Charging passengers a higher fare for public transportation to help fund more service results in a funding mechanism with a close relationship to transportation needs.

Rating: High

Summary rating: Low

Go/no go decision to advance to next tier: No go

Tier 1 Screening

24. Name of proposed mechanism: Vacancy Tax

Description: The number of 2nd home residences in the Tahoe Basin is substantial, and the majority are vacant. This funding measure would impose a tax on residences that are vacant a substantial portion of the year.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: The California and Nevada constitutions do not appear to prohibit this proposed mechanism, although California Proposition 13 provisions requires that the Vacancy tax be a flat parcel tax or utility fee. The City of Oakland enacted a Vacancy tax in November 2018.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: The Vacancy Tax would be a new funding mechanism in the Tahoe Basin. Given the large number of residences that are 2nd homes (50% in South Lake Tahoe, and 56% to 93% in other jurisdictions in the Tahoe Basin), a majority of these homes would be subject to the Vacancy tax, although the exact number would depend upon the definition of “vacant”. The rate of the tax would be the other factor in determining revenue generation. The City of South Lake Tahoe could generate approximately \$27 million per year at \$3,000 per vacant residence. (Source: Devin Middlebrook)

Rating: Medium

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The predictability of this revenue mechanism is a function of the number of vacant residences and the rate at which the tax is applied. In addition, the definition of “Vacancy” in any tax measure will have a huge impact on what residences are required to pay the tax, and therefore the predictability of this revenue source. Some property owners would respond to the vacancy tax by putting residences in the rental market, with a high tax creating more conversion to rentals and a lower tax creating less conversion to rentals. Logically, the higher the tax rate, the more likely vacancy tax revenue will decline over time as property owners seek to avoid the tax and offer their residences for rental. This is the policy objective of the City of South Lake Tahoe, but would not be desirable for funding transportation operations. Predictability could be improved if transportation funding were given first priority in the allocation of these revenues.

Rating: Medium

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: The revenue from this source would be dedicated to supporting the robust multimodal transportation system envisioned by the community in the Regional Transportation Plan. Charging properties a Vacancy tax will encourage more occupancy and higher demand for transportation services.

Rating: Low

Summary rating: Medium

Go/no go decision to advance to next tier: Go

Tier 1 Screening

25. Name of proposed mechanism: Increase Transient Occupancy Tax

Description: There are currently Transient Occupancy Taxes (TOT) charged by all jurisdictions in the Tahoe Basin. The TOT is charged as a percent of the room rate and added to the bill charged to the visitor. This funding measure would impose an additional increment in the TOT that would be used to fund transportation improvements in the Tahoe Basin.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: The California and Nevada constitutions allow this proposed mechanism.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: The revenue generated by an increase to the TOT would be subject to the percentage increase and the room rate and the number of rooms rented. The existing TOTs range from 10% to 14% and generate approximately \$39 million per year (2016), thus a 40% increase in the tax rate would generate approximately \$15 million per year.

Rating: Medium

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The predictability of this revenue mechanism is relatively stable. There has been substantial TOT revenue growth in the last 10 years and is likely to continue to grow absent a major economic downturn.

Rating: Medium

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: The revenue from this source would be dedicated to supporting the robust multimodal transportation system envisioned by the community in the Regional Transportation Plan. Charging visitors a higher TOT is not a direct charge for the use of the transportation system.

Rating: Low

Summary rating: Medium

Go/no go decision to advance to next tier: Go

Notes: Eastern Placer Co TOT rate is 10%, Washoe Co TOT is 13% at Incline Village, City of South Lake Tahoe is 12-14%, Douglas Co TOT is 14% at Tahoe Township

Tier 1 Screening

26. Name of proposed mechanism: Increase Rental Car Fee

Description: There is currently a fee of \$5.50 per day assessed for cars rented in the Tahoe Basin. This funding is used for transit operations. The proposed increase in this fee of \$2.75 would be used to fund transportation improvements in the Tahoe Basin.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: The California and Nevada constitutions allow this proposed mechanism.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: The revenue generated by the current rental car fee is \$120,000 per year. A 50% increase to the fee would generate approximately \$60,000 per year, assuming no decrease in demand.

Rating: Low

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The predictability of this revenue mechanism is relatively stable. There has been substantial visitor growth in the last 10 years and is likely to continue to grow absent a major economic downturn.

Rating: Medium

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: The revenue from this source would be dedicated to supporting the robust multimodal transportation system envisioned by the community in the Regional Transportation Plan. Charging visitors a higher rental car tax will generate more revenue to address the travel demand created by additional visitors, although the users of rental cars are less likely to use transit options.

Rating: Medium

Summary rating: Low

Go/no go decision to advance to next tier: No Go

Tier 1 Screening

28. Name of proposed mechanism: Ski Lift Ticket/Pass Fee

Description: This mechanism would add a fee to ski lift ticket and ski pass sales within the Tahoe Basin dedicated to funding projects and services contained in the Tahoe RTP.

Evaluation ranking for each criterion:

Constitutional Amendments/Statewide Vote (fatal flaw)- If a proposed funding mechanism would require an amendment to the CA or NV constitutions, or a statewide vote of the people in either state, this is considered a fatal flaw. The ability to accomplish either of these is considered beyond the reasonable capability of the TTD and its partners.

Discussion: There appears to be no outright prohibition in either the California or Nevada constitutions against the imposition of such a fee. There appears to be no constitutional or statutory requirement for a state-wide vote of the people in either California or Nevada. A state-wide vote in California or Nevada would only be required if mandated by the legislature.

Rating: Pass

Adequacy (2)- Strategies are given a “high” rating if they are capable of producing large amounts of revenue assuming reasonable fee/tax rates. In particular, fuel taxes have been the mainstay of transportation revenues for decades, receiving generally a “high” rating related to yield. Sources or strategies are given a “low” rating if the strategies are inherently short-term or low-yield. For example, a revenue source like transportation impact fees used to recover the costs incurred for the expansion of the transportation network necessary to serve demands generated by new development would rank “low” in adequacy, given its narrow tax base, the limited new growth, and the fact that it is a onetime charge.

Discussion: Yield would be dependent on the fee rate and ski lift ticket and pass sales; an additional 10% in the price is estimated to yield \$ 4.4 million in 2019.

Rating: Low

Predictability (2)- A funding strategy with a “high” rating produces revenues that are predictably sustained over time, whereas a “low” rating refers to funding sources whose revenue generation potential over time is more uncertain. For example, motor fuel taxes may not be reliable over time because, if not indexed, the revenue degrades with both inflation and lower consumption as vehicles become more fuel efficient. If they are indexed, the inflation impact is removed, and revenues are only impacted by lower demand.

Discussion: The level of ski ticket and pass sales is largely driven by snow conditions and level of visitation in the Tahoe Basin. The Tahoe Basin ski resorts have invested heavily in snow making

equipment to reduce the impact of low snow winters and visitation is projected to have continued growth. Obviously, this fee ignores virtually all non-ski visits to the Tahoe Basin.

Rating: Medium

Economic efficiency (1)- This criterion refers to the extent that a strategy provides clear pricing signals that encourage users and providers to minimize unproductive travel and maximize economic growth. Therefore, strategies with “high” economic efficiency are those that help to make the marginal prices of goods and services reflect their true costs. Strategies with “low” economic efficiency are those that distort the market by collecting fees that are unrelated to the services they help fund. For example, hotel/lodging taxes would be considered “low” in economic efficiency, as these are not directly related to transportation and would not send direct signals of efficient use of the transportation network. A robust measure of economic efficiency includes the full network effects that are gained from completing a single segment of roadway.

Discussion: There is no relationship between a fee on ski lift tickets and the price of transportation infrastructure or services.

Rating: Low

Summary rating: Low

Go/no go decision to advance to next tier: No go

Notes: source: <https://tahoequarterly.com/outdoors/report-ski-resorts-see-revenue-despite-drought>

Tierney study for 2013-14 ski season:

“Tierney’s study, the first of its kind in the Tahoe Basin to go public, collected data from Lake Tahoe’s nine largest resorts: Alpine Meadows, Heavenly, Homewood, Kirkwood, Sugar Bowl Resort, Mt. Rose, NorthStar California, Sierra-at-Tahoe and Squaw Valley. Combined, these resorts represent more than 75 percent of all skier visits to the Tahoe area and roughly half of all skier visits in California, a cumulative 2.72 million visits.”

Outside Tahoe Basin resorts: Alpine Meadows, Kirkwood, Sugar Bowl, Mt. Rose, NorthStar, Sierra at Tahoe and Squaw Valley. It would be optimistic to assume that the resorts in the Tahoe Basin (Heavenly and Homewood) have 30% of sales; Homewood is quite small, Heavenly is large.

“Hard numbers support Monson’s logic. Restaurant, food and beverage revenue is earmarked as the leading skier expenditure, according to Tierney’s study. Food and beverage sales account for \$98.2 million, nearly 20 percent of the ski industry’s total economic impact last season. Lift tickets were a close second at \$90.9 million, largely thanks to help from season pass sales. Lodging kicked in another \$75.3 million, followed by shopping and retail at a cool \$66.2 million.”

Tahoe Basin Resort Percent of total ski economic impact: 30%

2014 total ski ticket/pass revenue: \$91 million

2014 total ski ticket/pass revenue in Tahoe Basin: \$91 million *30%=\$27.3 million

2014 Tahoe Basin ski lift ticket/pass revenue increased by 10% per year for 5 years (5% price inflation and 5% visitation growth) =

\$ 2,014.00	\$ 2,015.00	\$ 2,016.00	\$ 2,017.00	\$ 2,018.00	\$ 2,019.00
\$ 27.30	\$ 30.03	\$ 33.03	\$ 36.34	\$ 39.97	\$ 43.97

2019 Tahoe Basin ski lift ticket/pass fee revenue applied at rate of 10%: \$ 44 million * 10%= \$4.4 million

Tier 2 Screening

5. Name of proposed mechanism: Gross Receipts Tax

Description: This mechanism would add a gross receipts tax on all businesses within the Lake Tahoe Basin dedicated to funding projects and services contained in the Tahoe RTP.

Summary of Tier 1 screening results weighting factors in parentheses:

Constitutional amendment/statewide vote of the people (fatal flaw) rating: Pass

Adequacy (2) rating: High

Predictability (2) rating: Medium

Economic efficiency (1) rating: Low

Tier 1 summary rating: Medium

Go/no go decision to advance to next tier: Go

Tier 2 evaluation rating for each criterion:

Equity (2) –This criterion refers to the extent that each strategy places inequitable burdens on different groups of people financially, or unfairly restricts access to basic transportation services. Excise and sales taxes and user fees are all regressive, since they require those with lower incomes to expend a disproportionately higher share of their incomes to pay the tax or fee. The only funding strategies that are likely to receive a “high” rating are those that levy different fees based on income levels, including income or payroll taxes, property taxes, and vehicle personal property.

Discussion: A gross receipts tax falls onto businesses; however, it can be expected to be passed on indirectly to the customers of such businesses. Low-income populations have to spend a higher share of their income to pay the tax or fee compared to other groups, or are unfairly restricted from using basic transportation services.

Rating: Low

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) — The Lake Tahoe Region is an area of regional and statewide significance serving both interstate and intrastate travel. Tahoe experiences a high percentage of visitor use from adjacent urban centers in California and Nevada, in part, as a result of Lake Tahoe’s central location in the Northern California Megapolitan, a basin of growing metropolitan areas that extends from San Francisco Bay area to Reno, Nevada. More than 14 million people live in the Northern California Megapolitan and many of them drive to Lake Tahoe to enjoy its world-class recreation opportunities. Overnight and day use visitors can exceed the Basin’s capacity with the peak visitation in summer and winter, putting significant pressures on the

transportation system, which consists primarily of six two-lane roadways leading into Tahoe and a bi-state 2 lane highway that loops around the Lake, thus contributing to some of the region's largest water quality, air quality, and emergency management challenges. This criterion considers the potential to share the tax burden with out-of-basin residents/businesses, or if the tax burden is carried by Tahoe residents and businesses. Tolling would be rated "high" because out-of-basin travelers would pay their share for using the roadways, whereas property taxes would be rated "low" because the tax is paid by residents and businesses where the additional property tax is imposed to pay for the project.

Discussion: This criterion considers the potential to share the tax burden with out-of-basin residents/businesses, or if the tax burden is carried by Tahoe residents and businesses. Gross receipt taxes would be paid primarily in-basin, by local businesses. Since about 42% of visitor trips are day trips, which may occasion little or no economic activity within the basin, the share that is attributable to purchases from visitors would offer some relief but only indirectly.

Rating: Low

Supports Attaining Environmental Thresholds (3) – The Tahoe Regional Planning Agency (TRPA) operates at a regional level under the authority of the Bi-State Compact (Public Law 96-551) between the states of California and Nevada. The Bi-State Compact states that the TRPA's Regional Plan shall promotes walking, biking, public transit use, and environmental innovation technologies can help preserve a healthy environment. Specifically, the plan shall (a) reduce private vehicles dependency by making more effective use of existing transportation modes and public transit to move people and goods within the Region and (b) to the extent possible, reduce the air pollution that is caused by motor vehicles. The Bi-State Compact requires TRPA establishes environmental threshold that measure the Region's performance in the areas of air quality, water quality, soil conservation, vegetation, noise, recreation, scenic resources, fisheries, and wildlife. This criterion measures the degree to which a given revenue mechanism help achieve TRPA established thresholds. Some revenue mechanisms discourage behavior that causes harmful side effects such as congestion or air pollution. A congestion charge, for example, discourages travel at times and places where congestion may occur and as a result, may contribute to improve air quality. In contrast, other revenue mechanisms simply generate revenue, for example, an income tax.

Discussion: Gross receipts taxes have little direct impact on achieving VMT reduction, GHG emissions, or TMDL standards.

Rating: Low

Business Climate Friendliness (2) - Business climate friendliness is the way the business community will perceive a given mechanism. As with the Political Feasibility/Public Acceptability criterion, very few (if any) taxes are popular with businesses since they reduce profits. Given this general opposition to taxes, this criterion focuses on the degree of difficulty that might be encountered in gaining acceptance among Tahoe business community to initially implement the revenue mechanism, compared to other revenue

options. The business community in particular disfavors taxes that are burdensome or complicated to comply with or that substantially increase the costs of doing business (especially if they target one business more than its competitors). Of course, there will be variability among the views of specific industrial sectors. For example, the automotive industry is likely to oppose burdensome taxes on auto purchases, while the retail industry is likely to oppose sales taxes. This criterion will consider the business community as a whole.

Discussion: The gross receipts tax is not perceived as friendly by the business community. It would be burdensome to comply with and pay, and place significant disproportionate costs on business activities.

Rating: Low

Tier 2 summary rating: Low

Go/no go decision to advance to next tier: No go

Notes: If the gross receipts tax is limited to business associated with tourism, there will be a loss of revenue as well as a reduction in the predictability of revenue. This mechanism may be considered for inclusion in a final recommended package if it is useful to address resident versus non-resident equity or to address other factors.

Tier 2 Screening

6. Name of proposed mechanism: Employee Payroll Tax

Description: This mechanism would add a payroll tax increment on wages paid by employers within the Tahoe Basin with proceeds from this increment dedicated to funding projects and services contained in the Tahoe RTP.

Summary of Tier 1 screening results weighting factors in parentheses:

Constitutional amendment/statewide vote of the people (fatal flaw) rating: Pass

Adequacy (2) rating: High

Predictability (2) rating: Medium

Economic efficiency (1) rating: Low

Tier 1 summary rating: Medium

Go/no go decision to advance to next tier: Go

Tier 2 evaluation rating for each criterion:

Equity (2) – This criterion refers to the extent that each strategy places inequitable burdens on different groups of people financially, or unfairly restricts access to basic transportation services. Excise and sales taxes and user fees are all regressive, since they require those with lower incomes to expend a disproportionately higher share of their incomes to pay the tax or fee. The only funding strategies that are likely to receive a “high” rating are those that levy different fees based on income levels, including income or payroll taxes, property taxes, and vehicle personal property.

Discussion: Since an employee would be likely to be proportional to the wages it was levied upon, the burden could be considered fairer. However, if the tax was implemented on a flat, per capita basis, it would be regressive.

Rating: Medium

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) – The Lake Tahoe Region is an area of regional and statewide significance serving both interstate and intrastate travel. Tahoe experiences a high percentage of visitor use from adjacent urban centers in California and Nevada, in part, as a result of Lake Tahoe’s central location in the Northern California Megapolitan, a basin of growing metropolitan areas that extends from San Francisco Bay area to Reno, Nevada. More than 14 million people live in the Northern California Megapolitan and many of them drive to Lake Tahoe to enjoy its world-class recreation opportunities. Overnight and day use visitors can exceed the Basin’s capacity with the peak visitation in summer and winter, putting significant pressures on the transportation system, which consists primarily of six two-lane roadways leading into Tahoe and a bi-

state 2 lane highway that loops around the Lake, thus contributing to some of the region's largest water quality, air quality, and emergency management challenges. This criterion considers the potential to share the tax burden with out-of-basin residents/businesses, or if the tax burden is carried by Tahoe residents and businesses. Tolling would be rated "high" because out-of-basin travelers would pay their share for using the roadways, whereas property taxes would be rated "low" because the tax is paid by residents and businesses where the additional property tax is imposed to pay for the project.

Discussion: This criterion considers the potential to collect revenues proportionately from visitors versus residents. Employee taxes would be rated "low" because the tax is mainly paid by residents, both full-year and seasonal.

Rating: Low

Supports Attaining Environmental Thresholds (3) - The Tahoe Regional Planning Agency (TRPA) operates at a regional level under the authority of the Bi-State Compact (Public Law 96-551) between the states of California and Nevada. The Bi-State Compact states that the TRPA's Regional Plan shall promotes walking, biking, public transit use, and environmental innovation technologies can help preserve a healthy environment. Specifically, the plan shall (a) reduce private vehicles dependency by making more effective use of existing transportation modes and public transit to move people and goods within the Region and (b) to the extent possible, reduce the air pollution that is caused by motor vehicles. The Bi-State Compact requires TRPA establishes environmental threshold that measure the Region's performance in the areas of air quality, water quality, soil conservation, vegetation, noise, recreation, scenic resources, fisheries, and wildlife. This criterion measures the degree to which a given revenue mechanism help achieve TRPA established thresholds. Some revenue mechanisms discourage behavior that causes harmful side effects such as congestion or air pollution. A congestion charge, for example, discourages travel at times and places where congestion may occur and as a result, may contribute to improve air quality. In contrast, other revenue mechanisms simply generate revenue, for example, an income tax.

Discussion: Employee payroll taxes have no impact on achieving VMT reduction, GHG emissions, or TMDL standards.

Rating: Low

Business Climate Friendliness (2) - Business climate friendliness is the way the business community will perceive a given mechanism. As with the Political Feasibility/Public Acceptability criterion, very few (if any) taxes are popular with businesses since they reduce profits. Given this general opposition to taxes, this criterion focuses on the degree of difficulty that might be encountered in gaining acceptance among Tahoe business community to initially implement the revenue mechanism, compared to other revenue options. The business community in particular disfavors taxes that are burdensome or complicated to comply with or that substantially increase the costs of doing business (especially if they target one business more than its competitors). Of course, there will be variability among the views of specific

industrial sectors. For example, the automotive industry is likely to oppose burdensome taxes on auto purchases, while the retail industry is likely to oppose sales taxes. This criterion will consider the business community as a whole.

Discussion: This mechanism may have limited opposition by businesses since it would be relatively straightforward to implement and not directly impact business costs. However, since it would indirectly reduce all employee salaries, it may require businesses to increase salaries in order to compensate in order to attract employees to the region.

Rating: Low

Tier 2 summary rating: Low

Go/no go decision to advance to next tier: No go

Notes: Equity of this mechanism could be improved by having a sliding scale for income levels or if it is levied proportionately. This mechanism may be considered for inclusion in a final recommended package if it is useful to address resident versus non-resident equity or to address other factors.

Tier 2 Screening

11. Name of proposed mechanism: Cordon pricing (also includes basin entry fee [item 23])

Description: All users would be required to pay a fee for entering the Lake Tahoe Basin. The revenue from the fee would be dedicated to supporting the multimodal transportation system within the basin. Similar to cordon pricing systems elsewhere in the world (e.g., London, Stockholm, Singapore, etc.), basin resident and businesses would be allowed a number of free entries annually. Fees would be billed to users using license plate capture technology and/or transponders. Fee rates would be adjusted annually for inflation.

Summary of Tier 1 screening results weighting factors in parentheses:

Constitutional amendment/statewide vote of the people (fatal flaw) rating: Pass

Adequacy (2) rating: High

Predictability (2) rating: High

Economic efficiency (1) rating: High

Tier 1 summary rating: High

Go/no go decision to advance to next tier: Go

Tier 2 evaluation rating for each criterion:

Tier 2 evaluation rating for each criterion:

Equity (2) – This criterion refers to the extent that each strategy places inequitable burdens on different groups of people financially, or unfairly restricts access to basic transportation services. Excise and sales taxes and user fees are all regressive, since they require those with lower incomes to expend a disproportionately higher share of their incomes to pay the tax or fee. The only funding strategies that are likely to receive a “high” rating are those that levy different fees based on income levels, including income or payroll taxes, property taxes, and vehicle personal property.

Discussion: A cordon pricing mechanism is not based on income levels and would be regressive.

Rating: Low

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) — The Lake Tahoe Region is an area of regional and statewide significance serving both interstate and intrastate travel. Tahoe experiences a high percentage of visitor use from adjacent urban centers in California and Nevada, in part, as a result of Lake Tahoe’s central location in the Northern California Megapolitan, a basin of growing metropolitan areas that extends from San Francisco Bay area to Reno, Nevada. More than 14 million people live in the Northern California Megapolitan and many of them drive to Lake

Tahoe to enjoy its world-class recreation opportunities. Overnight and day use visitors can exceed the Basin's capacity with the peak visitation in summer and winter, putting significant pressures on the transportation system, which consists primarily of six two-lane roadways leading into Tahoe and a bi-state 2 lane highway that loops around the Lake, thus contributing to some of the region's largest water quality, air quality, and emergency management challenges. This criterion considers the potential to share the tax burden with out-of-basin residents/businesses, or if the tax burden is carried by Tahoe residents and businesses. Tolling would be rated "high" because out-of-basin travelers would pay their share for using the roadways, whereas property taxes would be rated "low" because the tax is paid by residents and businesses where the additional property tax is imposed to pay for the project.

Discussion: Tahoe experiences a high percentage of visitor trips from adjacent urban centers in California and Nevada, with 75% of vehicle trips made by visitors each year, with over 40% being day trips. This criterion considers the potential to collect revenues proportionately from visitors versus residents. Tolling and other per vehicle fees would be rated "high" because visitors would pay their share for using the roadways, whereas property taxes would be rated "low" because the tax is mainly paid by residents and businesses.

A cordon pricing mechanism would collect revenue directly from all users. Given the assumption that residents would be allowed a certain number of free entries per year, it should be possible to maintain a reasonable balance between the burden borne by residents and non-residents

Rating: High

Supports Attaining Environmental Thresholds (3) – The Tahoe Regional Planning Agency (TRPA) operates at a regional level under the authority of the Bi-State Compact (Public Law 96-551) between the states of California and Nevada. The Bi-State Compact states that the TRPA's Regional Plan shall promotes walking, biking, public transit use, and environmental innovation technologies can help preserve a healthy environment. Specifically, the plan shall (a) reduce private vehicles dependency by making more effective use of existing transportation modes and public transit to move people and goods within the Region and (b) to the extent possible, reduce the air pollution that is caused by motor vehicles. The Bi-State Compact requires TRPA establishes environmental threshold that measure the Region's performance in the areas of air quality, water quality, soil conservation, vegetation, noise, recreation, scenic resources, fisheries, and wildlife. This criterion measures the degree to which a given revenue mechanism help achieve TRPA established thresholds. Some revenue mechanisms discourage behavior that causes harmful side effects such as congestion or air pollution. A congestion charge, for example, discourages travel at times and places where congestion may occur and as a result, may contribute to improve air quality. In contrast, other revenue mechanisms simply generate revenue, for example, an income tax.

Discussion: The Tahoe Bi-State Compact and California law require TRPA to meet environmental thresholds to reduce vehicle miles of travel and greenhouse gas emissions. This criterion considers the

potential of a funding measure to reduce vehicle trips and congestion. A congestion charge or vehicle transportation fee, for example, discourages travel at times and places where congestion may occur or vehicle travel in general and would rate highly in attaining environmental thresholds. In contrast, other revenue mechanisms which simply generate revenue, e.g., a property or sales tax, would rate low.

Since a cordon pricing mechanism would have a direct relationship with the cost of using the transportation system within the basin, it could reasonably be expected to influence travel behavior and thus reduce VMT, GHG emissions, etc.

Rating: High

Business Climate Friendliness (2) - Business climate friendliness is the way the business community will perceive a given mechanism. As with the Political Feasibility/Public Acceptability criterion, very few (if any) taxes are popular with businesses since they reduce profits. Given this general opposition to taxes, this criterion focuses on the degree of difficulty that might be encountered in gaining acceptance among Tahoe business community to initially implement the revenue mechanism, compared to other revenue options. The business community in particular disfavors taxes that are burdensome or complicated to comply with or that substantially increase the costs of doing business (especially if they target one business more than its competitors). Of course, there will be variability among the views of specific industrial sectors. For example, the automotive industry is likely to oppose burdensome taxes on auto purchases, while the retail industry is likely to oppose sales taxes. This criterion will consider the business community as a whole.

Discussion: While a cordon pricing mechanism would be an additional cost to businesses, it would treat all businesses similarly. This mechanism should not have a significant impact on business operations and the compliance burden would be negligible.

Rating: Medium

Tier 2 summary rating: High

Go/no go decision to advance to next tier: Go

Notes: Equity of this mechanism could be improved by offering discounts for users demonstrating need.

Tier 2 Screening

12. Name of proposed mechanism: Vehicle Miles Traveled (VMT) Fees

Description: Users would be required to pay a fee for each mile driven within the Lake Tahoe Basin. Revenue would be dedicated to supporting transportation and transportation related projects and services included in the Regional Transportation Plan. Per mile fee rates would be set to generate a targeted amount of revenue and adjusted annually for inflation. Deployment of a pay-at-the-pump VMT fee system in the Tahoe Basin alone would probably not be feasible given the large number of day visitors that would be fueling outside of the Basin. Collection of VMT fees as a separate transaction from fueling would involve significant deployment of new technology onboard the motor vehicles to record and capture odometer readings of mileage driven within the basin or GPS type technology to track vehicles and record mileage.

Summary of Tier 1 screening results weighting factors in parentheses:

Constitutional amendment/statewide vote of the people (fatal flaw) rating: Pass

Adequacy (2) rating: Medium

Predictability (2) rating: Medium

Economic efficiency (1) rating: High

Tier 1 summary rating: Medium

Go/no go decision to advance to next tier: Go

Tier 2 evaluation rating for each criterion:

Equity (2)—This criterion refers to the extent that each strategy places inequitable burdens on different groups of people financially, or unfairly restricts access to basic transportation services. Excise and sales taxes and user fees are all regressive, since they require those with lower incomes to expend a disproportionately higher share of their incomes to pay the tax or fee. The only funding strategies that are likely to receive a “high” rating are those that levy different fees based on income levels, including income or payroll taxes, property taxes, and vehicle personal property.

Discussion: The burden, as compared to fuel taxes, is shared based on use, regardless of income levels. However, user fees are regressive, since they require those with lower incomes to spend a disproportionately higher share of their incomes to pay the fee, compared to other groups.

Rating: Low

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) — The Lake Tahoe Region is an area of regional and statewide significance serving both interstate and intrastate travel. Tahoe experiences a high percentage of visitor use from adjacent urban centers in California and

Nevada, in part, as a result of Lake Tahoe's central location in the Northern California Megapolitan, a basin of growing metropolitan areas that extends from San Francisco Bay area to Reno, Nevada. More than 14 million people live in the Northern California Megapolitan and many of them drive to Lake Tahoe to enjoy its world-class recreation opportunities. Overnight and day use visitors can exceed the Basin's capacity with the peak visitation in summer and winter, putting significant pressures on the transportation system, which consists primarily of six two-lane roadways leading into Tahoe and a bi-state 2 lane highway that loops around the Lake, thus contributing to some of the region's largest water quality, air quality, and emergency management challenges. This criterion considers the potential to share the tax burden with out-of-basin residents/businesses, or if the tax burden is carried by Tahoe residents and businesses. Tolling would be rated "high" because out-of-basin travelers would pay their share for using the roadways, whereas property taxes would be rated "low" because the tax is paid by residents and businesses where the additional property tax is imposed to pay for the project.

Discussion: VMT fees would be rated "high" because it would collect revenues from all users including visitors, who would pay their share for using the roadways.

Rating: High

Supports Attaining Environmental Thresholds (3) – The Tahoe Regional Planning Agency (TRPA) operates at a regional level under the authority of the Bi-State Compact (Public Law 96-551) between the states of California and Nevada. The Bi-State Compact states that the TRPA's Regional Plan shall promotes walking, biking, public transit use, and environmental innovation technologies can help preserve a healthy environment. Specifically, the plan shall (a) reduce private vehicles dependency by making more effective use of existing transportation modes and public transit to move people and goods within the Region and (b) to the extent possible, reduce the air pollution that is caused by motor vehicles. The Bi-State Compact requires TRPA establishes environmental threshold that measure the Region's performance in the areas of air quality, water quality, soil conservation, vegetation, noise, recreation, scenic resources, fisheries, and wildlife. This criterion measures the degree to which a given revenue mechanism help achieve TRPA established thresholds. Some revenue mechanisms discourage behavior that causes harmful side effects such as congestion or air pollution. A congestion charge, for example, discourages travel at times and places where congestion may occur and as a result, may contribute to improve air quality. In contrast, other revenue mechanisms simply generate revenue, for example, an income tax.

Discussion: This criterion considers the potential of a funding measure to also reduce vehicle trips and congestion. Depending upon the technology used to account for miles driven, a rate could be set to take into account congestion. A flat congestion rate could be charged to discourage travel at times and places where congestion routinely occurs. Real-time charges could go even farther to address behavior however that would entail much more sophisticated tracking systems. Mechanisms that discourage vehicle travel in general and/or in congested periods would rate highly in attaining environmental thresholds. Such mechanisms would have a direct relationship with the cost of using the transportation

system within the basin, it could reasonably be expected to influence travel behavior and thus reduce VMT, GHG emissions, etc.

Rating: High

Business Climate Friendliness (2) - Business climate friendliness is the way the business community will perceive a given mechanism. As with the Political Feasibility/Public Acceptability criterion, very few (if any) taxes are popular with businesses since they reduce profits. Given this general opposition to taxes, this criterion focuses on the degree of difficulty that might be encountered in gaining acceptance among Tahoe business community to initially implement the revenue mechanism, compared to other revenue options. The business community in particular disfavors taxes that are burdensome or complicated to comply with or that substantially increase the costs of doing business (especially if they target one business more than its competitors). Of course, there will be variability among the views of specific industrial sectors. For example, the automotive industry is likely to oppose burdensome taxes on auto purchases, while the retail industry is likely to oppose sales taxes. This criterion will consider the business community as a whole.

Discussion: If the form of VMT fee is revenue neutral when compared to motor fuel taxes, there should be minimal resistance which would yield a “high” rating. Two aspects may push that to a medium level: the inconvenience of dealing with something new and unknown in terms of cost to the business, and the concerns by those who have invested in hybrid and alternative fueled vehicles in their businesses, based on the expectation that they will not have to pay user fees associated with the amount that they use their vehicles. Thus, businesses may not be supportive even if there is not an explicit additional cost to businesses, and it would require education and honing of processes to minimize compliance concerns.

Rating: Medium

Tier 2 summary rating: High

Go/no go decision to advance to next tier: Go

Notes: Depending upon the sophistication of the tracking/collection system, a different rate could be charged to facilitate a public policy rationale. For example, lower income individuals or those who are part of a special employment /development program could be charged less. Another example is that the rate charged could be set to encourage alternative features of the vehicle such as emissions. If such regimes were included, the ratings for equity or environment could change. Extensive, detailed legal research and consultation with state and federal agencies would need to be undertaken to assess the impacts of use restrictions on the usefulness of this proposed revenue mechanism.

Tier 2 Screening

13. Name of proposed mechanism: Transportation Utility Special District (combination of “special district” [item 13] and “road utility” [item 27])

Description: A “special district” is a form of government not a revenue mechanism per se. Both California and Nevada have an extensive history with a variety of special districts providing a wide range of services. The scenario considered in this analysis is a special district established across the Tahoe Basin empowered to provide, operate and maintain transportation and transportation related facilities and services. The funding mechanism would be an annual transportation fee levied against each parcel of land within the basin based upon the trip generation of the land use. Fee rates would be set to generate a targeted amount of revenue supporting transportation and transportation related projects and services included in the Regional Transportation Plan. Fee rates would be automatically adjusted annually for inflation.

Summary of Tier 1 screening results weighting factors in parentheses:

Constitutional amendment/statewide vote of the people (fatal flaw) rating: Pass

Adequacy (2) rating: High

Predictability (2) rating: High

Economic efficiency (1) rating: High

Tier 1 summary rating: High

Go/no go decision to advance to next tier: Go

Tier 2 evaluation rating for each criterion:

Equity (2)—This criterion refers to the extent that each strategy places inequitable burdens on different groups of people financially, or unfairly restricts access to basic transportation services. Excise and sales taxes and user fees are all regressive, since they require those with lower incomes to expend a disproportionately higher share of their incomes to pay the tax or fee. The only funding strategies that are likely to receive a “high” rating are those that levy different fees based on income levels, including income or payroll taxes, property taxes, and vehicle personal property.

Discussion: The transportation utility special district is not based on income levels and would be regressive.

Rating: Low

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) — The Lake Tahoe Region is an area of regional and statewide significance serving both interstate and intrastate travel. Tahoe experiences a high percentage of visitor use from adjacent urban centers in California and Nevada, in part, as a result of Lake Tahoe’s central location in the Northern California Megapolitan, a basin of growing metropolitan areas that extends from San Francisco Bay area to Reno, Nevada. More than 14 million people live in the Northern California Megapolitan and many of them drive to Lake Tahoe to enjoy its world-class recreation opportunities. Overnight and day use visitors can exceed the Basin’s capacity with the peak visitation in summer and winter, putting significant pressures on the transportation system, which consists primarily of six two-lane roadways leading into Tahoe and a bi-state 2 lane highway that loops around the Lake, thus contributing to some of the region’s largest water quality, air quality, and emergency management challenges. This criterion considers the potential to share the tax burden with out-of-basin residents/businesses, or if the tax burden is carried by Tahoe residents and businesses. Tolling would be rated “high” because out-of-basin travelers would pay their share for using the roadways, whereas property taxes would be rated “low” because the tax is paid by residents and businesses where the additional property tax is imposed to pay for the project.

Discussion: The transportation utility special district fee assessed on parcel land use would not directly target visitors, particularly day visitors.

Rating: Low

Supports Attaining Environmental Thresholds (3) – The Tahoe Regional Planning Agency (TRPA) operates at a regional level under the authority of the Bi-State Compact (Public Law 96-551) between the states of California and Nevada. The Bi-State Compact states that the TRPA’s Regional Plan shall promotes walking, biking, public transit use, and environmental innovation technologies can help preserve a healthy environment. Specifically, the plan shall (a) reduce private vehicles dependency by making more effective use of existing transportation modes and public transit to move people and goods within the Region and (b) to the extent possible, reduce the air pollution that is caused by motor vehicles. The Bi-State Compact requires TRPA establishes environmental threshold that measure the Region’s performance in the areas of air quality, water quality, soil conservation, vegetation, noise, recreation, scenic resources, fisheries, and wildlife. This criterion measures the degree to which a given revenue mechanism help achieve TRPA established thresholds. Some revenue mechanisms discourage behavior that causes harmful side effects such as congestion or air pollution. A congestion charge, for example, discourages travel at times and places where congestion may occur and as a result, may contribute to improve air quality. In contrast, other revenue mechanisms simply generate revenue, for example, an income tax.

Discussion: The transportation utility special district fee has no direct impact on the price or convenience of travel in the basin, although assessing the fee to parcels based upon trip generation does create an indirect impact on the price of travel in the basin.

Rating: Medium

Business Climate Friendliness (2) - Business climate friendliness is the way the business community will perceive a given mechanism. As with the Political Feasibility/Public Acceptability criterion, very few (if any) taxes are popular with businesses since they reduce profits. Given this general opposition to taxes, this criterion focuses on the degree of difficulty that might be encountered in gaining acceptance among Tahoe business community to initially implement the revenue mechanism, compared to other revenue options. The business community in particular disfavors taxes that are burdensome or complicated to comply with or that substantially increase the costs of doing business (especially if they target one business more than its competitors). Of course, there will be variability among the views of specific industrial sectors. For example, the automotive industry is likely to oppose burdensome taxes on auto purchases, while the retail industry is likely to oppose sales taxes. This criterion will consider the business community as a whole.

Discussion: While a transportation utility special district fee would be an additional cost to businesses, it would treat all businesses similarly. This mechanism should not have a significant impact on business operations and the compliance burden would be negligible.

Rating: Low

Tier 2 summary rating: Low

Go/no go decision to advance to next tier: No go

Notes: A significant portion of land within the basin is owned by the federal and state governments which are often significant generators or trips. It is likely that federal and state lands would be exempt from a transportation utility special district fees. This mechanism may be considered for inclusion in a final recommended package if it is useful to address resident versus non-resident equity or to address other factors.

Tier 2 Screening

14. Name of proposed mechanism: Tolling

Description: Users would be required to pay a toll for travel into or through specified toll zones on the major arterial roadways in the Basin. Trips made entirely within a single toll zone would not be charged. Revenue would be dedicated to supporting transportation and transportation related projects and services included in the Regional Transportation Plan. Toll rates would be set to generate a targeted amount of revenue and adjusted annually for inflation.

Summary of Tier 1 screening results weighting factors in parentheses:

Constitutional amendment/statewide vote of the people (fatal flaw) rating: Pass

Adequacy (2) rating: Medium

Predictability (2) rating: Medium

Economic efficiency (1) rating: High

Tier 1 summary rating: Medium

Go/no go decision to advance to next tier: Go

Tier 2 evaluation rating for each criterion:

Equity (2)—This criterion refers to the extent that each strategy places inequitable burdens on different groups of people financially, or unfairly restricts access to basic transportation services. Excise and sales taxes and user fees are all regressive, since they require those with lower incomes to expend a disproportionately higher share of their incomes to pay the tax or fee. The only funding strategies that are likely to receive a “high” rating are those that levy different fees based on income levels, including income or payroll taxes, property taxes, and vehicle personal property.

Discussion: This criterion refers to the extent that the financial burden is placed on different groups of people or unfairly restricts access to basic transportation services. The burden, as compared to fuel taxes, is shared based on use, regardless of income levels. However, user fees, including tolls, are regressive, since they require those with lower incomes to spend a disproportionately higher share of their incomes to pay the fee, compared to other groups.

Rating: Low

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) — The Lake Tahoe Region is an area of regional and statewide significance serving both interstate and intrastate travel. Tahoe experiences a high percentage of visitor use from adjacent urban centers in California and Nevada, in part, as a result of Lake Tahoe’s central location in the Northern California Megapolitan, a basin of growing metropolitan areas that extends from San Francisco Bay area to Reno, Nevada. More

than 14 million people live in the Northern California Megapolitan and many of them drive to Lake Tahoe to enjoy its world-class recreation opportunities. Overnight and day use visitors can exceed the Basin's capacity with the peak visitation in summer and winter, putting significant pressures on the transportation system, which consists primarily of six two-lane roadways leading into Tahoe and a bi-state 2 lane highway that loops around the Lake, thus contributing to some of the region's largest water quality, air quality, and emergency management challenges. This criterion considers the potential to share the tax burden with out-of-basin residents/businesses, or if the tax burden is carried by Tahoe residents and businesses. Tolling would be rated "high" because out-of-basin travelers would pay their share for using the roadways, whereas property taxes would be rated "low" because the tax is paid by residents and businesses where the additional property tax is imposed to pay for the project.

Discussion: This criterion considers the potential to collect revenues proportionately from visitors versus residents. Tolling and other trip related vehicle fees would be rated "high" because visitors would pay their share for using the roadways. Depending on the technology used for collection, the travel pattern and state of origin of the vehicle could be determined from the license plate. As such, discounts could be provided for frequent users (in-basin residents).

Rating: High

Supports Attaining Environmental Thresholds (3) – The Tahoe Regional Planning Agency (TRPA) operates at a regional level under the authority of the Bi-State Compact (Public Law 96-551) between the states of California and Nevada. The Bi-State Compact states that the TRPA's Regional Plan shall promotes walking, biking, public transit use, and environmental innovation technologies can help preserve a healthy environment. Specifically, the plan shall (a) reduce private vehicles dependency by making more effective use of existing transportation modes and public transit to move people and goods within the Region and (b) to the extent possible, reduce the air pollution that is caused by motor vehicles. The Bi-State Compact requires TRPA establishes environmental threshold that measure the Region's performance in the areas of air quality, water quality, soil conservation, vegetation, noise, recreation, scenic resources, fisheries, and wildlife. This criterion measures the degree to which a given revenue mechanism help achieve TRPA established thresholds. Some revenue mechanisms discourage behavior that causes harmful side effects such as congestion or air pollution. A congestion charge, for example, discourages travel at times and places where congestion may occur and as a result, may contribute to improve air quality. In contrast, other revenue mechanisms simply generate revenue, for example, an income tax.

Discussion: This criterion considers the potential of a funding measure to also reduce vehicle trips and congestion. Mechanisms such as tolls increase the awareness of the cost of driving and influences behavior. Thus, vehicle travel is discouraged and could reasonably be expected to influence travel behavior and thus reduce VMT, GHG emissions, etc. Depending upon the technology used to implement a tolling regime, a rate could be set to take into account congestion, further potentially addressing environmental targets. A flat congestion rate could be charged to discourage travel at times and places

where congestion routinely occurs. Real-time charges could go even farther to address behavior however that would entail much more sophisticated tracking systems.

Rating: High

Business Climate Friendliness (2) - Business climate friendliness is the way the business community will perceive a given mechanism. As with the Political Feasibility/Public Acceptability criterion, very few (if any) taxes are popular with businesses since they reduce profits. Given this general opposition to taxes, this criterion focuses on the degree of difficulty that might be encountered in gaining acceptance among Tahoe business community to initially implement the revenue mechanism, compared to other revenue options. The business community in particular disfavors taxes that are burdensome or complicated to comply with or that substantially increase the costs of doing business (especially if they target one business more than its competitors). Of course, there will be variability among the views of specific industrial sectors. For example, the automotive industry is likely to oppose burdensome taxes on auto purchases, while the retail industry is likely to oppose sales taxes. This criterion will consider the business community as a whole.

Discussion: The additional out of pocket costs for commercial trips would be viewed as unfriendly, similar to increases in taxes. Even with all electronic tolling, it may be seen as inconvenient however with greater experience, such inconvenience is minimal. Tolls may be more acceptable if they were to be offset from or in lieu of fuel taxes, that would mitigate the opposition but by adding complexity, tolls would be seen as negative for the business climate.

Rating: Low

Tier 2 summary rating: Medium

Go/no go decision to advance to next tier: Go

Notes: Depending upon the sophistication of the tracking/collection system, a different rate could be charged to facilitate a public policy rationale. For example, lower income individuals or those who are part of a special employment /development program/small business assistance could be charged less. Another example is that the rate charged could be set to encourage alternative features of the vehicle such as emissions. If such regimes were included, the ratings for equity or environment could change. Extensive, detailed legal research and consultation with state and federal agencies would need to be undertaken to assess the impacts of use restrictions on the usefulness of this proposed revenue mechanism.

Tier 2 Screening

16. Name of proposed mechanism: Zoned transportation user fee (also includes hourly transportation fee [item 20])

Description: All users would be required to pay a fee dedicated to supporting the multimodal transportation system within the basin. Basin residents and resident businesses would pay a flat fee for one of six community transportation zones plus a daily fee for travel within the basin outside of the community transportation zone where they reside when such trips are made. Non-residents would pay a daily fee. The resident flat rate fee could be billed by piggybacking on the collection of residential and commercial property taxes or by a utility service type billing. Fees for non-resident use and for resident use outside of the community transportation zone could be billed through license plate capture technology and/or transponders. Fee rates would be adjusted annually for inflation.

Summary of Tier 1 screening results weighting factors in parentheses:

Constitutional amendment/statewide vote of the people (fatal flaw) rating: Pass

Adequacy (2) rating: High

Predictability (2) rating: High

Economic efficiency (1) rating: High

Tier 1 summary rating: High

Go/no go decision to advance to next tier: Go

Tier 2 evaluation rating for each criterion:

Equity (2)—This criterion refers to the extent that each strategy places inequitable burdens on different groups of people financially, or unfairly restricts access to basic transportation services. Excise and sales taxes and user fees are all regressive, since they require those with lower incomes to expend a disproportionately higher share of their incomes to pay the tax or fee. The only funding strategies that are likely to receive a “high” rating are those that levy different fees based on income levels, including income or payroll taxes, property taxes, and vehicle personal property.

Discussion: A zoned user fee is not based on income levels and would be regressive.

Rating: Low

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) — The Lake Tahoe Region is an area of regional and statewide significance serving both interstate and intrastate travel. Tahoe experiences a high percentage of visitor use from adjacent urban centers in California and

Nevada, in part, as a result of Lake Tahoe's central location in the Northern California Megapolitan, a basin of growing metropolitan areas that extends from San Francisco Bay area to Reno, Nevada. More than 14 million people live in the Northern California Megapolitan and many of them drive to Lake Tahoe to enjoy its world-class recreation opportunities. Overnight and day use visitors can exceed the Basin's capacity with the peak visitation in summer and winter, putting significant pressures on the transportation system, which consists primarily of six two-lane roadways leading into Tahoe and a bi-state 2 lane highway that loops around the Lake, thus contributing to some of the region's largest water quality, air quality, and emergency management challenges. This criterion considers the potential to share the tax burden with out-of-basin residents/businesses, or if the tax burden is carried by Tahoe residents and businesses. Tolling would be rated "high" because out-of-basin travelers would pay their share for using the roadways, whereas property taxes would be rated "low" because the tax is paid by residents and businesses where the additional property tax is imposed to pay for the project.

Discussion: A zoned transportation user fee would collect revenue directly from all users. With the appropriate rate structure, it should be possible to have both residents and non-residents pay their fair share for use of the transportation system in the basin.

Rating: High

Supports Attaining Environmental Thresholds (3) – The Tahoe Regional Planning Agency (TRPA) operates at a regional level under the authority of the Bi-State Compact (Public Law 96-551) between the states of California and Nevada. The Bi-State Compact states that the TRPA's Regional Plan shall promotes walking, biking, public transit use, and environmental innovation technologies can help preserve a healthy environment. Specifically, the plan shall (a) reduce private vehicles dependency by making more effective use of existing transportation modes and public transit to move people and goods within the Region and (b) to the extent possible, reduce the air pollution that is caused by motor vehicles. The Bi-State Compact requires TRPA establishes environmental threshold that measure the Region's performance in the areas of air quality, water quality, soil conservation, vegetation, noise, recreation, scenic resources, fisheries, and wildlife. This criterion measures the degree to which a given revenue mechanism help achieve TRPA established thresholds. Some revenue mechanisms discourage behavior that causes harmful side effects such as congestion or air pollution. A congestion charge, for example, discourages travel at times and places where congestion may occur and as a result, may contribute to improve air quality. In contrast, other revenue mechanisms simply generate revenue, for example, an income tax.

Discussion: Since a zoned user fee would have a direct relationship with the price of using the transportation system within the basin, it could reasonably be expected to influence travel behavior and thus reduce VMT, GHG emissions, etc.

Rating: High

Business Climate Friendliness (2) - Business climate friendliness is the way the business community will perceive a given mechanism. As with the Political Feasibility/Public Acceptability criterion, very few (if any) taxes are popular with businesses since they reduce profits. Given this general opposition to taxes, this criterion focuses on the degree of difficulty that might be encountered in gaining acceptance among Tahoe business community to initially implement the revenue mechanism, compared to other revenue options. The business community in particular disfavors taxes that are burdensome or complicated to comply with or that substantially increase the costs of doing business (especially if they target one business more than its competitors). Of course, there will be variability among the views of specific industrial sectors. For example, the automotive industry is likely to oppose burdensome taxes on auto purchases, while the retail industry is likely to oppose sales taxes. This criterion will consider the business community as a whole.

Discussion: While a zoned user fee would be an additional cost to businesses, it would treat all businesses similarly. This mechanism should not have a significant impact on business operations and the compliance burden would be negligible.

Rating: Medium

Tier 2 summary rating: High

Go/no go decision to advance to next tier: Go

Notes: Equity of this mechanism could be improved by offering discounts for users demonstrating need.

Tier 2 Screening

24. Name of proposed mechanism: Vacancy Tax

Description: The number of 2nd home residences in the Tahoe Basin is substantial, and the majority are vacant. This funding measure would impose a tax on residences that are vacant a substantial portion of the year.

Summary of Tier 1 screening results weighting factors in parentheses:

Constitutional amendment/statewide vote of the people (fatal flaw) rating: Pass

Adequacy (2) rating: Medium

Predictability (2) rating: Low

Economic efficiency (1) rating: Low

Tier 1 summary rating: Medium

Go/no go decision to advance to next tier: Go

Tier 2 evaluation rating for each criterion:

Equity (2)—This criterion refers to the extent that each strategy places inequitable burdens on different groups of people financially, or unfairly restricts access to basic transportation services. Excise and sales taxes and user fees are all regressive, since they require those with lower incomes to expend a disproportionately higher share of their incomes to pay the tax or fee. The only funding strategies that are likely to receive a “high” rating are those that levy different fees based on income levels, including income or payroll taxes, property taxes, and vehicle personal property.

Discussion: The vacancy tax would likely affect more high-income property owners than low income property owners/residents so there is some progressive impact from this funding measure.

Rating: Medium

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) — The Lake Tahoe Region is an area of regional and statewide significance serving both interstate and intrastate travel. Tahoe experiences a high percentage of visitor use from adjacent urban centers in California and Nevada, in part, as a result of Lake Tahoe’s central location in the Northern California Megapolitan, a basin of growing metropolitan areas that extends from San Francisco Bay area to Reno, Nevada. More than 14 million people live in the Northern California Megapolitan and many of them drive to Lake

Tahoe to enjoy its world-class recreation opportunities. Overnight and day use visitors can exceed the Basin's capacity with the peak visitation in summer and winter, putting significant pressures on the transportation system, which consists primarily of six two-lane roadways leading into Tahoe and a bi-state 2 lane highway that loops around the Lake, thus contributing to some of the region's largest water quality, air quality, and emergency management challenges. This criterion considers the potential to share the tax burden with out-of-basin residents/businesses, or if the tax burden is carried by Tahoe residents and businesses. Tolling would be rated "high" because out-of-basin travelers would pay their share for using the roadways, whereas property taxes would be rated "low" because the tax is paid by residents and businesses where the additional property tax is imposed to pay for the project.

Discussion: The vacancy tax would not target visitors and would not address visitor use of the transportation system.

Rating: Medium

Supports Attaining Environmental Thresholds (3) – The Tahoe Regional Planning Agency (TRPA) operates at a regional level under the authority of the Bi-State Compact (Public Law 96-551) between the states of California and Nevada. The Bi-State Compact states that the TRPA's Regional Plan shall promote walking, biking, public transit use, and environmental innovation technologies can help preserve a healthy environment. Specifically, the plan shall (a) reduce private vehicles dependency by making more effective use of existing transportation modes and public transit to move people and goods within the Region and (b) to the extent possible, reduce the air pollution that is caused by motor vehicles. The Bi-State Compact requires TRPA establish environmental threshold that measure the Region's performance in the areas of air quality, water quality, soil conservation, vegetation, noise, recreation, scenic resources, fisheries, and wildlife. This criterion measures the degree to which a given revenue mechanism help achieve TRPA established thresholds. Some revenue mechanisms discourage behavior that causes harmful side effects such as congestion or air pollution. A congestion charge, for example, discourages travel at times and places where congestion may occur and as a result, may contribute to improve air quality. In contrast, other revenue mechanisms simply generate revenue, for example, an income tax.

Discussion: The vacancy tax has no direct impact on the price or convenience of travel in the basin thus it does not support the attainment of environmental thresholds.

Rating: Medium

Business Climate Friendliness (2) - Business climate friendliness is the way the business community will perceive a given mechanism. As with the Political Feasibility/Public Acceptability criterion, very few (if any) taxes are popular with businesses since they reduce profits. Given this general opposition to taxes, this criterion focuses on the degree of difficulty that might be encountered in gaining acceptance among Tahoe business community to initially implement the revenue mechanism, compared to other revenue options. The business community in particular disfavors taxes that are burdensome or complicated to

comply with or that substantially increase the costs of doing business (especially if they target one business more than its competitors). Of course, there will be variability among the views of specific industrial sectors. For example, the automotive industry is likely to oppose burdensome taxes on auto purchases, while the retail industry is likely to oppose sales taxes. This criterion will consider the business community as a whole.

Discussion: The vacancy tax does not affect business operations so there should be no burden on Tahoe businesses to comply with this funding measure.

Rating: Medium

Tier 2 summary rating: Medium

Go/no go decision to advance to next tier: Go

Tier 2 Screening

25. Name of proposed mechanism: Increase Transient Occupancy Tax

Description: There are currently Transient Occupancy Taxes (TOT) charged by all jurisdictions in the Tahoe Basin. The TOT is charged as a percent of the room rate and added to the bill charged to the visitor. This funding measure would impose an additional increment in the TOT that would be used to fund transportation improvements in the Tahoe Basin.

Summary of Tier 1 screening results weighting factors in parentheses:

Constitutional amendment/statewide vote of the people (fatal flaw) rating: Pass

Adequacy (2) rating: Medium

Predictability (2) rating: Medium

Economic efficiency (1) rating: Low

Tier 1 summary rating: Medium

Go/no go decision to advance to next tier: Go

Tier 2 Evaluation rating for each criterion:

Equity (2)—This criterion refers to the extent that each strategy places inequitable burdens on different groups of people financially, or unfairly restricts access to basic transportation services. Excise and sales taxes and user fees are all regressive, since they require those with lower incomes to expend a disproportionately higher share of their incomes to pay the tax or fee. The only funding strategies that are likely to receive a “high” rating are those that levy different fees based on income levels, including income or payroll taxes, property taxes, and vehicle personal property.

Discussion: The transient occupancy tax would not be based on income level and would have regressive effects.

Rating: Low

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) — The Lake Tahoe Region is an area of regional and statewide significance serving both interstate and intrastate travel. Tahoe experiences a high percentage of visitor use from adjacent urban centers in California and Nevada, in part, as a result of Lake Tahoe’s central location in the Northern California Megapolitan, a basin of growing metropolitan areas that extends from San Francisco Bay area to Reno, Nevada. More

than 14 million people live in the Northern California Megapolitan and many of them drive to Lake Tahoe to enjoy its world-class recreation opportunities. Overnight and day use visitors can exceed the Basin's capacity with the peak visitation in summer and winter, putting significant pressures on the transportation system, which consists primarily of six two-lane roadways leading into Tahoe and a bi-state 2 lane highway that loops around the Lake, thus contributing to some of the region's largest water quality, air quality, and emergency management challenges. This criterion considers the potential to share the tax burden with out-of-basin residents/businesses, or if the tax burden is carried by Tahoe residents and businesses. Tolling would be rated "high" because out-of-basin travelers would pay their share for using the roadways, whereas property taxes would be rated "low" because the tax is paid by residents and businesses where the additional property tax is imposed to pay for the project.

Discussion: The transient occupancy tax would target visitors, although it would not address the large number of day visitors and their use of the transportation system.

Rating: Medium

Supports Attaining Environmental Thresholds (3) – The Tahoe Regional Planning Agency (TRPA) operates at a regional level under the authority of the Bi-State Compact (Public Law 96-551) between the states of California and Nevada. The Bi-State Compact states that the TRPA's Regional Plan shall promotes walking, biking, public transit use, and environmental innovation technologies can help preserve a healthy environment. Specifically, the plan shall (a) reduce private vehicles dependency by making more effective use of existing transportation modes and public transit to move people and goods within the Region and (b) to the extent possible, reduce the air pollution that is caused by motor vehicles. The Bi-State Compact requires TRPA establishes environmental threshold that measure the Region's performance in the areas of air quality, water quality, soil conservation, vegetation, noise, recreation, scenic resources, fisheries, and wildlife. This criterion measures the degree to which a given revenue mechanism help achieve TRPA established thresholds. Some revenue mechanisms discourage behavior that causes harmful side effects such as congestion or air pollution. A congestion charge, for example, discourages travel at times and places where congestion may occur and as a result, may contribute to improve air quality. In contrast, other revenue mechanisms simply generate revenue, for example, an income tax.

Discussion: The transient occupancy tax has no direct impact on the price or convenience of travel in the basin thus it does not support the attainment of environmental thresholds.

Rating: Low

Business Climate Friendliness (2) - Business climate friendliness is the way the business community will perceive a given mechanism. As with the Political Feasibility/Public Acceptability criterion, very few (if any) taxes are popular with businesses since they reduce profits. Given this general opposition to taxes, this criterion focuses on the degree of difficulty that might be encountered in gaining acceptance among Tahoe business community to initially implement the revenue mechanism, compared to other revenue

options. The business community in particular disfavors taxes that are burdensome or complicated to comply with or that substantially increase the costs of doing business (especially if they target one business more than its competitors). Of course, there will be variability among the views of specific industrial sectors. For example, the automotive industry is likely to oppose burdensome taxes on auto purchases, while the retail industry is likely to oppose sales taxes. This criterion will consider the business community as a whole.

Discussion: The transient occupancy tax directly affects the visitor industry in Tahoe, which is the single largest business sector. There are existing transient occupancy taxes in Tahoe, so an increase in the rate would not be a compliance burden.

Rating: Low

Tier 2 summary rating: Low

Go/no go decision to advance to next tier: No go

Notes: Eastern Placer Co TOT rate is 10%, Washoe Co TOT is 13% at Incline Village, City of South Lake Tahoe is 12-14%, and Douglas Co TOT is 14% at Tahoe Township.

Tier 3 Screening

11. Name of proposed mechanism: Cordon pricing (also includes basin entry fee [item 23])

Description: All users would be required to pay a transportation fee for each day or portion of a day that they are present in the Lake Tahoe Basin. Similar to cordon pricing systems elsewhere in the world (e.g., London, Stockholm, Singapore, etc.), basin resident and businesses would be allowed a number of free entries annually. The rate structure would also address the unique circumstances of commuters and residents by charging them at a rate different rate. The revenue from the fee would be dedicated to supporting all aspects of the multimodal transportation system within the basin. Fees would be billed to users using license plate capture technology and/or transponders. Fee rates would be adjusted annually for inflation.

Summary of Tier 1 screening results weighting factors in parentheses:

Constitutional amendment/statewide vote of the people (fatal flaw) rating: Pass

Adequacy (2) rating: High

Predictability (2) rating: High

Economic efficiency (1) rating: High

Tier 1 summary rating: High

Go/no go decision to advance to next tier: Go

Summary of Tier 2 screening results weighting factors in parentheses:

Equity (2) rating: Low

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) rating: High

Supports Attaining Environmental Thresholds (3) rating: High

Business Climate Friendliness (2) rating: Medium

Tier 2 summary rating: High

Go/no go decision to advance to next tier: Go

Tier 3 evaluation rating for each criterion

Revenue Potential (3) – This criterion measures the ability of the funding mechanisms to generate the needed revenue during the life of the TRPA's Regional Plan. Task 2 has estimated that new local and regional sources will be needed to generate \$1.53 billion so that the fully envisioned TRPA's Regional Plan addressing all needs in the region can be implemented over the 23-year forecast period. For each revenue mechanism, this criterion will estimate the funding to be generated over the life of the TRPA's

Regional Plan. Revenue mechanisms will be categorized as low, medium or high if they have the potential to generate low, medium or high gross revenues, over the life of the RTP.

Discussion: High level analysis of multiple variations of this mechanism indicates that it has strong potential to generate all the revenue needed to meet the identified transportation funding shortfall of about \$67 million annually. The analysis indicated that charging each non-resident, non-commuter groups entering the basin, excluding non-resident commuters, a daily fee of about \$4.10, and non-resident commuter groups a daily fee of about \$1.00 would be sufficient to generate approximately 95% of the annual net revenue target of \$67 million from non-residents. Collecting revenues from residents using this mechanism is somewhat problematic as they are generally in the basin 365 days per year. A theoretical daily charge of about \$0.40 per resident household would be sufficient to generate 5% of the revenue from residents.

Rating: High

Administrative Effectiveness (1) – This criterion refers to the cost and ease of administering each fee or tax system; that is, minimizing evasion and minimizing the logistical difficulties imposed on the public in the process of paying the fee or tax in a cost-effective way. The easiest fee-collection systems, designated as having “high” administrative effectiveness are those that piggyback on other payments at the point of sale, including fuel taxes and sales taxes. Strategies are designated as “medium” if they require the user to make a unique payment solely for the purpose of paying fees or taxes, but where this process has been reasonably streamlined. New funding sources or those with high administrative costs are designated as “low.”

Discussion: Open road collection systems that can capture billing data from moving vehicles through well proven technologies such as license plate readers (LPR), transponders, etc. have been in use for decades. These technologies would have little to no cost to users and would not impede their travels. Likewise, automated back office operations for billing, collection, and data analysis have been well proven.

Rating: High

Political Feasibility/Public Acceptance (2) - Because all of the funding sources require the public to pay more, it is likely that they will all have some public opposition. Funding sources that are somewhat removed from the transportation project or service they are supporting tend to be particularly unpopular, such as property and income taxes and general revenue. This criterion measures the degree of difficulty that might be encountered in gaining public acceptance to initially implement the revenue mechanism, compared to other revenue options. Public acceptance of revenue mechanisms may improve over time as individuals become more accustomed to the means of collection and how the mechanism impacts their finances, travel patterns, or other activities. Therefore, the acceptability of a new mechanism is measured comparatively, recognizing that some methods will initially be more acceptable than others. This measure will be largely informed through stakeholder input.

Discussion: Public acceptance of the collection and billing technologies is widespread in most of the US. There is strong consensus among voters in both California and Nevada that traffic is a significant problem in the Tahoe Basin and that it is urgent to be addressed. This sentiment is also echoed in the one-on-one meetings with elected officials and key stakeholders, as well as the attendees at our public listening sessions. Proprietary polling also indicates that most California and Nevada voters feel that a daily charge of \$4.30 for groups visiting the Lake Tahoe Basin is reasonable. Many voters residing in the Basin are more reluctant about Basin residents paying more for transportation since they feel that the cost of living at Tahoe is already too high. Despite this, there is a recognition by Basin voters that collecting fees from all travelers in the basin is necessary.

Rating: Medium

Fungibility Across Modes and Jurisdictions in Tahoe Basin (3) - The fact that funding shortfalls are identified for all of the major travel modes and other priority needs requires that any new funding mechanism not be limited to a single mode and ideally would be fungible across all modes of travel and priority needs. In addition, given the many jurisdictions within the Tahoe Basin, it will be critical that any new funding mechanism have the ability to fund projects and services across the entire Tahoe Basin and not be limited to use within the jurisdiction of collection.

Discussion: If this new revenue were dedicated to funding the projects and the services in the Tahoe RTP, and applied across the entire Tahoe Basin, it would require authorizing language from California, Nevada, and possibly the US Congress. The enabling legislation could allow for fungibility across all jurisdictions, transportation modes, and activities.

Rating: High

Impacts to the Regional Economy (2) - Money collected through a revenue mechanism is no longer available to the tax/fee payer for other purposes such as investment, saving, or spending. This could be a deterrent to tax/fee payers to visit Lake Tahoe. These impacts could, however, be offset by increased spending on transportation projects and services which can stimulate the regional economy. Improvements to the transportation system may also improve the quality-of-experience for visitors and quality-of-life for residents, thus stimulating additional spending in the region.

Discussion: Economic analysis of the regional economy was examined using IMPLAN. Since all scenarios assumed the same amount of annual net transportation revenue of \$67 million the IMPLAN results were fairly similar and all Tier 3 mechanisms were assigned a “high” rating on this criterion. Perhaps of greater interest was IMPLAN analysis that assumed three scenarios for annual visitation growth between 2017 and 2040: a 1.16% annual increase in visitation reflecting forecast population growth in Tahoe’s major markets; a 0% annual increase; and a -0.212% annual decrease (cumulative 5% drop in annual visitation between 2017 and 2040). While no one can predict what will happen to visitation if the Tahoe “experience” continues to erode, these scenarios offer some food for thought. If Tahoe can maintain its market share the cumulative increase economic output over the slightly negative visitation growth rate is 16%.

Notes: Using uniform rates for all users to achieve a 95%-5% split in revenue from non-residents and residents creates an extreme burden on residents. This issue could be addressed through the rate structure or through utilizing an alternative revenue mechanism for residents. Charging the same rate to commuters and recreational visitors is also problematic given the difficulty in attracting and retaining workers in the Basin. This issue would probably best be addressed through a differential rate structure.

Tier 3 Screening

12. Name of proposed mechanism: Vehicle Miles Traveled (VMT) Fees

Description: Users would be required to pay a fee for each mile driven within the Lake Tahoe Basin. Revenue would be dedicated to supporting transportation and transportation related projects and services included in the Regional Transportation Plan. Per mile fee rates would be set to generate a targeted amount of revenue and adjusted annually for inflation. Deployment of a pay-at-the-pump VMT fee system in the Tahoe Basin alone would probably not be feasible given the large number of day visitors that would be fueling outside of the Basin. Collection of VMT fees as a separate transaction from fueling would involve significant deployment of new technology onboard the motor vehicles to record and capture odometer readings of mileage driven within the basin or GPS type technology to track vehicles and record mileage.

Summary of Tier 1 screening results (weighting factors in parentheses):

Constitutional amendment/statewide vote (fatal flaw) rating: Pass

Adequacy (2) rating: Medium

Predictability (2) rating: Medium

Economic efficiency (1) rating: High

Tier 1 summary rating: Medium

Summary of Tier 2 screening results (weighting factors in parentheses):

Equity (2) rating: Low

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) rating: High

Supports Attaining Environmental Thresholds (3) rating: High

Business Climate Friendliness (2) rating: Medium

Tier 2 summary rating: High

Tier 3 evaluation rating for each criterion:

Revenue Potential (3)– This criterion measures the ability of the funding mechanisms to generate the needed revenue during the life of the TRPA's Regional Plan. Task 2 has estimated that new local and regional sources will be needed to generate \$1.53 billion so that the fully envisioned TRPA's Regional Plan addressing all needs in the region can be implemented over the 23-year forecast period. For each revenue mechanism, this criterion will estimate the funding to be generated over the life of the TRPA's

Regional Plan. Revenue mechanisms will be categorized as low, medium or high if they have the potential to generate low, medium or high gross revenues, over the life of the RTP.

Discussion: While high level analysis of multiple variations of this mechanism indicates that it has strong potential to generate all the revenue needed to meet the identified transportation funding shortfall of about \$67 million annually, there are two major issues that negatively impact the suitability of this source for the Tahoe Basin.

First is the restriction in the Nevada constitution that requires revenues collected on the operation of a motor vehicle on state highways to be used on state highways. The most restrictive interpretation of this would mean that VMT fees collected in Nevada could only be used on roads in Nevada. Taking a more liberal interpretation that VMT fees collected in Nevada could be used for roads anywhere in the basin (including roads in California) and that VMT fees collected in California could be used on all transportation uses throughout the basin, still results in significant shortfalls in funding for non-road transportation uses.

Second is the high cost of collection driven by the need to provide technology onboard the vehicles coming into the basin to capture the miles driven and additional technology to capture the VMT readings as vehicles entered and left the basin for billing purposes. Additional equipment to capture VMT data might also be necessary within the basin to capture data from vehicles that never or only infrequently leave the basin. This would not be a one-time cost, but a continuing cost as new vehicles are introduced into the visitor fleet each year.

Taking into account both of these issues, high level illustrative planning estimates were run assuming the best-case interpretation of the Nevada use restrictions. This analysis indicates that a charge of about 30 cents per mile on the miles driven by non-resident, non-commuter vehicles, and 4 cents per mile for residents and commuters would generate sufficient gross revenue to yield a net annual revenue of about \$58 million. Dollars collected in excess of this amount would be unusable because of the use restrictions and, as a result, about \$9 million in annual non-road transportation needs would be unfunded. This illustrative scenario also meets the desire at 95%-5% split in the burden between residents and non-residents for the \$58 million annual revenue.

Rating: Medium

Administrative Effectiveness (1) – This criterion refers to the cost and ease of administering each fee or tax system; that is, minimizing evasion and minimizing the logistical difficulties imposed on the public in the process of paying the fee or tax in a cost-effective way. The easiest fee-collection systems, designated as having “high” administrative effectiveness are those that piggyback on other payments at the point of sale, including fuel taxes and sales taxes. Strategies are designated as “medium” if they require the user to make a unique payment solely for the purpose of paying fees or taxes, but where this process has been reasonably streamlined. New funding sources or those with high administrative costs are designated as “low.”

Discussion: As noted above, this mechanism would require the installation of equipment in every vehicle

driven in the Tahoe Basin to record VMT as well as equipment to capture this data from the vehicles for billing purposes. Aside for the very substantial costs entailed, the installation of onboard equipment could become quite intrusive and inconvenient particularly for visitors.

Rating: Low

Political Feasibility/Public Acceptance (2) - Because all of the funding sources require the public to pay more, it is likely that they will all have some public opposition. Funding sources that are somewhat removed from the transportation project or service they are supporting tend to be particularly unpopular, such as property and income taxes and general revenue. This criterion measures the degree of difficulty that might be encountered in gaining public acceptance to initially implement the revenue mechanism, compared to other revenue options. Public acceptance of revenue mechanisms may improve over time as individuals become more accustomed to the means of collection and how the mechanism impacts their finances, travel patterns, or other activities. Therefore, the acceptability of a new mechanism is measured comparatively, recognizing that some methods will initially be more acceptable than others. This measure will be largely informed through stakeholder input.

Discussion: There is strong consensus among voters in both California and Nevada that traffic is a significant problem in the Tahoe Basin and a that it is urgent to be addressed. This sentiment is also echoed in the one-one-one meetings with elected officials and key stakeholders, as well as the attendees at our public listening sessions. Despite this, the high relative cost and intrusiveness of a standalone VMT system would probably make this particular mechanism much less acceptable relative to other options.

Rating: Low

Fungibility Across Modes and Jurisdictions in Tahoe Basin (3)-The fact that funding shortfalls are identified for all of the major travel modes and other priority needs requires that any new funding mechanism not be limited to a single mode and ideally would be fungible across all modes of travel and priority needs. In addition, given the many jurisdictions within the Tahoe Basin, it will be critical that any new funding mechanism have the ability to fund projects and services across the entire Tahoe Basin and not be limited to use within the jurisdiction of collection.

Discussion: As noted above in the discussion of revenue potential, the restriction of the Nevada constitution creates major impediments to the fungibility of revenue from a VMT mechanism.

Rating: Low

Impacts to the Regional Economy (2)- Money collected through a revenue mechanism is no longer available to the tax/fee payer for other purposes such as investment, saving, or spending. This could be a deterrent to tax/fee payers to visit Lake Tahoe. These impacts could, however, be offset by increased spending on transportation projects and services which can stimulate the regional economy. Improvements to the transportation system may also improve the quality-of-experience for visitors and quality-of-life for residents, thus stimulating additional spending in the region.

Discussion: Discussion: Economic analysis of the regional economy was examined using IMPLAN. Since all scenarios assumed the same amount of annual net transportation revenue of \$67 million the IMPLAN results were fairly similar and all Tier 3 mechanisms were assigned a “high” rating on this criterion. Perhaps of greater interest was IMPLAN analysis that assumed three scenarios for annual visitation growth between 2017 and 2040: a 1.16% annual increase in visitation reflecting forecast population growth in Tahoe’s major markets; a 0% annual increase; and a -0.212% annual decrease (cumulative 5% drop in annual visitation between 2017 and 2040). While no one can predict what will happen to visitation if the Tahoe “experience” continues to erode, these scenarios offer some food for thought. If Tahoe can maintain its market share the cumulative increase economic output over the slightly negative visitation growth rate is 16%.

Rating: High

Summary Tier 3 rating: Low

Notes: Even under the most optimistic interpretation of Nevada’s use restrictions, this mechanism would need to be coupled with other revenue mechanisms to achieve the desired level of funding. Collection costs would be substantial due to a continuing requirement to equip new-to-the-basin vehicles with technology and there could be considerable public resistant to this due to cost and privacy concerns. The collection cost issues largely go away in the future if there is an integrated nationwide VMT system. The possibility of such a system is probably 10+ years in the future.

Vehicle miles traveled (VMT) fee

Conceptual locations of billing data capture points

▼ Data capture point



Morse Associates Consulting, LLC

Tier 3 Screening

14. Name of proposed mechanism: Tolling

Description: Users would be required to pay a toll for travel into or through specified toll zones on the major arterial roadways in the Basin. Trips made entirely within a single toll zone would not be charged. Revenue would be dedicated to supporting transportation and transportation related projects and services included in the Regional Transportation Plan. Toll rates would be set to generate a targeted amount of revenue and adjusted annually for inflation.

Summary of Tier 1 screening results (weighting factors in parentheses):

Constitutional amendment/statewide vote (fatal flaw) rating: Pass

Adequacy (2) rating: Medium

Predictability (2) rating: Medium

Economic efficiency (1) rating: High

Tier 1 summary rating: Medium

Summary of Tier 2 screening results (weighting factors in parentheses):

Equity (2) rating: Low

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) rating: High

Supports Attaining Environmental Thresholds (3) rating: High

Business Climate Friendliness (2) rating: Low

Tier 2 summary rating: Medium

Tier 3 evaluation rating for each criterion:

Revenue Potential (3)– This criterion measures the ability of the funding mechanisms to generate the needed revenue during the life of the TRPA’s Regional Plan. Task 2 has estimated that new local and regional sources will be needed to generate \$1.53 billion so that the fully envisioned TRPA’s Regional Plan addressing all needs in the region can be implemented over the 23-year forecast period. For each revenue mechanism, this criterion will estimate the funding to be generated over the life of the TRPA’s Regional Plan. Revenue mechanisms will be categorized as low, medium or high if they have the potential to generate low, medium or high gross revenues, over the life of the TRP.

Discussion: While high level analysis of multiple variations of this mechanism indicates that it has strong potential to generate all the revenue needed to meet the identified transportation funding shortfall of

about \$67 million annually, there are two major issues that negatively impact the suitability of this source for the Tahoe Basin.

First is the restriction in the Nevada constitution that requires revenues collected on the operation of a motor vehicle on state highways to be used on state highways. The most restrictive interpretation of this would mean that VMT fees collected in Nevada could only be used on roads in Nevada. Taking a more liberal interpretation that VMT fees collected in Nevada could be used for roads anywhere in the basin (including roads in California) and that VMT fees collected in California could be used on all transportation uses throughout the basin, still results in significant shortfalls in funding for non-road transportation uses.

Second is the fact that a toll would be charged on US-50. This would require Federal approvals under 23 U.S.C. 129 (generally referred to as “Section 129”). Once a tolled facility is adequately maintained, excess revenues may be generally be applied to any other purpose for which Federal funds may be obligated under title 23, United States Code including the capital costs of transit projects eligible for assistance under chapter 53 of title 49, United States Code. Given that a substantial portion of the Tahoe transportation funding shortfall is in transit operations and maintenance, the restriction on the use of excess revenues for transit capital poses a significant impediment.

Taking into account both of these issues, high level illustrative planning estimates were run assuming the best-case interpretation of the Nevada use restrictions. This analysis indicates that a charge of about \$2.38 per toll zone for non-resident, non-commuter vehicles, and \$0.70 per toll zone for residents and commuters would generate sufficient gross revenue to yield a net annual revenue of about \$57 million. Dollars collected in excess of this amount would be unusable because of the use restrictions and, as a result, about \$10 million in annual non-road transportation needs would be unfunded. This illustrative scenario also meets the desired 95%-5% split in the burden between residents and non-residents for the \$57 million of annual revenue.

Rating: Medium

Administrative Effectiveness (1) – This criterion refers to the cost and ease of administering each fee or tax system; that is, minimizing evasion and minimizing the logistical difficulties imposed on the public in the process of paying the fee or tax in a cost-effective way. The easiest fee-collection systems, designated as having “high” administrative effectiveness are those that piggyback on other payments at the point of sale, including fuel taxes and sales taxes. Strategies are designated as “medium” if they require the user to make a unique payment solely for the purpose of paying fees or taxes, but where this process has been reasonably streamlined. New funding sources or those with high administrative costs are designated as “low.”

Discussion: Discussion: Open road collection systems that can capture billing data from moving vehicles through well proven technologies such as license plate readers (LPR), transponders, etc. have been in use for decades. These technologies would have little to no cost to users and would not impede their travels. Likewise, automated back office operations for billing, collection, and data analysis have been well proven.

Rating: Medium

Political Feasibility/Public Acceptance (2) - Because all of the funding sources require the public to pay more, it is likely that they will all have some public opposition. Funding sources that are somewhat removed from the transportation project or service they are supporting tend to be particularly unpopular, such as property and income taxes and general revenue. This criterion measures the degree of difficulty that might be encountered in gaining public acceptance to initially implement the revenue mechanism, compared to other revenue options. Public acceptance of revenue mechanisms may improve over time as individuals become more accustomed to the means of collection and how the mechanism impacts their finances, travel patterns, or other activities. Therefore, the acceptability of a new mechanism is measured comparatively, recognizing that some methods will initially be more acceptable than others. This measure will be largely informed through stakeholder input.

Discussion: Even under the most optimistic interpretation of Nevada's use restrictions and the restrictions on revenue generated from toll zones including US-50, this mechanism would need to be coupled with one or more other revenue mechanisms to achieve the desired level of funding. Addressing this issue may require a different set of additional mechanisms in Nevada than in California leading to added complexity and perceptions of unfairness for among residents within the basin.

Rating: Low

Fungibility Across Modes and Jurisdictions in Tahoe Basin (3)-The fact that funding shortfalls are identified for all of the major travel modes and other priority needs requires that any new funding mechanism not be limited to a single mode and ideally would be fungible across all modes of travel and priority needs. In addition, given the many jurisdictions within the Tahoe Basin, it will be critical that any new funding mechanism have the ability to fund projects and services across the entire Tahoe Basin and not be limited to use within the jurisdiction of collection.

Discussion: Discussion: As noted above in the discussion of revenue potential, the restriction of the Nevada constitution creates major impediments to the fungibility of revenue from a VMT mechanism.

Rating: Low

Impacts to the Regional Economy (2)- Money collected through a revenue mechanism is no longer available to the tax/fee payer for other purposes such as investment, saving, or spending. This could be a deterrent to tax/fee payers to visit Lake Tahoe. These impacts could, however, be offset by increased spending on transportation projects and services which can stimulate the regional economy. Improvements to the transportation system may also improve the quality-of-experience for visitors and quality-of-life for residents, thus stimulating additional spending in the region.

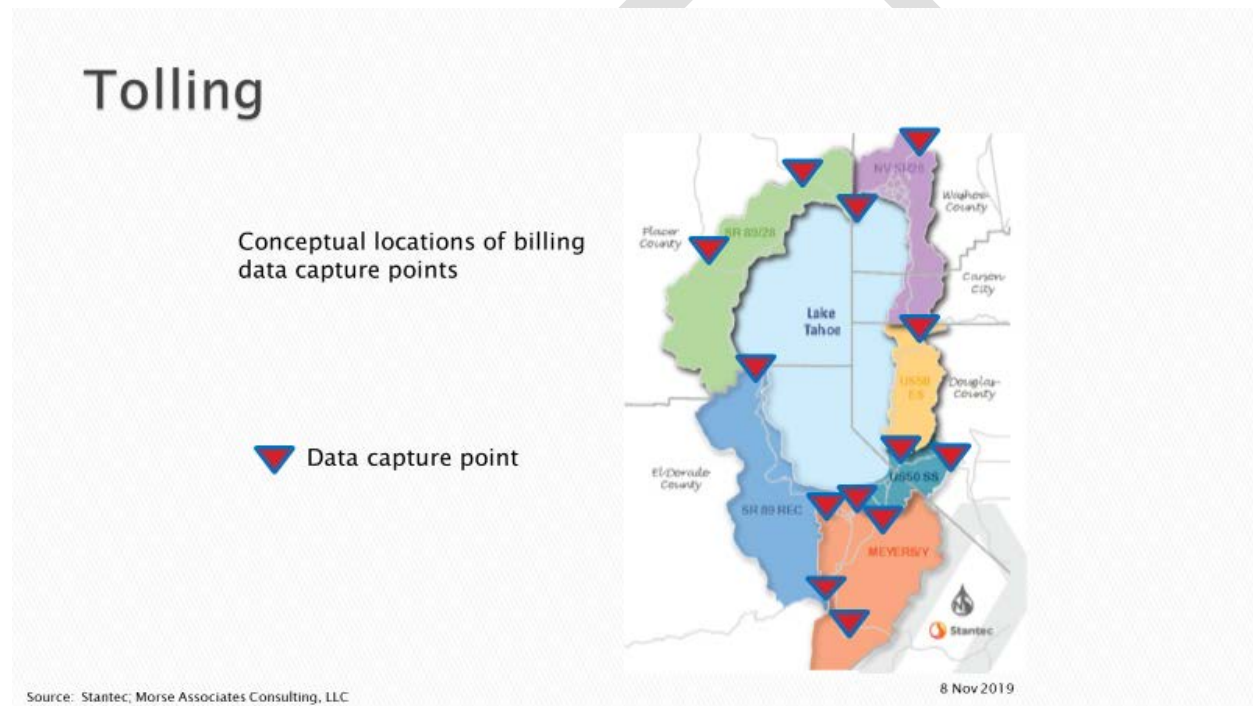
Discussion: Economic analysis of the regional economy was examined using IMPLAN. Since all scenarios assumed the same amount of annual net transportation revenue of \$67 million the IMPLAN results were fairly similar and all Tier 3 mechanisms were assigned a "high" rating on this criterion. Perhaps of greater interest was IMPLAN analysis that assumed three scenarios for annual visitation growth

between 2017 and 2040: a 1.16% annual increase in visitation reflecting forecast population growth in Tahoe's major markets; a 0% annual increase; and a -0.212% annual decrease (cumulative 5% drop in annual visitation between 2017 and 2040). While no one can predict what will happen to visitation if the Tahoe "experience" continues to erode, these scenarios offer some food for thought. If Tahoe can maintain its market share the cumulative increase economic output over the slightly negative visitation growth rate is 16%.

Rating: High

Summary Tier 3 rating: Low

Notes: Even under the most optimistic interpretation of Nevada's use restrictions and the restrictions on revenue generated from toll zones including US-50, this mechanism would need to be coupled with one or more other revenue mechanisms to achieve the desired level of funding.



Tier 3 Screening

16. Name of proposed mechanism: Zoned transportation user fee (also includes hourly transportation fee [item 20])

Description: All users would be required to pay a fee dedicated to supporting the multimodal transportation system within the basin. Basin residents and resident businesses would pay a flat fee for one of six community transportation zones plus a daily fee for travel within the basin outside of the community transportation zone where they reside when such trips are made. Non-residents would pay a daily fee. The resident flat rate fee could be billed by piggybacking on the collection of residential and commercial property taxes or by a utility service type billing. Fees for non-resident use and for resident use outside of the community transportation zone could be billed through license plate capture technology and/or transponders. Fee rates would be adjusted annually for inflation.

Summary of Tier 1 screening results (weighting factors in parentheses):

Constitutional amendment/statewide vote (fatal flaw) rating: Pass

Adequacy (2) rating: High

Predictability (2) rating: High

Economic efficiency (1) rating: High

Tier 1 summary rating: High

Summary of Tier 2 screening results (weighting factors in parentheses):

Equity (2) rating: Low

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) rating: High

Supports Attaining Environmental Thresholds (3) rating: High

Business Climate Friendliness (2) rating: Medium

Tier 2 summary rating: High

Tier 3 evaluation rating for each criterion

Revenue Potential (3)– This criterion measures the ability of the funding mechanisms to generate the needed revenue during the life of the TRPA's Regional Plan. Task 2 has estimated that new local and regional sources will be needed to generate \$1.53 billion so that the fully envisioned TRPA's Regional Plan addressing all needs in the region can be implemented over the 23-year forecast period. For each revenue mechanism, this criterion will estimate the funding to be generated over the life of the TRPA's

Regional Plan. Revenue mechanisms will be categorized as low, medium or high if they have the potential to generate low, medium or high gross revenues, over the life of the TRP.

Discussion: High level analysis of multiple variations of this mechanism indicates that it has strong potential to generate all the revenue needed to meet the identified transportation funding shortfall of about \$67 million annually. The analysis used a rate structure charging each non-resident, non-commuter group within the user zone covering the entire basin, a fee of between \$4.00 to \$4.50 for each day or portion thereof, and non-resident commuter groups would be charged \$1.00 per day. Residents would be charged an annual transportation fee for use of the transportation system within their community zone and in the basin-wide zone averaging about \$80 per household, and resident businesses a flat annual fee averaging about \$800 per year. This fee structure would meet the target of sharing the burden with visitors at a 95%-5% split.

Rating: High

Administrative Effectiveness (1)— This criterion refers to the cost and ease of administering each fee or tax system; that is, minimizing evasion and minimizing the logistical difficulties imposed on the public in the process of paying the fee or tax in a cost-effective way. The easiest fee-collection systems, designated as having “high” administrative effectiveness are those that piggyback on other payments at the point of sale, including fuel taxes and sales taxes. Strategies are designated as “medium” if they require the user to make a unique payment solely for the purpose of paying fees or taxes, but where this process has been reasonably streamlined. New funding sources or those with high administrative costs are designated as “low.”

Discussion: Open road collection systems that can capture billing data from moving vehicles through well proven technologies such as license plate readers (LPR), transponders, etc. have been in use for decades. These technologies would have little to no cost to users and would not impede their travels. Likewise, automated back office operations for billing, collection, and data analysis have been well proven. Collections of the flat portion of the fees for resident households and businesses could be piggybacked on existing collection processes already in place for utility and tax payments.

Rating: High

Political Feasibility/Public Acceptance (2) - Because all of the funding sources require the public to pay more, it is likely that they will all have some public opposition. Funding sources that are somewhat removed from the transportation project or service they are supporting tend to be particularly unpopular, such as property and income taxes and general revenue. This criterion measures the degree of difficulty that might be encountered in gaining public acceptance to initially implement the revenue mechanism, compared to other revenue options. Public acceptance of revenue mechanisms may improve over time as individuals become more accustomed to the means of collection and how the mechanism impacts their finances, travel patterns, or other activities. Therefore, the acceptability of a new mechanism is measured comparatively, recognizing that some methods will initially be more acceptable than others. This measure will be largely informed through stakeholder input.

Discussion: Public acceptance of the collection and billing technologies is widespread in most of the US. There is strong consensus among voters in both California and Nevada that traffic is a significant problem in the Tahoe Basin and that it is urgent to be addressed. This sentiment is also echoed in the one-on-one meetings with elected officials and key stakeholders, as well as the attendees at our public listening sessions. Proprietary polling also indicates that most California and Nevada voters feel that a daily charge of \$4.30 for groups visiting the Lake Tahoe Basin is reasonable. Many voters residing in the Basin are more reluctant about Basin residents paying more for transportation since they feel that the cost of living at Tahoe is already too high. Despite this, there is a recognition by Basin voters that collecting fees from all travelers in the basin is necessary.

Rating: Medium

Fungibility Across Modes and Jurisdictions in Tahoe Basin (3)-The fact that funding shortfalls are identified for all of the major travel modes and other priority needs requires that any new funding mechanism not be limited to a single mode and ideally would be fungible across all modes of travel and priority needs. In addition, given the many jurisdictions within the Tahoe Basin, it will be critical that any new funding mechanism have the ability to fund projects and services across the entire Tahoe Basin and not be limited to use within the jurisdiction of collection.

Discussion: If these new revenues were dedicated to funding the projects and the services in the Tahoe RTP, and applied across the entire Tahoe Basin, it would require authorizing language from California, Nevada, and possibly the US Congress. The enabling legislation could allow for fungibility across all jurisdictions, transportation modes, and activities.

Rating: High

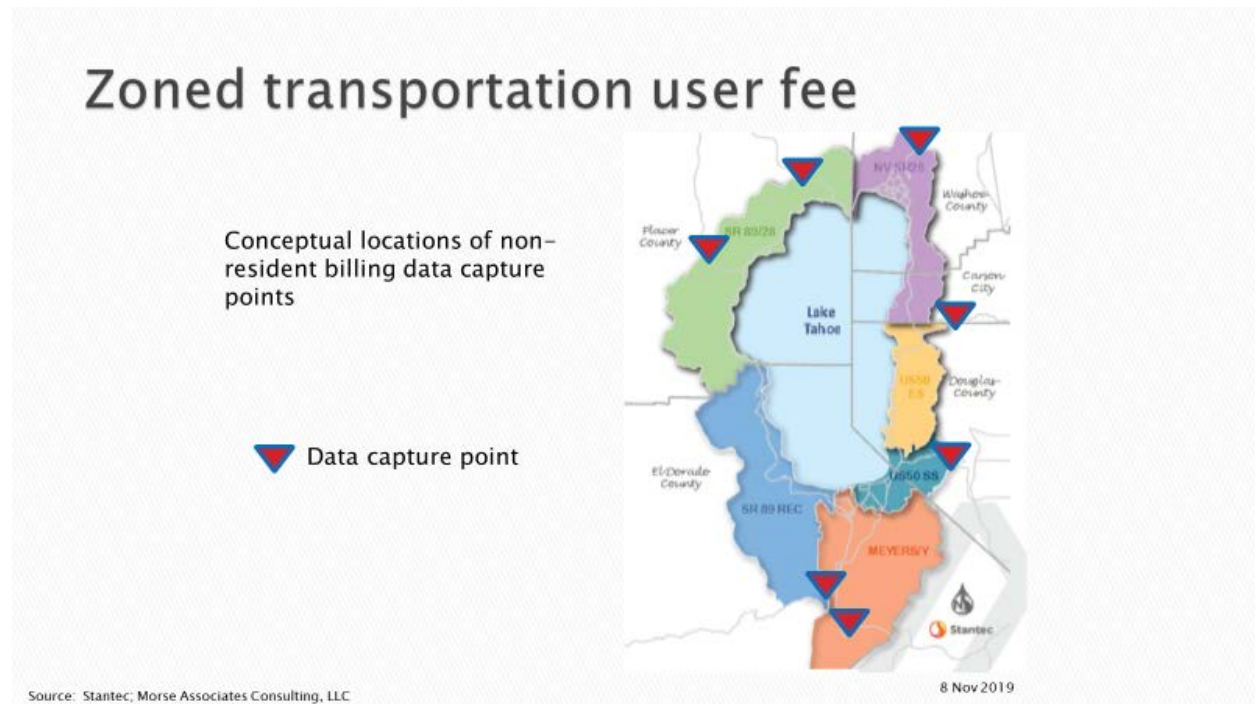
Impacts to the Regional Economy (2)- Money collected through a revenue mechanism is no longer available to the tax/fee payer for other purposes such as investment, saving, or spending. This could be a deterrent to tax/fee payers to visit Lake Tahoe. These impacts could, however, be offset by increased spending on transportation projects and services which can stimulate the regional economy. Improvements to the transportation system may also improve the quality-of-experience for visitors and quality-of-life for residents, thus stimulating additional spending in the region.

Discussion: Economic analysis of the regional economy was examined using IMPLAN. Since all scenarios assumed the same amount of annual net transportation revenue of \$67 million the IMPLAN results were fairly similar and all Tier 3 mechanisms were assigned a “high” rating on this criterion. Perhaps of greater interest was IMPLAN analysis that assumed three scenarios for annual visitation growth between 2017 and 2040: a 1.16% annual increase in visitation reflecting forecast population growth in Tahoe’s major markets; a 0% annual increase; and a -0.212% annual decrease (cumulative 5% drop in annual visitation between 2017 and 2040). While no one can predict what will happen to visitation if the Tahoe “experience” continues to erode, these scenarios offer some food for thought. If Tahoe can maintain its market share the cumulative increase economic output over the slightly negative visitation growth rate is 16%.

Rating: High

Tier 3 summary rating: High

Notes: This mechanism is a hybrid combining cordon pricing for non-residents with a differing revenue mechanism for residents in recognition of the unique situation of residents versus non-residents traveling into and around the basin. Other mechanisms could be substituted for the fee for residents and resident businesses such as a transportation utility fee based on land use trip/generation.



Tier 3 Screening

24. Name of proposed mechanism: Vacancy Tax

Description: The number of 2nd home residences in the Tahoe Basin is substantial, and the majority are vacant. This funding measure would impose a tax on residences that are vacant a substantial portion of the year.

Summary of Tier 1 screening results (weighting factors in parentheses):

Constitutional amendment/statewide vote (fatal flaw) rating: Pass

Adequacy (2) rating: Medium

Predictability (2) rating: Low

Economic efficiency (1) rating: Low

Tier 1 summary rating: Medium

Summary of Tier 2 screening results (weighting factors in parentheses):

Equity (2) rating: Medium

Share of Tax Paid by Out-of-basin versus In-basin Residents and Businesses (2) rating: Medium

Supports Attaining Environmental Thresholds (3) rating: Medium

Business Climate Friendliness (2) rating: Medium

Tier 2 summary rating: Medium

Tier 3 screening results (weighting factors in parentheses):

Revenue Potential (3) – This criterion measures the ability of the funding mechanisms to generate the needed revenue during the life of the TRPA’s Regional Plan. Task 2 has estimated that new local and regional sources will be needed to generate \$1.53 billion so that the fully envisioned TRPA’s Regional Plan addressing all needs in the region can be implemented over the 23-year forecast period. For each revenue mechanism, this criterion will estimate the funding to be generated over the life of the TRPA’s Regional Plan. Revenue mechanisms will be categorized as low, medium or high if they have the potential to generate low, medium or high gross revenues, over the life of the TRP.

The theoretical potential of the Vacancy Tax to raise revenue is substantial, although it is likely that the higher the tax rate, the larger of number of units will be converted to use and will no longer be subject to the tax.

Discussion: High level analysis of this mechanism indicates that it has strong potential to generate all the revenue needed to meet the identified transportation funding shortfall of about \$67 million annually. The analysis indicated that of the 34,570 residences in the Tahoe Basin owned by non-residents, a fee of approximately \$3,700 per unit per year applied to approximately 52% of these residents that are assumed to be vacant (per the assumptions used by the City of South Lake Tahoe) would generate the needed income. The Vacancy Tax is assumed to encourage property owners to convert their residences to use, so it was assumed 5% of units per year would no longer be assessed the tax. In order to keep the revenue stream constant, this required the tax to be increased each year. Over the course of 10 years, the number of units assessed the tax decreased from approximately 18,200 to 14,400 and the per unit tax increased from approximately \$3,700 to 5,900. After 10 years, the simplifying assumption was made that no additional units would be introduced into the rental market so that the number of units subjected to the tax and the tax remained constant

Rating: Medium

Administrative Effectiveness (1) – This criterion refers to the cost and ease of administering each fee or tax system; that is, minimizing evasion and minimizing the logistical difficulties imposed on the public in the process of paying the fee or tax in a cost-effective way. The easiest fee-collection systems, designated as having “high” administrative effectiveness are those that piggyback on other payments at the point of sale, including fuel taxes and sales taxes. Strategies are designated as “medium” if they require the user to make a unique payment solely for the purpose of paying fees or taxes, but where this process has been reasonably streamlined. New funding sources or those with high administrative costs are designated as “low.”

Discussion: The Vacancy Tax should be somewhat simple to bill and collect, similar to the property tax process. The determination of whether a property is liable to pay the tax, however, is a more complex issue and will depend in part on the definition of “vacant” and the process that would be used to monitor compliance with the definition of “vacant”. The monitoring process is not known, and could become extremely complex and expensive if the definition of “vacant” is not based upon easily available compliance data.

Rating: Low

Political Feasibility/Public Acceptance (2) - Because all of the funding sources require the public to pay more, it is likely that they will all have some public opposition. Funding sources that are somewhat removed from the transportation project or service they are supporting tend to be particularly unpopular, such as property and income taxes and general revenue. This criterion measures the degree of difficulty that might be encountered in gaining public acceptance to initially implement the revenue mechanism, compared to other revenue options. Public acceptance of revenue mechanisms may improve over time as individuals become more accustomed to the means of collection and how the

mechanism impacts their finances, travel patterns, or other activities. Therefore, the acceptability of a new mechanism is measured comparatively, recognizing that some methods will initially be more acceptable than others. This measure will be largely informed through stakeholder input.

Discussion: The political feasibility of the Vacancy Tax, which is a relatively new approach to revenue generation, is somewhat complex. Like the property tax, it will be strongly unpopular with the owners of property that will be found liable for the tax. For non-property owners, the perception that the Vacancy Tax might increase the number of units available and/or lower costs could result in strong support for this type of tax. In November 2018, the Vacancy Tax proposed in the City of Oakland obtained 70% support from the voters.

Rating: Low

Fungibility Across Modes and Jurisdictions in Tahoe Basin (3)-The fact that funding shortfalls are identified for all of the major travel modes and other priority needs requires that any new funding mechanism not be limited to a single mode and ideally would be fungible across all modes of travel and priority needs. In addition, given the many jurisdictions within the Tahoe Basin, it will be critical that any new funding mechanism have the ability to fund projects and services across the entire Tahoe Basin and not be limited to use within the jurisdiction of collection.

Discussion: Vacancy taxes are a relatively new mechanism in California and currently not used at all in Nevada. If these taxes are levied at the local jurisdictional level, there will likely be jurisdictional restrictions on the use of the revenues. Levying these taxes uniformly across the basin by a regional entity may address the jurisdictional fungibility issues. Perhaps a bigger impediment will be the lack of a strong nexus between the collection of a tax on vacant property and the use of these revenues for transportation. A powerful argument would be that taxes being levied on a vacant property should not be used for a transportation system that the vacant properties are not using.

Rating: Low

Impacts to the Regional Economy (2) - Money collected through a revenue mechanism is no longer available to the tax/fee payer for other purposes such as investment, saving, or spending. This could be a deterrent to tax/fee payers to visit Lake Tahoe. These impacts could, however, be offset by increased spending on transportation projects and services which can stimulate the regional economy. Improvements to the transportation system may also improve the quality-of-experience for visitors and quality-of-life for residents, thus stimulating additional spending in the region.

Discussion: Discussion: Economic analysis of the regional economy was examined using IMPLAN. Since all scenarios assumed the same amount of annual net transportation revenue of \$67 million the IMPLAN results were fairly similar and all Tier 3 mechanisms were assigned a “high” rating on this criterion. Perhaps of greater interest was IMPLAN analysis that assumed three scenarios for annual visitation growth between 2017 and 2040: a 1.16% annual increase in visitation reflecting forecast population growth in Tahoe’s major markets; a 0% annual increase; and a -0.212% annual decrease (cumulative 5% drop in annual visitation between 2017 and 2040). While no one can predict what will happen to

visitation if the Tahoe “experience” continues to erode, these scenarios offer some food for thought. If Tahoe can maintain its market share the cumulative increase economic output over the slightly negative visitation growth rate is 16%.

Rating: High

Tier 3 summary rating: Low

Notes: Vacancy taxes are a relatively new phenomenon and there is not a large body of law relating to their imposition, and use. In addition, the city of South Lake Tahoe has been contemplating the use of vacancy taxes to incent more rental properties for workers and to pay for things such as affordable housing that have a much stronger nexus to this type of tax.

Appendix D:

Current Transportation Funding Level-of-Effort

Task 3: Identify the Current Level of Effort (LOE) for Transportation Funding

Prepared for the Tahoe Transportation District

Under contract with Morse Associates Consulting, LLC

By Greg Krause, KrauseConsult

October 2020

1. Purpose

The purpose of the TTD Revenue Action Plan project is to determine the most appropriate and effective transportation funding strategy (or strategies) necessary to implement the Transportation Vision for the Lake Tahoe Basin. The Task 2 memo identified the funding shortfall in the current Tahoe Regional Transportation Plan (RTP). This memo identifies the current funding level of effort (LOE) by each level of government, and where available, by individual entity in the Tahoe RTP. In order to prevent an increase in the funding shortfalls already identified, it is imperative that existing funding sources continue to be provided at current levels, which will require adjustments for inflation on a periodic basis. Ideally these adjustments should occur annually to avoid short-term shortfalls, as well as the negative impact of large tax or fee increases which occur when annual increases are deferred.

The growth projections for the Tahoe Basin show small increases in population and development over the next 20 years. However, the projected 27% increase in population in the Northern California/Northern Nevada megalopolis between 2017-2035 is likely to substantially increase trips to Tahoe Basin (RTP sec. 1, p1) and will impact the transportation system, even if the resident population increase is small.

This memo will also review the issue of Resident versus Non-Resident payment for Tahoe transportation needs that was discussed in the Task 2 memo and recommend a process to ensure an equitable LOE for these two groups going forward.

2. Funding By Level of Government in Tahoe RTP

Table 1 shows funding by level of government (local, state and federal) for the period 2017-2040 in 2017\$. The funding subcategories from the Tahoe RTP are further disaggregated to show funding expected for each mode. As noted in Task 2, the largest shortfall will be in Transit operations at nearly \$1 billion, with a possible shortfall of up to \$320 million in Transit projects and services just in the Constrained RTP scenario.

Table 1: Tahoe RTP Revenues Estimated By Mode/Use for 2017-2040 With Reduction in State and Federal Discretionary Funding (\$106 million)

2017\$

Source	Bus	Street/Bike/Ped	Water Quality	Ferry	Total
LOCAL SOURCES					
Farebox Revenues	\$4,459,085				\$4,459,085
TRPA Rental Car Mitigation Fund	\$2,925,507				\$2,925,507
TRPA Air Quality Mitigation Fund		\$9,769,944			\$9,769,944
TRPA Water Quality Mitigation Fund			\$11,641,513		\$11,641,513
Local Funds (on-going)	\$69,000,000	\$96,044,160			\$165,044,160
Local Funds (project specific)		\$13,253,350			\$13,253,350
Private Funds	\$1,150,000	\$35,450,000			\$36,600,000
Ferry Partnership				\$128,800,000	\$128,800,000
O&M (bike trail, ped facilities, roadway, stormwater)		\$280,757,176	\$32,000,000		\$312,757,176
Environmental Stormwater Capital			\$112,241,793		\$112,241,793
Total Local	\$77,534,592	\$435,274,630	\$155,883,306	\$128,800,000	\$797,492,527
STATE SOURCES					
State Transit Assistance and Local Transportation Fund	\$97,848,060				\$97,848,060
Regional Improvement Program (STIP)		\$57,572,847			\$57,572,847
Low Carbon Transit Operations	\$4,284,000				\$4,284,000
Affordable Housing Sustainable Communities Note: reduced \$6 million per adjust		\$19,140,000			\$19,140,000
California Proposition 1B		\$75,431			\$75,431
California Tahoe Conservancy		\$14,155,400			\$14,155,400
Active Transportation Program (CA) Note: reduced \$6 million per adjust		\$28,714,800			\$28,714,800
Emergency Road Repair		\$2,448,000			\$2,448,000
California SHOPP Note: reduced \$29 million per adjust		\$87,226,000			\$87,226,000
Nevada Question 1		\$2,700,000			\$2,700,000
Nevada State Funds Note: reduced \$9 million per adjust		\$28,623,000			\$28,623,000
Total State	\$102,132,060	\$240,655,478	\$0	\$0	\$342,787,538
FEDERAL SOURCES					
Surface Transportation Block Grant		\$72,557,544			\$72,557,544
Surface Transportation Block Grant Set-Aside (TAP)		\$3,922,332			\$3,922,332
Federal Lands Transportation Program Note: reduced \$1million per adjusts		\$3,896,000			\$3,896,000
Federal Lands Access Program Note: reduced \$41million per adjusts		\$97,568,000			\$97,568,000
Congestion Mitigation & Air Quality Program	\$20,000,000	\$25,266,256			\$45,266,256
National Highway Performance Program		\$18,000,000			\$18,000,000
Highway Safety Improvement Program Note reduced \$8 million per adjusts		\$24,870,859			\$24,870,859
FHWA Ferry Program Note reduced by \$6 million per adjusts				\$19,500,000	\$19,500,000
FTA 5307 Urbanized Area Formula Program	\$105,264,000				\$105,264,000
FTA 5310 Enhancement Mobility of Seniors and individuals with Disabilities	\$2,007,360				\$2,007,360
FTA 5311 Rural Area Formula Grants (NV)	\$30,082,000				\$30,082,000
FTA 5339 Bus and Bus Facilities	\$6,120,000				\$6,120,000
Federal Aviation Administration Airport Improvement Program	\$7,293,150				\$7,293,150
High Priority Projects Program		\$1,655,000			\$1,655,000
Total Federal	\$170,766,510	\$247,735,992	\$0	\$19,500,000	\$438,002,502
Total Local/State/Federal	\$350,433,161	\$923,666,099	\$155,883,306	\$148,300,000	\$1,578,282,567

It will be critical for all of the existing funding sources to be adjusted for inflation, particularly those sources expected to fund Transit operating costs. A recent example of the impact of inflation on transit operations costs occurred in 2018, when the TTD was forced to increase the transit operator salary range 20% in order to recruit, and hopefully retain needed staff. The high cost of living in the Tahoe Basin, coupled with a shortage of available labor required this large salary increase. Existing funding sources must be increased for inflation to avoid larger future shortfalls and/or failure to deliver planned projects and services.

With the help of the TRPA staff, we were able to provide additional detail regarding the funding assumptions by government entity for “Local Funds (on-going)” and “Local O & M (road, bike trail, ped facilities and stormwater)”, the two largest components of Local funding. The Tahoe RTP technical appendices included additional breakout of funding by entity. Table 2 shows the detail by entity for “Local Funds (on-going)”.

Table 2: Tahoe RTP “Local Funds (on-going)” 2017-2040 Funding Detail (2017\$)

2017-2040 REVENUE in 2017\$			Total
LOCAL ON-GOING DETAIL	Transit	Street/Bike/Ped	
North Lake Tahoe Transient Occup Tax: \$1,300,000/yr	\$31,200,000		\$31,200,000
Douglas Co Transient Occup Tax: \$500,000/yr	\$12,000,000		\$12,000,000
Placer County Local Contribution: \$1,075,000/yr	\$25,800,000		\$25,800,000
Other Local Public Works Expenditures		\$96,044,160	\$96,044,160
Total	\$69,000,000	\$96,044,160	\$165,044,160

Note that Placer County, and Douglas County and North Lake Tahoe Transient Occupancy Tax (TOT) are the major local government contributors to public transportation.

The funding details by entity for “Local O & M” are shown in Table 3. This category included both NDOT and CalTrans funding, but these state funds were kept in the “Local” category to maintain consistency with the Tahoe RTP overall financial analysis.

Table 3: Tahoe RTP Local O&M 2017-2040 Funding Detail (2017\$)

2017-2040 Revenues in 2017\$									
Local O & M Funding Category Detail	City of SLT	Douglas Co	Washoe Co	El Dorado Co	Placer Co	Tahoe City PUD	CalTrans	NDOT	Totals
Bike and Pedestrian Facilities Operation	\$648,000	\$540,000	\$516,000	\$7,800,000	\$4,800,000	\$7,466,352			\$21,770,352
Stormwater Treatment Facilities Operations and Maintenance	\$960,000	\$12,000,000	\$4,800,000	\$655,200	\$1,920,000			\$12,000,000	\$32,335,200
Streets and Roads Operations and Maintenance	\$59,616,000	\$1,440,000	\$4,668,000	\$17,472,000	\$13,920,000		\$124,335,624	\$31,200,000	\$252,651,624
ITS Operations and Maintenance – NDOT, Caltrans							\$2,400,000	\$3,600,000	\$6,000,000
Total	\$61,224,000	\$13,980,000	\$9,984,000	\$25,927,200	\$20,640,000	\$7,466,352	\$126,735,624	\$46,800,000	\$312,757,176

3. Challenges to Maintaining Current Funding LOE

A. Revenues With Limited Inflation Adjustment

1. Fuel Taxes

Historically, transportation funding for streets and highways has relied heavily on the fuel tax, typically applied as a cents per gallon tax on fuel. The fuel tax suffers from several problems:

- It does not adjust for inflation.
- Revenue per mile of travel is reduced as the fleet fuel economy increases.
- Electric vehicles do not pay the tax. The electric vehicle issue is a minor one now, but as the number of electric vehicles increases, it will become a larger negative impact on transportation funding from fuel taxes.

The federal gas tax of 18.4 cents per gallon, which has not been increased since 1973, provides a good example of the negative impact of inflation and improved fleet economy. The combined impacts of inflation and increasing fuel economy reduced

the real dollar amount collected per mile of travel between 1993 and 2019 by an estimated 70%.

California recently approved SB 1 which increased the state fuel tax in 2017 for the first time in twenty years and also imposed inflationary adjustments to the fuel tax beginning in 2020. Nevada does not have inflationary adjustments to the state fuel tax, although it has granted Clark and Washoe County the right to impose indexing based upon federal, state and local fuel taxes which these counties have implemented.

All other Counties in Nevada have the authority to enact fuel tax indexing, but the indexing is limited to county option fuel taxes.

2. Local Property Tax

At the local government level, the property tax is a significant revenue source for the general fund, which in turn, is a significant revenue source for public works programs and projects. As noted in Table 2, there is nearly \$5 million per year in local government public works expenditures projected in the Tahoe RTP. As property valuation has grown rapidly in many urban areas following the 2007 national recession, it might be expected that property tax revenue would also grow rapidly. This has not occurred in California and Nevada, due to statutory limitations on the annual increase in assessed valuation.

For the local governments in California, assessed valuation growth per property is limited to 2% per year for all properties until they are sold, at which time they are reassessed to market value. In Nevada, the annual cap on growth in assessed valuation is 3% for primary residences, and higher rates for other types of structures. Nevada however, has a unique residential property depreciation allowance of 1.5% per year that reduces actual revenue growth below 3% annually for existing dwellings. This constraint on property tax revenue growth will make it difficult for local government operations, including public works, to maintain their current LOE when inflation increases faster than 2-3% per year. As mentioned above, labor in the Tahoe Basin is difficult to acquire and it is likely that annual labor cost (wages, health care, etc.) increases will exceed 2-3% per year for at least some of the years during positive economic growth and while unemployment is at very low rates.

B. Revenues With Inflation Adjustment

The local government sales tax, which is typically a general fund revenue, has the advantage of responding to inflation as the price of goods increase, unlike the non-indexed fuel taxes or property taxes with policy limitations on revenue. The Transient Occupancy Tax (TOT) similarly is a type of sales tax on room accommodation and can go up with room price inflation. Both the sales tax and TOT revenues will be affected by regional economic conditions in the Tahoe Basin, thus the rate of tax revenue growth may or may not keep up with cost of transportation goods and services. Despite this, taxes tied to the price of goods are clearly more effective at protecting against inflationary impacts than flat taxes levied on a per unit basis such as per gallon fuel taxes.

In addition, local government fees for services have the potential to be adjusted for inflation by the local government policy board on a regular basis, allowing revenues to keep pace with inflation.

C. New Funding Measures Need Inflation Adjustment

In light of the above discussion, it will be critical to structure any new regional Tahoe transportation funding source(s) to have inflation adjustments which occur automatically and are tied to appropriate indicators of transportation cost inflation. There may also need to be additional fee adjustments as projects and services are added/deleted to the Tahoe RTP.

4. Current Tracking of Funding LOE in Tahoe Basin

Tracking funding LOE for federal, state and local revenues is not currently assigned to any public entity. It will be challenging, given the multitude of funding sources and the hundreds of existing and new services and projects that are anticipated in the Tahoe RTP. Ideally, a single entity would take responsibility for tracking funding LOE and project implementation and have access to detailed data regarding all of the relevant RTP funding sources, data on the costs for both transportation capital projects and services, and data on the status of those transportation projects.

The Tahoe Basin has the good fortune of having the Tahoe Regional Planning Agency (TRPA), an agency that has taken responsibility for monitoring, researching and

documenting progress on key projects and services through the Tahoe Federal Transportation Improvement Program (FTIP) and Tahoe Environmental Improvement Program (EIP).

TRPA, in its role as the Tahoe Metropolitan Planning Organization (TMPO), is required to prepare and adopt a Federal Transportation Improvement Program (FTIP) by federal transportation legislation. Under this federal legislation, States and MPOs are required to take a performance-based approach to planning and programming. The TMPO continues to highlight the connection between project effectiveness and monitoring performance toward meeting regional and local goals. An effort to identify and implement best in practice performance metrics and intuitive public engagement tools to track progress is underway.

This process is intended to provide useful information for decision-making, while fostering program alignment. TRPA's performance-based transportation planning framework utilizes Tahoe Regional Transportation Plan performance measures, and various state metrics of performance.

TMPO prepares and adopts the program every two years in conjunction with the following local agencies: California Department of Transportation (Caltrans), Nevada Department of Transportation (NDOT), the Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA).

TMPO recently adopted the 2019 FTIP, which programs the Region's priority transportation projects over the next four federal fiscal years (FFY) 2019 through 2022. The projects are recommended for various stages of development during the program period. The project

listings include the location and description of proposed work, project cost, anticipated funding sources, and the scheduled year of work.

In addition, TRPA has developed a collaboration with virtually all of the federal, state and local government entities that are responsible for projects and services that are critical to the health of Lake Tahoe. These projects and services are documented in the Environmental Improvement Program (EIP). TRPA launched the EIP process in 1997, and has developed an extensive, on-line listing of projects and services, including most of the existing and planned Tahoe RTP projects and services. Upon review, there are some projects that are not listed in the EIP, and there are some projects listed in the EIP that have no cost data. These omissions could be addressed fairly quickly and would allow the EIP to be a comprehensive source of information on all RTP projects, including projected costs, revenue sources, schedule for implementation, implementing entity, and current status.

TRPA also produces an annual EIP report which documents progress in implementing projects and achievement of goals. The most recent report: “2018 Environmental Improvement Program” includes a Sustainable Recreation and Transportation section, highlighting achievements. It is notable that the 2018 EIP report does not document any current transit services, nor progress in implementing planned future transit services. Transit services, as well as other multi-modal improvements are essential investments necessary to meet TRPA vehicle miles of travel and greenhouse gas emission targets.

5. Tracking Vehicle Miles of Travel (VMT) and Green House Gas (GHG) Targets

TRPA is responsible for monitoring the attainment of the Tahoe Basin VMT standard of 2.03 million daily VMT, as documented in the Tahoe RTP (sec 5- page 8). In addition, TRPA is responsible for monitoring the GHG emission reduction targets for cars and light trucks as required by California SB 375 (sec 5- page 10). The attainment of both the VMT and GHG targets require that transit services be increased to foster increased transit utilization and reduction in private auto use. TRPA did include an evaluation of the status of the VMT and GHG targets in the 2017-2040 Tahoe RTP.

Reporting the current transit service levels and ridership should be a priority for the TRPA, as well as progress toward meeting the VMT and GHG targets. All available data should be reported annually in the EIP progress report to ensure continued progress in air and water quality in the Tahoe Basin. It is understood that TRPA may not have new data to report each year on the VMT and GHG targets, given they are complicated and data intensive analyses. However, the VMT and GHG goals are so important their status warrants inclusion in annual documents like the EIP report or the bi-annual FTIP.

6. Resident versus Non-Resident Transportation Funding LOE

Table 4 shown below documents the resident and non-resident RTP revenue assumptions by funding category for all of the existing revenue sources. Although the existing data lacks sufficient detail to make a precise calculation, utilizing the assumptions described in Task 2, the RTP projected stream for 2017-2040 of \$1.587 billion (2017\$) of existing revenues, 95 percent to residents, and 5 percent to non-residents.

As discussed in Task 2, the projected shortfall for the period 2017-2040 is estimated to be \$1.539 billion (2017\$), with all adjustments, thus it is recommended that vast majority of new revenues be collected from non-residents to achieve a more equitable balance of who pays for the RTP versus who benefits.

Table 4: Tahoe RTP 2017-2040 Revenue Payments: Residents versus Non-Residents

Source	Bus	Street/Bike/Ped	Water Quality	Ferry	Total	Non-Resident	Resident
LOCAL SOURCES							
Farebox Revenues	\$4,459,085				\$4,459,085	\$1,337,726	\$3,121,359
TRPA Rental Car Mitigation Fund	\$2,925,507				\$2,925,507	\$2,925,507	
TRPA Air Quality Mitigation Fund		\$9,769,944			\$9,769,944		\$9,769,944
TRPA Water Quality Mitigation Fund			\$11,641,513		\$11,641,513		\$11,641,513
Local Funds (on-going)	\$69,000,000	\$96,044,160			\$165,044,160	\$42,324,247	\$122,719,913
Local Funds (project specific)		\$13,253,350			\$13,253,350	\$74,219	\$13,179,131
Private Funds	\$1,150,000	\$35,450,000			\$36,600,000		\$36,600,000
Ferry Partnership				\$128,800,000	\$128,800,000	\$38,640,000	\$90,160,000
O&M (bike trail, ped facilities, roadway, stormwater)		\$280,757,176	\$32,000,000		\$312,757,176	\$1,751,440	\$311,005,736
Environmental Stormwater Capital			\$112,241,793		\$112,241,793		\$112,241,793
Total Local	\$77,534,592	\$435,274,630	\$155,883,306	\$128,800,000	\$797,492,527	\$87,053,139	\$710,439,388
STATE SOURCES							
State Transit Assistance and Local Transportation Fund	\$97,848,060				\$97,848,060		\$97,848,060
Regional Improvement Program (STIP)		\$57,572,847			\$57,572,847		\$57,572,847
Low Carbon Transit Operations	\$4,284,000				\$4,284,000		\$4,284,000
Affordable Housing Sustainable Communities Note: reduced \$6 million per adjust		\$19,140,000			\$19,140,000		\$19,140,000
California Proposition 1B		\$75,431			\$75,431		\$75,431
California Tahoe Conservancy		\$14,155,400			\$14,155,400		\$14,155,400
Active Transportation Program (CA) Note: reduced \$6 million per adjust		\$28,714,800			\$28,714,800		\$28,714,800
Emergency Road Repair		\$2,448,000			\$2,448,000		\$2,448,000
California SHOPP Note: reduced \$29 million per adjust		\$87,226,000			\$87,226,000		\$87,226,000
Nevada Question 1		\$2,700,000			\$2,700,000		\$2,700,000
Nevada State Funds Note: reduced \$9 million per adjust		\$28,623,000			\$28,623,000		\$28,623,000
Total State	\$102,132,060	\$240,655,478	\$0	\$0	\$342,787,538		\$342,787,538
FEDERAL SOURCES							
Surface Transportation Block Grant		\$72,557,544			\$72,557,544		\$72,557,544
Surface Transportation Block Grant Set-Aside (TAP)		\$3,922,332			\$3,922,332		\$3,922,332
Federal Lands Transportation Program Note: reduced \$1million per adjusts		\$3,896,000			\$3,896,000		\$3,896,000
Federal Lands Access Program Note: reduced \$41million per adjusts		\$97,568,000			\$97,568,000		\$97,568,000
Congestion Mitigation & Air Quality Program	\$20,000,000	\$25,266,256			\$45,266,256		\$45,266,256
National Highway Performance Program		\$18,000,000			\$18,000,000		\$18,000,000
Highway Safety Improvement Program Note reduced \$8 million per adjusts		\$24,870,859			\$24,870,859		\$24,870,859
FHWA Ferry Program Note reduced by \$6 million per adjusts				\$19,500,000	\$19,500,000		\$19,500,000
FTA 5307 Urbanized Area Formula Program	\$105,264,000				\$105,264,000		\$105,264,000
FTA 5310 Enhancement Mobility of Seniors and individuals with Disabilities	\$2,007,360				\$2,007,360		\$2,007,360
FTA 5311 Rural Area Formula Grants (NV)	\$30,082,000				\$30,082,000		\$30,082,000
FTA 5339 Bus and Bus Facilities	\$6,120,000				\$6,120,000		\$6,120,000
Federal Aviation Administration Airport Improvement Program	\$7,293,150				\$7,293,150		\$7,293,150
High Priority Projects Program		\$1,655,000			\$1,655,000		\$1,655,000
Total Federal	\$170,766,510	\$247,735,992	\$0	\$19,500,000	\$438,002,502		\$438,002,502
Total Local/State/Federal						\$87,053,139	\$1,491,229,428
						Non-Resident	Resident
						\$87,053,139	\$1,491,229,428
						% of Total	94.5%

There is very limited data currently available to assess the local government tax contributions from non-residents/visitors to the Tahoe Basin. This is an area that would benefit greatly from further research and data collection to refine these estimates. In addition, there may be interest in doing further research and data collection to develop an estimate of the state and federal contributions of non-residents to the transportation funding in the Tahoe Basin, although this will be a very challenging exercise that will likely show an extremely small impact.

In summary, it will be important to monitor the continuation of LOE from all of the RTP revenue sources to determine if there are any changes to the resident versus non-resident contribution ratio discussed above. In terms of focus, the TOT funding is the most important to monitor, since it makes up the majority of the non-resident contributions and is obviously contributed by non-residents. As a starting point, it is recommended that the new funding mechanism(s) achieve approximately a 95 percent non-resident and 5 percent resident contribution ratio to work towards a more equitable balance of who pays. As more precise data is collected in the after implementation, periodic adjustments to the various funding mechanisms can be made to ensure that an equitable balance between resident and non-resident contributions to the transportation system is maintained.

The Task 4 Memo will address the suggested entity to conduct the monitoring of funding LOE, and a process to do the monitoring of the current and future ratio of resident versus non-resident contributions to RTP funding.

Appendix E:

Public Listening Sessions

Public Listening Sessions

Three rounds of public listening sessions were held within the Tahoe Basin as a component of the ONE TAHOE work. All sessions were announced publicly through the TTD website, print and commercial media, as well as social media. Email blasts were also sent to individuals and organizations that were thought to have an interest.

In the first round of listening sessions, three events were conducted:

- South Shore: Tuesday, Jan. 29, 2019 – 4 p.m. to 7 p.m.
Tahoe Transportation District – 128 Market Street, Stateline, NV
- North Shore/Incline Village: Wednesday, Jan. 30, 2019 – 4 p.m. to 7 p.m.
Parasol Tahoe Community Foundation – 948 Incline Way, Incline Village
- North Shore/Tahoe City: Tuesday, Apr. 23, 2019 – 4 p.m. to 7 p.m.
Fairway community Center –330 Fairway Drive, Tahoe City

In the second round of listening sessions, two events were conducted:

- South Shore: Thursday, 26 Sep., 2019 – 4 p.m. to 7 p.m.
Tahoe Transportation District – 128 Market Street, Stateline, NV
- North Shore/Tahoe City: Tuesday, 24 Sep, 2019 – 4 p.m. to 7 p.m.
Fairway community Center –330 Fairway Drive, Tahoe City

In the third round of listening session, two events were conducted:

- South Shore: Tuesday, Dec. 3, 2019 2019 – 4 p.m. to 7 p.m.
Tahoe Transportation District – 128 Market Street, Stateline, NV
- North Shore/Tahoe City: Thursday, 14 Nov., 2019 – 4 p.m. to 7 p.m.
Fairway community Center –330 Fairway Drive, Tahoe City

The listening sessions were held in an open house format with multiple information stations. Each station addressed a specific topic area and was manned by one or more subject matter experts that could field questions and provide greater detail and perspective on the topic. At the listening session, attendees were invited to fill out comment cards or provide oral statements that were then entered into a comment card for them. Attendees were also offered the option of providing comments at a later time through the project web page.

The following are images of the display materials used at each of the three rounds of listening sessions.

Display Boards for Round One Listening Sessions:

29 Jan 2019 in Stateline, Nevada

and

30 Jan 2019 in Incline Village, Nevada



LAKE TAHOE'S RICH HISTORICAL STORY

Long before Mark Twain (Samuel Langhorne Clemens), camped on the shores of Lake Tahoe, Native people in the Sierra knew of and appreciated the beauty of this alpine lake in which you could see more than 100 feet into its 1644 foot depth. The alpine setting surrounded by the Sierra Nevada Range and its mountains, several of which reach more than 10,000 feet in height, draws millions of visitors traveling by vehicles each summer. To many, it is a spiritual site which reminds us of our humanity.

But for the course of history (e.g. settlement patterns), Lake Tahoe might have been a national park, like Yosemite. Regardless, Lake Tahoe is a national treasure, and one that needs to be protected.

There is only ONE TAHOE.

Let's work together to preserve the Lake and our Quality of Life.



Did you know that Lake Tahoe is the beautiful home to over 55,000 very fortunate year-round residents?

We must work together to keep Tahoe blue.



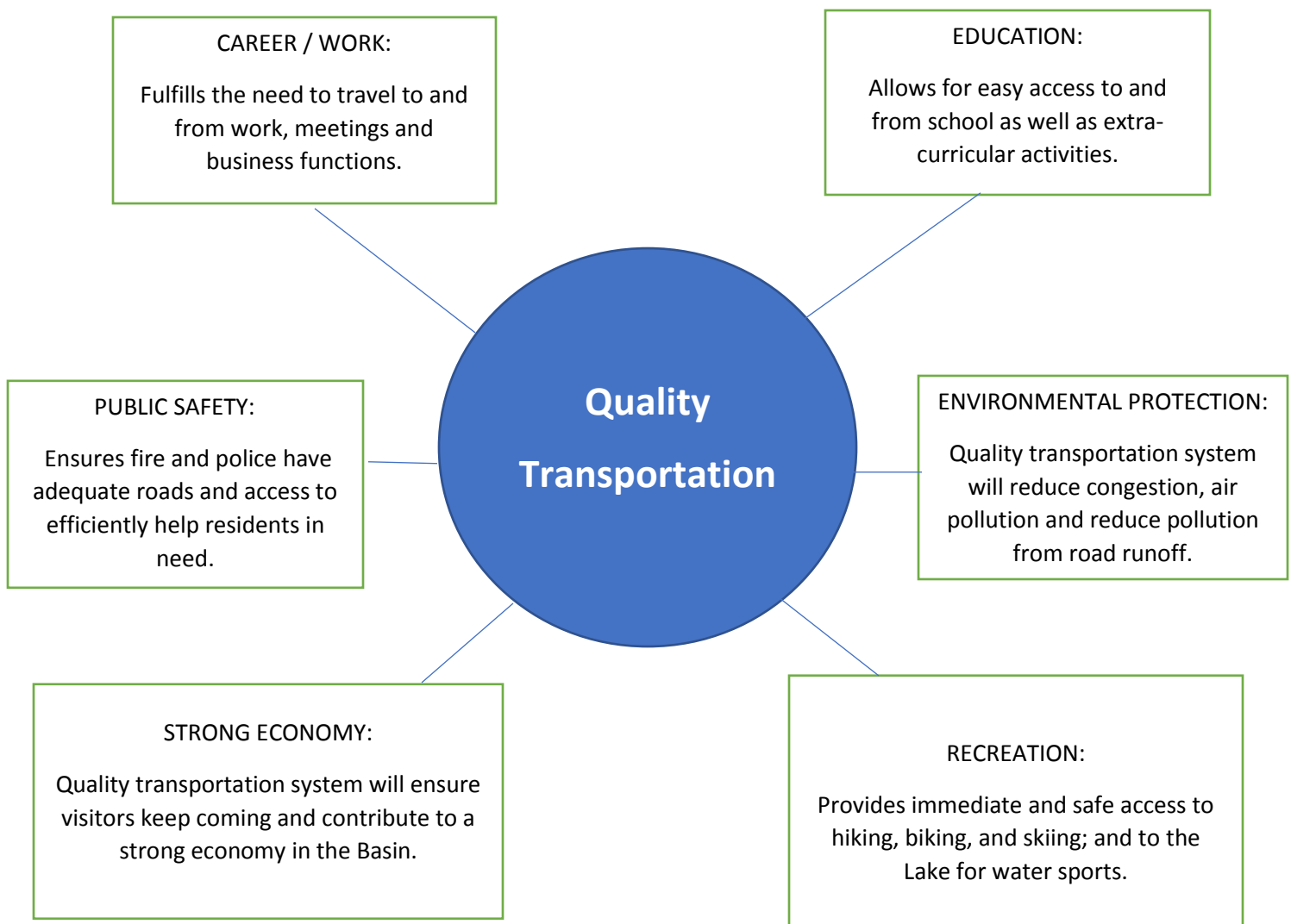
Tahoe is also enjoyed by more than 24 million visitors a year who come to experience its beauty, solitude, and recreational opportunities, and to recharge their spirits. This makes it even more important to be proactive regarding future transportation needs.



There is Only ONE Tahoe.

Let's work together to preserve the Lake and our Quality of Life.

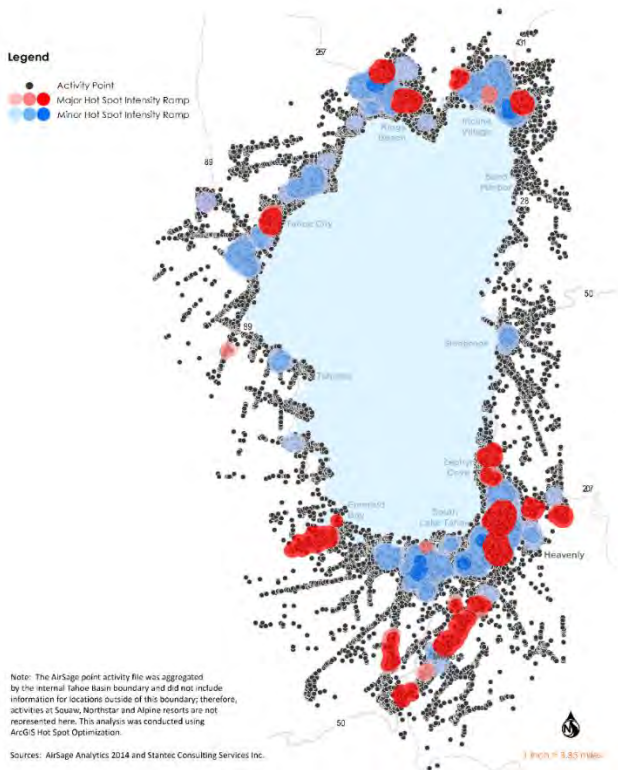
Quality of Life is of the utmost importance to all of us in and near the Lake Tahoe Basin, and good transportation is an essential part of our quality of life. In fact, it supports many of the values we deem important on a daily basis.



Challenges to the ONE TAHOE We Love.

We face many challenges to the quality of the Tahoe experience.

VEHICULAR TRAVEL



- 50+ million vehicle trips in/out/within the Basin each year.
- About 25% of these vehicle trips are by residents and 75% by visitors.
- Visitation could increase 25% by 2035 given current trends.



TRAFFIC CONGESTION



- Roadways and parking lots that work well during our quiet days are overwhelmed during the peak seasons, weekends, and special events.
- Congestion doesn't just waste time or increase pollution, it is dangerous! To drivers, pedestrians, and cyclists!
- Extreme environmental sensitivity and rugged topography make significant road expansion not viable for addressing congestion.

Challenges to the ONE TAHOE We Love.

We face many challenges to the quality of the Tahoe experience.

WATER POLLUTION



Urban stormwater is the largest source of pollution clouding Lake Tahoe's clear water. When it rains, or as snow melts, water flows down the streets and across the parking lots, picking up dirt, road sand, fine particles and oil, all of which flow directly into storm drains that lead to Lake Tahoe.

In fact, studies have confirmed that over 70% of the fine particles that end up clouding the Lake come from road debris and urban development.

Transportation planning is one of the key solutions to minimizing stormwater issues directly related to the clarity of Lake Tahoe.

INCREASED FIRE DANGER

Every year, areas throughout California and Nevada are devastated by wildfire. According to an article published last November in the *Tahoe Daily Tribune* regarding the Paradise, CA fire, local fire managers worry about the reality of situation here in Lake Tahoe. The consensus among fire professionals is that if it can happen in Paradise, CA, it can happen here. "There's no question about it," Jim Meston, president of the California Fire Chief's Association, said of the potential for a fire in the Tahoe Basin. "We have many, many similarities and some dis-similarities that are disadvantageous to us."

Like Paradise, the Tahoe Basin has the potential for bottlenecking in the event of a mass evacuation. Unlike Paradise, Tahoe has large timber, which can help fuel fires. It also has massive numbers of tourists who likely don't know the best evacuation routes. Well-planned, quality transportation is essential to managing the threat of wildfire devastation.



AIR POLLUTION



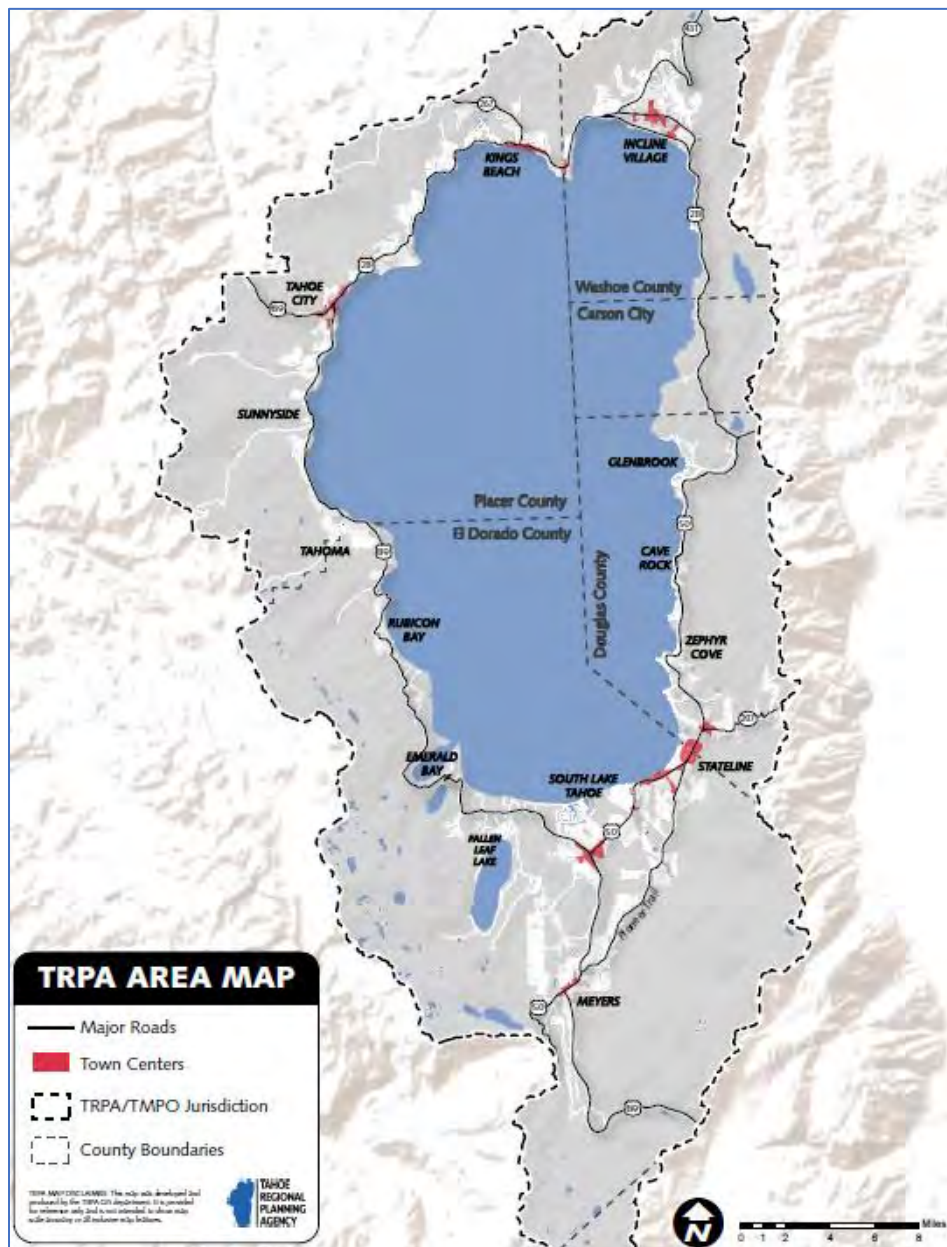
Scientists have long linked air quality to declining water clarity in Lake Tahoe through direct deposition of nitrogen, phosphorus and fine soil. Researchers estimate that 55% of nitrogen and 27% of phosphorus enter the Lake via atmospheric deposition.

Additionally, air pollution directly affects forest health and ozone layers in Lake Tahoe, especially in the summer. These pollutants, caused mostly by automobile traffic, have been found to be toxic to vegetation and trees.

In the Lake Tahoe Basin we face the challenge of multiple jurisdictions:

Federal lands (BLM/Forest Service), two states,
five counties (Washoe/Carson/Douglas/El Dorado/Placer),
one city, 16 GIDs and multiple communities.

- Our unusually large number of jurisdictions require extraordinary efforts for collaboration, cooperation, and coordination.
- Differing rules, regulations, and policies complicate building, operating, and maintaining a complete, integrated transportation system in the Basin.



Transforming Tahoe's Transportation

Linking Tahoe-Regional Transportation Plan

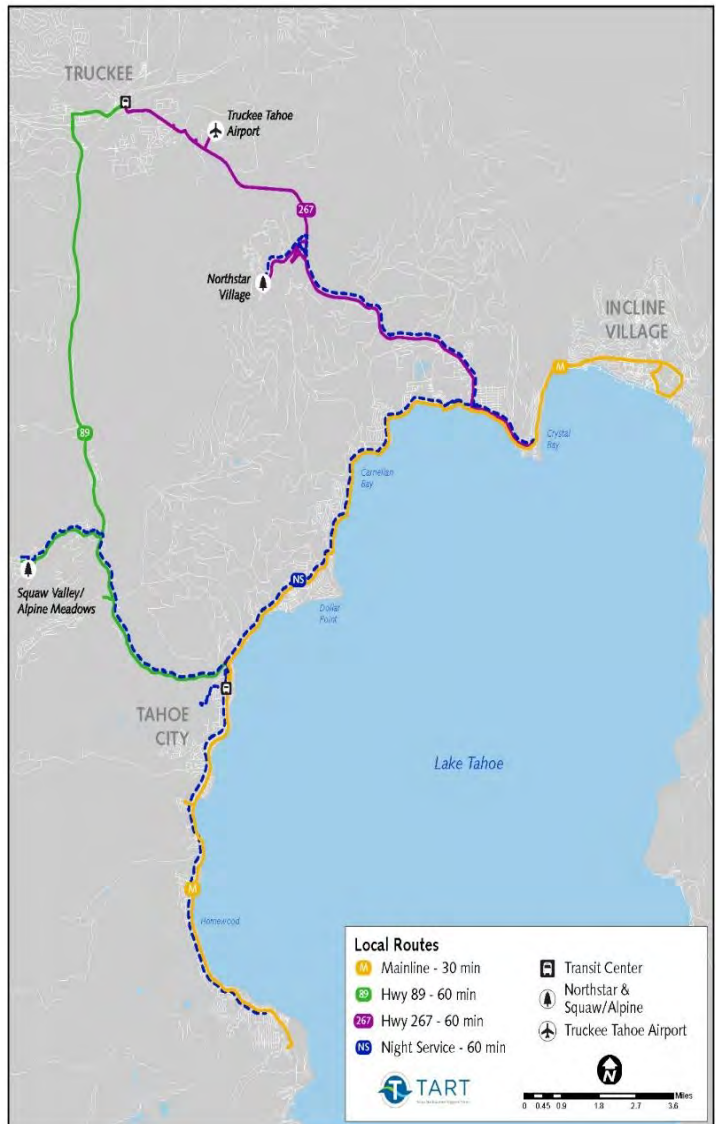
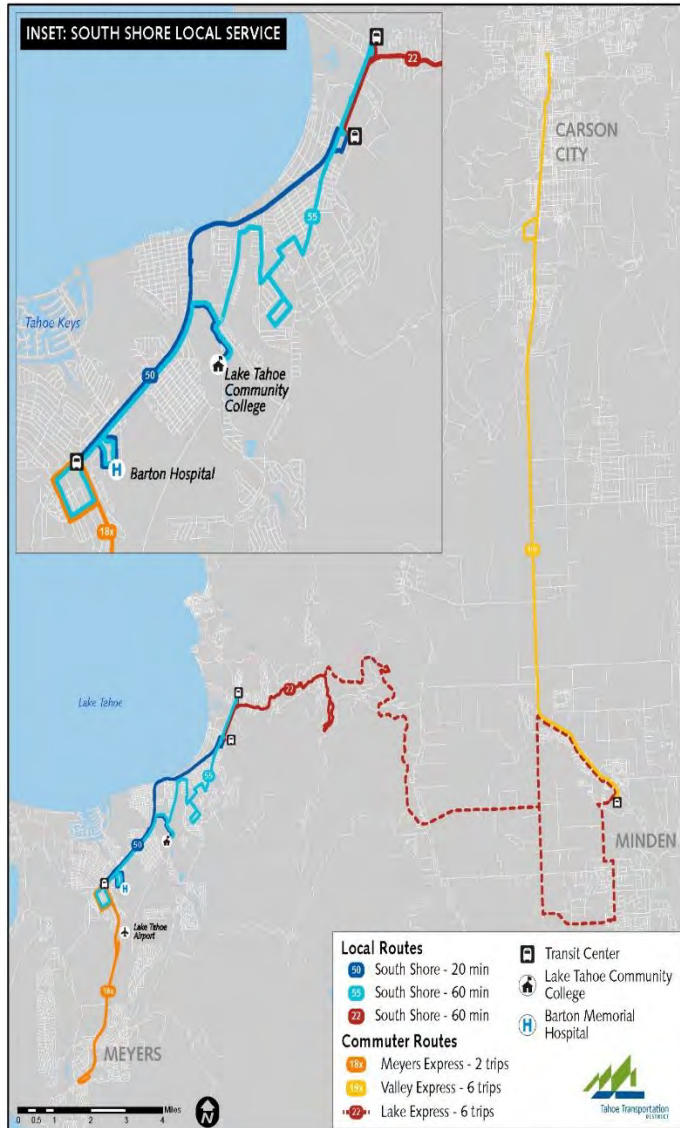
- **VISION:** A transportation system that prioritizes bicycling, walking and transit
- **WHO:** All road users
 - Everyday Tahoe – *resident local trips*
 - Discover Tahoe – *recreation trips within*
 - Visit Tahoe – *trips from outside the region*
- **WHAT:**
 - Expanding travel mode options
 - Spreading out times, places, and ways people travel
 - Providing environmentally innovative infrastructure
 - Improving safe and equitable access
- **HOW:** Through collaboration & partnerships





Transit Program

○ Existing:



○ Short-Mid Term:

- Cross-lake ferry
- Expand mobility hub network
- Sustainable fleet maintenance
- Expand local network and increase frequency
- Increase private sector involvement

○ Mid-Long Term:

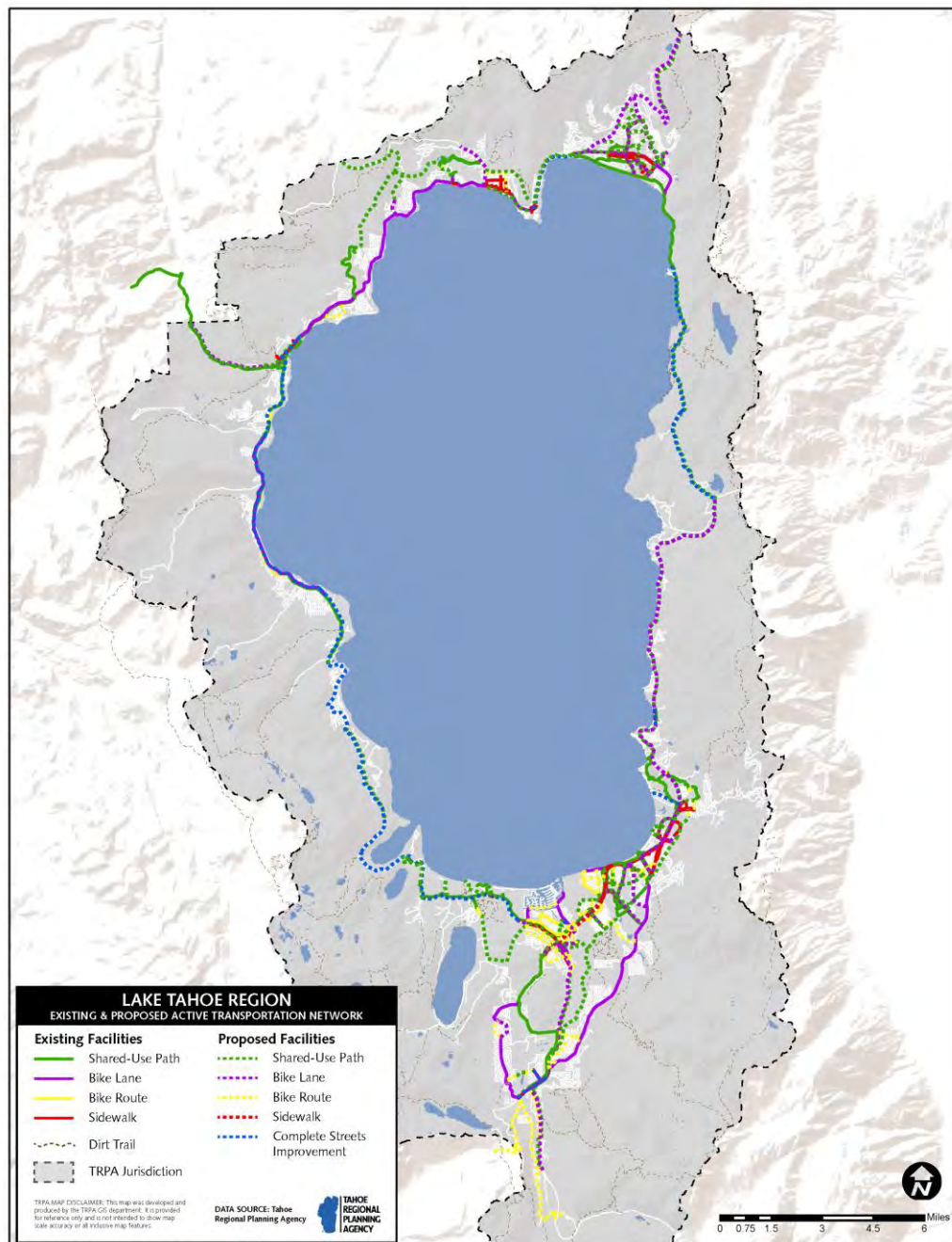
- New fleet maintenance yard
- Expand ferry operations
- Establish inter-regional connections



Active Transportation Infrastructure

Priorities:

- Completing the active transportation network
- Improving safety for bicyclists and pedestrians
- Coordinated project implementation
- Active Transportation encouragement and awareness





Technology and Pilot Projects

- Increase travel options (bikeshare & scootershare, ride-share)
- Signalization Upgrades
- Phone Applications
 - Regional Traffic Information
 - Emergency Preparedness
 - Real-Time Transit
 - Rideshare/Carpool
- Real Time Parking Info
- Next generation Transit

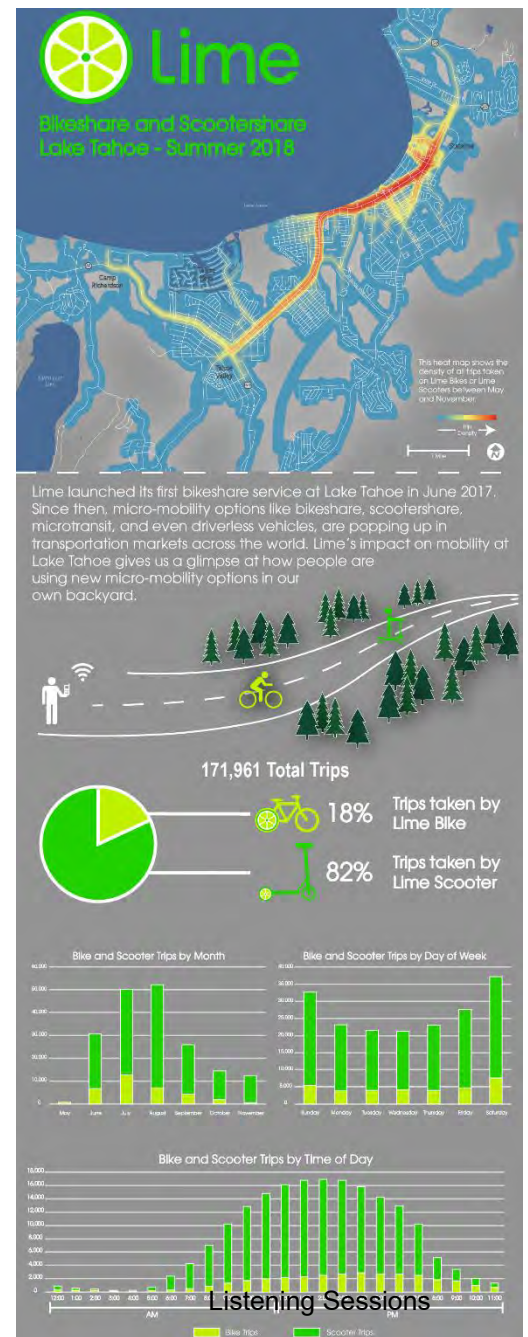
Phone Apps that help you avoid traffic:



More Travel Options:



Downtown – Micro Transit



ONE TAHOE: Transforming the Community's Transportation Vision to Reality.

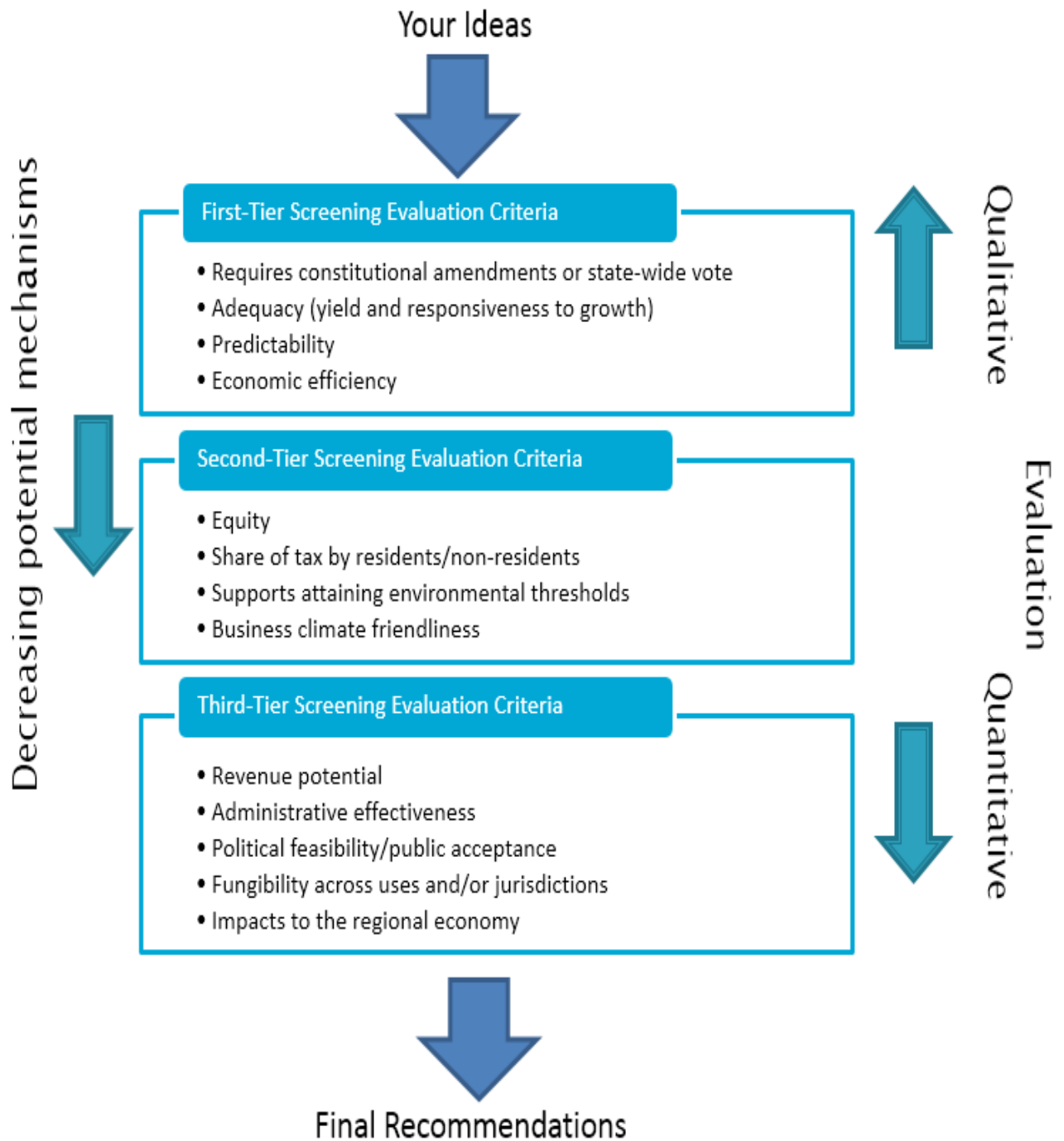
Tahoe Transportation Funding Shortfall

<u>2017-2040 Data</u>	<u>(2017\$)</u>
Projected Costs:	\$3.11 Billion
Projected Existing Revenues:	<u>\$1.58 Billion</u>
Projected Shortfall:	\$1.53 Billion

Bottom Line:

- We need approximately \$1.53 billion (2017\$) in new revenues over the next 23 years to implement the vision in the Linking Tahoe Regional Transportation Plan.
- Annually this is about \$67 million/year.
- \$67 million/year is about 1 percent of the annual Tahoe Basin economic activity.
- Visitors account for about 75% of vehicle travel in/out/within the Tahoe Basin and residents about 25%; everyone should pay their fair share.
- All transportation revenues must be adjusted periodically to recover the loss of purchasing power due to inflation.

We need *your* input and ideas to help resolve revenue shortfall.



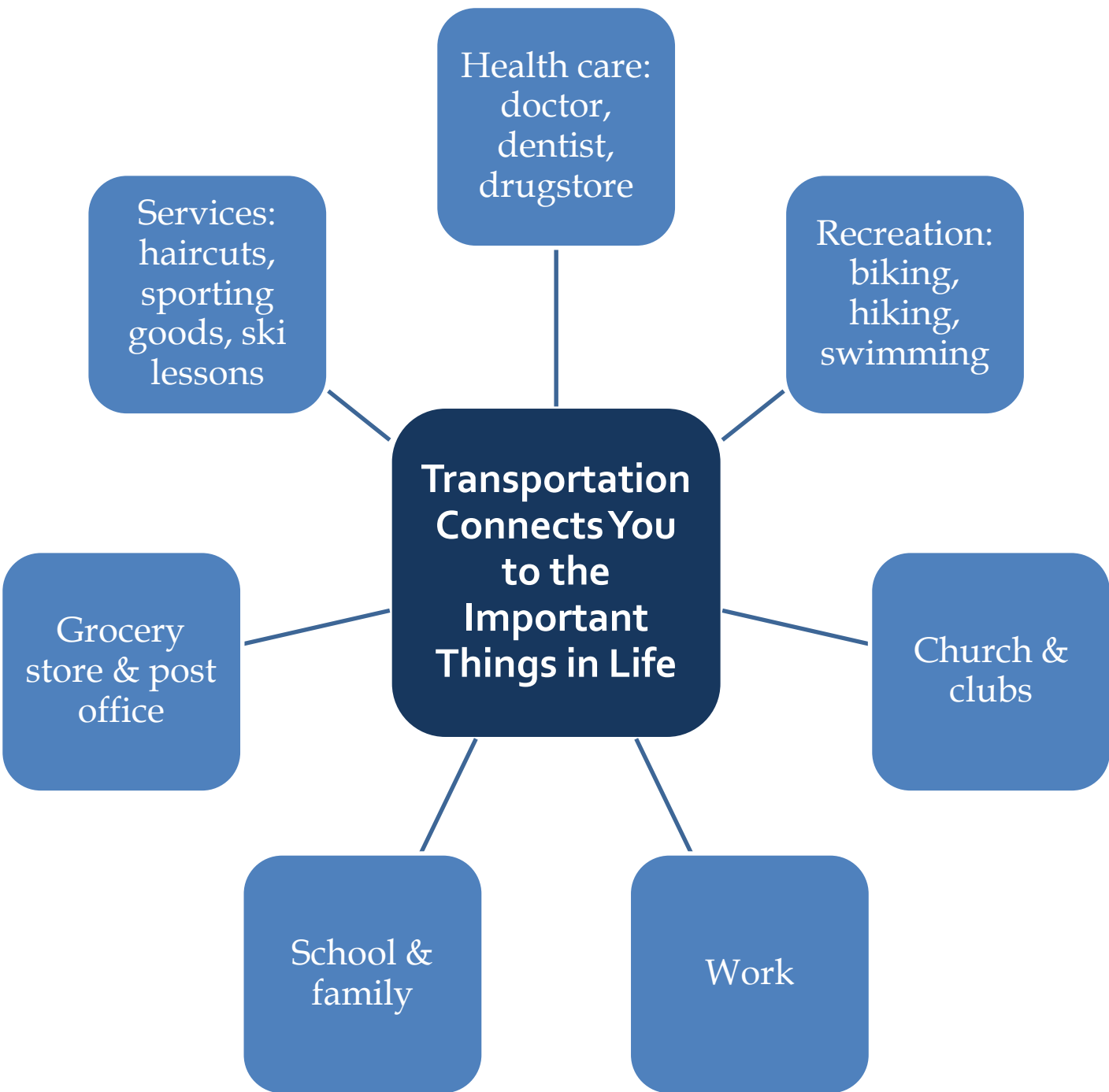
ENVISION A COMPLETE TRANSPORTATION SYSTEM

Imagine a complete transportation system serving the Lake Tahoe Basin. A system that offers you real alternatives to the car with expanded opportunities to use transit, walk, bike, or ride a ferry, not necessarily for every trip, but where and when it works. A system that offers visitors choices for traveling to Lake Tahoe from home without having to use a car. Many successful destination communities already have these choices. Why don't we?

For over 40 years, the solutions have been known. They have been identified in successive [Regional Transportation Plans](#) and policies for years. As the major urban areas outside Tahoe continue to grow and future generations continue to want to enjoy the Tahoe area, it is time to finish putting the resources in place that will make the community's transportation vision a reality.

A transportation system encompasses residents' ability to arrive safely to work, school, stores and amenities; it is reliable and convenient. Visitors need and want an enjoyable experience, enhancing the quality of their visit in addition to safety, convenience and reliability. Businesses need a system that brings supplies, materials, products, employees and customers to and from their establishments in a timely manner.





Transportation is Fundamental to Your Quality of Life!

Please visit our webpage at ONETAHOE.org and provide your thoughts and ideas or fill-out a card here!

OFFER YOUR PRIVATE INPUT

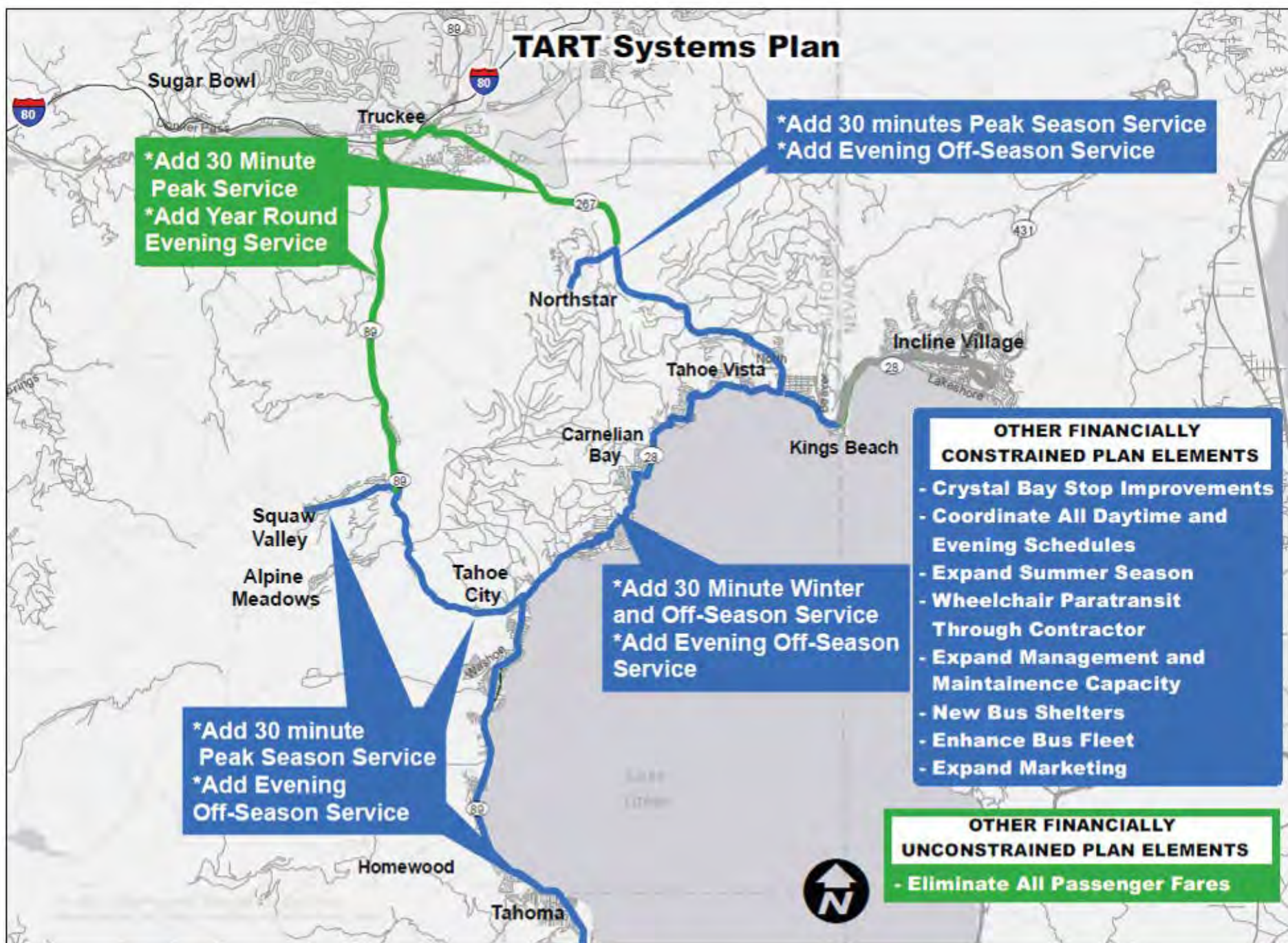
In putting together a plan to provide complete funding for the community's enhanced regional Lake Tahoe Transportation System, your ideas and suggestions are needed to develop a list for elected officials and leaders to consider. Working together, we will find equitable solutions.



Additional Display Boards for Round One Listening Session:

23 Apr 2019 in Tahoe City, California

TART Systems Plan





Display Boards for Round Two Listening Sessions:

24 Sep 2019 in Tahoe City, California

and

26 Sep 2019 in Stateline, Nevada

ONE TAHOE



A transportation funding initiative.

There is only ONE TAHOE ...



A unique place...



exhilaration...



rejuvenation...



recreation...

... But, the quality of the *“Tahoe experience”*, the Lake’s fragile *environment*, and our *economic prosperity* are threatened.

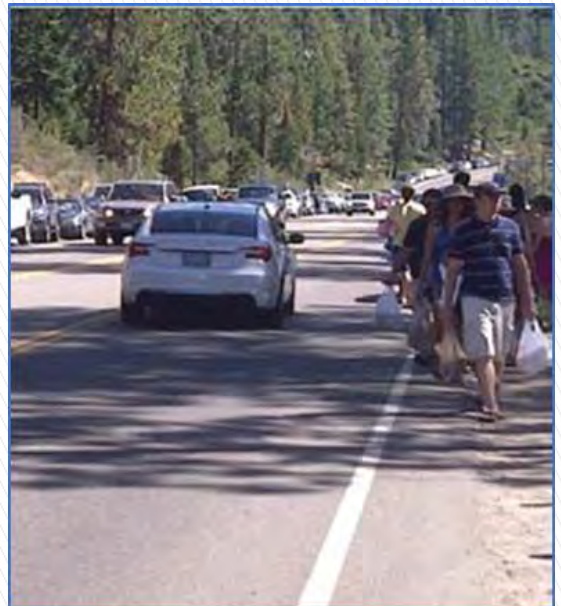
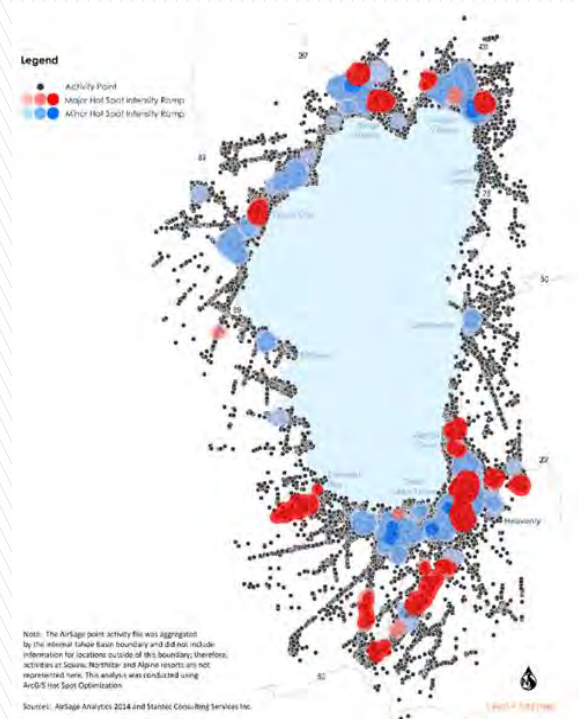
Transportation Challenges to Lake Tahoe

Travel patterns:

Typical community travel: work, shopping, school, recreation *but*, overlain with tremendous influxes of vehicles during peak seasons, holidays, and special events.

Dependence upon vehicular travel:

- 50+ million vehicle trips into/out of/within the Basin annually.
- 75% of vehicular trips by visitors; 25% by residents.
- 42% of visits are day trips.
- 58% of visits are 4+ days.
- Could see 25% increase in visitation by 2035 *if* the quality of experience is sustained.



Transportation Challenges to Lake Tahoe

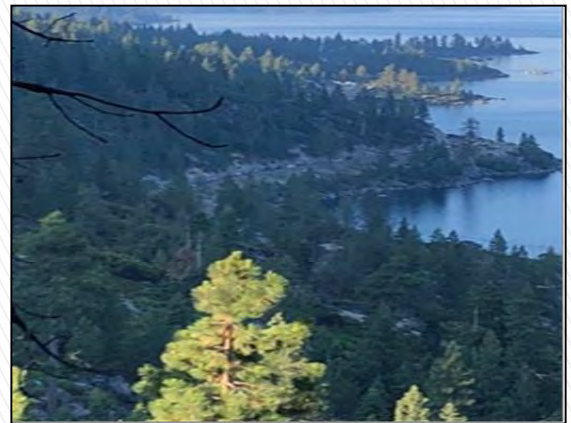
Roadway and parking lot congestion causes:

- Unsafe conditions for drivers, pedestrians, and cyclists.
- Water pollution—declining lake clarity.
- Air pollution.
- Fire danger—climate change and evacuation issues.



Significantly mitigating congestion by adding additional road capacity is not an option due to:

- Extreme environmental sensitivity.
- High costs for construction and land.
- Lack of alternative routes requires keeping roads open during construction.



Air pollution directly affects water quality:

- Scientists have long linked air quality to declining water clarity in Lake Tahoe through direct deposition of nitrogen, phosphorus and fine soil.
- Air pollution also directly affects forest health and ozone layers, especially in the summer months. These pollutants, caused mostly by automobile traffic, have been found to be toxic to vegetation and trees.



Transportation Challenges to Lake Tahoe

Water Pollution



- Urban stormwater is the *largest* source of pollution clouding Lake Tahoe's clear water.
- Rain and snow melt flows across streets and parking lots picking up dirt, road sand, fine particles and oil – all which go into storm drains that lead into Lake Tahoe.
- Studies confirm that *over 70%* of fine particles entering the lake come from road debris and urban development.
- Transportation improvements offer a *key opportunity* for minimizing stormwater impacts to the clarity of Lake Tahoe.

Increased Fire Danger

- Every year, areas in California and Nevada are devastated by wildfire.
- According to an article published in the *Tahoe Daily Tribune* regarding the Paradise, CA fire, local fire managers worry about the reality of the situation here in Lake Tahoe – the consensus is, if it can happen in Paradise, it can happen here.
- “There’s no question about it,” Jim Meston, president of the CA Fire Chief’s Association, said of the potential for a fire in the Tahoe Basin. “We have many, many similarities and some dissimilarities that are disadvantageous to us.”
- Like Paradise, the Tahoe Basin has the potential for bottlenecking in the event of a mass evacuation.
- Unlike Paradise, Tahoe has large timber which can help fuel fires; and also massive numbers of tourists who likely do not know the best evacuation routes.



Well-planned, quality transportation is essential to managing the threat of wildfire devastation.

Listening Sessions

The solution has been known for decades.



A community vision for a complete transportation system.

The Community's Transportation Vision

Developed over decades through extensive public process and input with partners.



Articulated in successive transportation plans.



A transportation system offering realistic alternatives to the car:



**Not for every trip, but
where and when these
alternatives work!**

What is keeping the vision from becoming a reality?

A substantial shortfall in financial resources.

Tahoe Transportation Funding Shortfall

- | <u>2017-2040 Data</u> | <u>(2017\$)</u> |
|------------------------------|------------------------|
| Projected Costs: | \$3.11 Billion |
| Projected Existing Revenues: | <u>\$1.58 Billion</u> |
| Projected Shortfall: | \$1.53 Billion |
- ▶ **O&M accounts for about 62% of total costs**
 - ▶ **Shortfall \$67 million/year; 1% of basin economic activity**
 - ▶ **Shortfall investments**
 - \$1.035 billion in transit/water ferries/rail
 - \$366 million in streets, bicycle and pedestrian facilities
 - \$110 million in communications and technology
 - \$18 million in transit oriented development

To sustain a truly functional, integrated transportation system, this level of commitment will have to continue beyond 2040.

Purpose of the ONE TAHOE initiative

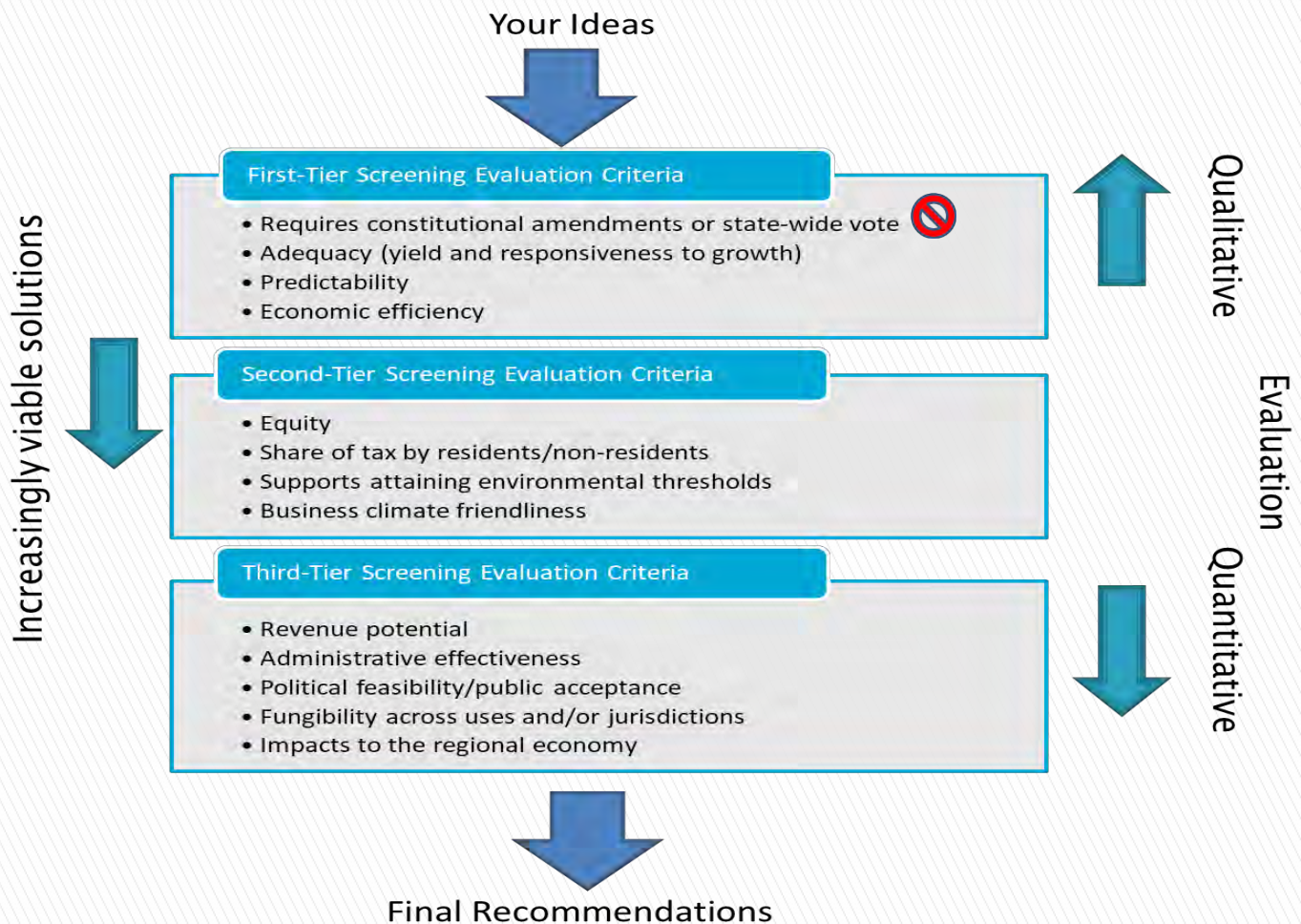


To take significant next steps towards filling the transportation funding shortfall in the Lake Tahoe Basin through 2040 and beyond.



Screening process and evaluation criteria:

Ideas gathered from public, elected officials, agencies, business, and stakeholders



Your suggested ideas for transportation funding:

Listed verbatim no priority, viability, etc.

1. Sales tax
2. Income tax
3. Property tax
4. Fuel taxes
5. Gross receipts tax
6. Employee tax
7. New sustained federal funding
8. New sustained State of Nevada funding
9. New sustained State of California funding
10. New sustained funding from each county general fund
11. Cordon pricing
12. VMT fee for travel in basin
13. Special district such as a Transportation GID
14. Tolling
15. Joint Powers Authority (JPA)
16. Zoned “basin transportation fee”
17. Tahoe Transportation Fee collected with vehicle registration fees
18. Convert all parking in basin to paid parking
19. Developer impact fees
20. Hourly transportation user fee for time spent within basin
21. Congestion pricing
22. Increased transit fares
23. Basin entry fee
24. Vacancy tax
25. Transient occupancy tax (TOT)
26. Rental car fees
27. Road utility

Tier 1 screening

Primary focus: Elimination of mechanisms

Four criteria:

- Does idea require NV or CA *constitutional amendments* or mandatory *statewide votes* of the people? If so, a fatal flaw!
- Can mechanism generate *adequate* gross revenue at reasonable rates?
- Is the revenue stream *predictable* so that the system can be sustained?
- Does the mechanism have a direct *economic* link to transportation that encourages *efficient* use of the system?

Summary Tier 1 screening results:

Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/No-go
1	Sales tax	Pass					No-go*
2	Income tax	Fail					No-go
3	Property tax	Pass					No-go
4	Local fuel taxes	Pass					No-go
5	Gross receipts tax	Pass					Go
6	Employee tax	Pass					Go
7	New federal funding	Pass					No-go
8/9	New NV/CA state funding	Pass					No-go
10	New city/county general funds	Pass					No-go*
11/23	Cordon pricing/basin entry fee	Pass					Go
12	VMT fee in basin	Pass					Go
13/27	Transportation Utility (Special District)	Pass					Go
14	Tolling	Pass					Go
15	Joint Powers Authority	Pass	Governance structure: may be considered for final recommended package if advantageous				No-go
16/20	Zoned transportation user fee	Pass					Go
17	Transportation fee collected with vehicle registration	Pass					No go
18	Paid parking	Pass					No go*
19	Developer impact fees	Pass					No go*
21	Congestion pricing	Pass	Applicable to structure of multiple mechanisms may be considered for final recommended package				No-go
22	Increased transit fares	Pass					No go
24	Vacancy tax	Pass					Go
25	Transient occupancy tax	Pass					Go
26	Rental car fees	Pass					No-go

*Not sufficiently robust for a regional source but may be useful for addressing local needs
E-36 | Page Listening Sessions























































Tier 2 screening

Nine candidates passed from Tier 1 screening to Tier 2

Four criteria:

- Is the mechanism *equitable* to groups of differing income?
- Do basin *residents* and *non-residents* reasonably *share* the burden?
- Could the mechanism encourage behavior that *supports attaining Environmental Thresholds?*
- Would the mechanism be *perceived as business friendly?*

Summary Tier 2 screening results:

Item	Description	Tier 1 summary rating	Equity (2)	Share paid by out-of-basin v. in-basin residents (2)	Supports attaining environmental thresholds (3)	Business climate friendliness (2)	Tier 2 summary rating	Go/ No go
5	Gross receipts tax							No go*
6	Employee payroll tax							No go*
11	Cordon pricing/basin entry fee							Go
12	Vehicle miles traveled (VMT) fee							Go
13	Transportation utility special district							No go*
14	Tolling							Go
16	Zoned transportation user fee							Go
24	Vacancy tax							Go
26	Increased transient occupancy tax							No-go

*Mechanism may be considered for inclusion in a final recommended package if it is useful to address resident versus non-resident equity or other factors.

Please, give us your input!

We want to know:

- Do you agree there is a transportation problem?
- If so, is it important to fix it?
- If you don't like these funding ideas, what are your specific concerns?
- Are there other ideas that you think should be considered?
- Should visitors be a part of the solution?
- What is the best mechanism to capture visitor contributions?
- Is not fixing our transportation problem acceptable?

To fix this problem, we must reach consensus!

Next steps

- Incorporate comments and suggestions on Tiers 1 and 2 screening into process.
- Tier 3 screening.
- Continuing outreach and communication.
- Present results of Tier 3 screening and recommendations (end of 2019).



Please come join us!
OneTahoe.org

Display Boards for Round Three Listening Sessions:

14 Nov 2019 in Tahoe City, California

and

3 Dec 2019 in Stateline, Nevada

ONE TAHOE



A transportation funding initiative.

There is only ONE TAHOE...



A unique place...



exhilaration...



rejuvenation...



recreation...

. . . But, the quality of the *“Tahoe experience”*, the Lake’s fragile *environment*, and our *economic prosperity* are threatened.

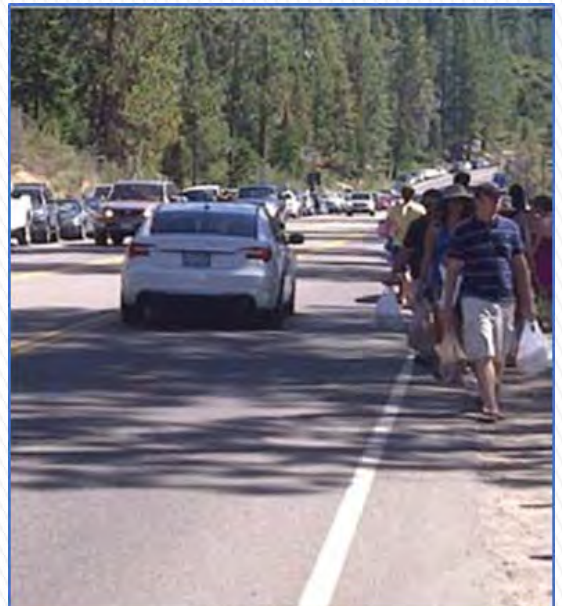
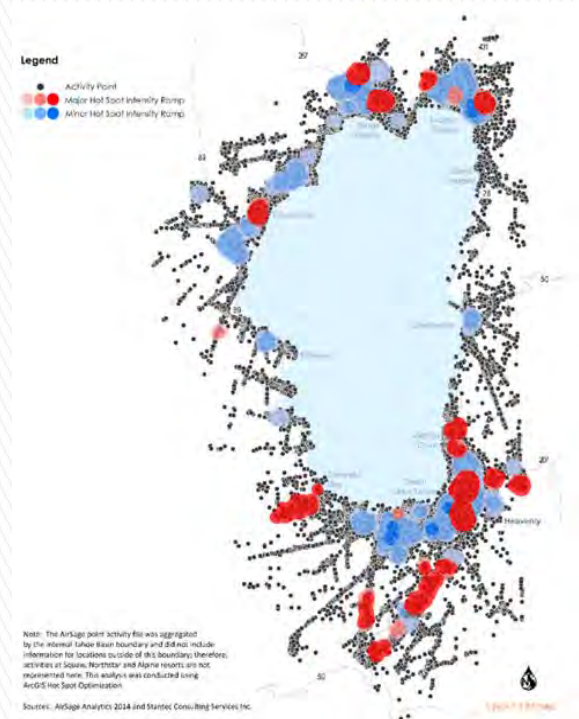
Transportation Challenges to Lake Tahoe

Travel patterns:

Typical community travel: work, shopping, school, recreation *but*, overlain with tremendous influxes of vehicles during peak seasons, holidays, and special events.

Dependence upon vehicular travel:

- 50+ million vehicle trips into/out of/within the Basin annually.
- 75% of vehicular trips by visitors; 25% by residents.
- 42% of visits are day trips.
- 58% of visits are 4+ days.
- Could see 25% increase in visitation by 2035 *if* the quality of experience is sustained.



Transportation Challenges to Lake Tahoe

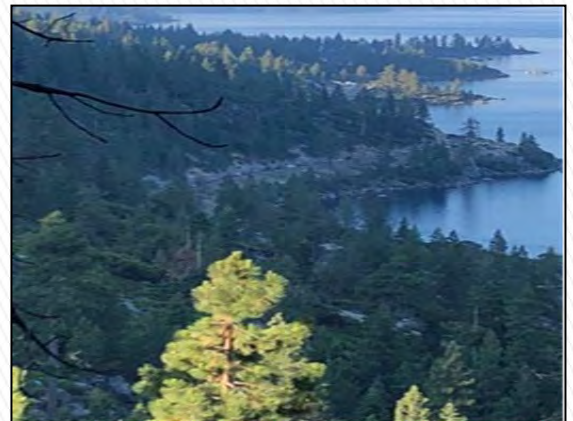
Roadway and parking lot congestion causes:

- Unsafe conditions for drivers, pedestrians, and cyclists.
- Water pollution—declining lake clarity.
- Air pollution.
- Fire danger—climate change and evacuation issues.



Significantly mitigating congestion by adding additional road capacity is not an option due to:

- Extreme environmental sensitivity.
- High costs for construction and land.
- Lack of alternative routes requires keeping roads open during construction.



Air pollution directly affects water quality:

- Scientists have long linked air quality to declining water clarity in Lake Tahoe through direct deposition of nitrogen, phosphorus and fine soil.
- Air pollution also directly affects forest health and ozone layers, especially in the summer months. These pollutants, caused mostly by automobile traffic, have been found to be toxic to vegetation and trees.



Transportation Challenges to Lake Tahoe

Water Pollution



- Urban stormwater is the *largest* source of pollution clouding Lake Tahoe's clear water.
- Rain and snow melt flows across streets and parking lots picking up dirt, road sand, fine particles and oil – all which go into storm drains that lead into Lake Tahoe.
- Studies confirm that *over 70%* of fine particles entering the lake come from road debris and urban development.
- Transportation improvements offer a *key opportunity* for minimizing stormwater impacts to the clarity of Lake Tahoe.

Increased Fire Danger

- Every year, areas in California and Nevada are devastated by wildfire.
- According to an article published in the *Tahoe Daily Tribune* regarding the Paradise, CA fire, local fire managers worry about the reality of the situation here in Lake Tahoe – the consensus is, if it can happen in Paradise, it can happen here.
- “There’s no question about it,” Jim Meston, president of the CA Fire Chief’s Association, said of the potential for a fire in the Tahoe Basin. “We have many, many similarities and some dissimilarities that are disadvantageous to us.”
- Like Paradise, the Tahoe Basin has the potential for bottlenecking in the event of a mass evacuation.
- Unlike Paradise, Tahoe has large timber which can help fuel fires; and also massive numbers of tourists who likely do not know the best evacuation routes.



Well-planned, quality transportation is essential to managing the threat of wildfire devastation.

Listening Sessions

The solution has been known for decades.



A community vision for a complete transportation system.

The Community's Transportation Vision

Developed over decades through extensive public process and input with partners.



Articulated in successive transportation plans.



A transportation system offering realistic alternatives to the car:



**Not for every trip, but
where and when these
alternatives work!**

What is keeping the vision from becoming a reality?

A substantial shortfall in financial resources.

Tahoe Transportation Funding Shortfall

- | ▶ <u>2017-2040 Data</u> | <u>(2017\$)</u> |
|--------------------------------|------------------------|
| Projected Costs: | \$3.11 Billion |
| Projected Existing Revenues: | <u>\$1.58 Billion</u> |
| Projected Shortfall: | \$1.53 Billion |
-
- ▶ **O&M accounts for about 62% of total costs**
 - ▶ **Shortfall \$67 million/year; 1% of basin economic activity**
 - ▶ **Shortfall investments**
 - \$1.035 billion in transit/water ferries/rail
 - \$366 million in streets, bicycle and pedestrian facilities
 - \$110 million in communications and technology
 - \$18 million in transit oriented development

To sustain a truly functional, integrated transportation system, this level of commitment will have to continue beyond 2040.

Purpose of the ONE TAHOE initiative

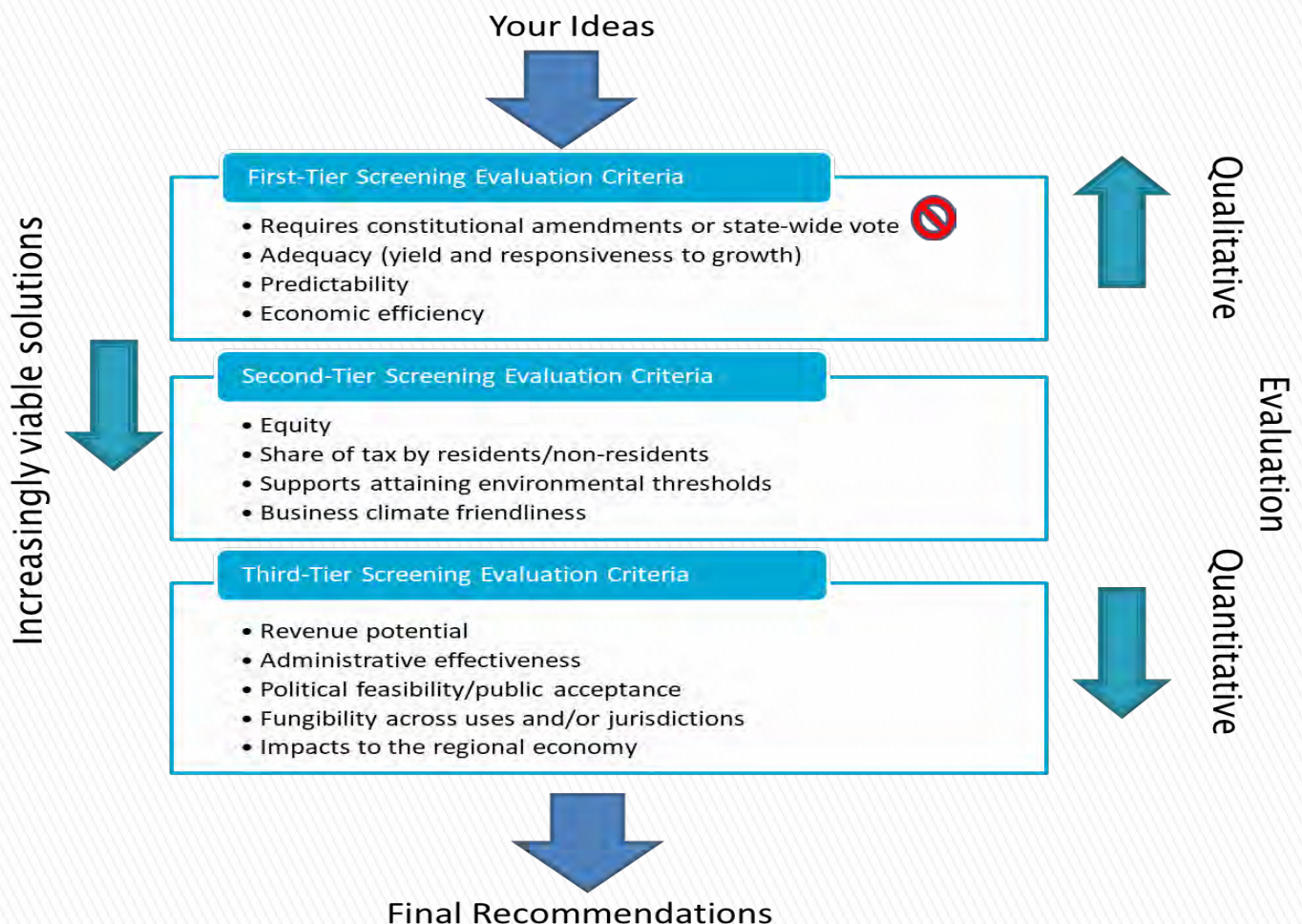


To take significant next steps towards filling the transportation funding shortfall in the Lake Tahoe Basin through 2040 and beyond.



Screening process and evaluation criteria:

Ideas gathered from public, elected officials, agencies, business, and stakeholders



Your suggested ideas for transportation funding:

Listed verbatim no priority, viability, etc.

1. Sales tax
2. Income tax
3. Property tax
4. Fuel taxes
5. Gross receipts tax
6. Employee tax
7. New sustained federal funding
8. New sustained State of Nevada funding
9. New sustained State of California funding
10. New sustained funding from each county general fund
11. Cordon pricing
12. VMT fee for travel in basin
13. Special district such as a Transportation GID
14. Tolling
15. Joint Powers Authority (JPA)
16. Zoned “basin transportation fee”
17. Tahoe Transportation Fee collected with vehicle registration fees
18. Convert all parking in basin to paid parking
19. Developer impact fees
20. Hourly transportation user fee for time spent within basin
21. Congestion pricing
22. Increased transit fares
23. Basin entry fee
24. Vacancy tax
25. Transient occupancy tax (TOT)
26. Rental car fees
27. Road utility

Tier 1 screening

Primary focus: Elimination of mechanisms

Four criteria:

- Does idea require NV or CA *constitutional amendments* or mandatory *statewide votes* of the people? If so, a fatal flaw!
- Can mechanism generate *adequate* gross revenue at reasonable rates?
- Is the revenue stream *predictable* so that the system can be sustained?
- Does the mechanism have a direct *economic* link to transportation that encourages *efficient* use of the system?

Summary Tier 1 screening results:

Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/No-go
1	Sales tax	Pass					No-go*
2	Income tax	Fail					No-go
3	Property tax	Pass					No-go
4	Local fuel taxes	Pass					No-go
5	Gross receipts tax	Pass					Go
6	Employee tax	Pass					Go
7	New federal funding	Pass					No-go
8/9	New NV/CA state funding	Pass					No-go
10	New city/county general funds	Pass					No-go*
11/23	Cordon pricing/basin entry fee	Pass					Go
12	VMT fee in basin	Pass					Go
13/27	Transportation Utility (Special District)	Pass					Go
14	Tolling	Pass					Go
15	Joint Powers Authority	Pass	Governance structure: may be considered for final recommended package if advantageous				No-go
16/20	Zoned transportation user fee	Pass					Go
17	Transportation fee collected with vehicle registration	Pass					No go
18	Paid parking	Pass					No go*
19	Developer impact fees	Pass					No go*
21	Congestion pricing	Pass	Applicable to structure of multiple mechanisms may be considered for final recommended package				No-go
22	Increased transit fares	Pass					No go
24	Vacancy tax	Pass					Go
25	Transient occupancy tax	Pass					Go
26	Rental car fees	Pass					No-go

*Not sufficiently robust for a regional source but may be useful for addressing local needs
E-55 | Page Listening Sessions















Tier 2 screening

Nine candidates passed from Tier 1 screening to Tier 2

Four criteria:

- Is the mechanism *equitable* to groups of differing income?
- Do basin *residents* and *non-residents* reasonably *share* the burden?
- Could the mechanism encourage behavior that *supports attaining Environmental Thresholds?*
- Would the mechanism be *perceived as business friendly?*

Summary Tier 2 screening results:

Item	Description	Tier 1 summary rating	Equity (2)	Share paid by out-of-basin v. in-basin residents (2)	Supports attaining environmental thresholds (3)	Business climate friendliness (2)	Tier 2 summary rating	Go/ No go
5	Gross receipts tax							No go*
6	Employee payroll tax							No go*
11	Cordon pricing/basin entry fee							Go
12	Vehicle miles traveled (VMT) fee							Go
13	Transportation utility special district							No go*
14	Tolling							Go
16	Zoned transportation user fee							Go
24	Vacancy tax							Go
26	Increased transient occupancy tax							No-go

*Mechanism may be considered for inclusion in a final recommended package if it is useful to address resident versus non-resident equity or other factors.

Tier 3 screening

Five candidates passed from Tier 2 screening to Tier 3

Tier 3 screening criteria:

- Can the mechanism generate *adequate gross revenue*?
- What is the *cost and ease of administering and collecting* the revenue?
- How *acceptable* will the mechanism be to the *public and political leaders*?
- Is the revenue *fungible* so that it can be used *across modes, activities, and political jurisdictions*?
- What are the *impacts* of the revenue on the *regional economy*?









































Tier 3 mechanisms

- ▶ **Cordon pricing/basin entry:**
 - Individuals/groups entering basin by vehicle would pay a transportation fee for each day in the basin.
 - Different fee rates for commuters and residents.
 - Billing address for each individual/group arriving by vehicle captured with license plate readers (LPR) or transponders (“open road collection” i.e., no stops required).
- ▶ **Vehicle miles traveled (VMT) fee:**
 - Vehicles traveling in basin would be charged a fee for each mile driven.
 - Different fee rates for commuters and residents.
 - Would require installation of onboard equipment in every motor vehicle traveling in basin to allow “open road collection”.
- ▶ **Tolling:**
 - Basin divided into 6 toll zones.
 - Vehicles traveling into/within basin would be charged a toll for each toll zone entered.
 - Different fee rates for commuters and residents.
 - Billing addresses captured through LPR and transponders allowing “open road collection”.
- ▶ **Zoned transportation user fee:**
 - Master zone covering entire basin and six community transportation zones.
 - Non-resident individuals/groups entering basin by vehicle would pay a transportation fee for each day in the master zone.
 - “Residence” status and billing address determined from vehicle registration address.
 - Billing addresses captured through LPR and transponders allowing “open road collection”.
 - Different rates for non-resident commuters to address workforce impacts.
 - Resident households and businesses would pay a transportation fee based upon their community transportation zone.
 - Residential fees would be flat within a community zone.
 - Business fees would vary by trip generation.
 - Collection from household regardless of ownership, piggybacked on existing systems (e.g. water bills, sewer bills, etc.).
- ▶ **Vacancy tax:**
 - Tax vacant dwelling units in attempt to raise revenue and increase available housing stock.
 - Unique tax because its existence tends to reduce the number of taxable units.
 - New tax concept, recently enacted in Oakland, CA.
 - Vacancy tax concept being considered in City of South Lake Tahoe; objectives are increasing housing supply and reducing housing costs.

Tier 3 general considerations:

- Unique circumstances of basin residents: affordability, equitable share of burden, etc.
- Split of existing transportation funding burden 95% residents/5% non-residents.
- Ratings are relative one mechanism to another.
- Illustrative rates do not address socio-economic, demographic, or other potential subgroup issues other than commuters.
- Fees vs. taxes–transparency, flexibility, approvals.
- Assumed rates for all mechanisms would be adjusted annually to recover loss of purchasing power due to inflation.

Summary Tier 3 screening results:

Item	Description	Tier 1 summary rating	Tier 2 summary rating	Revenue potential (3)	Administrative effectiveness (1)	Political feasibility/public acceptance(2)	Fungibility across modes/uses/jurisdictions(3)	Impacts to regional economy (2)	Tier 3 summary rating
11/23	Cordon pricing/basin entry fee								
12	Vehicle miles traveled (VMT) fee								
14	Tolling								
16	Zoned transportation user fee								
24	Vacancy tax								

Illustrative* fee rates (2019\$)

- ▶ Cordon pricing/basin entry:
 - Non-resident, non-commuter individuals/groups \$4.35 per day.
 - Non-resident commuters \$1.06 per day.
 - Resident households \$0.42 per day.
- ▶ Vehicle miles traveled (VMT) fee:
 - Non-resident, non-commuter vehicles \$0.30 per mile.
 - Resident and commuter vehicles \$0.04 per mile.
- ▶ Tolling:
 - Non-resident, non-commuter vehicles \$2.99 per toll zone.
 - Resident and commuter vehicles \$0.74 per toll zone.
- ▶ Zoned transportation user fee:
 - Non-resident, non-commuter groups: \$4.31 per day.
 - Non-resident commuters: \$1.06 per day.
 - Resident households: \$7.00 per month.
 - Resident businesses: \$71.00 per month (average).
- ▶ Vacancy tax per vacant dwelling unit:
 - \$3,912 (2019\$) initially.
 - Increasing each year to reach \$6,209 in 10th year.

* Planning level estimates based upon one scenario. May be subject to significant revisions based on subsequent public/political processes and decision making, and system implementation.

Please, give us your input!

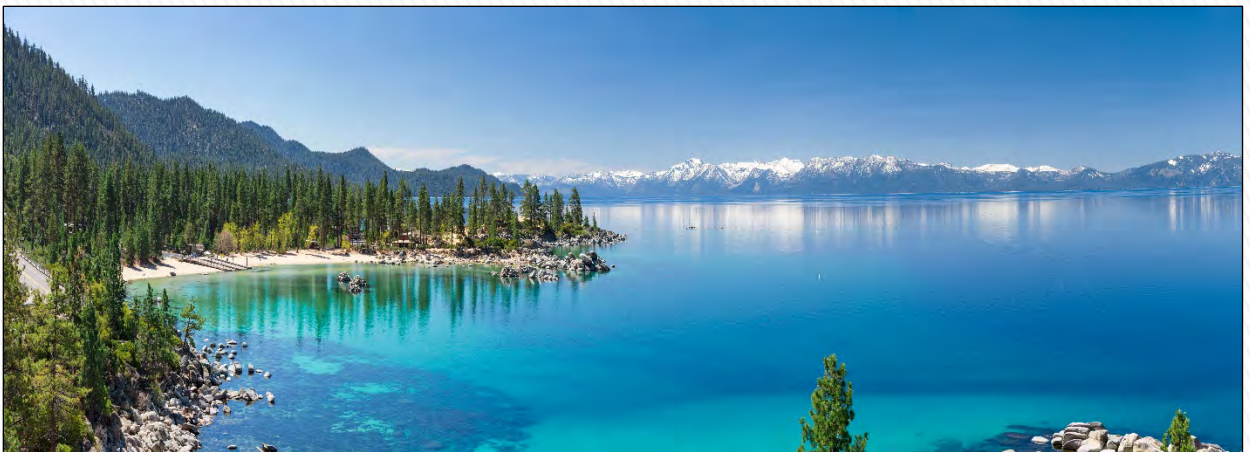
We want to know:

- Do you agree there is a transportation problem?
- If so, is it important to fix it?
- If you don't like these funding ideas, what are your specific concerns?
- Are there other ideas that you think should be considered?
- Should visitors be a part of the solution?
- What is the best mechanism to capture visitor contributions?
- Is not fixing our transportation problem acceptable?

To fix this problem, we must reach consensus!

Next steps

- Incorporate comments and suggestions on Tiers 1, 2, and 3 screening into process.
- Continuing outreach and communication.
- Draft recommendations on funding mechanism(s) package (end of 2019).



Please come join us!
OneTahoe.org

Appendix F:

Representative Briefing Materials

Public Listening Sessions

Three rounds of public listening sessions were held within the Tahoe Basin as a component of the ONE TAHOE work. All sessions were announced publicly through the TTD website, print and commercial media, as well as social media. Email blasts were also sent to individuals and organizations that were thought to have an interest.

In the first round of listening sessions, three events were conducted:

- South Shore: Tuesday, Jan. 29, 2019 – 4 p.m. to 7 p.m.
Tahoe Transportation District – 128 Market Street, Stateline, NV
- North Shore/Incline Village: Wednesday, Jan. 30, 2019 – 4 p.m. to 7 p.m.
Parasol Tahoe Community Foundation – 948 Incline Way, Incline Village
- North Shore/Tahoe City: Tuesday, Apr. 23, 2019 – 4 p.m. to 7 p.m.
Fairway community Center –330 Fairway Drive, Tahoe City

In the second round of listening sessions, two events were conducted:

- South Shore: Thursday, 26 Sep., 2019 – 4 p.m. to 7 p.m.
Tahoe Transportation District – 128 Market Street, Stateline, NV
- North Shore/Tahoe City: Tuesday, 24 Sep, 2019 – 4 p.m. to 7 p.m.
Fairway community Center –330 Fairway Drive, Tahoe City

In the third round of listening session, two events were conducted:

- South Shore: Tuesday, Dec. 3, 2019 2019 – 4 p.m. to 7 p.m.
Tahoe Transportation District – 128 Market Street, Stateline, NV
- North Shore/Tahoe City: Thursday, 14 Nov., 2019 – 4 p.m. to 7 p.m.
Fairway community Center –330 Fairway Drive, Tahoe City

The listening sessions were held in an open house format with multiple information stations. Each station addressed a specific topic area and was manned by one or more subject matter experts that could field questions and provide greater detail and perspective on the topic. At the listening session, attendees were invited to fill out comment cards or provide oral statements that were then entered into a comment card for them. Attendees were also offered the option of providing comments at a later time through the project web page.

The following are images of the display materials used at each of the three rounds of listening sessions.

Display Boards for Round One Listening Sessions:

29 Jan 2019 in Stateline, Nevada

and

30 Jan 2019 in Incline Village, Nevada

Additional Display Boards for Round One Listening Session:

23 Apr 2019 in Tahoe City, California

Display Boards for Round Two Listening Sessions:

24 Sep 2019 in Tahoe City, California

and

26 Sep 2019 in Stateline, Nevada

Display Boards for Round Three Listening Sessions:

14 Nov 2019 in Tahoe City, California

and

3 Dec 2019 in Stateline, Nevada

One-on-One and Small Group Briefings

Hundreds of people were briefed on the ONE TAHOE project through one-on-one and small group meetings during the ONE TAHOE project. These included local elected officials; local agency leadership and staff; state agency leaderships and staff; key legislators and staff the in Nevada and California legislatures; stakeholder groups such as business associations, chambers of commerce, citizen advisory boards, political groups, etc.; individual interested citizens and businesses. Briefing materials were customized for each presentation based upon the:

- Status of the ONE TAHOE work at the time of the briefing
- Level of existing knowledge of the person or groups being briefed regarding transportation issues in the Tahoe Basin and the ONE TAHOE project
- Needs and interests of the person or group being briefed
- Amount of time afforded the presenter

The following are representative of the briefing materials generally used at various times in the project.

Update to TTD Board Dec 2018

Tahoe Transportation Funding Initiative

*Update to the TTD Board
14 Dec 2018*

Topics to be covered

- ▶ Purpose of project
- ▶ Primary deliverables
- ▶ Major elements of the work plan
- ▶ Schedule
- ▶ Funding shortfall and how it was developed
- ▶ Screening process and evaluation criteria

Purpose of the project

To take significant next steps towards filling the transportation funding shortfall in the Lake Tahoe Basin through 2040

Primary deliverables

- ▶ A recommended package of one or more funding mechanisms best suited to meeting the shortfall
- ▶ Extensive and documented outreach and communication– ***“No one can say they didn’t have an opportunity to be heard.”***
- ▶ An action plan:
 - Additional communication and outreach needed to develop strategic consensus
 - Road map of public and legislative approvals for enabling legislation
 - Road map of public and legislative approvals for implementing legislation

Major elements of the work plan

- ▶ Define shortfall using current best available data
- ▶ Develop screening process and evaluation criteria
- ▶ Communication and outreach
 - Six public listening sessions in the basin
 - Three rounds of meetings (140+) with key stakeholders, agencies, political leaders, business groups, media, etc.
 - Two rounds of polling
 - Focus groups in NV and CA
 - Website
 - Social media
- ▶ Identify, screen, and evaluate potential funding mechanisms
- ▶ Develop recommended funding package and action plans

Stakeholder list

- ▶ State of Nevada–Governor
- ▶ State of Nevada–Senate Committee on Finance 7 members
- ▶ State of Nevada–Senate Committee on Transportation 5 members
- ▶ State of Nevada–Legislative Oversight Committee 6 members
- ▶ State of Nevada–Assembly Committee on Taxation 11 members
- ▶ State of Nevada–Assembly Committee on Transportation 11 members
- ▶ State of California–Governor
- ▶ State of California–Senate Committee on Finance 7 members
- ▶ State of California–Senate Committee on Transportation 13 members
- ▶ State of California Senate Rules committee–5 members
- ▶ State of California–Assembly Committee on Finance 10 members
- ▶ State of California–Assembly Committee on Transportation 14 members
- ▶ State of California Assembly Rules Committee–13 members
- ▶ Regional Transportation Commission of Washoe County, Nevada (MPO)
- ▶ Carson City, Nevada
- ▶ Carson Area Metropolitan Planning Organization (MPO)
- ▶ Douglas County, Nevada
- ▶ Nevada Department of Transportation
- ▶ USDA Forest Service–Region and LTBMU
- ▶ Placer County, California
- ▶ Placer County Transportation Planning Agency
- ▶ El Dorado County, California
- ▶ El Dorado County Transportation Commission

Stakeholder list

- ▶ City of South Lake Tahoe
- ▶ Nevada County, California
- ▶ Nevada County Transportation Commission
- ▶ Town of Truckee
- ▶ Tahoe Regional Planning Agency–14 members
- ▶ Tahoe Metropolitan Planning Organization
- ▶ Caltrans
- ▶ Truckee/ North Tahoe Transportation Management Association (TMA)
- ▶ South Shore TMA
- ▶ Western Nevada Development District
- ▶ Northern Nevada Development Authority
- ▶ Economic Development Authority of Western Nevada (EDAWN)
- ▶ League to Save Lake Tahoe
- ▶ Sierra Club
- ▶ Off-road vehicle organizations
- ▶ Nevada Taxpayers Association
- ▶ California Taxpayers Association
- ▶ North Lake Tahoe Resort Association
- ▶ Incline Village/Crystal Bay Visitors Bureau
- ▶ Incline Village/Crystal Bay Chamber of Commerce
- ▶ Lake Tahoe South Chamber of Commerce
- ▶ Lake Tahoe Visitors Authority
- ▶ Truckee Donner Chamber of Commerce

Stakeholder list

- ▶ Carson City Chamber of Commerce
- ▶ Carson City Convention and Visitors Authority
- ▶ Carson Valley Chamber of Commerce and Visitors Authority
- ▶ Laborer's Union NV
- ▶ Operating Engineers Union NV
- ▶ Laborer's Union CA
- ▶ Operating Engineers Union CA
- ▶ Squaw Valley
- ▶ North Star
- ▶ Heavenly Valley
- ▶ Reno–Sparks Convention and Visitors Authority
- ▶ Reno–Sparks Chamber of Commerce
- ▶ Sparks Chamber of Commerce
- ▶ Reno Gazette Journal
- ▶ Nevada Appeal
- ▶ Tahoe Mountain News
- ▶ North Lake Tahoe Bonanza
- ▶ Sierra Sun
- ▶ Tahoe Daily Tribune
- ▶ Major South Shore Hotels and Casinos
- ▶ Major North Shore Hotels and Casinos

Project schedule–major activities

- ▶ Define shortfall – 14 Dec 2018
- ▶ Develop screening process–14 Dec 2018
- ▶ Communication and outreach
 - Round 1: Dec 2018–Feb 2019
 - Round 2: Apr 2019–Jun 2019
 - Round 3: Jul 2019–Sep 2019
- ▶ Identify/screen/evaluate revenue mechanisms: Dec 2018–Aug 2019
- ▶ Funding recommendations and action plans: Sep 2019–Dec 2019

Defining the “shortfall”

RTP costs and revenues

Table 1: 2017-2040 RTP Costs (Constrained Plus Unconstrained) and Revenues in 2017\$	
Category	2017-2040 RTP Costs (2017\$)
Corridor Revitalization	\$ 227,000,000
Transit	\$ 1,452,000,000
Active Transportation	\$ 284,000,000
Technology & TSM	\$ 26,000,000
Water Quality	\$ 127,000,000
Operations & Maintenance	\$ 2,008,000,000
TOTAL COSTS	\$ 4,124,000,000
TOTAL REVENUES	\$ 1,684,000,000
SHORTFALL	\$ (2,440,000,000)

Recommended adjustments to RTP costs/revenues

Table 2: 2017-2040 RTP Costs and Revenues with Recommended Adjustments in 2017\$	
Adjustments to RTP Costs and Revenues	2017-2040 RTP Costs/Revenues (2017\$)
Change in Costs	
1. Add Net Transit adjustments (Fares & Admin)	\$ 5,000,000
2. Reduce Roadway Operations/Maintenance cost	\$ (1,229,000,000)
3. Add Telecom Network cost	\$ 80,000,000
4. Add Transportation System Management cost	\$ 4,000,000
5. Add TMDL Annual cost	\$ 29,000,000
6. Add Ferry Capital and Operating cost	\$ 76,000,000
7. Add Transit Oriented Development (30% of \$59.1 mil)	\$ 18,000,000
Change in Revenues	
1. Reduce Discretionary/Competitive Revenue 25%	\$ 106,000,000
Total Net Adjustments to RTP shortfall	\$ (911,000,000)

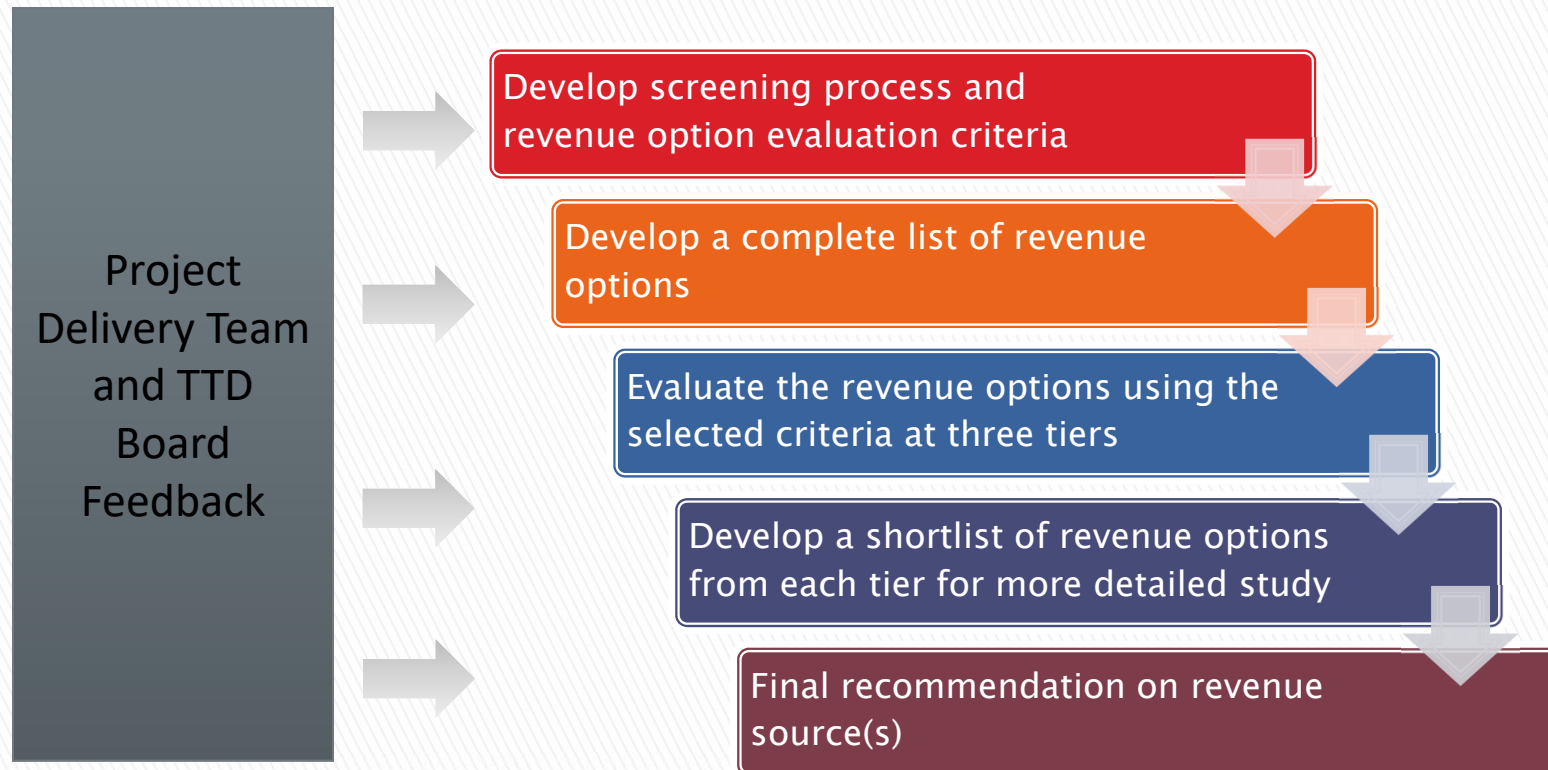
Adjusted shortfall

Table 3: 2017-2040 RTP Costs and Revenues by Mode/Use, with Adjustments (2017\$)

Mode/Use Category	RTP Costs + Adjustments	RTP Revenues + Adjustments	Shortfall by Mode/Use
Transit Capital + Operations + Admin	\$ 1,344,000,000	\$ 350,000,000	\$ (994,000,000)
Street/Bike/Ped Capital + Operations	\$ 1,257,000,000	\$ 924,000,000	\$ (333,000,000)
Stormwater TMDL W Q Cap + Ops	\$ 189,000,000	\$ 156,000,000	\$ (33,000,000)
Technology TSM Capital + Operations	\$ 110,000,000	\$ -	\$ (110,000,000)
Ferry and Water Taxi Capital +Ops	\$ 189,000,000	\$ 148,000,000	\$ (41,000,000)
Transit Oriented Development (30% of \$59.1 million)*	\$ 18,000,000	\$ -	\$ (18,000,000)
Totals	\$ 3,107,000,000	\$ 1,578,000,000	\$(1,529,000,000)
*Note: Private sector funding will cover remaining \$41 million needed to complete TOD project; assumed 200 units total			

Screening process and evaluation criteria

Proposed screening process



Proposed evaluation criteria

- ▶ Adequacy–can raise significant revenue
- ▶ Predictability–sustainability over time
- ▶ Economic efficiency–sends clear market signals
- ▶ Equity–socio economic
- ▶ Administrative effectiveness–cost and ease of administration
- ▶ Share paid by in–basin versus out–of–basin residents/businesses
- ▶ Political feasibility/public acceptance

Proposed evaluation criteria

- ▶ Business climate friendliness
- ▶ Supports attaining Tahoe Basin environmental thresholds–VMT, GHG, TMDL, etc.
- ▶ Revenue potential–quantitative assessment
- ▶ Impacts to regional economy–quantitative assessment
- ▶ Fungibility across uses and/or jurisdictions
- ▶ Requires CA or NV constitutional amendment, or state–wide vote of the people

Draft rating definitions and weighting for evaluation criteria

Criterion	Low	Medium	High
Adequacy	Revenue streams are low and may not provide sufficient funding to support a project or program, or can only be implemented over the short term. It may also have flat or negative future growth. Example: Transportation impact fees.	Revenue streams are significant and predicted to grow, although it may be at slower rate than transportation demand. Levies may partially support a project or program, and could be leveraged through finance. Example: Hotel/lodging taxes	Revenue streams sufficient and will grow with transportation demand. Levies can support a project and program over the long term. Example: Motor fuel taxes.
Predictability	Revenue fluctuations are uncertain and highly volatile, making it difficult to predict future revenue streams. Fluctuations in revenues are highly variable year-to-year, and specific factors affecting stability cannot be identified. Example: motor fuel taxes not indexed to inflation	Revenue fluctuations are generally consistent over time or more predictable, and the factors affecting stability are generally known, such as economic downturns. Example: motor fuel taxes indexed to inflation but affected by lower travel demand.	Revenue streams are highly predictable, with a long history of receipts for which trends can be easily identified. Fluctuations in revenues are low or nonexistent.
Economic Efficiency	The revenue source and the use of the system are unrelated, thus it does not provide clear pricing signals, leading to inefficient use of the system. Example: Property taxes.	The revenue source and the use of the system are indirectly related, yet pricing signals are not clear and users are not encouraged to make efficient use of the system. Example: Rental car taxes.	There is a strong relationship between the revenue source and the use of the system, sending clear pricing signals, and encouraging the efficient use of the system. The revenue option reflects the true cost of using the system. Example: tolls
Equity	Low-income populations have to spend a higher share of their income to pay the tax or fees compared to other groups, or are unfairly restricted from using basic transportation services. Example: Sales taxes	The burden on low-income populations is lower, but they still spend a higher share of their income to pay the tax and fee compared to other groups. Example: Real property tax	The tax or fee is based on income levels. Example: Income taxes
Administrative Effectiveness	Administrative and compliance costs account for a significant share) of total revenues, require new collection systems and/or technologies or are difficult to enforce. Example: Sales and use tax on internet sales	Administrative and compliance costs account for a reasonable share (e.g., about 10 to 50 percent) of total revenues. The collection system is streamlined, reducing the administrative costs. Example: Tolls	Administrative and compliance costs are low (e.g., less than 10 percent of total revenues), and collection and monitoring can be piggy-backed under existing collection systems. Example: Sales tax

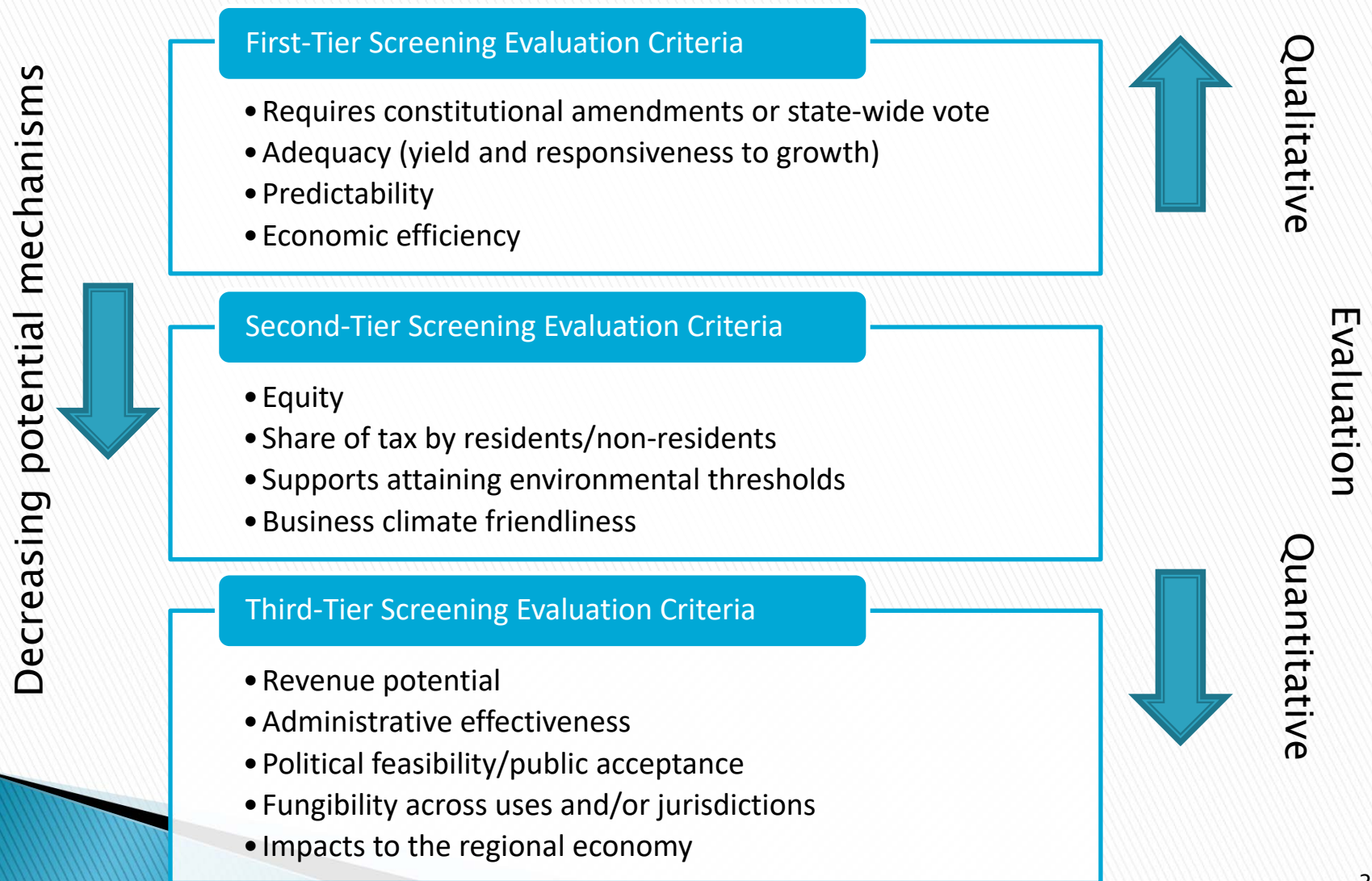
Draft rating definitions for evaluation criteria

Criterion	Low	Medium	High
Political Feasibility/ Public Acceptance	Highly unpopular and low support from public and decision-makers.	Medium support from public and decision-makers.	High support from public and decision-makers.
Share of tax/fee burden paid by in-basin residents/businesses versus out-of-basin residents/businesses	Tax/fee burden paid primarily by residents. Example: property taxes paid by local residents and businesses.	A portion of the tax/fee burden is transferred to out-of-basin residents/businesses.	The tax/fee burden is reasonably shared among in-basin residents/businesses and out-of-basin residents/businesses based on use of the transportation infrastructure Example: road tolling.
Business climate friendliness	The mechanism is not perceived as friendly by the business community. It may be burdensome to comply with and pay or it may place significant disproportionate costs on business activities, or both.	The mechanism is perceived as somewhat business climate friendly. It may be somewhat inconvenient to comply with and pay or it places some additional costs on business activities, or both.	The mechanism is perceived as business climate friendly. It is simple to comply with and pay, and places generally acceptable costs on business activities.
Supports attaining Tahoe Basin environmental quality thresholds	The mechanism has little direct or significant impact on achieving VMT reduction, GHG emissions, or TMDL standards.	The mechanism has moderate impact on achieving VMT reduction, GHG emissions, or TMDL standards.	The mechanism has very direct and significant impact on achieving VMT reduction, GHG emissions, or TMDL standards.
Revenue potential	Estimates of net revenue based upon reasonable fee/tax rates are low and would not significantly contribute toward meeting the shortfall	Estimates of net revenue based upon reasonable fee/tax rates are moderate and could, if combined with other mechanisms substantially meet the shortfall	Estimates of net revenue based upon reasonable fee/tax rates are high and alone would meet the shortfall
Impacts to regional economy	Estimates of economic impact indicate a negative impact compared to status quo	Estimates of economic impact indicate a neutral impact compared to status quo	Estimates of economic impact indicate a positive impact compared to status quo
Fungibility across uses and/or jurisdictions	Revenue has severe use restrictions and/or cannot be used outside of jurisdiction of collection.	Revenue can be flexed to multiple uses and be used outside of jurisdiction of collection with moderate administrative effort.	Revenue can be flexed to multiple uses and be used outside of jurisdiction of collection with little or no administrative effort.
Requires constitutional amendment in either CA or NV, or a state-wide vote of the people in CA or NV	If any of these actions is required, mechanism is considered fatally flawed and eliminated from further consideration.	NA	If none of these actions is required, mechanism is considered viable in this regards and will be eligible for further consideration.

Proposed evaluation criteria weighting factors

- ▶ Adequacy: 2
- ▶ Predictability: 2
- ▶ Economic efficiency: 1
- ▶ Equity: 1
- ▶ Administrative effectiveness: 1
- ▶ Share paid by in-basin versus out-of-basin residents/businesses: 2
- ▶ Political feasibility/public acceptance: 2
- ▶ Business climate friendliness: 2
- ▶ Supports attaining Tahoe Basin environmental thresholds: 3
- ▶ Revenue potential: 3
- ▶ Impacts to regional economy: 2
- ▶ Fungibility across uses and/or jurisdictions: 3
- ▶ Requires CA or NV constitutional amendment, or state-wide vote of the people: Fatal flaw

Application of evaluation criteria in the tiered screening process



Questions and comments

Thank you!

Leave Behind Tri-fold Brochure
Feb 2019

There is only ONE Tahoe.



Lake Tahoe offers an outstanding quality of experience to residents and visitors alike, including recreation, exhilaration and rejuvenation.



However, the quality of the Lake Tahoe Experience we are familiar with is threatened.



One of the primary challenges to the Lake Tahoe Experience is transportation:
How we travel into, out of, and within the Lake Tahoe out Basin:

Travel Patterns:

- Typical community travel including work commute, shopping, school and recreation, but overlain with tremendous influxes of vehicles during peak seasons, holidays, and special events.

Dependence on vehicular travel:

- 50+ million vehicle trips into/out of/within the Basin annually.
- 75% of vehicle trips are made by visitors, and 25% by residents.
- Estimated 25% increase in visitation by 2035!

Congestion on roadways and parking lots:

- Unsafe conditions for drivers, pedestrians, and cyclists.
- Water pollution causing declining lake clarity.
- Air pollution.
- Fire danger – climate change and evacuation issues.

Significantly mitigating congestion by adding additional road capacity is not option:

- Extreme environmental sensitivity.
- High costs for construction and land.
- Lack of alternative routes requires keeping roads open during construction.

A Community Vision for a Complete Transportation System

How we can successfully meet the transportation challenge has been known for decades. The public, working with numerous public and private partners, has developed plans for a complete transportation system offering realistic alternatives to the car:

- Public Transit
- Ferries
- Biking
- Walking

Not for every trip, but where and when it works for you!



What is Keeping the Vision from Becoming a Reality?

A substantial shortfall in the funding needed is preventing us from achieving the reality.

<u>2017-2040 Data</u>	<u>(2017\$)</u>
Projected Costs:	\$3.11 Billion
Projected Existing Revenues:	<u>\$1.58 Billion</u>
Projected Shortfall:	\$1.53 Billion

The Bottomline is:

- \$1.53 billion in new revenues over the next 23 years to implement the community's transportation vision.
- Annually, this about \$67 million a year.
- \$67 million is about one percent of the annual Tahoe Basin economic activity.

One Tahoe

A complete transportation system is key to maintaining the outstanding quality of the Lake Tahoe Experience. One Tahoe is an initiative to take significant next steps towards filling the transportation funding shortfall in the Lake Tahoe Basin through 2040. One Tahoe is seeking suggestions from the public, businesses, and organizations on how to raise the additional needed revenue. These ideas will be evaluated through a three-tiered screening process that will help determine recommendations on the best way to complete this effort.

Your Ideas



First-Tier Screening Evaluation Criteria:

- Adequacy (yield/responsiveness to growth)
- Predictability
- Economic efficiency
- Require amendments of state-wide vote

Second-Tier Screening Evaluation Criteria:

- Equity
- Share of tax by residents/non-residents
- Supports attaining environmental thresholds
- Business climate friendliness

Third-Tier Screening Evaluation Criteria:

- Revenue potential
- Administrative effectiveness
- Political feasibility/public acceptance
- Fungibility across uses and/or jurisdictions
- Impacts to the regional economy



Final Recommendations

We Need Your Input, So Share Your Ideas!

If the Lake Tahoe Experience is to be preserved and passed on future generations, we need to find a way to transform the community's vision to reality! This is your opportunity to give us your ideas. Please visit www.OneTahoe.org to share your suggestions and for more information.



Town of Truckee City Council
Mar 2019

ONE TAHOE

A transportation funding initiative





exhilaration...



rejuvenation..

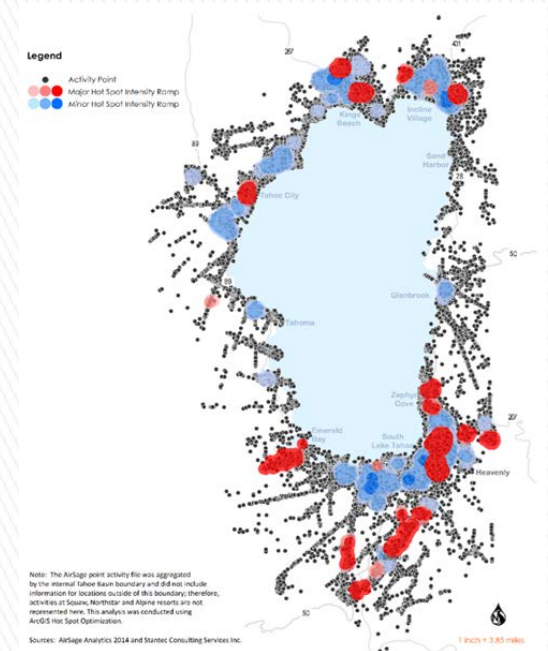


recreation...

An outstanding quality of life and experience but it is threatened.

Transportation Challenges to Lake Tahoe

- ▶ Travel patterns
 - Typical community travel: work, shopping, school, recreation *but...*
 - Overlain with tremendous influxes of vehicles during peak seasons, holidays, and special events
- ▶ Dependence upon vehicular travel
 - 50+ million vehicle trips into/out of/within the Basin annually
 - 75% of vehicular trips by visitors; 25% by residents
 - Could see 25% increase in visitation by 2035



Transportation Challenges to Lake Tahoe

- ▶ Congestion on roadways and parking lots
 - Unsafe conditions for drivers, pedestrians, and cyclists
 - Water pollution–declining lake clarity
 - Air pollution
 - Fire danger–climate change and evacuation issues

- ▶ Significantly mitigating congestion by adding additional road capacity is not an option
 - Extreme environmental sensitivity
 - High costs for construction and land
 - Lack of alternative routes requires keeping roads open during construction



How we can successfully
meet these challenges has
been known for decades:

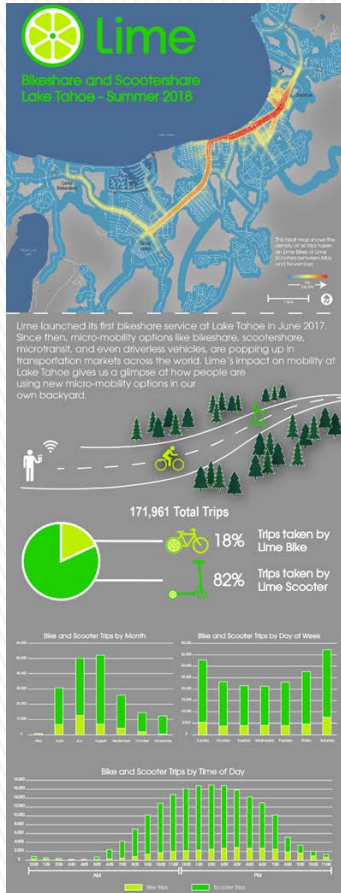
*A community vision for a complete
transportation system*

The community's transportation vision

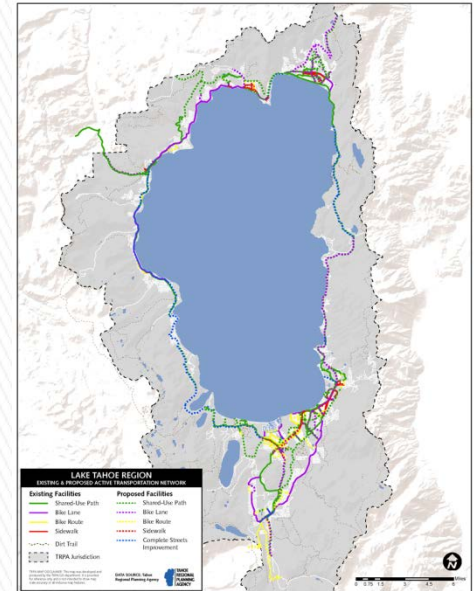
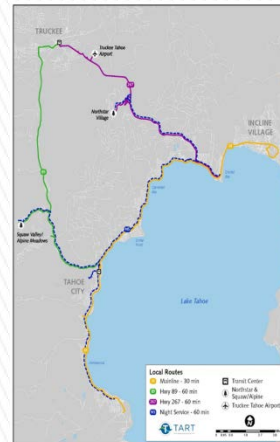
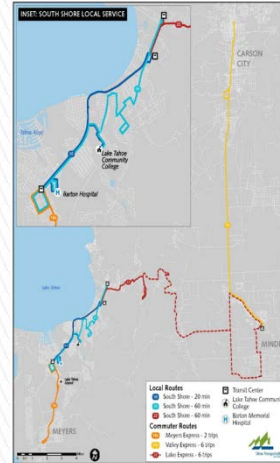


- ▶ Articulated in successive transportation plans

A transportation system offering realistic alternatives to the car



Transit
Ferries
Bike
Walking



What is keeping the vision from becoming a reality?

*A substantial shortfall in the financial
resources needed*

Purpose of the ONE TAHOE initiative

*To take significant next steps towards filling the
transportation funding shortfall in the Lake
Tahoe Basin through 2040*

Major elements of the work

- ▶ Define shortfall (14 Dec 2018)
- ▶ Develop screening process (14 Dec 2018)
- ▶ Public outreach and communication (Dec 2018–Sep 2019)
- ▶ Gather ideas on potential funding mechanisms from public, stakeholders, and transportation professionals; screen and evaluate (Dec 2018–Aug 2019)
- ▶ Develop recommended funding package and actions plans (Sep 2019–Dec 2019)
 - Additional work needed to develop strategic consensus
 - Road map of public and legislative approvals needed for enabling and implementing legislation

Outreach and communication goal:

“Everyone will have an opportunity to be heard”

- ▶ Three rounds
 - Round 1: Project introduction and solicitation of funding ideas (Dec 2018–Mar 2019)
 - Round 2: Report on funding ideas; initial screening results (Apr 2019 to Jun 2019)
 - Round 3: Report on final screening results; draft recommendations (Jul 2019–Sep 2019)
- ▶ Six public listening sessions in the basin
- ▶ 140+ meetings with key stakeholders
- ▶ Polling
- ▶ Focus groups in CA and NV
- ▶ Website
- ▶ Social media

- ▶ State of Nevada–Governor
- ▶ State of Nevada–Senate Committee on Finance 7 members
- ▶ State of Nevada–Senate Committee on Transportation 5 members
- ▶ State of Nevada–Legislative Oversight Committee 6 members
- ▶ State of Nevada–Assembly Committee on Taxation 11 members
- ▶ State of Nevada–Assembly Committee on Transportation 11 members
- ▶ State of California–Governor
- ▶ State of California–Senate Committee on Finance 7 members
- ▶ State of California–Senate Committee on Transportation 13 members
- ▶ State of California Senate Rules committee–5 members
- ▶ State of California–Assembly Committee on Finance 10 members
- ▶ State of California–Assembly Committee on Transportation 14 members
- ▶ State of California Assembly Rules Committee–13 members
- ▶ Regional Transportation Commission of Washoe County, Nevada (MPO)
- ▶ Carson City, Nevada
- ▶ Carson Area Metropolitan Planning Organization (MPO)
- ▶ Douglas County, Nevada
- ▶ Nevada Department of Transportation
- ▶ USDA Forest Service–Region and LTBMU
- ▶ Placer County, California
- ▶ Placer County Transportation Planning Agency
- ▶ El Dorado County, California
- ▶ El Dorado County Transportation Commission

- ▶ City of South Lake Tahoe
- ▶ Nevada County, California
- ▶ Nevada County Transportation Commission
- ▶ Town of Truckee
- ▶ Tahoe Regional Planning Agency–14 members
- ▶ Tahoe Metropolitan Planning Organization
- ▶ Caltrans
- ▶ Truckee/ North Tahoe Transportation Management Association (TMA)
- ▶ South Shore TMA
- ▶ Western Nevada Development District
- ▶ Northern Nevada Development Authority
- ▶ Economic Development Authority of Western Nevada (EDAWN)
- ▶ League to Save Lake Tahoe
- ▶ Sierra Club
- ▶ Off-road vehicle organizations
- ▶ Nevada Taxpayers Association
- ▶ California Taxpayers Association
- ▶ North Lake Tahoe Resort Association
- ▶ Incline Village/Crystal Bay Visitors Bureau
- ▶ Incline Village/Crystal Bay Chamber of Commerce
- ▶ Lake Tahoe South Chamber of Commerce
- ▶ Lake Tahoe Visitors Authority
- ▶ Truckee Donner Chamber of Commerce

- ▶ Carson City Chamber of Commerce
- ▶ Carson City Convention and Visitors Authority
- ▶ Carson Valley Chamber of Commerce and Visitors Authority
- ▶ Laborer's Union NV
- ▶ Operating Engineers Union NV
- ▶ Laborer's Union CA
- ▶ Operating Engineers Union CA
- ▶ Squaw Valley
- ▶ North Star
- ▶ Heavenly Valley
- ▶ Reno–Sparks Convention and Visitors Authority
- ▶ Reno–Sparks Chamber of Commerce
- ▶ Sparks Chamber of Commerce
- ▶ Reno Gazette Journal
- ▶ Nevada Appeal
- ▶ Tahoe Mountain News
- ▶ North Lake Tahoe Bonanza
- ▶ Sierra Sun
- ▶ Tahoe Daily Tribune
- ▶ Major South Shore Hotels and Casinos
- ▶ Major North Shore Hotels and Casinos

Project status

Tahoe Transportation Funding Shortfall

► 2017-2040 Data

(2017\$)

Projected Costs: \$3.11 Billion

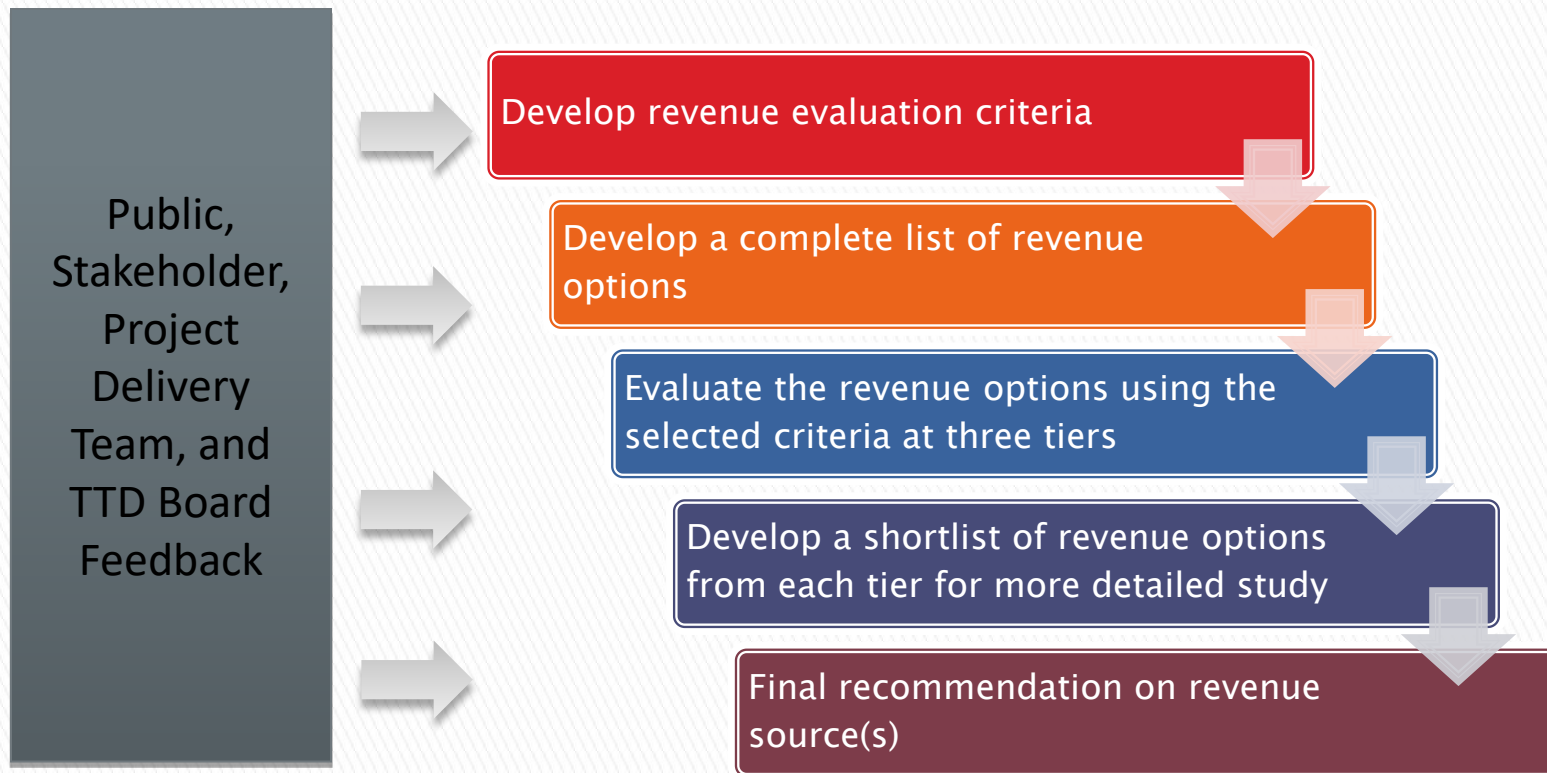
Projected Existing Revenues: \$1.58 Billion

Projected Shortfall: **\$1.53 Billion**

► **Bottom Line:**

- \$1.53 billion (2017\$) in new revenues over the next 23 years to implement the community's transportation vision
- Annually this is about \$67 million/year
- \$67 million/year is about 1 percent of the annual Tahoe Basin economic activity.

Screening process



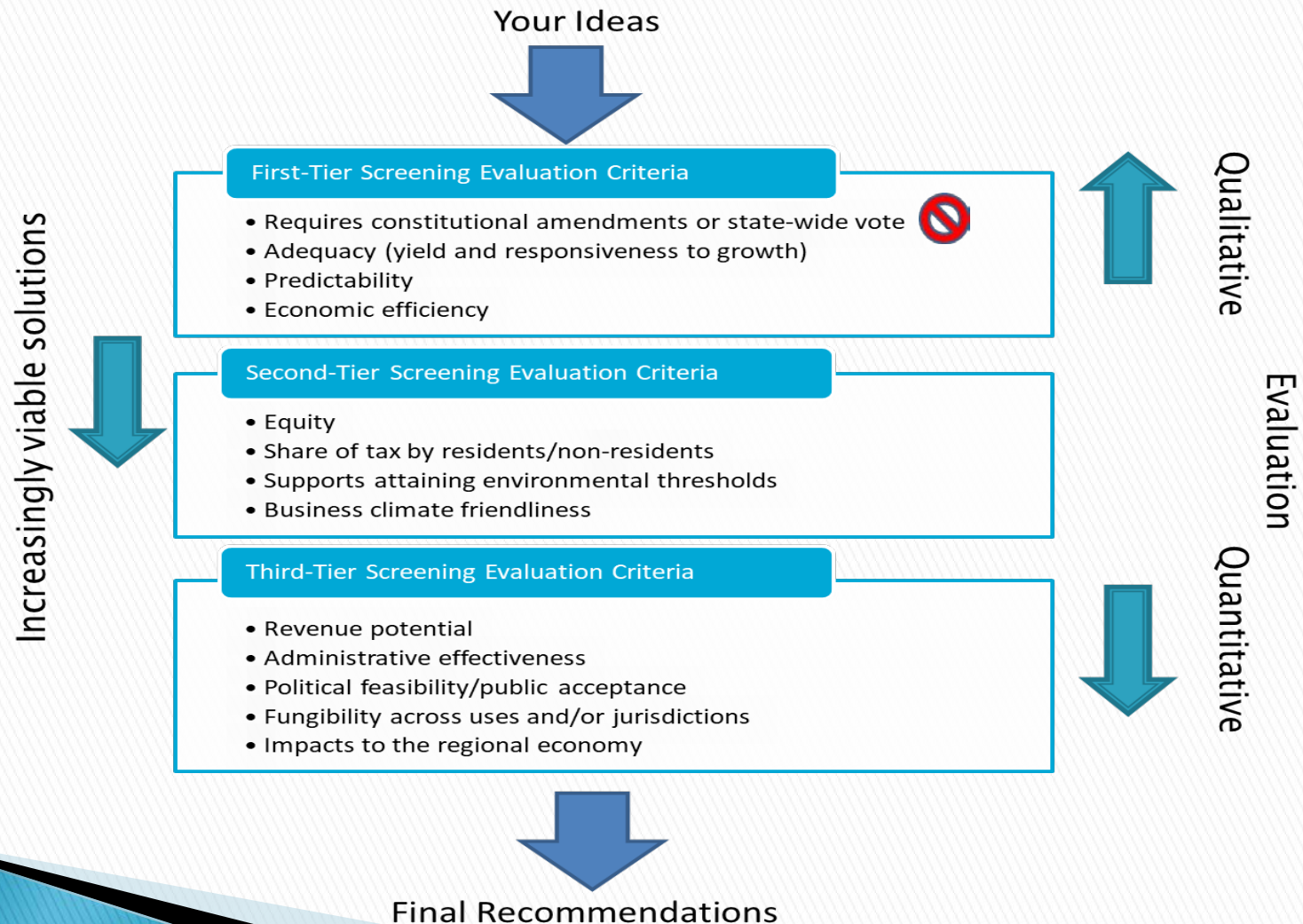
Evaluation criteria

- ▶ Requires CA or NV constitutional amendment, or state-wide vote of the people (fatal flaw)
- ▶ Adequacy—can raise significant revenue
- ▶ Predictability—sustainability over time
- ▶ Economic efficiency—sends clear market signals
- ▶ Equity—socio economic
- ▶ Share paid by in-basin versus out-of-basin residents/businesses

Evaluation criteria (continued)

- ▶ Supports attaining Tahoe Basin environmental thresholds–VMT, GHG, TMDL, etc.
- ▶ Business climate friendliness
- ▶ Revenue potential (quantitative assessment)
- ▶ Administrative effectiveness–cost and ease of administration
- ▶ Political feasibility/public acceptance
- ▶ Fungibility across uses and/or jurisdictions
- ▶ Impacts to regional economy (quantitative assessment)

Application of evaluation criteria in the tiered screening process



Outreach and communication– Round 1:

- ▶ Public listening sessions–Stateline(29 Jan), Incline Village (30 Jan), Tahoe City (27 Mar)
- ▶ Press releases
- ▶ Email blasts
- ▶ Media coverage
- ▶ Social media
- ▶ ONE TAHOE webpage launch
- ▶ Meetings/presentations with multiple stakeholders

Relevance of ONE TAHOE to the Town of Truckee

- ▶ Preservation of the Lake Tahoe Experience is critical to a thriving regional economy
- ▶ Shortfall includes funding for projects and services beneficial to the Town of Truckee including (in 2017\$):
 - \$52 million for capital/operations supporting expanded transit service connecting Truckee to the Tahoe Basin (avg. \$2.6 million/year 2020-2040)
 - \$66 million for Inter-Regional Rail Capital Corridor to Truckee to Reno – capital/operations (avg. \$7.3 million/year 2021-2030)
 - \$5 million for Adaptive Traffic Management on SR 89 and SR 267
- ▶ Opportunities for coordination, cooperation, and collaboration between the Town of Truckee and transportation agencies in the Tahoe Basin on other funding initiatives, projects, and programs

*Will we preserve the Lake
Tahoe Experience now and
for future generations?*



This is your chance!

Go to ONETAHOE.org for more information and to share your ideas on how to fully fund the community's transportation vision

CA legislative staff
Jul 2019

ONE TAHOE

A transportation funding initiative





exhilaration...



rejuvenation..

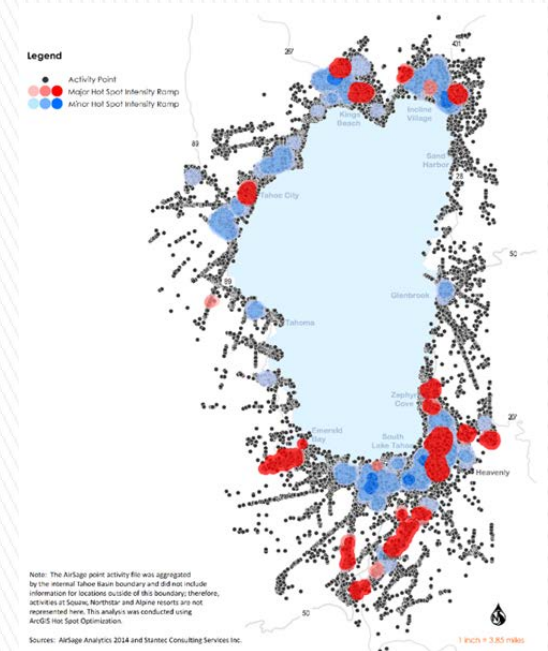


recreation...

An outstanding quality of life and experience but it is threatened.

Transportation Challenges to Lake Tahoe

- ▶ Travel patterns
 - Typical community travel: work, shopping, school, recreation *but...*
 - Overlain with tremendous influxes of vehicles during peak seasons, holidays, and special events
- ▶ Dependence upon vehicular travel
 - 50+ million vehicle trips into/out of/within the Basin annually
 - 75% of vehicular trips by visitors; 25% by residents
 - Could see 25% increase in visitation by 2035



Transportation Challenges to Lake Tahoe

- ▶ Congestion on roadways and parking lots
 - Unsafe conditions for drivers, pedestrians, and cyclists
 - Water pollution–declining lake clarity
 - Air pollution
 - Fire danger–climate change and evacuation issues

- ▶ Significantly mitigating congestion by adding additional road capacity is not an option
 - Extreme environmental sensitivity
 - High costs for construction and land
 - Lack of alternative routes requires keeping roads open during construction



How we can successfully
meet these challenges has
been known for decades:

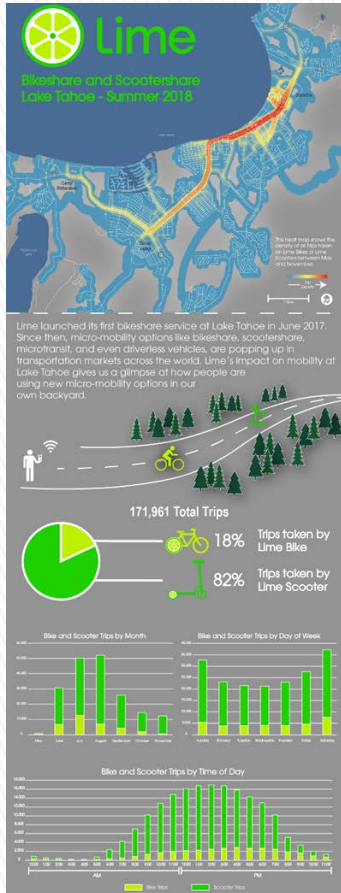
*A community vision for a complete
transportation system*

The community's transportation vision

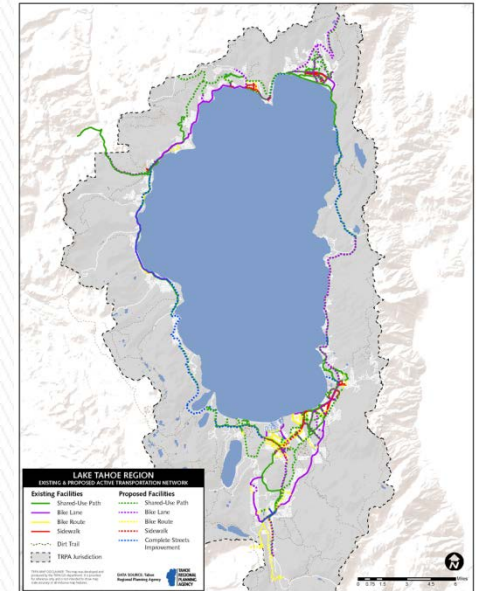
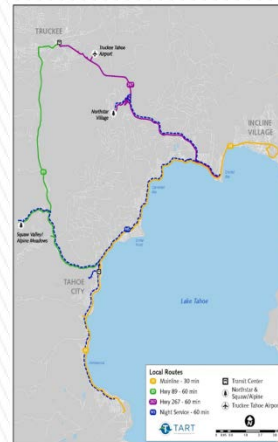
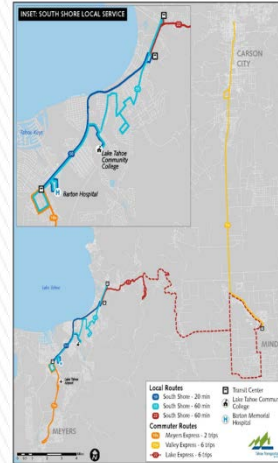


- ▶ Articulated in successive transportation plans

A transportation system offering realistic alternatives to the car



Transit
Ferries
Bike
Walking



What is keeping the vision from becoming a reality?

*A substantial shortfall in the financial
resources needed*

Purpose of the project

To take significant next steps towards filling the transportation funding shortfall in the Lake Tahoe Basin through 2040

Major elements of the work plan

- ▶ Define shortfall using current best available data
- ▶ Develop screening process and evaluation criteria
- ▶ Communication and outreach
 - Six public listening sessions in the basin
 - Three rounds of meetings (140+) with key stakeholders, agencies, political leaders, business groups, media, etc.
 - Two round of polling
 - Focus groups in NV and CA
 - Website
 - Social media
- ▶ Identify, screen, and evaluate potential funding mechanisms
- ▶ Develop recommended funding package and action plans

Project schedule–major activities

- ▶ Define shortfall – 14 Dec 2018
- ▶ Develop screening process–14 Dec 2018
- ▶ Communication and outreach
 - Round 1: Dec 2018–Feb 2019
 - Round 2: Apr 2019–Jun 2019
 - Round 3: Jul 2019–Sep 2019
- ▶ Identify/screen/evaluate revenue mechanisms: Dec 2018–Aug 2019
- ▶ Funding recommendations and action plans: Sep 2019–Dec 2019

Activities and accomplishments to date

Tahoe Transportation Funding Shortfall

► 2017-2040 Data

(2017\$)

Projected Costs: \$3.11 Billion

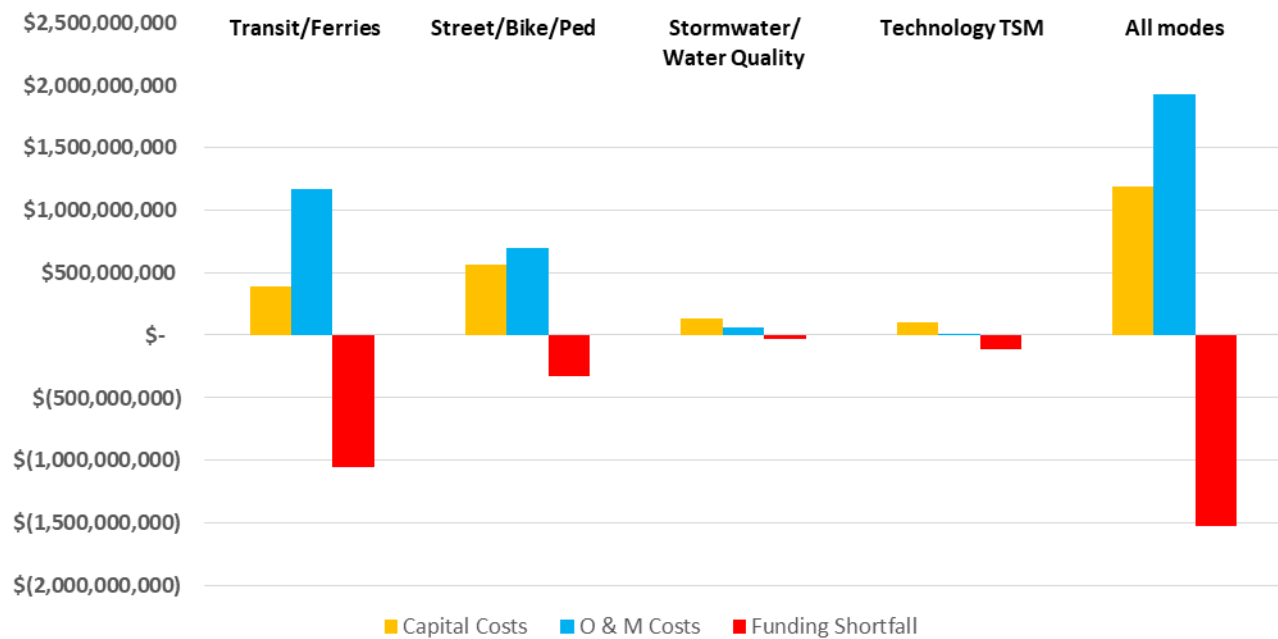
Projected Existing Revenues: \$1.58 Billion

Projected Shortfall: **\$1.53 Billion**

► **Bottom Line:**

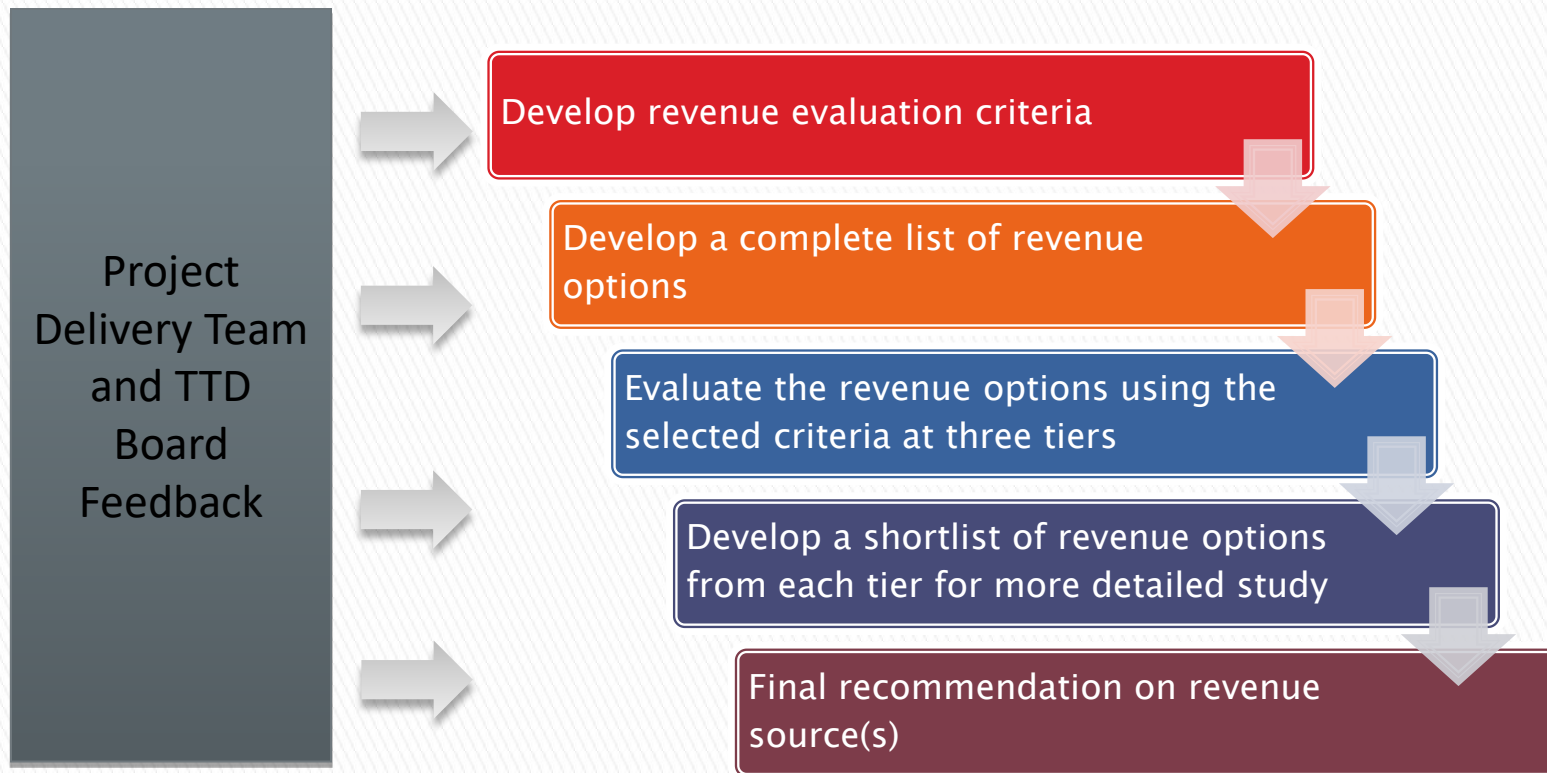
- \$1.53 billion (2017\$) in new revenues over the next 23 years to implement the community's transportation vision
- Annually this is about \$67 million/year
- \$67 million/year is about 1 percent of the annual Tahoe Basin economic activity.

Tahoe 2017-2040 Transportation Needs and Shortfalls (2017\$)



Screening process and evaluation criteria

Screening process



Evaluation criteria

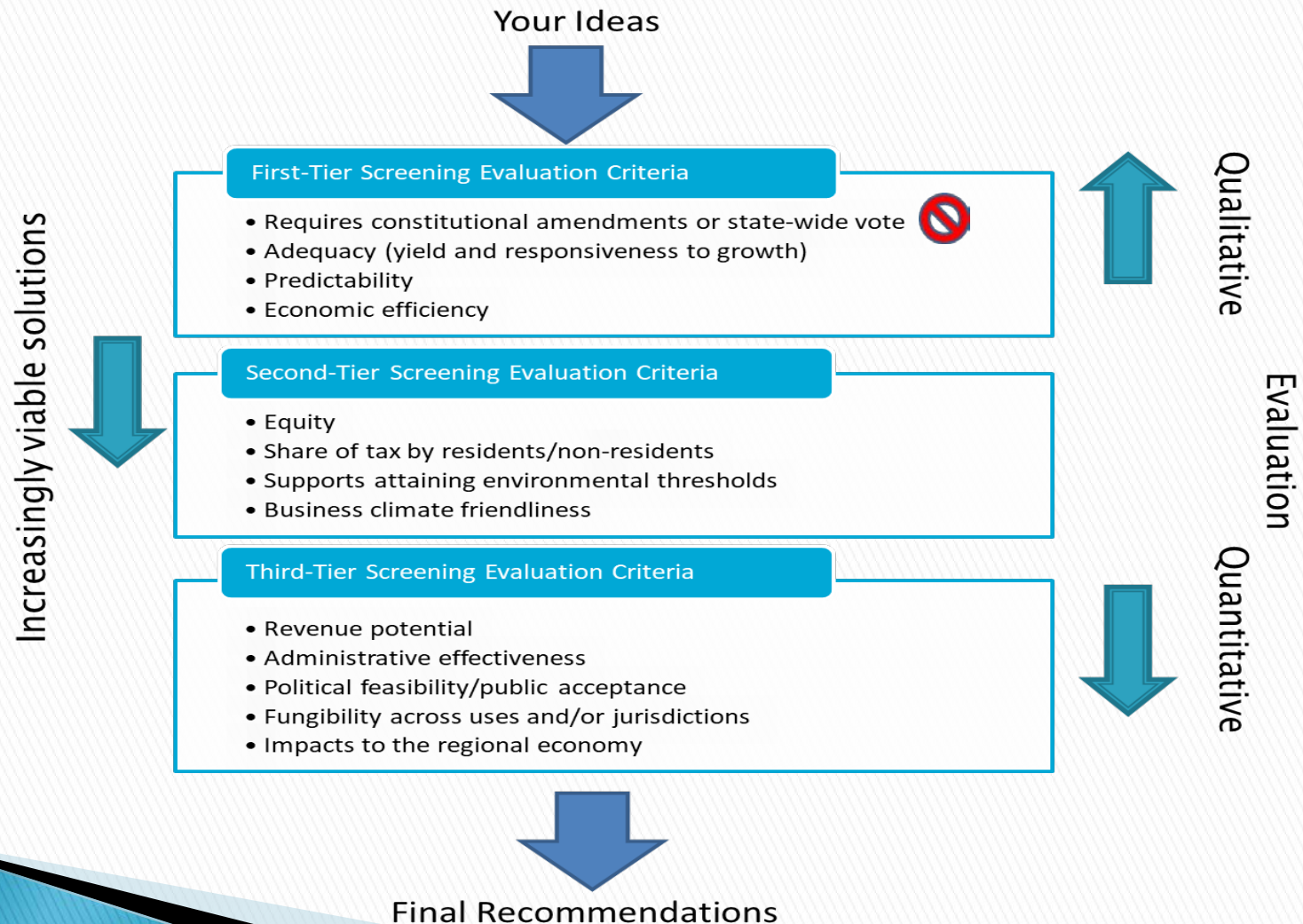
- ▶ Requires CA or NV constitutional amendment, or state-wide vote of the people (Fatal flaw)
- ▶ Adequacy—can raise significant revenue
- ▶ Predictability—sustainability over time
- ▶ Economic efficiency—sends clear market signals
- ▶ Equity—socio economic
- ▶ Share paid by in-basin versus out-of-basin residents/businesses
- ▶ Business climate friendliness

Evaluation criteria

- ▶ Supports attaining Tahoe Basin environmental thresholds–VMT, GHG, TMDL, etc.
- ▶ Revenue potential–quantitative assessment
- ▶ Administrative effectiveness–cost and ease of administration
- ▶ Political feasibility/public acceptance
- ▶ Fungibility across uses and/or jurisdictions
- ▶ Impacts to regional economy–quantitative assessment

Criterion	Weighting Factor
Constitutional Amendment/Statewide Vote	Fatal flaw
Adequacy	2
Predictability	2
Economic Efficiency	1
Equity	2
Share of tax paid by out-of-basin versus in-basin residents and businesses	2
Supports attaining Tahoe Basin environmental quality thresholds	3
Business climate friendliness	2
Revenue potential	3
Administrative Effectiveness	1
Political /Feasibility/Public Acceptability	2
Fungibility across uses and/or jurisdictions	3
Impacts to regional economy	2

Screening process and evaluation criteria



Outreach and communication to date

- ▶ Rollout of **ONE TAHOE** and webpage (ONETAHOE.org)
- ▶ Three public listening sessions
- ▶ Communications with public agency staff
- ▶ 25+ meetings legislative and executive branch in California and Nevada
- ▶ Multiple presentations/meetings with public bodies, business and stakeholder groups
- ▶ Lake Tahoe transportation solutions video
- ▶ Proprietary internal polling
 - NV statewide all voters
 - CA statewide all voters

Ideas for funding mechanisms

- ▶ Multiple sources
 - Public
 - Elected officials
 - Agency staff
 - Consultant team
- ▶ Received many project/service ideas that were passed on to relevant agencies
- ▶ 27 ideas related to funding

Ideas for funding mechanisms





























- ▶ Listed verbatim no priority, viability, etc.
 - 1. Sales tax
 - 2. Income tax
 - 3. Property tax
 - 4. Fuel taxes
 - 5. Gross receipts tax
 - 6. Employee tax
 - 7. New sustained federal funding
 - 8. New sustained State of Nevada funding
 - 9. New sustained State of California funding
 - 10. New sustained funding from each county general fund
 - 11. Cordon pricing
 - 12. VMT fee for travel in basin
 - 13. Special district such as a Transportation GID
 - 14. Tolling





























Ideas for funding mechanisms (continued)

























- 15. Joint Powers Authority (JPA)
- 16. Zoned “basin transportation fee”
- 17. Tahoe Transportation Fee collected with vehicle registration fees
 - NV/CA statewide
 - NV/CA in basin
 - NV/CA basin and adjacent counties
- 18. Convert all parking in basin to paid parking
- 19. Developer impact fees
- 20. Hourly transportation user fee for time spent within basin
- 21. Congestion pricing
- 22. Increased transit fares
- 23. Basin entry fee
- 24. Vacancy tax
- 25. Transient occupancy tax (TOT)
- 26. Rental car fees
- 27. Road utility

Tier 1 screening

- ▶ Primary focus: Elimination of mechanisms
 - NV or CA constitutional amendments
 - Statewide votes of the people
 - Low revenue potential
 - Ideas screened out may be worth pursuing as separate local initiatives or later reconsidered to achieve balance
- ▶ Prescreening issues
 - Assumed uniform application of mechanism across jurisdictions
 - Governance structures versus revenue mechanisms
 - Significantly overlapping ideas
 - Ideas with multiple variations
 - Concepts applicable to pricing structures

Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/ No-go
1	Sales tax	Pass					No-go*
2	Income tax	Fail					No-go
3	Property tax	Pass					No-go
4	Local fuel taxes	Pass					No-go
5	Gross receipts tax	Pass					Go
6	Employee tax	Pass					Go
7	New federal funding	Pass					No-go
8/9	New NV/CA state funding	Pass					No-go

Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/ No-go
10	New city/county general funds	Pass					No-go*
11/23	Cordon pricing/basin entry fee	Pass					Go
12	VMT fee in basin	Pass					Go
13/27	Transportation Utility (Special District)	Pass					Go
14	Tolling	Pass					Go
15	Joint Powers Authority	Pass	Governance structure may be considered for governance of final recommended package if advantageous				No-go
16/20	Zoned transportation user fee	Pass					Go
17	Transportation fee collected with vehicle registration	Pass					No go

Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/ No-go
18	Paid parking	Pass					No go*
19	Developer impact fees	Pass					No go*
21	Congestion pricing	Pass	mechanisms may be considered for final recommended package				No-go
22	Increased transit fares	Pass					No go
24	Vacancy tax	Pass					Go
25	Transient occupancy tax	Pass					Go
26	Rental car fees	Pass					No-go

Tier 2 screening

- ▶ Nine candidates passed from Tier 1 screening to Tier 2
- ▶ Four criteria
 - Equity (2)
 - Share of Tax/Fee paid by Out-of-basin versus In-basin Residents and Businesses (2)
 - Supports Attaining Environmental Thresholds (3)
 - Business Climate Friendliness (2)
- ▶ Go/No go decision for Tier 3 considered Tier 1 and Tier 2 results

Tier 2 screening criteria

- ▶ Equity (Socio-economic)
 - Financial impacts
 - Restriction of access
- ▶ Does mechanism differentiate based upon user income?
- ▶ Are there reasonable mitigations?

Tier 2 screening criteria






















































- ▶ Share of Tax/Fee paid by Out-of-basin versus In-basin Residents and Businesses
 - 50+ million annual vehicle trips in, out, within the Tahoe Basin
 - 75% of vehicle trips by non-residents
 - 25 % of vehicle trips by residents
 - Should non-residents pay for the transportation system?
 - How effective is the mechanism for collecting from these groups of users?

Tier 2 screening criteria

- ▶ Supports Attaining Environmental Thresholds
 - TRPA Regional Plan “shalls”:
 - Promote walking, biking, and public transit use
 - Reduce private vehicle dependence
 - Reduce the air pollution that is caused by motor vehicles
 - Environmental thresholds
 - Air quality
 - Water quality/TMDL
 - GHG
 - VMT
- ▶ How strongly would the mechanism support attainment?

Tier 2 screening criteria

- ▶ Business Climate Friendliness
 - Perception of business community
 - Taxes/fees on businesses are generally unpopular
 - Burden of administration and compliance
 - Increase cost of business
 - Does mechanism treat all businesses “equally”?
 - Does mechanism give the competition an advantage?
 - Consider business community as a whole

Item	Description	Tier 1 summary rating	Equity (2)	Share paid by out-of-basin v. in-basin residents (2)	Supports attaining environmental thresholds (3)	Business climate friendliness (2)	Tier 2 summary rating	Go/ No go
5	Gross receipts tax							No go*
6	Employee payroll tax							No go*
11	Cordon pricing							Go
12	Vehicle miles traveled (VMT) fee							Go
13	Transportation utility special district							No go*
14	Tolling							Go
16	Zoned transportation user fee							Go
24	Vacancy tax							Go
26	Increased transient occupancy tax							No-go

*Mechanism may be considered for inclusion in a final recommended package if it is useful to address resident versus non-resident equity or other factors.

Now the fun begins!

- ▶ Everyone will have something they don't like!

But ask them ...

- Do you agree there is a transportation problem?
- Do we want to fix it?
- If you don't like these funding ideas, why and what could you support?
- If you agree that visitors need to be a part of the solution, what is the best mechanism to capture their contribution?
- ▶ If not fixing the problem is unacceptable, we must reach consensus

Concept for ONE TAHOE governance

- ▶ Concept predicated on scenario where ONE TAHOE revenues come directly to TTD
- ▶ Planning, programming, and budgeting of ONE TAHOE revenues
- ▶ Planning using Regional Transportation Plan (RTP) process
- ▶ Programming using Regional Transportation Improvement Program (RTIP) process

Concept for ONE TAHOE governance

- ▶ Draft annual budget for use of ONE TAHOE revenue for projects and services prepared for TTD Board by technical committee
- ▶ Technical committee members appointed by TTD Board
- ▶ ONE TAHOE budget must be approved unanimously by TTD Board

Concept for ONE TAHOE governance

- ▶ Budgeting and disbursement requirements:
 - Budgeted projects and services must be in RTP and RTIP
 - No money can be spent on ONE TAHOE projects or services unless in the approved budget
 - Amendments to budget require unanimous TTD Board approval
 - Agreements must be in place for conjunctively funded projects before release of funding
 - Agreements must be in place for pass through projects before release of funding

Concept for ONE TAHOE Governance

- ▶ Budgeting and disbursement requirements (continued):
 - Prioritization of ONE TAHOE funding based upon the following priorities:
 - Routine Operations and maintenance
 - System preservation
 - System renewal
 - New/expanded projects or services
 - Deviation from priorities allowed if documented and approved by TTD Board
 - Projects/services may be budgeted by phases or logical activities

Relationship of ONE TAHOE and the Bi-state 10 year list of priorities

- ▶ ONE TAHOE is to fill the gap in funding for fully implementing the RTP
- ▶ The 10 year list is a subset of the RTP indicating illustrative projects and priorities; does not include many other needs, especially O&M
- ▶ The 10 year list is largely unfunded; ONE TAHOE will address this.
- ▶ The list is not a replacement for the RTP and, by itself, is insufficient to meet the community's transportation goals and objectives

Next steps

- ▶ Incorporate comments and suggestions on Tier 1 screening into process
- ▶ Tier 2 screening
- ▶ Continued outreach and communication

Thank you!

NV and CA legislators and staff, CALSTA, CA DCNR, NV DCNR
Jul-Sep 2019

ONE TAHOE

A transportation funding initiative





exhilaration ...



rejuvenation...

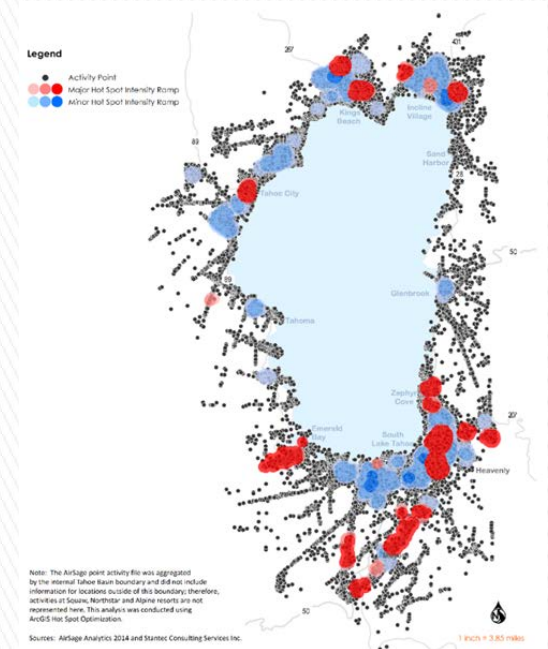


recreation...

... but the quality of the “Tahoe experience”, the Lake’s fragile environment, and our economic prosperity are threatened.

Transportation Challenges to Lake Tahoe

- ▶ Travel patterns
 - Typical community travel: work, shopping, school, recreation *but...*
 - Overlain with tremendous influxes of vehicles during peak seasons, holidays, and special events
- ▶ Dependence upon vehicular travel
 - 50+ million vehicle trips into/out of/within the Basin annually
 - 75% of vehicular trips by visitors; 25% by residents
 - Could see 25% increase in visitation by 2035



Transportation Challenges to Lake Tahoe

- ▶ Congestion on roadways and parking lots
 - Unsafe conditions for drivers, pedestrians, and cyclists
 - Water pollution–declining lake clarity
 - Air pollution
 - Fire danger–climate change and evacuation issues

- ▶ Significantly mitigating congestion by adding additional road capacity is not an option
 - Extreme environmental sensitivity
 - High costs for construction and land
 - Lack of alternative routes requires keeping roads open during construction



The solutions have been known for decades:

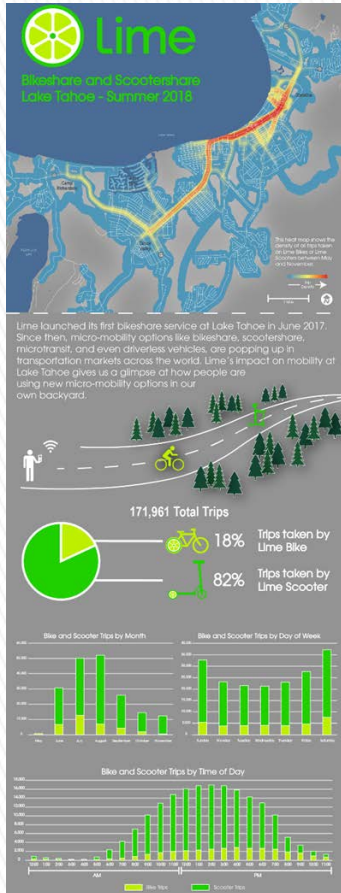
A community vision for a complete transportation system

The community's transportation vision

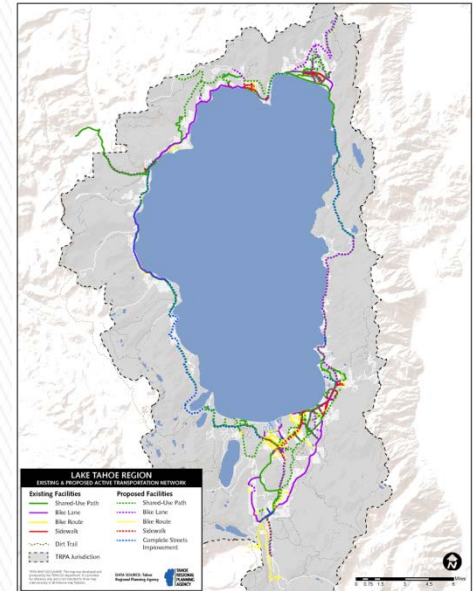
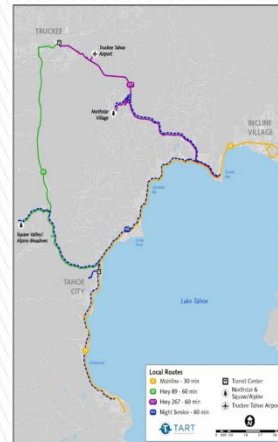
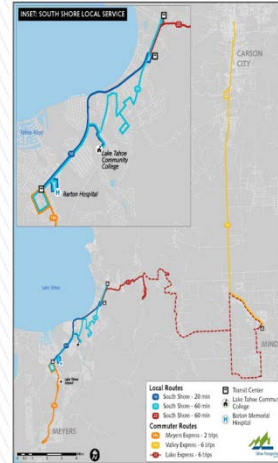


- ▶ Articulated in successive transportation plans

A transportation system offering realistic alternatives to the car



Transit
Ferries
Bike
Walking



What is keeping the vision from becoming a reality?

A substantial shortfall in the financial resources needed

Purpose of ONE TAHOE:

To take significant next steps towards filling the transportation funding shortfall in the Lake Tahoe Basin through 2040 and beyond

Major elements of the work plan

- ▶ Define shortfall using current best available data
- ▶ Develop screening process and evaluation criteria
- ▶ Communication and outreach
 - Six public listening sessions in the basin
 - Three rounds of meetings (140+) with key stakeholders, agencies, political leaders, business groups, media, etc.
 - Two rounds of polling
 - Focus groups in NV and CA
 - Website
 - Social media
- ▶ Identify, screen, and evaluate potential funding mechanisms
- ▶ Develop recommended funding package and action plans

Project schedule–major activities

- ▶ Define shortfall – 14 Dec 2018
- ▶ Develop screening process–14 Dec 2018
- ▶ Communication and outreach
 - Round 1: Dec 2018–Mar 2019
 - Round 2: Apr 2019–Sep 2019
 - Round 3: Sep 2019–Oct 2019
- ▶ Identify/screen/evaluate revenue mechanisms: Dec 2018–Oct 2019
- ▶ Funding recommendations and action plans: Oct 2019–Dec 2019

Activities and accomplishments to date

Tahoe Transportation Funding Shortfall

► 2017-2040 Data

(2017\$)

Projected Costs: \$3.11 Billion

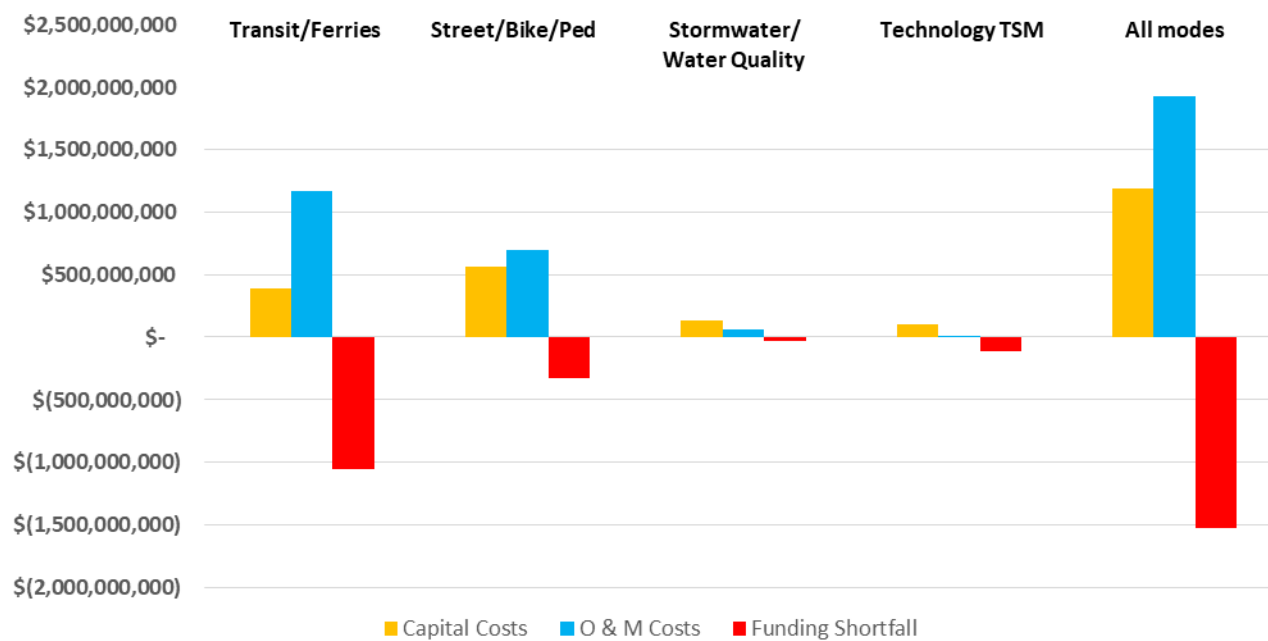
Projected Existing Revenues: \$1.58 Billion

Projected Shortfall: **\$1.53 Billion**

► **Bottom Line:**

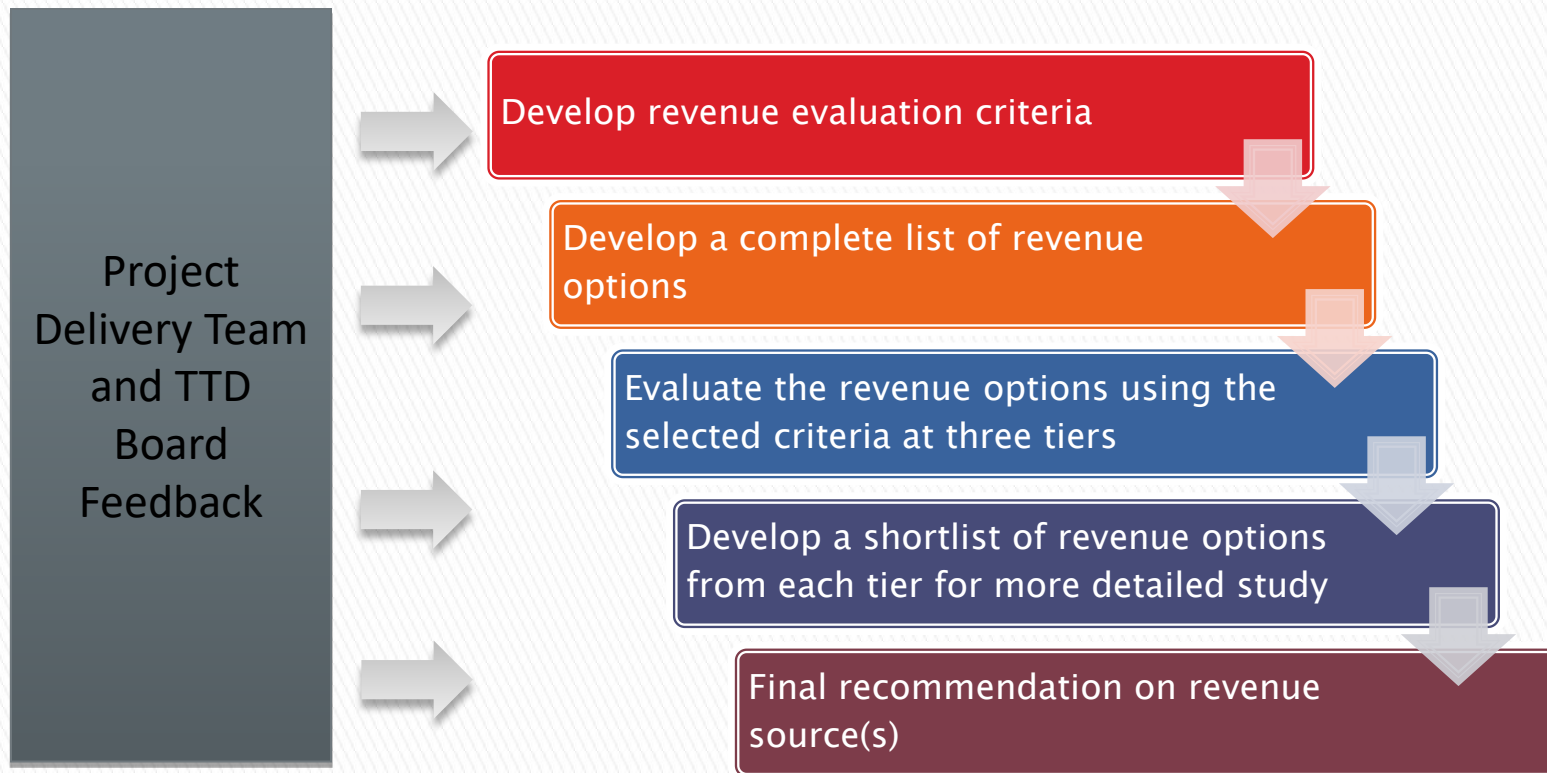
- \$1.53 billion (2017\$) in new revenues over the next 23 years to implement the community's transportation vision
- Annually this is about \$67 million/year
- \$67 million/year is about 1 percent of the annual Tahoe Basin economic activity
- To be sustainable, level of commitment needs to extend beyond 2040

Tahoe 2017-2040 Transportation Needs and Shortfalls (2017\$)



Screening process and evaluation criteria

Screening process



Evaluation criteria

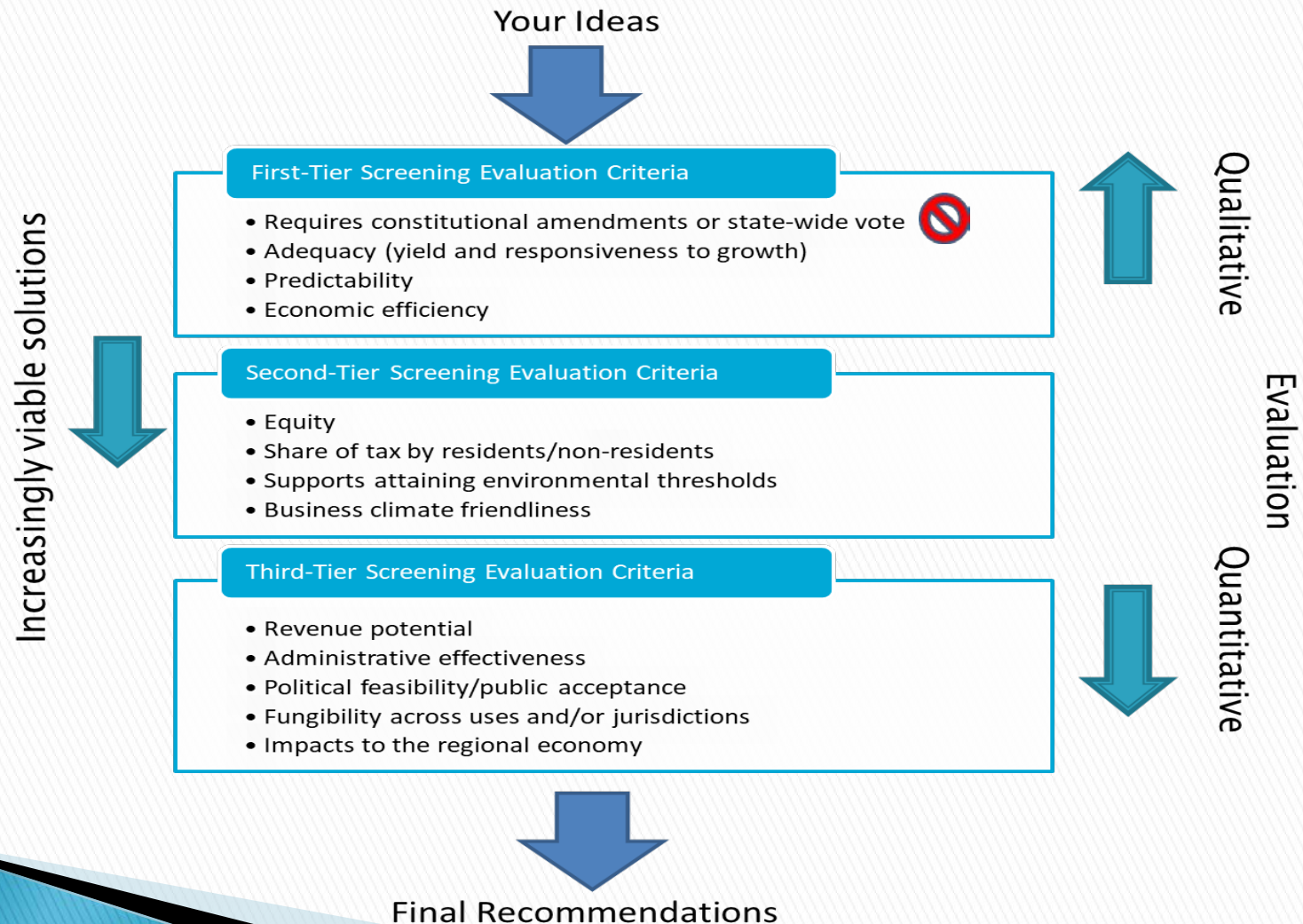
- ▶ Requires CA or NV constitutional amendment, or state-wide vote of the people (Fatal flaw)
- ▶ Adequacy—can raise significant revenue
- ▶ Predictability—sustainability over time
- ▶ Economic efficiency—sends clear market signals
- ▶ Equity—socio economic
- ▶ Share paid by in-basin versus out-of-basin residents/businesses
- ▶ Business climate friendliness

Evaluation criteria

- ▶ Supports attaining Tahoe Basin environmental thresholds–VMT, GHG, TMDL, etc.
- ▶ Revenue potential–quantitative assessment
- ▶ Administrative effectiveness–cost and ease of administration
- ▶ Political feasibility/public acceptance
- ▶ Fungibility across uses and/or jurisdictions
- ▶ Impacts to regional economy–quantitative assessment

Criterion	Weighting Factor
Constitutional Amendment/Statewide Vote	Fatal flaw
Adequacy	2
Predictability	2
Economic Efficiency	1
Equity	2
Share of tax paid by out-of-basin versus in-basin residents and businesses	2
Supports attaining Tahoe Basin environmental quality thresholds	3
Business climate friendliness	2
Revenue potential	3
Administrative Effectiveness	1
Political /Feasibility/Public Acceptability	2
Fungibility across uses and/or jurisdictions	3
Impacts to regional economy	2

Screening process and evaluation criteria



Outreach and communication to date

- ▶ Rollout of **ONE TAHOE** and webpage (ONETAHOE.org)
- ▶ Five public listening sessions
- ▶ Communications with public agency staff
- ▶ 35+ meetings legislative and executive branch in California and Nevada
- ▶ Multiple presentations/meetings with public bodies, business and stakeholder groups
- ▶ Lake Tahoe transportation solutions video
- ▶ Proprietary internal polling
 - NV statewide all voters
 - CA statewide all voters

Ideas for funding mechanisms

- ▶ Multiple sources
 - Public
 - Elected officials
 - Agency staff
 - Consultant team
- ▶ Received many project/service ideas that were passed on to relevant agencies
- ▶ 27 ideas related to funding

Ideas for funding mechanisms





























- ▶ Listed verbatim no priority, viability, etc.
 - 1. Sales tax
 - 2. Income tax
 - 3. Property tax
 - 4. Fuel taxes
 - 5. Gross receipts tax
 - 6. Employee tax
 - 7. New sustained federal funding
 - 8. New sustained State of Nevada funding
 - 9. New sustained State of California funding
 - 10. New sustained funding from each county general fund
 - 11. Cordon pricing
 - 12. VMT fee for travel in basin
 - 13. Special district such as a Transportation GID
 - 14. Tolling





























Ideas for funding mechanisms (continued)

























- 15. Joint Powers Authority (JPA)
- 16. Zoned “basin transportation fee”
- 17. Tahoe Transportation Fee collected with vehicle registration fees
- 18. Convert all parking in basin to paid parking
- 19. Developer impact fees
- 20. Hourly transportation user fee for time spent within basin
- 21. Congestion pricing
- 22. Increased transit fares
- 23. Basin entry fee
- 24. Vacancy tax
- 25. Transient occupancy tax (TOT)
- 26. Rental car fees
- 27. Road utility
- 28. Fee/tax on recreation activities
- 29. Fee/tax on ski passes

Tier 1 screening

- ▶ Primary focus: Elimination of mechanisms
- ▶ Four criteria
 - Does idea require NV or CA constitutional amendments or mandatory statewide votes of the people? If so, a fatal flaw!
 - Can mechanism generate adequate gross revenue at reasonable rates?
 - Is the revenue stream predictable so that the system can be sustained?
 - Does the mechanism have a direct economic link to transportation that encourages efficient use of the system?
- ▶ Prescreening issues
 - Assumed uniform application of mechanism across jurisdictions
 - Governance structures versus revenue mechanisms
 - Significantly overlapping ideas and multiple variations

Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/ No-go
1	Sales tax	Pass					No-go*
2	Income tax	Fail					No-go
3	Property tax	Pass					No-go
4	Local fuel taxes	Pass					No-go
5	Gross receipts tax	Pass					Go
6	Employee tax	Pass					Go
7	New federal funding	Pass					No-go
8/9	New NV/CA state funding	Pass					No-go

Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/ No-go
10	New city/county general funds	Pass					No-go*
11/23	Cordon pricing/basin entry fee	Pass					Go
12	VMT fee in basin	Pass					Go
13/27	Transportation Utility (Special District)	Pass					Go
14	Tolling	Pass					Go
15	Joint Powers Authority	Pass	Governance structure may be considered for governance of final recommended package if advantageous				No-go
16/20	Zoned transportation user fee	Pass					Go
17	Transportation fee collected with vehicle registration	Pass					No go

Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/ No-go
18	Paid parking	Pass					No go*
19	Developer impact fees	Pass					No go*
21	Congestion pricing	Pass	mechanisms may be considered for final recommended package				No-go
22	Increased transit fares	Pass					No go
24	Vacancy tax	Pass					Go
25	Transient occupancy tax	Pass					Go
26	Rental car fees	Pass					No-go

Tier 2 screening

- ▶ Nine candidates passed from Tier 1 screening to Tier 2
- ▶ Four criteria
 - Equity (2)
 - Share of Tax/Fee paid by Out-of-basin versus In-basin Residents and Businesses (2)
 - Supports Attaining Environmental Thresholds (3)
 - Business Climate Friendliness (2)
- ▶ Go/No go decision for Tier 3 considered Tier 1 and Tier 2 results

Tier 2 screening criteria

- ▶ Equity (Socio-economic)
 - Financial impacts
 - Restriction of access
- ▶ Does mechanism differentiate based upon user income?
- ▶ Are there reasonable mitigations?
- ▶ Is mitigation cost effective?

Tier 2 screening criteria












- ▶ Share of Tax/Fee paid by Out-of-basin versus In-basin Residents and Businesses
 - 50+ million annual vehicle trips in, out, within the Tahoe Basin
 - 75% of vehicle trips by non-residents
 - 25 % of vehicle trips by residents
 - 42% of visits are day trips
 - 58% of visits have an average length of 4+ days
- ▶ Should non-residents pay for the transportation system?
- ▶ How effective is the mechanism for collecting from this group of users?

Tier 2 screening criteria

- ▶ Supports Attaining Environmental Thresholds
 - TRPA Regional Plan “shalls”:
 - Promote walking, biking, and public transit use
 - Reduce private vehicle dependence
 - Reduce the air pollution that is caused by motor vehicles
 - Environmental thresholds
 - Air quality
 - Water quality/TMDL
 - GHG
 - VMT
- ▶ Could the mechanism encourage behaviors that support attainment?

Tier 2 screening criteria

- ▶ Business Climate Friendliness
 - Perception of business community
 - Taxes/fees on businesses are generally unpopular
 - Burden of administration and compliance
 - Increase cost of business
 - Does mechanism treat all businesses “equally”?
 - Does mechanism give the competition an advantage?
 - Consider business community as a whole

Item	Description	Tier 1 summary rating	Equity (2)	Share paid by out-of-basin v. in-basin residents (2)	Supports attaining environmental thresholds (3)	Business climate friendliness (2)	Tier 2 summary rating	Go/ No go
5	Gross receipts tax							No go*
6	Employee payroll tax							No go*
11	Cordon pricing/basin entry fee							Go
12	Vehicle miles traveled (VMT) fee							Go
13	Transportation utility special district							No go*
14	Tolling							Go
16	Zoned transportation user fee							Go
24	Vacancy tax							Go
26	Increased transient occupancy tax							No-go

*Mechanism may be considered for inclusion in a final recommended package if it is useful to address resident versus non-resident equity or other factors.

Now the fun begins!

- ▶ Everyone will have something they don't like!

But ask them ...

- Do you agree there is a transportation problem?
- Is it important to fix it?
- If you don't like these funding ideas, what are your specific concerns?
- What could you support?
- If visitors need to be a part of the solution, what is the best mechanism to capture their contribution?

If not fixing the problem is unacceptable, we must reach consensus!

Concept for ONE TAHOE governance

- ▶ Concept predicated on scenario where ONE TAHOE revenues come directly to TTD
- ▶ Planning, programming, and budgeting of ONE TAHOE revenues
- ▶ Planning using Regional Transportation Plan (RTP) process
- ▶ Programming using Regional Transportation Improvement Program (RTIP) process

Concept for ONE TAHOE governance

- ▶ Draft annual budget for use of ONE TAHOE revenue for projects and services prepared for TTD Board by technical committee
- ▶ Technical committee members appointed by TTD Board
- ▶ ONE TAHOE budget must be approved unanimously by TTD Board

Concept for ONE TAHOE governance

- ▶ Budgeting and disbursement requirements:
 - Budgeted projects and services must be in RTP and RTIP
 - No money can be spent on ONE TAHOE projects or services unless in the approved budget
 - Amendments to budget require unanimous TTD Board approval
 - Agreements must be in place for conjunctively funded projects before release of funding
 - Agreements must be in place for pass through projects before release of funding

Concept for ONE TAHOE Governance

- ▶ Budgeting and disbursement requirements (continued):
 - Prioritization of ONE TAHOE funding based upon the following priorities:
 - Routine Operations and maintenance
 - System preservation
 - System renewal
 - New/expanded projects or services
 - Deviation from priorities allowed if documented and approved by TTD Board
 - Projects/services may be budgeted by phases or logical activities

Project	Estimated Cost (\$)	Committed (\$)			
TRANSIT PROGRAM	\$215,500,000	\$122,000,000			
North Shore:					
•Peak 30–Minute Service on SR89 and seasonal routes; expanded service to Truckee					
•Priority Bus Lanes on SR89 and SR267					
South Shore:					
•South Shore Transit Maintenance Facility (location unknown)					
•Local service to LTCC and Heavenly; 15–minute service on US–50/30–min to Meyers; ferries					
•Emerald Bay Shuttle					
•Regional connections to Carson					
MULTIMODAL CORRIDOR INVESTMENT	\$212,500,000	\$29,949,000			
Mobility Hubs: park and ride, and intercept lots, varies by location					
North Shore:					
•Stateline to Stateline bikeway – pedestrian, parking, and water quality improvements (Tahoe Trail)					
•SR89/SR267 roundabout					
South Shore:					
•US–50 Community Revitalization					
•US–50/Pioneer Trail roundabout and Apache Avenue Complete Streets					
•SR89 Corridor Improvements					
ACTIVE TRANSP. INFRASTRUCTURE	\$25,600,000	\$7,368,000			
•North Shore: Placer County Resort Triangle; Trail Network – Tahoe Region					
•South Shore: South Tahoe Greenway Shared–Used Path; and Pioneer Trail Sidewalks					
TECHNOLOGY & PILOT PROJECTS	\$8,000,000	\$250,000			
•Regional Transportation Applications (trip planning tool, and rideshare)					
South Shore: Multimodal signal control and adaptive traffic management on US–50					

Relationship of ONE TAHOE and the Bi-state 10 year list of priorities

- ▶ ONE TAHOE is to fill the gap in funding for fully implementing the RTP
- ▶ The 10 year list is a subset of the RTP indicating illustrative projects and priorities; does not include many other needs, especially O&M
- ▶ The 10 year list is largely unfunded; ONE TAHOE will address this.
- ▶ The list is not a replacement for the RTP and, by itself, is insufficient to meet the community's transportation goals and objectives

Next steps

- ▶ Incorporate comments and suggestions on Tier 1 and 2 screening into process
- ▶ Tier 3 screening
- ▶ Continuing outreach and communication
- ▶ Present results of Tier 3 screening and recommendations (end of 2019)

Thank you!

CA legislators and staff, CALSTA
Jan-Mar 2020

ONE TAHOE

A transportation funding initiative





exhilaration ...



rejuvenation...



recreation...

... but the quality of the “Tahoe experience”, the Lake’s fragile environment, and our economic prosperity are threatened.

Transportation Challenges to Lake Tahoe

- ▶ Congestion on roadways and parking lots
 - Unsafe conditions for drivers, pedestrians, and cyclists
 - Water pollution–declining lake clarity
 - Air pollution
 - Fire danger–climate change and evacuation issues

- ▶ Significantly mitigating congestion by adding additional road capacity is not an option
 - Extreme environmental sensitivity
 - High costs for construction and land
 - Lack of alternative routes requires keeping roads open during construction



The solutions have been known for decades:

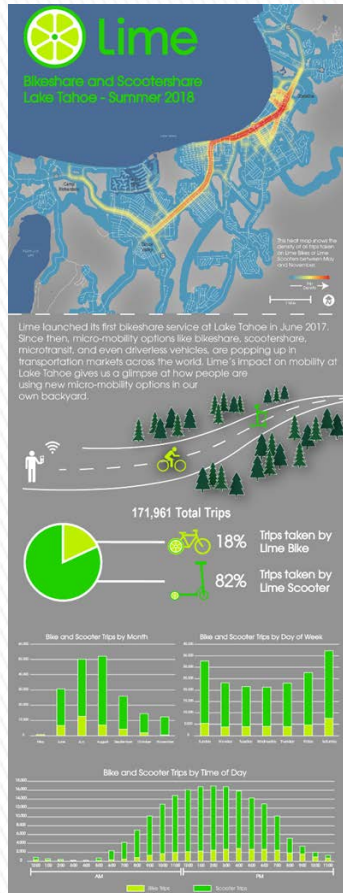
A community vision for a complete transportation system

The community's transportation vision

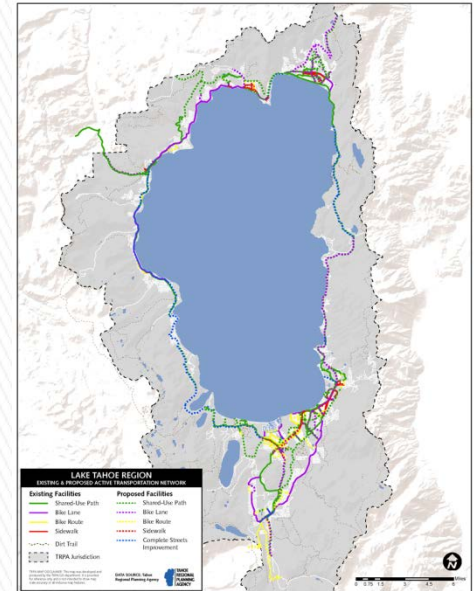
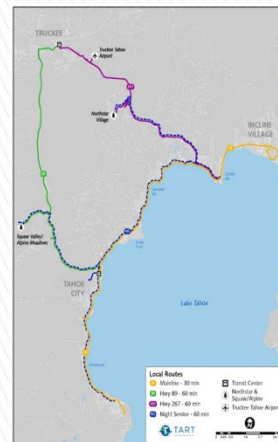
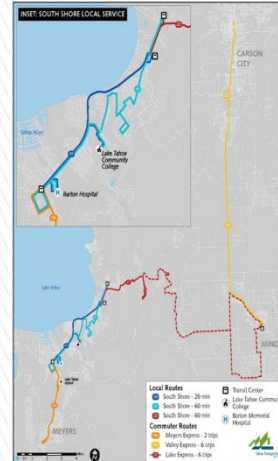


- Articulated in successive transportation plans

A transportation system offering realistic alternatives to the car



Transit
Ferries
Bike
Walking



What is keeping the vision from becoming a reality?

A substantial shortfall in the financial resources needed

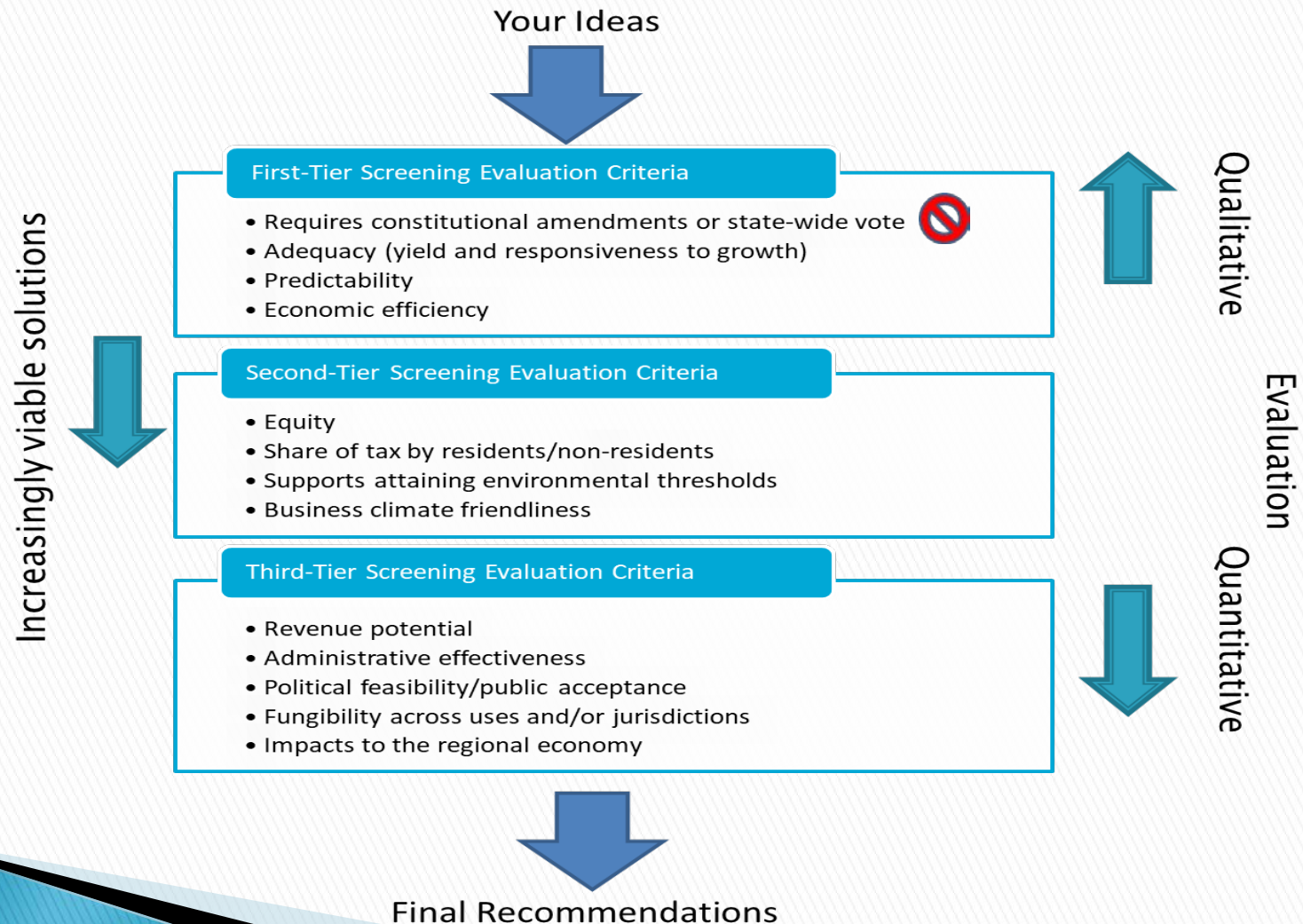
Purpose of ONE TAHOE:

To take significant next steps towards filling the transportation funding shortfall in the Lake Tahoe Basin through 2040 and beyond, including recommendations on funding mechanisms

Tahoe Transportation Funding Shortfall

- ▶ **2017-2040 Data** **(2017\$)**
 - Projected Costs: \$3.11 Billion
 - Projected Existing Revenues: \$1.58 Billion
 - Projected Shortfall: **\$1.53 Billion**
- ▶ **Shortfall \$67 million/year; 1% of basin economic activity**
- ▶ **O&M accounts for about 62% of total costs**
- ▶ **Shortfall investments**
 - \$1.035 billion in transit/water ferries/rail
 - \$366 million in streets, bicycle and pedestrian facilities
 - \$110 million in communications and technology
 - \$18 million in transit oriented development
- ▶ **Sustainability requires commitment beyond 2040**

Gather ideas for funding mechanisms, screen, and evaluate



Ideas for funding mechanisms





























- ▶ Listed verbatim no priority, viability, etc.
 - 1. Sales tax
 - 2. Income tax
 - 3. Property tax
 - 4. Fuel taxes
 - 5. Gross receipts tax
 - 6. Employee tax
 - 7. New sustained federal funding
 - 8. New sustained State of Nevada funding
 - 9. New sustained State of California funding
 - 10. New sustained funding from each county general fund
 - 11. Cordon pricing
 - 12. VMT fee for travel in basin
 - 13. Special district such as a Transportation GID
 - 14. Tolling





























Ideas for funding mechanisms (continued)





























- 15. Joint Powers Authority (JPA)
- 16. Zoned “basin transportation fee”
- 17. Tahoe Transportation Fee collected with vehicle registration fees
- 18. Convert all parking in basin to paid parking
- 19. Developer impact fees
- 20. Hourly transportation user fee for time spent within basin
- 21. Congestion pricing
- 22. Increased transit fares
- 23. Basin entry fee
- 24. Vacancy tax
- 25. Transient occupancy tax (TOT)
- 26. Rental car fees
- 27. Road utility
- 28. Fee/tax on ski passes

Tier 1 screening

- ▶ 28 ideas for funding mechanisms evaluated
- ▶ Primary focus: Elimination of mechanisms
- ▶ Four criteria
 - Does idea require NV or CA constitutional amendments or mandatory statewide votes of the people? If so, a fatal flaw!
 - Can mechanism generate adequate gross revenue at reasonable rates?
 - Is the revenue stream predictable so that the system can be sustained?
 - Does the mechanism have a direct economic link to transportation that encourages efficient use of the system?















Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/ No-go
1	Sales tax	Pass					No-go*
2	Income tax	Fail					No-go
3	Property tax	Pass					No-go
4	Local fuel taxes	Pass					No-go
5	Gross receipts tax	Pass					Go
6	Employee tax	Pass					Go
7	New federal funding	Pass					No-go
8/9	New NV/CA state funding	Pass					No-go

Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/ No-go
10	New city/county general funds	Pass					No-go*
11/23	Cordon pricing/basin entry fee	Pass					Go
12	VMT fee in basin	Pass					Go
13/27	Transportation Utility (Special District)	Pass					Go
14	Tolling	Pass					Go
15	Joint Powers Authority	Pass	Governance structure may be considered for governance of final recommended package if advantageous				No-go
16/20	Zoned transportation user fee	Pass					Go
17	Transportation fee collected with vehicle registration	Pass					No go

Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/ No-go
18	Paid parking	Pass					No go*
19	Developer impact fees	Pass					No go*
21	Congestion pricing	Pass	Pricing structure applicable to multiple mechanisms may be considered for final recommended package				No-go
22	Increased transit fares	Pass					No go
24	Vacancy tax	Pass					Go
25	Transient occupancy tax	Pass					Go
26	Rental car fees	Pass					No-go
28	Tax on ski lift passes	Pass					No-go

Tier 2 screening









































- ▶ Nine candidates passed from Tier 1 screening to Tier 2
- ▶ Four criteria
 - Is the mechanism *equitable* to groups of differing income?
 - Do basin *residents* and *non-residents* reasonably *share* the burden?
 - Could the mechanism encourage behavior that *supports attaining Environmental Thresholds ?*
 - Would the mechanism be *perceived as business friendly?*

Item	Description	Tier 1 summary rating	Equity (2)	Share paid by out-of-basin v. in-basin residents (2)	Supports attaining environmental thresholds (3)	Business climate friendliness (2)	Tier 2 summary rating	Go/ No go
5	Gross receipts tax							No go*
6	Employee payroll tax							No go*
11	Cordon pricing/basin entry fee							Go
12	Vehicle miles traveled (VMT) fee							Go
13	Transportation utility special district							No go*
14	Tolling							Go
16	Zoned transportation user fee							Go
24	Vacancy tax							Go
25	Increased transient occupancy tax							No-go

*Mechanism may be considered for inclusion in a final recommended package if it is useful to address resident versus non-resident equity or other factors.

Tier 3 screening

- ▶ Five candidates passed from Tier 2 screening to Tier 3
- ▶ Five Tier 3 criteria
 - Can the mechanism generate adequate gross revenue?
 - What is the cost and ease of administering and collecting the revenue?
 - How acceptable will the mechanism be to the public and political leaders?
 - Is the revenue fungible so that it can be used across modes, activities, and political jurisdictions?
 - What are the impacts of the revenue on the regional economy?

Item	Description	Tier 1 summary rating	Tier 2 summary rating	Revenue potential (3)	Administrative effectiveness (1)	Political feasibility/public acceptance(2)	Fungibility across modes/uses/jurisdictions(3)	Impacts to regional economy (2)	Tier 3 summary rating
11/23	Cordon pricing/basin entry fee								
12	Vehicle miles traveled (VMT) fee								
14	Tolling								
16	Zoned transportation user fee								
24	Vacancy tax								

Transportation user fees

- ▶ Most equitable, effective and efficient given different types of use and users
 - Residents
 - Non-commuters
 - Commuters
 - Resident businesses
 - Non-residents
 - Day visitors
 - Extended visitors
 - Commuters
- ▶ Full transparency–revenue targets and fees driven by Regional Transportation Plan

Transportation user fees

- ▶ Maximum fungibility across:
 - Governmental/administrative jurisdictions
 - Modes
 - Roads
 - Transit
 - Water ferries and taxis
 - Bicycle facilities
 - Pedestrian facilities
 - Activities
 - Capital
 - Operations and maintenance

Transportation user fees

- ▶ Administrative implementation/amendment
- ▶ Flexibility to deal with future changes
 - Revenue from other sources (fed, state, local, private)
 - New mandates impacting transportation by local, state, and federal governments
 - Air quality
 - GHG
 - Congestion
 - Water quality
 - New technology
 - Evolving community goals
 - Adjustments to maintain equity in “who is paying”

Recommended transportation user fees and illustrative* rates (2019\$)

▶ Non-residents

- Non-resident, non-commuter groups (1 or more persons) entering the basin by vehicle: \$4.10/day
- Non-resident, commuter groups (1 or more persons) entering the basin by vehicle: \$1.06/day

▶ Residents

- Resident households: \$7.00/month
- Resident businesses based on trip generation of land use: average \$71/month

*Planning level estimates based upon one scenario. May be subject to significant revisions based subsequent public/political processes and decision making, and system implementation.

Planning, programming, and budgeting

- ▶ Planning (RTP), programming (RTIP), and budgeting of ONE TAHOE revenues
- ▶ All projects and services must be in RTP and RTIP (Use existing TRPA/TMPO processes)
- ▶ Draft budgets by Technical Advisory Committee appointed by TTD Board with priorities based upon:
 - Routine operations and maintenance
 - System preservation
 - System renewal
 - New/expanded projects or services
- ▶ Unanimous agreement by TTD Board on budgets and budget amendments

Additional governance issues

- ▶ Perceived inequities in current levels of transportation investment by member entities
- ▶ “Return of revenue to source”
- ▶ Maintaining equity between and among Resident and Non-Resident users over time
- ▶ Establishing fee structures and fee rates

Recommendation, if participation is desired

- ▶ Amend Bi-state compact to allow transportation user fees to be collected in the basin by TTD
 - Revenues would be invested in projects and services in the RTP
 - Per the RTP, significant investments would be made outside the basin for connectivity including in the portions of the RT outside the basin and in TT

and...

- ▶ Pursue legislation in California to create one or more new transportation special districts encompassing the Resort Triangle outside the basin and Town of Truckee
 - Agreements could then be entered into between TTD and the new district(s) to establish joint revenue collection, revenue sharing, conjunctive funding of projects, etc.

Major task/milestone timeline for implementation

Major task/milestone	2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Decision by TTD on 4 key issues	■															
Key elements of draft legislation to NV IC; recruit sponsors		■														
Key elements of draft legislation to CA select legislators; recruit sponsors		■														
Develop bill language with NV IC and sponsors; reconciliation w/CA			■	■												
Develop bill language with CA sponsors; reconciliation w/NV			■	■												
Introduce bill in CA legislature					■											
Introduce bill in NV legislature					■											
Final passage of bill in NV legislature						■										
Final passage of bill in CA legislature						■										
RFP soliciting DBF for collection systems							■	■								
Resolve governance issues; develop administrative tools, fee structures, etc.			■	■	■	■	■	■	■	■	■	■				
Permit/Design/Build/Test collection systems									■	■	■	■				
Begin revenue collection													■			
Outreach and education to public, business, stakeholders, electeds	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Where do we go from here?

- ▶ Everyone will have something they don't like!

But ask them ...

- Do you agree there is a transportation problem?
- Is it important to fix it?
- If you don't like these funding ideas, what are your specific concerns?
- What could you support?
- If visitors need to be a part of the solution, what is the best mechanism to capture their contribution?

If not fixing the problem is unacceptable, we must reach consensus!

Thank you!

Various groups

Jul-Sep 2020

ONE TAHOE

A transportation funding initiative





exhilaration ...



rejuvenation...



recreation...

... but the quality of the “Tahoe experience”, the Lake’s fragile environment, and our economic prosperity are threatened.

Transportation Challenges to Lake Tahoe

- ▶ Congestion on roadways and parking lots
 - Unsafe conditions for drivers, pedestrians, and cyclists
 - Water pollution–declining lake clarity
 - Air pollution
 - Fire danger–climate change and evacuation issues

- ▶ Significantly mitigating congestion by adding additional road capacity is not an option
 - Extreme environmental sensitivity
 - High costs for construction and land
 - Lack of alternative routes requires keeping roads open during construction



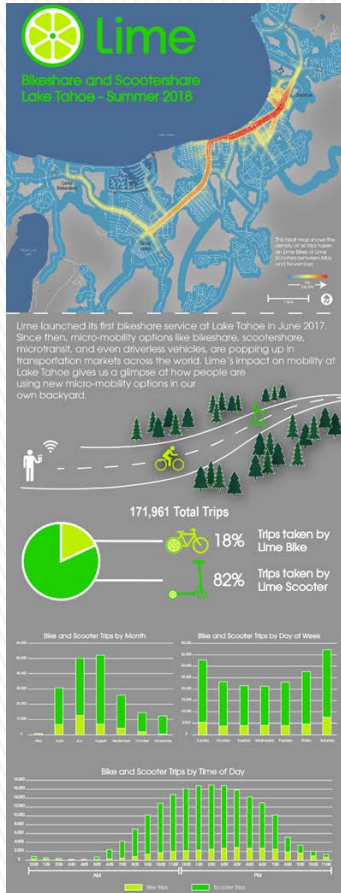
The community has a solution: A complete transportation system



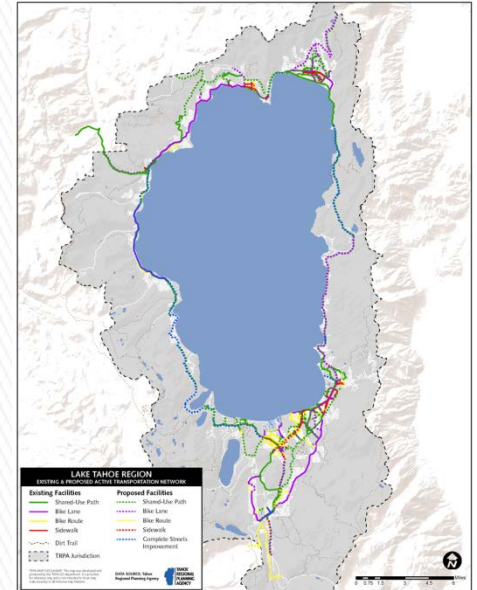
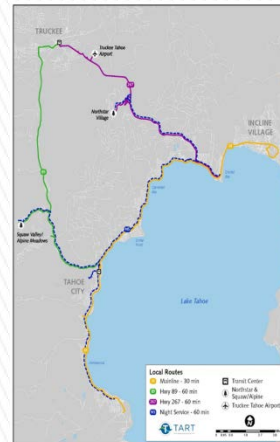
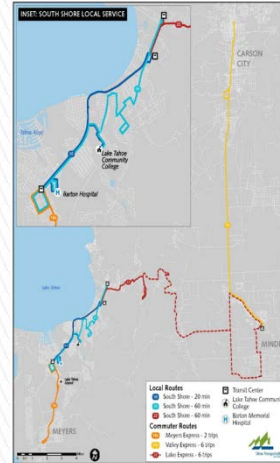
- ▶ Articulated in successive transportation plans



Realistic alternatives to the car



Transit
Ferries
Bike
Walking



2017–2040 Regional Transportation Plan vision:

- ▶ Eliminate the large backlog of road repairs
- ▶ Keep transportation infrastructure in good repair and operating smoothly
- ▶ Expand transit services more than 800%
 - Longer hours of service
 - Increased frequency
 - Greater geographic coverage
 - Increase transit mode share from 1.4% to 20% in 12 years
- ▶ Cross-lake ferry and local water taxis
- ▶ More than double bike/pedestrian facilities including completing a path around the lake
- ▶ Greatly expand parking/park & ride facilities
- ▶ Robust traveler & emergency communications

What is keeping the vision from becoming a reality?

A substantial shortfall in the financial resources needed

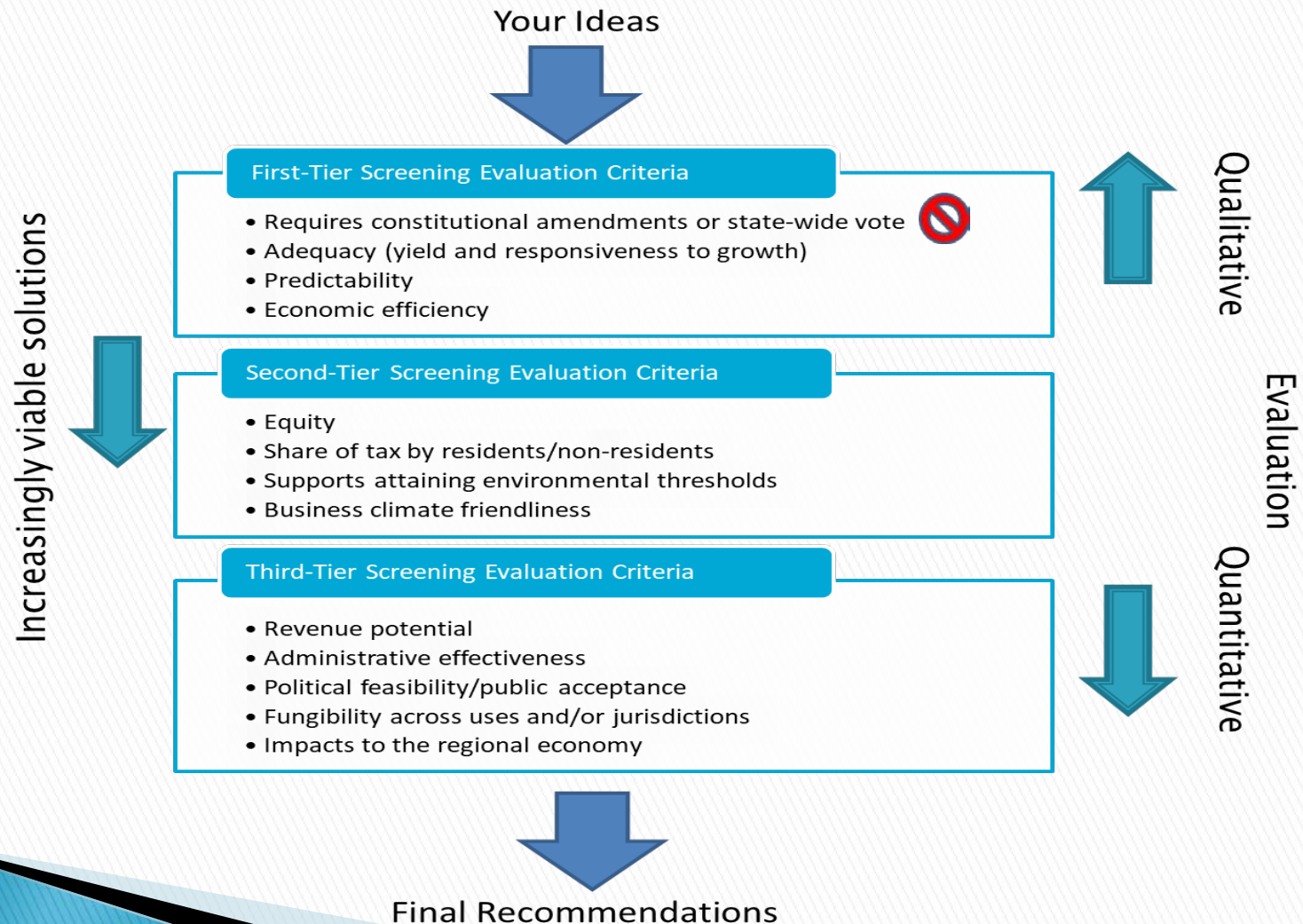
Purpose of ONE TAHOE:

To take significant next steps towards filling the transportation funding shortfall in the Lake Tahoe Basin through 2040 and beyond, including recommendations on funding mechanisms

Tahoe Transportation Funding Shortfall

- ▶ **2017-2040 Data** **(2017\$)**
 - Projected Costs: \$3.11 Billion
 - Projected Existing Revenues: \$1.58 Billion
 - Projected Shortfall: **\$1.53 Billion**
- ▶ **Shortfall \$67 million/year; 1% of basin economic activity**
- ▶ **O&M accounts for about 62% of total costs**
- ▶ **Shortfall investments**
 - \$1.035 billion in transit/water ferries/rail
 - \$366 million in streets, bicycle and pedestrian facilities
 - \$110 million in communications and technology
 - \$18 million in transit oriented development
- ▶ **Sustainability requires commitment beyond 2040**

Gather ideas for funding mechanisms, screen, and evaluate



Ideas for funding mechanisms





























- ▶ Listed verbatim no priority, viability, etc.
 - 1. Sales tax
 - 2. Income tax
 - 3. Property tax
 - 4. Fuel taxes
 - 5. Gross receipts tax
 - 6. Employee tax
 - 7. New sustained federal funding
 - 8. New sustained State of Nevada funding
 - 9. New sustained State of California funding
 - 10. New sustained funding from each county general fund
 - 11. Cordon pricing
 - 12. VMT fee for travel in basin
 - 13. Special district such as a Transportation GID
 - 14. Tolling





























Ideas for funding mechanisms (continued)





























- 15. Joint Powers Authority (JPA)
- 16. Zoned “basin transportation fee”
- 17. Tahoe Transportation Fee collected with vehicle registration fees
- 18. Convert all parking in basin to paid parking
- 19. Developer impact fees
- 20. Hourly transportation user fee for time spent within basin
- 21. Congestion pricing
- 22. Increased transit fares
- 23. Basin entry fee
- 24. Vacancy tax
- 25. Transient occupancy tax (TOT)
- 26. Rental car fees
- 27. Road utility
- 28. Fee/tax on ski passes

Tier 1 screening

- ▶ 28 ideas for funding mechanisms evaluated
- ▶ Primary focus: Elimination of mechanisms
- ▶ Four criteria
 - Does idea require NV or CA constitutional amendments or mandatory statewide votes of the people? If so, a fatal flaw!
 - Can mechanism generate adequate gross revenue at reasonable rates?
 - Is the revenue stream predictable so that the system can be sustained?
 - Does the mechanism have a direct economic link to transportation that encourages efficient use of the system?











Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/ No-go
1	Sales tax	Pass					No-go*
2	Income tax	Fail					No-go
3	Property tax	Pass					No-go
4	Local fuel taxes	Pass					No-go
5	Gross receipts tax	Pass					Go
6	Employee tax	Pass					Go
7	New federal funding	Pass					No-go
8/9	New NV/CA state funding	Pass					No-go

Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/ No-go
10	New city/county general funds	Pass					No-go*
11/23	Cordon pricing/basin entry fee	Pass					Go
12	VMT fee in basin	Pass					Go
13/27	Transportation Utility (Special District)	Pass					Go
14	Tolling	Pass					Go
15	Joint Powers Authority	Pass	Governance structure may be considered for governance of final recommended package if advantageous				No-go
16/20	Zoned transportation user fee	Pass					Go
17	Transportation fee collected with vehicle registration	Pass					No go

Item	Description	Constitutional Prohibition	Adequacy (2)	Predictability (2)	Economic Efficiency (1)	Summary rating	Go/ No-go
18	Paid parking	Pass					No go*
19	Developer impact fees	Pass					No go*
21	Congestion pricing	Pass	Pricing structure applicable to multiple mechanisms may be considered for final recommended package				No-go
22	Increased transit fares	Pass					No go
24	Vacancy tax	Pass					Go
25	Transient occupancy tax	Pass					Go
26	Rental car fees	Pass					No-go
28	Tax on ski lift passes	Pass					No-go

Tier 2 screening









































- ▶ Nine candidates passed from Tier 1 screening to Tier 2
- ▶ Four criteria
 - Is the mechanism *equitable* to groups of differing income?
 - Do basin *residents* and *non-residents* reasonably *share* the burden?
 - Could the mechanism encourage behavior that *supports attaining Environmental Thresholds ?*
 - Would the mechanism be *perceived as business friendly?*

Item	Description	Tier 1 summary rating	Equity (2)	Share paid by out-of-basin v. in-basin residents (2)	Supports attaining environmental thresholds (3)	Business climate friendliness (2)	Tier 2 summary rating	Go/ No go
5	Gross receipts tax							No go*
6	Employee payroll tax							No go*
11	Cordon pricing/basin entry fee							Go
12	Vehicle miles traveled (VMT) fee							Go
13	Transportation utility special district							No go*
14	Tolling							Go
16	Zoned transportation user fee							Go
24	Vacancy tax							Go
25	Increased transient occupancy tax							No-go

*Mechanism may be considered for inclusion in a final recommended package if it is useful to address resident versus non-resident equity or other factors.

Tier 3 screening

- ▶ Five candidates passed from Tier 2 screening to Tier 3
- ▶ Five Tier 3 criteria
 - Can the mechanism generate adequate gross revenue?
 - What is the cost and ease of administering and collecting the revenue?
 - How acceptable will the mechanism be to the public and political leaders?
 - Is the revenue fungible so that it can be used across modes, activities, and political jurisdictions?
 - What are the impacts of the revenue on the regional economy?

Item	Description	Tier 1 summary rating	Tier 2 summary rating	Revenue potential (3)	Administrative effectiveness (1)	Political feasibility/public acceptance(2)	Fungibility across modes/uses/jurisdictions(3)	Impacts to regional economy (2)	Tier 3 summary rating
11/23	Cordon pricing/basin entry fee								
12	Vehicle miles traveled (VMT) fee								
14	Tolling								
16	Zoned transportation user fee								
24	Vacancy tax								

Transportation user fees

- ▶ Most equitable, effective and efficient given different types of use and users
 - Residents
 - Non-commuters
 - Commuters
 - Resident businesses
 - Non-residents
 - Day visitors
 - Extended visitors
 - Commuters
- ▶ Full transparency–revenue targets and fees driven by Regional Transportation Plan

Transportation user fees

- ▶ Basin-wide fees provide fungibility across:
 - Governmental/administrative jurisdictions
 - Modes
 - Roads
 - Transit
 - Water ferries and taxis
 - Bicycle facilities
 - Pedestrian facilities
 - Activities
 - Capital
 - Operations and maintenance

Transportation user fees

- ▶ Administrative implementation/amendment
- ▶ Flexibility to deal with future changes
 - Revenue from other sources (fed, state, local, private)
 - New mandates impacting transportation by local, state, and federal governments
 - Air quality
 - GHG
 - Congestion
 - Water quality
 - New technology
 - Evolving community goals
 - Adjustments to maintain equity in “who is paying”

Recommended transportation user fees and illustrative* rates (2019\$)

▶ Non-residents

- Non-resident, non-commuter groups (1 or more persons) entering the basin by vehicle: \$4.10/day
- Non-resident, commuter groups (1 or more persons) entering the basin by vehicle: \$1.06/day

▶ Residents

- Resident households: \$7.00/month
- Resident businesses based on trip generation of land use: average \$71/month

*Planning level estimates based upon one scenario. May be subject to significant revisions based subsequent public/political processes and decision making, and system implementation.

RTP w/adjustments geographic location of investments (2017\$)

Constrained Expenses	El Dorado excl CSLT	CSLT	Placer incl RT and TT	Washoe	Carson	Douglas	Total all years
Roads/Bike/Peds	\$ 147,126,000	\$ 256,336,000	\$ 133,270,000	\$ 100,258,000	\$ 14,778,000	\$ 28,818,000	\$ 680,586,000
Transit	\$ 152,314,000	\$ 171,542,000	\$ 299,535,000	\$ 18,436,000	\$ 35,448,000	\$102,956,000	\$ 780,231,000
TMDL	\$ 31,773,000	\$ 31,773,000	\$ 31,773,000	\$ 5,641,000	\$ 5,641,000	\$ 5,641,000	\$ 112,242,000
Tech	\$ 942,000	\$ 1,179,000	\$ 942,000	\$ 675,000	\$ 675,000	\$ 1,162,000	\$ 5,575,000
Subtotal constrained expenses	\$ 332,155,000	\$ 460,830,000	\$ 465,520,000	\$ 125,010,000	\$ 56,542,000	\$138,577,000	\$ 1,578,634,000
Unconstrained Expenses							
Roads/Bike/Peds	\$ 198,892,000	\$ 167,618,000	\$ 53,514,000	\$ 81,590,000	\$ 37,700,000	\$ 87,562,000	\$ 626,876,000
Transit	\$ 173,017,000	\$ 264,943,000	\$ 137,236,000	\$ 133,302,000	\$ 2,300,000	\$ 45,298,000	\$ 756,096,000
TMDL	\$ 8,985,000	\$ -	\$ 8,985,000	\$ 8,985,000	\$ 8,985,000	\$ 8,985,000	\$ 44,925,000
Tech	\$ 14,615,000	\$ 17,167,000	\$ 19,115,000	\$ 16,115,000	\$ 16,115,000	\$ 16,115,000	\$ 99,242,000
Subtotal unconstrained expenses	\$ 395,509,000	\$ 449,728,000	\$ 218,850,000	\$ 239,992,000	\$ 65,100,000	\$157,960,000	\$ 1,527,139,000
Total all	\$ 727,664,000	\$ 910,558,000	\$ 684,370,000	\$ 365,002,000	\$121,642,000	\$296,537,000	\$ 3,105,773,000

- ▶ Article IX of Bi-state Compact created TTD with:
 - Mission to implement projects and services "in accordance with its adopted transportation plan" (RTP)
 - Geography of operation coterminous with TRPA but may go outside of the basin for connectivity
 - Revenue authority to pursue transportation taxes but this has proven to be impractical
- ▶ Article IX is the only article of the Compact that can be amended by CA and NV without US Congress approval
- ▶ Recommend amending Article IX to enable TTD to levy transportation user fees

Major task/milestone timeline for implementation

Major task/milestone	2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Decision by TTD on 4 key issues	■															
Key elements of draft legislation to NV IC; recruit sponsors		■														
Key elements of draft legislation to CA select legislators; recruit sponsors		■														
Develop bill language with NV IC and sponsors; reconciliation w/CA			■	■												
Develop bill language with CA sponsors; reconciliation w/NV			■	■												
Introduce bill in CA legislature					■											
Introduce bill in NV legislature					■											
Final passage of bill in NV legislature						■										
Final passage of bill in CA legislature						■										
RFP soliciting DBF for collection systems							■	■								
Resolve governance issues; develop administrative tools, fee structures, etc.			■	■	■	■	■	■	■	■	■	■				
Permit/Design/Build/Test collection systems									■	■	■	■				
Begin revenue collection													■			
Outreach and education to public, business, stakeholders, electeds	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Looking ahead

- ▶ Q1 2023 is projected to be the earliest date that fee collections could begin
- ▶ Missing the 2021 legislative sessions would push collection out to 2025 or later
- ▶ Broad based support from local governments and key stakeholders critical to legislative success
- ▶ Huge amount of additional work on governance/ administrative processes and procedures to be done in parallel to pursuit of enabling legislation

- ▶ Planning, programming, and budgeting
- ▶ Priority setting
- ▶ Establishing and documenting revenue targets
- ▶ Fee structure
- ▶ Fee rates
- ▶ Credits/offsets for resident fees
- ▶ Adjustments to fee rates
 - annual inflationary
 - annual target revenue variance
 - periodic with RTP updates
- ▶ Fee collection
- ▶ Cost/revenue sharing with external entities
- ▶ Appeals
- ▶ Pass-through funding and conjunctively funded projects
- ▶ Funding of administrative costs
- ▶ Regional minimal standards for eligible projects, investment, transit, and road LOS
- ▶ Tracking, monitoring, and reporting
 - intergovernmental equity
 - resident versus non-resident equity
 - needs versus investments
- ▶ Collection systems and equipment design, procurement and installation

Recommendations on planning, programming, and budgeting

- ▶ Planning (RTP), programming (RTIP), and budgeting of ONE TAHOE revenues
- ▶ All projects and services must be in RTP and RTIP (Use existing TRPA/TMPO processes)
- ▶ Draft budgets by Technical Advisory Committee appointed by TTD Board with priorities based upon:
 - Routine operations and maintenance
 - System preservation
 - System renewal
 - New/expanded projects or services
- ▶ Unanimous agreement by TTD Board on budgets and budget amendments

Planning

- Regional Transportation Plan (RTP) 20+ years
- Lead: TRPA/TMPO
- Contributors:
 - Public
 - Local governments
 - State DOTs/DCNRs
 - Public/private operators

Programming

- Regional Transportation Improvement Program (RTIP) 3–5 years
- Projects/services must be in RTP
- Lead: TRPA/TMPO
- Contributors:
 - Public
 - Local governments
 - State DOTs/DCNRs
 - Public/private operators

Budgeting

- Annual ONE TAHOE budget
- Projects/services must be in RTIP
- Lead: TTD
- Contributors:
 - TRPA/TMPO
 - Transportation Tech Advisory Committee
 - State DOTs/DCNRs
 - Public/private operators

Critical direction/decisions needed by Oct 2020

- ▶ Concurrence on transportation user fees as the mechanism
- ▶ Direction to pursue enabling legislation for user fees in NV and CA by amending Article IX
- ▶ Direction to proceed with the development of governance/administrative policies, procedures, processes, etc.

Where do we go from here?

- ▶ Everyone will have something they don't like!

But ask them ...

- Do you agree there is a transportation problem?
- Is it important to fix it?
- If you don't like these funding ideas, what are your specific concerns?
- What could you support?
- If visitors need to be a part of the solution, what is the best mechanism to capture their contribution?

If not fixing the problem is unacceptable, we must reach consensus!

Thank you!

Douglas County Commission
Oct 2020

ONE TAHOE

A transportation funding initiative

Update



The big picture...

- ▶ Heavy reliance on the automobile threatens the Lake
 - Congestion, air and water pollution, unsafe conditions for travelers
 - Degradation of the Tahoe “Experience”
 - Reduced competitiveness as a destination with potentially severe impacts to the economy
- ▶ Visitation seems to be even more intense in the time of COVID 19

Solutions exist

- ▶ Community vision for a complete transportation system articulated through successive RTPs
 - Bring the system up to good condition and keep it there
 - Provide realistic alternatives to auto not for all trips but where and when it works through new investments in:
 - Transit
 - Bike and ped facilities
 - Ferries and water taxis
 - Traveler communications
- ▶ For decades, transportation funding shortfalls have kept vision from becoming reality

ONE TAHOE transportation funding initiative

- ▶ Refine needs, revenues, and shortfall
- ▶ Outreach to all on shortfall and seek ideas for new funding mechanisms
- ▶ Screen and evaluate funding mechanism ideas
- ▶ Recommendations on mechanisms best suited to Tahoe's unique circumstances

Transportation Funding Shortfall

▶ 2017-2040 RTP with adjustments (2017\$)

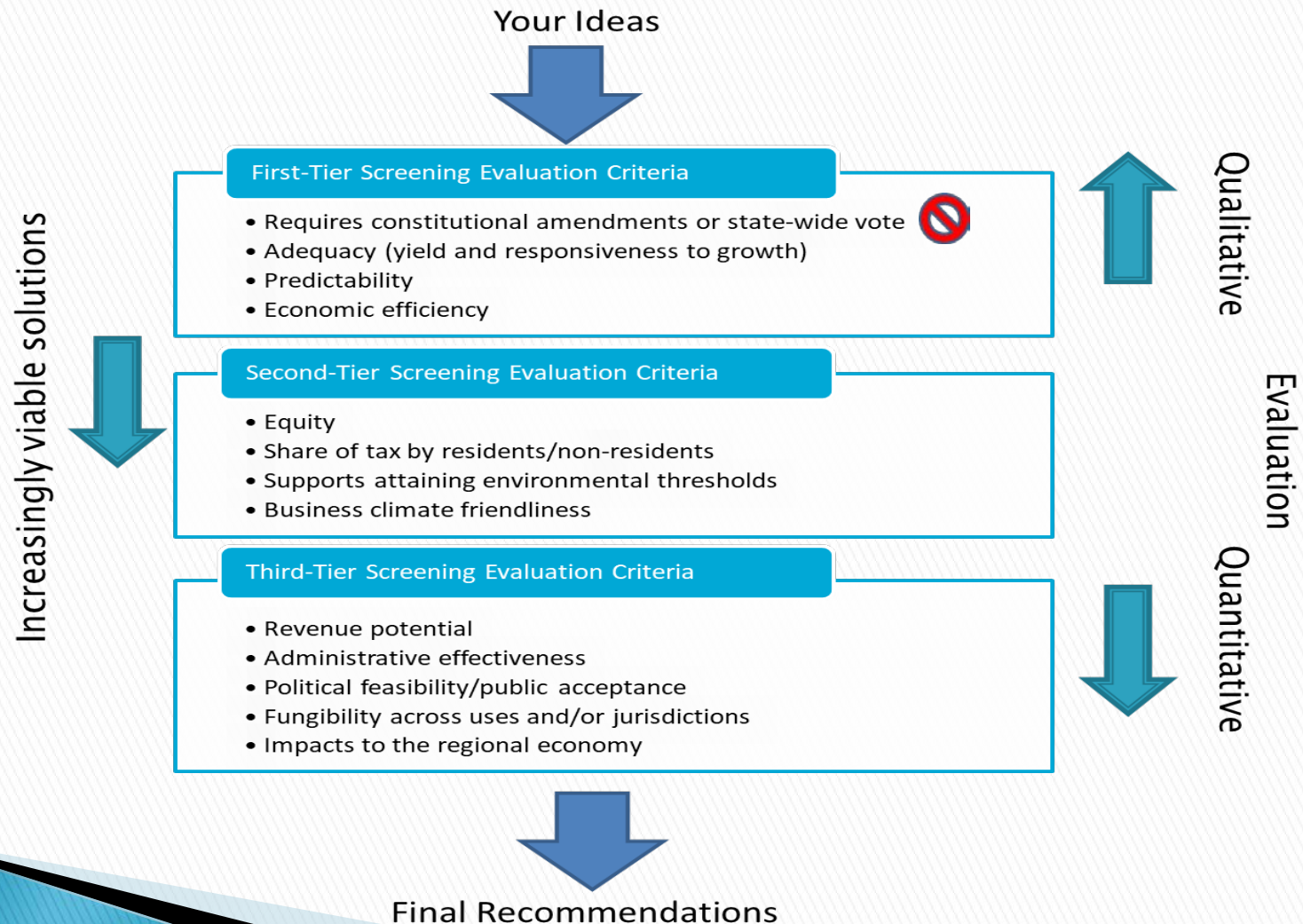
Projected Costs: \$3.11 Billion

Projected Existing Revenues: \$1.58 Billion

Projected Shortfall: **\$1.53 Billion**

- ▶ **Shortfall average about \$67 million/year**
- ▶ **O&M accounts for about 62% of total costs**
- ▶ **Numbers could change with RTP update**
- ▶ **Strong convergence with Bi-state 10 year program**
- ▶ **Sustainability requires commitment beyond 2040**

Gather ideas for funding mechanisms, screen, and evaluate



Screening/evaluation of funding mechanism ideas

- ▶ 28 ideas related to funding received and considered
- ▶ Visitors
 - 75% of all vehicle trips
 - 42% of visitors are “day trippers”
 - Account for about 5% of existing funding
 - New mechanism must effectively capture revenue from short and long-term visitors
- ▶ Fungibility
 - Use restrictions a significant problem with current funding
 - New funding with minimal use restrictions is critical
- ▶ Administrative effectiveness
 - Collections must create minimal disruption to travelers
 - Administrative flexibility crucial to respond to a changing world

Transportation user fees

- ▶ Most equitable, effective and efficient given different types of use and users
 - Residents
 - Non-commuters
 - Commuters
 - Resident businesses
 - Non-residents
 - Day visitors
 - Extended visitors
 - Commuters
- ▶ Full transparency–revenue targets and fees driven by Regional Transportation Plan

Transportation user fees

- ▶ Basin-wide fees provide fungibility across:
 - Governmental/administrative jurisdictions
 - Modes
 - Roads
 - Transit
 - Water ferries and taxis
 - Bicycle facilities
 - Pedestrian facilities
 - Activities
 - Capital
 - Operations and maintenance

Transportation user fees

- ▶ Administrative implementation/amendment
- ▶ Flexibility to deal with future changes
 - Revenue from other sources (fed, state, local, private)
 - New mandates impacting transportation by local, state, and federal governments
 - Air quality
 - GHG
 - Congestion
 - Water quality
 - New technology
 - Evolving community goals
 - Adjustments to maintain equity in “who is paying”

Recommended transportation user fees and illustrative* rates (2019\$)

▶ Non-residents

- Non-resident, non-commuter groups (1 or more persons) entering the basin by vehicle: \$4.10/day
- Non-resident, commuter groups (1 or more persons) entering the basin by vehicle: \$1.06/day

▶ Residents

- Resident households: \$7.00/month
- Resident businesses based on trip generation of land use: average \$71/month

*Planning level estimates based upon one scenario. May be subject to significant revisions based subsequent public/political processes and decision making, and system implementation.

RTP w/adjustments geographic location of investments (2017\$)

Constrained Expenses	El Dorado excl CSLT	CSLT	Placer incl RT and TT	Washoe	Carson	Douglas	Total all years
Roads/Bike/Peds	\$ 147,126,000	\$ 256,336,000	\$ 133,270,000	\$ 100,258,000	\$ 14,778,000	\$ 28,818,000	\$ 680,586,000
Transit	\$ 152,314,000	\$ 171,542,000	\$ 299,535,000	\$ 18,436,000	\$ 35,448,000	\$102,956,000	\$ 780,231,000
TMDL	\$ 31,773,000	\$ 31,773,000	\$ 31,773,000	\$ 5,641,000	\$ 5,641,000	\$ 5,641,000	\$ 112,242,000
Tech	\$ 942,000	\$ 1,179,000	\$ 942,000	\$ 675,000	\$ 675,000	\$ 1,162,000	\$ 5,575,000
Subtotal constrained expenses	\$ 332,155,000	\$ 460,830,000	\$ 465,520,000	\$ 125,010,000	\$ 56,542,000	\$138,577,000	\$ 1,578,634,000
Unconstrained Expenses							
Roads/Bike/Peds	\$ 198,892,000	\$ 167,618,000	\$ 53,514,000	\$ 81,590,000	\$ 37,700,000	\$ 87,562,000	\$ 626,876,000
Transit	\$ 173,017,000	\$ 264,943,000	\$ 137,236,000	\$ 133,302,000	\$ 2,300,000	\$ 45,298,000	\$ 756,096,000
TMDL	\$ 8,985,000	\$ -	\$ 8,985,000	\$ 8,985,000	\$ 8,985,000	\$ 8,985,000	\$ 44,925,000
Tech	\$ 14,615,000	\$ 17,167,000	\$ 19,115,000	\$ 16,115,000	\$ 16,115,000	\$ 16,115,000	\$ 99,242,000
Subtotal unconstrained expenses	\$ 395,509,000	\$ 449,728,000	\$ 218,850,000	\$ 239,992,000	\$ 65,100,000	\$157,960,000	\$ 1,527,139,000
Total all	\$ 727,664,000	\$ 910,558,000	\$ 684,370,000	\$ 365,002,000	\$121,642,000	\$296,537,000	\$ 3,105,773,000

- ▶ Article IX of Bi-state Compact created TTD with:
 - Mission to implement projects and services "in accordance with its adopted transportation plan" (RTP)
 - Geography of operation coterminous with TRPA but may go outside of the basin for connectivity
 - Revenue authority to pursue transportation taxes but this has proven to be impractical
- ▶ Article IX is the only article of the Compact that can be amended by CA and NV without US Congress approval
- ▶ Recommend amending Article IX to enable TTD to levy transportation user fees

Major task/milestone timeline for implementation

Major task/milestone	2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Decision by TTD on 4 key issues	■															
Key elements of draft legislation to NV IC; recruit sponsors		■														
Key elements of draft legislation to CA select legislators; recruit sponsors		■														
Develop bill language with NV IC and sponsors; reconciliation w/CA			■	■												
Develop bill language with CA sponsors; reconciliation w/NV			■	■												
Introduce bill in CA legislature					■											
Introduce bill in NV legislature					■											
Final passage of bill in NV legislature						■										
Final passage of bill in CA legislature						■										
RFP soliciting DBF for collection systems							■	■								
Resolve governance issues; develop administrative tools, fee structures, etc.			■	■	■	■	■	■	■	■	■	■				
Permit/Design/Build/Test collection systems									■	■	■	■				
Begin revenue collection													■			
Outreach and education to public, business, stakeholders, electeds	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Looking ahead

- ▶ Q1 2023 is projected to be the earliest date that fee collections could begin if enabled
- ▶ Missing the 2021 legislative sessions would push collection out to 2025 or later
- ▶ Broad based support from local governments and key stakeholders critical to legislative success
- ▶ Huge amount of additional work on governance/ administrative processes and procedures to be done in parallel to pursuit of enabling legislation

Critical decisions needed in Q4 2020

- ▶ Concurrence on transportation user fees as the mechanism
- ▶ Direction to pursue enabling legislation for user fees in NV and CA by amending Article IX
- ▶ Direction to proceed with the development of governance/administrative policies, procedures, processes, etc.

ONE TAHOE clarifications

- ▶ Enabling legislation does not implement fees but provides an option for the future
- ▶ Revenue can only be used for Regional Transportation Plan (RTP) projects/services
- ▶ Fee rates are limited because directly connected to the RTP shortfall
- ▶ Douglas County has a vote on:
 - What is in the RTP
 - Whether or not a fee is implemented
 - Annual ONE TAHOE budgets

Where do we go from here?

- ▶ Among the public and stakeholders there is a strong agreement:
 - Tahoe has a serious transportation problem and it is getting worse.
 - It is urgent to fix this problem.
 - Both visitors and residents need to bear a reasonable share of the financial burden.

***If user fees are not the answer, then what?
If now is not the time, then when?***

Thank you!

Appendix G:

Polling

Polling

To inform the work of the consultant team, existing polling data was reviewed and additional proprietary polls (also referred to as surveys) were conducted in California, Nevada, and the Tahoe Basin. The polls were conducted by The Cromer Group, a nationally respected firm that has been conducting polls in the Tahoe Region for years.

These were “cold” polls, that is there was no prior public campaign to inform the electorate of the transportation issues in the Tahoe Region. Top line data Selected portions of these polls are along with presentations of the meaning of the data are given below.

As is common practice, topline results were collapsed for graphic presentation of data. Extensive, detailed cross tabulations enable a more nuanced interpretation of poll data and its meaning. Some minor variation between tabulations and graphics are caused by rounding.

WILLIAM M. CROMER, President, The Cromer Group

William Cromer is a nationally known political advisor, pollster, business and media consultant. He has over 40 years of experience using quantitative and qualitative research to advise campaigns, corporations, associations and universities on critical marketing decisions and matters of public policy.

In 1978, Mr. Cromer devised and formulated the geographic “T” strategy, well-known in Pennsylvania politics, which is still utilized in statewide campaigns today. His reputation for accuracy and precision has been cited in publications such as the New York Times, Philadelphia Inquirer, Anchorage Daily News, Pittsburgh Post Gazette, and Adweek.

He has designed strategies and worked with corporate and association clients such as the three major oil companies in Alaska: BP, ConocoPhillips, and ExxonMobil, in addition to other corporate entities including Mellon Bank, Hershey Foods, USX, IBM, Pennsylvania State University, the University of Alaska, the Pennsylvania Cable Television Association, AFSCME-Council 13, the National Education Association, the National Committee to Preserve Social Security and Medicare, The Nature Conservancy, the Washington State United Food & Commercial Workers, the American Farmland Trust, the Newspaper Association of America, the Tahoe Regional Planning Agency, the Tahoe Transportation District, and the University of Nevada Reno.

The Cromer Group has been polling public opinion on Tahoe issues both inside and outside the Basin since 2002 conducting more than 50 regional and/or statewide surveys. And with the U.S. Army Corps of Engineers, The Cromer Group completed a series of focus groups in the primary Tahoe visitor markets of Las Vegas, the Los Angeles Area, San Francisco, Walnut Creek and Reno. These focus groups explored perceptions of Tahoe visitors, including transportation issues.

Mr. Cromer and his company have done extensive research among the public for numerous health care providers. In Alaska, he has conducted public opinion research for Providence Alaska Medical Center in Fairbanks, the Mat-Su Valley, the Kenai Peninsula, the Alaska State Hospital and Nursing Home Association. Other clients have included the New Jersey Medical InterInsurance Exchange and Our Lady of Lourdes Hospital in New Jersey, The Pennsylvania Medical Society, the Florida Medical Society, the

Arizona Medical Society, the Northern Colorado Medical Center, an all-Latino study for Providence's Saint Joseph Medical Center in Los Angeles, public opinion survey research for Providence Hospital in Santa Clarita, and Yakima Valley in the State of Washington and on the island of Oahu in Hawaii.

Political clients have included U.S. Senator Lisa Murkowski's historic, successful, write-in reelection campaign in Alaska, former Ohio Senator John Glenn, former Pennsylvania Senator John Heinz, former Congressional Chairmen Peter Rodino (NJ) and Walter Jones, Sr. (NC); Congressman Jim Florio (N.J.); Marcy Kaptur (OH); and Bart Stupak (MI); Alaska Governors Bill Sheffield, Steve Cowper, Tony Knowles and Frank Murkowski; the National Democratic Senate Campaign Committee, the National Democratic Governor's Association, the Pennsylvania and Colorado House Democratic Campaign Committees, and the Michigan Senate Democratic Campaign Committee as well as the Nevada Minority House Caucus. Mr. Cromer has also conducted polling in British Columbia and served as a consultant to Mexico's Sindicato Nacional Trabajadores Educacion.

The Cromer Group also has extensive experience working on public policy issues such as health care reform, state and local tax reform, economic development and a variety of consumer issues.

Mr. Cromer is a native of Pennsylvania and has served as an adjunct professor at Pennsylvania State University, his alma mater. Mr. Cromer has been a guest lecturer at the John F. Kennedy School of Government at Harvard University. He currently lives in Washington, D.C.

In some cases, the ONE TAHOE effort was fortunate to have data from earlier statewide polls conducted by The Cromer Group in 2005 and 2012 which asked identical questions to the new polls conducted in Jan/Feb 2019. The first of the series was conducted in both states in 2005. The second was conducted in 2012, and the third, this past January/February of 2019 for ONE TAHOE— six studies in total, three each in California and Nevada.

Methodology Jan/Feb 2019 California and Nevada surveys

The surveys were conducted by telephone among registered voters. Nevada was divided into six regions: Las Vegas, Henderson, rest of Clark County, Washoe County, Carson/Douglas Counties, and rest of Nevada. California was also divided into six regions as displayed in Figure F-1. The proportion of voters interviewed in each region was representative of that unique region's percent of registered voters. The list of registered voters for each study was secured from L2 Political in Seattle, Washington, previously known as Labels and Lists. The company has been providing voter list data since 1975.

The sample size for the statewide survey in Nevada (Jan 2019) is 600 with a + 4 percent error rate at a 95 percent level of confidence. Thus, based on this error rate, one could be assured that any answer is within this margin of error. The most statewide survey in California is a sample size of 702 with a + 3.5 percent error rate at a 95 percent level of confidence. Likewise, based on this error rate, one could be assured that any answer is within this margin of error.

In the Jan and Feb 2019 studies, in California, 63 percent of the calls were completed on cell phones and 37 percent on land lines. In Nevada, 81 percent were completed on cell phones and 19 percent on land lines. This information is shared to demonstrate that both landlines and cell phones were called.

Figure F-1: California regions for state-wide surveys

California



Methodology Dec 2019 California and Nevada surveys

The California survey was conducted between December 16 -18, 2019. The Nevada survey was conducted December 9-11, 2019.

The surveys were conducted by telephone among registered voters. Again, each state was divided into the same regions noted above and the proportion of voters interviewed was representative of that unique region's percent of registered voters. The list of registered voters for each study was secured from L2 Political in Seattle, Washington, previously known as Labels and Lists. The company has been providing voter list data since 1975.

The sample size for the Dec2019 statewide survey in Nevada is 600 with a ± 4 percent error rate at a 95 percent level of confidence. Thus, based on this error rate, one could be assured that any answer is within this margin of error. The Dec 2019 statewide survey in California is a sample size of 704 with a ± 3.5 percent error rate at a 95 percent level of confidence. Likewise, based on this error rate, one could be assured that any answer is within this margin of error.

In these studies, in California, 72 percent of the calls were completed on cell phones and 28 percent on land lines. In Nevada, 78 percent were completed on cell phones and 22 percent on land lines. This information is shared to demonstrate that both landlines and cell phones were called.

Methodology Feb 2020 In-basin survey

An In-Basin survey was conducted for ONE TAHOE between February 18-20, 2020.

The survey was conducted by telephone among registered voters. The In-basin region of the four contiguous counties with population, were surveyed with El Dorado County divided additionally between those residents within the City limits of South Lake Tahoe and those within the County in the 5th Supervisor District and within the Basin, but outside the City Limits. The list of registered voters was secured from L2 Political in Seattle, Washington, previously known as Labels and Lists. The company has been providing voter list data since 1975.

All In-Basin registered voters were aggregated and the percentage of the total number of voters each county contained equaled the percent of the 400 calls placed to voters within that county, in the Basin. El Dorado's percentage was further broken down between the percent of voters living within the City and the percent living outside the City limits, in the Basin and within the 5th Supervisor District.

The sample size was 400 with a ± 5 percent error rate at a 95 percent level of confidence, although the error rate does vary according to the division of responses for each question and the resulting sample size in each population cell.

In this study, 54 percent of the calls were completed on cell phones and 46 percent on land lines.

Selected results 2005, 2012, and Jan/Feb 2019 CA and NV statewide surveys

Nevada topline Questions 9 and 11

9. Have you ever gone to Lake Tahoe, or not?

		<u>1/19</u>	<u>12/12</u>	<u>2/05</u>	
1.	Yes	76%	77%	56%	Go to Q10
2.	No	23%	23%	44%	Go to Q12
3.	Can't Say	1%	0%	0%	

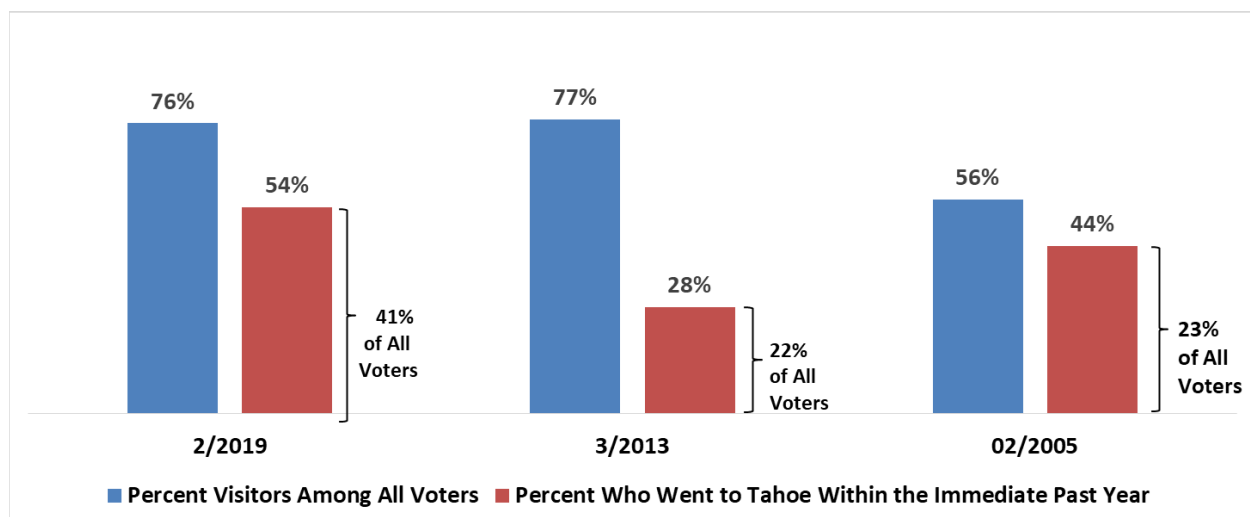
11. **IF "YES" IN Q9 ASK:** How long has it been since you were at Lake Tahoe? Is it...(READ LIST)

	<u>1/19</u>	<u>12/12</u>	<u>2/05</u>	
1.	Within the past six months,	31%	16%	20%
2.	Within the past year,	23%	12%	21%
3.	Sometime in the past two years,	14%	12%	17%
4.	Between two-and-five years,	15%	14%	18%
5.	Between five-and-ten years, or	8%	18%	10%
6.	Over ten years.	8%	26%	13%
7.	Can't Recall (DO NOT READ)	0%	2%	1%

ALL GO TO Q13

Figure F-1: Graphic presentation of NV questions 9 and 11

IN 2019, A MAJORITY OF NEVADA VOTERS HAVE BEEN TO LAKE TAHOE AND MORE THAN HALF OF THESE VOTERS HAVE VISITED IN THE LAST YEAR



Source: ESI; The Cromer Group

California topline Q 9 and 11

9. Have you ever gone to Lake Tahoe, or not?

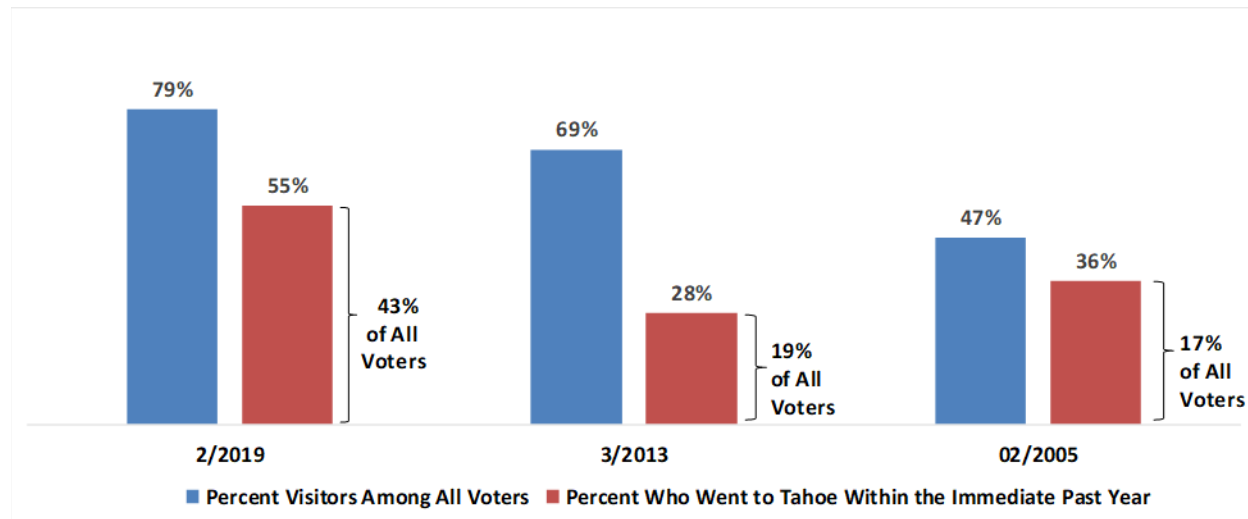
		<u>2/19</u>	<u>3/13</u>	<u>2/05</u>	
1.	Yes	79%	69%	47%	Go to Q10
{	2. No	21%	30%	52%	Go to Q12
	3. Can't Say	0%	0%	1%	

11. **IF "YES" IN Q9 ASK:** How long has it been since you were at Lake Tahoe? Is it...(READ LIST)

	<u>2/19</u>	<u>3/13</u>	<u>2/05</u>
1. Within the past six months,	25%	13%	15%
2. Within the past year,	30%	15%	21%
3. Sometime in the past two years,	14%	13%	18%
4. Between two-and five years,	13%	16%	19%
5. Between five-and-ten years, or	5%	14%	8%
6. Over ten years.	12%	24%	19%
7. Can't Recall (DO NOT READ)	1%	5%	0%

Figure F-2: Graphic presentation of CA questions 9 and 11

IN 2019, A MAJORITY OF CALIFORNIA VOTERS HAVE BEEN TO LAKE TAHOE AND MORE THAN HALF OF THESE VOTERS HAVE VISITED IN THE LAST YEAR



Source: ESI; The Cromer Group

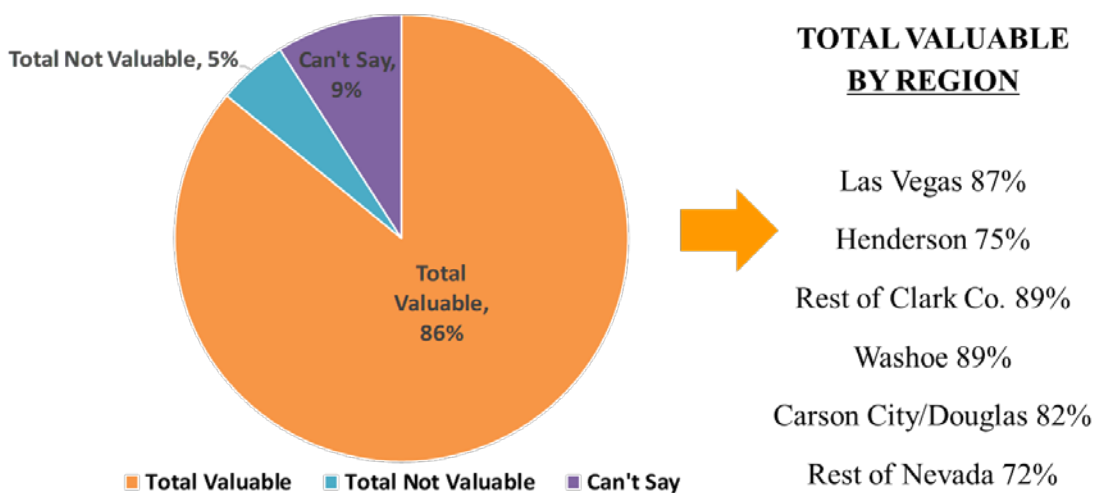
Nevada toplines Question 29

29. **(ASK OF EVERYONE)** How valuable do you feel Lake Tahoe and the Lake Tahoe Basin communities are to the current economic health of Northern California and Northern Nevada – highly valuable; somewhat valuable; not too valuable; or not valuable at all?

1. Highly Valuable/29%
2. Somewhat Valuable/57%
3. Not Too Valuable/4%
4. Not Valuable At All/1%
5. Can't Say/9%

Figure F-3: Graphic presentation of Nevada Question 29

NO MATTER WHERE THEY LIVE, NEVADA'S VOTERS OVERWHELMINGLY UNDERSTAND THE IMPORTANCE OF LAKE TAHOE TO THE ECONOMY OF NORTHERN NEVADA.



Source: ESI; The Cromer Group

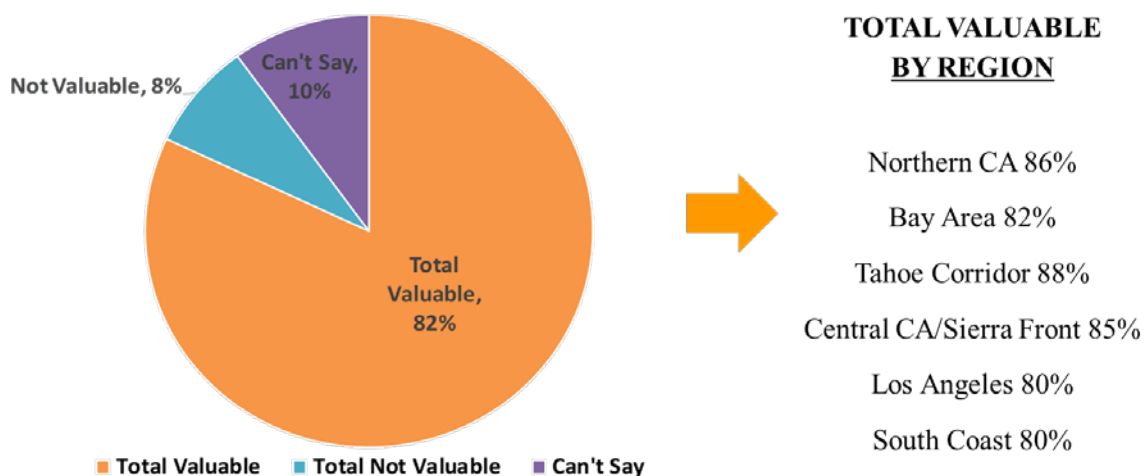
CA topline Question 29

29. (ASK OF EVERYONE) How valuable do you feel Lake Tahoe and the Lake Tahoe Basin communities are to the current economic health of Northern California and Northern Nevada – highly valuable; somewhat valuable; not too valuable; or not valuable at all?

1. Highly Valuable/20%
2. Somewhat Valuable/62%
3. Not Too Valuable/6%
4. Not Valuable At All/2%
5. Can't Say/10%

Figure F-4: Graphic presentation of CA Question 29

NO MATTER WHERE THEY LIVE, CALIFORNIA'S VOTERS OVERWHELMINGLY UNDERSTAND THE IMPORTANCE OF LAKE TAHOE TO THE ECONOMY OF THE LAKE REGION.



Source: ESI; The Cromer Group

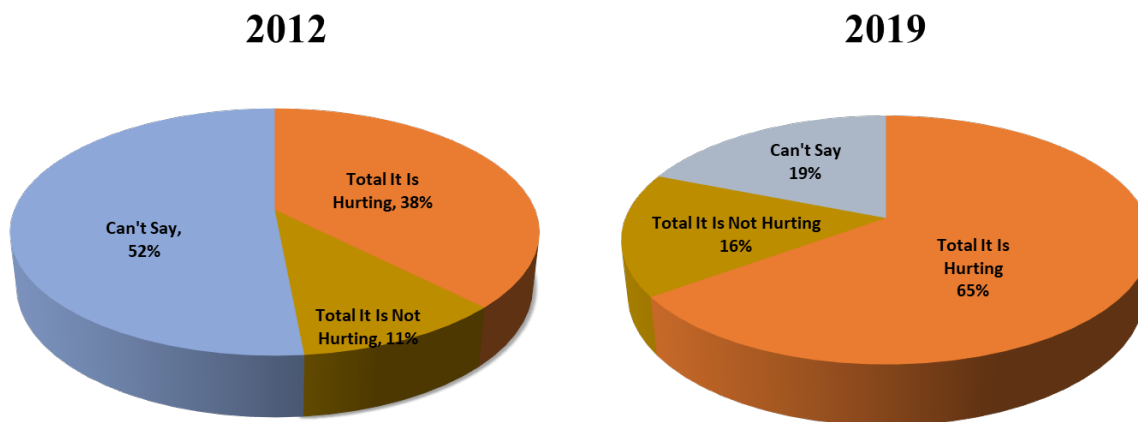
Nevada topline Question 30

30. How much do you feel the transportation and traffic situation in and around the Lake Tahoe Basin is impeding the economy and the growth of the visitor and tourism industry of the Tahoe Region – a lot; somewhat; hardly any, or not at all?

	<u>12/12</u>	<u>1/19</u>
1. A Lot	13%	19%
2. Somewhat	25%	46%
3. Hardly any, or	5%	14%
4. Not at all	6%	2%
5. Can't Say	52%	19%

Figure F-5: Graphic presentation of NV Question 30

A SIGNIFICANT MAJORITY OF NEVADA VOTERS NOW FEEL THAT TAHOE'S TRAFFIC IS HURTING THE ECONOMY OF THE LAKE REGION – A DRAMATIC INCREASE OF 71 PERCENT IN JUST THE PAST SIX YEARS



Source: ESI; The Cromer Group

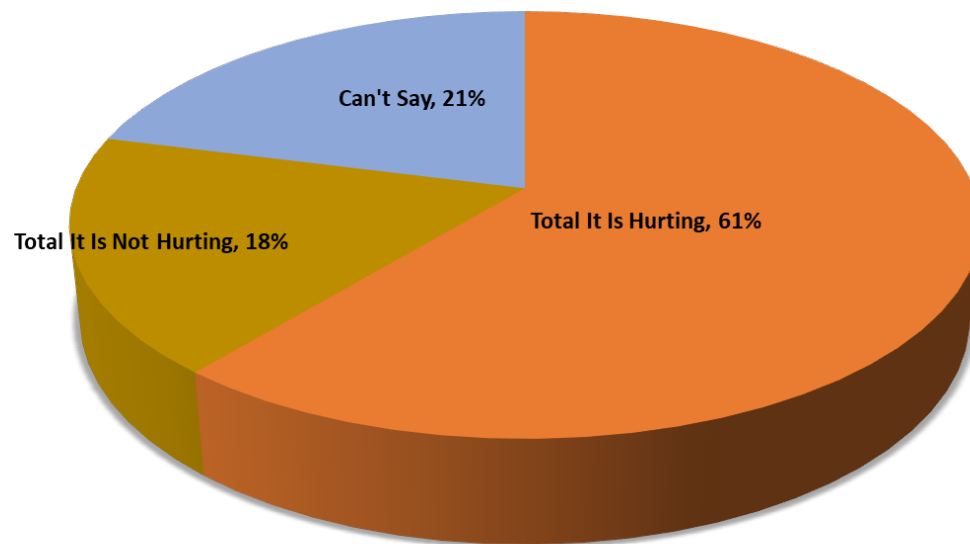
CA topline Question 30

30. How much do you feel the transportation and traffic situation in and around the Lake Tahoe Basin is impeding the economy and the growth of the visitor and tourism industry of the Tahoe Region – a lot; somewhat; hardly any, or not at all?

1. A Lot/15%
2. Somewhat/46%
3. Hardly any, or/14%
4. Not at all/4%
5. Can't Say/21%

Figure F-6: Graphic presentation of CA Question 30

A SIGNIFICANT MAJORITY OF CALIFORNIA VOTERS FEEL THAT TAHOE'S TRAFFIC IS HURTING THE ECONOMY OF THE LAKE REGION



Source: ESI; The Cromer Group

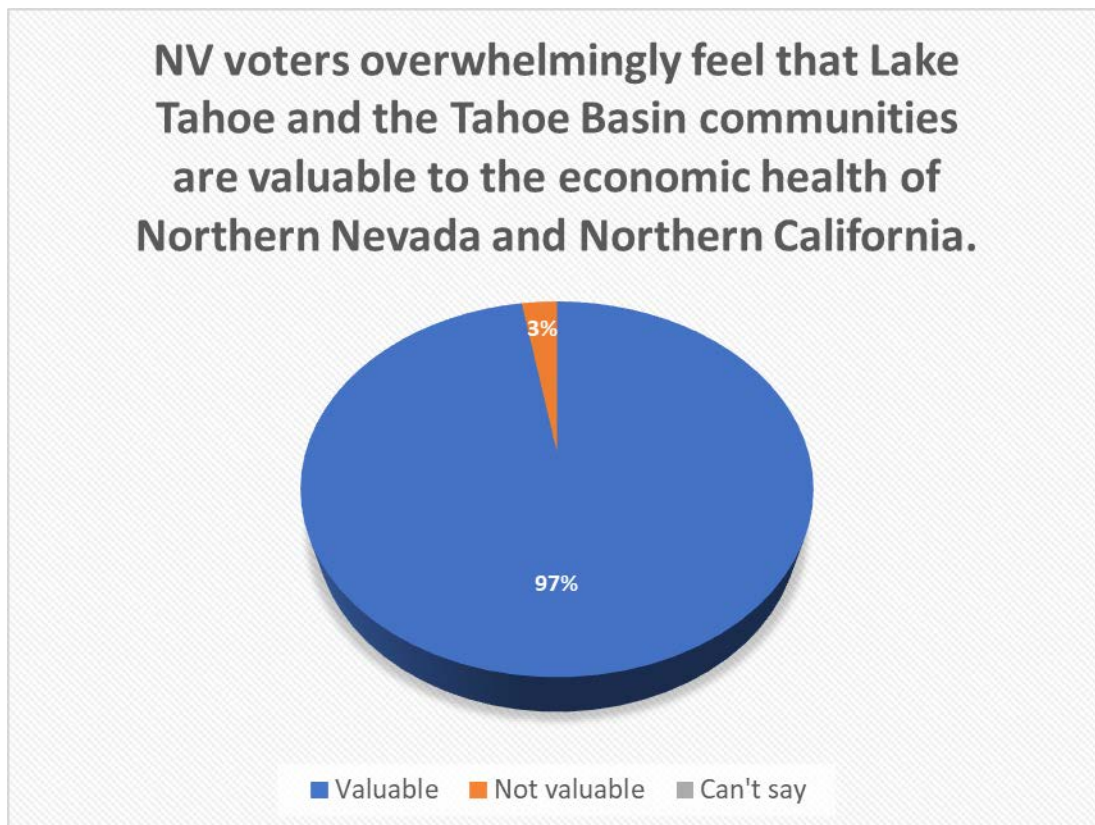
Selected results Dec 2019 CA and NV statewide surveys

NV topline Question 17

17. And, how valuable do you feel Lake Tahoe and the Lake Tahoe Basin communities are to the current economic health of Northern California and Northern Nevada – highly valuable; somewhat valuable; not too valuable; or not valuable at all?

	<u>12/19</u>	<u>01/19</u>
1. Highly Valuable	30%	29%
2. Somewhat Valuable	67%	57%
3. Not Too Valuable	3%	4%
4. Not Valuable At All	0%	1%
5. Can't Say	0%	9%

Figure F-7: Graphic presentation of NV Question 17 from 12/19



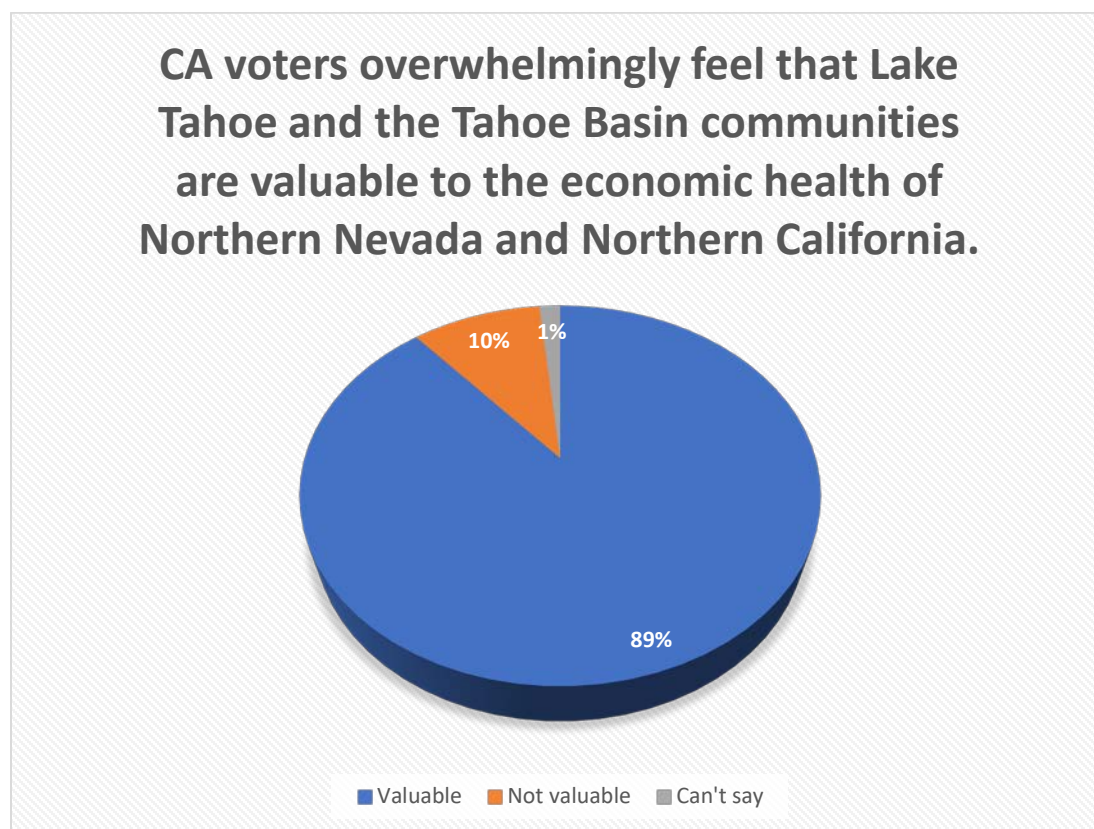
Source: ESI; The Cromer Group

CA topline Question 17

17. And, how valuable do you feel Lake Tahoe and the Lake Tahoe Basin communities are to the current economic health of Northern California and Northern Nevada – highly valuable; somewhat valuable; not too valuable; or not valuable at all?

	<u>12/19</u>	<u>2/19</u>
1. Highly Valuable	36%	20%
2. Somewhat Valuable	53%	62%
3. Not Too Valuable	9%	6%
4. Not Valuable At All	1%	2%
5. Can't Say	1%	10%

Figure F-8: Graphic presentation of CA Question 17



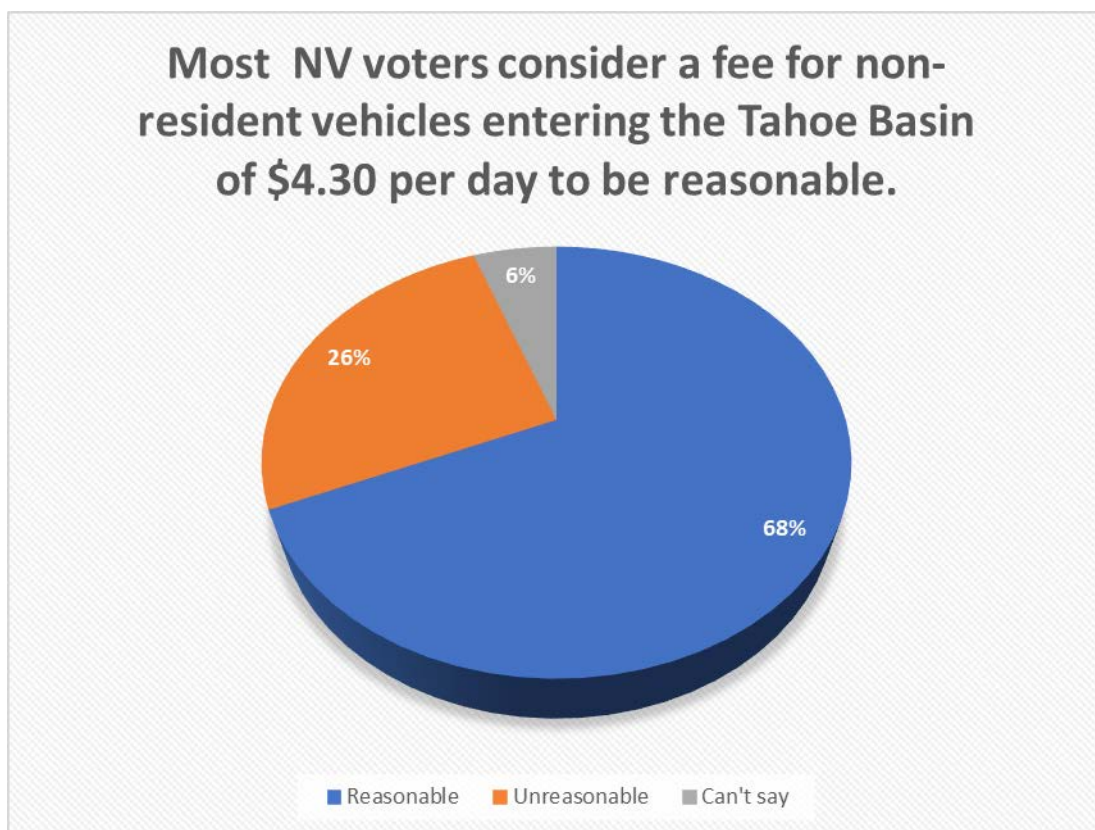
Source: ESI; The Cromer Group

NV topline Question 37

37. A transportation fee on visitors of \$4 dollars and 30 cents per day, per vehicle – no matter how many are in it. Do you feel this is...(READ LIST)

1. Very reasonable for visitors to pay,/20%
2. Somewhat reasonable for visitors to pay,/48%
3. Somewhat unreasonable for visitors to pay,/12%
4. Very unreasonable for visitors to pay,/14%
5. Can't Say (DO NOT READ)/6%

Figure F-9: Graphic presentation of NV Question 37



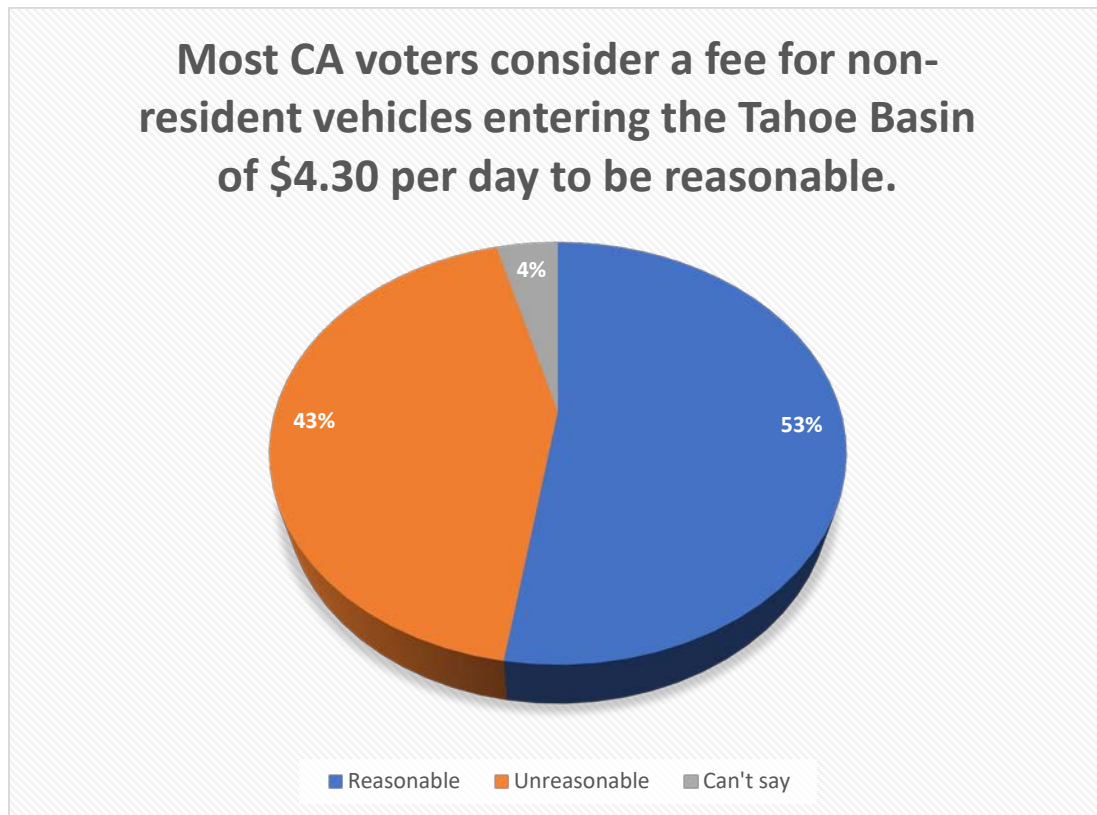
Source: ESI; The Cromer Group

CA topline of Question 37

37. A transportation fee on visitors of \$4 dollars and 30 cents per day, per vehicle – no matter how many are in it. Do you feel this is...(READ LIST)

1. Very reasonable for visitors to pay,/17%
2. Somewhat reasonable for visitors to pay,/36%
3. Somewhat unreasonable for visitors to pay,/17%
4. Very unreasonable for visitors to pay?/26%
5. Can't Say (DO NOT READ)/4%

Figure F-10: Graphic presentation of CA question 37

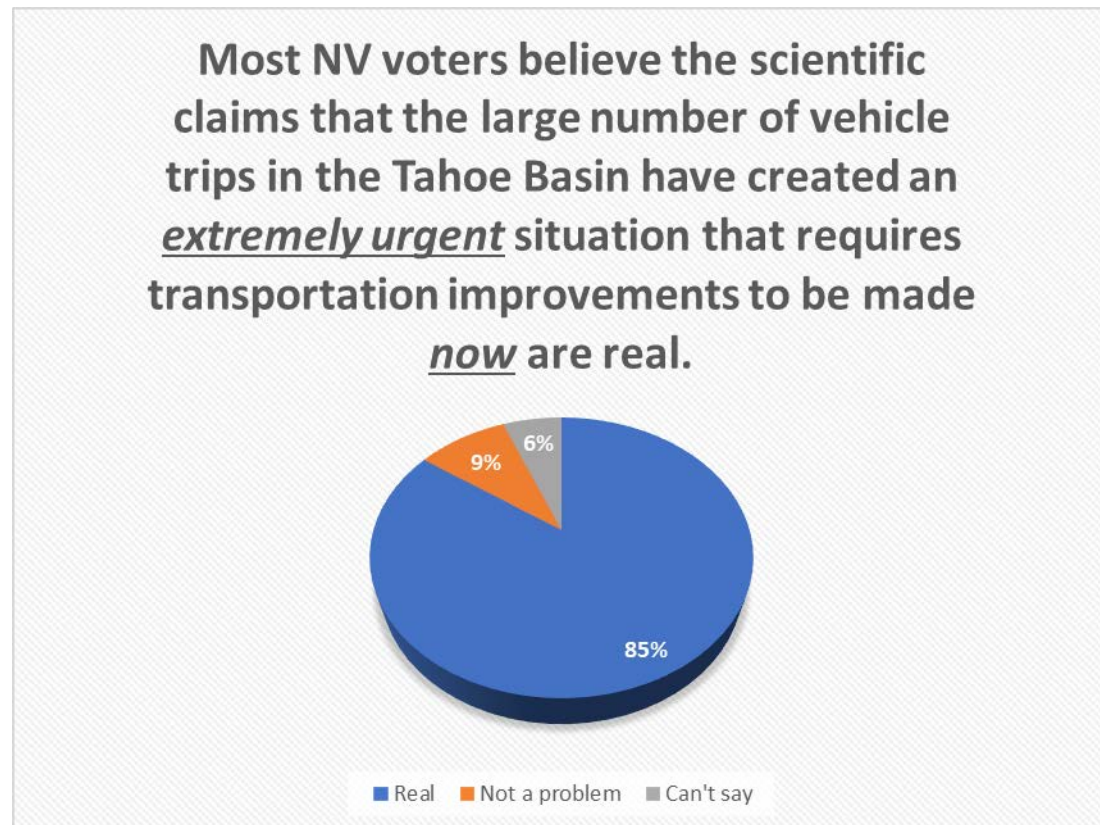


Source: ESI; The Cromer Group

Toplines of NV Question 46

46. The scientists doing the monitoring at Lake Tahoe are saying that the accelerated impact of climate change on Tahoe and the impact of the more than 50 million vehicle trips per year into Lake Tahoe has created an extremely urgent situation that requires these transportation improvements to address this significant transportation stress to be made now. Do you feel these claims by the Lake scientists are...(READ LIST)
1. Real and needs to be taken quite seriously;/38%
 2. Real, but a bit overblown or overstated;/47%
 3. Not much of a problem; or/7%
 4. Not a problem at all at Lake Tahoe./2%
 5. Can't Say (DO NOT READ)/6%

Figure F-11: Graphic presentation of NV Question 46



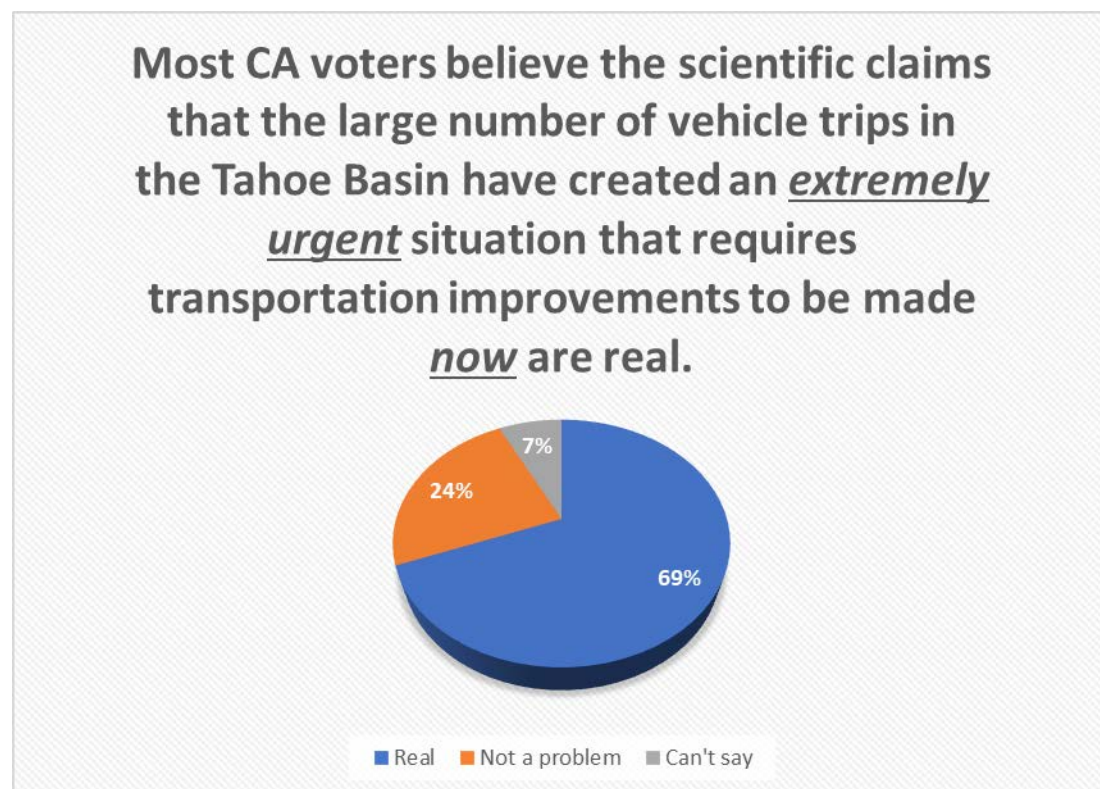
Source: ESI; The Cromer Group

Toplines of CA Question 46

46. The scientists doing the monitoring at Lake Tahoe are saying that the accelerated impact of climate change on Tahoe and the impact of the more than 50 million vehicle trips per year into Lake Tahoe has created an extremely urgent situation that requires these transportation improvements to address this significant transportation stress to be made now. Do you feel these claims by the Lake scientists are...(READ LIST)

1. Real and needs to be taken quite seriously;/43%
2. Real, but a bit overblown or overstated;/26%
3. Not much of a problem; or/20%
4. Not a problem at all at Lake Tahoe?/4%
5. Can't Say (DO NOT READ)/7%

Figure F-12: Graphic presentation of CA Question 46



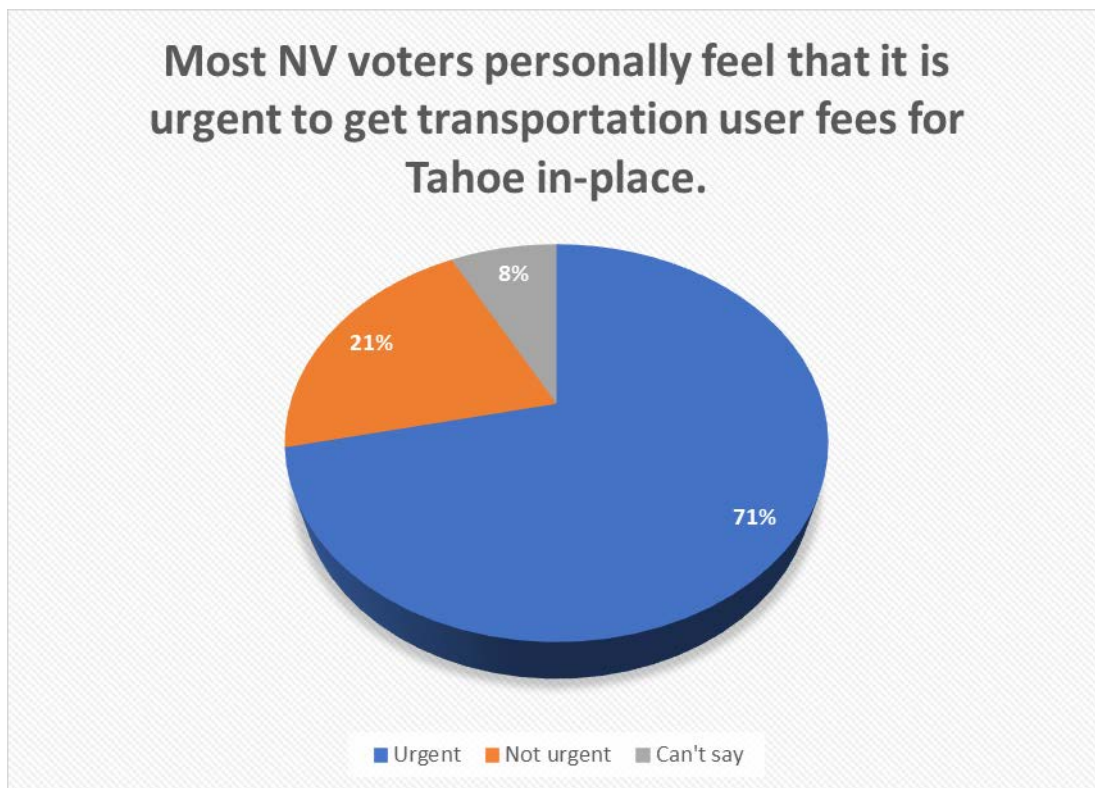
Source: ESI; The Cromer Group

Toplines of NV Question 47

47. How URGENT do you personally feel it is to get this transportation fee structure funding in place to allow for the proper development and maintenance of a safe, secure, and environmentally sound transportation system at Lake Tahoe? Would you say it is extremely urgent; somewhat urgent; not too urgent; or not urgent at all?

1. Extremely Urgent/16%
2. Somewhat Urgent/55%
3. Not Too Urgent, or/19%
4. Not urgent at all?/2%
5. Can't Say/8%

Figure F-13: Graphic presentation of NV question 47



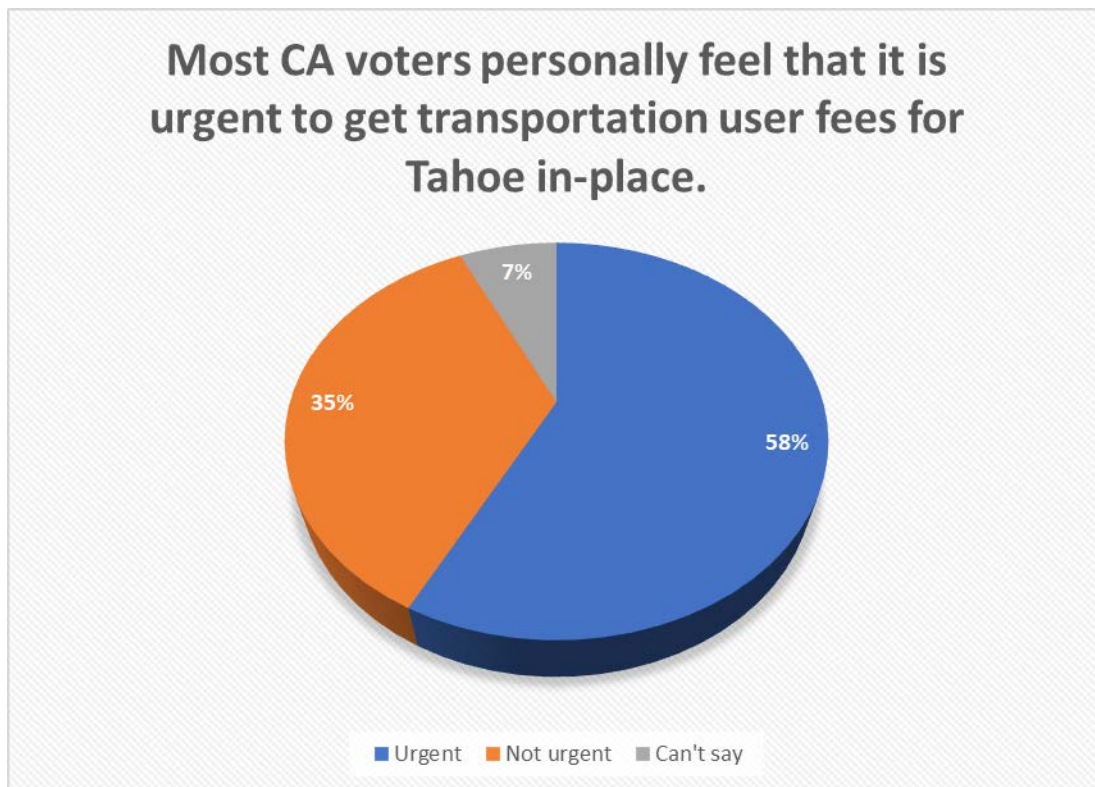
Source: ESI; The Cromer Group

Toplines of CA Question 47

47. How URGENT do you personally feel it is to get this transportation fee structure funding in place to allow for the proper development and maintenance of a safe, secure, and environmentally sound transportation system at Lake Tahoe? Would you say it is extremely urgent; somewhat urgent; not too urgent; or not urgent at all?

1. Extremely Urgent/28%
2. Somewhat Urgent/30%
3. Not Too Urgent/30%
4. Not urgent at all/5%
5. Can't Say/7%

Figure F-14: Graphic presentation of CA Question 47



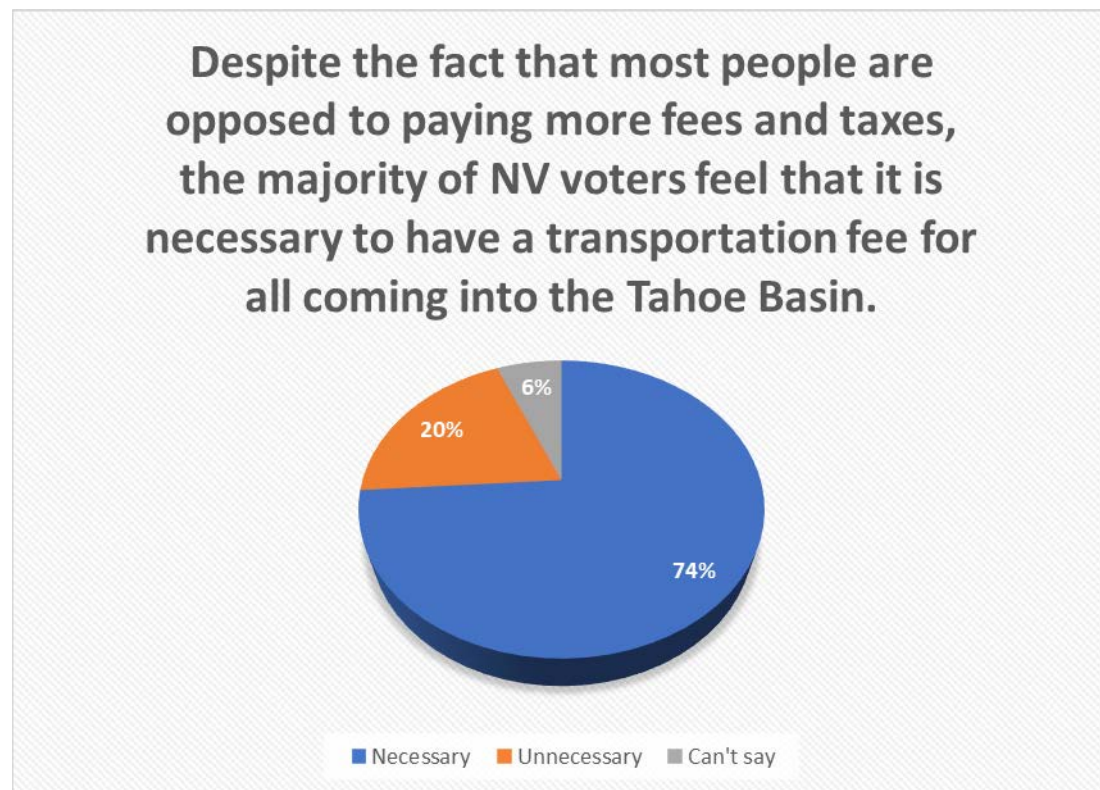
Source: ESI; The Cromer Group

Toplines NV Question 48

48. Everyone usually opposes paying more taxes or fees, but given the transportation needs at Lake Tahoe and how they can help not only save Tahoe but also maximize everyone's valuable time and experiences at the Lake, do you feel it is absolutely necessary, probably necessary, probably unnecessary, or absolutely unnecessary to have some kind of transportation fee for all coming into the Lake Tahoe Basin?

1. Absolutely necessary/14%
2. Probably Necessary/60%
3. Probably Unnecessary, or/15%
4. Absolutely Unnecessary/5%
5. Can't Say/6%

Figure F15: Graphic presentation of NV Question 48



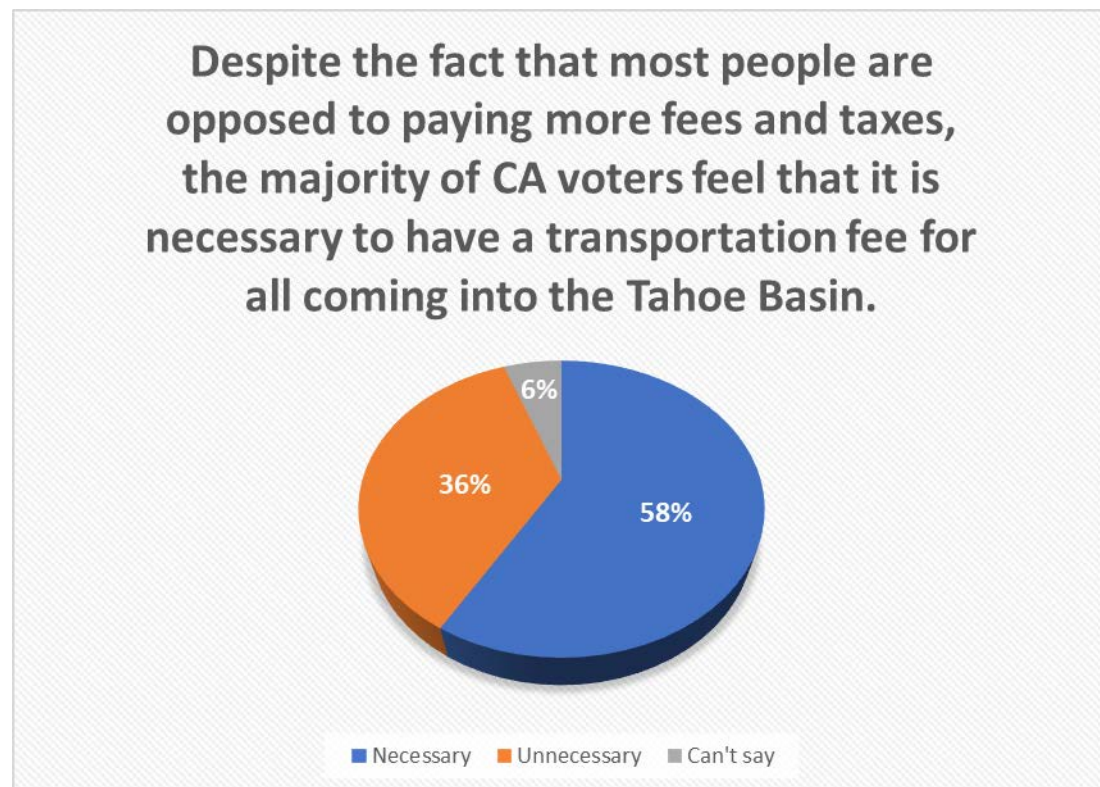
Source: ESI; The Cromer Group

Toplines of CA Question 48

48. Everyone usually opposes paying more taxes or fees, but given the transportation needs at Lake Tahoe and how they can help not only save Tahoe but also maximize everyone's valuable time and experiences at the Lake, do you feel it is absolutely necessary, probably necessary, probably unnecessary, or absolutely unnecessary to have some kind of transportation fee for all coming into the Lake Tahoe Basin?

1. Absolutely necessary/21%
2. Probably Necessary/37%
3. Probably Unnecessary/18%
4. Absolutely Unnecessary/18%
5. Can't Say/6%

Figure F-16: Graphic presentation of CA Question 48



Source: ESI; The Cromer Group

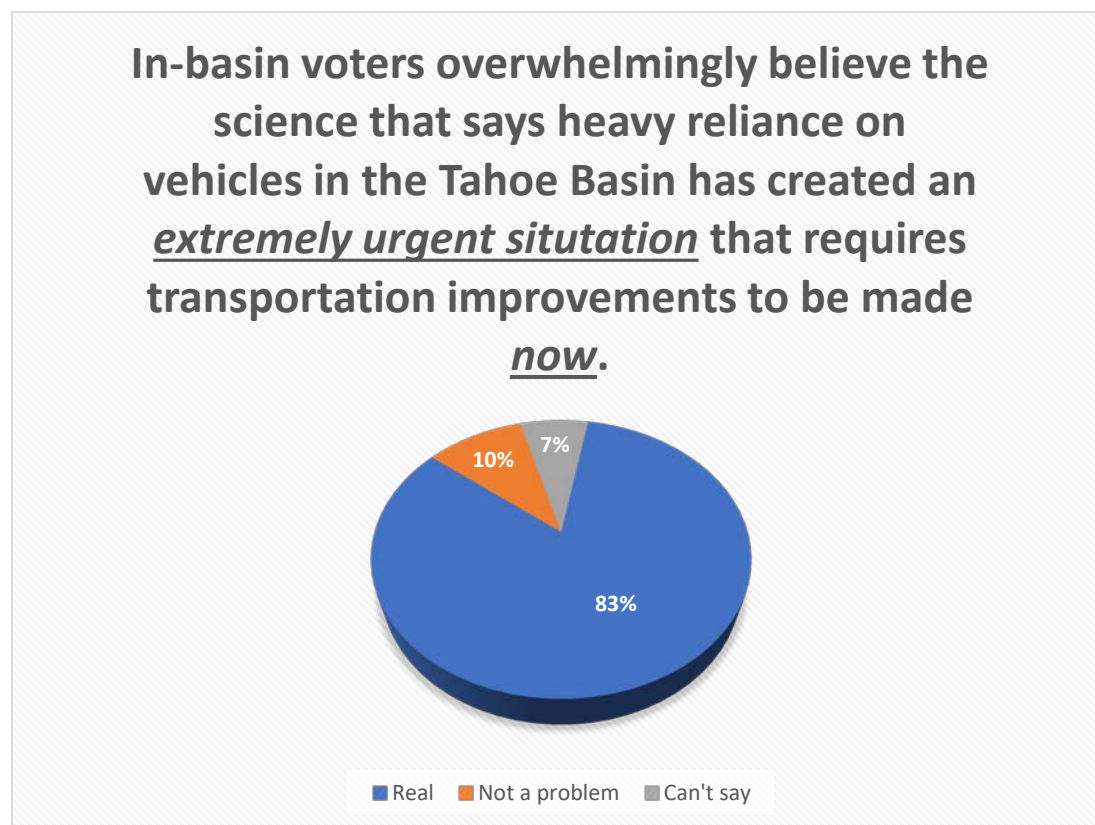
Selected results Feb 2020 Tahoe Basin survey

Toplines of In-basin Question 15

15. The scientists doing the monitoring at Lake Tahoe are saying that the accelerated impact of climate change on Tahoe and the impact of the more than 50 million vehicle trips per year into Lake Tahoe has created an extremely urgent situation that requires these transportation improvements to address this significant transportation stress to be made now. Do you feel these claims by the Lake scientists are...(READ LIST)

1. Real and needs to be taken quite seriously;/33%
2. Real, but a bit overblown or overstated;/50%
3. Not much of a problem; or/5%
4. Not a problem at all at Lake Tahoe./5%
5. Can't Say (DO NOT READ)/8%

Figure F-17: Graphic presentation of In-basin Question 15

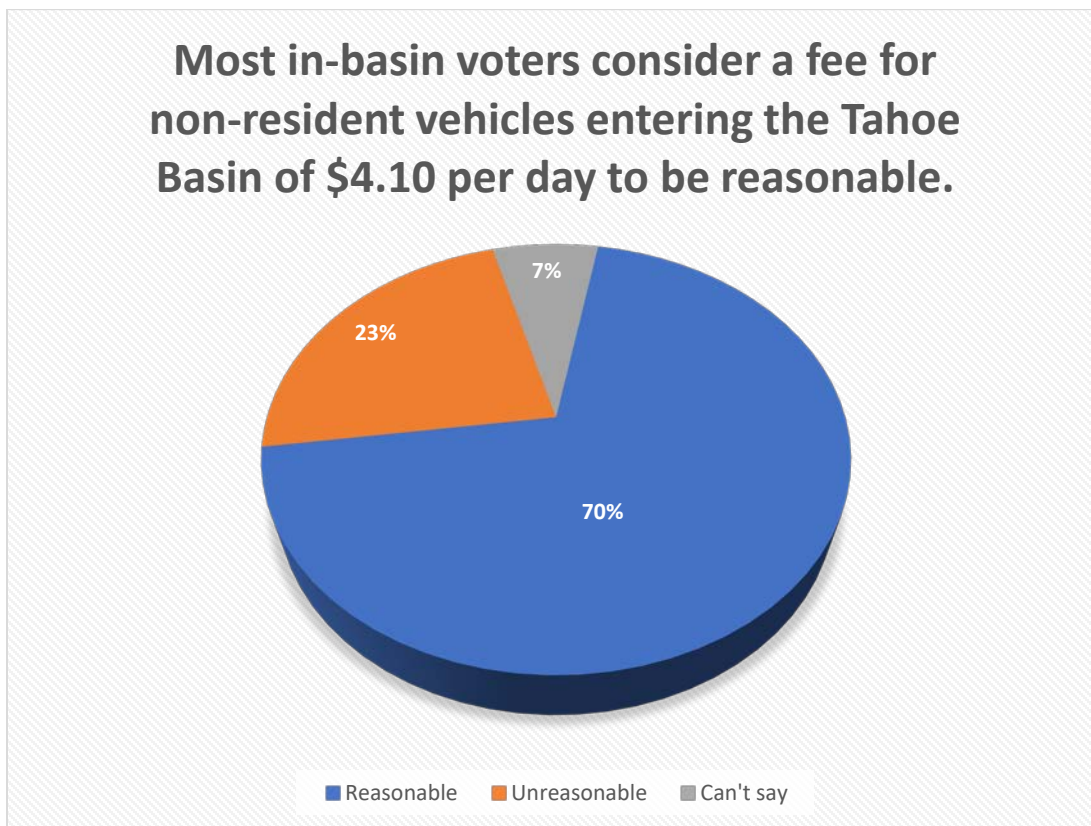


Source: ESI; The Cromer Group

Toplines of In-basin Question 12.

12. A transportation fee on visitors of \$4 dollars and 10 cents per day, per vehicle – no matter how many are in it. Do you feel this is...(READ LIST)
1. Very reasonable for visitors to pay,/30%
 2. Somewhat reasonable for visitors to pay,/40%
 3. Somewhat unreasonable for visitors to pay,/10%
 4. Very unreasonable for visitors to pay?/13%
 5. Can't Say (DO NOT READ)/7%

Figure F-18: Graphic presentation of In-basin Question 12



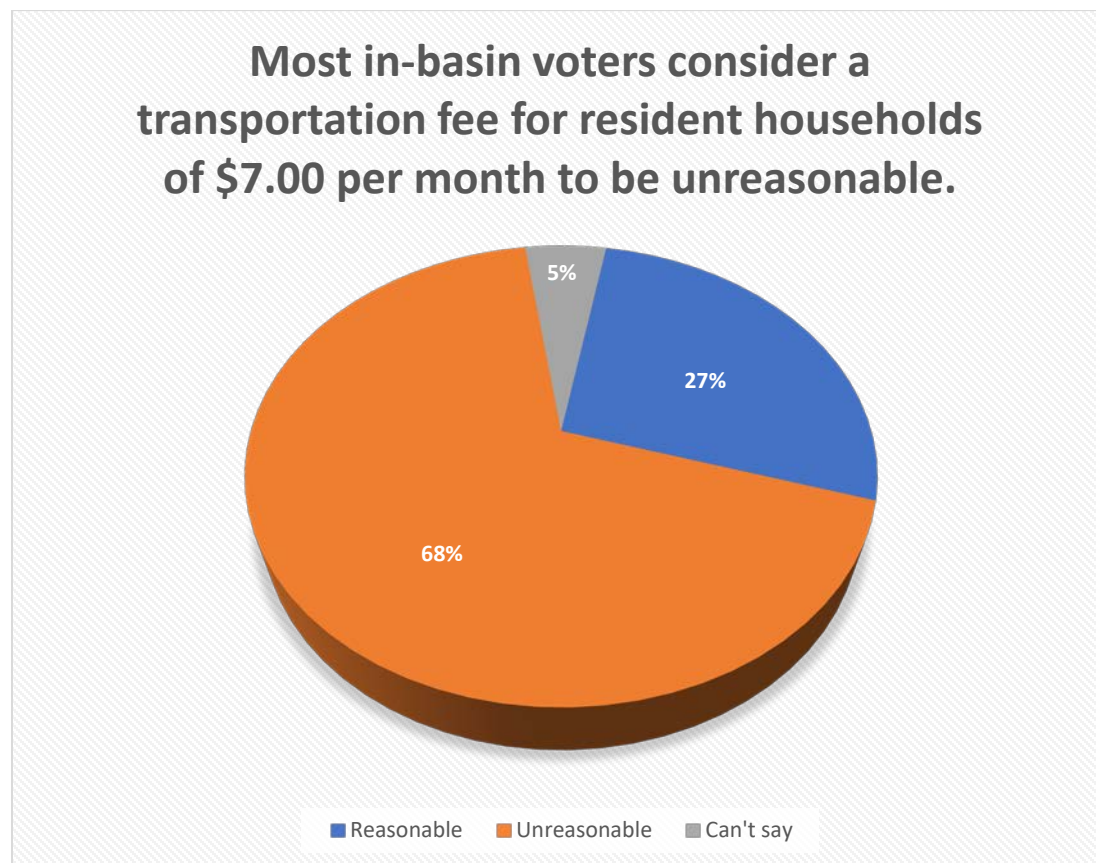
Source: ESI; The Cromer Group

Toplines of In-basin Question 13.

13. How about the transportation for In-Basin Residents, if the transportation fee were \$7 dollars per month per household, do you feel this is...(READ LIST).

1. Very reasonable for In-Basin Residents to pay,/7%
2. Somewhat reasonable for In-Basin Residents to pay,/20%
3. Somewhat unreasonable for In-Basin Residents to pay,/24%
4. Very unreasonable for In-Basin Residents to pay?/45%
5. Can't Say (DO NOT READ)5%

Figure F-19: Graphic presentation of In-basin Question 13.



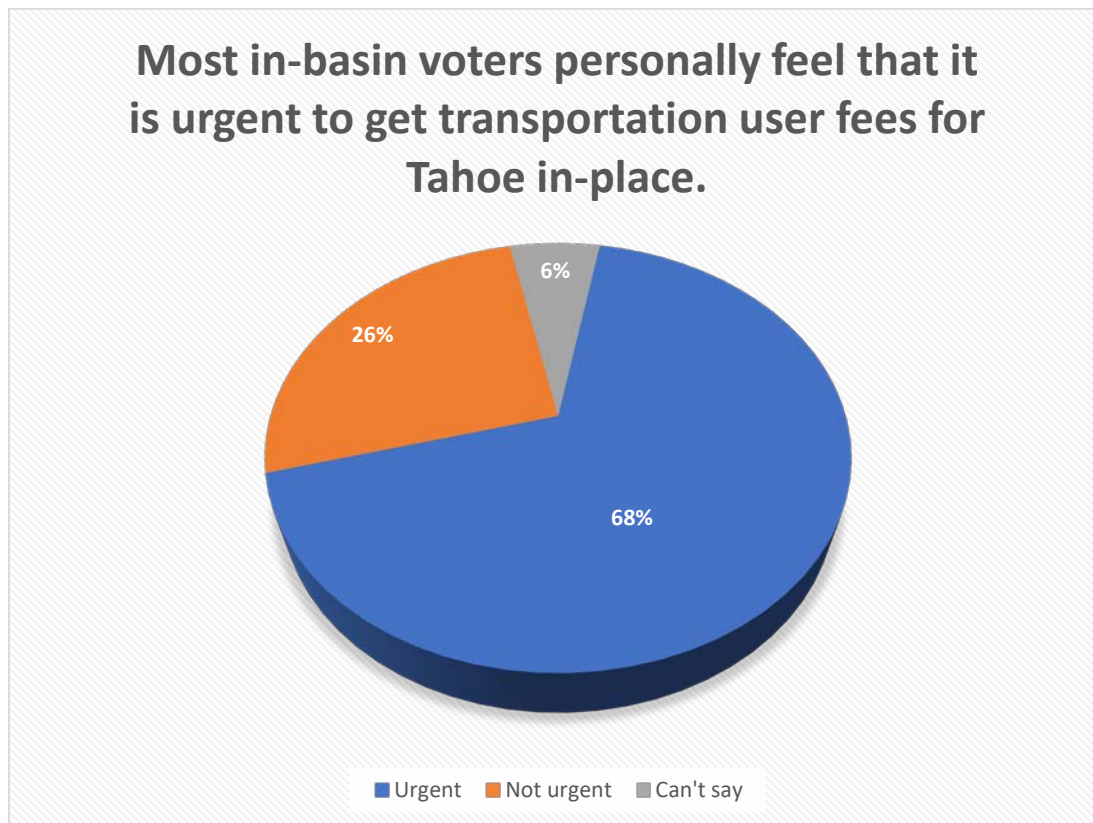
Source: ESI; The Cromer Group

Toplines of In-basin Question 16.

16. How URGENT do you personally feel it is to get this transportation fee structure funding in place to allow for the proper development and maintenance of a safe, secure, and environmentally sound transportation system at Lake Tahoe? Would you say it is extremely urgent; somewhat urgent; not too urgent; or not urgent at all?

1. Extremely Urgent/21%
2. Somewhat Urgent/47%
3. Not Too Urgent, or/16%
4. Not urgent at all?/10%
5. Can't Say/6%

Figure F-20: Graphic presentation of In-basin Question 16.



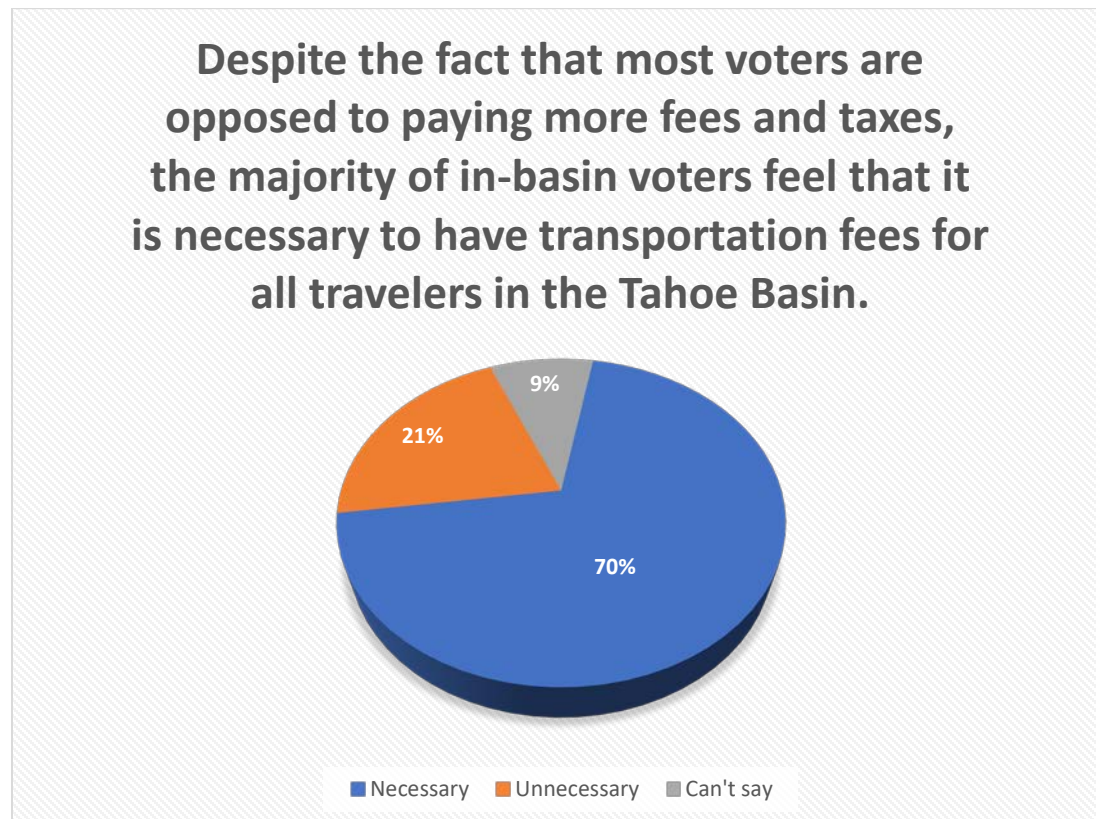
Source: ESI; The Cromer Group

Toplines of In-basin Question 16.

17. Everyone usually opposes paying more taxes or fees, but given the transportation needs at Lake Tahoe and how they can help not only save Tahoe but also maximize everyone's valuable time and experiences at the Lake, do you feel it is absolutely necessary, probably necessary, probably unnecessary, or absolutely unnecessary to have some kind of transportation fee for all coming into the Lake Tahoe Basin?

1. Absolutely necessary/11%
2. Probably Necessary/60%
3. Probably Unnecessary, or/10%
4. Absolutely Unnecessary/11%
5. Can't Say/9%

Figure F-21: Graphic presentation of In-basin Question 16.



Source: ESI; The Cromer Group

Appendix H:

Endorsements and Letters of Support



TAHOE CHAMBER

When Tahoe means business.

June 20, 2019

Mailing Address

PO Box 17181
South Lake Tahoe, CA
96151

Office Address

169 Hwy 50
Stateline, NV

Phone

775.588.1728

Learn More

tahoechamber.org

Mr. Carl Hasty
Tahoe Transportation District
Mr. Derek Morse
Morse & Associates
PO Box 499
Zephyr Cove, NV 89448

Gentlemen:

At our regularly scheduled meeting of June 20, 2019, the Board of Directors of the Lake Tahoe Chamber of Commerce voted to formally endorse the "One Tahoe" transportation funding initiative.

Over the years, Tahoe Chamber representatives have been actively engaged in helping to shape the regional transportation plans of the Tahoe Transportation District and the Tahoe Regional Planning Agency. We recognize there are limits to the amount of federal and state dollars Tahoe can secure and that funding from both of these sources is on a downward trajectory. To the extent federal and state funds are still available, the required "local match" is now significantly higher. Accordingly, we are keenly aware that the development of one or more regional sources of funding specific to the Tahoe region is essential to help implement the projects and programs identified in Tahoe's adopted transportation plans.

We are further aware that TRPA is set to embark on the process of updating its Regional Transportation Plan (RTP). Without a dedicated local/regional source of funding, the list of projects identified that can be funded will be shorter than ever before.

When it comes to funding, all decisions are challenging. However, we support the One Tahoe process as to the path forward to decision-making.

Thank you for the District's leadership in spearheading the "One Tahoe" initiative.

Sincerely,

John Packer
Board Chair



YEARS

Nevada Chapter

Associated General Contractors

5400 Mill Street
Post Office Box 7578
Reno, NV 89510
Tel 775.329.6116
Fax 775.329.6575
www.nevadaagc.org

2019 OFFICERS

President

Nate Roach

First Vice President

Bob Gardner

Second Vice President

Marc Markwell

Treasurer

Chris Burke

DIRECTORS

Travis Coombs
Brian Dowd
Bob Fehling
Shane Glenn
Ryan Greenhalgh
Kylan Perks
Tom Pourchot
Jarrett Rosenau
Eric Scolari
Johnnie Stolz
Steve Talafuse
Robb Wong

EX-OFFICIO

DIRECTORS

Jeremy Anthony
Marty Crew
Lonnie Johnson
Jan Leggett
Shaun Smith
Rich Stoltz
Dean Stone

NATIONAL GOVERNORS

Dave Backman
Piero Bullentini
Trish Bullentini
Mike Cate
Frank Lepori
Lance Semenko
Deane Shaver
B. J. Sullivan

NATIONAL GOVERNOR

PAST PRESIDENT

Jim Miller

November 25, 2019

Carl Hasty, Manager
Tahoe Transportation District
PO Box 499
Zephyr Cove, NV 89448

Dear Mr. Hasty

Please accept this correspondence at the formal endorsement of the "One Tahoe" transportation funding initiative on behalf of the Nevada Chapter Associated General Contractors.

Over the years, our organization has been actively interested in helping to shape the regional transportation plans of the Tahoe Transportation District and the Tahoe Regional Planning Agency. We recognize there are limits to the amount of federal and state dollars Tahoe can secure and that funding from both of these sources is on a downward trajectory. To the extent federal and state funds are still available, the required "local match" is now significantly higher. Accordingly, we are keenly aware that the development of one or more sources of funding specific to the Tahoe region is essential to help implement the projects and programs identified in Tahoe's adopted transportation plans.

We are further aware that TRPA is set to embark on the process of updating its Regional Transportation Plan (RTP). Without a dedicated local/regional source of funding, the list of projects that can be funded will be shorter than ever before.

When it comes to funding, all decisions are challenging. Therefore, we support the One Tahoe process as the path forward for solving Lake Tahoe's urgent transportation problems.

Thank you for the District's leadership in spearheading the "One Tahoe" initiative.

If you have any questions regarding this matter, please contact me at (775) 329-6116.

Sincerely,

Craig Madole, CEO

Cc: Derek Morse

From: Carl Hasty <chasty@tahoetransportation.org>
Sent: Thursday, January 30, 2020 4:35 PM
To: Derek Morse
Subject: Fwd: FHWA Support

FYI, I plan to share this tomorrow. Or at least paraphrase it.

----- Forwarded message -----

From: **Novak, Greg (FHWA)** <Greg.Novak@dot.gov>
Date: Thu, Jan 30, 2020 at 10:45 AM
Subject: FHWA Support
To: chasty tahoetransportation.org <chasty@tahoetransportation.org>

Carl – I may have to stay here tomorrow. After watching and reviewing the material Derek has presented, I agree that the TTD Board should consider moving ahead with the recommended alternatives. Lake Tahoe does not have a sufficient revenue stream to take on the list of planned transportation projects, and is always competing with other MPO and State priorities. Normal Federal-aid apportionments are small, with TRPA, USFS and TTD looking for discretionary funding from all sources, including SNPLMA and FLAP. Coordination with NDOT and Caltrans is excellent, and will continue to be, as such projects as the US 50 Loop Road and the SR 28 Shared Use Path move ahead. Future federal funding is difficult to predict, but I have not seen any firm proposals that would increase the overall program size. Expansion seems to be heading towards more public private partnerships, with your involvement in our recent Value Capture peer exchange very appropriate. Moving ahead with any self-help effort should aid in future grant program competitions. The work you have done to-date does show serious concern for addressing the shortfall. The next step is a local decision, and I know it will be an informed one.

Greg Novak, M.E., P.E.

FHWA Nevada Division

Deputy Division Administrator

775 687 1203

--

Carl Hasty
District Manager
Tahoe Transportation District
128 Market St Suite 3F Stateline, NV 89449
PO Box 499 Zephyr Cove, NV 89448
Office 775-589-5501

Cell 775-230-4469



North Tahoe and Meeks Bay Fire Protection Districts

**222 Fairway Drive
P.O. Box 5879
Tahoe City, CA 96145
530.583.6913
Fax 530.583.6909**

Michael S. Schwartz, Fire Chief

Carl Hasty, Manager
Tahoe Transportation District
PO Box 499
Zephyr Cove, NV 89448

Dear Mr. Hasty

North Tahoe and Meeks Bay Fire Protection Districts have embraced the importance of collaboration of transit agencies and initiatives. As a result our District's formally endorse the "One Tahoe" transportation funding initiative.

Over the years, our Districts have been actively engaged in regional transportation and public safety discussions helping to shape planning efforts of the Tahoe Transportation District and the Tahoe Regional Planning Agency. This is motivated by the need to ensure transit helps our emergency service delivery and does not hinder it. The importance of emergency vehicle access, sound evacuation procedures, and overall land planning can be crucial in our mission.

We recognize there are limits to the amount of federal and state dollars Tahoe can secure and a collaborative approach to programs, projects, and services is necessary to meet the visitation demand and to assure the public safety of our communities. Funding sources are on a downward trajectory and to the extent federal and state funds are still available, the required "local match" is beyond that of regional resources available. Accordingly, we are keenly aware that the development funding specific to the Tahoe region is essential to help implement the projects and programs identified in Tahoe's adopted transportation plans.

We are further aware that TRPA, the region's Metropolitan Planning Organization (MPO) is currently embarking on the process of updating its Regional Transportation Plan (RTP). Without a dedicated local/regional source of funding, the list of projects that can be funded will be shorter than ever before.

After watching and reviewing the materials that the Tahoe Transportation District have presented, we agree that the TTD Board should consider moving ahead with the recommended alternatives. TTD is a collaborative partner with strong relationships and a shared vision in the basin, and will continue to be an advocate to protect the resources of Lake Tahoe and implement solutions that protect the safety of our communities and visitors alike.

When it comes to funding, all decisions are challenging. Therefore, we support the One Tahoe process as the path forward for solving Lake Tahoe's urgent transportation problems.

Thank you for the District's leadership in spearheading the "One Tahoe" initiative.

Respectfully,

A handwritten signature in blue ink, appearing to read 'Michael Schwartz', with a long, sweeping horizontal line extending to the right.

Michael Schwartz, Fire Chief

Carl Hasty, Manager
Tahoe Transportation District
PO Box 499
Zephyr Cove, NV 89448

Dear Mr. Hasty

I write to express my support for the ONE TAHOE transportation funding initiative. The basin is being ravaged by our virtually sole reliance on motor vehicles to travel. The resulting congestion, pollution, and unsafe conditions for both drivers and pedestrians are ruining the Tahoe that we all love. To reverse this, we must make significant investments that create an integrate basin wide transportation system that provides realistic alternatives to the automobile for some of our trips.

Clearly the burdens of funding our transportation system must be shared equitably by both those who live in the basin and the millions of visitors that we welcome to share Lake Tahoe each year. The ONE TAHOE proposal to levy transportation user fees seems a reasonable and equitable solution.

The Tahoe Transportation District Board should move quickly to establish these fees so that we can preserve this special place for now and generations to come. This is urgent and kicking this can down the road is simply unacceptable. Please act now.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Carl Hasty', with a long horizontal flourish extending to the right.

Appendix I:

Transit Peer Group Review

Peer Group Review

Legislative and Regulatory Consulting Services – 11.10

May 2019

Prepared by:

Michael Steele

3645 Cashill Blvd, Reno, NV 89509

775-221-7991

Email: steelewulf52@gmail.com

Prepared for:

Tahoe Transportation District (TTD)

Morse Associates Consulting, LLC

Table of Contents

Executive Summary	3
Peer Group List	3
Peer Group Review Conclusions and Recommendations.....	3
Peer Group Review	5
Transit System Operation Characteristics Definitions.....	6
Performance Ratio Definitions	7
Peer Group Descriptions	8
Peer Group Operating Data and Ratios Chart	10
Peer Group Data Graphs and Comments	11
Peer Group FTA NTD Profiles	27

Executive Summary

The purpose of this report is to compare key operating data and performance indicators of the Tahoe Transportation District (TTD) transit service with a peer group of other transit systems operating in similar environments to that of the TTD. The ten transit systems selected for comparison are those serving national parks, tourist areas and ski resorts because of the similarities in operating conditions, passenger demand and mobility objectives. Although service is designed to provide access for local residence, service in the peer group is also tailored to the demands of visitors which represent a large percentage of its ridership base. Comments are also made for those performance indicators that are outside the median value for the indicator.

The primary data source for the peer group was from the FY 2017 National Transit Database (NTD) - the most recently published database available from the Federal Transit Administration (FTA). The only exception is the Town of Vail who provided the operating data for Vail Transit.

The following ten transit systems comprise the peer group with the Tahoe Transportation District:

- Yosemite Area Regional Transportation System (YARTS), CA
- Southern Teton Area Rapid Transit (START) - Jackson Hole, WY
- Steamboat Springs Transit, City of Steamboat Springs, CO
- Roaring Fork Transit Authority – Aspen, CO
- Mountain Rides Transportation Authority, Sun Valley, ID
- Park City Transit - Park City, UT
- Eastern Sierra Transit Authority (Mammoth Lakes, CA)
- Greater Glens Falls Transit System (Glens Falls NY; Lake George)
- Vail Transit, Town of Vail, CO
- Eagle County Regional Transportation Authority (ECO Transit; Vail regional area)

In addition, a median value is calculated for each performance indicator which is defined as the midpoint of all values.

Conclusions and Recommendations

The TTD transit system performance indicator values are comparable to the ten peer systems reviewed. Those include revenue vehicle hours and miles provided, passengers transported, fare revenue collected and peak vehicles operated. Overall, TTD operates and administers an efficient and productive system.

Indicators relative to operational expenses per unit of service provided are generally in the upper third of those reviewed and are attributable primarily to the commuter service segment and to the maintenance costs of an aging fleet. According to the 2017-2021 TTD Short Range Transit Plan, “TTD’s fleet needs substantial and urgent attention. Over half of the current bus fleet is either

approaching or is already beyond the Federal Transit Authority's (FTA) designated useful life."¹In addition, operating from leased facilities limits access to federal and state funding for capital improvements for those facilities that may translate into operating cost savings. Therefore, funding should be obtained for converting facilities from leased to owned.

The level of local funding provided to the TTD for supporting transit is among the lowest of those reviewed. Local funding as a percent of total operating expenses for the TTD is 1.8% compared to a median value of 44.4% for the group.

A predictable and meaningful stream of local funding to the TTD would leverage federal and state funding for needed capital facilities and other foundational projects. Converting leased facilities to owned facilities with a controlling interest is necessary for the use of federal and state capital funding.

¹ TTD 2017-2021 Short Range Transit Plan, Page 63

Peer Group Review

The purpose of this report is to compare key operating data and performance indicators of the Tahoe Transportation District (TTD) transit service with a peer group of other transit systems operating in similar environments to that of the (TTD). The ten transit systems selected for comparison are those serving national parks, tourist areas and ski resorts because of the similarities in operating conditions, passenger demand and mobility objectives. Although service is designed to provide access for local residents, service in the peer group is also tailored to the demands of visitors which represent a large percentage of its ridership base. Comments are also made for those performance indicators that are outside the median value for the indicator.

The primary data source for the peer group was from the FY 2017 National Transit Database (NTD) - the most recently published database available from the Federal Transit Administration (FTA). The only exception is the Town of Vail who provided the data for Vail Transit.

The report is organized in five sections:

- Definitions of data and performance ratios
- Peer group transit system descriptions
- Table of operating data and performance ratios
- Charts representing graphic comparisons between peer systems and commentary
- NTD profiles

The following ten transit systems comprise the peer group with the Tahoe Transportation District:

- Yosemite Area Regional Transportation System (YARTS), CA
- Southern Teton Area Rapid Transit (START) - Jackson Hole, WY
- Steamboat Springs Transit, City of Steamboat Springs, CO
- Roaring Fork Transit Authority – Aspen, CO
- Mountain Rides Transportation Authority, Sun Valley, ID
- Park City Transit - Park City, UT
- Eastern Sierra Transit Authority (Mammoth Lakes, CA)
- Greater Glens Falls Transit System (Glens Falls NY; Lake George)
- Vail Transit, Town of Vail, CO
- Eagle County Regional Transportation Authority (ECO Transit; Vail regional area)

In addition, a median value is calculated for each performance indicator which is defined as the midpoint of all values.

The following operating data elements were used in the report and are defined by the NTD. The performance ratios are those customarily used to describe a transit system's efficiency and effectiveness, many of which are also reported by the NTD.

Operation Characteristics Definitions

Revenue Vehicle Hours

The hours that vehicles travel while in revenue service. Vehicle revenue hours (VRH) include layover/recovery time but excludes deadhead, operator training, maintenance testing, school bus and charter services.

Revenue Vehicle Miles

The miles that vehicles travel while in revenue service. Vehicle revenue miles (VRM) excludes miles related to deadhead, operator training, maintenance testing, school bus and charter services.

Peak Vehicle All Modes

The number of revenue vehicles operated to meet the annual maximum service requirement. This is the revenue vehicle count during the peak season of the year; on the week and day, that maximum service is provided. Vehicles operated in maximum service (VOMS) exclude atypical days, one-time special events.

Unlinked Passengers

The number of passengers who board public transportation vehicles. Passengers are counted each time they board a vehicle no matter how many vehicles they use to travel from their origin to their destination.

Operating Expenses

The NTD separates expenses into two major categories: operating and capital. Operating expenses are expenses that a transit agency incurs during day-to-day operations. Usually, operating expenses have a useful life of less than one year and a unit cost of less than \$5,000. It includes operations, maintenance and administration costs.

Farebox Revenue

All income directly earned from carrying passengers, paid either in cash or through pre-paid tickets, passes, etc. It includes donations from those passengers who donate money on the vehicle, reduced fares paid by passengers in a user-side subsidy arrangement, or payments made through an agreement to provide fare-free service for a certain group, e.g. payments from a university to provide free service to students. It also includes base fare, zone or distance premiums, express service premiums, extra cost transfers, and special transit fares.

Local Operating Funds

As defined by the NTD, financial assistance from local entities that support the operation of the transit system. They include, but are not limited to:

- Tax levies - A specified amount from local levies that is dedicated to supporting public transit system operating costs;
- General funds - Transfers from the general fund of local governments to cover the Local Share portion of the transit system budget;

- Specified contributions - Contributions from city, county or other municipal government towards the Local Share portion of the transit system budget;
- Donations - Donations from individuals or organizations to help cover the costs of providing transit service but which are not related to specific passengers or trips; and
- Other - Other revenues such as advertising.

This data is being compared across the peer group as a measure of local commitment toward supporting public transit for its service area.

Performance Ratio Definitions

Service Efficiency

Expenses per Revenue Hour - The average expense to operate one vehicle for one hour of passenger service.

Expenses per Revenue Mile - The average expense cost to operate one vehicle for one mile of passenger service.

Fare Revenue per Revenue Hour- The fares collected in one hour of service.

Farebox Recovery Ratio - The proportion of operating expenses that are paid for by fare revenues.

Average System Speed - The average revenue miles per revenue hour.

Service Effectiveness

Unlinked Passengers per Revenue Hour - The average number of passengers to board a vehicle in one hour of passenger service.

Unlinked Passengers per Revenue Mile - The average number of passengers to board a vehicle in one mile of passenger service.

Other Factors

Local Funding- as a percent of Operating Expenses – The percent of operating expenses supported by locally generated funds. See page 18 for descriptions of the local funding for the peer group systems.

Peer Group Descriptions

Yosemite Area Regional Transportation System (YARTS), CA

YARTS serves Yosemite Valley, with routes to Merced, Mammoth Lakes, Fresno and Sonora. It operates Yosemite Valley shuttle system, fare free, providing access around eastern Yosemite Valley including stops at or near all overnight accommodations, stores, and major vistas. This shuttle operates year-round.

Southern Teton Area Rapid Transit (START) - Jackson Hole, WY

The system is funded partially by the Town of Jackson, Teton County, and the federal government. Service began in 1987 and was first implemented to be the skier's transportation from the town to Teton Village. It now also provides commuter service Monday through Friday from Star Valley, Wyoming and Teton Valley, Idaho to Jackson. There are additional seasonal services in the winter.

Steamboat Springs Transit – Steamboat Springs, CO

Provides free fixed route local service and between downtown and the ski resort mountain village. It also has regional service between Steamboat Springs, Milner, Hayden and Craig at reasonable fares. Seasonal service augments the main services operating on 20 minute frequencies.

Roaring Fork Transportation Authority (RFTA) - Aspen, CO –

RFTA has been in operation since 1983 originally under the name Roaring Fork Transit Agency. It now functions as a Regional Transportation Authority (RTA). The RTA includes the communities of Aspen, Snowmass Village, Pitkin County, Basalt, and a portion of Eagle County, Carbondale, Glenwood Springs and New Castle. RFTA also provides commuter bus service from Aspen to Glenwood Springs (40 miles) and Glenwood to Rifle (30 miles).

Mountain Rides Transportation Authority - Sun Valley, ID

Mountain Rides operates multiple routes serving Blaine County Idaho, which includes the communities of Sun Valley, Ketchum, Hailey, Bellevue, and Carey. Service frequencies are generally 15 minutes on the primary routes and 30-60 minutes for the connector services. Van routes serve the communities of Twin Falls, Shoshone, Gooding, Jerome and Fairfield. There are additional seasonal services to the Sun Valley and River Run ski hills. Sun Valley markets the use of transit as a travel alternative to the private automobile.

Park City Transit - Park City, UT

Park City Transit is a free service that operates multiple routes including the Main Street Trolley. It also offers commuter service to Kimball Junction. A high frequency service zone has been identified in Park City with 5-15 minutes between buses. Otherwise service frequencies are generally 20-40 minutes. Express service to Kimball Junction runs hourly.

Eastern Sierra Transit Authority - Tuolumne Meadows – Yosemite Valley - Mammoth Lakes, CA

Mammoth Lakes service area for both Town of Mammoth Lakes and regional, including service to June Lake, Yosemite, and along Hwy 395 corridor. Three routes serve year-round on 30 minute frequencies and are supplemented with seasonal and the regional services which also connect into the TTD service area.

Greater Glens Falls Transit System (GGFT) - Glens Falls, Lake George, NY

GGFT operates year-round and serves the resort area of Lake George as well as the greater Glens Falls area. Other portions of Warren, Washington and Saratoga counties include Queensbury, South Glens Falls, Hudson Falls, Kingsbury, Fort Edward and Moreau are also served.

Vail Transit - Town of Vail, CO

The Town of Vail operates Vail Transit with fare free service. Not only does the service provide public transportation for its residents, it recognizes its role in reducing vehicle traffic in the community as well. Parking structures serve as transfer centers with connections to transit. Vail has two primary routes with 15 minutes between buses. Other connector services link into the main services and operate at lower frequencies of 30-60 minutes.

Eagle County Regional Transportation Authority (ECO Transit, Vail, CO regional area)

Founded in January 1, 1996, the Eagle County Regional Transportation Authority operates ECO Transit which provides regional transit service in [Eagle County, Colorado](#). It connects with the local transit systems in [Avon](#) and [Vail](#). Service extends to Eagle and Gypsum to the west and to Leadville to the south with all transit service routed through the Vail Transportation Center in Vail, CO at and to the ski areas. A dedicated half-cent county sales tax was approved by the voters in November 1995 to fund regional transportation. Service is year-round with certain routes augmented during the ski season from November to April the following year. Fares for adult start range from \$4 to \$7. Youth and senior fare is \$1.

Peer Group Operating Data Charts, Graphs and Comments

The next section includes a chart of operating data and performance ratios for the peer group followed by graphic representations and comments for each data element.

Tahoe Transportation District (TTD)

Peer Group Review

Source: FY 2017 Federal Transit Administration (FTA) National Transit Database (NTD)

Transit System Operating Data

Peer Transit System	Peak Vehicles	Unlinked Passengers Trips	Revenue Vehicle Hours (RVH)	Revenue Vehicle Miles (RVM)	Operating Expenses	Fare Revenue	Local Funds	Local Funds as Percent of Expenses
Tahoe Transportation District (TTD), Lake Tahoe	27	852,968	50,733	734,690	\$ 5,545,452	\$ 578,048	\$ 102,370	1.8%
Yosemite Area Regional Transportation System (YARTS)	10	106,744	17,131	402,629	\$ 2,298,999	\$ 479,998	\$ 300,002	13.0%
Southern Teton Area Rapid Transit (START) - Jackson Hole, WY	3	1,043,594	56,527	928,450	\$ 3,946,320	\$ 425,763	\$ 1,752,383	44.4%
Steamboat Springs Transit, City of Steamboat Springs, CO	21	1,167,457	46,880	644,556	\$ 3,570,856	\$ 114,746	\$ 2,753,892	77.1%
Roaring Fork Transit Authority - Aspen, CO	96	5,264,091	276,928	4,873,391	\$ 31,102,216	\$ 4,810,310	\$ 15,864,488	51.0%
Park City Transit - Park City, UT	37	2,064,496	87,386	1,243,294	\$ 10,128,008	\$ 29,735	\$ 7,233,051	71.4%
Mountain Rides Transportation Authority, Sun Valley, ID	27	533,949	40,072	843,657	\$ 2,303,459	\$ 356,039	\$ 754,246	32.7%
Eastern Sierra Transit Authority, Mammoth Lakes, CA	44	1,203,867	56,004	892,089	\$ 4,645,640	\$ 944,040	\$ -	0.0%
Greater Glens Falls Transit System, Glens Falls NY; (Lake George)	6	317,829	20,721	346,709	\$ 1,655,385	\$ 269,311	\$ 91,000	5.5%
ECO Transit, Eagle Co, CO (Vail regional area)	22	985,965	82,807	1,665,735	\$ 8,522,586	\$ 2,081,544	\$ 5,996,755	70.4%
Vail Transit, Town of Vail, CO (source: Agency provided)	20	3,200,000	83,027	638,529	\$ 3,807,216	\$ -	\$ 3,807,216	100.0%
Median	22	1,043,594	56,004	843,657	\$ 3,946,320	\$ 425,763	\$ 1,752,383	44.4%

ECO Transit, Eagle Co, CO (Vail regional area)

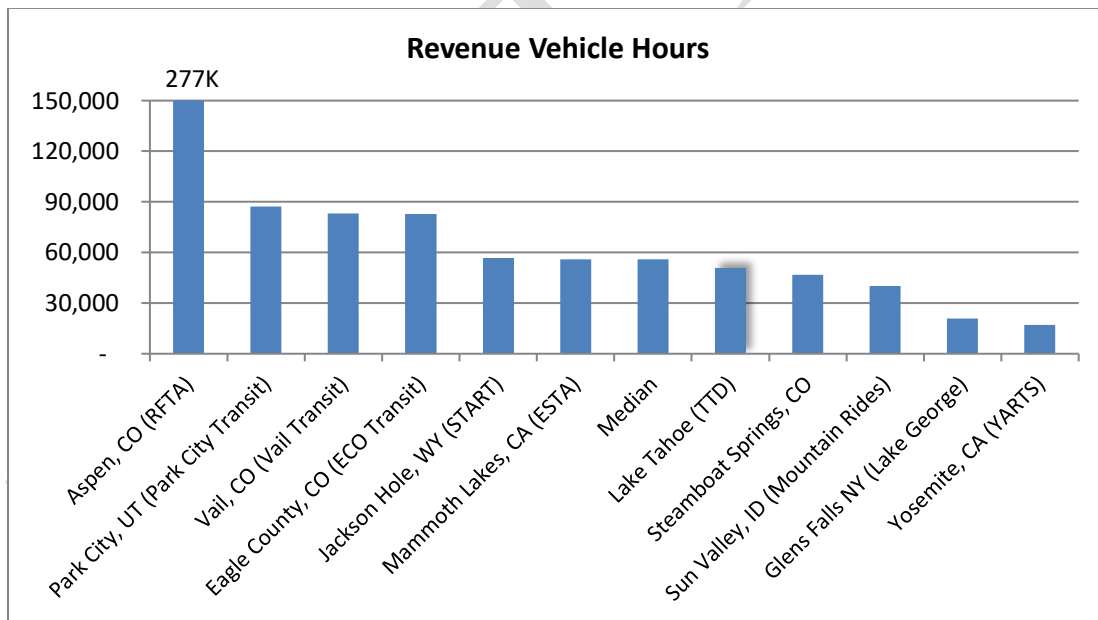
Transit System Operating Performance Ratios

Peer Transit System	Pass/RVH	Pass/RVM	Avg System Speed (MPH)	Expenses/RVH	Expenses/RVM	Expenses/Pass	Fare Revenue/RVH	Fare /Pass	Fare Recovery Ratio
Tahoe Transportation District (TTD), Lake Tahoe	16.8	1.2	14.5	\$109.31	\$7.55	\$6.50	\$11.39	\$0.68	10.4%
Yosemite Area Regional Transportation System (YARTS)	6.2	0.3	23.5	\$134.20	\$5.71	\$21.54	\$28.02	\$4.50	20.9%
Southern Teton Area Rapid Transit (START) - Jackson Hole, WY	18.5	1.1	16.4	\$69.81	\$4.25	\$3.78	\$7.53	\$0.41	10.8%
Steamboat Springs Transit, City of Steamboat Springs, CO	24.9	1.8	13.7	\$76.17	\$5.54	\$3.06	\$2.45	\$0.10	3.2%
Roaring Fork Transit Authority - Aspen, CO	19.0	1.1	17.6	\$112.31	\$6.38	\$5.91	\$17.37	\$0.91	15.5%
Park City Transit - Park City, UT	23.6	1.7	14.2	\$115.90	\$8.15	\$4.91	\$0.34	\$0.01	0.3%
Mountain Rides Transportation Authority, Sun Valley, ID	13.3	0.6	21.1	\$57.48	\$2.73	\$4.31	\$8.88	\$0.67	15.5%
Eastern Sierra Transit Authority, Mammoth Lakes, CA	21.5	1.3	15.9	\$82.95	\$5.21	\$3.86	\$16.86	\$0.78	20.3%
Greater Glens Falls Transit System, Glens Falls NY; (Lake George)	15.3	0.9	16.7	\$79.89	\$4.77	\$5.21	\$13.00	\$0.85	16.3%
ECO Transit, Eagle Co, CO (Vail regional area)	11.9	0.6	20.1	\$102.92	\$5.12	\$8.64	\$25.14	\$2.11	24.4%
Vail Transit, Town of Vail, CO (source: Agency provided)	38.5	5.0	7.7	\$45.86	\$5.96	\$1.19	\$0.00	\$0.00	0.0%
Median	18.5	1.1	16.4	\$82.95	\$5.54	\$4.91	\$11.39	\$0.68	15.5%

Peer Group Review Operation Characteristics

Revenue Vehicle Hours

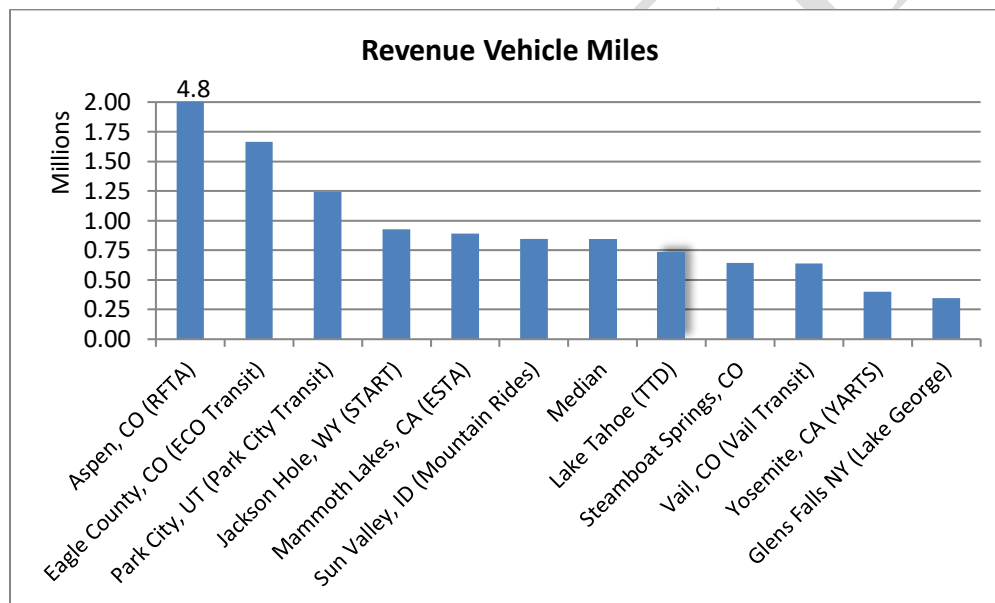
Transit System	Revenue Vehicle Hours
Aspen, CO (RFTA)	276,928
Park City, UT (Park City Transit)	87,386
Vail, CO (Vail Transit)	83,027
Eagle County, CO (ECO Transit)	82,807
Jackson Hole, WY (START)	56,527
Mammoth Lakes, CA (ESTA)	56,004
Median	56,004
Lake Tahoe (TTD)	50,733
Steamboat Springs, CO	46,880
Sun Valley, ID (Mountain Rides)	40,072
Glens Falls, NY (Lake George)	20,721
Yosemite, CA (YARTS)	17,131



TTD 's number of revenue vehicle hours at 50,733 is comparable to those in group and median at 56,527. Roaring Fork Transit Authority (Aspen, CO) has significantly more service hours due to its size.

Revenue Vehicle Miles

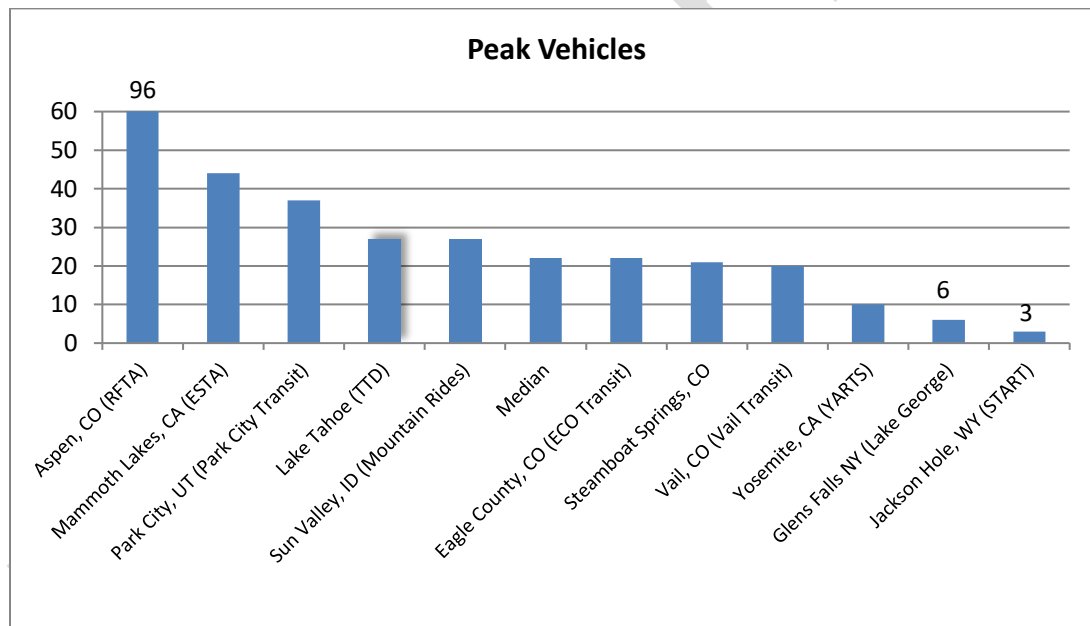
Transit System	Revenue Vehicle Miles
Aspen, CO (RFTA)	4,873,391
Eagle County, CO (ECO Transit)	1,665,735
Park City, UT (Park City Transit)	1,243,294
Jackson Hole, WY (START)	928,450
Mammoth Lakes, CA (ESTA)	892,089
Sun Valley, ID (Mountain Rides)	843,657
Median	843,657
Lake Tahoe (TTD)	734,690
Steamboat Springs, CO	644,556
Vail, CO (Vail Transit)	638,529
Yosemite, CA (YARTS)	402,629
Glens Falls, NY (Lake George)	346,709



TTD 's number of revenue vehicle miles at 734K is comparable to those in the peer group and slightly below the median value at 928K. Roaring Fork Transit Authority (Aspen, CO) has significantly more service miles at 4.8M due to its size.

Peak Vehicles All Modes

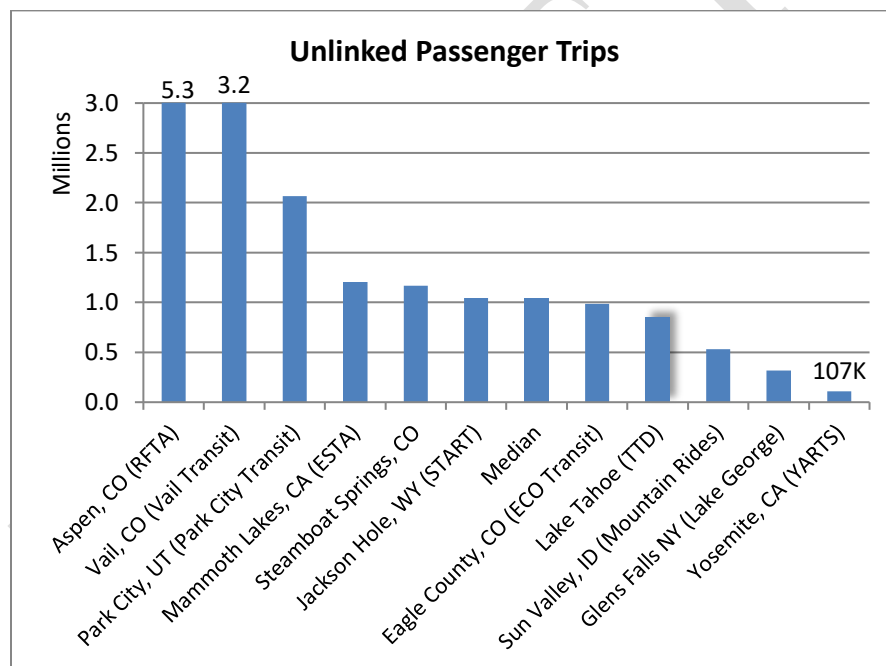
Transit System	Peak Vehicles
Aspen, CO (RFTA)	96
Mammoth Lakes, CA (ESTA)	44
Park City, UT (Park City Transit)	37
Lake Tahoe (TTD)	27
Sun Valley, ID (Mountain Rides)	27
Median	22
Eagle County, CO (ECO Transit)	22
Steamboat Springs, CO	21
Vail, CO (Vail Transit)	20
Yosemite, CA (YARTS)	10
Glens Falls, NY (Lake George)	6
Jackson Hole, WY (START)	3



TTD's number of peak vehicles at 27 is comparable to the peer group and to the median at 37. Roaring Fork Transit Authority's (Aspen, CO) number of peak vehicles at 96 is much larger due to its size.

Unlinked Passenger Trips

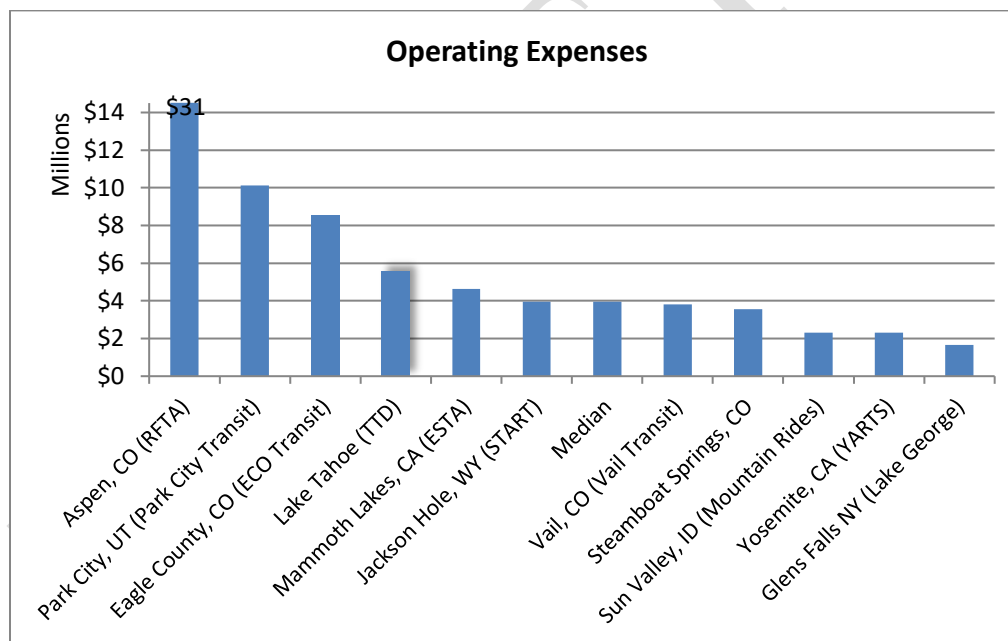
Transit System	Unlinked Passengers
Aspen, CO (RFTA)	5,264,091
Vail, CO (Vail Transit)	3,200,000
Park City, UT (Park City Transit)	2,064,496
Mammoth Lakes, CA (ESTA)	1,203,867
Steamboat Springs, CO	1,167,457
Jackson Hole, WY (START)	1,043,594
Median	1,043,594
Eagle County, CO (ECO Transit)	985,965
Lake Tahoe (TTD)	852,968
Sun Valley, ID (Mountain Rides)	533,949
Glens Falls, NY (Lake George)	317,829
Yosemite, CA (YARTS)	106,744



TTD's number of unlinked passengers of 853K is slightly below the median of 1M but otherwise comparable to the group. Roaring Fork Transit Authority's (Aspen, Co) number of trips are significantly higher due to its size. Vail Transit's high passenger trips per revenue hour of 38.5 generates a high level of ridership for its size. This is partially the result of fares being free.

Operating Expenses

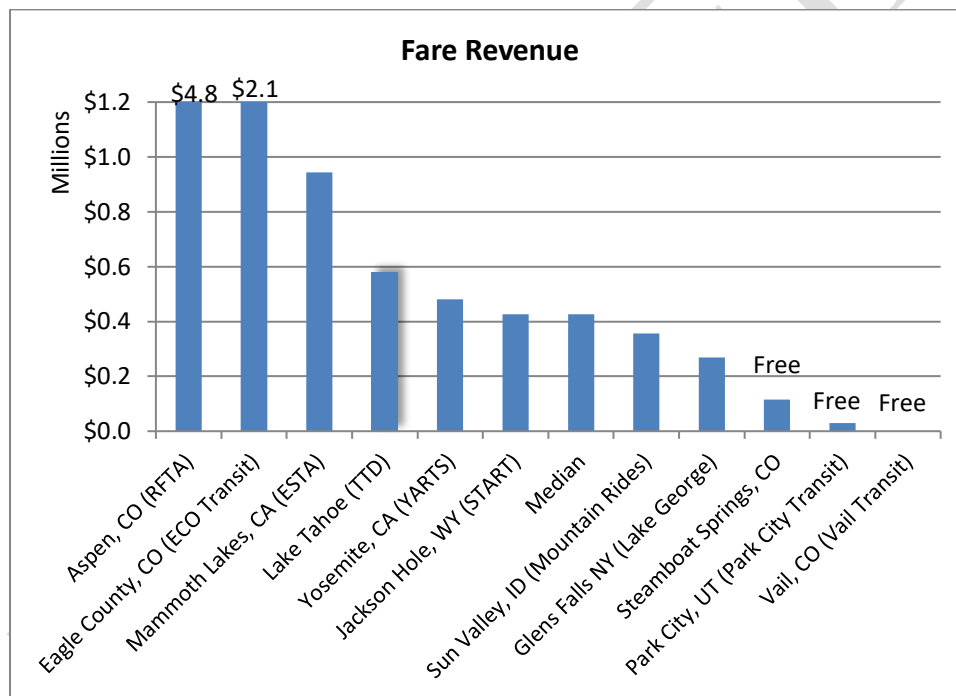
Transit System	Operating Expenses
Aspen, CO (RFTA)	\$ 31,102,216
Park City, UT (Park City Transit)	\$ 10,128,008
Eagle County, CO (ECO Transit)	\$ 8,522,586
Lake Tahoe (TTD)	\$ 5,545,452
Mammoth Lakes, CA (ESTA)	\$ 4,645,640
Jackson Hole, WY (START)	\$ 3,946,320
Median	\$ 3,946,320
Vail, CO (Vail Transit)	\$ 3,807,216
Steamboat Springs, CO	\$ 3,570,856
Sun Valley, ID (Mountain Rides)	\$ 2,303,459
Yosemite, CA (YARTS)	\$ 2,298,999
Glens Falls, NY (Lake George)	\$ 1,655,385



TTD's operating expenses of \$5.5M is proportional to the size and characteristics of the transit systems. Additional comments are made below relative to the expenses per revenue hour. Roaring Fork Transit Authority's (Aspen) expenses are significantly higher at \$31M due to its size.

Farebox Revenue

Transit System	Fare Revenue
Aspen, CO (RFTA)	\$ 4,810,310
Eagle County, CO (ECO Transit)	\$ 2,081,544
Mammoth Lakes, CA (ESTA)	\$ 944,040
Lake Tahoe (TTD)	\$ 578,048
Yosemite, CA (YARTS)	\$ 479,998
Jackson Hole, WY (START)	\$ 425,763
Median	\$ 425,763
Sun Valley, ID (Mountain Rides)	\$ 356,039
Glens Falls, NY (Lake George)	\$ 269,311
Steamboat Springs, CO	\$ 114,746
Park City, UT (Park City Transit)	\$ 29,735
Vail, CO (Vail Transit)	\$ -

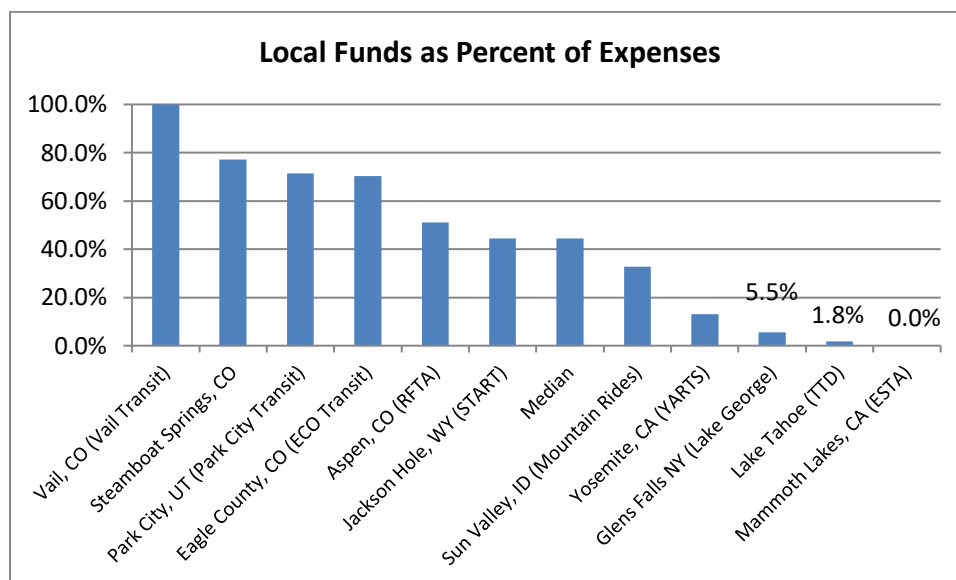


The TTD's fare revenue at \$578K compares favorably to the group and also represents the median value. It should be noted that three systems offer free service, Steamboat Springs, CO, Park City, Utah and Vail Transit, CO. START has free service within the Town of Jackson and charges fares for the commuter service to the surrounding areas. Roaring Fork Transit Authority's (Aspen) and ECO Transit has considerably more revenue due to their size.

Local Operating Funds

Transit System	Local Funds
Aspen, CO (RFTA)	\$ 15,864,488
Park City, UT (Park City Transit)	\$ 7,233,051
Eagle County, CO (ECO Transit)	\$ 5,996,755
Vail, CO (Vail Transit)	\$ 3,807,216
Steamboat Springs, CO	\$ 2,753,892
Jackson Hole, WY (START)	\$ 1,752,383
Median	\$ 1,752,383
Sun Valley, ID (Mountain Rides)	\$ 754,246
Yosemite, CA (YARTS)	\$ 300,002
Lake Tahoe (TTD)	\$ 102,370
Glens Falls, NY (Lake George)	\$ 91,000
Mammoth Lakes, CA (ESTA)	\$ -

Transit System	Local Funds as Percent of Expenses
Vail, CO (Vail Transit)	100.0%
Steamboat Springs, CO	77.1%
Park City, UT (Park City Transit)	71.4%
Eagle County, CO (ECO Transit)	70.4%
Aspen, CO (RFTA)	51.0%
Jackson Hole, WY (START)	44.4%
Median	44.4%
Sun Valley, ID (Mountain Rides)	32.7%
Yosemite, CA (YARTS)	13.0%
Glens Falls, NY (Lake George)	5.5%
Lake Tahoe (TTD)	1.8%
Mammoth Lakes, CA (ESTA)	0.0%



TTD reported only 1.8% local funds as a percent of expenses compared the median value of 32.7%. It does not have a dedicated source of local funds like many other systems in the group.

A predictable and meaningful stream of local funding to the TTD would leverage federal and state funding for needed capital facilities and other foundational projects. Converting leased facilities to owned facilities with a controlling interest is necessary for the use of federal and state capital funding.

The following summarizes the local funding in place for the peer group reviewed:

Tahoe Transportation District (TTD)

TTD receives no dedicated local funding but does receive financial support from Douglas Co. TTD also receives Local Transportation Funds (LTF) through the State of California and is based on ¼ cent of the general sales tax collected state wide and allocated back to the county of origin. These funds were reported to the NTD as state funding

Yosemite Area Regional Transportation System (YARTS), CA

YARTS receives no dedicated local funds or other direct local funding. It does receive, however, funds from the surrounding counties through the State of California Local Transportation Funds (LTF) funding mechanism. YARTS reported a portion of these funds as local funding on the 2017 NTD report. Other California based systems in the peer group report these funds as state funding.

Southern Teton Area Rapid Transit (START) - Jackson Hole, WY

Local funds are provided through a lodging tax as well as from the state of Idaho to support commuter service.

Steamboat Springs Transit, City of Steamboat Springs, CO

Steamboat Springs Transit is considered a division of the City of Steamboat Springs, CO for purposes of local funding. The system operates fare free for the local service. By city ordinance up to 14% of the city's general fund is allocated to the transit system's operating and capital budget. The general fund is funded by sales tax. The amount of funds allocated is determined in June of each year for the following year.

Roaring Fork Transit Authority (RFTA) – Aspen, CO

RFTA receives dedicated local funding through the collection of sales and use tax from two counties and six municipalities ranging from .4% to 1.0% under intergovernmental agreements. These and other funds considered local represent approximately half of their annual operating budget of \$30 million.

Mountain Rides Transportation Authority, Sun Valley, ID

Mountain Rides receives a local option sales tax from the Cities of Sun Valley, Ketchum, Hailey and Bellevue. The tax is 1% of certain items as determined by the cities. Blaine County also provides funds from its general fund. Even though the tax is collected each year, Mountain Rides must request the funds each budget cycle.

Park City Transit - Park City, UT

Local funding is provided by the Town of Park City and Summit County. The city funding comes from a .25% sales tax and the County funding comes from up to five additional .25% sales tax levies.

Eastern Sierra Transit Authority (ESTA) - (Mammoth Lakes, CA)

ESTA receives a modest amount of sales tax funding from the Town of Mammoth Lakes (fares are free on the local service). ESTA also receives Local Transportation Funds (LTF) through the State of California and was reported as state funds.

Greater Glens Falls Transit System (Glens Falls NY; Lake George)

Greater Glens Falls Transit System (GGFTS) is considered a department of the City of Glens Falls, NY for purposes of local funding. Three counties allocate funding to GGFTS through operating agreements. In addition, eleven municipalities provide funding through their general funds proportionate to the level of transit service received.

Vail Transit, Town of Vail, CO

100% of the operating cost of the Vail Transit system is funded through the Town of Vail general fund. The system operates fare free.

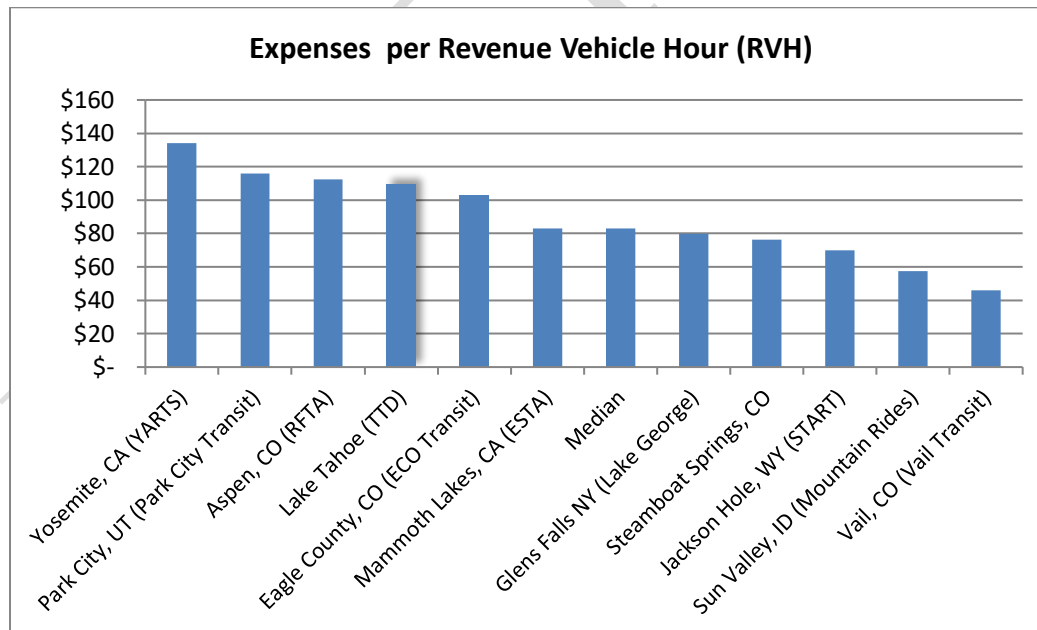
Eagle County Regional Transportation Authority (ECO Transit, Vail, CO area)

Approximately 70% of ECO Transit's operating budget is funded by sales tax through Eagle County, CO.

Peer Group Review Performance Ratios Service Efficiency

Expenses per Revenue Vehicle Hour

Transit System	Expenses per RVH
Yosemite, CA (YARTS)	\$ 134.20
Park City, UT (Park City Transit)	\$ 115.90
Aspen, CO (RFTA)	\$ 112.31
Lake Tahoe (TTD)	\$ 109.31
Eagle County, CO (ECO Transit)	\$ 102.92
Mammoth Lakes, CA (ESTA)	\$ 82.95
Median	\$ 82.95
Glens Falls, NY (Lake George)	\$ 79.89
Steamboat Springs, CO	\$ 76.17
Jackson Hole, WY (START)	\$ 69.81
Sun Valley, ID (Mountain Rides)	\$ 57.48
Vail, CO (Vail Transit)	\$ 45.86

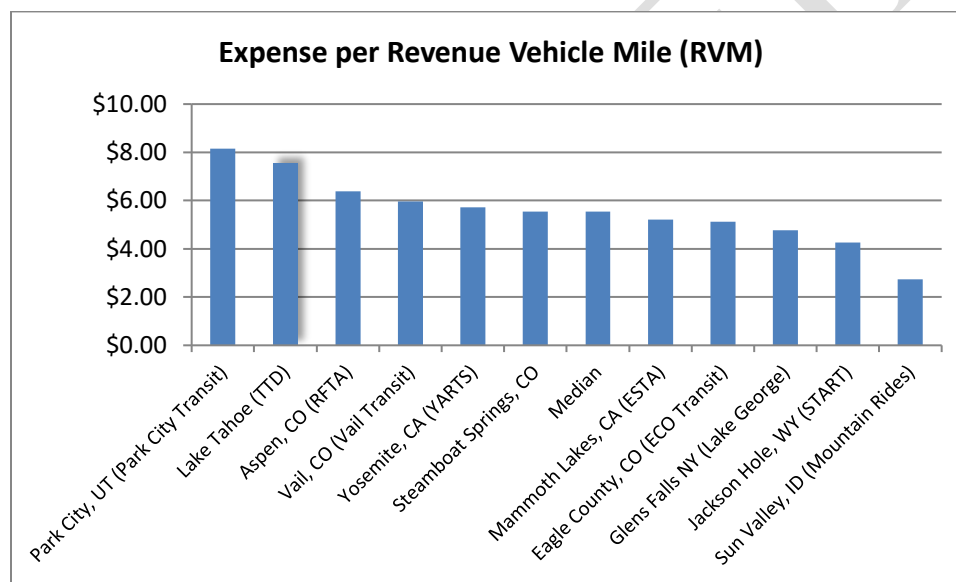


TTD's expenses per revenue hour of \$109.31 are higher than the median of \$82.95 and in the upper half of the group. It should be noted that the majority of the systems with commuter buses in their service mix experienced increased overall expenses per revenue hour. For example, the following systems in the group had commuter service with expenses per revenue hour (in

parentheses): TTD (\$169.00 vs \$90.65 for bus according to the NTD data), Aspen (\$118.82 vs \$97.67 for bus), and Steamboat Springs (\$102.44 vs \$74.00 for bus). In addition, the TTD indicated they have encountered higher than usual vehicle maintenance expenses due to an effort to bring the fleet up to correct standards after assuming direct responsibility for the fleet's maintenance. The duty cycle of the fleet which at times operates in steep terrain, especially for the commuter buses, also contributes to higher expenses. Yosemite Area Transit has the highest expenses per hour due to its purchased service agreement. Currently, contracted buses (12) cost \$150 per hour and their own (10) cost \$130 per hour.

Expenses per Revenue Mile

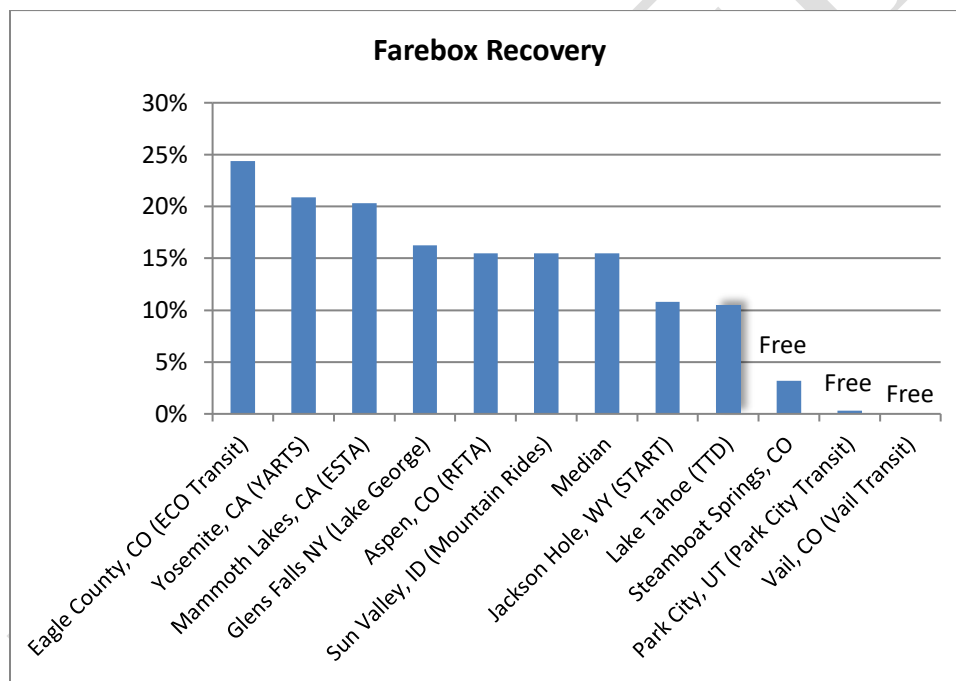
Transit System	Expense per RVM
Park City, UT (Park City Transit)	\$8.15
Lake Tahoe (TTD)	\$7.55
Aspen, CO (RFTA)	\$6.38
Vail, CO (Vail Transit)	\$5.96
Yosemite, CA (YARTS)	\$5.71
Steamboat Springs, CO	\$5.54
Median	\$5.54
Mammoth Lakes, CA (ESTA)	\$5.21
Eagle County, CO (ECO Transit)	\$5.12
Glens Falls, NY (Lake George)	\$4.77
Jackson Hole, WY (START)	\$4.25
Sun Valley, ID (Mountain Rides)	\$2.73



The expenses per RVM for TTD of \$7.55 is higher than the median value of \$4.68. As noted in the discussion above for Operating Expenses, higher costs are associated with commuter service and higher maintenance costs have been incurred due to an aging fleet. A 12.7% lower average system speed also increases the cost per unit of service. Consideration should be made for development of further intelligent transportation system projects like queue jump and signal prioritization to increase the system speed.

Farebox Recovery

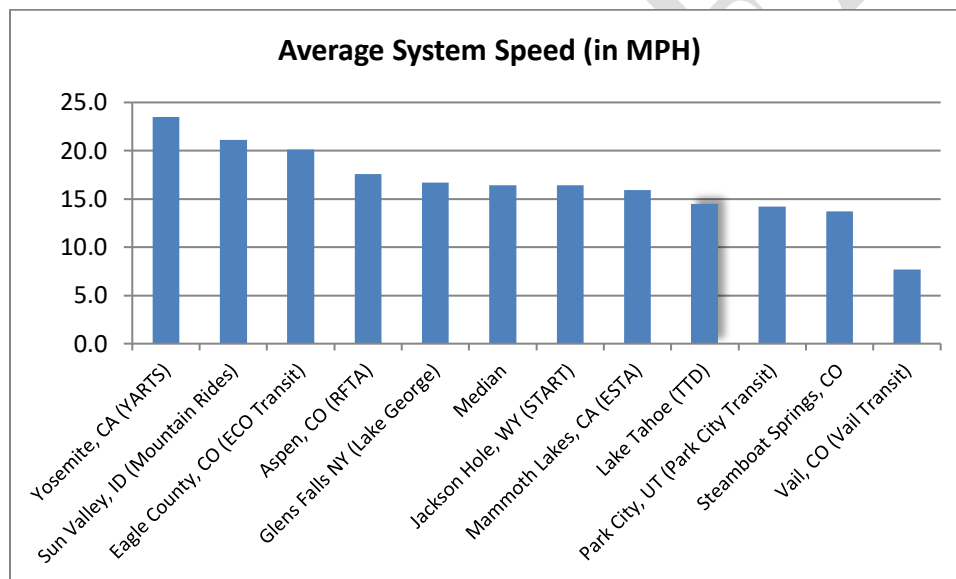
Transit System	Farebox Recovery
Eagle County, CO (ECO Transit)	24.4%
Yosemite, CA (YARTS)	20.9%
Mammoth Lakes, CA (ESTA)	20.3%
Glens Falls, NY (Lake George)	16.3%
Aspen, CO (RFTA)	15.5%
Sun Valley, ID (Mountain Rides)	15.5%
Median	15.5%
Jackson Hole, WY (START)	10.8%
Lake Tahoe (TTD)	10.4%
Steamboat Springs, CO	3.2%
Park City, UT (Park City Transit)	0.3%
Vail, CO (Vail Transit)	0.0%



TTD's farebox recovery ratio at 10.4% represents an average of ratios based on the type of service provided ranging up to 17% for the fixed route service (source: TTD 2017 Short Range Transit Plan). It is generally comparable to the peer group.

Average System Speed

Transit System	System Speed
Yosemite, CA (YARTS)	23.5
Sun Valley, ID (Mountain Rides)	21.1
Eagle County, CO (ECO Transit)	20.1
Aspen, CO (RFTA)	17.6
Glens Falls, NY (Lake George)	16.7
Median	16.4
Jackson Hole, WY (START)	16.4
Mammoth Lakes, CA (ESTA)	15.9
Lake Tahoe (TTD)	14.5
Park City, UT (Park City Transit)	14.2
Steamboat Springs, CO	13.7
Vail, CO (Vail Transit)	7.7

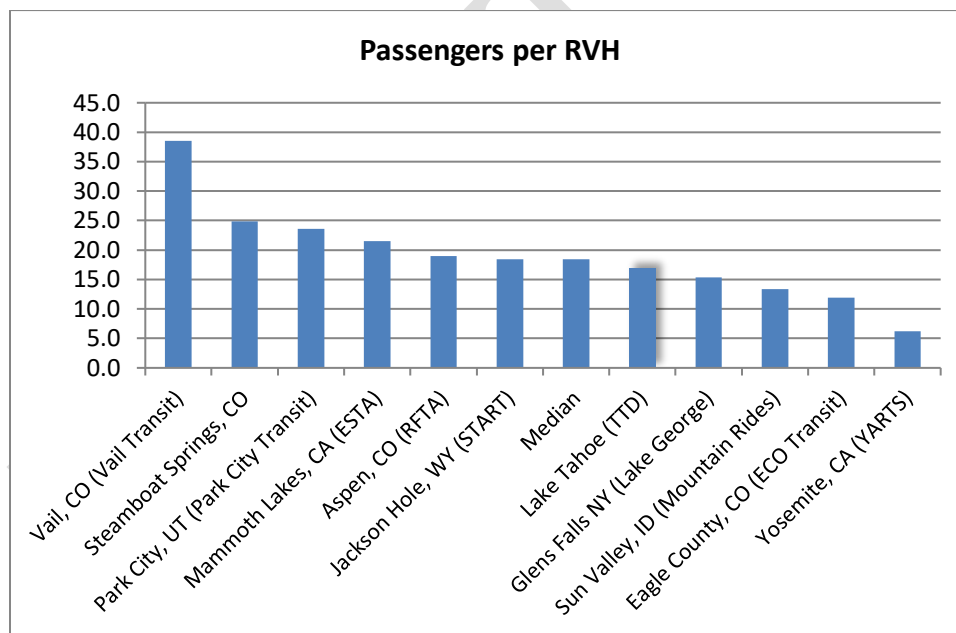


The average system speed for the group fluctuates in a relatively narrow range. It depends largely on the systems' route profile. The TTD value at 14.5 is 12.7% lower than the median of 16.6. The average system speed is largely influenced by the service mix, e.g. how much commuter service is provided compared to fixed route service. Even though the speed of fixed route service, by nature, tends to be slower than other services, its performance can be improved by the adoption of intelligent transportation systems such as traffic signal priority and signal queue jump.

Peer Group Review Performance Ratios Service Effectiveness

Unlinked Passengers per Revenue Vehicle Hours (RVH)

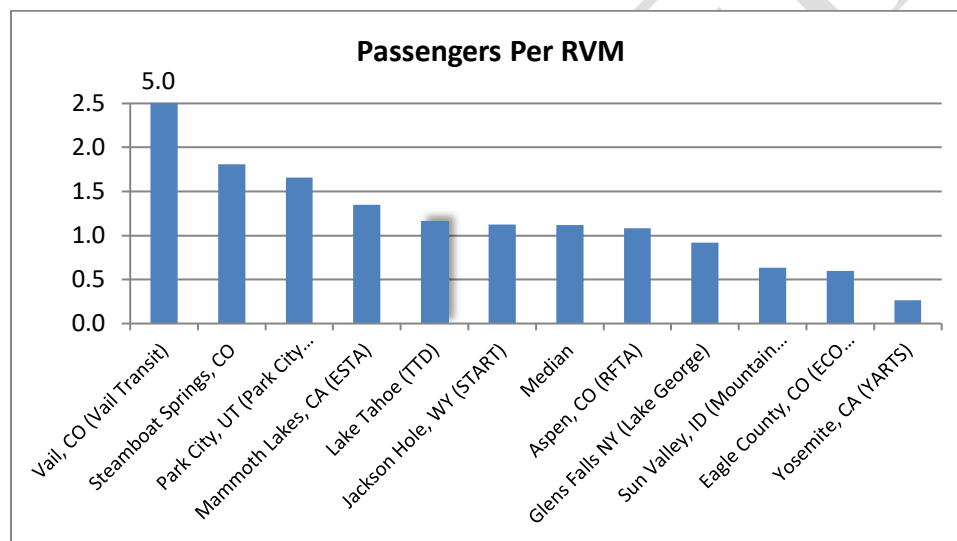
Transit System	Passengers per RVH
Vail, CO (Vail Transit)	38.5
Steamboat Springs, CO	24.9
Park City, UT (Park City Transit)	23.6
Mammoth Lakes, CA (ESTA)	21.5
Aspen, CO (RFTA)	19.0
Jackson Hole, WY (START)	18.5
Median	18.5
Lake Tahoe (TTD)	16.8
Glens Falls, NY (Lake George)	15.3
Sun Valley, ID (Mountain Rides)	13.3
Eagle County, CO (ECO Transit)	11.9
Yosemite, CA (YARTS)	6.2



TTD's number of unlinked passengers per revenue hours of 16.8 is an average of all service types provided and is comparable to the peer group. For example, according to the TTD 2017 Short Range Transit Plan, the passengers per revenue hour ranged up to 30.36 for winter seasonal service and 21.41 for fixed route service. Note also that the three systems with the highest passengers per RVH do not charge a fare by policy.

Unlinked Passengers per Revenue Vehicle Mile (RVM)

Transit System	Passengers Per RVM
Vail, CO (Vail Transit)	5.0
Steamboat Springs, CO	1.8
Park City, UT (Park City Transit)	1.7
Mammoth Lakes, CA (ESTA)	1.3
Lake Tahoe (TTD)	1.2
Jackson Hole, WY (START)	1.1
Median	1.1
Aspen, CO (RFTA)	1.1
Glens Falls, NY (Lake George)	0.9
Sun Valley, ID (Mountain Rides)	0.6
Eagle County, CO (ECO Transit)	0.6
Yosemite, CA (YARTS)	0.3

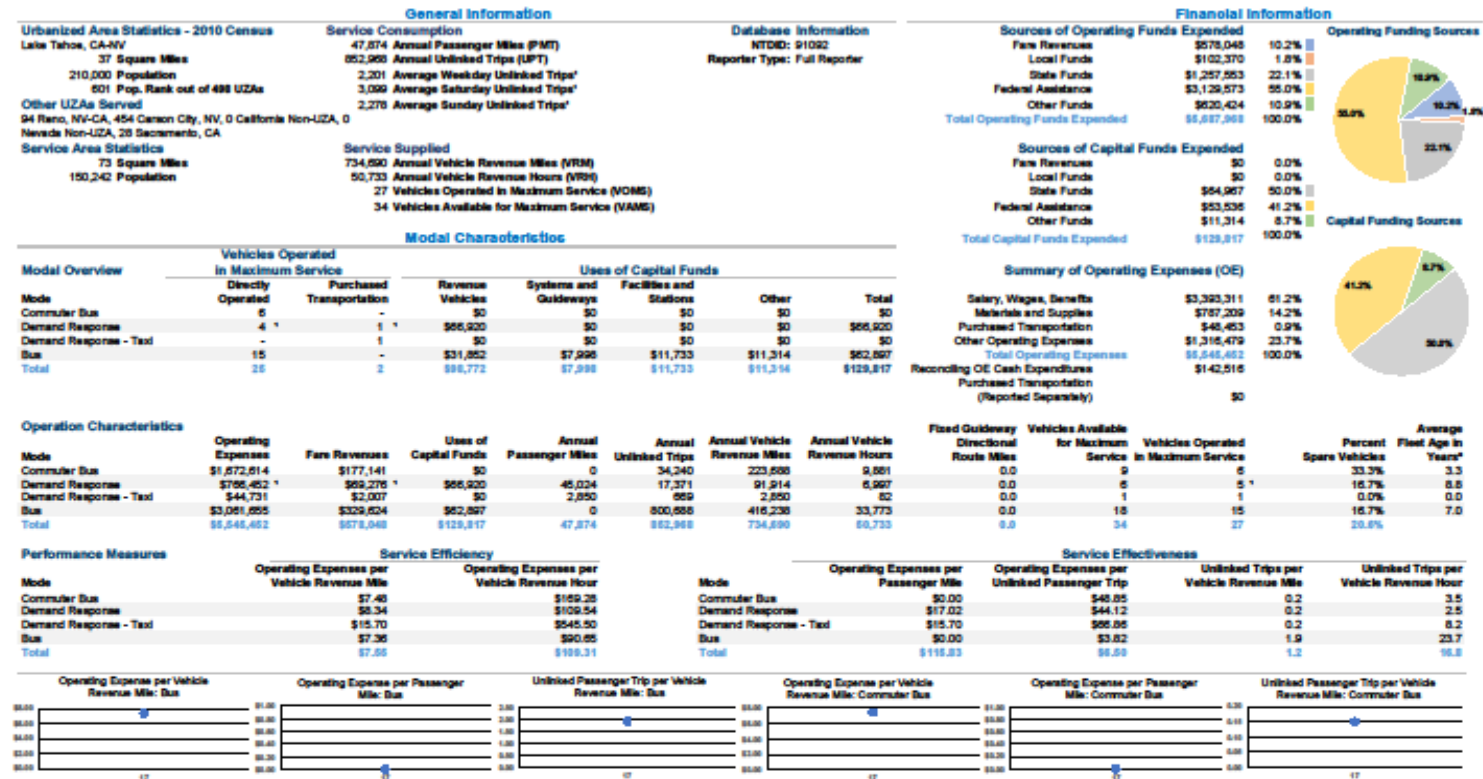


TTD's number of passengers per revenue vehicle mile at 1.2 is comparable to those systems of similar size, service design and fare policy. Note also that the three systems with the highest passengers per RVM do not charge a fare by policy.

Federal Transit Administration, National Transit Database (NTD) 2017 Profiles

The following section provides the NTD 2017 profiles for the peer group agencies:

Tahoe Transportation District 2017 Annual Agency Profile



Modal Characteristics

Modal Overview	Vehicles Operated in Maximum Service		Uses of Capital Funds						Total
	Directly Operated	Purchased Transportation	Revenue Vehicles	Systems and Guideways	Facilities and Stations	Other			
Commuter Bus	5	-	\$0	\$0	\$0	\$0	\$0		
Demand Response	4	1	\$66,920	\$0	\$0	\$0	\$66,920		
Demand Response - Taxi	-	1	\$0	\$0	\$0	\$0	\$0		
Bus	15	-	\$31,852	\$7,998	\$11,733	\$11,314	\$62,897		
Total	25	2	\$98,772	\$7,998	\$11,733	\$11,314	\$129,817		

Operation Characteristics

Mode	Operating Expenses	Fare Revenues	Uses of Capital Funds	Annual Passenger Miles	Annual Unlinked Trips	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours	Fixed Guideway Directional Route Miles	Vehicles Available for Maximum Service	Vehicles Operated in Maximum Service	Percent Spare Vehicles	Average Fleet Age in Years*
Commuter Bus	\$1,572,614	\$177,141	\$0	0	34,240	223,888	9,881	0.0	9	5	33.3%	3.3
Demand Response	\$196,452	\$69,276	\$66,920	45,024	17,371	91,914	6,967	0.0	6	5	16.7%	8.8
Demand Response - Taxi	\$44,731	\$2,007	\$0	2,050	959	2,050	62	0.0	1	1	0.0%	0.0
Bus	\$3,061,555	\$309,624	\$62,897	0	800,868	416,236	33,773	0.0	18	15	16.7%	7.0
Total	\$5,545,462	\$578,048	\$129,817	47,874	852,968	734,690	60,733	0.0	34	27	25.6%	

Performance Measures

Service Efficiency

Mode	Operating Expenses per Vehicle Revenue Mile	Operating Expenses per Vehicle Revenue Hour
Commuter Bus	\$7.48	\$189.28
Demand Response	\$8.34	\$109.54
Demand Response - Taxi	\$15.70	\$545.50
Bus	\$7.36	\$50.66
Total	\$7.55	\$169.31

Service Effectiveness

Mode	Operating Expenses per Passenger Mile	Operating Expenses per Unlinked Passenger Trip	Unlinked Trips per Vehicle Revenue Mile	Unlinked Trips per Vehicle Revenue Hour
Commuter Bus	\$0.00	\$46.85	0.2	3.5
Demand Response	\$17.02	\$44.12	0.2	2.5
Demand Response - Taxi	\$15.70	\$66.86	0.2	8.2
Bus	\$0.00	\$3.82	1.9	23.7
Total	\$115.83	\$6.59	1.2	16.8

Operating Expense per Vehicle Revenue Mile: Bus

Operating Expense per Passenger Mile: Bus

Unlinked Passenger Trip per Vehicle Revenue Mile: Bus

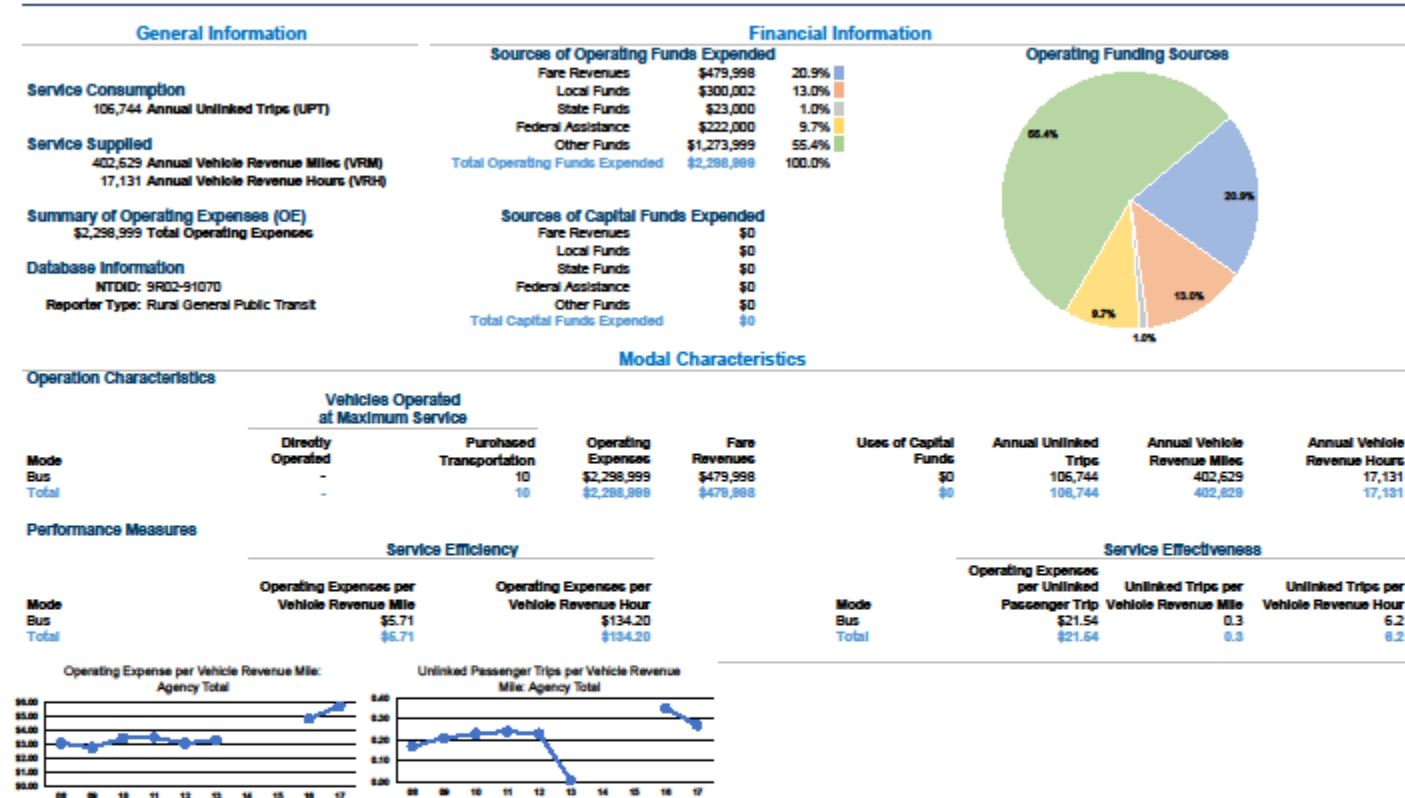
Operating Expense per Vehicle Revenue Mile: Commuter Bus

Operating Expense per Passenger Mile: Commuter Bus

Unlinked Passenger Trip per Vehicle Revenue Mile: Commuter Bus

Notes:
*Demand Response - Taxi (DT) and non-dedicated fleets do not report fleet age data.
*Includes data for a contract with another reporter.
*Average Unlinked Trips not available for Demand Response Taxi.
*This agency has a purchased transportation relationship in which they buy service from Town of Truckee (NTDID: 91101), and in which the data are captured in this report for mode DR/PT.

Yosemite Area Regional Transportation System 2017 Annual Agency Profile



Southern Teton Area Rapid Transit 2017 Annual Agency Profile

General Information

Service Consumption
1,043,594 Annual Unlinked Trips (UPT)

Service Supplied
928,450 Annual Vehicle Revenue Miles (VRM)
56,527 Annual Vehicle Revenue Hours (VRH)

Summary of Operating Expenses (OE)
\$3,946,320 Total Operating Expenses

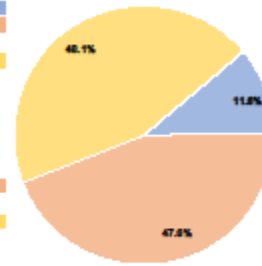
Database Information
NTDID: 8R05-80188, ORD1-80188
Reporter Type: Rural General Public Transit

Financial Information

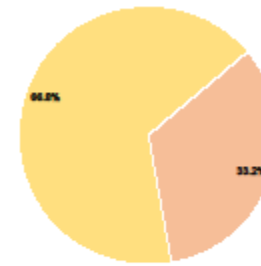
Sources of Operating Funds Expended			
Fare Revenues	\$425,763	11.6%	
Local Funds	\$1,752,383	47.6%	
State Funds	\$0	0.0%	
Federal Assistance	\$1,768,174	48.1%	
Other Funds	\$0	0.0%	
Total Operating Funds Expended	\$3,879,667	100.0%	

Sources of Capital Funds Expended			
Fare Revenues	\$0	0.0%	
Local Funds	\$279,441	33.2%	
State Funds	\$0	0.0%	
Federal Assistance	\$560,984	66.8%	
Other Funds	\$0	0.0%	
Total Capital Funds Expended	\$840,425	100.0%	

Operating Funding Sources



Capital Funding Sources



Modal Characteristics

Operation Characteristics

Mode	Vehicles Operated at Maximum Service		Operating Expenses	Fare Revenues	Uses of Capital Funds	Annual Unlinked Trips	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours
	Directly Operated	Purchased Transportation						
Demand Response	1	-	\$73,591	\$6,093	\$0	4,843	19,056	2,210
Bus	23	-	\$3,872,729	\$419,670	\$840,425	1,038,751	909,394	54,317
Total	24	-	\$3,946,320	\$425,763	\$840,425	1,043,594	928,450	56,527

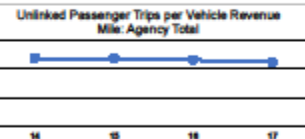
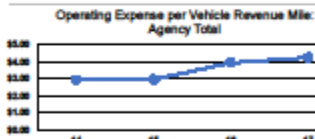
Performance Measures

Service Efficiency

Mode	Operating Expenses per Vehicle Revenue Mile	Operating Expenses per Vehicle Revenue Hour
Demand Response	\$3.86	\$33.30
Bus	\$4.24	\$68.63
Total	\$4.26	\$68.81

Service Effectiveness

Mode	Operating Expenses per Unlinked Passenger Trip	Unlinked Trips per Vehicle Revenue Mile	Unlinked Trips per Vehicle Revenue Hour
Demand Response	\$15.20	0.3	2.2
Bus	\$3.58	1.2	19.2
Total	\$3.78	1.1	18.6



Steamboat Springs, City of 2017 Annual Agency Profile

General Information

Service Consumption
1,167,457 Annual Unlinked Trips (UPT)

Service Supplied
644,556 Annual Vehicle Revenue Miles (VRM)
46,880 Annual Vehicle Revenue Hours (VRH)

Summary of Operating Expenses (OE)
\$3,570,856 Total Operating Expenses

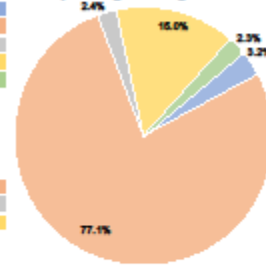
Database Information
NTDID: 8RD1-80186
Reporter Type: Rural General Public Transit

Financial Information

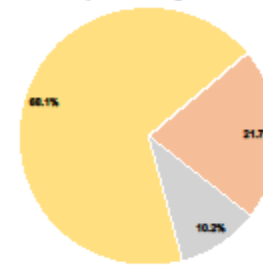
Sources of Operating Funds Expended			
Fare Revenues	\$114,746	3.2%	
Local Funds	\$2,753,892	77.1%	
State Funds	\$84,365	2.4%	
Federal Assistance	\$537,290	15.0%	
Other Funds	\$80,563	2.3%	
Total Operating Funds Expended	\$3,570,856	100.0%	

Sources of Capital Funds Expended			
Fare Revenues	\$0	0.0%	
Local Funds	\$261,007	21.7%	
State Funds	\$122,760	10.2%	
Federal Assistance	\$819,940	68.1%	
Other Funds	\$0	0.0%	
Total Capital Funds Expended	\$1,203,707	100.0%	

Operating Funding Sources



Capital Funding Sources



Modal Characteristics

Operation Characteristics

Mode	Vehicles Operated at Maximum Service		Operating Expenses	Fare Revenues	Uses of Capital Funds	Annual Unlinked Trips	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours
	Directly Operated	Purchased Transportation						
Commuter Bus	4	-	\$379,649	\$114,746	\$372,000	30,900	89,750	3,706
Demand Response	1	-	\$73,073	\$0	\$0	1,992	12,704	1,038
Bus	16	-	\$3,118,134	\$0	\$831,707	1,134,565	542,102	42,136
Total	21	-	\$3,570,856	\$114,746	\$1,203,707	1,167,457	644,556	46,880

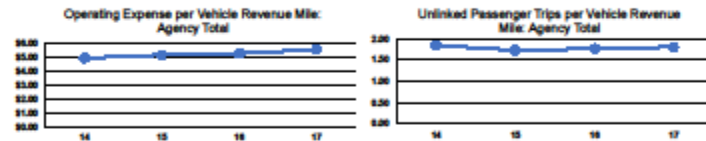
Performance Measures

Service Efficiency

Mode	Operating Expenses per Vehicle Revenue Mile	Operating Expenses per Vehicle Revenue Hour
Commuter Bus	\$4.23	\$102.44
Demand Response	\$5.75	\$70.40
Bus	\$5.75	\$74.00
Total	\$5.64	\$76.17

Service Effectiveness

Mode	Operating Expenses per Unlinked Passenger Trip	Unlinked Trips per Vehicle Revenue Mile	Unlinked Trips per Vehicle Revenue Hour
Commuter Bus	\$12.29	0.3	8.3
Demand Response	\$36.68	0.2	1.9
Bus	\$2.75	2.1	26.9
Total	\$3.06	1.8	24.8



Roaring Fork Transportation Authority 2017 Annual Agency Profile

General Information

Service Consumption
5,264,091 Annual Unlinked Trips (UPT)

Service Supplied
4,873,391 Annual Vehicle Revenue Miles (VRM)
276,928 Annual Vehicle Revenue Hours (VRH)

Summary of Operating Expenses (OE)
\$31,102,216 Total Operating Expenses

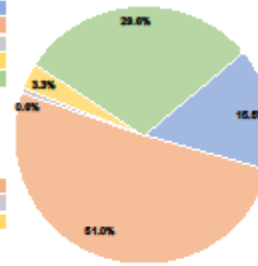
Database Information
NTDID: 8RD1-80289
Reporter Type: Rural General Public Transit

Financial Information

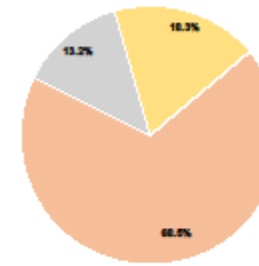
Sources of Operating Funds Expended			
Fare Revenues	\$4,810,310	15.5%	
Local Funds	\$15,864,488	51.0%	
State Funds	\$200,000	0.6%	
Federal Assistance	\$1,014,550	3.3%	
Other Funds	\$9,212,868	29.6%	
Total Operating Funds Expended	\$31,102,216	100.0%	

Sources of Capital Funds Expended			
Fare Revenues	\$0	0.0%	
Local Funds	\$3,116,036	68.5%	
State Funds	\$600,000	13.2%	
Federal Assistance	\$833,252	18.3%	
Other Funds	\$0	0.0%	
Total Capital Funds Expended	\$4,549,288	100.0%	

Operating Funding Sources



Capital Funding Sources



Modal Characteristics

Operation Characteristics

Mode	Vehicles Operated at Maximum Service		Operating Expenses	Fare Revenues	Uses of Capital Funds	Annual Unlinked Trips	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours
	Directly Operated	Purchased Transportation						
Commuter Bus	32	-	\$11,942,679	\$2,308,732	\$1,959,730	1,672,474	1,984,123	100,513
Demand Response	7	-	\$857,947	\$0	\$16,579	19,080	65,137	6,443
Bus	29	-	\$9,795,262	\$653,511	\$917,484	2,674,980	965,155	100,291
Bus Rapid Transit	28	-	\$8,506,328	\$1,848,067	\$1,655,495	897,557	1,858,976	69,681
Total	96	-	\$31,102,216	\$4,810,310	\$4,549,288	5,264,091	4,873,391	276,928

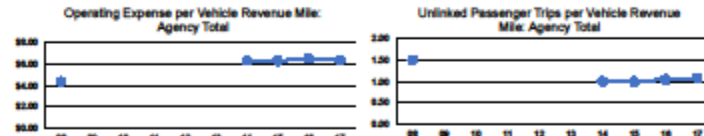
Performance Measures

Service Efficiency

Mode	Operating Expenses per Vehicle Revenue Mile	Operating Expenses per Vehicle Revenue Hour
Commuter Bus	\$6.02	\$118.82
Demand Response	\$13.17	\$133.16
Bus	\$10.15	\$97.67
Bus Rapid Transit	\$4.58	\$122.08
Total	\$6.38	\$112.91

Service Effectiveness

Mode	Operating Expenses per Unlinked Passenger Trip	Unlinked Trips per Vehicle Revenue Mile	Unlinked Trips per Vehicle Revenue Hour
Commuter Bus	\$7.14	0.8	16.6
Demand Response	\$44.57	0.3	3.0
Bus	\$3.66	2.8	26.7
Bus Rapid Transit	\$9.48	0.5	12.9
Total	\$6.91	1.1	18.0



Park City Municipal Corporation 2017 Annual Agency Profile

General Information

Service Consumption
2,064,496 Annual Unlinked Trips (UPT)

Service Supplied
1,243,294 Annual Vehicle Revenue Miles (VRM)
87,386 Annual Vehicle Revenue Hours (VRH)

Summary of Operating Expenses (OE)
\$10,128,008 Total Operating Expenses

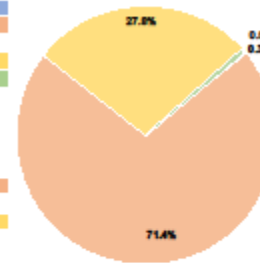
Database Information
NTDID: 8R06-80284
Reporter Type: Rural General Public Transit

Financial Information

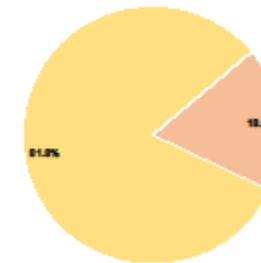
Sources of Operating Funds Expended			
Fare Revenues	\$29,735	0.3%	
Local Funds	\$7,233,051	71.4%	
State Funds	\$0	0.0%	
Federal Assistance	\$2,813,864	27.8%	
Other Funds	\$51,358	0.5%	
Total Operating Funds Expended	\$10,128,008	100.0%	

Sources of Capital Funds Expended			
Fare Revenues	\$0	0.0%	
Local Funds	\$2,918,299	18.2%	
State Funds	\$0	0.0%	
Federal Assistance	\$13,158,725	81.8%	
Other Funds	\$0	0.0%	
Total Capital Funds Expended	\$16,077,024	100.0%	

Operating Funding Sources



Capital Funding Sources



Modal Characteristics

Operation Characteristics

Mode	Vehicles Operated at Maximum Service		Operating Expenses	Fare Revenues	Uses of Capital Funds	Annual Unlinked Trips	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours
	Directly Operated	Purchased Transportation						
Demand Response	6	-	\$759,641	\$29,735	\$0	16,016	92,375	9,779
Bus	31	-	\$9,368,367	\$0	\$16,077,024	2,048,480	1,150,919	77,607
Total	37	-	\$10,128,008	\$29,735	\$16,077,024	2,064,496	1,243,294	87,386

Performance Measures

Service Efficiency

Mode	Operating Expenses per Vehicle Revenue Mile	Operating Expenses per Vehicle Revenue Hour
Demand Response	\$8.22	\$77.68
Bus	\$8.14	\$120.72
Total	\$8.16	\$116.90

Service Effectiveness

Mode	Operating Expenses per Unlinked Passenger Trip	Unlinked Trips per Vehicle Revenue Mile	Unlinked Trips per Vehicle Revenue Hour
Demand Response	\$47.43	0.2	1.6
Bus	\$4.57	1.8	26.4
Total	\$4.91	1.7	23.8



Mountain Rides Transportation Authority 2017 Annual Agency Profile

General Information

Service Consumption
533,949 Annual Unlinked Trips (UPT)

Service Supplied
843,657 Annual Vehicle Revenue Miles (VRM)
40,072 Annual Vehicle Revenue Hours (VRH)

Summary of Operating Expenses (OE)
\$2,303,459 Total Operating Expenses

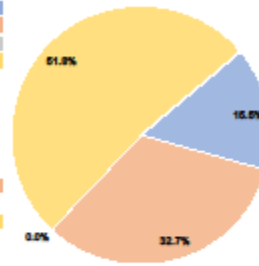
Database Information
NTDID: ORD1-00311
Reporter Type: Rural General Public Transit

Financial Information

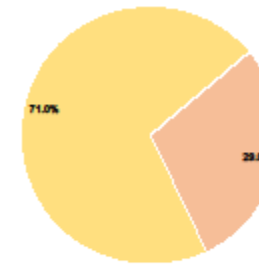
Sources of Operating Funds Expended			
Fare Revenues	\$356,039	15.5%	
Local Funds	\$754,246	32.7%	
State Funds	\$723	0.0%	
Federal Assistance	\$1,192,451	51.8%	
Other Funds	\$0	0.0%	
Total Operating Funds Expended	\$2,303,459	100.0%	

Sources of Capital Funds Expended			
Fare Revenues	\$0	0.0%	
Local Funds	\$40,443	29.0%	
State Funds	\$0	0.0%	
Federal Assistance	\$99,000	71.0%	
Other Funds	\$0	0.0%	
Total Capital Funds Expended	\$138,443	100.0%	

Operating Funding Sources



Capital Funding Sources



Modal Characteristics

Operation Characteristics

Mode	Vehicles Operated at Maximum Service		Operating Expenses	Fare Revenues	Uses of Capital Funds	Annual Unlinked Trips	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours
	Directly Operated	Purchased Transportation						
Demand Response	1	-	\$7,623	\$631	\$0	364	2,060	122
Bus	16	-	\$2,159,475	\$219,047	\$57,915	492,991	504,436	31,024
Vanpool	10	-	\$136,361	\$136,361	\$81,528	40,594	337,161	8,926
Total	27	-	\$2,303,459	\$356,039	\$138,443	533,949	843,657	40,072

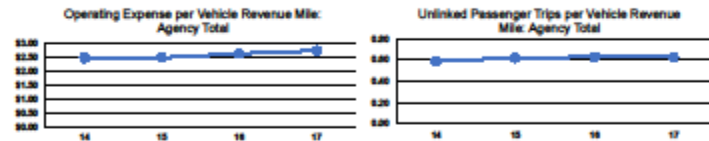
Performance Measures

Service Efficiency

Mode	Operating Expenses per Vehicle Revenue Mile	Operating Expenses per Vehicle Revenue Hour
Demand Response	\$3.70	\$62.48
Bus	\$4.28	\$69.51
Vanpool	\$0.40	\$15.28
Total	\$2.73	\$67.48

Service Effectiveness

Mode	Operating Expenses per Unlinked Passenger Trip	Unlinked Trips per Vehicle Revenue Mile	Unlinked Trips per Vehicle Revenue Hour
Demand Response	\$20.94	0.2	3.0
Bus	\$4.38	1.0	15.9
Vanpool	\$3.36	0.1	4.5
Total	\$4.31	0.8	13.3



Eastern Sierra Transit Authority 2017 Annual Agency Profile

General Information

Service Consumption
1,203,867 Annual Unlinked Trips (UPT)

Service Supplied
892,089 Annual Vehicle Revenue Miles (VRM)
56,004 Annual Vehicle Revenue Hours (VRH)

Summary of Operating Expenses (OE)
\$4,645,540 Total Operating Expenses

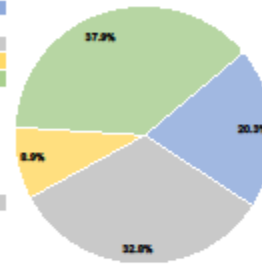
Database Information
NTDID: 9R02-91052
Reporter Type: Rural General Public Transit

Financial Information

Sources of Operating Funds Expended			
Fare Revenues	\$944,040	20.3%	
Local Funds	\$0	0.0%	
State Funds	\$1,526,063	32.8%	
Federal Assistance	\$415,002	8.9%	
Other Funds	\$1,760,535	37.9%	
Total Operating Funds Expended	\$4,645,640	100.0%	

Sources of Capital Funds Expended			
Fare Revenues	\$0	0.0%	
Local Funds	\$0	0.0%	
State Funds	\$115,403	100.0%	
Federal Assistance	\$0	0.0%	
Other Funds	\$0	0.0%	
Total Capital Funds Expended	\$115,403	100.0%	

Operating Funding Sources



Capital Funding Sources



Modal Characteristics

Operation Characteristics

Mode	Vehicles Operated at Maximum Service		Operating Expenses	Fare Revenues	Uses of Capital Funds	Annual Unlinked Trips	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours
	Directly Operated	Purchased Transportation						
Commuter Bus	7	-	\$340,260	\$57,119	\$22,590	12,864	153,653	4,149
Demand Response	11	-	\$1,179,830	\$133,512	\$11,510	57,134	165,533	17,303
Bus	26	-	\$3,125,550	\$753,409	\$81,303	1,133,869	572,903	34,552
Total	44	-	\$4,645,640	\$944,040	\$115,403	1,203,867	892,089	56,004

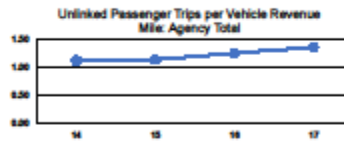
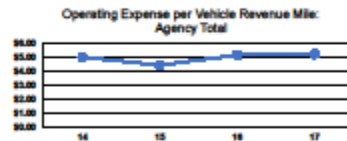
Performance Measures

Service Efficiency

Mode	Operating Expenses per Vehicle Revenue Mile	Operating Expenses per Vehicle Revenue Hour
Commuter Bus	\$2.21	\$82.01
Demand Response	\$7.13	\$68.19
Bus	\$5.46	\$30.46
Total	\$6.21	\$82.86

Service Effectiveness

Mode	Operating Expenses per Unlinked Passenger Trip	Unlinked Trips per Vehicle Revenue Mile	Unlinked Trips per Vehicle Revenue Hour
Commuter Bus	\$26.45	0.1	3.1
Demand Response	\$20.65	0.3	3.3
Bus	\$2.76	2.0	32.8
Total	\$3.88	1.3	21.6



Greater Glens Falls Transit System

2017 Annual Agency Profile

General Information

Urbanized Area (UZA) Statistics - 2010 Census

Glens Falls, NY
42 Square Miles
65,443 Population
419 Pop. Rank out of 488 UZAs
Other UZAs Served
0 New York Non-UZA

Service Area Statistics

57 Square Miles
61,090 Population

Service Consumption

317,829 Annual Unlinked Trips (UPT)

Service Supplied

346,709 Annual Vehicle Revenue Miles (VRM)
20,721 Annual Vehicle Revenue Hours (VRH)

Database Information

NTDID: 20120

Reporter Type: Reduced Reporter

Financial Information

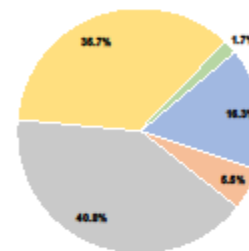
Sources of Operating Funds Expended

Fare Revenues	\$269,311	16.3%
Local Funds	\$91,000	5.5%
State Funds	\$675,650	40.8%
Federal Assistance	\$591,498	35.7%
Other Funds	\$27,926	1.7%
Total Operating Funds Expended	\$1,655,386	100.0%

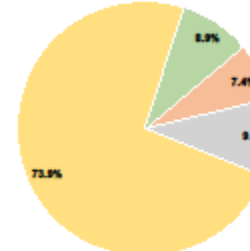
Sources of Capital Funds Expended

Fare Revenues	\$0	0.0%
Local Funds	\$60,341	7.4%
State Funds	\$79,888	9.8%
Federal Assistance	\$604,809	73.9%
Other Funds	\$72,852	8.9%
Total Capital Funds Expended	\$817,890	100.0%

Operating Funding Sources



Capital Funding Sources



Modal Characteristics

Operation Characteristics

Vehicles Operated at Maximum Service

Mode	Directly Operated	Purchased Transportation	Operating Expenses	Fare Revenues	Uses of Capital Funds	Annual Unlinked Trips	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours	Average Fleet Age in Years*
Demand Response	1	-	\$145,400	\$5,150	\$0	2,058	13,917	1,950	5.0
Bus	5	-	\$1,509,985	\$264,161	\$817,890	315,771	332,792	18,771	5.0
Total	6	-	\$1,655,386	\$269,311	\$817,890	317,829	346,709	20,721	

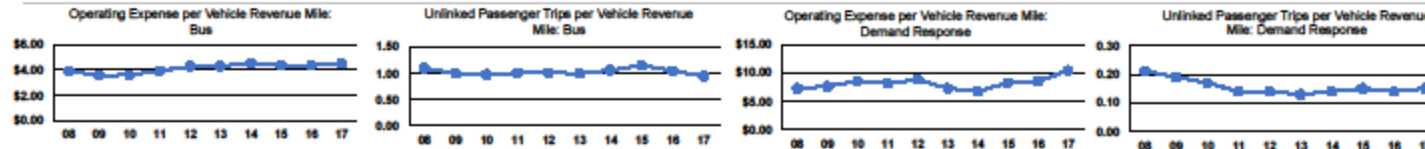
Performance Measures

Service Efficiency

Mode	Operating Expenses per Vehicle Revenue Mile	Operating Expenses per Vehicle Revenue Hour
Demand Response	\$10.45	\$74.56
Bus	\$4.54	\$80.44
Total	\$4.77	\$79.88

Service Effectiveness

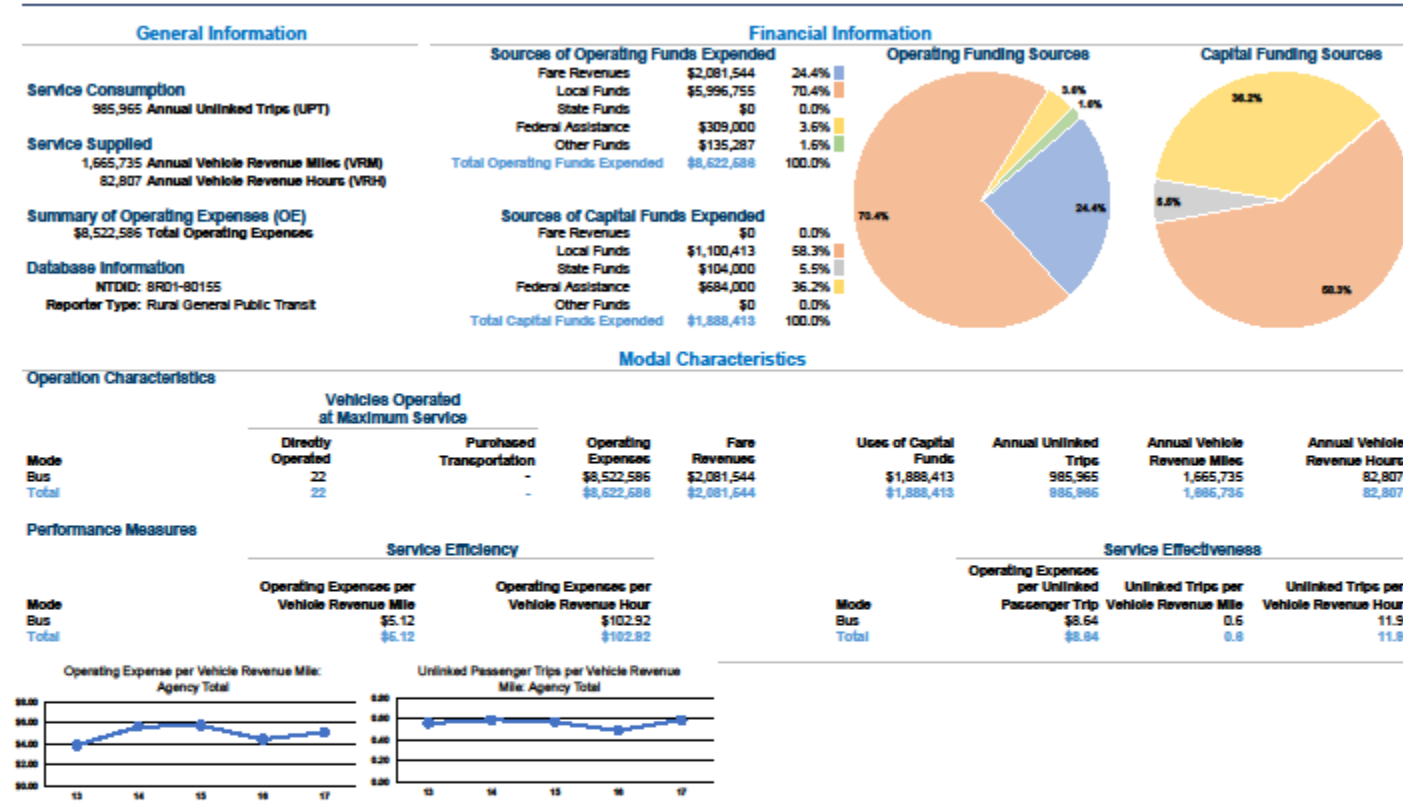
Mode	Operating Expenses per Unlinked Passenger Trip	Unlinked Trips per Vehicle Revenue Mile	Unlinked Trips per Vehicle Revenue Hour
Demand Response	\$70.65	0.1	1.1
Bus	\$4.78	0.9	16.8
Total	\$6.21	0.8	16.3



Notes:

*Demand Response - Taxi (DT) and non-dedicated fleets do not report fleet age data.

Eagle County Regional Transportation Authority 2017 Annual Agency Profile



Appendix J:

Transit Automation

Transit Automation

Transit Vehicle Automation / Shared Mobility

Legislative and Regulatory Consulting Services – 12.10

May 2019

Prepared by:

Michael Steele

3645 Cashill Blvd, Reno, NV 89509

775-221-7991

Email: steelewulf52@gmail.com

Prepared for:

Tahoe Transportation District (TTD)

Morse Associates Consulting, LLC

Table of Contents

Executive Summary	4
Transit Vehicle Automation	
Federal Transit Administration (FTA) research	7
Strategic Transit Automation Research Plan”, (STAR Plan)	8
Transit Bus Automation Project: Transferability of Automation Technologies.....	9
Transit Automation Demonstration and Pilot Projects – Vehicle Assist.....	10
Vehicle Assist and Automation (VAA) Pilot in Oregon	10
Driver Assist System (DAS) Pilot in Minnesota	11
Active Safety-Collision Warning Pilot in Washington.....	11
Mercedes-Benz Future Bus with CityPilot Demonstration in the Netherlands	12
Yutong Bus Project Demonstration in China.....	12
Automated Bus Testing in Singapore	12
Transit Automation Demonstration and Pilot Projects – Autonomous Vehicles	12
The Contra Costa Transportation Authority (CCTA).....	12
The Minnesota Department of Transportation.....	13
City of Arlington, Texas	14
Recommendations.....	15
Shared Mobility	15
Shared-Use Mobility Center (SUMC) titled “Shared Mobility And The Transformation Of Public Transit.....	16
Key findings.....	16
Transform Public Transportation Agencies Into Mobility Agencies.....	17
General Transit Feed Specifications (GTFS).....	18
Broadband Infrastructure	19
Mobility on Demand (MOD) Sandbox program.....	20
Tri-County Metropolitan District of Oregon (TriMet)	21

The Vermont Agency of Transportation.....	21
In Dallas, TX, the Dallas Area Rapid Transit (DART)	21
The Regional Transportation Authority of Pima County	21
Valley Metro, Maricopa County, Arizona	21
Mobility on Demand: Example of plan to integrate mobile phone applications	23
Vermont Agency of Transportation (VTrans)	23
Tri-County Metropolitan Transportation District of Oregon (TriMet) MOD	24
Transit+ Trip Planning Application Experience	27
Regional Transportation Commission (RTC) Southern Nevada	27
Pinellas Suncoast Transit Authority (PSTA) Pinellas County, FL	28
Recommendations.....	28
Transit Automation Grant Programs.....	28
Recommendations.....	29
Bibliography	30
Exhibit A - Levels of Automation	33
Exhibit B - Strategic Transit Automation Research Plan (STAR) Roadmap	34
Exhibit C – FTA Section 5312 Fact Sheet.....	35

Executive Summary

This paper is a high level review of current trends and activities in transit automation technologies that have the potential of enhancing revenues, reducing costs and increasing efficiency, effectiveness and safety associated with the mobility related programs of the Tahoe Transportation District.

It summarizes a review of recent relevant literature and the experiences of many transit agencies that have utilized technologies relevant to transit vehicle automation and systems that utilize shared data in order to facilitate the shifting of trips made by private auto to those utilizing various modes linked to public transit. It discusses the importance of resolving the challenges of the “first and last” mile as it relates to this linkage between modes of travel.

Examples of autonomous transit vehicle projects include those at Contra Costa Transportation Authority (CCTA), San Ramon, California, where they announced in March 2018 that approval was received from the U.S. Department of Transportation’s National Highway Traffic Safety Administration (NHTSA) and California’s DMV to operate an autonomous bus on public roads. In January 2018, the Minnesota Department of Transportation (MnDOT) conducted tests of autonomous buses at their MnROAD pavement testing facility in Albertville, MN during winter conditions in order to demonstrate the viability of these systems in their weather environment.

Other examples of transit vehicle automation technologies relate to vehicle safety like in Eugene, Oregon, where systems that utilize collision avoidance and driver assist systems are being tested; and in the state of Washington, where eight transit systems across the state are testing a variety of safety related automation applications including pedestrian and bicyclist warning systems.

The technologies associated with shared mobility initiatives, the report summarizes the evolution of GPS based systems including those supported by General Transit Feed Specification-Real Time Format (GTFS-RT) that provide real time information needed to link together various modes of transportation for an individual to complete a trip. Similar to the Transit App that currently TTD utilizes, these systems take advantage of the power, flexibility and mobility of smart phone technology. Recognition is also made to the current limitations in the Tahoe Basin as it relates to internet broadband gaps and efforts made to address them.

Finally, it identifies applicable grant resources that may be used to advance these technologies such as those available through the Federal Transit Administration – Public Transportation Innovation 5312 program (Research and TCRP).

Recommendations:

Digital Wireless Communications

- Virtually all of the technological advances reviewed in this paper will require that individuals with smart devices, vehicles with GPS capabilities and traffic management/control devices in the Tahoe Basin have access to effective and robust

hardline fiber and wireless broadband communications network. This would include the I-80 and Highway 50 and 395 corridors. The “Dig Once” policy within the Basin is an excellent example of the type of initiative that needs to be fully programmed and implemented.

- The TTD should consider taking the lead in planning, promoting and where appropriate implementing the broadband network with sufficient capacity and reliability to support the many technological initiatives.

Transportation Corridor Management

- Implement technologies associated with transit operational efficiency initiatives such as queue jumping, signal prioritization and coordination. Recognition is given to the recent grant application submitted under the Caltrans Sustainable Transportation Planning – Sustainable Communities Grant Application program - the objectives of which include transit optimization.

Development of Transit Trip Planning systems.

- The TTD currently utilizes a trip planning application, Transit. It is recommended that this program be integrated with ride-hailing services like Uber and Lyft and taxis to the extent that these services become a link in an individual’s trip which includes TTD public transit services. Currently Uber and Lyft are offered as an alternative to transit and not part of a coordinated trip. Transit offers an enhanced application “Transit+”, currently in beta, which incorporates Uber/Lyft as a connection to transit services. The application is referred to by the company as “transit-oriented ridehailing”. The TTD should consider partnering with Transit to implement Transit+. Contact should be made with Transit’s Communications Lead, Stephen Miller, at partners@transit.app.

This report discusses how other agencies like the Regional Transportation Commission (RTC), Clark County, NV and Pinellas Suncoast Transit Authority (PSTA, Pinellas County, FL are effectively utilizing Transit+ (page 27)

Transit Vehicle Automation / Shared Mobility

- Track the progress of the FTA funded pilot projects relative to driver assist projects identified in this report to determine best practices, lessons learned and applications that would apply to the TTD initiatives.
- Identify specific vehicle automation systems that would increase operating efficiencies and safety and reduce costs, such as the Active Safety-Collision Warning Pilot underway in Washington State.
- As the TTD executes the near and intermediate strategies associated with increasing the connectivity of travel in the Tahoe Basin and the transit mode split in particular, it should anticipate how and where autonomous vehicles could best be integrated into the mobility network in the longer term such as those advanced by the Minnesota Department of Transportation and the City of Arlington, Texas.

- The TTD should review the evaluation reports completed by Booz Allen Hamilton on the MOD Sandbox programs as they become available for applicable lessons learned and the development of best practices.

Grant Funding

- FTA is expected to announce in early 2019 the continuation of the Mobility on Demand (MOD) Sandbox program which is designed to enable transit agencies to innovate in order to provide better transit service. There is also an element of the program which focuses on integrating mobility payments.

Subscribe on www.grants.gov to receive notification of all FTA research opportunities by entering 20.514 where it requests the CFDA Number. These funds may be issued on a discretionary basis; therefore it is important to stay apprised of emerging grant opportunities.

DRAFT FTA

Transit Automation

This paper is a high level review of current trends and activities in transit automation technologies that have the potential of enhancing revenues, reducing costs and increasing efficiency, effectiveness and safety associated with the mobility related programs of the Tahoe Transportation District.

It is organized under two major topics, “Transit Vehicle Automation” and “Shared Mobility” and each is supported by review of recent relevant literature and the experiences of many transit agencies that have utilized technologies relevant to transit vehicle automation and systems that utilize shared data in order to facilitate the shifting of trips made by private auto to those utilizing various modes linked to public transit

Transit Vehicle Automation

Federal Transit Administration (FTA) literature research

The Federal Transit Administration (FTA) supports initiatives related to transit automation through its Office of Research, Demonstration and Innovation. In an October 2018 report titled “*Transit Automation Research*” the FTA affirmed its commitment to funding transit automation programs by stating:

“In recent years, there have been significant developments in vehicle automation technologies. Although transit agencies are interested in automating some aspects of transit bus operations, they are hesitant to invest in automation deployments due to the risks, lack of information on life-cycle costs and quantified benefits, uncertain performance and reliability of automated systems, and other factors.

FTA seeks to address these concerns by continuing automation research, providing knowledge and technology transfer of research results, and supporting a path from automation research to commercialization and deployment. These efforts have informed the planning and execution of FTA-sponsored transit automation development and demonstration projects, and future research efforts that may include elements of automation.

Automated vehicle technologies can range from simple systems, such as driver assistance applications, to fully automated systems that do not require a human driver. The Society of Automotive Engineers defines the level of automation on a scale of 0-5 (SAE level 0 represents no driver assistance and level 5 represents full driverless automation).¹ (See Exhibit A)

¹ Strategic Transit Automation Research Team, Office of Research, Demonstration and Innovation, Federal Transit Administration, *Transit Automation Research*, <<https://www.transit.dot.gov/automation-research>>

“FTA plans to explore the application of automation levels to bus operations. (For this initiative, bus is defined broadly to consider a range of sizes and passenger capacities, and could include both traditional and novel vehicle designs, e.g. full-size city buses, articulated buses and small shuttles.) This includes:

- advanced driver assistance systems (ADAS);
- automated shuttle services;
- maintenance, yard, and parking operations;
- mobility-on-demand service; and
- automated bus rapid transit applications

Equipping buses with automation technology across a range of capabilities may aid in adoption and deployment of these systems.”²

Strategic Transit Automation Research Plan” (STAR Plan)

In January 2018, the Federal Transit Administration (FTA) published a report titled “Strategic Transit Automation Research Plan” (STAR Plan).

“The STAR Plan is part of the STAR Program, which was launched in the summer of 2016. The purpose of the program is to “to define a five-year Strategic Transit Automation Research Plan that will establish a research and demonstration framework to move the transit industry forward.”³

“Automation capabilities have grown rapidly in recent years and have changed the dialogue around all aspects of the surface transportation system. Whereas automation is relatively mature in rail transit operations, this is not the case in bus transit. The domestic transit bus industry lags behind both light-duty vehicles and heavy-duty trucking, as well as international transit manufacturers and providers. Transit bus automation could deliver many potential benefits, but transit agencies need additional research and policy guidance to make informed deployment decisions.”⁴

“FTA’s Office of Research, Demonstration and Innovation is exploring the use of vehicle automation technologies in bus transit operations. The goal of this effort is to advance transit readiness for automation by:

- conducting enabling research to achieve safe and effective transit automation deployments
- identifying and resolving barriers to deployment of transit automation
- leveraging technologies from other sectors to move the transit automation industry forward
- demonstrating market-ready technologies in real-world settings
- transferring knowledge to the transit stakeholder community”⁵

² Ibid, page 1

³Federal Transit Administration, supported by: John A. Volpe National Transportation Systems Center, *Strategic Transit Automation Research Plan*, Page v. <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/114661/strategic-transit-automation-research-report-no-0116_0.pdf>

⁴ Ibid, page 1

⁵ Ibid, page 3

The sequence of task elements are referenced in: Strategic Transit Automation Research Roadmap”⁶ (see Exhibit B).

Transit Bus Automation Project: Transferability of Automation Technologies

In September 2018, the FTA published another report, “Transit Bus Automation Project: Transferability of Automation Technologies *Final Report*” The FTA stated in the abstract:

“This report examines the feasibility of transferring 13 current automated systems technologies from light-duty vehicles and commercial trucks to 40-ft diesel transit buses. It explores the associated technical and safety challenges of implementing those systems in transit buses and ways to overcome some of the identified barriers to implementation. The transferability of each systems was given a grade of Red, Yellow, or Green, with Green indicating most ready to be transferred.

Transferring existing automation systems from other vehicle formats will generally require modification, replacement, or redesign of components and systems on the bus. Sensors are relatively mature and should be able to be adapted to buses without modification. To enable other automation systems, however, the transit bus industry will need to implement foundational and interfacing systems that can support electronic actuation. Modifications to propulsion systems should be more easily made than modifications to other foundational systems (i.e., steering and braking). Steering systems may require more modification, but heavy-duty vehicle steering solutions that enable automation exist and may not require extensive changes. Implementation of electronic control of a transit bus brake system appears to be a major challenge, as pneumatic brakes found in buses are less conducive to automation and more extensive design changes may be needed. Automated applications may require a new communication system architecture with bandwidth to carry numerous complex signals reliably. Finally, buses will require new human-machine interfaces to control automation systems, although these should be relatively easy to design and implement.”⁷

“The scope of the report is limited to SAE Level 2 and lower automation systems currently in production for light-duty vehicles and commercial trucks with potential applicability to transit buses. This report considers 13 relevant automation systems, assesses their potential transferability to transit vehicles, and assigns each system a grade Green, Yellow, or Red based on an analysis of the extent of modifications required and the severity of safety concerns:

- A grade of **Green** suggests that for the introduction of the automation system, minor modifications to foundational bus systems may be required and that safety issues or concerns are few and of low severity.
- A grade of **Yellow** suggests that major modifications to the foundational bus systems may be required for the implementation of the automated system and that safety issues or concerns are considered low to moderate.

⁶ Ibid, Page 11, Figure 1-1

⁷ Federal Transit Administration, Ahmad Nasser, John Brewer, Wassim Najm, Joshua Cregger, Advanced Vehicle Technology Division, Volpe National Transportation Systems Center, *Transit Bus Automation Project: Transferability of Automation Technologies Final Report*, FTA Report No. 0125, Page v.

- A grade of **Red** suggests that significantly new technology may be required for one or more foundational bus systems to accommodate the automated systems and that safety issues or concerns may be relatively high.”⁸

In determining what technology applications have the best potential for bus applications, the report identified “use cases” in its evaluation. “The use cases consider environmental, infrastructure, and operational elements. Each use case was assessed for relevance to the operation of the specific vehicles.

Based on the evaluation of these use cases, transit buses would benefit from automation systems that improve safety, improve the operation of the bus during passenger pick-up and drop-off, or facilitate the handling of the bus in the bus yard/barn and maintenance facility.

Transit bus safety can be improved by providing assistance to the driver in maintaining the bus in the intended lane and avoiding collision with other vehicles and (more importantly) pedestrians. Automation systems that provide steering and braking assist under most operating conditions should improve bus safety.

Automation systems that improve the entry and exit of the passengers into the bus include those that provide assistance to the driver for improved docking at bus stops regardless of the complexity of the road geometry. These systems can help optimize the distance between the bus entrance and the passenger pick-up spot.

Park assist automation systems might provide assistance in parking the bus in different orientations (e.g., perpendicular or parallel) and getting the bus out of the parking spot. Some automation systems can provide assistance in maneuvering the bus safely through pre-determined paths to a parking location.

Based on the above strategy, a subset of available automation systems was selected for detailed analysis of transferability.”⁹

Transit Automation Demonstration and Pilot Projects – Vehicle Assist

The following are examples from the report of domestic and international applications of transit automation demonstration and pilot projects that could be considered in the Tahoe basin:

- “Vehicle Assist and Automation (VAA) Pilot in Oregon

FTA identified automation as a topic of interest more than a decade ago, leading to the development of the VAA project, which was active between 2009 and 2016 with testing in revenue service between 2013 and 2015. The California Department of Transportation and California Partners for Advanced Transportation Technology (PATH) launched a pilot program to demonstrate the VAA system on transit buses. The system used magnets embedded in the roadway to guide vehicles. Deployed applications of VAA included lane

⁸ Ibid, Page 1

⁹ Ibid, page 21

keeping and precision docking at bus rapid transit (BRT) stops. The system was deployed in Eugene, Oregon, on a Lane Transit District 60-foot articulated bus. The on-board equipment included two magnetometer sensor bars (one in front and one under the middle door), a steering actuator, a computer controller, and a human-machine interface (HMI) display. Magnets were installed along 3 miles of a 23-mile BRT line.

- **Driver Assist System (DAS) Pilot in Minnesota**

The Minnesota Valley Transit Authority (MVTA) received \$4.2 million from FTA to develop a DAS, a lane guidance system for bus-on-shoulder operations along Cedar Avenue (Trunk Highway 77). The DAS system uses a differential global positioning system (DGPS) and lidar (light detection and ranging), a surveying method that measures distance to a target by illuminating the target with pulsed laser light and measuring the reflected pulses with a sensor, to enable a bus to travel on typically unused shoulder right-of-way, bypassing congestion during peak rush hours. When highway speeds on general-purpose lanes drop below 35 mph, MVTA buses are authorized to use the shoulder along a 22-mile stretch between Apple Valley and Minneapolis. The DGPS aids with triangulation and positioning, while the lidar system scans the environment for objects to avoid collisions. If an object is detected, the system warns the driver through visual (head-up display) and haptic (seat vibration and steering wheel resistance) feedback. MVTA hopes to enhance driver confidence in operating buses on shoulders, particularly during bad weather. Secondary goals include reduced travel times, increased reliability, safety, and customer satisfaction. In 2015, FTA awarded MVTA \$1.79 million to upgrade the system, which is being demonstrated in revenue service. An evaluation of the system was completed in June 2018 and available at the following link: <http://www.dot.state.mn.us/automated/bus/finalreport.pdf>

- **Active Safety-Collision Warning Pilot in Washington**

In 2016, eight transit agencies across the state of Washington participated in a pilot project to test and analyze the Mobileye Shield+ collision avoidance system on buses. Participating transit agencies included Metro Transit, Community Transit, Pierce Transit, Intercity Transit, C-Tran, Kitsap, Ben Franklin, and Spokane Transit. The Mobileye Shield+ system uses bus-mounted cameras to identify and alert bus drivers when other road users, including pedestrians, cyclists, and other vehicles, are dangerously close to the bus. The system was installed on 38 buses statewide. Funding for the project was provided by the Washington State Transit Insurance Pool, Alliant Insurance Services, Government Entities Mutual, Pacific Northwest Transportation Consortium, and Munich Re America. The pilot program evaluation was funded by the Transportation Research Board (TRB) with an Innovation Deserving Exploratory Analysis (IDEA) grant.

In January 2017, FTA awarded Pierce Transit a \$1.66 million Safety Research and Demonstration (SRD) grant to fund a \$2.9 million project to implement and research collision warning and automated braking technology in buses. The Mobileye Shield+ warning system will be installed on 176 buses, and an AEB system will be installed on up to 30 buses. The Virginia Tech Transportation Institute is assisting with the evaluation of impacts on the AEB system on passengers.

- **Mercedes-Benz Future Bus with CityPilot Demonstration in the Netherlands**

In July 2016, the Mercedes-Benz Future Bus with CityPilot was demonstrated in the Netherlands, running along the 12-mile BRT route between Schiphol airport and the town of Haarlem. The bus uses a (SAE) Level 2 system (operator in the driver seat and ready to reassume control) with automated lane-keeping, acceleration, and braking. The bus also reacts to traffic lights, uses precision docking at stops, and automatically opens the doors for boarding and alighting passengers.

- **Yutong Bus Project Demonstration in China**

In September 2015, Chinese bus manufacturer Yutong conducted a demonstration of its automation system on a 20-mile stretch of public roads through an urban environment from Zhengzhou to Kaifeng. The trip involved automated lane changes, overtaking other vehicles, and responding traffic lights (26 in total) without human intervention. The bus was equipped with a lidar unit (light detection and ranging), a surveying method that measures distance to a target by illuminating the target with pulsed laser light and measuring the reflected pulses with a sensor, and cameras on each side.

- **Automated Bus Testing in Singapore**

Singapore's Land Transport Authority (LTA) and Nanyang Technological University (NTU) signed an agreement in October 2016 to equip two hybrid electric buses with sensors and other capabilities to enable automated driving. The roads between NTU and CleanTech Park (located in the Jurong Innovation District) were identified as potential test routes for the trial. In January 2018, Volvo announced that it had signed an agreement with NTU to provide automated electric buses to begin testing in Singapore starting in early 2019.”¹⁰

Transit Automation Demonstration and Pilot Projects – Autonomous Vehicles

The following two projects highlight the use of autonomous buses which could serve as references to the TTD if and when the use of this technology is considered.

- **“The Contra Costa Transportation Authority (CCTA)**

The Contra Costa Transportation Authority (CCTA) and GoMentum Station announced that permission was granted and testing of autonomous vehicles on public roads will begin at Bishop Ranch, the largest mixed-use business community in Northern California, located in the city of San Ramon. This is the first time the California Department of Motor Vehicles (DMV) has allowed a shared autonomous vehicle to travel on public roads in the state.

CCTA is leading a pilot demonstration project testing electric, low-speed, multi-passenger autonomous vehicles manufactured by Easymile, that are not equipped with a steering wheel, brake pedal, or accelerator. The California State Legislature passed

¹⁰ Ibid, Pages 7-10

pioneering legislation in 2016, Assembly Bill 1592, to allow for the pilot program. After successful testing at the GoMentum Station autonomous vehicle proving grounds in Concord, Calif. and in parking lots at Bishop Ranch, CCTA is advancing to the third phase of testing.

CCTA received permission from the U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) in October 2017 and permission from the California DMV in January 2018, to operate the EasyMile shuttle on public streets within the business park.

Shared autonomous shuttles offer safe, accessible service that could soon provide first- and last-mile transit solutions in office parks, campuses, suburbs, and town centers. Zero-emission, low-speed autonomous shuttles have the potential to ease congestion, reduce harmful emissions, and provide affordable access to transportation hubs throughout Contra Costa County.

As CCTA moves to the third phase of testing, members of the general public will not be able to ride the shared autonomous vehicles on public streets. The vehicles are currently staffed by trained testers. It is anticipated that during the upcoming year, additional predetermined testers and evaluators chosen from employees of various employers within Bishop Ranch will be able to ride the vehicles as they traverse public streets within the business park.

The permission for the EasyMile shuttles from the California DMV is separate from their autonomous vehicle testing program that has been underway since 2014.”¹¹

- **“The Minnesota Department of Transportation (MnDOT)**

The Minnesota Department of Transportation (MnDOT) authorized testing and demonstration of an automated vehicle (AV) in February of 2017. MnDOT's research into previous AV efforts in other states indicated that testing had not been completed in winter weather conditions. MnDOT also wanted to address the lack of exposure to the AV technology within the state, while increasing Minnesota's influence in AV development nationally. The testing and demonstration goals included the following:

1. Identify the challenges of operating automated vehicle technologies in snow/ice conditions and test potential solutions through field testing.
2. Identify the challenges and strategies of having third parties safely operate automated vehicles on the MnDOT transportation system.
3. Identify infrastructure gaps and solutions to safely operate automated vehicles on the MnDOT transportation system.
4. Prepare transit for improving mobility services through automated vehicles.
5. Increase Minnesota's influence and visibility on advancing automated & connected vehicles.
6. Enhance partnerships between government and industry to advance automated & connected vehicles in Minnesota.

¹¹ Metro Magazine, Testing of first autonomous shuttle on public roads in Calif. Begins, March 8, 2018)
<<http://www.metro-magazine.com/technology/news/728819/testing-of-first-autonomous-shuttle-on-public-roads-in-calif-begins>>

7. Provide opportunities for public demonstrations of automated vehicles and obtain public feedback.

MnDOT tested an automated shuttle bus supplied by EasyMile at the MnROAD facility in December 2017 and January 2018 under the direction of MnDOT staff with support from project consultants. The testing methodology can be found in Chapter 2. Public tours and demonstrations of the automated shuttle bus were held for select transportation professionals in December 2017 and January 2018 at MnROAD. This was followed by public demonstrations of the automated shuttle bus between January 24th and January 28th in conjunction with community activities that preceded Super Bowl LII in Minneapolis, Minnesota. Five additional demonstrations were held between February and April of 2018 at 3M, the City of Rochester, the University of Minnesota, Hennepin County, and Bismarck, North Dakota.”¹²

- **“City of Arlington, Texas**

As part of an innovative transportation pilot program, visitors to Arlington’s Entertainment District may soon be able to catch a free ride on a driverless shuttle to help make getting from their vehicles to the stadium venues more convenient.

In August 2017, the Arlington City Council approved a one-year lease agreement with EasyMile of Toulouse, France, for the use of two low-speed, autonomous shuttles. As early as June, the City will begin offering free shuttle rides on pre-programmed routes along select Entertainment District off-street trails during Stadium and Ballpark events.

This pilot program will allow Arlington to test the application of autonomous shuttles in a real-world setting.

‘The City seeks to position itself at the forefront of the connected and autonomous vehicle technology movement,’ Community Development and Planning Director John Dugan said. ‘The pilot project will allow us to see how this driverless vehicle system really works and to look at the overall picture of how these vehicles could enhance the City’s transportation options.’

Although the EZ10 shuttles will run autonomously, they will always have an operator on-board. The vehicles can hold up to 12 passengers and will have a maximum speed of about 20 miles per hour as they travel on select pathways, not city streets, during the pilot program.

Driverless vehicles are one of the many options being explored by the Council-appointed Transportation Advisory Committee, which is expected to present recommendations on how to address Arlington’s transportation needs to City Council later this year.

‘The Committee is working on a large-scale transportation plan, looking out over the next 10 to 20 years. Autonomous vehicles could play a role in their final recommendation,’

¹² WSB & Associates, Inc. AECOM, *MnDOT Autonomous Bus Pilot Project Testing and Demonstration Summary*, June 27, 2018, Page 6) < <http://www.dot.state.mn.us/automated/bus/finalreport.pdf> >

Dugan said. ‘After a year or so, we will be in a much better position to decide if this technology can help us meet our future transportation needs.’ ”¹³

The concept of autonomous vehicles was mentioned in the LTCCP as it relates to long term strategies associated with meeting the needs of recreational travel: “Further possibilities may be created with the eventual introduction of autonomous vehicles into traditional transit fleet operations that operate within specific corridors to key destinations. This could create a fairly substantial demand responsive fleet at much lower costs to systems with operators and reduce the overall number of vehicles traveling on Basin roadways. This type of operating system is currently in beta mode and could be deployed in the near future if transit agencies and the general public are ready to make the associated improvements to facilitate autonomous transit vehicles.”¹⁴

Recommendations:

- Track the progress of the pilot projects identified in this report to determine best practices, lessons learned and applications that would apply to the TTD initiatives.
- Identify those vehicle automation systems that would increase operating efficiencies and safety and reduce costs.
- As the TTD executes the near and intermediate strategies associated with increasing the connectivity of travel in the Tahoe Basin and the transit mode split in particular, it should anticipate how and where autonomous vehicles could best be integrated into the mobility network in the longer term.

Shared Mobility

The following is a summary of current discussion and practices on “Shared Mobility” as way to integrate public transit into other modes of travel and mobility technologies.

Shared-Use Mobility Center (SUMC) titled “Shared Mobility and the Transformation of Public Transit”

In a 2016 study prepared for the American Public Transportation Association by the Shared-Use Mobility Center (SUMC) titled “Shared Mobility and the Transformation of Public Transit”, the authors stated that “Technology is transforming transportation. The ability to conveniently request, track, and pay for trips via mobile devices is changing the way people get around and interact with cities.” ¹⁵

¹³ Susan Schrock, City of Arlington MyArlington Website, *Driverless Shuttle Pilot Program to Roll Out in Arlington’s Entertainment District* March 28, 2017 <<http://www.arlington-tx.gov/news/2017/03/28/driverless-shuttle-pilot-program-roll-arlingtons-entertainment-district/>>

¹⁴ Stantec, *Linking Tahoe – Corridor Connection Plan*, Page 26, August 2017

¹⁵ Shared-Use Mobility Center (SUMC), American Public Transit Association, *Shared Mobility And The Transformation Of Public Transit*, Page 3
<<https://www.apta.com/resources/reportsandpublications/Documents/APTA-Shared-Mobility.pdf>>

Their report examined the “relationship of public transportation to shared modes, including bikesharing, carsharing, and ridesourcing services provided by companies such as Uber and Lyft.”¹⁶ Although their research involved larger urban areas including Austin, Boston, Chicago, Los Angeles, San Francisco, Seattle and Washington, DC., their findings and recommendations may applied to the Tahoe Basin and provide a relevant backdrop for mobility and connectivity solutions sought by the Tahoe Transportation District (TTD)

Their **key findings** were:

- “1. The more people use shared modes, the more likely they are to use public transit, own fewer cars, and spend less on transportation overall. “Supersharers”—people who routinely use several shared modes, such as bikesharing, carsharing (e.g. car2go or Zipcar), and ridesourcing (e.g. Lyft or Uber)—save the most money and own half as many household cars as people who use public transit alone.
2. Shared modes complement public transit, enhancing urban mobility. Ridesourcing services are most frequently used for social trips between 10pm and 4am, times when public transit runs infrequently or is not available. Shared modes substitute more for automobile trips than public transit trips.
3. Shared modes will continue to grow in significance, and public entities should identify opportunities to engage with them to ensure that benefits are widely and equitably shared. Public transit agencies should seize opportunities to improve urban mobility for all users through collaboration and public-private partnerships, including greater integration of service, information and payment methods.
4. The public sector and private operators are eager to collaborate to improve paratransit service using emerging approaches and technology. While a number of regulatory and institutional hurdles complicate partnerships in this area, technology and business models from the shared mobility industry can help drive down costs, increase service availability and improve rider experience.”¹⁷

Transform Public Transportation Agencies Into Mobility Agencies

One of their key recommendations involved a rethinking of public agency roles within a section titled “Transform Public Transportation Agencies Into Mobility Agencies”¹⁸ and included the following highlights:

“• Coordinate public transit operations—along with regulation of bikesharing, carsharing, ridesourcing, shuttles, parking, and curb access—toward common mobility goals.” For example, “The San Francisco Municipal Transportation Agency and several agencies in Seattle are

¹⁶ Ibid, Page 3

¹⁷ Ibid, Page 3

¹⁸ Ibid, Page 33

transforming themselves into mobility managers, with responsibilities that go beyond a public utility model of transit provision or a streets department’

- Address mobility beyond direct provision of transportation services—especially through spreading awareness and training people how to use the full mobility menu to reduce the need for personal vehicles.
- Create a network of mobility managers at different levels (e.g., regions, municipalities, public transit agencies, and large employers) to communicate and coordinate mobility needs across departmental, jurisdictional and public/private lines.
- Create cross-agency working groups to get multiple entities—including public transit agencies, departments of transportation, business affairs divisions, consumer watchdogs, zoning departments, planners, and public safety agencies all in the same room to create policies that ensure they’re not working at cross-purposes in pursuit of similar goals.”¹⁹

In order to gain an appreciation for the technologies involved in assessing the capabilities of data sharing among transportation modes, the researchers performed an analysis titled: “Ridesourcing and Public Transit Capacity and Demand Analysis”²⁰ as part of their report.

The following is an excerpt from their report on the subject: “While ridesourcing companies like Lyft and Uber are extremely protective of their trip data for both competitive and customer privacy reasons, the companies do provide a way for computer applications to get information about their services via a tool called an application protocol interface (API), a portal where two computers can pass specific information back and forth in a structured way.

Queries from the Uber smartphone app use the API to request rides and interact with the customer account; Uber also provides limited access to the API to third-party software developers and researchers. Uber granted SUMC’s researchers access to the API for 1000 requests per hour for each of price and wait time. The API provides two key pieces of information as part of the response to queries for a theoretical ride between two locations: the wait time before a vehicle arrives at a requested location, and the estimated price, which includes a factor called the surge multiplier that reflects the relative demand for vehicles at that moment and location. Though it doesn’t directly reflect the number of riders, the researchers made the assumption that changes in this factor act as a proxy for the changing level of demand over time.

By systematically querying the API around the clock with origin/destination pairs from points providing coverage of the study cities, the researchers assembled a picture of how ridesourcing availability and demand varies across time and geography.”²¹

“To determine how Uber rides corresponded with transit trips, we compared the Uber API data with transit agencies’ General Transit Feed Specification (GTFS) service information. For the transit capacity side of the comparison, we started from the assumption that the transit agencies schedule service in accordance with customer demand, and used the GTFS schedule data to build estimates of service capacity at the zip code level across the day and week. The researchers gathered the transit agencies’ GTFS feeds and programmatically transformed them to hourly counts of trips, vehicles and vehicle types, and maximum wait times for each stop in the system (limited, like the ridesourcing data, to the core county of each region). Using standard load

¹⁹ Ibid, Page 33

²⁰ Ibid, Page 35

²¹ Ibid, Pages 35,36

factors and agency-specific vehicle sizes to estimate capacity at each stop, we arrived at a measure of hourly seat-stops and headways for each stop. We then generated aggregate measures of seat stops per hour and average headways at the ZCTA level.”²²

General Transit Feed Specifications (GTFS)

As way of background, General Transit Feed Specifications (GTFS) was developed by Tri-Met and Google, and “defines a common format for public transportation schedules and associated geographic information. GTFS ‘feeds’ allow public transit agencies to publish their transit data and developers to use that data to write applications. The feeds are represented in a series of text files that are compressed into a ZIP file, and include information such as fixed-route schedules, routes, and bus stop data. GTFS datasets are used in a variety of types of applications, including trip planners such as Google Maps, mobile applications, timetable generation software, tools for transit planning and operations analysis, and other categories of applications . . .”²³

In addition, General Transit Feed Specification-Real Time Format (GTFS-RT) was developed by Google “as an extension to General Transit Feed Specification (GTFS) and released via Creative Commons in 2011, GTFS-RT is a software-agnostic standard that allows public transportation agencies to provide realtime updates about their fleet to the public vis-a-vis application developers and Google Maps. The GTFS-RT standard allows transit operators to provide the following:

- Trip Updates - delays, cancellations, changed routes
- Service alerts - stop moved, unforeseen events affecting a station, route or the entire network
- Vehicle positions - information about the vehicles including location and congestion level”²⁴

The TTD utilizes a third party application, “Transit” for providing real time passenger information and multi-modal trip planning services for its customers. Transit was developed by a Canadian company and uses GPS trackers on all TTD's buses. Passengers can generate real-time information on the location of a bus, its estimated arrival time and details on delays. The system is free through phone vendor app stores and also available through a website for those without smart phones. Transit includes ride-hailing services, Uber and Lyft, but only as options for the trip being planned. It does not incorporate those services as a link to the nearest transit stop in those cases where the origination and/or destination is outside the transit service area. Transit is offering an enhancement, Transit+, which links ride-hailing services with public transit. The application is in beta but is being offered to communities at no cost where there is an interest and a willingness to promote the application through the agency’s website, social media and/or printed material as part of their service promotions. Refer to page 27 for examples of where Transit+ is being used, including the Regional Transportation Commission, Clark Co, NV and Pinellas Suncoast Transit Authority, Pinellas Co. FL.

²² Ibid Page 36

²³ Transit Wiki: https://www.transitwiki.org/TransitWiki/index.php/General_Transit_Feed_Specification

²⁴ Ibid

Broadband Infrastructure

One of the challenges facing the TTD and others in the Tahoe Basin when considering expanding online capabilities and data sharing is the remaining gaps in the broadband infrastructure. For example, the Tahoe Prosperity Center's (TPC) Connected Tahoe Project is focused on extending high speed broadband internet within the Basin. TPC is advocating for getting "Dig Once Policies enacted by each Basin County and the City of South Lake Tahoe by providing internet providers access to publicly owned rights of way. This is in addition to the mandatory installation of conduit for fiber-optic cable during road construction, similar excavation projects, or by allowing qualified broadband deployments to be installed during construction projects."²⁵

In addition, the 2017 TRPA "Linking Tahoe Regional Transportation Plan" outlined the Dig Once Policy as follows:

"The Dig Once Policy

- Conduit is installed when digging occurs for projects, allowing easy upgrades to communication lines, increasing broad-band coverage.
- Provides opportunities for synchronization and connection of traffic signals, improving traffic flow.
- Parking management systems also benefit by encouraging installation of real-time information systems during routine maintenance or new construction.
- Challenges to delivering the Dig Once Policy include finding appropriate funding sources."²⁶

Federal Transit Administration Mobility on Demand (MOD) Sandbox program

In May 2016 the Federal Transit Administration (FTA) announced the availability of \$8 Million "for a new program to demonstrate and evaluate innovative approaches to integrated "Mobility on Demand" (MOD) solutions within a public transportation framework"²⁷ (Federal Transit Administration, *Mobility on Demand (MOD) Sandbox Program*, Page 1, May 3, 2016, <https://www.transit.dot.gov/funding/applying/notices-funding/mobility-demand-mod-sandbox-program> >. As FTA explained it in the announcement, "The MOD Sandbox Demonstration Program is part of a larger MOD research effort at FTA and the U.S. Department of Transportation (DOT) that seeks to support transit agencies and communities as they navigate the dynamic, evolving landscape of personal mobility and integrated multimodal transportation networks. FTA is interested in conducting research on new service options in combination with available technologies that enable a traveler-centric approach to transportation, and provide better mobility options for everyone. FTA's MOD Sandbox Demonstration Program will provide a platform where integrated MOD concepts and solutions – supported through local partnerships

²⁵ Tahoe Prosperity website: <<https://tahoeprosperity.org/connected-tahoe>>

²⁶ TRPA, Linking Tahoe Regional Transportation Plan and Sustainable Communities Strategy Horizon Year 2017-2040, page 3-28.

²⁷ Federal Transit Administration, *Mobility on Demand (MOD) Sandbox Program*, Page 1, May 3, 2016, <<https://www.transit.dot.gov/funding/applying/notices-funding/mobility-demand-mod-sandbox-program> >

– can be demonstrated in real-world settings. FTA seeks to fund project teams to innovate, explore partnerships, develop new business models, integrate transit and MOD solutions, and investigate new, enabling technical capabilities such as integrated payment systems, decision support, and incentives for traveler choices. FTA intends to conduct evaluations of each of the demonstration efforts to measure the program impacts and assess how existing FTA policies and regulations may support or impede these new mobility service models.

The guiding principles of the MOD Sandbox demonstrations are:

- **System Integration** – the MOD Sandbox Program seeks operational integration of MOD products and services with existing transit service. Examples of this include open data platforms, common user interfaces, and practices and technologies that encourage and ensure system interoperability.
- **Partnership Driven** – MOD Sandbox projects should demonstrate teaming efforts, from public and private sectors, with partners committed to supporting the proposed MOD project both technically and institutionally.
- **Innovative Business Model** – the MOD Sandbox is structured to encourage innovative business models where MOD solution providers and transit operators partner to collectively deliver better service to travelers, while mutually benefitting from the partnership.
- **Equity of Service Delivery** – MOD Sandbox projects will demonstrate and promote equitable mobility service for all travelers, including communities such as low income, the aging population, and persons with disabilities, including wheelchair users.”²⁸ (Ibid, Page 1)

In 2017, the FTA awarded \$8 Million to fund eleven projects under this program. The following are relevant examples of these projects:

“**TriMet**, which serves Portland, OR, will receive funds to integrate shared-use mobility options into its existing trip planning app, allowing users to plan efficient trips even without nearby transit access.

The Vermont Agency of Transportation will receive \$480,000 for a statewide transit trip planner that will incorporate flexible-route, hail-a-ride, and other services in mobility apps. The online trip planner particularly benefits non-traditional rural transit users and people with disabilities, allowing universal access to transit information.

In Dallas, TX, the Dallas Area Rapid Transit (DART) will receive \$1.2 million to integrate ride-sharing services into its GoPass ticketing app. The project will create an integrated, multimodal application that leverages ride-sharing services, improving access to DART stations, particularly in non-walkable areas not well served by transit.”²⁹

Other examples of grants awarded through the Sandbox Program include the following:

The Regional Transportation Authority of Pima County

²⁸ Ibid, Page 1

²⁹ Federal Transit Administration, *U.S. DOT Secretary Foxx Participates in White House Frontiers Conference, Announces Nearly \$65 Million in Advanced Technology Transportation Grants*, May 21, 2018, Page 1

The Regional Transportation Authority of Pima County, which includes Tucson, Arizona, who “will receive funding for the ‘Adaptive Mobility with Reliability and Efficiency’ project, integrating fixed route, subscription based ride-sharing and social carpooling services into an existing data platform to provide affordable, convenient and flexible service. The project augments transit by addressing first mile/ last mile issues and congestion mitigation by incorporating shared ride-on-demand services, integrated open payment systems and advanced traveler information systems.”³⁰

Valley Metro, Maricopa County, Arizona

The following is an excerpt from Valley Metro’s FTA grant announcement and provides an example of a plan to integrate mobile phone applications and link them to travel modes. The challenges and goals the program addresses appear to be similar to those being encountered by the TTD. Chief among them are the challenges in solving the ‘first and last mile’ segments of an individual’s effort to use a transportation mode other than with a private auto.

“Valley Metro is the regional public transportation agency in Maricopa County, Arizona providing coordinated, multimodal transit options to approximately four million residents of the Phoenix metropolitan region. With a core mission of developing a regional and fully integrated transit network, Valley Metro plans, develops and operates the regional bus and light rail systems and alternative transportation programs for commuters, seniors and people with disabilities. Valley Metro will develop a mobile application for all major smartphone devices that will integrate mobile ticketing and multimodal trip planning to provide fast and reliable transit and local travel information.

The proposed Valley Metro Mobility Platform will build upon Ridekick™, Valley Metro’s existing mobile application, by adding features not currently available to users. The envisioned Mobility Platform will enable users to receive real-time travel information, purchase tickets for both public and private transportation modes, and utilize an optimized trip planning service through the integration of non-Valley Metro operated services such as Uber, Lyft, GR:D Bike Share, Zipcar, etc.

With the formation of public-private partnerships (P3s), the mobile application will let riders choose specific travel itineraries based on travel time, mobility preferences and proximity to transit options, as well as trip cost estimates. The enhanced integration will improve the level of connectivity throughout the transit network, thereby decreasing the first/last mile challenge facing public transportation users and allowing users to smoothly complete their trip from their point of origin to final destination. This mobile application will allow Valley Metro and private transportation services to utilize technology to provide a multimodal travel planning service with the simplicity of a mobile interface and single payment system.

The application will be free to download on all major mobile device operating systems including, but not limited to, the iOS (iPhone and iPad) and Android OS (Samsung, LG, HTC, etc.). Users will be able to create personalized accounts suitable to their needs and will be able to track travel patterns, use a single payment system for public/private transportation modes, as well as receive

³⁰ Federal Transit Administration, *Fiscal Year 2016 Mobility on Demand (MOD) Sandbox Program Projects*, May 18, 2017 as updated, page 1 < <https://www.transit.dot.gov/research-innovation/fiscal-year-2016-mobility-demand-mod-sandbox-program-projects> >

electronic discounts for local events such as basketball games, concerts, movie theaters, restaurants, etc.

These application features will be available to anyone with a connected mobile device, but most importantly, the application will provide personalized travel options established in the user's account settings, including travel or accessibility features for people with disabilities. Valley Metro will use an open data platform design to allow other public transportation agencies to use the application; however, they will be able to adjust the features and functionality of the application to meet the needs and requirements for their respective service area and clients.

The Mobility Platform will be implemented in two phases. Phase I includes improvements to Valley Metro's Ridekick™ application to include mobile ticket purchasing using wireless capabilities and multimodal booking options with GR:D Bike Share. In addition, non-fare payment services such as incident reporting capabilities will also be integrated in Phase I. Phase II will expand mobile ticket purchasing options to include transportation network companies (TNCs) such as Lyft, Uber, Zipcar and others. Additional features to be deployed as part of Phase II will include opportunities for businesses to provide combined event and transportation ticket purchasing in a single payment.

CHALLENGES PROJECT IS DESIGNED TO ADDRESS

The current Ridekick™ mobile application limits users' ability to plan multimodal trips. Currently, if a passenger wanted to know all the potential travel options in their immediate vicinity, as well as utilize and pay for one of those services, they would need to visit multiple applications on their smartphone. For example, riders need to access Ridekick™ for bus and rail schedules, Uber or Lyft for transportation network company choices, and Social Bicycles for GR:D Bike.

A fundamental component of improving the mobile application is to include a trip planning tool that includes a combination of public and private transportation alternatives. The new mobile application would not only provide a greater volume of travel options, but also provide users with personalized information about the environmental and economic benefits of each travel route. For example, someone querying the application would get a trip cost estimate, amount of CO₂ saved from using alternative mobility options versus automobile travel, calories burned, and amount of gas money saved displayed with each travel option. Beyond this, the application would provide a single, integrated payment system for all trips. Additionally, the new added convenience of mobile ticketing would be accompanied by real-time trip tracking for Valley Metro bus and light rail services, both of which are currently not available.

ANTICIPATED OUTCOMES, BENEFITS, IMPACTS

The development of the Mobility Platform will enable real-time travel and trip planning functions for public transportation riders, which are currently not available on the Ridekick™ application. The Mobility Platform will consolidate all trips using public and private transportation choices to allow riders more flexibility when choosing their travel mode. Users will be able to see the cost of gasoline saved, amount of CO₂ saved from using alternative modes of travel, as well as route travel-time comparisons. The Mobility Platform will also provide riders a universal payment system for all public and private transportation choices, thus

enhancing connectivity, integrating sustainable transit solutions, such as car sharing and vanpool travel choices, as well as providing real-time travel data for riders throughout the Phoenix Metropolitan Region. Providing real-time trip information will save riders' time, thereby improving system efficiency and helping address perceived wait times. The mobile ticketing element also provides a sustainable solution as it will reduce the need for passengers to use fareboxes or ticket vending machines which, in turn, reduces paper-based and card-based tickets.”³¹

Mobility on Demand: Example of plan to integrate mobile phone applications:

Vermont MOD:

“Building off previous investments in data creation and research, the Vermont Agency of Transportation (VTrans) and its partners are applying for funds to create and implement a tool that fills a well-known gap in transit public information: an online trip planner for both “fixed” and “flexible” transit services. The public transportation industry has seen a boom in third-party mobile applications for transit riders. These applications are designed for both standard web browsers, and as mobile apps for smart phones with internet access. One of the most important features of these applications is the presentation of information from multiple agencies within the same interface.

Rural transit operators provide a variety of services that help tailor transit to their areas including flag stops, deviated-fixed routes, general service area dial-a-ride, and other forms that work better in rural areas. That means trip planners built for urban areas do not present all the options that rural residents have. These flexible modes of transit are not only for rural areas though. They are also common models to provide extra service to persons with disabilities. Some business models have also sought to bring flexible transit services, such as Bridj or Ollie, to larger cities to provide trips more efficiently than public transit, and cheaper than taxis.

VTrans' goal is to develop a trip planner that provides access to mobility options while also building on a platform that can be adapted, utilized, and scaled elsewhere. This proposed trip planner will include itineraries that utilize both fixed and flexible modes of public transit. The final deliverable of this project is a mobile and desktop-accessible statewide trip planning website application. Any user will be able to define an origin and destination within the state and receive transit itineraries including those that can be found in Google, but also services like flag stops, deviated fixed routes, and dial-a-ride. Just like the Google Maps trip planner, this web application will provide information on what trips are possible, but not book actual trips for riders.”³²

Tri-County Metropolitan Transportation District of Oregon (TriMet) MOD:

³¹ Ibid, with link to: “*MOBILITY ON DEMAND (MOD) SANDBOX*” Valley Metro Rail, Inc. (Phoenix, AZ) Mobility Platform” < <https://www.transit.dot.gov/sites/fta.dot.gov/files/FTA%20MOD%20Project%20Description%20-%20Valley%20Metro.pdf> >, Page 1,2

³² Ibid with link to: “*MOBILITY ON DEMAND (MOD) SANDBOX VERMONT AGENCY OF TRANSPORTATION (VTrans) Vermont Statewide Transit Trip Planner – Fixed and Flex*” < <https://www.transit.dot.gov/sites/fta.dot.gov/files/FTA%20MOD%20Project%20Description%20-%20VTrans.pdf> > page 1,2

“TriMet’s OTP SUM project will create a complete open platform for the integration of transit and shared-use mobility options. The open data, software and user interfaces, responsive on both web and mobile, will help Portland area customers make informed decisions about their mobility choices, including the critical first and last miles of transit trips where a bus or train alone doesn’t provide full access. TriMet’s project includes the development and expansion of two core data frameworks that current and future collaborative OTP initiatives can be built upon, producing replicable software and results for communities across the country. These two foundational core project elements are to:

- Extend the Open Trip Planner code base to support the integration of transit trip planning with shared-use mobility modes, such as bike share and transportation network companies (TNCs), as well as updated real-time transit information.
- Implement a fully functional and comprehensive open geocoder built off the existing Mapzen Pelias geocoder. Geocoding, or address locating, is a primary requirement for trip planning. A non-proprietary and non-restrictive option for address locating would substantially lower the barrier to entry for many transit systems to offer trip planning and can achieve significant cost savings for transit agencies, government agencies, and the public.”³³

These preceding examples echo the strategies identified in myriad studies completed for the TTD. For instance, recommendation “G2 – Multi-Modal First Strategies” of the “Linked Tahoe Corridor Connection Plan” states the following:

- “Insure that pedestrian facilities are incorporated in new development and redevelopment that address the “last mile” to/from transit service.
 - o Tactics/actions:
 - Identify and prioritize significant “last mile gaps”
 - Reach agreement with partner agencies approving development that projects will be reviewed for opportunities to address these gaps
- Prioritize public investments in new pedestrian facilities to address “last mile” gaps.
 - o Tactics/actions:
 - Circulate the list of significant “last mile gaps” to partner agencies
 - Reach agreement with partner agencies that capital improvement programs in pavements and sidewalks will be reviewed for opportunities to address these gaps”³⁴

In June, 2018, the National Transportation Library released plans for how “independent researchers will evaluate Mobility on Demand public transportation projects. . . . Researchers will assess each of the 11 MOD Sandbox Program projects based on performance measures provided by the project partners, as well as an independent evaluation. Each report will address

³³ Ibid with link to: *MOBILITY ON DEMAND (MOD) SANDBOX Tri-County Metropolitan Transportation District of Oregon (TriMet) OTP Integration of Transit with Shared-Use Mobility Real-Time & Data Enhancement*, Page 1,2 <<https://www.transit.dot.gov/sites/fta.dot.gov/files/FTA%20MOD%20Project%20Description%20-%20TriMet.pdf>>

³⁴ Stantec, *Linking Tahoe – Corridor Connection Plan*, Page 102, August 2017

the project evaluation approach and process and data collection and analyses.”³⁵ (Federal Transit Administration, *Mobility on Demand (MOD) Sandbox Program*, Page 1, October 12, 2018 <<https://www.transit.dot.gov/research-innovation/mobility-demand-mod-sandbox-program>>, Booz Allen Hamilton was awarded a contract for these evaluations and their work is still being conducted.

In addition to addressing the “first and last mile” challenges referred to above, once a passenger is utilizing a public transit link, it becomes equally important to constantly improve the system’s performance, including increasing operating speeds in order to reduce the overall duration of the passenger trip .

The TTD and Tahoe Regional Planning Agency (TRPA) recognizes and supports the importance of increasing system speed as noted in the 2017 “Linking Tahoe: Regional Transportation Plan and Sustainable Communities Strategy” under the section titled “Transit Priority Access” as follows:

“Making transit faster, cheaper, and more convenient is key to increasing ridership and reducing vehicle miles traveled. One method to achieve this is by creating roadway restrictions in targeted locations that only allow transit, bike, emergency, and local traffic during peak periods. These types of projects dramatically reduce vehicle miles traveled and GHG emissions, needing first broad coordination among partner agencies. Transit signal priority which allows buses to start moving before cars at signalized intersections is on the constrained list and is a first step. Adaptive management strategies that hold cars to let buses pass or provide transit only lanes will occur later with additional project funding and partner consultation.”³⁶

The report continues its discussion regarding proposed technological improvements:

“This plan will continue to deliver technological improvements that provide real-time information using smartphone applications on bus arrival, road conditions, and parking availability and dynamic pricing to residents, commuters, and visitors. Signals along the South Shore will be optimized to better address peak demand visitation and provide safe and equitable access to bicyclists, pedestrians, and those with special needs. Transit signal priority will also be introduced on the South shore to make transit a more convenient and attractive option for commuters and visitors. Changeable message signs and traffic monitoring equipment will become more common on the Nevada side of the Region to enhance safety, manage congestion, and understand travel demand. Maintenance equipment will be upgraded to preserve the environment and enhance efficiency of maintenance activities. Alternative fuel infrastructure and public fleets will begin rapid deployment through implementation of the Plug-in Electric Vehicle Readiness Plan. Partners will collaborate to identify subsidy programs for partnerships with ridesharing companies to fill gaps where transit or active transportation cannot accommodate traveler needs. Additional technology projects such weather variable speeds signs, a region-wide transportation trip planning tool, and information kiosks at activity centers are desired but require newly identified funding.”³⁷

³⁵ Federal Transit Administration, *Mobility on Demand (MOD) Sandbox Program*, Page 1, October 12, 2018 <<https://www.transit.dot.gov/research-innovation/mobility-demand-mod-sandbox-program>>

³⁶ (TRPA, Linking Tahoe Regional Transportation Plan and Sustainable Communities Strategy Horizon Year 2017-2040 Page 3-12

³⁷ Ibid, Page 3-28

Other transit related technological improvements in various stages of development are also referred to in the report as follows:

“Communication improvements, optimizing intersection functionality, and increasing electric and zero-emission vehicle use help meet the regional goals of environment, safety, operations and congestion management, and system preservation.” “Optimizing intersections, addresses congestion management and safety by improving traffic flow, movement predictability, and accessibility. Examples of intersection improvements include signal timing and coordination, signal queue-jump for buses, bikes, and pedestrians, bicycle signal detection, emergency response signal override, and pedestrian hybrid beacons. Technology also preserves the environment through using best available technologies in equipment, construction, and vehicle type.”³⁸

In addition, technologies associated with transit and its role in congestion mitigation and increasing the transit mode split is emphasized in “Linking Tahoe – Corridor Connection Plan” (LTCCP) with the following excerpts:

“G3. Manage Congestion-Strategies

- Increase amenities for transit riders (NextBus, WIFI, seating, bus stops, lighting and safe connectivity).
 - o Tactics/Actions:
 - TTD Implement Real Time Bus Arrival technology to emulate TART system
 - TTD/TART Construct large capacity bus shelters complete with NextBus arrival information, level boarding, off-bus fare collection, CCTV, seating, and trash receptacles
- Operational and limited capacity improvements to address congestion
 - o Tactics/Actions:
 - TTD/TART Install queue jump priority systems for transit vehicles at key signalized intersections
 - All Agencies Work with legislators to require drivers to yield to buses re-entering the roadway from bus stops”³⁹

Within the LTCCP and TMP, a clear emphasis was placed on increasing the transit mode split from the current levels of less than 2% to 5%, 10% and 20% incrementally over the next decade. It was also recognized that the visitors to the Tahoe Basin represents a large percentage of the trips generated in the area. Specifically, the LTCCP stated that recreational travel over commuter travel needs to be an important focus: “Since the proportion of these commuter trips compared to those of visitors or residents is miniscule, the focus of transit service enhancements will be directed to capturing the recreational visitor, both outside the Basin where possible and from their lodging destinations on sidewalks, bikeways or at transit stops. Since most of all travel into and within the Basin is visitor and recreational based, further study and evaluation is necessary to more fully understand how to transfer a significant portion of these travelers to active transportation options including transit.”⁴⁰

³⁸ Ibid, Page 3-24

³⁹ Stantec, *Linking Tahoe – Corridor Connection Plan*, August 2017, Appendix A, Page 5

⁴⁰ Ibid, Page 25

Regional Transportation Commission, Clark County, NV (RTC South)

In November 2018, the RTC, Clark County announced the launch of Transit+ trip planning application which is currently in beta and is an enhancement to the Transit App that has been utilized at the RTC for a number of years. Transit+ is a multimodal trip planning platform that includes ride-hailing services such as Uber and Lyft for those portions of a trip that transit service does not cover. The RTC representative reported that customers have successfully utilized the new program and are pleased with its performance. Recently, of the 6-7 thousand uses of the RTC on-line trip planning tool, 16 percent, or 100 people a day, use the Transit + multimodal trip planning feature. Although RTC has a trip planning program accessible through their website, it does not incorporate the ride-hailing services like the Transit+ application does. The RTC's contact regarding this application is Jesse Diaz, Government Affairs, Media and Communications at 702-676-1595, DiazJ@rtcsonv.com.

Pinellas Suncoast Transit Authority (PSTA), Pinellas County, FL

The PSTA also utilizes the Transit+ trip planning application as described above but also uses Google Map-based trip planner which incorporates a \$5 subsidy for using the ridehailing service, Uber for part of their trip. An analysis of the utilization rate of the new Transit + application has not been made as of this time. The PSTA contact regarding this application is Jacob Labutka, 727-540-1977, Jlabutka@psta.net.

Recommendations:

- Virtually all of the technological advances reviewed in this paper will require that individuals with smart devices, vehicles with GPS capabilities and traffic management/control devices in the Tahoe Basin have access to effective and robust hardline fiber and wireless broadband communications network. This would include the I-80 and Highway 395 corridors. The “Dig Once” policy within the Basin is an excellent example of the type of initiative that needs to be fully programmed and implemented.

The TTD should consider taking the lead in planning, promoting and where appropriate implementing the broadband network with sufficient capacity and reliability to support the many technological initiatives.

- Implement technologies associate with operational efficiency initiatives such as queue jumping, signal prioritization and coordination, as outlined in the LTCCP.
- The TTD should consider partnering with Transit to implement their “Transit+” trip planning enhancement. Currently Uber and Lyft are offered as an alternative to public transit and not part of a coordinated trip. Transit+ does incorporate Uber/Lyft as a connection to transit services. The application is referred to by the company as “transit-oriented ridehailing”. Contact should be made with Transit’s Communications Lead, Stephen Miller, at partners@transit.app.
- The TTD should review the evaluation reports as they become completed by Booz Allen Hamilton on the relevant MOD Sandbox programs for applicable lessons learned and the development of best practices.

Transit Automation Grant Programs

Much of the Federal Transit Administration's (FTA) transit bus automation research is funded by the Public Transportation Innovation Program (FTA Section 5312) – revised under the Fixing America's Surface Transportation Act (FAST). Attached, as Exhibit C, is the fact sheet for Section 5312.

FTA is expected to announce in early 2019 the continuation of the Mobility on Demand (MOD) Sandbox program which is designed to enable transit agencies to innovate in order to provide better transit service. There is also an element of the program which focuses on integrating mobility payments.

FTA funding may be allocated on a discretionary basis. Grant opportunities are posted on <http://www.grants.gov/> under the CFDA Number 20.514. Interested parties may subscribe on that website to receive notification of all FTA research opportunities by entering 20.514 where it requests the CFDA Number.

The Federal Highway Administration also has competitive grants available to fund advanced transportation and congestion management technologies under its Advanced Transportation and Congestion Management Technologies Deployment Program. Funds have been authorized through 2020. Eligible projects include the following:

- advanced traveler information systems;
- advanced transportation management technologies;
- infrastructure maintenance, monitoring, and condition assessment;
- advanced public transportation systems;
- transportation system performance data collection, analysis, and dissemination systems;
- advanced safety systems, including vehicle-to-vehicle and vehicle-to-infrastructure communications;
- technologies associated with autonomous vehicles, and other collision avoidance technologies, including systems using cellular technology;
- integration of intelligent transportation systems with the Smart Grid and other energy distribution and charging systems;
- electronic pricing and payment systems; or
- advanced mobility and access technologies, such as dynamic ridesharing and information systems to support human services for elderly and disabled individuals. [23.U.S.C. 503(c)(4)(E)]

Additionally, there may be opportunities for agencies to participate in peer exchanges and communities to share lessons learned and best practices. There has also been significant state and local investment in automation, and additional state funding may be available.

Recommendation:

Subscribe on www.grants.gov to receive notification of all FTA research opportunities by entering 20.514 where it requests the CFDA Number. These funds may be issued on a discretionary basis, therefore it is important to stay apprised of emerging grant opportunities.

DRAFT FINVA

Bibliography

Federal Transit Administration, Ahmad Nasser, John Brewer, Wassim Najm, Joshua Cregger, Advanced Vehicle Technology Division, Volpe National Transportation Systems Center, *Transit Bus Automation Project: Transferability of Automation Technologies Final Report*, FTA Report No. 0125, Pages v., 1, 7-10, 21

Federal Transit Administration, *Fiscal Year 2016 Mobility on Demand (MOD) Sandbox Program Projects*, May 18, 2017 as updated, page 1 < <https://www.transit.dot.gov/research-innovation/fiscal-year-2016-mobility-demand-mod-sandbox-program-projects>>, page 1

Federal Transit Administration, *Fiscal Year 2016 Mobility on Demand (MOD) Sandbox Program Projects*, May 18, 2017 as updated with link to: “*MOBILITY ON DEMAND (MOD) SANDBOX*” Valley Metro Rail, Inc. (Phoenix, AZ) Mobility Platform”, pages 1,2
<<https://www.transit.dot.gov/sites/fta.dot.gov/files/FTA%20MOD%20Project%20Description%20-%20Valley%20Metro.pdf>>

Federal Transit Administration, *Fiscal Year 2016 Mobility on Demand (MOD) Sandbox Program Projects*, May 18, 2017 as updated with link to: “*MOBILITY ON DEMAND (MOD) SANDBOX VERMONT AGENCY OF TRANSPORTATION (VTrans) Vermont Statewide Transit Trip Planner – Fixed and Flex*” page 1,2
<https://www.transit.dot.gov/sites/fta.dot.gov/files/FTA%20MOD%20Project%20Description%20-%20VTrans.pdf>

Federal Transit Administration, *Fiscal Year 2016 Mobility on Demand (MOD) Sandbox Program Projects*, May 18, 2017 as updated with link to: *MOBILITY ON DEMAND (MOD) SANDBOX Tri-County Metropolitan Transportation District of Oregon (TriMet) OTP Integration of Transit with Shared-Use Mobility Real-Time & Data Enhancement*, Page 1,2
<<https://www.transit.dot.gov/sites/fta.dot.gov/files/FTA%20MOD%20Project%20Description%20-%20TriMet.pdf>>

Federal Transit Administration, supported by: John A. Volpe National Transportation Systems Center, *Strategic Transit Automation Research Plan*, Pages v., 1,3,11, Figure 1-1
<https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/114661/strategic-transit-automation-research-report-no-0116_0.pdf>

Federal Transit Administration, *U.S. DOT Secretary Foxx Participates in White House Frontiers Conference, Announces Nearly \$65 Million in Advanced Technology Transportation Grants*, May 21, 2018, page 1 <<https://www.transit.dot.gov/about/news/us-dot-secretary-foxx-participates-white-house-frontiers-conference-announces-nearly-65>>

GoSwiftly, Inc. website, <<https://www.goswift.ly/mbta-press-release>>

Metro Magazine, *Testing of first autonomous shuttle on public roads in Calif. Begins*, March 8, 2018 <<http://www.metro-magazine.com/technology/news/728819/testing-of-first-autonomous-shuttle-on-public-roads-in-calif-begins>>

Shared-Use Mobility Center (SUMC), American Public Transit Association, *SHARED MOBILITY AND THE TRANSFORMATION OF PUBLIC TRANSIT*, Pages 3, 33, 35, 36
<<https://www.apta.com/resources/reportsandpublications/Documents/APTA-Shared-Mobility.pdf>>

Stantec, *Linking Tahoe – Corridor Connection Plan*, August 2017

Stantec, *Linking Tahoe: Lake Tahoe Basin – Transit Master Plan*, February 2017

Strategic Transit Automation Research Team, Office of Research, Demonstration and Innovation, Federal Transit Administration, *Transit Automation Research*, October 26, 2018
<https://www.transit.dot.gov/automation-research>

Susan Schrock, City of Arlington, My Arlington Website, *Driverless Shuttle Pilot Program to Roll Out in Arlington's Entertainment District*, March 28, 2017 <<http://www.arlington-tx.gov/news/2017/03/28/driverless-shuttle-pilot-program-roll-arlingtons-entertainment-district/>>

Tahoe Prosperity website, <<https://tahoeprosperity.org/connected-tahoe>>

Transit Wiki website,

<https://www.transitwiki.org/TransitWiki/index.php/General_Transit_Feed_Specification>

TRPA, *Linking Tahoe Regional Transportation Plan and Sustainable Communities Strategy
Horizon Year 2017-2040*, page 3-28

TRPA, *Linking Tahoe Regional Transportation Plan and Sustainable Communities Strategy
Horizon Year 2017-2040*, pages 3-12, 3-24, 3-28, Appendix A, page 5

WSB & Associates, Inc. AECOM, *MnDOT Autonomous Bus Pilot Project Testing and
Demonstration Summary*, June 27, 2018, Page 6)

<<http://www.dot.state.mn.us/automated/bus/finalreport.pdf>>

EXHIBIT A

Society of Automotive Engineers (SAE)

Levels of Automation

Automated driving levels and definitions include the following:

Level 0 – No Automation: The human driver does all the driving.

Level 1 – Driver Assistance: An advanced driver assistance system (ADAS) on the vehicle can sometimes assist the human driver with either steering or braking/accelerating, but not both simultaneously.

Level 2 – Partial Automation: An advanced driver assistance system (ADAS) on the vehicle can itself actually control both steering and braking/accelerating simultaneously under some circumstances. The human driver must continue to pay full attention (“monitor the driving environment”) at all times and perform the rest of the driving task.

Level 3 – Conditional Automation: An Automated Driving System (ADS) on the vehicle can itself perform all aspects of the driving task under some circumstances. In those circumstances, the human driver must be ready to take back control at any time when the ADS requests the human driver to do so. In all other circumstances, the human driver performs the driving task.

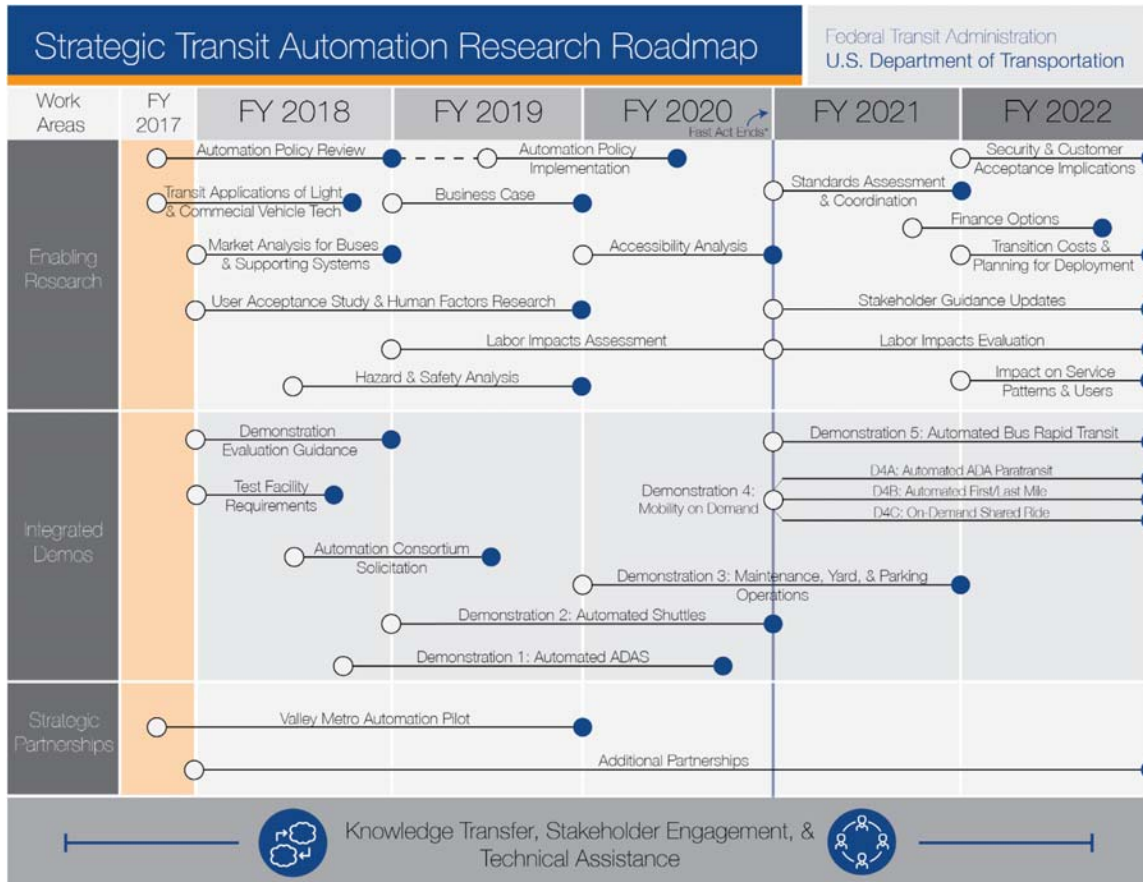
Level 4 – High Automation: An Automated Driving System (ADS) on the vehicle can itself perform all driving tasks and monitor the driving environment – essentially, do all the driving – in certain circumstances. The human need not pay attention in those circumstances.

Level 5 – Full Automation: An Automated Driving System (ADS) on the vehicle can do all the driving in all circumstances. The human occupants are just passengers and need never be involved in driving.

Source: National Highway Traffic Safety Administration

Exhibit B

Strategic Transit Automation Research (STAR) Roadmap



Source: Federal Transit Administration

EXHIBIT C

Federal Transit Administration

FACT SHEET

PUBLIC TRANSPORTATION INNOVATION Section 5312

Source: Federal Transit Administration



**U.S. Department of Transportation
Federal Transit Administration**



**FACT SHEET:
PUBLIC TRANSPORTATION INNOVATION
Section 5312**

	FY15/ MAP-21	FY16 (millions)	FY17 (millions)	FY18 (millions)	FY19 (millions)	FY20 (millions)	TOTAL (millions)
Research, Development, Demonstration, Deployment, & Evaluation	\$7.5	\$20.0	\$20.0	\$20.0	\$20.0	\$20.0	\$100.0
Low or No Emission Vehicle Component Testing	-	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$15.0
Transit Cooperative Research Program	\$3.0	\$5.0	\$5.0	\$5.0	\$5.0	\$5.0	\$25.0
5312 PROGRAM TOTAL*	\$10.5	\$28.0	\$28.0	\$28.0	\$28.0	\$28.0	\$140.0

**Amounts above are funded from the Highway Trust Fund. Additional funds authorized from the General Fund are subject to annual appropriations and not included above.*

PROGRAM PURPOSE: To advance innovative public transportation research and development.

Statutory References: 49 U.S.C. Section 5312 / FAST Section 3008

Eligible Recipients: Federal Government departments, agencies, and instrumentalities of the Government, including Federal laboratories; State and local governmental entities; providers of public transportation; private or non-profit organizations; institutions of higher education; and technical and community colleges.

Eligible Activities:

Research: Activities shall focus on (A) providing more effective and efficient public transportation service, including services to seniors; individuals with disabilities; and low-income individuals; (B) mobility management and improvements and travel management systems; (C) data and communication system advancements; (D) system capacity, including train control; capacity improvements; and performance management; (E) capital and operating efficiencies; (F) planning and forecasting modeling and simulation; (G) advanced vehicle design; (H) advancements in vehicle technology; (I) asset maintenance and repair systems advancement; (J) construction and project management; (K) alternative fuels; (L) the environment and energy efficiency; (M) safety

improvements; or (N) any other area that is important to advance the interests of public transportation.

Innovation and Development: Activities shall focus on (A) the development of public transportation research projects that received assistance that were successful; (B) planning and forecasting modeling and simulation; (C) capital and operating efficiencies; (D) advanced vehicle design; (E) advancements in vehicle technology; (F) the environment and energy efficiency; (G) system capacity, including train control and capacity improvements; or (H) any other area that is important to advance the interests of public transportation.

Demonstration, Deployment and Evaluation: A demonstration, deployment, or evaluation project that receives assistance shall seek to build on successful research, innovation, and development efforts to facilitate (A) the deployment of research and technology development resulting from private efforts or Federally funded efforts; or (B) the implementation of research and technology development to advance the interests of public transportation.; or (C) the deployment of low or no emission vehicles, zero emission vehicles, or associated advanced technology. A comprehensive evaluation must be conducted within 2 years from the date a demonstration or deployment project receives assistance; to evaluate the success or failure of the project and to describe any plans for broad-based implementation of the innovation promoted by successful projects.

Low or No Emission Vehicle Component Testing (Low-No Testing): At least one institution of higher education shall be competitively selected to operate and maintain a facility to conduct testing, evaluation, and analysis of low or no emission vehicle components intended for use in low or no emission vehicles. The institution(s) shall have: (I) the capacity to carry out transportation-related advanced component and vehicle evaluation; (II) laboratories capable of testing and evaluation; and (III) direct access to or a partnership with a testing facility capable of emulating real-world circumstances in order to test low or no emission vehicle components installed on the intended vehicle. Component testing is voluntary, however, a low or no emission bus model must still comply with Section 5318 Bus Testing.

Transit Cooperative Research Program (TCRP): Through a cooperative agreement, the National Academy of Science will administer a public transportation cooperative research program. An independent governing board will continue to recommend public transportation research, development and technology transfer activities.

What's Changed?

- The 5312 program is authorized for funding from both the Highway Trust Fund and General Fund. In addition to the amounts in the chart above which are authorized from the Highway Trust fund, FAST authorized an additional \$20 million from the General Fund, which is subject to annual appropriations.
- The creation of a voluntary Lo-No Testing Program for components, which is separate and apart of the Bus Testing Program (Section 5318). This program also requires FTA to publish a performance report on the assessments conducted.
- TCRP, formerly authorized in Section 5313, is now included in this section and is now funded by the Trust Fund as opposed to the General Fund.
- Annual Research Report on projects, evaluations, and benefits is posted to FTA's website rather than submitted to the Congress.

Funding:

Federal Share: The Government share of the cost of a project carried out under this section shall not exceed 80 percent. However, for the Lo-No Testing, the Government share is 50 percent.

Non-Government Share: The non-Government share of the cost of a project carried out under this section may be derived from in-kind contributions For the Lo-No Testing, the remaining 50 percent is to be paid from the fees established and collected.

Additional Information:

- Departmental Coordination: FAST requires FTA to submit its comprehensive annual modal research plan to the Assistant Secretary for Research and Technology for review and approval prior to expending funds.
- Small Business Innovation Research (SBIR): Pursuant to the Small Business Innovation Development Act of 2000 (P.L. 106-554), a portion of the 5312 funds must be set aside for the Department's SBIR program to address high priority research that will demonstrate innovative, economic, accurate, and durable technologies, devices, applications, or solutions to significantly improve current transit-related service including transit vehicle operation, safety, infrastructure and environmental sustainability, mobility, rider experience, or broadband communication.

For Additional Information on FTA and the FAST Act, please visit: www.fta.dot.gov/fast.html

Appendix K:

Automated Vehicles in the Tahoe Context

Effective Regional Revenue Sources to Address Regional and Local Transportation Projects, Services, and Operations in the Lake Tahoe Region

Task 12: Review of Autonomous Vehicle Technology

prepared for

**Tahoe Transportation District
Morse Associates Consulting, LLC**

prepared by

Cambridge Systematics, Inc.
555 12th Street, Suite 1600
Oakland, CA 94607

date

July 3, 2020

List of Acronyms

ADAS	Advanced Driver Assistance System
ADS	Automated Driving System
AI	Artificial Intelligence
AVs	Automated Vehicles
EIA	U.S. Energy Information Administration
GHG	Greenhouse Gas Emissions
GPS	Global Positioning System
LIDAR	Light Detection and Ranging
NHTSA	National Highway Traffic Safety Administration
NLC	National League of Cities
SAE	Society of Automotive Engineers'
SAVs	Shared Autonomous Vehicles
TNCs	Transportation Network Companies
TTD	Tahoe Transportation District
UDOT	Utah Department of Transportation
UTA	Utah Transit Authority
VMT	Vehicle Miles Traveled

Introduction

The Tahoe Transportation District (TTD), working in conjunction with federal, state, local, and private sector partners, has the authority and responsibility for providing a safe, environmentally-positive, multi-modal transportation system for the Lake Tahoe region. Unfortunately, the TTD faces challenges in fulfilling this responsibility for the region due to a lack of sustainable, adequate funding. The permanent population in the Tahoe Basin is currently estimated at 55,000 residents, so it has a small base population that cannot afford to pay for all of the needed transportation projects and services. Much of the transportation needs in the Tahoe Basin are the result of the many visitors that come to enjoy its natural beauty and many recreational opportunities.

The Tahoe Basin is facing a number of transportation challenges because the majority of travel in the Basin is the result of visitors. Visitors come from across the United States, as well as around the world, to see the beauty of Tahoe and enjoy the many summer and winter recreational opportunities. The majority of these visitors reside in California and Nevada and can easily drive to Lake Tahoe. Of all vehicle trips into, out of, and within the Basin, 75% are made by visitors and 25% by residents. There are winter and summer peak travel seasons, but the summer travel is twice the volume of winter travel. Winter travel delays can be as bad or worse than summer, given the snow storms that slow traffic, cause difficult driving conditions, accidents, and road closures. Peak summer visitor travel creates congestion and unsafe travel movements as visitors search for parking along extremely busy and narrow 2 lane highways. During the peak visitor season, the parking and congestion conditions result in major problems for emergency service response, particularly when large scale evacuation is necessary. Residents of Tahoe Basin routinely struggle to find convenient access to employment centers and needed services during these peak parking and congestion periods.

The analysis of Automated Vehicles (AVs) in the Tahoe Basin must consider the issue of communications infrastructure capability. AV operation is heavily dependent on communication, including GPS, vehicle to vehicle and/or passenger to vehicle data. Currently, communications into and within the Lake Tahoe Basin is extremely difficult due to the topography in the area. Microwave communications have limited success beyond a few miles due to the direct line of sight requirements needed for point-to-multipoint (PtMP) systems. The use of fiber optic communications is limited or non-existent for center-to-center (C2C) communications. California and Nevada's radio systems do not provide adequate coverage for first responders and land managers, additionally significant interference occurs in several areas. During peak visitation the existing limited broadband capacity deteriorates as more devices are connected. Furthermore, Intelligent Transportation System (ITS) devices that can decrease accidents and congestion and provide traveler information are limited to non-existent and lack coordination between states and federal agencies. Transportation strategies that use information and communications technologies such as autonomous vehicles, TNCs, parking management systems, car and bike sharing, real-time transit information, vehicle-to anything (V2X) communications, and transportation demand management (TDM) programs that have the potential to reduce vehicle miles traveled, save energy, and reduce GHGs have limited success and application due to inadequate communications currently available.

To address the current transportation situation, and to maintain Lake Tahoe as a desirable destination for leisure which is essential to sustaining the Basin's tourist-based economy, the TTD is looking into emerging technologies to understand how they might affect decisions regarding investment priorities, as this ensures proactive planning for the future. This is of greater importance especially in the case of Lake Tahoe, as securing adequate funding is already a challenge due to recreation and tourism travel related funding not being a priority in existing funding mechanisms.

This memo discusses AVs, one of the emerging transportation technologies that could potentially alter how people travel in the future, and consequently have an impact on future transportation needs and funding. The memo provides a description of AV technology and current trends in the US in terms of technology testing and piloting. This is followed by a discussion on the potential deployment methods and opportunities and constraints of AVs based on industry research and trends. The memo then presents examples of how AVs are being utilized to address recreational travel, and concludes with key findings and final remarks.



Photo Credit: Lara Farhadi

AV Technology Advances

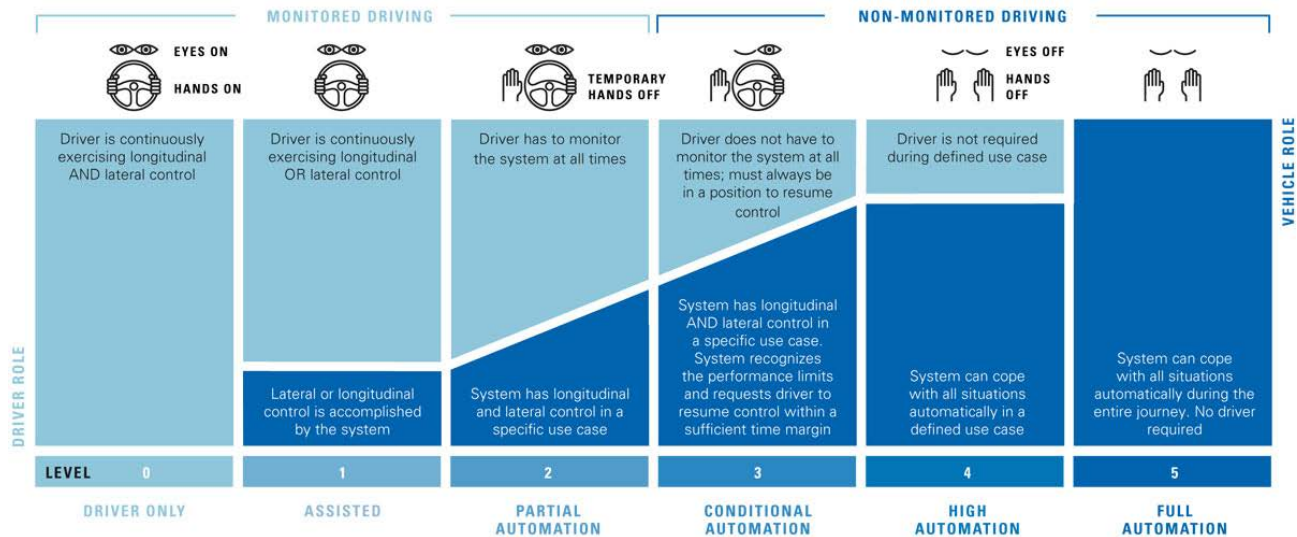
AVs are one of the most exciting emerging technologies that offer to solve our transportation challenges in an intelligent and innovative way. The reality of AVs is becoming tangible, as more automation features are being introduced in commercial vehicles today and as the industry continues to heavily invest in the development and testing of AVs with the goal of producing truly self-driving vehicles. While it is hotly debated exactly when AVs that are largely self-driving will be ready for mass deployment, there is a general consensus that communities need to start preparing for AVs and their potential effects on traffic and mobility.

Defining AV Technology

AVs are vehicles with some capability to sense their environment and navigate without relying entirely on human input. Vehicles with very high levels of automation could potentially allow passengers to sleep, work, or engage in other activities during their travels. AVs make intelligent decisions regarding a vehicle's direction, speed and interaction with other road users (i.e., cyclists and pedestrians) through the utilization of global positioning system (GPS), radar, and light detection and ranging (LIDAR) technology.

There are six levels of driving automation as defined by the Society of Automotive Engineers' (SAE) vehicle standards committee, and as adopted by the National Highway Traffic Safety Administration (NHTSA). **Figure 1** shows the levels of vehicle automation, each varying by the level of driver and vehicle control.

Figure 1. Six Levels of Vehicle Automation



Mike Lemanski

Source: Society of Automotive Engineers'

Level 0 represents no automation where the driver is fully responsible for driving and monitoring the road. Levels 1 and 2, include advanced driver assistance system (ADAS) which performs some driving tasks, yet the driver has control at all times. Most commercially available vehicle automation features fall into SAE Levels 1 and 2. Such features include adaptive cruise control, parking assist systems, lane keeping systems, blind spot detection and autonomous braking. These technology features help the vehicles understand their surroundings, and either warn the driver or act to avoid a crash. SAE Level 3 includes automated driving system (ADS) that can perform all aspects of driving under some conditions. The human driver needs to be ready to take back control at any time when the system requests the driver to do so. Levels 4 is a high automation level where the driver does not need to pay attention to the road at all times and the vehicle will provide warnings in need of assistance from the driver. Level 5 is full automation where the ADS performs all driving tasks during the entire journey without the need of a driver. The latest Level 5 ADS developments require significant data communications to enable safe and effective operation. This level of data communications may be impossible in large portions of the Tahoe Basin; in fact, portions of the Tahoe Basin have virtually no data communication capability due to topography and lack of communications infrastructure.

Current AV Trends

Over 40 corporations are currently trying to develop a fully autonomous, or level 5, passenger vehicle (CB Insights, 2019). These include automobile manufacturers such as Tesla, Ford, General Motors, and BMW, as well as technology and software companies such as APTIV, Google and Apple, just to name a few. These companies are working together with local, State, and Federal partnerships to shape the future of AVs. Several industry leaders are also designing and testing autonomous commercial vehicles, such as driverless podcars, shuttles, buses, and trucks.

In the process of developing AVs that can operate safely on the roads, AV testing and piloting are necessary steps. Through on-road testing, AVs can develop their Artificial Intelligence (AI) by creating highly detailed and three-dimensional maps of an area using sensors, and by experiencing driving in different situations such as at night, in rain, during rush hours, etc. Rain and snow have proven to be challenges for AV. They sometimes

obscure and confuse the sensors on the vehicles and in the communications with traffic signals. Also, lower levels of sunshine make it difficult for the algorithms on autonomous vehicles to pick out cars and pedestrians. However, as autonomous vehicle testing is shifting to locations with winter weather, companies are trying to solve these issues (Wired, 2020). Unlike other winter testing sites such as Michigan, the Lake Tahoe Basin can see up to a foot of snow an hour at times which currently limits the opportunity for testing Tahoe type conditions. Often following successful testing in a controlled environment, pilots are undertaken where the AV provides operational services; currently, there are three types of AV pilots operating in the United States (Chatman et al., 2019):

- Fixed-route autonomous shuttles;
- Flexible-route passenger travel by autonomous sedans, minivans and SUVs; and
- Freight deliveries by autonomous sidewalk robots, road-based microcars and conventional vehicles.

Uncertainty around Future AV Deployment Methods

There are many different models under which AVs might be rolled out in the future depending on the evolving character of the mobility marketplace and the efforts being undertaken in AV development and piloting.

Privately Owned AVs

The National League of Cities (NLC) report *City of the Future: Technology & Mobility* provides short-term 2020 predictions for changes in the urban environment that will affect how people move from one place to another and long-term predictions that could be seen by the year 2030 and beyond. The NLC envisions a future where driverless technology is initially mass deployed in fleet vehicles and buses (NLC, 2015), further reducing the need for privately owned vehicles.

One evolving trend is that AV developers and technology companies are pursuing the deployment of AVs as part of a shared fleet, similar to modern-day car sharing services, or sometimes referred to as shared automated vehicles (SAV). This could indicate that the shared AV fleet model may be far more prevalent than personally owned AVs, at least in the initial years of AV deployment. In addition, experts estimate that Level 4 automation will cost an additional \$10,000 to \$50,000 per vehicle (Stocker et al., 2017), which will make these vehicles substantially more expensive than the price of an equivalent non-automated vehicle. If this is accurate, it may be an incentive for participating in a shared fleet rather than personally owning a highly automated vehicle. **Figure 2** provides an overview of some of the SAV pilots happening across the country as of February 2018. The SAV pilot projects shown below are all located in urban/suburban areas with sufficient communications infrastructure to allow their operation. As mentioned earlier, the limited communication infrastructure in the Tahoe Basin will need to be upgraded before it will be possible to consider SAV deployment at Tahoe.

It is important, however, to note the historical success of private vehicle ownership, where vehicle owners may be less likely to share vehicles due to convenience and insecurities. Vehicle manufacturers have shown interest in building the capabilities of their vehicle fleets by adding increasingly more sophisticated driver assistance options. This has the potential to preserve the current privately-owned vehicle model that is of obvious profitability to vehicle manufacturers. In one potential future, most if not all drivers still own and operate their own highly automated vehicles, the only significant change being that they are more productive while in the car (doing work, accessing entertainment, sleeping, etc.). Even under this scenario, there will be substantial limitations on AV utilization in the Tahoe Basin, since all AVs will be forced to share roadways with non AV

vehicles, given the inability of low-income workers to afford expensive technology, the inability to construct new AV-only lanes, and the questionable effectiveness of AVs in Tahoe snow events.

Figure 2. Active SAV Pilots in the U.S.



Source: Stocker et al., 2018

Autonomous Shuttles

Driverless shuttles, which operate at maximum speeds of 25 mph and typically have a capacity of 8-10 people, are being piloted in city neighborhoods throughout the country. These shuttles have the potential to serve as downtown circulators, as well as in enclosed spaces where public transportation is not readily available such as airports, university campuses, business parks, etc. Early implementation involves the shuttles running short distances on fixed routes, but the vision for the future as the technology continues to develop, is operating at higher speeds and capacity to replace conventional bus vehicles, and potentially provide on-demand door-to-door service. Companies such as Navya, Auro Robotics, Varden Labs, Local Motors and EasyMile are currently the main manufacturers of these driverless shuttles (CB Insights, 2017). There will need to be amendments to state and/or local laws and regulations to allow for AV operation in the Tahoe Basin. Both Nevada and California have been progressive and supportive of testing of AVs in urban areas. The specific limitations and requirements of the Tahoe Basin will require additional legislation that ensures safe AV operation, considering the communication infrastructure requirements, snow conditions, and the need to operate on both local and state highways with mixed fleets of AVs and non-AVs.

Las Vegas is an example of a city that carried out an autonomous shuttle pilot. An eight-passenger autonomous shuttle was tested and later piloted providing passenger travel services free of charge, on a downtown loop within the City's Innovation District. The shuttle was provided by AAA and the Regional Transportation Commission of Southern Nevada, in partnership with the City of Las Vegas and Keolis North America. Keolis was the operator of the autonomous shuttle, which is manufactured by Navya. The shuttle was tested for a ten-day period, and later piloted for twelve months from November 2017 to October 2018, carrying approximately 32,000 riders (AAA Las Vegas, 2018). **Figure 3** shows the AV passenger shuttle piloted in Las Vegas.

Figure 3. Autonomous Shuttle Pilot in Las Vegas, Nevada



AV Ride Hailing/Ride Sharing Services

Private AV companies have been testing, and in some cases operating AVs or AV technology as a part of a private fleet which customers can request from smartphones in an on-demand fashion. Such companies include Waymo (owned by Alphabet), Cruise (owned by General Motors), Uber and Lyft. While these companies are at different points in testing and piloting, the end goal is to provide full commercial ride-hailing/ride-sharing services to passengers. Uber and Lyft's large investment in AV technology supports this prediction (Hawkins, 2018b; Shields, 2019), as do reports to date that predict fleet AV services will offer significantly lower prices per ride than today's manually-driven ride-hailing (Bösch et al., 2018). Other research points to the added cost of new expensive AV vehicles and other factors that will make it difficult to predict any reduction in cost per trip compared to current conventional driver TNC vehicles (Ashley Nunes and Kristen D. Hernandez, MIT 2019).

In addition, the current conventional driver vehicle business models followed by ridesharing companies like Uber and Lyft continue to be unprofitable. On average, Uber loses about \$1.20 per ride. In 2018, this equated to a reported loss of \$3 billion in revenue. (Intrinio, 2019). As ridesharing companies continue to invest in AV technologies, their hope is that the technology can help them reduce costs and turn a profit.

Waymo have been providing passenger rides in its AVs in Arizona as part of the Waymo's Early Rider Program. The service is called Waymo One and has been operating since April 2017. Although Waymo One is not commercialized yet, Waymo has applied to the Arizona state government for a license to launch app-based AV ride-hailing services, likely partnering with Lyft in Phoenix. (Chatman et al, 2019; Stocker et al, 2018). In Las Vegas, Lyft has partnered with auto company Aptiv to provide AV ride-hailing/ride-sharing services since May 2018. 30 AVs have been deployed and passengers get the option to consent to be picked up by an AV via the Lyft mobile application (Chatman et al, 2019; Stocker et al, 2018). **Figure 4** shows the Waymo Early Rider Program in Phoenix (left) and Aptiv/Lyft service in Las Vegas (right).

Figure 4. SAV Pilots in Phoenix and Las Vegas



Feeder to Transit System

AVs may provide a solution for transit's first mile/ last mile issue. Whether through autonomous shuttles or AV ride-hailing/ride-sharing services, an easily accessible fleet of shared AVs could support shorter trips that are too expensive for traditional transit. Currently, some transit agencies have begun addressing the first mile/last mile issue through partnerships and subsidies with TNCs.

In the Tahoe region, a new service called Mountaineer is providing “micro transit” service in the Squaw Valley and Alpine Meadows communities. Mountaineer is an on-demand, app-based transit service available to residents and guests of Squaw Valley and Alpine Meadows. This service is available at no cost to any in-valley rider who summons the vehicle with the Mountaineer app. Mountaineer also serves the TART bus stops on Highway 89 and in Squaw Valley, linking the Mountaineer to TART transit service to both Truckee and Tahoe City. The service runs from December to March and is provided by 4WD Sprinter vans that are equipped with ski and snow board racks. The nonprofit Squaw Alpine Transit Company (SATCo) is funding Mountaineer through the combination of a one percent assessment on lift tickets sold on-site by Squaw Valley | Alpine Meadows, and a one percent assessment on lodging and vacation rentals within Squaw Valley and Alpine Meadows.

While Mountaineer is not provided with AV, it is a good example of how microtransit in the Tahoe region can work to supplement the existing fixed-route public transit services to improve accessibility and mobility and hopefully reduce personal vehicle trips. During December 2019 through mid March 2020, over 69,000 passenger trips were provided by Mountaineer, at an estimated cost of \$737,000. The impact of Mountaineer on personal vehicle trips and TART usage is not currently known, but the detailed trip data collected by the app should allow for these questions to be answered in the future.

Another example is the partnership of Metro and Lyft on a new pilot program in St. Louis City, Missouri. Riders of Lyft can ride to or from a nearby Metro Transit center/stop for only \$1.00, with the remaining cost of the trip subsidized by the transit agency. The trip must begin or end within 500 feet from selected streets identified for the pilot project (Metro St Louis, Lyft Pilot Program). In the longer term, it is likely that partnerships will continue to happen between transit agencies and TNCs with AV fleet.

Autonomous Shuttle Pilot in Canyons Village, Utah

The Utah Department of Transportation (UDOT) in partnership with the Utah Transit Authority (UTA) launched an autonomous shuttle pilot in 2019 at various locations around Utah providing free ride services. One of these locations is the Canyons Village, one of the three ski resorts located at Park City which attracts more than two million visitors annually (Funderburk, 2019). The UDOT and UTA aimed to explore AV technology as a solution for last-mile connection to existing bus system and/or to riders' final destination. The pilot was also an opportunity to familiarize the public with the technology and get their feedback. The autonomous shuttle circulated in a loop around the village providing ridership capacity up to 12 people (<http://www.avshuttleutah.com>).

The pilot began in mid-2019 and there are limited conclusions available at this point, but it is worth monitoring.

Driverless Pods in Lake District National Park, UK

The Lake District National Park is collaborating with Westfield Technology Group to undertake a feasibility study to test driverless pods as a new means of transportation to access the National Park in a more environmentally sustainable way. Richard Leafe, Chief Executive at the Lake District National Park says: "We're constantly looking at new ways to balance the needs and enjoyment of people as they visit and move around the Lake District, whilst being mindful of the impact on the environment" (Lake District National Park, 2018).

The Lake District is a UNESCO World Heritage Site and is considered one of the popular tourist destinations in northwest England, attracting on average 15.8 million visitors annually (<https://www.lakedistrict.gov.uk/learning>). The feasibility study will allow people to try the technology and provide feedback on whether they feel it is an effective transport solution, and this will inform future planning decisions for the National Park.

This program began in 2018 and there is limited documentation of the results

AV Car Sharing

Looking at the mobility sector today, we realize that there is a growing trend toward a shared economy, characterized by lower car ownership, enhanced car sharing and improved mobility services through TNCs (Uber/Lyft) and micro-mobility (scooters and bikes). The car sharing market is growing with its key vendors being Zipcar, Car2go, Turo, Maven and Getaround (Clean Fleet Report, 2019). In the long run, it is anticipated that the shared economy trend will continue and perhaps merge with the emergence of new vehicles systems such as AVs.

**Note that TNCs are discussed in greater detail in a separate memo.*

Anticipated Market Penetration

There are more than 272 million conventional cars in the United States (<https://www.statista.com/>). Those cars are not going to suddenly become driverless cars. Autonomous cars will gradually emerge and there will be a decades-long transition period, where conventional cars will share the streets with cars having different levels of autonomy. The penetration rate will depend on the operational performance of the technology, the effectiveness of its use, the cost, and the infrastructure considerations.

The prediction of the speed of AV adoption varies greatly. The transportation community has issued widely varying timelines as to when users can expect the high and full levels of automation (i.e. SAE Level 4 and 5). In 2016, Serbjeet Kohli and Luis Willumsen presented the results of a Delphi survey on the field of AV transportation. The results show that, on average, transportation experts expect that AV technology, specifically level 4/5 which can operate without a driver, will be available in the U.S. by 2021 (with a two-year standard deviation); and that there will be a 20-percent penetration rate in the U.S. market by 2033 (with a six-year standard deviation) (Kohli et. al. 2016).

Other industry researchers expect that by 2040, over 90% of all vehicles sold will be of Levels 4 and 5 (Munster, 2017). It is also anticipated that there will not be a gradual transition from one level to the next; but most players will skip Level 3, going straight from partial automation to high or full automation (Munster, 2017).

It is difficult to speculate what the AV penetration rate will be in the future, given that the technology is still developing and there are many obstacles in terms of regulations, costs and user acceptance that are yet to be overcome. However, we can say that the most likely scenario for near future is one of a “mixed fleet” where level 4 and 5 AVs share the roads with vehicles with low to nonexistent automated functions.

Potential Effects of Vehicle Automation on the Transportation System

Most of the transportation industry’s efforts today are centered on developing the AV technology to ensure that these vehicles will safely operate on our transportation system while also trying to understand the effects that they may have. At this point, we are uncertain on how the AV technology will mature or how fast will it be deployed, how it will influence key characteristics of travel behavior (cost, time, etc.), or how customers will react to them. There is great uncertainty surrounding the effects of AVs.

There is a large body of relevant academic research and documentation of industry expectations on the potential effects of AVs. These considerations are more towards an outlook to the longer-term rather than the short or medium-term, as the short and medium-terms are harder to forecast given that the vehicle fleet will most likely be mixed with various levels of AV automation. Also, we are assuming that in the long term, the AV technology is fully functional and reliable.

In order to accommodate full AV function, the obvious first step for the Tahoe Basin will be a major upgrade of the communications infrastructure. This is a clear priority, given the major communication problems that emergency responders and other public services currently face in the Tahoe Basin. In addition, improving the communications infrastructure will allow for expanded traffic signal optimization, traffic management, and other intelligent transportation system services to exist or expand. While AV communication needs are not a top priority in the Tahoe Basin, they should be part of the future planning for what will be needed in the Tahoe Basin, even though there will likely be only a small number of AVs in operation over the next 5-10 years.

Safety

Over 37,000 people die in road crashes each year and an additional 2.35 million are injured or disabled in the United States. (Association for Safe International Road Travel). Human error causes 94 percent of all motor vehicle crashes, due to impaired driving, distraction, and speeding or illegal maneuvers. (National Highway Traffic Safety Administration, 2017). AVs offer an opportunity to significantly reduce the number of deaths and injuries from roadway crashes.

The biggest safety advantage to AVs is the potential to eliminate human driving errors. AVs could be programmed to obey all traffic rules; AVs won't speed and can't be distracted. In addition, the AV technology relies on sensors and software that allow an expansive view of the surroundings across a range of lighting and weather conditions. When trained through adequate testing, AVs provide the potential to accurately detect, recognize anticipate, and respond to the movements of all transportation system users including pedestrian and cyclists (U.S. Department of Transport AV 3.0).

Mobility and Access

AVs present a new travel option for those unwilling to drive, or unable to drive such as the elderly, disabled, and young. The U.S. Department of Transport is initiating efforts to partner with the U.S. Department of Labor, U.S. Department of Health and Human Services, and the broader disability community to focus research efforts in prototyping autonomous vehicles that enable people to travel independently and conveniently, regardless of their individual abilities (U.S. Department of Transport AV 3.0).

Vehicle Miles Traveled and Congestion

There are many discussions on how AVs will impact travel patterns and accordingly vehicle miles traveled (VMT) and congestion levels. Although, it is possible to set out general expectations, a concluding direction of AVs impact on VMT and congestion, whether positive or negative, is unpredictable. Table 1 presents an outlook of how AVs might increase or decrease VMT (Victoria Transport Policy Institute, 2019; Center for Automotive Research, 2017; Millard-Ball, 2019).

Table 1. Potential AV Effects on VMT

VMT can increase due to:	VMT can decrease due to:
<ul style="list-style-type: none"> Increased mobility of non-drivers (i.e. induced travel) Increased travel demand due to lower time costs associated with travelers being able to spend their time traveling more productively Encouraged sprawling development by virtue of reduced travel costs Zero occupancy VMT to pick-up/drop-off passengers Mode shift from mass transit and non-motorized modes Parking is not an issue encouraging vehicle ownership and travel AVs "cruising" between trips when parking is unavailable or more costly 	<ul style="list-style-type: none"> Convenient SAV services reduce vehicle ownership and use SAV services increases vehicle occupancies First-mile/last-mile solutions combined with transit Reduced vehicle travel in search for parking

There are other effects that AVs can have on congestion levels, with no direct relation to VMT. For example, AVs should in theory improve road safety and reduce accidents, thereby reducing the associated delays and

congestion encountered due to accidents. A study by the US Energy Information Administration (EIA), indicates that 25% of congestion is caused by traffic incidents, and that low level of automation (Levels 1 and 2) could achieve the benefit of reduced congestion from accidents, if their market penetration is high enough (EIA, 2017).

A field experiment undertaken by the University of Illinois at Urbana-Champaign shows that with as little as 5% penetration of autonomous vehicles in a controlled environment, traffic flow could significantly reduce traffic congestion. This is achieved by eliminating the stop-and-go movement that is caused by human driving behavior (Goldin, 2018).

Emissions

Together with AVs' potential to lower congestion levels comes reduction in CO₂ emissions. Having the capability to eliminate the stop-and-go movement, AVs have smoother acceleration and deceleration behavior that results in less idling and more consistent speeds, and therefore better fuel consumption. According to a study from Ohio University, "Since software will drive the car, the modern vehicle can now be programmed to reduce emissions to the maximum extent possible. The transition to the new-age cars is expected to contribute to a 60% fall in emissions." (Goldin, 2018). Note that if AVs lead to more VMT, these savings will be limited unless AVs become electrified.

Public Transit

AVs have the potential to significantly effect transit services. Automated driving systems can be incorporated within transit services (self-driving buses or shuttles), potentially driving down labor costs and improving the existing driver shortages, which is a national problem.

AVs may increase VMT, which could make the roadways that public transit operate on more congested roadways, and perhaps drive policy-makers to pursue elements advantageous to transit like congestion pricing, bus only by-pass lanes, or outright time-of-day or seasonal bans on cars regardless of whether they are AV or not.

Parking and Curb Space

As the market penetration of high-level AVs increases, the resulting effects on parking and curb space are difficult to predict. The demand for parking may decrease and in fact change to pick-up/drop-off areas that serve both SAVs and personal AVs. It is likely that commuters using personal AVs would be dropped at their destination and the AV would park itself at the parking that is most economical or as programmed by the owner, which may or may not be the nearest available parking. In cases where commuters utilize SAVs, the SAV could park at the most economic location or continue to cruise before finding another customer.

Not only parking demand will change but also parking infrastructure. A report from Ohio University states that a "significant impact of driverless cars is that such cars can be parked in 15% less space. Currently, cars need to be parked with enough space between them for the driver to exit after parking and enter when removing the car from the parking space. With self-driving cars, vehicles can be stacked right next to each other." (Goldin, 2018). Off-street parking lots could be consolidated optimizing parking or freeing up land for other use. Given the undersupply of parking, this will help address the seasonal demand of recreation travel in Lake Tahoe, but not eliminate it at the major traffic generators in the Tahoe Basin.

The Tahoe Basin has limited parking infrastructure to meet the seasonal variations of demand associated with the heavy visitation and recreation travel. AVs may spend more time cruising in between rides as opposed to parking themselves then traveling to the larger proposed parking hubs. Having a large number of AVs cruising on Tahoe streets has the potential to increase overall congestion. A study conducted by Adam Millard-Bell, published in Transport Policy, examined the potential effects of AV cruising on major city streets. He found that AV cruising between rides can have a large impact on congestion. Focusing on San Francisco, he found that AVs could slow street speeds down to 2 km/h (Millard-Bell, 2019). The same effect is possible in the Tahoe Basin, where parking is limited, which could impact the visitor experience that Lake Tahoe is known for.

What These Effects May Mean for the Tahoe Basin

Lake Tahoe is a destination offering activities and events all year-round, attracting on average 24 million visitors annually and peak visitation demand in summer months and winter weekends. Because of limited transportation options to get to and around Lake Tahoe, visitors typically access the Basin by private vehicle. The region is facing significant congestion and parking issues associated with recreation travel which could inhibit future sustainability and economic development, and increase GHG emissions and congestion. Although the effects of AVs are uncertain, it is worthwhile exploring how AVs could negatively impact, or potentially enhance, the transportation situation in Lake Tahoe. Below is a high-level speculation about possible consequences of AV technology in Lake Tahoe given the current research, trends and industry speculations.

In the long term when AV technology is fully developed and commercialized, it is expected that much of the conventional vehicle fleet will be converted to AVs. As previously mentioned, the Tahoe Basin will need to first build an adequate communications infrastructure to allow full AV operations. In addition, the Tahoe Basin snow events will create special problems for AVs that will likely delay their use at Tahoe. Finally, the limited highway system in the Tahoe Basin will require the AV and non-AV fleet to share the roadway since there is virtually no capacity to build new AV-only lanes. Given these constraints, we can still imagine a future where **A high penetration of personally-owned AVs** could drive changes to Lake Tahoe's transportation system such as:

- Increased road safety, as AVs hold the promise of faster and more accurate detection and reaction to roadway users and conditions.
- With more efficient fuel consumption, AVs have the potential to reduce emissions which is particularly important for an environmentally-sensitive place like Lake Tahoe. The reduction of emissions could be maximized if AV and electric vehicle technologies are merged. However, emissions are dependent on VMT. The effect of AVs on VMT is highly ambiguous and, if AVs increase VMT, this could substantially offset the gains made with more efficient AV vehicle operation. The conversion of the existing private vehicle fleet to AVs is going to take many years to occur, based upon current trends, and achieving SAE Level 5 automation will be the most difficult and time-consuming.
- Greater mobility for Lake Tahoe visitors and residents as a larger population (including the elderly, young, and disabled) has access to safe private vehicle transportation. Or due to increased public transit, with both frequency and coverage improvements by public transit operating AV shuttles for greater neighborhood circulation, and AV buses on the mainline. Free public transit services within the Tahoe Basin will create strong financial incentives to choose public transit over private hire AV trips.
- The effects of AV on the number and types of visitor vehicles are difficult to predict. Barring significant changes in ownership models, it is likely that the number of vehicles could increase as the difficulty of

driving lowers and as populations continue to increase in the Northern California and Nevada Megaregional drive-up market. In this case there would be more congestion during visitor peaks, driven in part by the fact that drivers of high-level AVs may not be as bothered by delays or weather systems given they can use their time otherwise. Demand for local, convenient parking would follow suit, which will be a serious challenge in the Tahoe Basin, which is suffering from a shortage of parking near many attractions, and limited available land for new parking lots and structures, as well as environmental concerns with constructing more parking facilities that are not expressly to facilitate the use of public transit.

- One of the major factors currently impacting the quality of the visitor experience at Lake Tahoe is traffic congestion. The degree to which AVs reduce or increase congestion could have a significant impact on the desirability and competitiveness of Tahoe as a destination and, thus, the health of the Basin's largely tourism-based economy.
- Driving-related jobs may decline as AVs provide more convenient mobility. While this would be an obvious negative for drivers, it may slightly lessen the burden of the workforce on the roadways, given much of it commutes in from Carson City and Reno.

If **AV technologies prove capable in future TTD transit applications**, the transit fleet could consider autonomous vehicles as part of the transit fleet which have the potential to effect transit costs. For example, fully autonomous buses should have better fuel efficiency and require no driver, lowering operational cost, assuming this is not offset by the increased capital and operating cost of an AV transit vehicle. There are opportunities for bus platooning leading to more efficient bus operations, cutting costs further. However, the upfront cost of autonomous buses, and their maintenance and insurance costs are yet unknown. Researchers in Singapore indicate that with automation, the bus cost will go down from \$0.72–1.25 (equivalent to US \$0.53–0.92) per passenger-km to Singapore \$0.31–0.55 (equivalent to US \$0.23–0.41) (Ongel et al., 2019). Currently, TTD will need to wait for AV technology to improve, and it is not clear how many years it will take before level 5 AV technology is fully operational, cost-competitive and commercially available.

If **SAVs are operated under a TNC-type model**, the following effects could be expected:

- SAVs will not likely compete with transit for short trips, given the adopted policy to provide free local transit and short average trip lengths (TTD average trip length of 1.5 miles would be free on transit and approximately \$10 on an SAV), unless no transit is available. SAVs could complement transit by providing a first mile/last mile pick and drop off at the nearest transit stop in those situations, but this service would need to comply with ADA requirements and need to be subsidized by the transit provider, for which there is no funding currently available.
- The large trip-peaking on weekends, and also seasonally, will limit the ability of TNCs, whether conventional driver, or AV, to meet a substantial portion of the peak demand.
- Congestion may increase as a result of AVs cruising between rides, as there is limited space for them to park.

Note that TNCs are discussed in a separate memo.

In the short term and as AV technology continues to develop, the impacts could be highly variable making it difficult to speculate. As AV technology becomes available for both private vehicles and transit vehicles, and it becomes cost-effective compared to conventional vehicles, AVs of various sizes should be considered in the

public transit fleet in the Tahoe Basin to maximize mobility and minimize cost. The need to reduce congestion, VMT, and parking demand while increasing mobility require that public transit service be maximized as allowed by AV technology and cost constraints. Given that it is unclear how much current TNC trip prices will go down, if at all, with AVs, the policy directive of free local public transit service in the Tahoe Basin will ensure that mobility and person trips will be maximized while the total VMT and parking demand will be minimized, regardless of the decision of TNCs and private vehicle owners to acquire and operate AVs. As previously stated, an important first step and high priority for the Tahoe Basin will be a major improvement of the communications infrastructure; while the need is not driven by AVs, it would be helpful to consider AV needs that might exist in 5-10 years as part of the communications infrastructure planning process. In the longer term, if AVs can be developed that are fully functional in the Tahoe operating environment, and become a significant part of the vehicle fleet, it will be important to monitor how congestion, accidents, VMT and parking conditions are being affected by use of AVs.

Conclusions

This memo provides a high-level overview of AV technology, current market trends, anticipated AV deployment methods and potential AV effects on the transportation system; to help inform transportation planning and investment decisions by TTD for the Tahoe Basin.

AV technology is among the key topics of research and development in the U.S. and worldwide. AVs could alter mobility in a way that could potentially help solve or could negatively affect the transportation issues related to safety, congestion, accessibility and GHG emissions. The effects of AVs are not yet fully understood, and predictions vary on how fast the technology will develop and how AVs will be deployed and adopted in the future. However, there are significant investments in developing and testing AVs and some cities are already preparing for them.

For TTD, AV considerations are highly dependent on the way the technologies and vehicle market evolve and the specific operating environment of Lake Tahoe, something TTD has little opportunity to control. If AV technology proves operationally feasible in the Tahoe Basin, and actually becomes cost-effective compared to conventional transit, the TTD will likely be a leader in procurement and use of AV vehicles. The best opportunities in the near-term are likely to follow the changes in technology, provide input into the state-level AV discussions as state regulations on vehicle permitting and licensing will have a major impact on the vehicles that access Tahoe. The TTD should consider the communication needs of AVs as part of the communications infrastructure planning process, even though AVs will likely be a small portion of the private vehicle fleet for many years. In the longer term, if AVs eventually become a significant part of the private vehicle fleet, there will be a need to study their impacts in the Tahoe Basin and make regulatory adjustments as necessary, to minimize congestion and parking impacts.

The idea that TNCs will provide large fleets of SAVs to serve the Tahoe region is unlikely, given the extreme peaking of demand for relatively short periods. The idea of deadheading large numbers of TNC vehicles from an hour or more away seems very unlikely. The policy direction is to greatly increase public transit service and then provide free local service within the Tahoe Basin, making the profitability of deadheading in a fleet of SAVs even more questionable. Cost considerations aside, if fleets of light-duty AVs, (whether operated by TNCs or individuals), increase VMT and congestion, this could compel the use of public policy tools to encourage moving trips to larger transit vehicles where and when this would be appropriate.

**TNC possibilities are discussed further in the TNC memo.*

References

AAA Free Self-Driving Shuttle Pilot Program, November 2018-October 2018.

(<http://www.aaahoponlasvegas.com/>).

Association for Safe International Road Travel, road Safety Facts.(<https://www.asirt.org/safe-travel/road-safety-facts/>).

Bösch, P.M., F. Becker, H. Becker, and K.W. Axhausen. 2018. “Cost-Based Analysis of Autonomous Mobility Services.” *Transport Policy* 64 (May): 76–91. (<https://doi.org/10.1016/j.tranpol.2017.09.005>).

CB Insights, 2019. “40+ Corporations Working on Autonomous Vehicles”

(<https://www.cbinsights.com/research/autonomous-driverless-vehicles-corporations-list/>).

CB Insights, 2017. “5 Companies Working On Driverless Shuttles And Buses”

(<https://www.cbinsights.com/research/driverless-shuttle-companies/>).

Center for Automotive Research, 2017. “Future Cities: Navigating the New Era of Mobility”.

(http://www.cargroup.org/wp-content/uploads/2017/10/Future-Cities_Navigating-the-New-Era-of-Mobility.pdf)

Chatman, D. and Moran M., UC Berkeley 2019. “Autonomous Vehicles in the United States: Understanding Why and How Cities and Regions Are Responding.” (<https://escholarship.org/uc/item/29n5w2jk>).

Clean Fleet Report, 2019. “Update: 10 Best Car Sharing Programs”. (<https://cleanfleetreport.com/best-car-sharing/>).

Eno Center for Transportation, 2017. “Cities Now Exploring Autonomous Buses – But Is It Worth It?”.

(<https://www.enotrans.org/article/cities-now-exploring-autonomous-buses-worth/>).

Funderburk, The Charlotte Observer, 2019. “Wanderlust: Escape to Park City, Utah—a must-see destination year-round”. (<https://www.charlotteobserver.com/charlottefive/c5-food-drink/article236121178.html>).

Goldin, Pete, ITS digest 2018. “10 Advantages of Autonomous Vehicles”. (<https://www.itsdigest.com/10-advantages-autonomous-vehicles>)

Hawkins, A.J., The Verge, 2018. “Lyft Unveils a New Self-Driving Car and Acquires an AR Startup.”

(<https://www.theverge.com/2018/10/23/18014200/lyft-self-driving-car-acquires-blue-vision-lab-ar>).

Intrinio, 2019. “What Does the Future of Uber Look Like?” (<https://blog.intrinio.com/uber-financial-future/>)

Kohli et. al. 2016. “Traffic Forecasting and Autonomous Vehicles”.

(<https://www.steergroup.com/sites/default/files/2019-10/Traffic-forecasting-and-automated-vehicles-Kohli-Willumsen.pdf>)

Lake District National Park, April 2018. “Lake District looks to the future with ‘driverless’ vehicles”.

(<https://www.lakedistrict.gov.uk/aboutus/media-centre/latest-news/news-releases/lake-district-looks-to-the-future-with-driverless-vehicles>)

Metro St Louis. “Lyft Pilot Program - \$1 Trips to Transit Connections”. (<https://www.metrostlouis.org/lyft/>).

Millard-Ball, Adam, 2019. “The autonomous vehicle parking problem”. (<https://www.sciencedirect.com/science/article/abs/pii/S0967070X18305924>)

National Highway Traffic Safety Administration (NHTSA), 2018. “2017 Fatal Motor Vehicle Crashes: Overview”. (<https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812603>).

National League of Cities, 2015. “City of the Future, Technology & Mobility”. (<http://www.nlc.org/Documents/Find%20City%20Solutions/Research%20Innovation/City%20of%20the%20Future/City%20of%20the%20Future%20FINAL%20WEB.pdf>).

Ohio University Blog. “The Future of Driving”. (<https://onlinemasters.ohio.edu/blog/the-future-of-driving/>).

Ongel, A; Loewer E.; Roemer, F.; Sethuraman G.; Chang, F.; Lienkamp M., 2019. “Economic Assessment of Autonomous Electric Microtransit Vehicles”. (<https://www.mdpi.com/2071-1050/11/3/648>).

Shields, N., Business Insider, 2019. “Uber Is Doubling down on Autonomous Vehicle Tech.” (<https://www.businessinsider.com/uber-softbank-toyota-autonomous-vehicle-tech-investment-2019-3>).

Stocker, A., and Shaheen, S., 2018. “Shared Automated Vehicles: 2018 Update on Developments and Policies.” (<http://onlinepubs.trb.org/onlinepubs/AVSMForum/events/july2018/ShahenSAVupdate.pdf>).

Stocker, A., and Shaheen, S., 2017. “Shared Automated Vehicles: Review of Business Models.” (<https://www.itf-oecd.org/sites/default/files/docs/shared-automated-vehicles-business-models.pdf>).

US Energy Information Administration, 2017. “Study of the Potential Energy Consumption Impacts of Connected and Automated Vehicles”. (https://www.eia.gov/analysis/studies/transportation/automated/pdf/automated_vehicles.pdf).

Victoria Transport policy Institute, October 2019. “Autonomous Vehicle Implementation Predictions – Implications for Transport planning”. (<https://www.vtpi.org/avip.pdf>).

Wired. “Snow and Ice Pose a Vexing Obstacle for Self-Driving Cars”. (<https://www.wired.com/story/snow-ice-pose-vexing-obstacle-self-driving-cars/>)

Appendix L:

Transportation Networking Companies (TNCs) in the Tahoe Context

Effective Regional Revenue Sources to Address Regional and Local

prepared for

**Tahoe Transportation District
Morse Associates Consulting, LLC**

prepared by

Cambridge Systematics, Inc.
555 12th Street, Suite 1600
Oakland, CA 94607

date

July 3, 2020

Transportation Projects, Services, and Operations in the Lake Tahoe Region

Task 12: Review of Transportation Network Companies Impact

List of Acronyms

RIDE	Reducing Individual Driving for the Environment
TNCs	Transportation Network Companies
TRPA	Tahoe Regional Planning Agency
TTD	Tahoe Transportation District
TTI	Texas A&M Transportation Institute
UTA	Utah Transit Authority
VMT	Vehicle Miles Traveled
VTOL	Vertical Take-off and Landing

Introduction

This paper provides a general explanation of the likely impact of Transportation Network Companies (TNCs) on transportation in the Tahoe Basin and the goals of the Regional Transportation Plan (RTP). The discussion will include the evolution and evaluation of TNCs based upon available data and analysis and implications for the Tahoe Basin.

The Tahoe Transportation District (TTD), working in conjunction with federal, state, local, and private sector partners, has the authority and responsibility for providing a safe, environmentally-positive, multi-modal transportation system for the Lake Tahoe region. Unfortunately, the TTD cannot fulfill this responsibility for the region due to a lack of sustainable, adequate funding. The permanent population in the Tahoe Basin is currently estimated at 55,000 residents, located within a small portion of five large generally rural counties. These five counties have urban centers located outside of the Tahoe Basin, so only a small portion of their total population is located within the Tahoe Basin and willing to pay for additional transportation services. The very small base population in the Tahoe Basin cannot afford to pay for all of the needed transportation projects and services, nor should it. Much of the transportation needs in the Tahoe Basin are the result of the many visitors that come to enjoy its natural beauty and many recreational opportunities.

To effectively evaluate potential funding solutions for the region, it is important to understand that the Tahoe Basin is facing a number of transportation challenges because the majority of travel into and around the Basin is the result of visitors. Visitors come from all across the United States, as well as around the world, to see the beauty of Tahoe and enjoy the many summer and winter recreational opportunities. The majority of these visitors reside in California and Nevada. Visitors account for 75% and residents 25% of all vehicle trips into, out of, and within the Tahoe Basin. There are winter and summer peak travel seasons, but the summer travel is twice the volume of winter travel. In many ways, the visitor travel to Lake Tahoe is similar to travel to a National Park.

One of the typical mechanisms to capture visitor contributions for needed services is the room tax, but at Tahoe 43 percent of the visitors are day visitors and do not spend the night. Funding mechanisms that target the resident population (fuel taxes, property taxes, sales taxes) will probably not be effective, given the small population that lives within the Tahoe Basin. Any funding mechanism needs to collect an equitable share of the needed revenue from the visiting population, since their vehicles are creating the vast majority of the transportation impacts.

The need to protect Lake Tahoe from both air pollution and surface water pollution has led to strict environmental standards, which also affect the transportation system and its operation. There is a vehicle miles of travel (VMT) standard of no more than 2,030,938 VMT per day. This standard is currently being met, with a current estimate of 1,937,070 VMT(2017-2040 Tahoe Regional Transportation Plan). However, continued growth of visitor travel is expected to threaten the ability to attain this standard in the near future. There is also a Green House Gas (GHG) standard mandated by California's SB 375 law which requires the Tahoe Metropolitan Planning Organization (Tahoe Regional Planning Agency) show that regional transportation plans will meet GHG emission reduction targets for cars and light trucks.

It is important to understand that these and other environmental goals require the Tahoe Basin to reduce VMT, congestion and vehicle emissions both in the short term and long-term. There has been some speculation that the use of Transportation Network Companies (TNCs) like Uber and Lyft, and automated TNC vehicles will assist in meeting the transportation-related environmental goals in the future. This appears unlikely, as will be pointed out below:

- The need to reduce VMT requires that more trips be made on public transit, and when possible, by walking and biking. Conversely, there will be a need to reduce trips made by private car and/or TNCs (Uber/Lyft); otherwise VMT will increase.
- The need to reduce congestion also requires that more trips be made on public transit, and to a lesser extent, walking and biking. Conversely, there needs to be a reduction in trips made by private car and/or TNCs (Uber/Lyft); otherwise congestion will increase.
- The pattern of huge seasonal and weekend visitor travel peaking and the small resident population of the Tahoe Basin will make it difficult for TNCs to address more than a tiny portion of the total travel demand.
- The future cost of TNC trips is unclear; there is concern that large current operating losses incurred by Uber and Lyft will not allow much, if any, cost reduction after the vehicles are automated. Automation will add substantial new capital costs to the TNCs, since TNCs would need to buy or lease the new AVs. Automation will not be viable in the short-term, since the snow and road sanding during winter months will be an additional challenge for this technology. In addition, both Nevada and California restrict the ability to provide service across state lines. Finally, the current cost of a 1.5 mile UBER trip in the urban areas of the Tahoe Basin (City of South Lake Tahoe and Tahoe City) is averaging \$10; this is substantially more than the average trip cost of \$6.60 for a fixed-route transit trip in City of South Lake Tahoe (TTD NTD Report 2017).

With the emergence of TNCs, popular examples being Uber and Lyft, some smaller municipalities (discussed later) have tested these services to accommodate demands for mobility associated with tourism. However, there are many indirect effects involved with the increased use of TNCs. This paper will provide a general explanation of how TNCs operate, focusing on the business model that TNC adhere by, as well as some of the possible results that can come from allowing them. In addressing the different subject areas regarding TNCs, this paper does the following:

- Provides a basic description of the recent evolution of TNCs and the current service models that they follow, both in the U.S. and internationally;
- Examines the impacts of TNCs on taxi businesses, transit ridership, traffic volume and congestion;
- Looks specifically at current TNC usage and how it relates to issues such as tourism peaks, transit, parking, and other factors in the Lake Tahoe region (where data are available);
- Looks towards the future of TNCs, exploring how these future evolutions may further affect transportation;
- Highlights some best practices regarding TNC usage; and
- Summarizes the key points presented in this paper regarding TNCs.

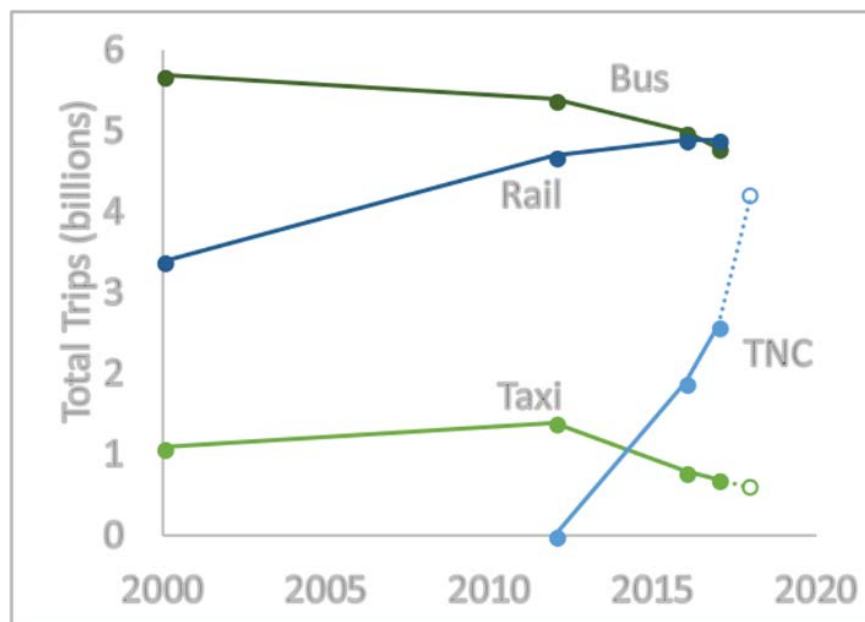
TNC Service Model

The Evolution of TNCs

Over the past decade, TNCs have come into existence and spread to almost every major city around the world, although TNC use in rural areas is very limited. Two of the most widely used companies in the U.S., Uber and Lyft, have been in operation since the early 2010's. However, there are a number of other companies that have entered the market. Since TNCs have begun operation, their use has grown very quickly in urban and suburban areas. As a result, there are a number of studies being conducted to determine their effects on different aspects of transportation.

As shown in Figure 1, the number of TNC trips has grown exponentially since the early 2010's, almost tripling in use within a few years. With bus and rail ridership remaining steady or declining during the same time period, TNCs are on track to account for nearly the same number of rides as transit. Research indicates that the factors leading to a decline in bus and rail ridership are complex. While TNCs may play some role in this decline, there has been insufficient work to establish the significance of this role.

Figure 1. Total Trips and Modes of Travel



Source: UC Davis Policy Institute, 2018.

TNCs have also been referred to as ridesharing or ride-hailing services. Regardless of where they operate, they follow a similar service model, although some areas have shared and private rides, and some areas only have private rides. In a sense, they provide the same amenity as a taxi, where the customer requests a ride and pays the driver for the service. However, several aspects differentiate TNCs from traditional taxis (MSKC, 2017):

- TNCs utilize driver-passenger matching technology, through mobile technology, enabling more efficiency in service versus taxis;

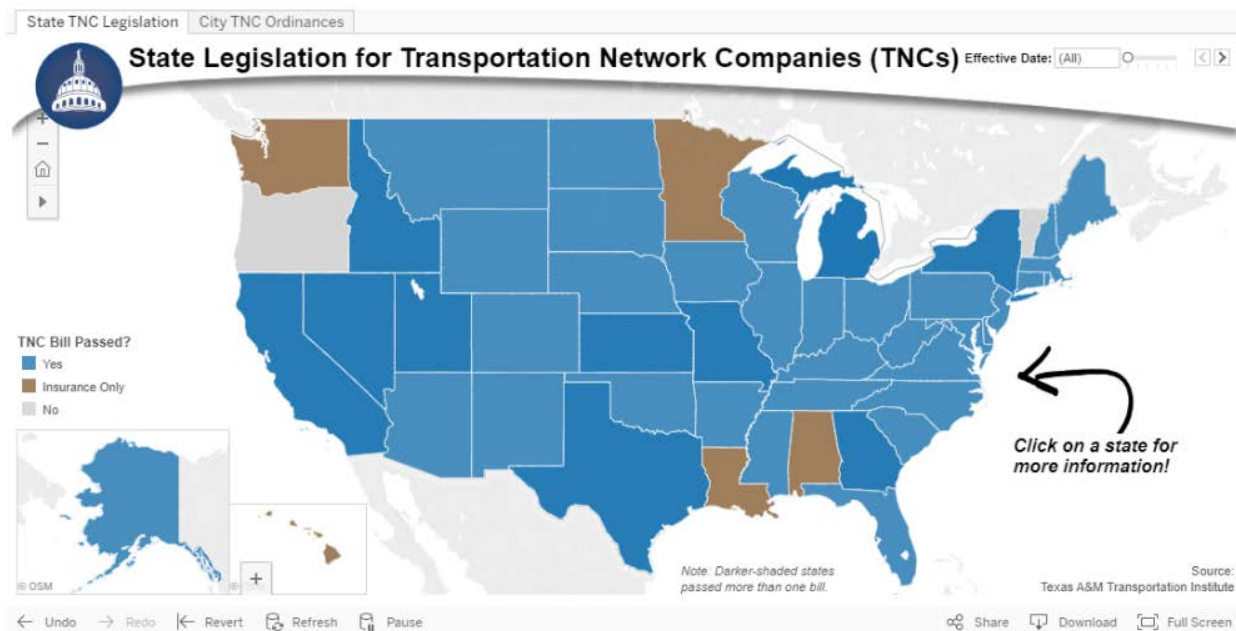
- TNCs have a larger scale of operation than taxi companies, meaning there are more drivers available at a given time;
- TNCs have fewer geographic regulations, meaning they can drop off and pick up customers across many municipalities, although they are not allowed to cross the California/Nevada state line in the Tahoe Basin; and
- TNCs use a dynamic pricing model, which attempts to match supply and demand for drivers throughout the day.

With these unique factors, TNCs have become a popular choice. Their business model has made them more convenient and comfortable than public transportation, while at the same time cheaper than the traditional taxi although the low cost is partially the result of losses that both Lyft and Uber have been sustaining for years. It is also worth noting that TNC's are not subject to the same regulatory oversight and requirements (e.g. Americans with Disability Act) as public transit dial a ride services.

Current TNC Market

As of today, TNC operation has grown to encompass all 50 U.S. states. At first, TNCs had little regulation. As usage climbed, many issues in need of regulation became apparent. Examples of common issues include permits and fees, insurance and financial responsibility, driver and vehicle requirements, passenger protections, data reporting and many others. As of today, 48 out of 50 states have passed some form of state legislation for regulating TNCs. The Texas A&M Transportation Institute (TTI) maintains an interactive database that tracks the current state legislations for TNCs.

Figure 2. State Legislation for TNCs



Source: Texas A&M Transportation Institute, 2017.

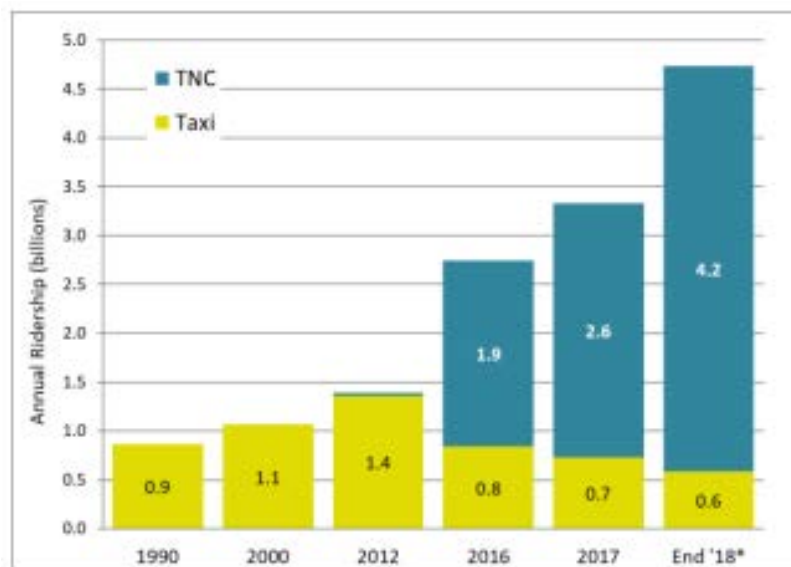
TNC Impacts on Transportation

Taxi Ridership

The growth of Transportation Network Companies in the U.S., specifically Uber and Lyft, is a major factor in the decrease in traditional taxi use. This is due in part to the factors mentioned earlier: TNCs being more readily available, low trip prices subsidized by operation losses, and having larger areas of operation.

As Figure 3 shows, taxi ridership decreased by about 50 percent from 2012 to 2017, which is approximately when TNCs entered the market. Before TNCs, the taxi industry had been growing steadily from 1990 to 2012 (Schaller Consulting, 2018).

Figure 3. TNC and Taxi Ridership in the US, 1990-2017



Source: Schaller Consulting, 2018. *The New Automobility*.

Transit Services

With TNCs being a recent method of transportation, it has been difficult to measure their exact effect on public transportation usage. In general, the goal of many TNCs is to encourage customers to use less of their personal vehicles, opting instead for ridesharing. Theoretically, this would result in less traffic congestion. However, while users are leaving their personal vehicles behind for TNCs, others are also using these services instead of public transportation. Studies have found that 60 percent of TNC users would have taken public transportation, walked, biked, or not made the trip at all if TNCs had not been available. The other 40 percent would have used their personal vehicle or a taxi (Schaller Consulting, 2018). With the competitively low pricing of many ridesharing companies, some users may see them as more convenient. Of course, the low price of TNC trips may not last as TNC companies such as Uber and Lyft continue to lose money and regulatory oversight continues to increase. The ability of automated vehicles (AV) to lower trip prices remains unclear, as discussed below.

Vehicle Miles of Travel and Congestion

Real data on the impacts of TNCs on traffic volumes and congestion levels is limited as the policy of the largest TNCs is to protect their proprietary data. However, mounting evidence described below shows there are major concerns about the impact of TNCs on congestion and vehicle miles of travel.

A recent report from the Union of Concerned Scientists: “Ride Hailing’s Climate Risks” noted the following:

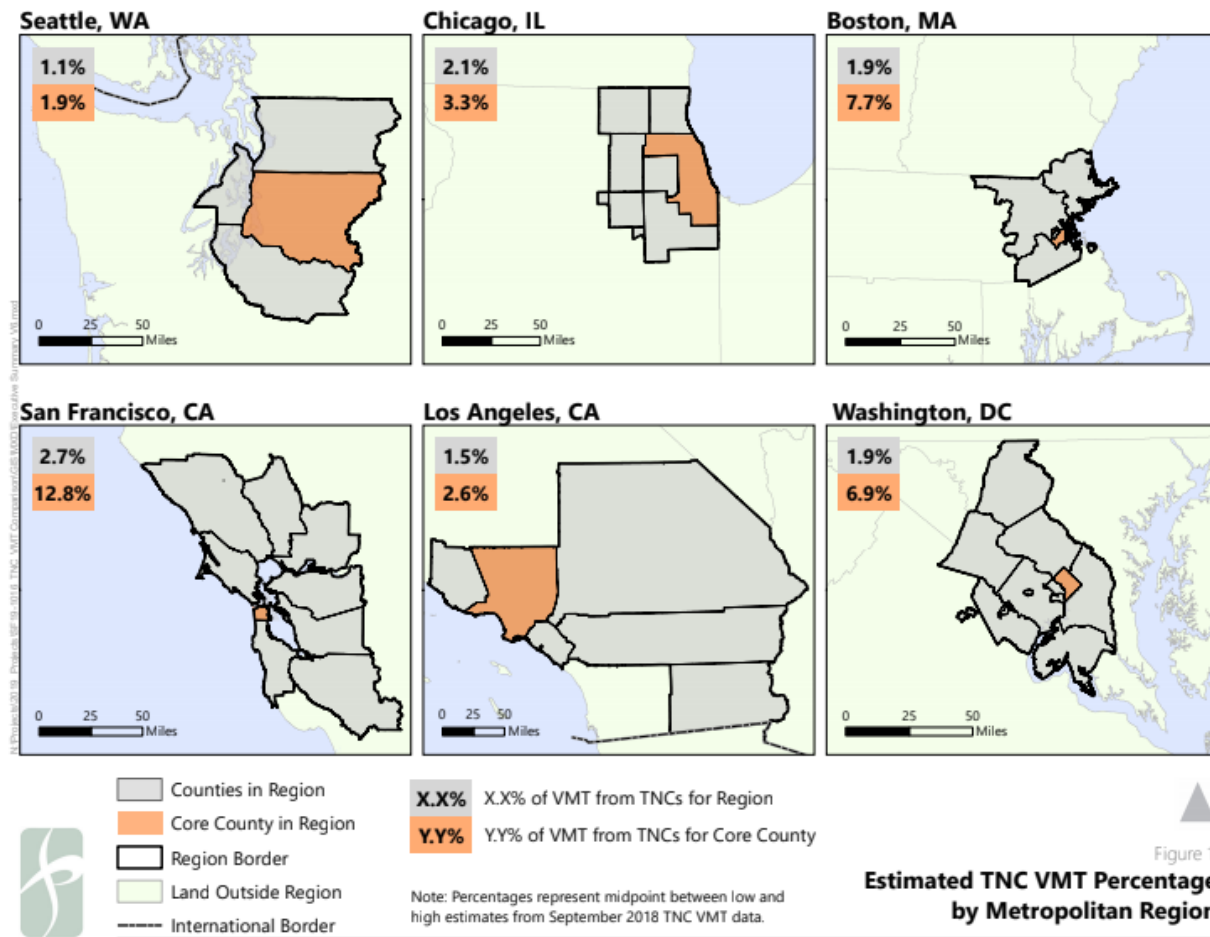
“Because ride-hailing (TNCs) displaces a mix of private car trips and cleaner travel modes and increases deadheading miles, it increases the total amount of car traffic, especially in urban areas where ride-hailing has grown most rapidly. One study found that ride-hailing in urban areas adds about 2.6 miles for each mile of personal driving it replaces (Schaller 2018). These additional miles significantly worsen congestion.

A recent study found that average speeds in San Francisco decreased by three miles per hour (mph), from 25.6 mph to 22.2 mph in 2016; half that decrease was due to increased ride-hailing (Erhardt et al. 2019). In Manhattan, taxi and ride-hailing trips almost doubled between 2010 and 2017, with average speeds in the central business district falling from 9.1 mph in 2010 to 7.1 mph in 2017. In midtown Manhattan, taxis and ride-hailing accounts for more than 50 percent of total traffic (NYDOT 2019). New York City, which is unique in the United States in its low share of trips in private vehicles, is affected especially severely...Even a small percentage increase in VMT can have an outsized impact on congestion, particularly if ride-hailing continues its rapid growth without increases in ride pooling.”

While the Tahoe Basin is nothing like San Francisco or Manhattan, the peak hour congestion problems on key links (US 50, CA89 and SR28) are real and severe, especially during peak periods. The additional VMT and congestion associated with increased TNC trips is a real concern and threat to achievement of environmental goals.

In August of 2019, a report authored by a collaboration of Uber, Lyft and Fehr & Peers was released which analyzed the traffic impacts of Uber and Lyft on several American metropolitan regions. Using data from the two TNCs, they were able to estimate the percentage of Vehicle Miles Traveled (VMT) that were generated by them. Looking at 6 metropolitan areas, the report compared the VMT from TNCs within the core county to the entire metropolitan region. Results showed that in many U.S. cities, TNCs are contributing to a very large portion of Vehicle Miles Traveled. As shown below, the core counties with the highest percent of TNC Vehicle Miles Traveled were San Francisco with 12.8%, Boston with 7.7%, and Washington, DC with 6.9%. These findings also show us that most TNC trips are occurring within urban cores and not affecting neighboring counties as drastically (Fehr & Peers, 2019).

Figure 4. Estimated TNC Percentage of VMT by Metro Region



Source: Fehr & Peers Using Uber and Lyft Data, 2019.

On a broader scale, TNCs have added a total of 5.7 billion miles of driving in the metropolitan areas of Boston, Chicago, Los Angeles, Miami, New York, Philadelphia, San Francisco, Seattle, and Washington D.C. At the same time, car ownership has increased in all large U.S. cities from 2012 to 2016 (Schaller Consulting, 2018).

Mobility

By presenting a new form of transportation, TNCs have arguably increased overall mobility for certain groups of people. Those who are either too young or too old to drive and the disabled now have more accessibility by using TNCs. Also, TNC use has been linked to reduced drunk driving in some cities, resulting in lower DUI rates.

There are equity concerns about overreliance on TNCs as a mobility option, however, as an individual must own a smartphone to access the service and pays rates higher than typical public transit trips.

TNC Service in Tahoe

Current TNC Operation in Tahoe Basin

Currently, both Uber and Lyft operate in the Lake Tahoe region. They were recently introduced in 2016 and provide services on both the California and Nevada sides of the lake. There is no comprehensive data record of service availability, but spot checks of both Uber and Lyft reveal limited availability during peak periods. One of the problems both Uber and Lyft face in the Tahoe Basin is the inability to make a pick-up in one state and then cross over the California/Nevada border.

TNC usage may be less than comparable tourist destinations given that air travel into Tahoe Basin is outside the normal travel shed for TNC transport, resulting in higher than normal personal car travel to the region (owned or rental car). In addition, there are two airport shuttle dial a ride systems available to the public. With a personal car at the availability of the tourist, they may be less interested in using a TNC. Also, within the Basin, congestion will impact the travel times and reliability for TNC and personal cars alike, which limits the advantage TNCs have over driving a personal car. As previously mentioned, TNCs also face the legal limitation of not being allowed to cross the California/Nevada state line.

That said, there are other factors which can drive and support TNC usage in tourist destinations, even for those already in possession of a personal car on their trip. The lack of parking at major Tahoe destinations is a huge issue that is only going to get worse over time and is an important consideration in using transit or TNCs to access a destination with parking limitations. Another factor is alcohol consumption. TNCs free up gatherings of people from assigning a designated driver, theoretically benefiting the group, the establishments serving tourists, and the overall safety of the transportation system. Another factor is inclement weather. Drivers may be uncomfortable navigating the roadways during snowfall or icy conditions. Local TNC drivers may have added expertise to enable tourists to access the ski slopes and entertainment destinations even during bad weather conditions.

Of course, all of these factors would also drive increased use of public transit, especially if the quality service envisioned in the Tahoe Regional Transportation Plan is implemented, which will greatly increase the frequency of service, the geographic coverage of service, and the number of amenities for customers, including mobility hubs, shelters at bus stops and priority bus lanes that will give public transit vehicles a significant travel time advantage over private and TNC vehicles during peak congestion periods. Given the importance of increasing public transit usage and reducing vehicle trips and congestion, future local public transit will be provided free of charge in the Tahoe Basin, thus providing a huge price advantage over private vehicles and TNCs. Most importantly, if TNCs use increases, they will contribute to increased VMT and traffic congestion, which represents a threat to meeting the RTP goals regarding VMT and GHG emissions.

Impacts on Local Transportation

Tourism Peaks

Lake Tahoe sees two high visitation periods. The peak months are February in the winter and July in the summer. In the 2017 Regional Transportation Plan by the Tahoe Regional Planning Agency (TRPA), seven of the busiest corridors were identified. Out of those, the California/Nevada US 50 South Shore Corridor was the busiest, with about eight million visitors annually. During the summer high visitation in July, the corridor sees about 2,243,390 trips. In February, the winter high visitation period, the corridor sees 1,908,081 trips

(TRPA, 2017). For Tahoe region's relatively low resident population, the corridors experience a high number of trips. Although TNCs may be able to offer some additional capacity of transportation service through these corridors, it will be limited when those trips cross the state line. Additionally, there may be instances of driver shortages given the large number of visitors. The bigger problem with TNC use during congested periods is the additional congestion and VMT associated with TNCs versus transit. The additional carrying capacity of transit will increase through put while reducing the number of vehicles.

Parking

In the same corridor mentioned previously, the California/Nevada US 50 South Shore Corridor, there are about 576 public parking spaces. As the Regional Transportation Plan states, this equates to about a 9,176:1 visitor to parking ratio (TRPA, 2017). Similar limitations in visitor parking exist throughout the Tahoe Basin, with some of the most critical shortages at Emerald Bay, Tahoe City, Kings Beach, Incline Village Sand Harbor and Zephyr Cove. It will not be feasible or consistent with adopted transportation or environmental policy to make major investments in public parking structures to try and meet this demand.

Many of the other corridors have similar ratios of visitors to parking. This makes parking for visitors very scarce in the region. Although it's been shown that TNCs are effective in areas that have scarce parking, some studies indicate that this comes at the cost of more VMT as the TNC vehicles "cruise" while waiting for their next trip. This would indicate that it's more important to invest in alternatives to personal vehicles for visitors to travel to and within Lake Tahoe than TNCs as a method to reduce parking demand.

If TNC use in the Tahoe Basin were to substantially increase, it could create the need for curbside management at few high activity locations to avoid TNC impacts on transit operations, commercial loading and through traffic operations. This issue has arisen in large urban centers with high density traffic, transit, commercial loading and TNC frequency. In these situations, the lack of sufficient curb space can cause travel lanes to be blocked by both transit and TNC vehicles needing to board and deboard passengers. If there is also the need to accommodate commercial vehicle loading, curbside management can become a complex study of the timing, frequency, and duration of each event in order to maximize the efficiency and effectiveness of the available curb space. Given the limitations of TNCs mentioned above (inability to take trips across state line, not price competitive with public transit, especially when local service is free, and the limited supply of TNCs in the Tahoe Basin), curbside management impacts of TNCs are not expected to be a problem in most locations.

Traffic Volumes

Between the 2012 and 2015, the Lake Tahoe region saw a 7 percent increase in overall traffic volume. Certain areas, such as the North Shore, have seen an even larger increase of 9 percent in traffic volume. When compared to traffic in 1986, traffic volume has decreased by 16 percent in the region (TRPA, 2017). Therefore, these increases are occurring recently, from about 2010 until 2015. Most of the traffic volume increase in Tahoe during this period is due to increased visitation as evidenced by the increase in transient occupancy tax and traffic volumes entering the region. The future growth of visitor travel from the Northern California/Northern Nevada megapolitan (current population of 15 million) to the Tahoe Basin is expected to follow the growth rate in the megapolitan. The growth for the megapolitan is estimated to be 25% to 30% between 2015 and 2035,

Transit Usage

In the year 2017, the Lake Tahoe region saw about 16.8 passengers per revenue hour on its transit systems, or about 1.2 passengers per mile. TTD's number of unlinked passengers per revenue hours is an average of all service types provided and is comparable to a peer group of other transit systems operating in similar environments (Steele, 2019).

Without the right planning and regulation, increased TNC reliance could potentially result in less public transportation use in the region, though this is very dependent on the financial means of the transit riders; while TNC travel times are typically much lower than public transit and have increased mobility options to some riders, the cost to the transit rider is going to be much higher to make trips on TNCs given the policy direction in the Tahoe Basin to make local transit trips free. The construction of Transit HOV facilities may allow transit travel time to be competitive with private vehicles and TNCs in the future, especially during congested periods.

Potential TNC Future Impacts

Air Travel

In 2016, Uber announced that it would be investing in the technology to incorporate air travel into their service model. This new service will be called Uber Air, with a few launch markets being chosen as the first cities to begin operation. As stated by Uber, demonstration flights are expected to begin in 2020, with the first commercial operations in 2023. The goal is to minimize travel time between large cities and their neighboring suburbs, with Melbourne, Los Angeles, and Dallas being the first launch markets (Uber Elevate). Uber Air has become feasible because of the development of specific VTOL (Vertical Take-off and Landing) aircraft. They are light and fully electric, allowing for cheaper and more efficient air travel (Uber Elevate, 2016). This type of service will be valuable and affordable for a small percentage of the population, but the costs may be prohibitive for the vast majority of travelers.

Vehicle Ownership

Over the past few years, car ownership grew in most major U.S. cities. However, the future of TNCs involves the emergence of many new shared mobility services. Uber and Lyft have recently been involved in acquiring shared scooter and bike services. The car sharing market is also growing, with companies such as Zipcar, Car2go, and Turo focusing on large cities with low car ownership. Rural areas, such as the Tahoe Basin, with highly variable peak traffic volumes, plus many months of snow that limits available parking, make these services difficult to implement and limit their impact in the Tahoe Basin. Therefore, emerging sources of mobility may result in TNCs lowering vehicle ownership, but this will mainly occur in urban areas and have very limited impact in the Tahoe Basin.

Public Transportation

As mentioned earlier, overall rail and bus ridership has shown a decline in the US over the past several years. While TNC's may have some role in this trend, their significance has not yet been established given the many other factors involved.

TNCs do have the potential to supplement transit by helping to solve first mile/last mile issues and support those who need to travel outside of the public transit service hours. In many cities, shared “micromobility” options like scooters and bikes have helped connect lower density areas with existing public transportation.

Automated Vehicles

Private AV companies have been testing, and in some cases operating AVs as a part of a private fleet which customers can request from smartphones in an on-demand fashion. Such companies include Waymo (owned by Alphabet), Cruise (owned by General Motors), Uber and Lyft. While these companies are at different points in testing and piloting, the end goal is to provide full commercial ride-hailing/ride-sharing services to passengers. Uber and Lyft’s large investment in AV technology supports this prediction (Hawkins, 2018b; Shields, 2019). Some studies that predict fleet AV services will offer significantly lower prices per ride than today’s manually-driven ride-hailing (Bösch et al., 2018), other studies point to the added cost of new AV vehicles making it difficult to predict any reduction in cost per trip compared to current conventional driver TNC vehicles.

Waymo has been providing passenger rides in its AVs in Arizona as part of the Waymo’s Early Rider Program. The service is called Waymo One and has been operating since April 2017. Although Waymo One is not commercialized yet, Waymo has applied to the Arizona state government for a license to launch app-based AV ride-hailing services. Waymo is most likely partnering with Lyft to allow Phoenix riders to hail. (Chatman et al, 2019; Stocker et al, 2018).

In Las Vegas, Lyft has partnered with auto company Aptiv to provide AV ride-hailing/ride-sharing services since May 2018. 30 AVs have been deployed and passengers get the option to consent to be picked up by an AV via the Lyft mobile application (Chatman et al, 2019; Stocker et al, 2018). This type of technology, when it is proven to be cost-effective and operational in snow environments, could be of great value to public transportation operators in the Tahoe Basin. The use of AV is likely to be an important service option for all public transportation operators given their experience with fleet operations, the difficulty with finding operations staff, and variability of street conditions (some routes will be more amenable to AV use than others).

Other cities have experimented with autonomous shuttles. These smaller, driverless busses are able to connect short distances within a city, which can be useful for first mile/last mile solutions. The city of Sion, Switzerland piloted autonomous shuttles on city streets in 2016. After its widespread success, the project was expanded, doubling the length of the shuttle’s route and providing connectivity to the city’s rail transit. Moving forward, the company plans to deploy similar lines in four other cities (BestMile, 2019)

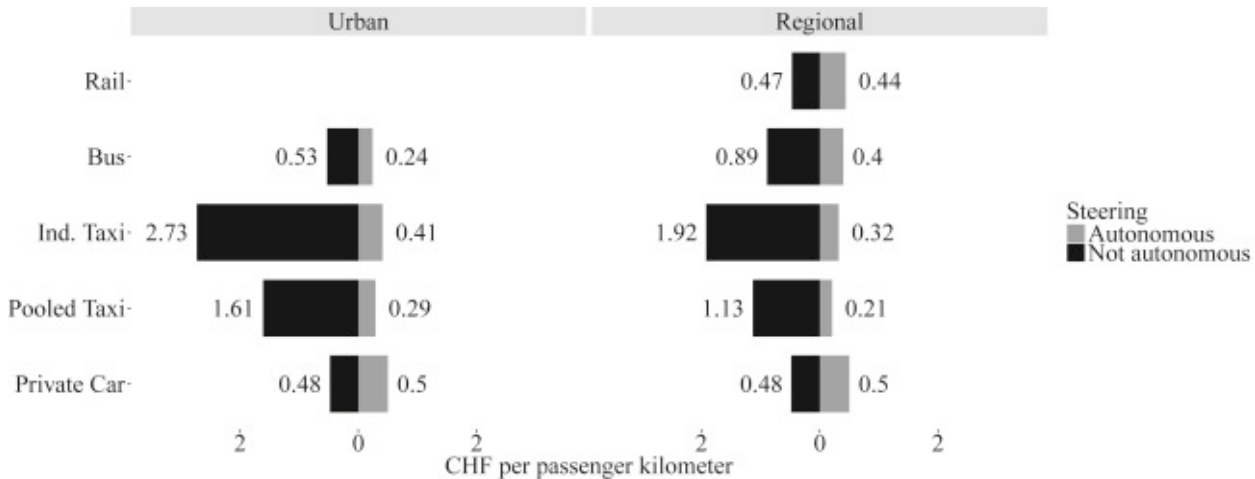
**Note that automated vehicles are covered in greater detail under a separate memo.*

Trip Pricing

Trip pricing is the determination of the cost for a given trip, which for TNCs is based mainly upon trip length and the availability of drivers to serve the trip. Motivation for automation of ridesharing vehicles by trip providers (TNCs and transit services) is the hope that automation would significantly lower the cost per vehicle mile. By removing the driver completely, TNCs can potentially save labor costs and generate profit, although this savings will be offset by the cost of operation and maintenance of new AV vehicles. Insurance costs could be lowered assuming the new technology works well and reduces accidents; conversely, the additional cost of the AV equipment may place upward pressure on insurance costs. Since this technology is still very new, it’s difficult to calculate exactly what the cost per vehicle mile would be.

A comprehensive study in the Transport Policy journal examined cost per passenger kilometer for different transportation modes, before and after automation. According to their research, automation made almost every mode of travel cheaper. TNCs, which would fall into the category of pooled or individual taxis, dropped significantly in cost after automation. Automated buses were projected to be the lowest cost mode., with a reduction of about half the cost (Bosch et. al., Transport Policy, 2018). These massive cost reductions make autonomous vehicles very appealing to public transit providers.

Figure 5. Cost Comparison of Modes with and without AV Technology



Source: Bosch et al., Transport Policy, 2018.

Other studies make the case that TNCs are unlikely to reach prices that make their service offerings profitable outside of the densest of U.S. cities. They make the case that AVs could possibly become more cost effective than conventionally driven vehicles, but only if they greatly increase their utilization/occupancy rate. At high occupancy rates, however, passengers may face additional delay and inconvenience, or expect a big discount on the ride cost, if forced to share a ride and go out of their way.

From the traveler perspective, the impacts on trip prices is less clear. Many proponents of TNC automation make the case that the lower prices will be transferred onto consumers. But given the concerns over current and projected TNC profitability, there may be significant price increases in the future, turning TNC trips into a luxury good. Currently, UBER is losing an average of \$1.20 per trip; with an operating loss of \$3 billion on revenue of \$11.3 billion during 2018; these are concerning numbers for a company that launched 10 years ago.

Local public transit in the Tahoe Basin is proposed to be free to the rider, with several on-going pilot programs. It is expected that public transit will always have a substantial cost advantage over TNCs in the Tahoe Basin in the future, thus TNCs will serve a complimentary role to public transit. The plan to increase public transit service frequency with implementation of the Regional Transportation Plan means that use of TNCs (automated or not) will likely be to provide first/last mile linkages to the free transit on the major corridors for passengers on a budget.

Peer Practices

Snowbird RIDE App

Snowbird, Utah, about 25 miles outside of Salt Lake City, originally launched its RIDE (Reducing Individual Driving for the Environment) app in 2016. The main goal was to reduce carbon dioxide emission and traffic congestion (Snowbird RIDE). With its immediate success, the app was relaunched in 2019. One of the additional features is a ridesharing app. Now, visitors can request rides similarly to Uber and Lyft. If rides aren't available, visitors are encouraged to use the local UTA bus instead.

The app incentivizes users to take alternative transportation methods. Users of the app earn points for carpooling or taking public transportation. Rewards include stickers, VIP parking next to the lift, and half priced lift tickets. With 48 percent of Utah's main wintertime air pollution coming from nonstationary sources such as cars, planes, and trains, this app can be an effective way of reducing emissions and congestion (Snowbird RIDE).

There is limited data on the operational statistics and results on this relatively new program.

Innisfil Transit

In May of 2017, Innisfil, Canada launched its ridesharing transit system. It was a partnership with Uber and Barrie Taxi. Initially a pilot program, it was intended to address immediate transit needs and increase mobility.

The city initially determined that a fixed-route bus service would be too costly, with a start-up cost of \$270,000 for one bus route and \$610,000 for two. The city's solution was to subsidize Uber routes, providing specific discounted rates for locations within the city (Innisfil, 2017).

With the program's success in 2017, it continues until today. However, some of the fares have been increased by \$1 or more, making some city trips cost up to \$6. The city has also implemented a monthly limit of 30 trips per person (Innisfil Transit).

Vancouver TNC Ban

In 2012, when TNCs like Uber and Lyft were entering the North American market, the city of Vancouver, British Columbia pushed them out completely. That year, the province enacted a widespread ban on the operation of any TNCs. Being one of the few cities where TNCs were completely outlawed, Vancouver became an experiment on how a city can thrive without them. While public transportation use was dropping drastically in U.S. cities, the opposite was happening in Vancouver. Public transit use grew by 6 percent in 2017 and by 7 percent in 2018. At the same time, the city made one of the largest investments in transportation improvements, totaling up to \$7 billion (CityLab, 2019). However, lawmakers announced that the TNC laws would change in late 2019, with applications for operation opening in September of that year. Introducing TNCs into the city may increase mobility and economic opportunity, but the city's unique ban helped demonstrate the correlation between TNC and public transportation usage.

Conclusion

TNCs are an emerging form of transportation and mobility. With less than ten years of operation in most cities, their effects on cities are just beginning to be noticed by planners and municipal government. TNCs have a much smaller utilization rate and impact in rural areas, which is a more appropriate comparison to the Tahoe Basin. At the same time, cities are accommodating for their growth, enabling legislative restrictions while allowing testing of new pilot programs. The sensitivity and environmental goals of the Tahoe Basin to limit VMT, traffic congestion, and increase public transportation use require TNC and AV evolution to continue to be studied and documented. Changes in regulatory oversight and technological advances will continue to drive the market of TNCs.

This memo provides a comprehensive overview of TNCs, as well as ways in which they may affect local transportation issues in the Tahoe Basin, to help inform future decision making by TTD and regional partners. The future impact of TNC's on public transit in the Tahoe Basin is uncertain but some factors that appear to be of significance are:

- Air travel into Tahoe Basin is outside the normal travel shed for TNC transport, resulting in higher than normal personal car travel to the region; this is also impacted by the requirement of Nevada and California that TNC trips cannot cross the state line (owned or rental car);
- Congestion in Basin impacts TNC and personal cars alike—there is limited advantage to using TNC over driving a personal car;
- Public transportation that avoids congestion has the potential to be more attractive than using a TNC or driving;
- TNCs may actually increase vehicular trips, congestion, and emissions by inducing additional vehicular travel and drawing trips from non-auto modes;
- Public transportation in the Tahoe Basin is planned to be free service (local service), thus it will always have a price advantage over TNC trips. It is unclear whether the conversion of TNC vehicles from conventional driver to AV will have a large impact on price per trip;
- TNC provision of first/last mile connection to public transit could play a key role in increasing mobility in Tahoe Basin;
- TNC availability, both conventional driver and AV, will be limited in the Tahoe Basin during peak periods, given the long deadhead distance that would need to be traveled, to address the weekend peaks during winter and summer months; and
- TNC AV operation in the Tahoe Basin in the winter will likely be a difficult operating environment.

Generally, TNCs can offer a flexible mobility option that self-adjusts to accommodate tourism travel peaks. Growth in the TNC market may require intervention and regulation to preserve curb space and prevent loading and unloading related congestion and safety issues. In addition, arterial road capacity in the Tahoe Basin is limited and expansion is prohibited. Allocation of this capacity at peak times between cars (including TNC vehicles) and more efficient transit vehicles is a public policy issue in the Tahoe Basin, given the requirements of the Bi-State Compact. Impacts on transit are uncertain, though an app similar to the

Snowbird RIDE App that pairs TNC with public transportation may make public transportation even more attractive. There are also short- and long-term impacts on the labor market as TNCs create new jobs while eliminating some traditional roles. TNC use of AVs, if it happens in the Tahoe Basin, would obviously have a negative effect on transportation jobs.

It is important to note that TNCs such as Uber and Lyft have not demonstrated long-term financial sustainability at this point. There is significant speculation within the industry that they must automate their vehicles and eliminate the drivers in order to do so. The potential for automation is very real, but there are still significant challenges the vehicles must overcome to operate in the kind of complex environments required to provide door-to-door service to ride-hailers (interactions with all modes, day or night, in all weather conditions, with a safety record that inspires consumer confidence). Even if the technology hurdles are overcome, there are serious questions about the profitability of such a service model. Ideally, TNCs will serve as a complimentary transportation service to a greatly enhanced public transportation system in the Tahoe Basin in the future.

**AV possibilities are discussed further in the AV memo.*

References

- BestMile, 2019. Integrating Autonomous Shuttles with Public Transit.
(<https://medium.com/bestmile/integrating-autonomous-shuttles-with-public-transit-724c536093ed>)
- Bosch et. al., Transport Policy, 2018. Cost-based analysis of autonomous mobility services.
(<https://www.sciencedirect.com/science/article/pii/S0967070X17300811>)
- Chatman, D. and Moran M., UC Berkeley 2019. “Autonomous Vehicles in the United States: Understanding Why and How Cities and Regions Are Responding.” (<https://escholarship.org/uc/item/29n5w2jk>).
- CityLab, 2019. In the City That Ride-Hailing Forgot, Change Is Coming.
(<https://www.citylab.com/transportation/2019/09/vancouver-uber-lyft-ride-hailing-ban-drivers-transit-data/597907/>)
- Fehr & Peers, 2019. (<https://drive.google.com/file/d/1FIUskVkj9IsAnWJQ6kLhAhNoVLjfFdx3/view>)
- Innisfil Transit. (<https://innisfil.ca/transit/>)
- Innisfil, 2017. Ridesharing Transit System 4 ½ Month Update. (<https://innisfil.ca/wp-content/uploads/2019/05/DSR-171-17-Ridesharing-Transit-System -4-1 2-Month-Update-Pdf.pdf>)
- MSKC, 2017. What are Ridesourcing/Transportation Network (TNC) Services?
(<https://mobilitybehaviour.eu/2017/07/26/what-are-ridesourcingtransportation-network-company-tnc-services/>)
- Outside, 2019. Snowbird Wants to Fix Ski Town Traffic with an App.
(<https://www.outsideonline.com/2390376/snowbird-ride-share-app>)
- Schaller Consulting, 2018. The New Automobility.
(<http://www.schallerconsult.com/rideservices/automobility.pdf>)
- SFGATE, 2020. ‘States controlling their turf’: Uber and Lyft drivers face unique challenges in Tahoe.
(<https://www.sfgate.com/renotahoe/article/Why-driving-Uber-and-Lyft-in-Tahoe-is-unlike-any-15092871.php>)
- Snowbird RIDE <https://www.snowbird.com/ride/>
- Steele, Michael, 2019. “Peer Group Review” prepared for Tahoe Transportation District by Morse Consulting, LLC.
- Stocker, A., and Shaheen, S., 2018. “Shared Automated Vehicles: 2018 Update on Developments and Policies.” (<http://onlinepubs.trb.org/onlinepubs/AVSMForum/events/july2018/ShahenSAVupdate.pdf>).
- Texas A&M Transportation Institute, 2017. (<https://policy.tti.tamu.edu/wp-content/uploads/2017/03/TTI-PRC-TNCs-SBC-031417.pdf>)
- TRPA, 2017. (http://www.trpa.org/wp-content/uploads/2017-Regional-Transportation-Plan_Final.pdf)

Uber Elevate, 2016. Fast-Forwarding to a Future of On-Demand Urban Air Transportation.
(<https://www.uber.com/elevate.pdf/>)

Uber Elevate. (<https://www.uber.com/us/en/elevate/uberair/>)

UC Davis Policy Institute, 2018. Could Ride-Hailing Improve Public Transportation Instead of Undercutting It? (<https://policyinstitute.ucdavis.edu/could-ride-hailing-improve-public-transportation-instead-of-undercutting-it/>)

Union of Concerned Scientists, 2020. Ride-Hailing's Climate Risks. (<https://www.ucsusa.org/resources/ride-hailing-climate-risks>)