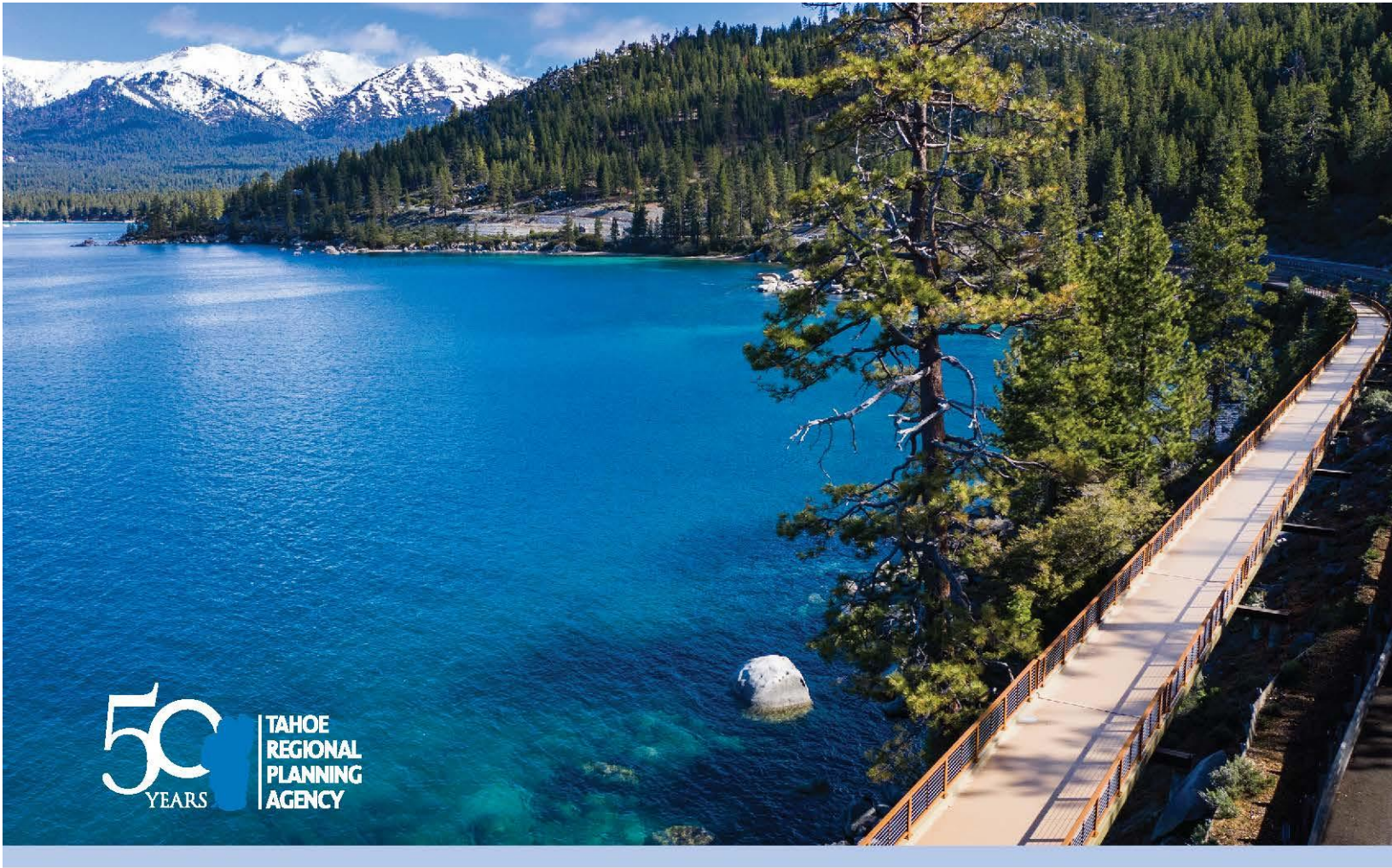
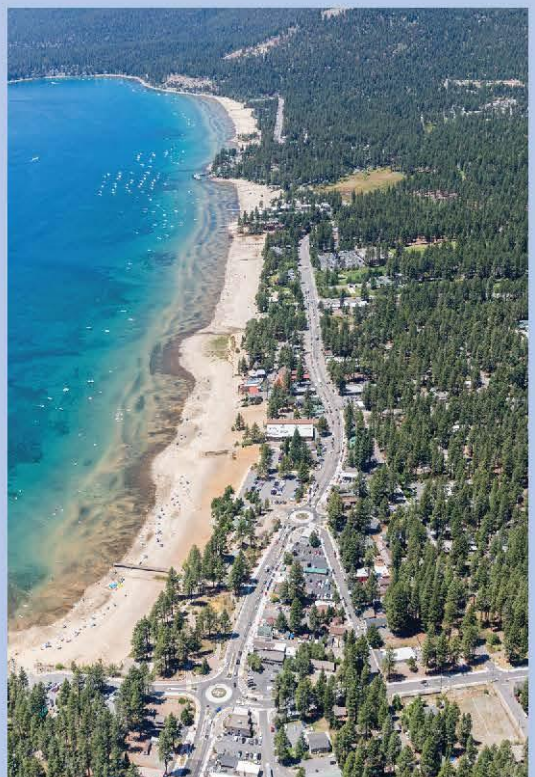
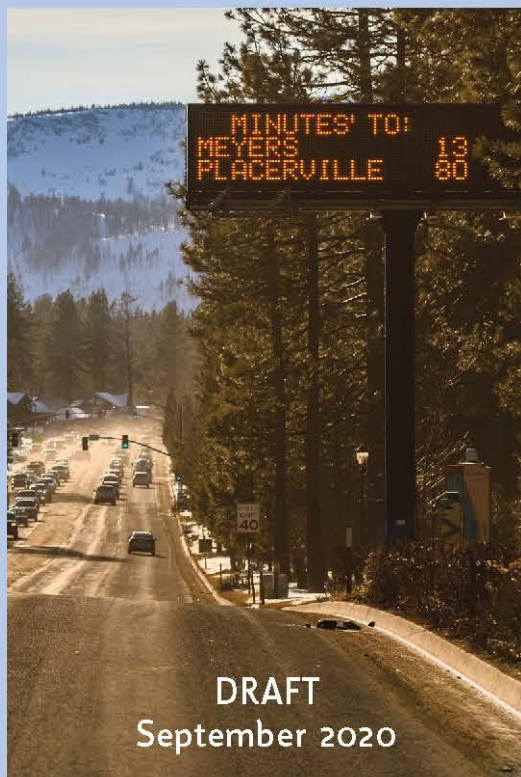


REGIONAL TRANSPORTATION PLAN

TAHOE REGIONAL PLANNING AGENCY | lake tahoe





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September 2020

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CHAPTER 1
INTRODUCTION

Figure 1: Tahoe Trail Near Tahoe City credit: Drone Promotions

Introduction

It is hard to imagine that the Lake Tahoe community of today could have been as large as San Francisco. Plans in the 1950s and 1960s called for a year-round population of 750,000 people at Tahoe with freeways ringing the mountaintops. A superhighway was planned for what is now the Tahoe Rim Trail.

Early growth and development restrictions at Lake Tahoe sparked controversy, but conflict gradually gave way to compromise and collaboration as competing interests learned to work together. Creation of the Tahoe Regional Planning Agency (TRPA) in December of 1969 and this growing spirit of collaboration have helped ensure the Tahoe Basin remains a world-class natural resource to protect.

TRPA's mission is to lead the cooperative effort to preserve, restore, and enhance the Lake Tahoe Region, while improving local communities and visitor's interactions with our irreplaceable environment.

There is broad consensus that the Tahoe Region needs a transportation system transformation to help people travel to, from, and around the Region more efficiently. Improvements are also needed to strengthen initiatives underway to conserve and restore Tahoe's environment; revitalize communities; improve quality of life for residents and quality of experience for visitors; improve mobility and safety for people walking and biking; improve recreation access and sustainability; reduce emissions of greenhouse gases (GHG), and build a resilient system in response to climate change.

In the Region, there is a strong link between land use and transportation. Land uses, such as public beaches or a popular micro-brewery, attract people — and people need transportation of some kind to get to those places. This push-and-pull between land use and transportation can also happen in the reverse. The development of the nation's transportation system, from the transcontinental railroad to the National Highway System, provides a classic example of transportation leading to land use changes — with many towns and cities developing along these critical transportation corridors.

Vision

Tahoe's transportation system is interconnected, inter-regional, and sustainable, connecting people and places in ways that reduce reliance on the private automobile.

At Lake Tahoe, recognizing and leveraging this interplay between land use and transportation is accomplished through the Regional Plan, the land use plan for the Lake Tahoe Region, as well as the Regional Transportation Plan (RTP), which serves as the transportation element of the Regional Plan.

The RTP guides project and program design and implementation through goals, policies, and projects linked to foreseeable revenues. It is the guide for improving Tahoe's transportation system and complements the Regional Plan's goals for environmental conservation and restoration and community revitalization through better, wiser, and more sustainable transportation choices.

THE TAHOE REGION

Lake Tahoe is situated in a beautiful and environmentally sensitive enclosed watershed, and its communities are supported by a robust seasonal recreation tourist economy that supports just over 50,000 residents and attracts millions of visitors each year. Town centers and popular recreation destinations are dispersed around the lake, connected by state and federal highways, local roads, bike lanes, and shared use paths.

Split by the California-Nevada border, the Tahoe Region is a uniquely complex transportation planning landscape.

The Region includes two states, five counties, one city, one transportation district, and multiple public land management agencies and public utility districts. Culturally, the lake is the center of the Washoe Tribe's world, both geographically and spiritually, and is known as Dá O Ga.

MEGA-REGION

Lake Tahoe serves as the outdoor playground for the neighboring metropolitan areas in Northern California and Nevada, from San Francisco, San Jose, and Sacramento, to Carson City and Reno, that together make up the Trans-Sierra Mega-region. In addition to being a popular destination for overnight visitors, Tahoe also attracts a high number of day visitors who drive up to enjoy Tahoe but do not stay overnight. As neighboring cities in California and Nevada continue to grow, so will visitation to Tahoe.

Travel to Tahoe from the Mega-region is possible by regional air, rail, roadway, and transit systems.

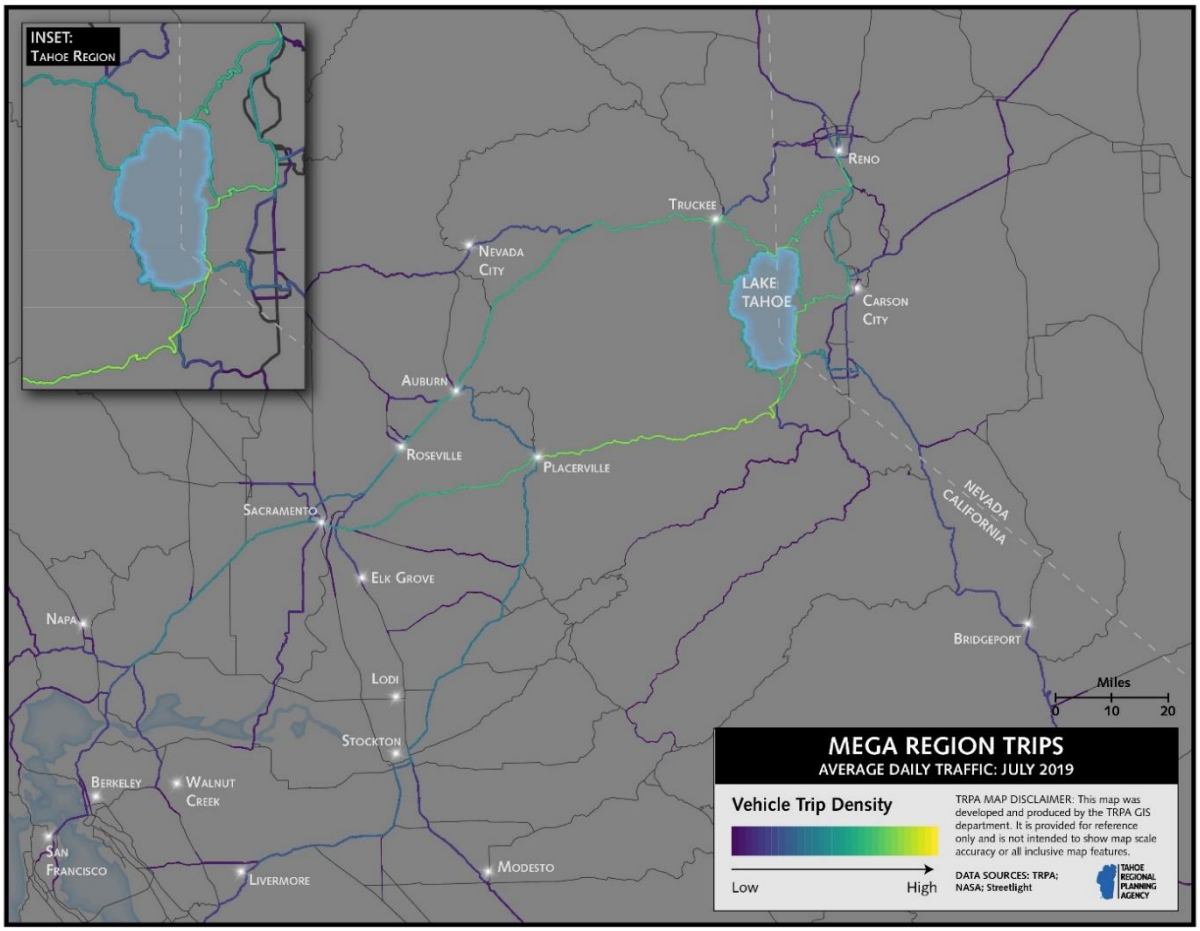


Figure 2: Lake Tahoe Mega-region

Air

These airports provide air connections to cities within the Mega-region that link to Tahoe by shuttle or a one- to five-hour drive: Reno/Tahoe International Airport, Sacramento International Airport, Oakland International Airport, and San Francisco International Airport.

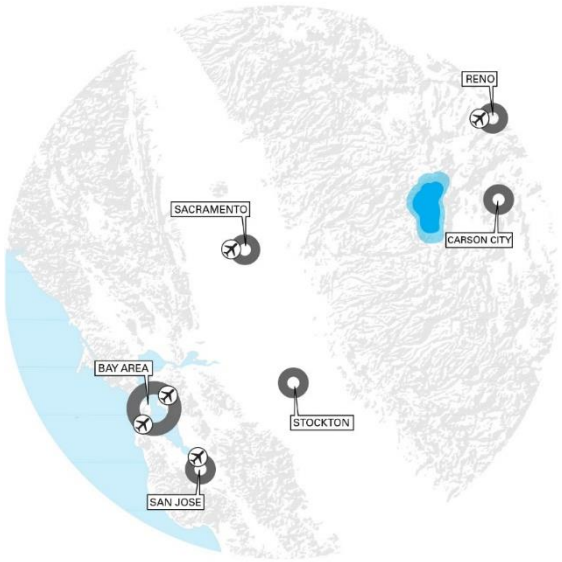


Figure 3: Mega-region Airport Map

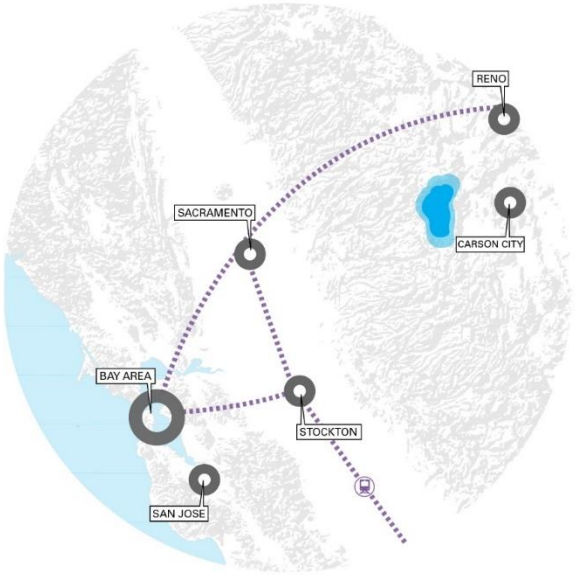


Figure 4: Mega-region Rail Corridors

Rail

Heavy rail corridor, originally part of the transcontinental railroad, connects the major airports from northern California to Reno, Nevada, with a stop in Truckee, California, just north of the Tahoe Region.

Auto

Automobile access to Tahoe is possible on interstate and U.S. highways, state routes, and local roads, including Interstate 80, U.S. Highway 50, U.S. Highway 395, Nevada State Route 207, Nevada State Route 431, Nevada and California State Route 28, and California state routes 88, 89, and 267.

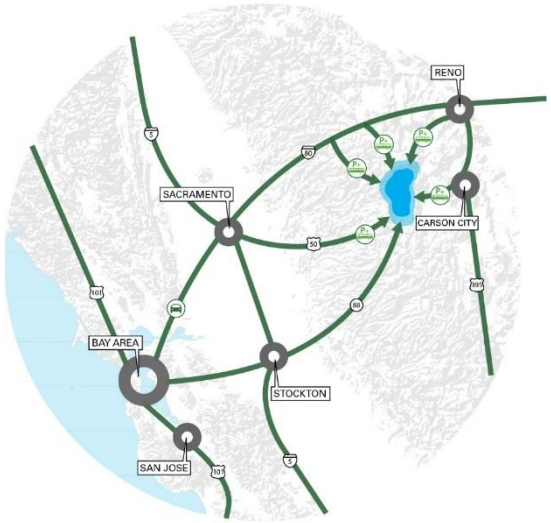


Figure 5: Mega-region Auto Corridor Map

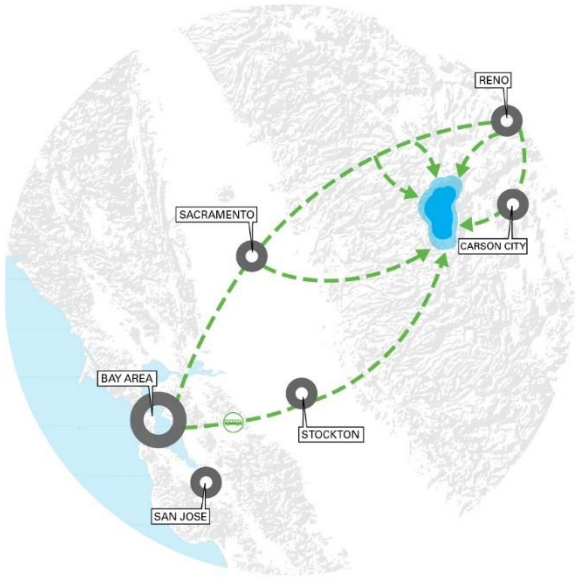


Figure 6: Mega-Region Bus Map

Bus

Public and private buses and shuttles provide transit connections to and from Lake Tahoe, major airports, and population centers outside of the Region, e.g., Amtrak, South Tahoe Airporter, North Lake Tahoe Express, and seasonal service by smaller private providers like Tahoe Convoy. Greyhound provides connections to Truckee, north of the Tahoe Region.

THE ENVISIONED TRANSPORTATION SYSTEM

The experience and perception of traffic congestion is real at Tahoe. During peak travel times in winter and summer, the roads become congested, making the traffic feel like what is more commonly encountered in a big city. Economic downturns can reduce travel temporarily, as happened during the Great Recession, but roadways rebound to pre-recession levels making the once quiet trip seem more congested than before.

The plan's mobility approach to transportation is to build a system that serves a typical travel day in Tahoe by using the existing roadway capacity more efficiently and enhancing the entire transportation system. New trails and transit services, traffic signal improvements, adaptive corridor management with transit priority and/or reversible travel lanes, and parking management are possible, proposed in the plan, and being added to the system by partners in order to improve connectivity and mobility.

Building out the roadway system for the peak roadway demand does not make sense for the environment or for those who live, work, or visit here.

Figure 8: New Round-a-Bout at Tahoe City credit: Drone Promotions

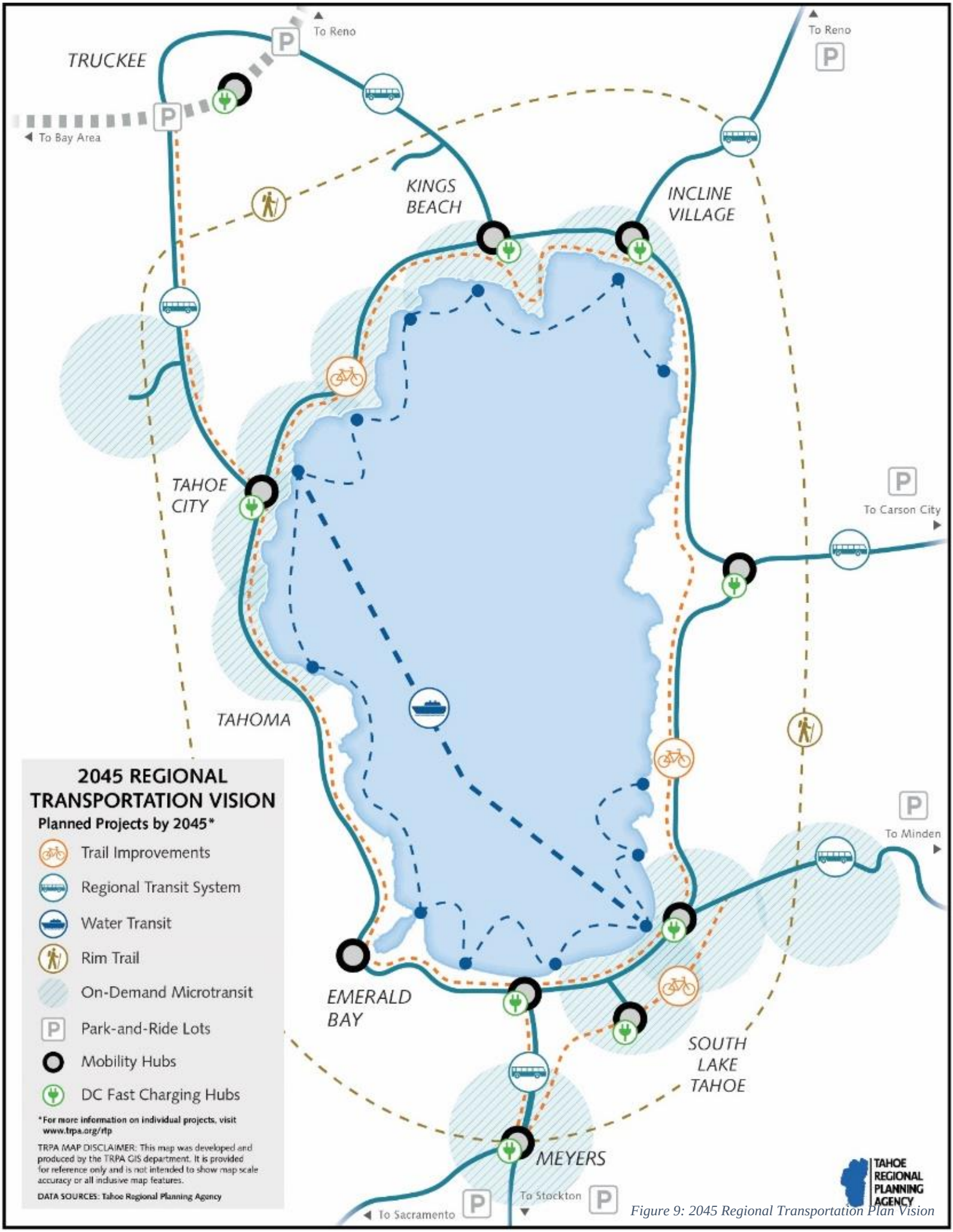


Figure 9: 2045 Regional Transportation Plan Vision

REGIONAL GOALS

Regional goals and policies establish the organizing framework for transportation planning at Lake Tahoe. They represent stakeholder feedback and public input, as well as input from previous plans, such as the 2016 Active Transportation Plan, the 2016 Tahoe-Truckee Plug-In Electric Vehicle Readiness Plan, and the 2015 Intelligent Transportation Systems Strategic Plan.

The Regional Plan and the RTP share six major goals for the transportation system. See Appendix A for more information on the Regional Plan and RTP goals and policies.

Look for each goal's icon throughout this document to find where it is demonstrated in the plan

Figure 10: Kings Beach Commercial Core credit: Placer County

Environment

Goal: Protect and enhance the environment, promote energy conservation, and reduce greenhouse gas emissions.

Plan Approach: A transportation system that provides alternatives to driving can help preserve Tahoe's environment by reducing greenhouse gas emissions and roadway runoff into the lake. Assessing projects for vehicle miles traveled (VMT) and mitigating those impacts is part of TRPA's and California jurisdictions' development review.

Connectivity

Goal: Enhance and sustain the connectivity and accessibility of the Tahoe transportation system, across and between modes, communities, and neighboring regions, for people and goods.

Plan Approach: A seamless, efficient, and accessible transportation system is accomplished through the individual elements of transit, trails, and technology while enhancing their integration through a corridor approach.

Safety

Goal: Increase safety and security for all users of Tahoe's transportation system.

Plan Approach: Residents, commuters, and visitors are more likely to bike, walk, and take transit if they feel safe. Addressing high crash rate locations, eliminating gaps in bike and pedestrian paths, improving pedestrian crossings, and lighting transit stops are all proposed safety improvements.

Economic Vitality and Quality of Life

Goal: Support the economic vitality of the Tahoe Region to enable a diverse workforce, sustainable environment, and quality experience for both residents and visitors.

Plan Approach: The Tahoe Region's economy is built on the world-renowned recreational access residents and visitors enjoy. The transportation system supports this by connecting workers to jobs, visitors to recreation hot spots, and residents to attractive town centers and affordable housing.

Operations and Congestion Management

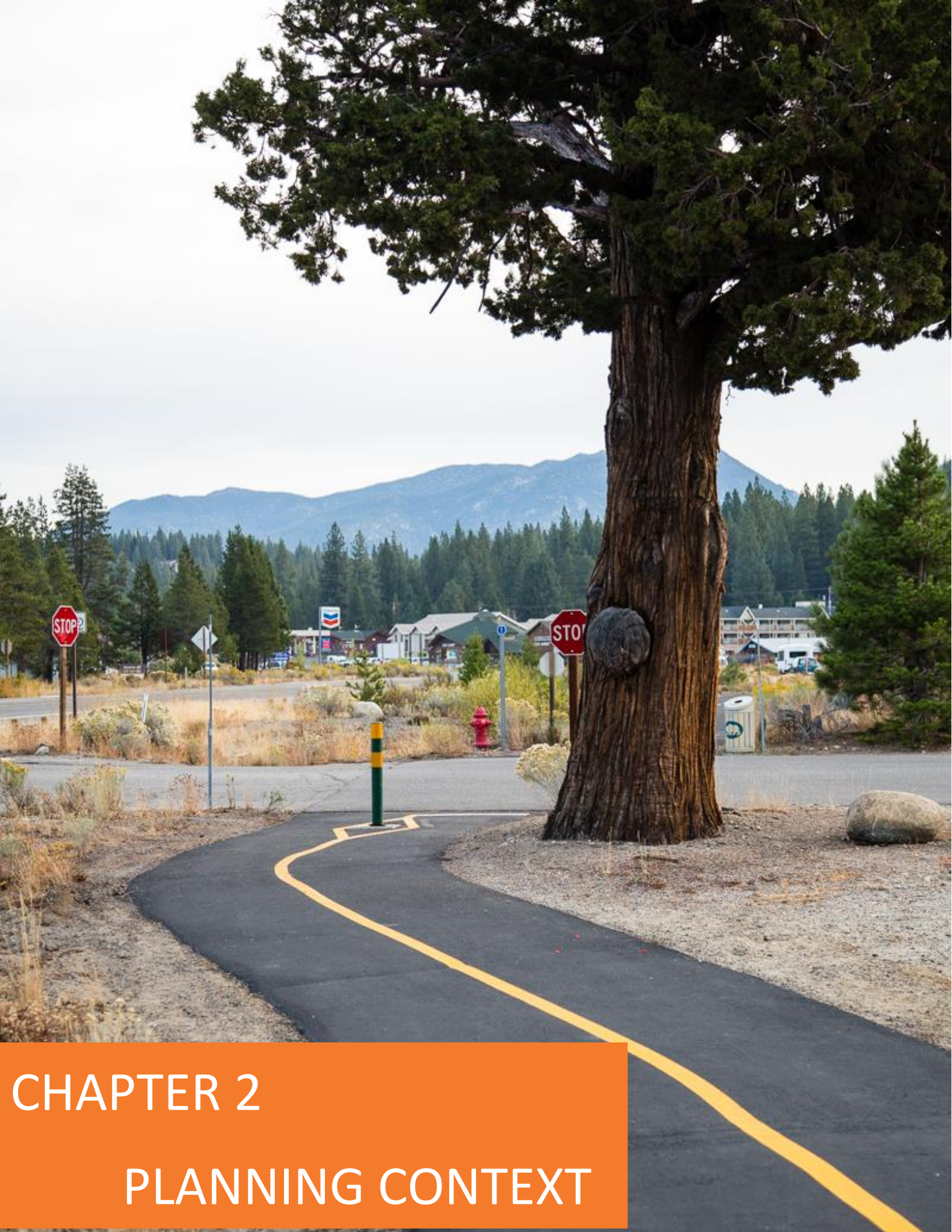
Goal: Provide an efficient transportation network through coordinated operations, system management, technology, monitoring, and targeted investments.

Plan Approach: A well-executed transportation management system incorporates monitoring data, real-time information, and dynamic operations that tracks, shares, and responds to travel needs, including congestion, snowstorms, and special events.

System Preservation

Goal: Provide for the preservation of the existing transportation system through maintenance activities that support climate resiliency, water quality, and safety.

Plan Approach: Maintaining the existing transportation system to operate at its highest level supports safe and efficient movement of people and goods in the Region. Keeping roadway pavement in safe condition, plowing paths for winter use, and planning for climate change resiliency makes initial investments last and reduces large and costly rehabilitation projects.



CHAPTER 2

PLANNING CONTEXT

Planning Context

Lake Tahoe is widely known for its famed water clarity and is designated by the EPA as an Outstanding National Resource Water. The lake's diminishing clarity as a result of rapid development leading up to and following the 1960 winter Olympics at Squaw Valley led California, Nevada, and the federal government to create TRPA in 1969 to manage growth and development throughout the Region and lead the lake's environmental restoration and conservation.

The TRPA Bi-State Compact gives TRPA land use planning authority to achieve environmental goals through the Regional Plan. This authority reaches throughout the Tahoe watershed and allows for regulations that specify where and how development may occur to protect, restore, and sustain the lake and other environmentally sensitive areas such as streams, wetlands, and wildlife habitat.

TRPA also functions as the Tahoe Metropolitan Planning Organization (TMPO), making it the federally designated transportation planning agency for the Tahoe Region. The TMPO provides transportation planning, funding, and technical assistance to realize the RTP's vision.

Most metropolitan planning organizations do not have TRPA's land use planning authorities. As a result of this dual role, the Tahoe Region has a long history of integrated land use and transportation planning. For example, Heavenly Village, redeveloped and the gondola installed in 2000, is now a bustling commercial and tourist lodging area on the South Shore. The village provides a gathering place and recreation destination and the gondola provides a walkable link to the ski hill for the many nearby hotel and lodging guests. As a result, vehicle trips to the mountain were reduced by over 40%. On the North Shore, the award-winning Kings Beach Commercial Core Improvement Project improved the main intersection in town, calmed traffic, and installed sidewalks and bike lanes to make a friendlier walking and biking community that connected businesses and public facilities, such as the King's Beach State Recreation Area, to homes and nearby tourist lodging.

Connecting land use and transportation planning and development is an important approach of the Regional Plan and the plan. TRPA is committed to continuing this approach by concentrating development and incentivizing affordable and achievable housing in town centers, and connecting centers with bicycling, walking, and transit options.

STATUTORY FRAMEWORK

The regional transportation plan satisfies three distinct transportation planning authorities: the TRPA Bi-State Compact, the federal metropolitan planning organization, and the State of California Regional Transportation Planning Agency.

Bi-State Compact

The regional transportation plan fulfills the Bi-State Compact requirement for TRPA's Regional Plan to have a transportation element that reduces dependency on the automobile and

reduces the environmental impacts of mobile source emissions.

Under direction of the Bi-State Compact, TRPA established environmental threshold carrying capacities (Thresholds) to measure the Region's performance on key environmental quality goals. TRPA is responsible for achieving these thresholds, which include performance indicators for air quality, water quality, soil conservation, vegetation, noise, recreation, scenic resources, fisheries, and wildlife.

Thresholds

The plan, in its implementation, is a threshold attainment program. Specifically, transportation improvements help TRPA achieve and sustain five of the nine adopted threshold categories:

Water Quality: Return the lake to 1960s water clarity and algal levels by reducing nutrient and sediment pollution in surface runoff and groundwater.

Air Quality: Achieve the strictest federal, state, or regional standards for carbon monoxide, ozone, and particulate matter levels; increase visibility; reduce U.S. 50 traffic; and reduce vehicle miles traveled.

Scenic Resources: Maintain or improve 1982 roadway and shoreline scenic travel route ratings; maintain or improve views of individual scenic resources; and maintain or improve the quality of views from public outdoor recreation areas.

Noise: Minimize noise disturbances from single events and minimize background noise disturbances in accordance with land use patterns.

Recreation: Preserve and enhance high quality public recreational experiences. Preserve undeveloped shorezone areas and other natural areas and maintain a fair share of recreational capacity for the public.

TRPA is presently updating its air quality thresholds, including the VMT threshold. This initiative will align with mobile source GHG emission targets and establish an approach to improve mobility options to reduce reliance on the private automobile and to address roadway congestion. The threshold standard will be developed in consultation with key stakeholders, and use anonymized and aggregated nearly real-time geo-location data from cellular phones and vehicle location and navigation systems to provide more current, accurate, and cost-effective information to calculate the threshold and monitor progress toward achieving it.

Federal

In accordance with Titles 49 and 23 of the Code of Federal Regulations, the TMPO has a continuing, comprehensive, and coordinated transportation planning process — known as a 3C process — that considers all transportation modes, provides a forum for public input, and supports social and economic vitality. The 3C process consolidates TMPO's region-wide and local transportation projects into one regional transportation plan. The Tahoe Region was recently designated a Transportation Management Area administered by TRPA. This designation recognizes the complexity of transportation issues in the Region and the high level of travel demand that the Region's transportation system must accomodate.

TRPA and partners develop the transportation improvement program (TIP) for the Region, fulfilling a requirement for the TPMO and the Transportation Management Area to identify

and prioritize projects for funding and implementation over a four-year period. The Funding the Plan section provides more information about the TIP.

The plan complies with several federal laws:

- Title VI of the Civil Rights Act of 1964, through its RTP Public Participation Plan
- The Americans with Disabilities Act of 1990, through incorporation of ADA into planning processes for this report and the plan's policies and strategies
- Fixing America's Surface Transportation Act (FAST Act), through development of a congestion management plan
- Clean Water Act (Section 303(d)), through implementing roadway maintenance and operations projects that remedy Lake Tahoe's designation as an impaired water body by reducing transportation pollutants entering the lake and achieving the deep-water transparency standard of 97.4 feet. This is completed through the Lake Tahoe Total Maximum Daily Load Program.

Total Maximum Daily Load Program

The Clean Water Act requires states to compile a list of impaired water bodies that do not meet water quality standards and to establish a Total Maximum Daily Load (TMDL) Program to reduce the primary pollutants affecting these waters. Lake Tahoe is designated an impaired water body because of its clarity loss. The primary pollutants causing its water quality degradation are phosphorus, nitrogen, and fine sediment particles. The TMDL for Lake Tahoe, established in 2010, identifies strategies for local, state, and federal jurisdictions around the lake to reduce these pollutant loads so that Tahoe's deep-water transparency can be restored to meet a standard of 97.4 feet, as measured by a Secchi disk.

The regional transportation plan and federal and state vehicle emissions standards contribute to the Tahoe TMDL program goals to reduce nitrogen loading to the atmosphere from mobile sources.

According to the program, reducing basin-wide atmospheric nitrogen loading by at least 1% by 2025, and 2% by 2075 will be necessary to restore Lake Tahoe's clarity.

Based on the proposed strategies to reduce VMT and the anticipated improvements in vehicle emissions technology documented in California's EMFAC 2014 model (which is used to calculate nitrogen load), TRPA expects nitrogen load reductions by 2025 to be significantly greater than the 1% target.

States

TRPA is the California designated Regional Transportation Planning Agency (RTPA) for the Tahoe Region covering El Dorado and Placer counties. An RTPA is required to complete a regional transportation plan and the plan fulfills that requirement. As the RTPA, TRPA must also complete a Regional Transportation Improvement Program (RTIP), which identifies funding for transportation projects in the California portion of the Region. The Funding the Plan section provides more information about the RTIP.

As a Metropolitan Planning Organization in California, the plan is also the Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) required by California Senate Bill 375 (SB 375). See the Land Use and Transportation Connection for more information on how land development and

transportation improvements will work together to reduce the Region's mobile-source GHG emissions and meet reduction targets in accordance with SB 375.

The California Air Resources Board (CARB) sets GHG reduction targets for the Tahoe Region. More information about these targets can be found in the Measuring Success chapter and Appendix I.

Development projects in the Region undergo TRPA's environmental review process, as required by TRPA Article VII. This process uses TRPA's VMT Threshold, among other criteria, to evaluate a project's impact to the transportation system. TRPA is presently updating the threshold standard and project impact assessment process to incorporate best practices, anticipated to be approved by 2021.

On July 1, 2020, California Senate Bill 743 (SB 743) took effect. SB 743 changes how California jurisdictions evaluate the impact of development projects under state environmental review requirements by replacing level of service standards with VMT and incorporate mitigations for VMT to advance the goals of the plan. This change aligns local and regional processes and will lead to a consistent, streamlined, and easy to use tool for assessing project impacts to transportation at the local and regional level.

Policy Spotlight

Policy 1.3: Develop and implement project impact analysis, mitigation strategies and fee programs to reduce vehicle miles traveled and auto trips.

Department of Transportation

The regional transportation plan is also aligned with both California and Nevada departments of transportation long-range transportation planning documents, complete street plans, and greater transportation system improvements.

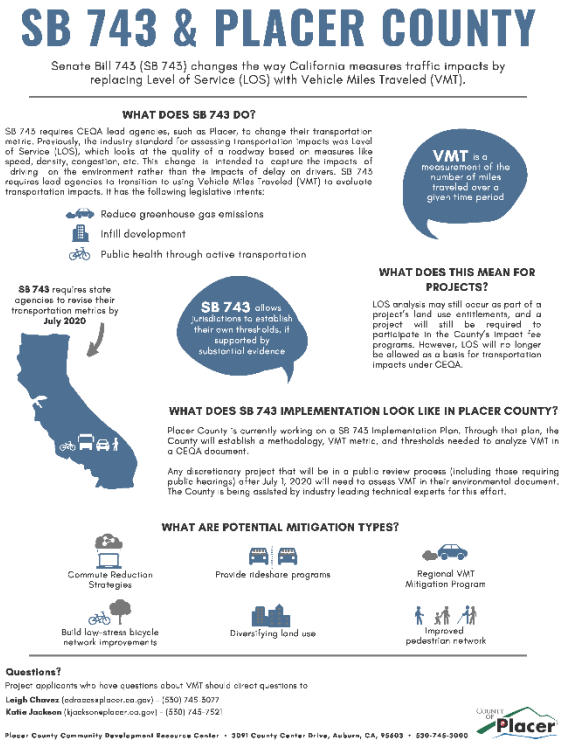


Figure 11: Informational Graphic for SB743

Cross-Cutting Regulation

Protecting Natural Resources

Natural habitat and rare, threatened, or endangered species are protected in the Tahoe Region by the federal Endangered Species Act, the California Endangered Species Act, and the TRPA Code of Ordinances. The TRPA Code of Ordinances also sets rules regarding development within the 100-year flood zone. In accordance with the requirements of SB 375, TRPA identifies protected parkland, open space, natural resource areas, and floodzones.

Protecting the environmental health of Lake Tahoe and the surrounding natural resources includes discouraging development in open space, flood zones, and natural habitats where rare, threatened, or endangered species live. This is a fundamental responsibility for TRPA and many of the Region's other public agencies.

The Tahoe Region is part of the Sierra Nevada Conservation Unit in California's State Wildlife Action Plan which identifies key pressures affecting conservation targets in the Sierra Nevada. These pressures include climate change; fire and fire suppression; housing and urban areas; invasive plants and animals; livestock, farming and ranching; recreational activities; renewable energy; and roads and railroads.

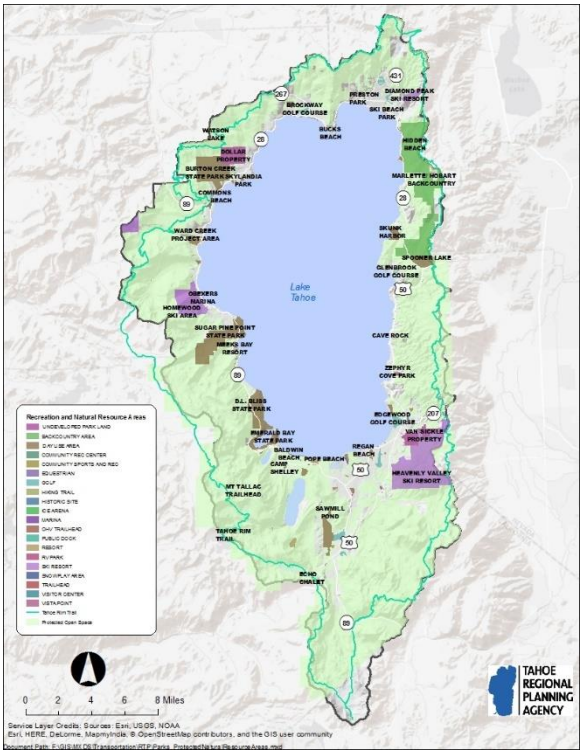


Figure 12: Map of Recreation and Natural Resource Areas

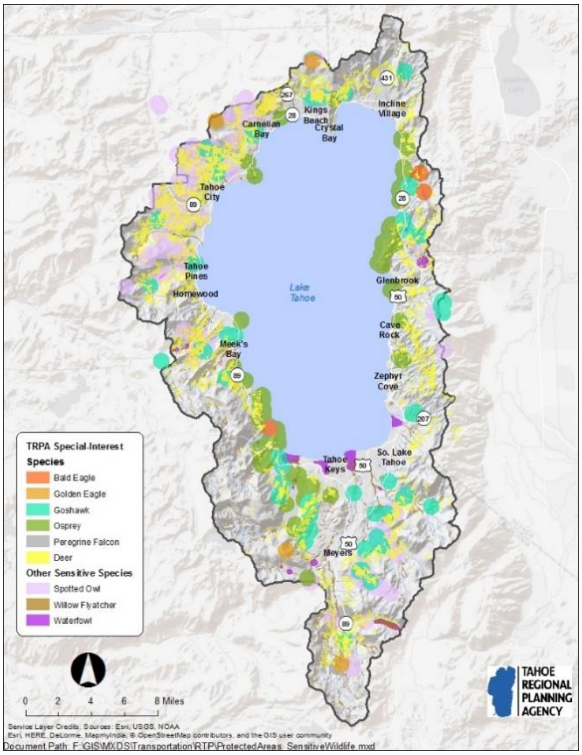


Figure 13: Map of TRPA Special Interest Species

Projects proposed in the plan do not yet have site-specific designs and locations and so their relation to species of concern is not yet known. Agencies permitting individual projects for construction will be required to consult with California Fish and Wildlife to ensure that site designs avoid or mitigate any negative impacts to sensitive species, including those listed in the State Wildlife Action Plan.

The plan's implementation improves environmental conditions in the Tahoe Region and requires all projects to use construction best management practices to manage invasive species. As a result, the plan and the listed projects will not interfere with land conservation strategies in the State Wildlife Action Plan.

Public Participation

The 2019 Public Participation Plan guided public outreach and engagement for the RTP, with

transparency of the planning process and broad support as its goals.

For the plan, TRPA reached the public through a plan webpage (http://gis.trpa.org/rtp/), advertisements in traditional and online media outlets, social media, promotional materials, partner and project meetings, webinars, public events, virtual events, surveys, and education and encouragement campaigns. North and South shore social service councils, school districts, and translation and translated materials were used to reach Spanish speaking members of the public and members of disadvantaged communities.

In total, 8,517 people informed the plan: 2,173 through direct engagement such as project and association meetings, and 6,344 through surveys, with 624 Spanish speaking residents engaged through both. Following shelter-in-place orders in response to the Covid-19 pandemic, the public outreach strategy pivoted to online initiatives, successfully reaching more than 2,000 members of the public.

More information about the plan's public engagement can be found in Appendix E.

Figure 14: Flyer for RTP Outreach in English and Spanish

THE LAND USE AND TRANSPORTATION CONNECTION

California's legislature recognized the land use and transportation connection in 2008 when it passed SB 375, the Sustainable Communities and Climate Protection Act. Under SB 375, metropolitan planning organizations develop an RTP/SCS, demonstrating how the proposed regional land use pattern, housing supply, and transportation strategy support each other to meet regional GHG emission targets from cars and light trucks. The RTP, which incorporates the land use and growth management goals of the Regional Plan, constitutes the RTP/SCS for the Tahoe Region.

Land-Use

The Tahoe Region's permanent population is about 50,000 people, and projections show only a modest increase in year-round residents by 2045. The approach of the Regional Plan and the plan is to concentrate development in town centers and incentivize affordable and achievable housing in those centers. For the RTP/SCS, analysis evaluated existing land use for its ability to house today's residents and new residents that will call Tahoe home over the next 25 years. The following maps show where residences, including densities comparable with the Regional Plan, are anticipated. The analysis found that the Region has areas sufficient to house residents from today to 2045.

Housing Supply

The State of California sets housing targets for individual jurisdictions through its Regional Housing Needs Assessment (RHNA) process. In the Tahoe Region, El Dorado County, Placer County, and the City of South Lake Tahoe are required to show how they will meet these targets through their Housing Elements. The RTP/SCS must also show that it can accommodate the RHNA. The following Table shows the RHNA requirements for 2021-2029. More information about the RHNA, how these requirements compare to TRPA's available development rights, and the plan's land use and transportation connection can be found in the Communities section of The Plan chapter.

Table 1: Regional Housing Needs Assessment (RHNA) Requirements (CA Only)

Jurisdiction	**Very Low + Low Income RHNA Requirement**	**Moderate RHNA Requirement**	**Above-Moderate RHNA Requirement**	**Total RHNA Requirement**
Placer County (Tahoe portion)	**177**	**77**	**181**	**435**
El Dorado County (Tahoe portion)	**146**	**63**	**150**	**359**
City of South Lake Tahoe	**120**	**42**	**127**	**289**
Total	**443**	**182**	**458**	**1083**

Figure 16: DOMAS Affordable Housing in Kings Beach credit: Karen Fink

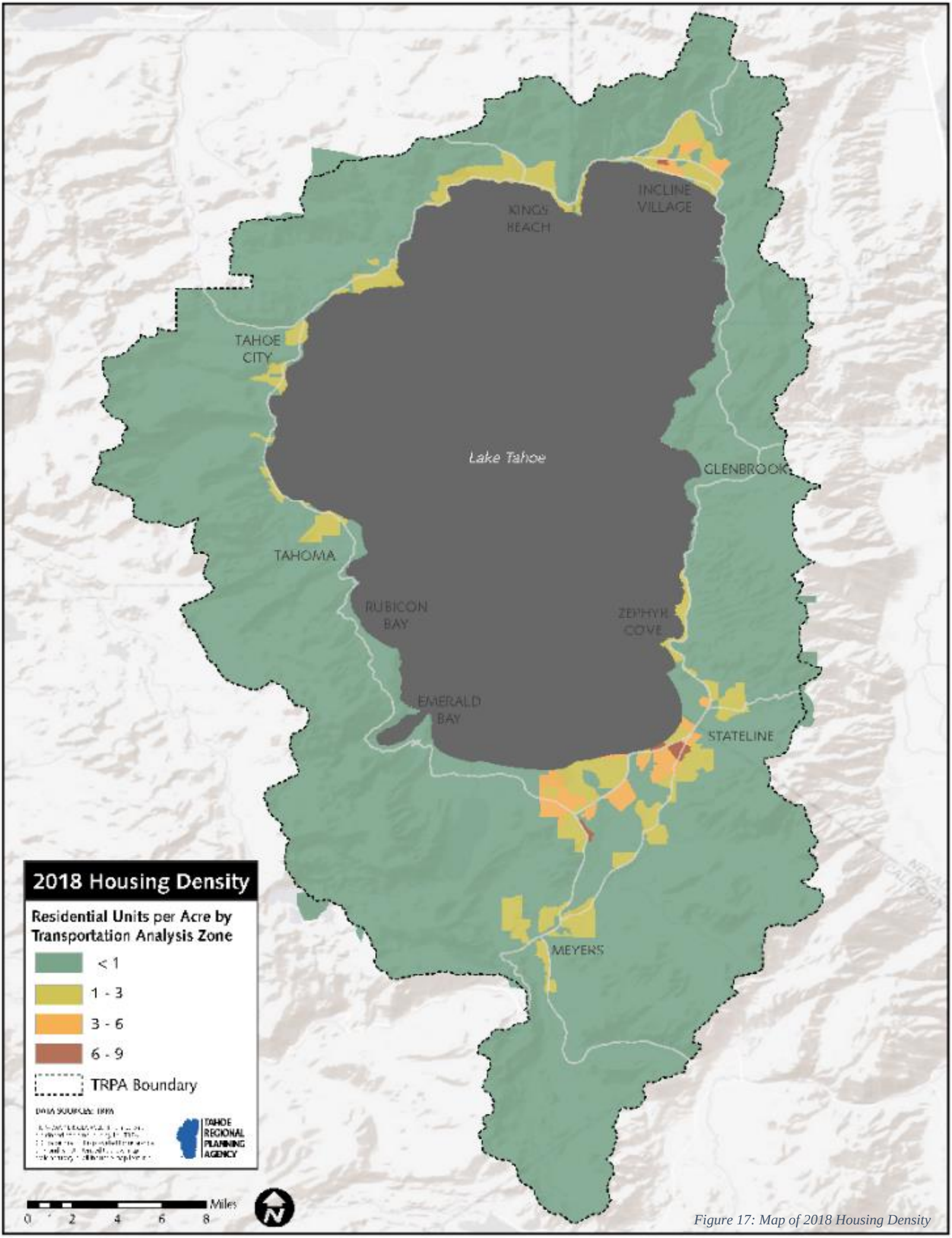


Figure 17: Map of 2018 Housing Density

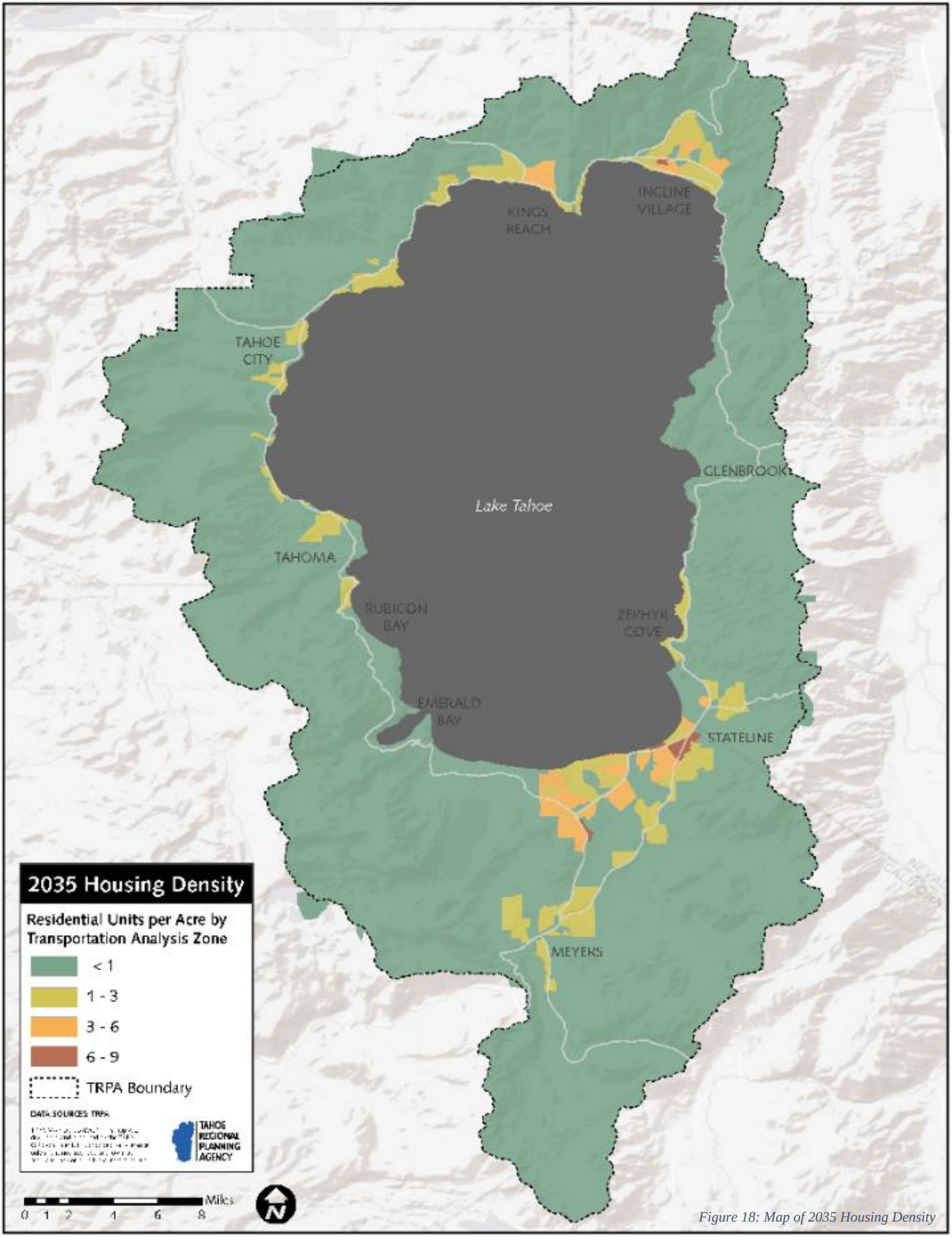


Figure 18: Map of 2035 Housing Density

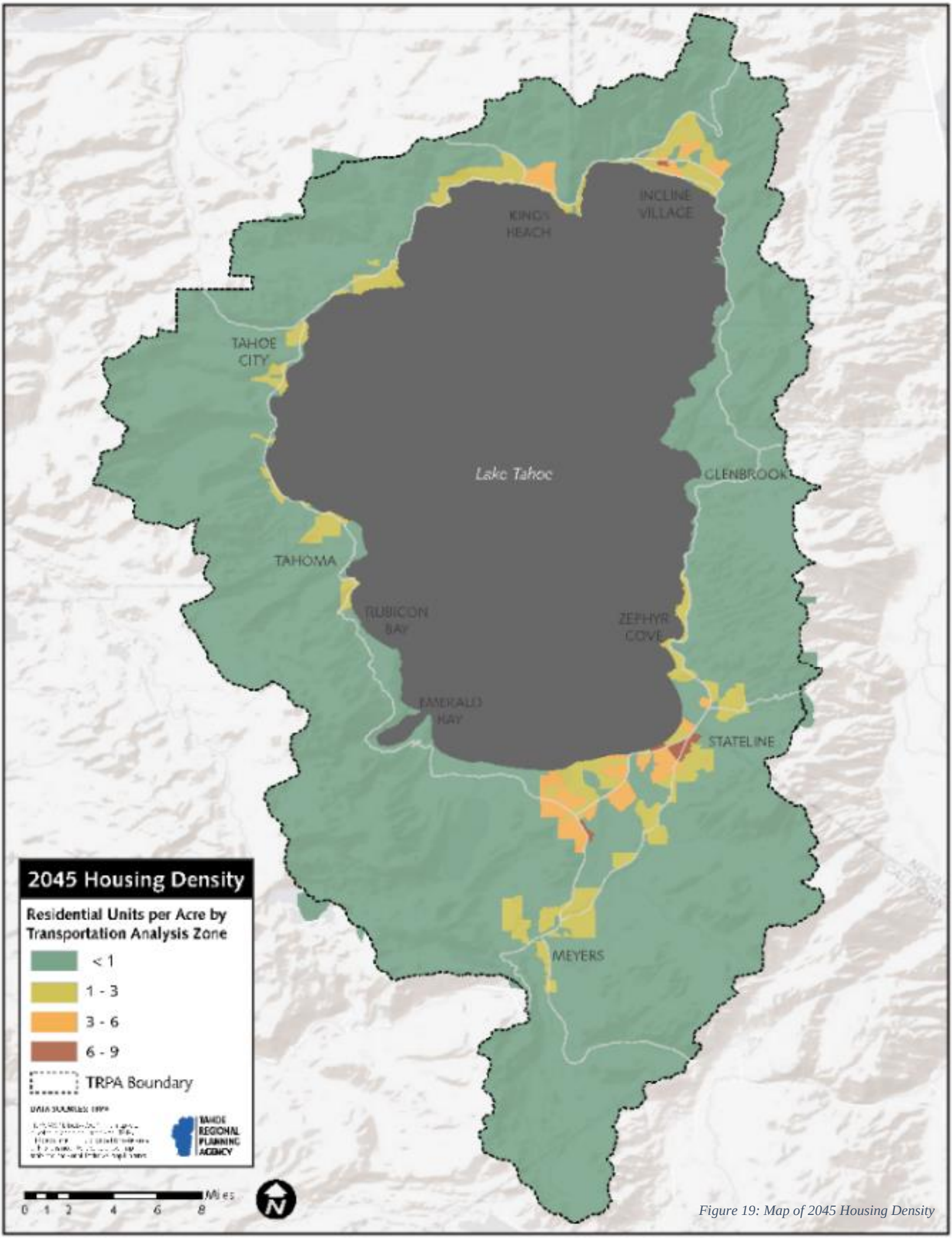


Figure 19: Map of 2045 Housing Density

Greenhouse Gas Emission Reductions

The Tahoe regional transportation demand model estimates that the Region will meet CARB-mandated GHG reduction targets. Appendix G provides more information about the transportation demand model estimates, the assumptions made, and the results of the GHG reduction target analysis completed as part of the plan's expanded environmental checklist. That analysis discusses the differences between the plan and the prior regional transportation plan approved in 2017.

See Appendix I for more information on the RTP/SCS Mobile-Source Greenhouse Gas Emissions for California Portion of Basin analysis.

Advancing Nevada's Climate Goals

Adopted in 2019, Nevada Senate Bill 256 established Nevada's climate goals. These include long-term reductions of GHG emissions to zero or near-zero by the year 2050. Additionally, Governor Steve Sisolak signed Executive Order 2019-22 in 2019. The order recognizes that as of 2015, fossil fuel use in the transportation sector is now the largest GHG and carbon emitting sector in Nevada. Both SB 256 and Executive Order 2019-22 emphasize the importance of reducing emissions from the transportation and land use sectors. The executive order outlines the actions and state priorities needed to reach climate goals, including reducing GHG emissions by at least 26% to 28% below 2005 levels by 2025, and raising Nevada's renewable portfolio standard to 50% by 2030.

As Nevada climate plans and actions are further developed over the next four years, TRPA will continue to leverage the intersection of transportation and land use planning to reduce GHG emissions and build local climate change resiliency into its infrastructure, environment, and communities.

Climate Resiliency

Climate change and its impacts pose significant and growing risks to the safety, reliability, effectiveness, and sustainability of the Tahoe Basin and its transportation network. Many impacts are already occurring, and Lake Tahoe communities need to adapt to become more resilient to these changes.

Higher temperatures, changes in seasonal precipitation, the intensity of rain events, and extreme weather can degrade roadways, damage culverts, and disrupt traffic. Preparing for climate change and extreme weather events is an important element of protecting the integrity of Tahoe's transportation system, the investment of taxpayer dollars, and the achievement of the plan's goals. Additionally, TRPA recognizes the broader need to address climate change in a holistic manner that connects to environmental justice.

Figure 20: Proterra Electric Bus at Kings Beach Event Center

In 2014, a multi-sector collaborative, led by TRPA and funded by the Strategic Growth Council, created the national award-winning Sustainability Action Plan. The action plan outlines a comprehensive regional approach to reducing GHG emissions and adapting to climate change through mitigation and adaptation. Partners in the Tahoe Basin to date have implemented nearly 76% of the actions identified in the plan. Over the next five years, TRPA will work with partners to develop a cohesive set of bi-state regional strategies that will result in climate mitigation, adaptation, and resiliency for the Region by building on regional climate action to date and best science and planning

The RTP identifies strategies to reduce per capita GHG emissions as part of regulatory requirements from California SB 375 and Nevada SB 256 and to build a resilient transportation system.

Identified Environmental Mitigation

The projects and programs outlined in the plan provide the Region's implementing partners with appropriate mitigations to offset forecasted transportation demand, including the development community who will build better projects that also advance implementation of the plan.

PLANNING APPROACH

Unlike many other areas in Nevada and California, a significant portion of the Tahoe Region's VMT comes from people who travel from outside of the Region to recreate at Tahoe, as well as those who commute into and out of the basin for work or school. Forecasts estimate that more than an additional four million people will be living in Northern California and Northern Nevada by 2045, which would increase the total number of people driving to and from Tahoe, the number of VMT produced by that travel, and associated GHG emissions.

With growth capped and development metered in the Tahoe Region, population growth within the Region is not anticipated to significantly increase its portion of GHG emissions.

The regional transportation plan proposes new trails and transit services, traffic signal improvements, adaptive corridor management with transit priority and/or reversible travel lanes, and parking management to improve connectivity and mobility within the Tahoe Region and from the broader Northern California and Northern Nevada regions. When implemented, these will reduce VMT and associated GHG emissions by providing more efficient, non-automotive transportation choices that are linked to the destinations people want to visit.

Understanding that transportation planning has equity impacts, that is it provides benefits as well as costs to people's lives, the RTP planning approach engaged disadvantaged communities to develop the plan and for other environmental justice efforts. See appendices E and F for more detail.

Supporting Plans

The policies, focus areas, and projects identified in the RTP are aligned to and consistent with many other existing plans and programs of other jurisdictions. Short- and Long-Range

Transit Plans of the North and South Shore transit operators and the Coordinated Human Services Plan informs the Transit approach. The 2016 Active Transportation Plan and Safe Routes to School planning informs the Transit approach. The 2016 Tahoe-Truckee Plug-In Electric Vehicle Readiness Plan and the 2015 Intelligent Transportation Systems Strategic Plan informs the Technologies approach. Communities and Corridors are informed by multiple plans: corridor and area plans coalesce regional and local land use and transportation policies and strategies at a community scale, and the Airport Master Plan, the 2018 Shoreline Plan, and the 2019 Lake Tahoe Region Safety Strategy further inform these focus areas.

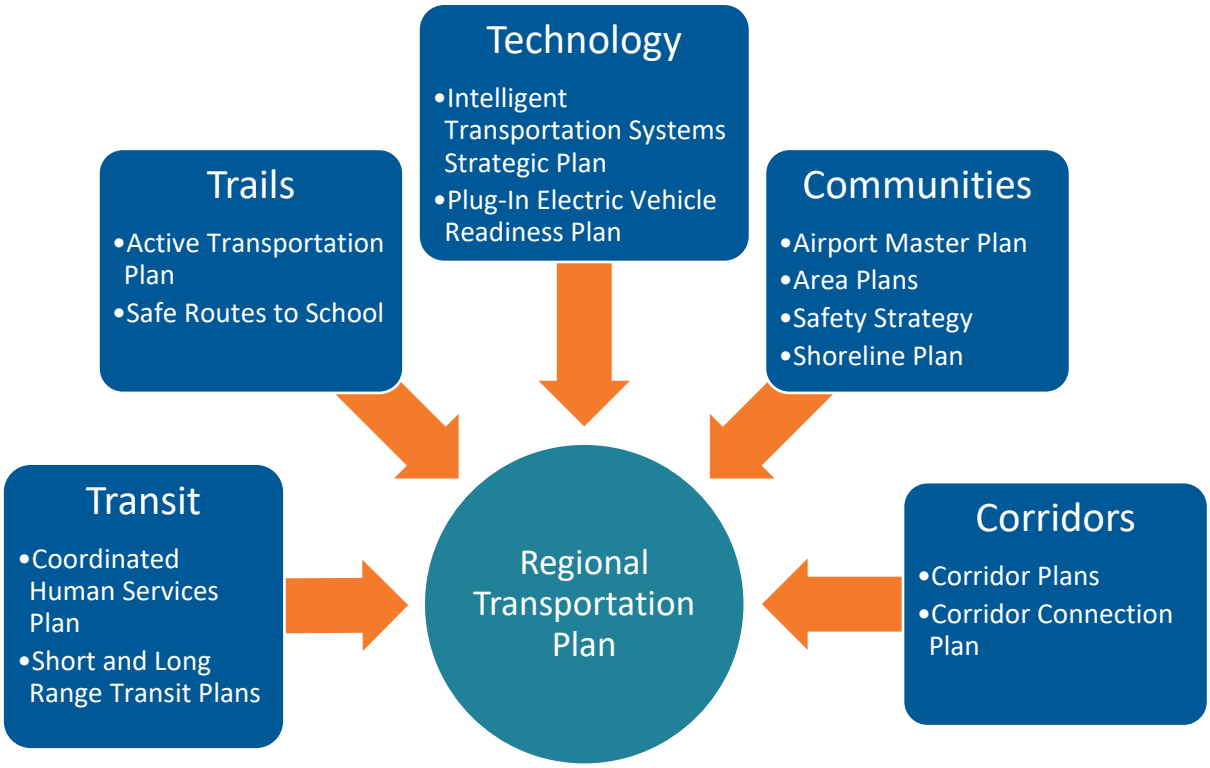


Figure 21: Connections between the Regional Transportation Plan and Other Planning Processes

Corridors

For planning and project implementation purposes, the Tahoe Region is divided into six travel corridors based on unique transportation, recreation, and quality of life needs.

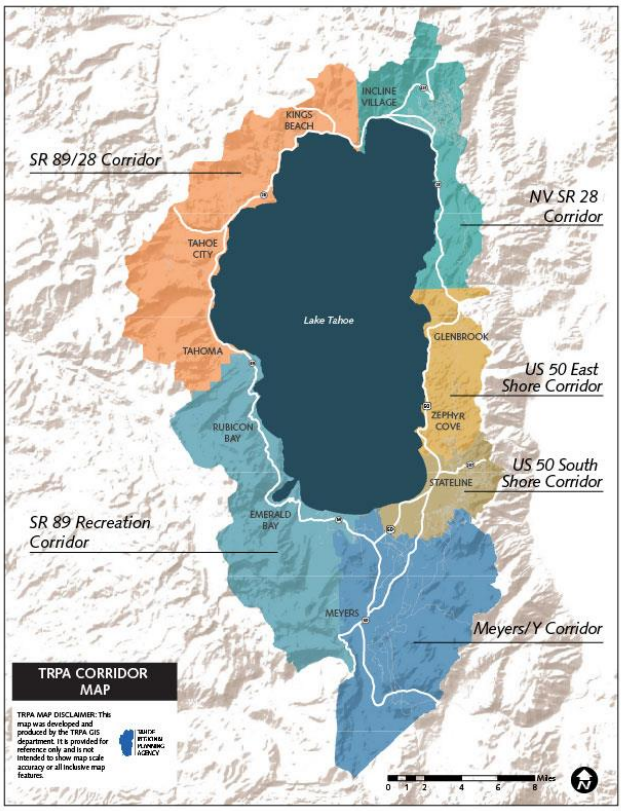


Figure 22: Tahoe Corridors Map

Corridor planning considers and integrates different travel options, solves implementation challenges, incorporates multiple stakeholder perspectives, and aligns related projects to maximize their benefits, effectiveness, and funding opportunities. Corridor plan projects are incorporated into the RTP project list to advance toward implementation; project champions are key to moving corridor plans and projects to construction and to ensuring partners commit to long-term operations and maintenance.

Corridor planning requires multi-agency collaboration, commitments, and resources to address shared issues that often cross jurisdictional boundaries. The Corridor Planning Framework is outlined in the Bi-State Corridor Planning MOU which was adopted through the 2018 Bi-State Consultation on Transportation and signed by 17 agencies committed to the corridor planning framework.

IN WITNESS WHEREOF the Parties hereto have caused this **Comprehensive Transportation Coordination and Corridor Planning for the Lake Tahoe Bi-State Region** Memorandum of Understanding to be executed by their respective officers duly authorized.

John Laird, Secretary of Natural Resources
State of California

Bradley Crowell, Director
Department of Conservation and Natural Resources
State of Nevada

Joanne S. Marchetta, Executive Director,
Tahoe Regional Planning Agency

Carl Hasty, District Manager,
Tahoe Transportation District

Jeff Marsolais, Forest Supervisor,
US Forest Service,
Lake Tahoe Basin Management Unit

Brian Annis, Transportation Secretary
California State Transportation Agency

Amarjeet S. Benipal, Director District 3
California Department of Transportation

Rudy Malfabon, P.E., Director
Nevada Department of Transportation

Lieutenant Terry Lowther, South Lake Tahoe Office
California Highway Patrol

Matt Green, Acting Sierra District Superintendent
California Department of Parks and Recreation

Todd Leopold, CEO
Placer County

Dirk Brazil, Interim City Manager
City of South Lake Tahoe

Don Ashton, CAO
El Dorado County

John Slaughter, County Manager
Washoe County

Jennifer Davidson, Interim County Manager
Douglas County

Brad Johnson, General Manager/CEO
North Tahoe Public Utility District

Sean Barclay, General Manager
Tahoe City Public Utility District

Lake Tahoe Coordination and Corridor Planning MOU – Final 6

Figure 23: Bi-State Consultation Participants

From Plan to Project Implementation

Strong partner coordination assures that projects are recognized in both the RTP project list and in partner's plans, making them eligible for funding.

Once the project is listed and eligible for funding, the project can move toward construction through completion of a study.

The study is typically completed by state or local jurisdictions or the Tahoe Transportation District (TTD). Data for these studies can include counting how many people are traveling by foot, bike, car, or transit in the project area, conducting a land survey of the roadway to better understand opportunities and constraints for construction, and gathering public input to inform the final project design.

The final step is securing funding and constructing the project, which is typically undertaken by the jurisdiction or organization that is both capable and committed to seeing a project through to completion.

TRPA and partners each monitor the effectiveness of the completed transportation improvements and identify additional needs for future planning, policy updates, and project designs. See Measuring and Managing for Success and Appendix I for more information.

Partnering and Collaborating

Implementing the RTP's vision requires broad collaboration — in Tahoe that can regularly mean at least a dozen or more agencies and partners for any single project.

This collaboration is required to achieve almost every project and program proposed in the plan: from planning to design, funding to construction, and most importantly, maintaining the system through its lifespan.

For example, the SR 89 Corridor Plan aligned multiple local governments, law enforcement agencies, public and private land managers, and utility and special improvement districts. The collaboration is key to developing the support and allegiance needed to implement the plan over the next several years.

TRPA also participates in planning processes in adjacent regions that directly connect or indirectly serve the Tahoe Region. For example, TRPA and the Washoe Regional Transportation Commission, Carson Area Metropolitan Planning Organization, and Incline Village/Crystal Bay Visitors Bureau are working together to develop transit options between Reno, Carson City, and Tahoe's East Shore recreation corridor. These transit routes will serve work commuters traveling between Reno and the Carson Valley to North Tahoe and day visitors to Tahoe's popular East Shore beaches, including Sand Harbor State Park. These transit services are included in the project list (Appendix B).

Figure 24: East Shore Tahoe Trail During Construction credit: Drone Promotions

Project Spotlight: Resort Triangle Corridor Plan

Placer County is leading the Resort Triangle Transportation Plan (RTTP) which seeks to improve the transportation system. The Resort Triangle is generally defined as the area shaped by SR 89, SR 267, and SR 28 in eastern Placer County and at the northern side of the Tahoe Basin. When completed, the Resort Triangle will be more adaptable and resilient to serve the influx of visitors throughout the year and to preserve the area's unique characteristics.

The plan will:

- Enhance transit operations on SR 89 and SR 267 corridors by providing a transit-only lane and/or high occupancy vehicle (HOV) lane
- Enhance overall operations of steep grades on SR 267 by providing a climbing lane specifically for trucks and transit vehicles
- Encourage people to take transit, carpool, walk, bike, and/or park one time by implementing a paid parking program in the commercial town centers and recreational destinations and use that revenue to invest in further improvements for walking, biking, and transit
- Enable people to leave their car behind (at their place of lodging) and take transit by implementing an on-demand microtransit program
- Equip employers with resources and support to provide their employees vehicle commute reduction options

Figure 25: Resort Triangle Plan Logo

The plan was developed in collaboration with town, county, regional, and state transportation and utility agencies, as well as representatives from the triangle's resort and ski industry representatives. TRPA participated on the Project Development Team for the RTTP and will continue to collaborate with Placer County on the further development and implementation of projects and programs identified in RTTP.

Partnerships

Strong relationships with the Region's many partners are paramount.

Policy Highlight

Policy 2.3: Collaborate with regional and inter-regional partners to establish efficient transportation connections within the Trans-Sierra Region including to and from Tahoe and surrounding communities.

The RTP encompasses the work of partners and recognizes their contributions to achieving the goals of the plan.

See Appendix E for more information TRPA's many partners.

Project Implementing Partners

Tahoe Transportation Implementation Committee (TTIC)

Local agency partners play an important role in constructing the regional transportation plan's priorities and projects. The TTIC coordinate recommendations for transportation project prioritization and funding for the Regional Grant Program, federal funding programming, project implementation and performance measuring, and provides technical support to develop regional revenue sources for improved transportation infrastructure. The committee provided valuable feedback for the development of the plan and played a large role in development of its final project list (Appendix B) and revenue forecast (Appendix C).

Members include:

- Local Jurisdictions
- Public Utility Districts
- Resource Conservation Districts
- State Departments of Transportation
- Transportation Management Associations
- Tahoe Transportation District
- USDA Forest Service

Tahoe Transportation Advisory Committee (TTAC)

Transportation planning is rapidly evolving and uses complex transportation modeling and technical inputs from increasingly sophisticated data sources. Understanding and guiding complex information, data, and policy decisions benefits from input and guidance from non-governmental organizations, technical experts, community stakeholders, and the development community. The TTAC will provide input at key points for TRPA led initiatives such as the VMT Threshold Standard update and studies to better understand visitation to the Region. The TTAC is an iteration of the successful TRPA Transportation Model Working Group. See Measuring & Managing for Success for more information about the model working group.

Members include:

- Local Jurisdictions
- Regional Government Agencies (California Attorney General)
- State Department of Transportation
- Public Professional - technical user(s)
- Chambers of commerce
- Visitors Authorities
- Non-Profits
- Public – Development community

Private Partners

Private partners play an important role in achieving the transportation vision of the RTP by providing easements, constructing improvements, paying fees, maintaining paths, and offering transportation services for Tahoe

travelers. For example, new development projects are charged mitigation fees based on the calculated impact of the project to Tahoe's transportation system. TRPA uses a competitive grant program to distribute collected fee revenues to projects that advance the vision, programs, and project list of the plan. Successful grant applicants use awarded mitigation monies to leverage larger grant opportunities, meaning mitigation fees can multiply available project funds.

Input from organizations representing public interests, advocacy groups, business associations, and others is essential to project and program development and delivery. For example, TRPA's Commute Tahoe program partners with the Region's employers so they, too, can help manage traffic congestion by encouraging their employees to walk, bike, use transit, carpool, or vanpool to work.

Figure 26: Sawmill to Meyers Bike Path

CHAPTER 3

THE PLAN

The regional transportation plan is the building block for transformative change at Lake Tahoe. It grows and enhances the plan's core focus areas of transit, trails, technology, and communities and their emphasis on creating walkable and bikeable town centers, increasing electric vehicle infrastructure and use, and developing greater walking, biking, and transit options that also connect people to popular recreation destinations in the Region.

Policy Highlight

Policy 4.0: Prioritize regional and local investments that fulfill TRPA objectives in transit, active transportation, transportation demand management, and other programs that support identified TRPA transportation performance outcomes.

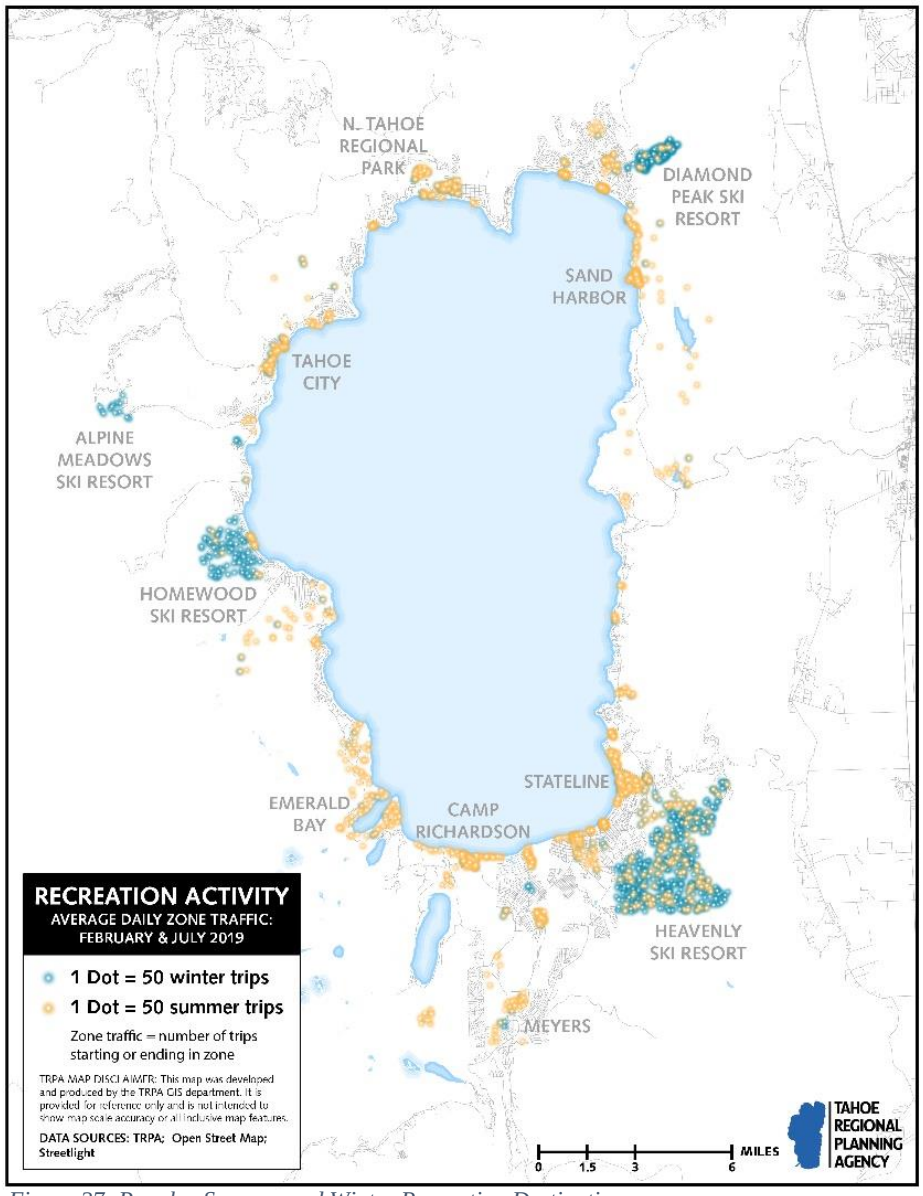


Figure 27: Popular Summer and Winter Recreation Destinations

UNDERSTANDING TRAVEL BEHAVIOR PATTERNS

Lake Tahoe's transportation system must serve everyone—and to do so successfully requires understanding the needs of three distinct groups of users: Residents, commuters, and visitors.

Knowing "who" is using the system, when and how they are traveling, the purpose of their trip, and where they are traveling to and from, helps TRPA and its partners build a better transportation system, and one that can scale with the seasons.

Three distinct user types form the basis for this understanding.

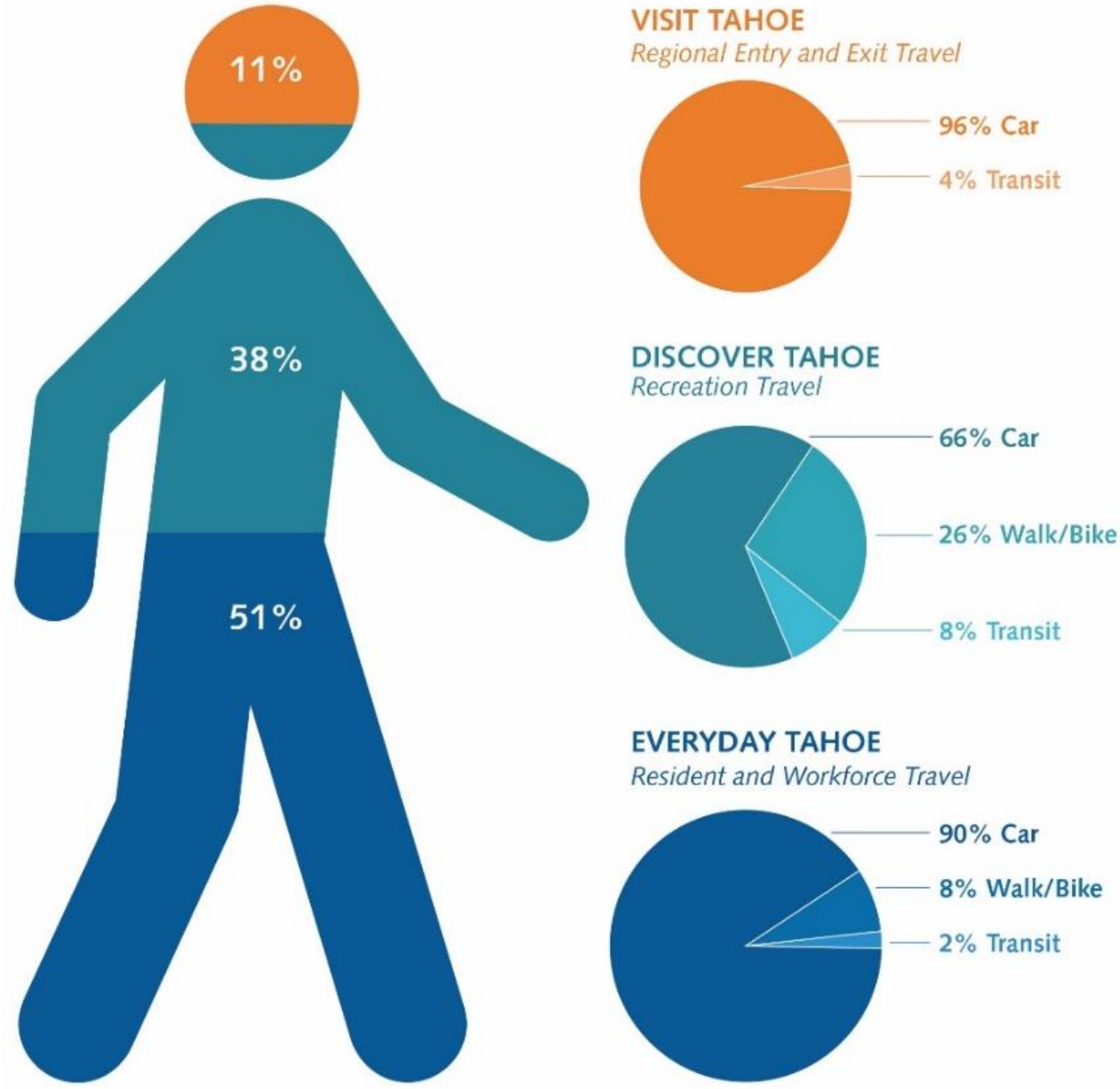


Figure 28: Proportion of Travelers by Behavior and Mode

Everyday Tahoe

Everyday Tahoe trips include commutes to work or school, routine short trips around town that are often less than two miles in length and focus on the most vulnerable who live in identified Community Priority Zones. Everyday Tahoe trips account for 51 percent of all trips made within the Region.

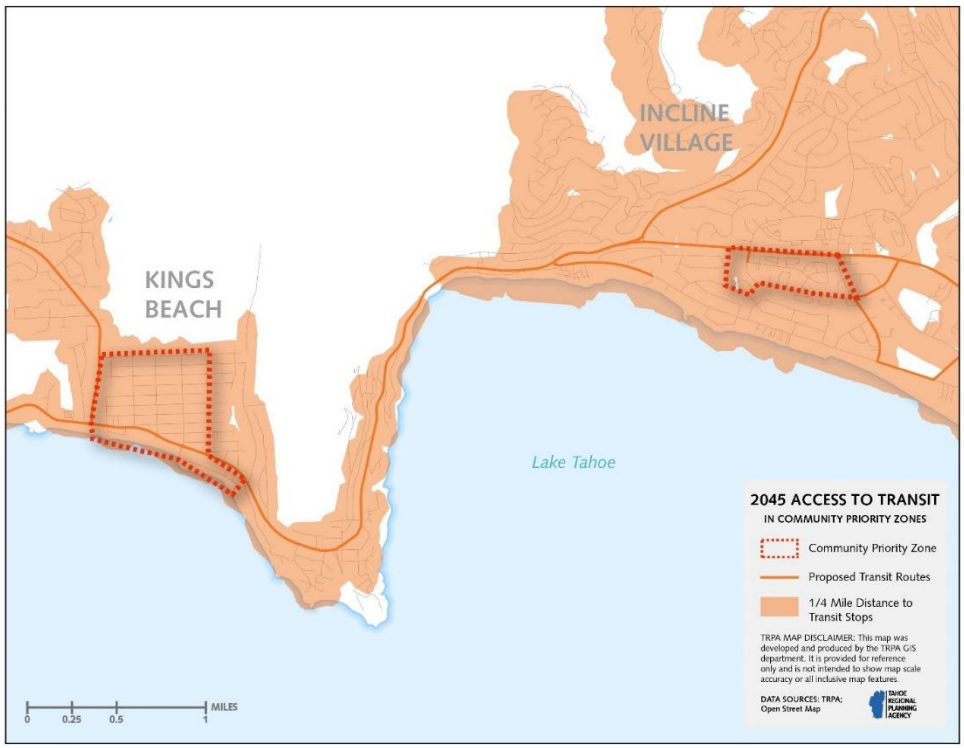


Figure 30: North Shore, Tahoe Community Priority Zones with Proposed Transit in 2045

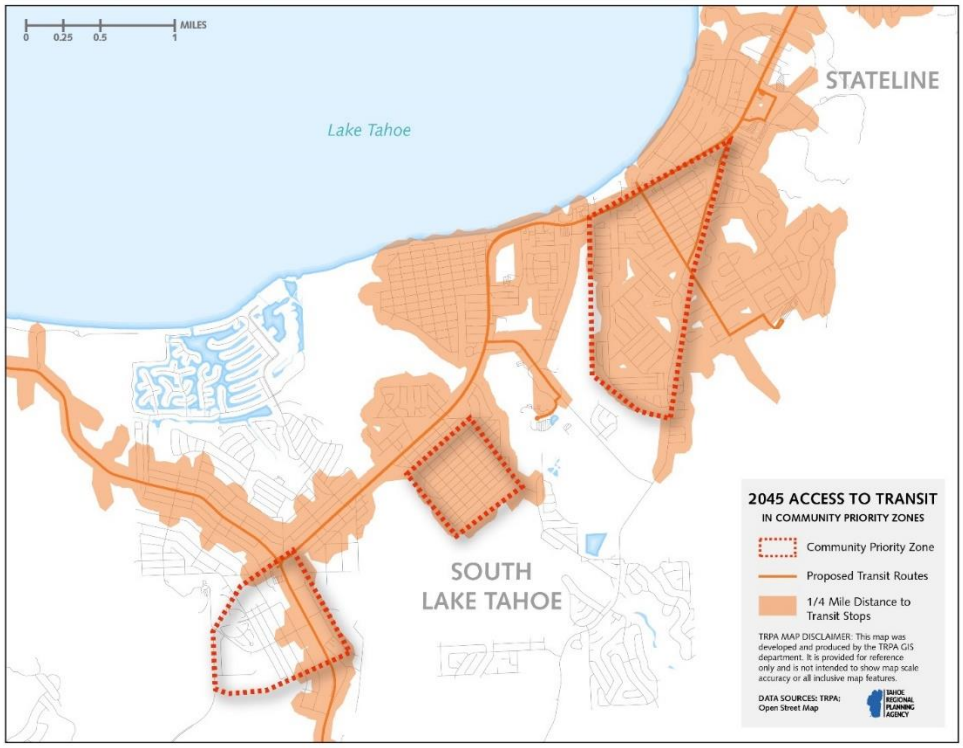


Figure 29: South Shore, Tahoe Community Priority Zones with Proposed Transit in 2045

Discover Tahoe

Discover Tahoe trips include residents and visitors who are making longer distance trips to recreation areas around the Region. Discover Tahoe recreation trips account for 38 percent of all trips made to, through, and within the Region.

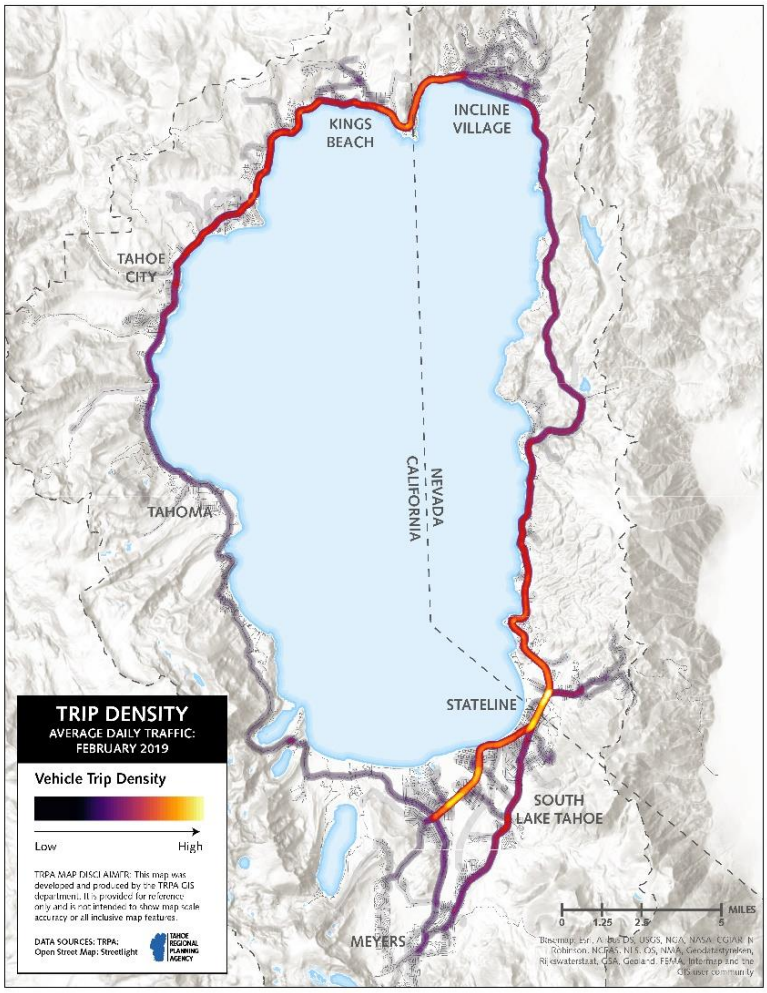


Figure 32: Regional Trip Density February 2019

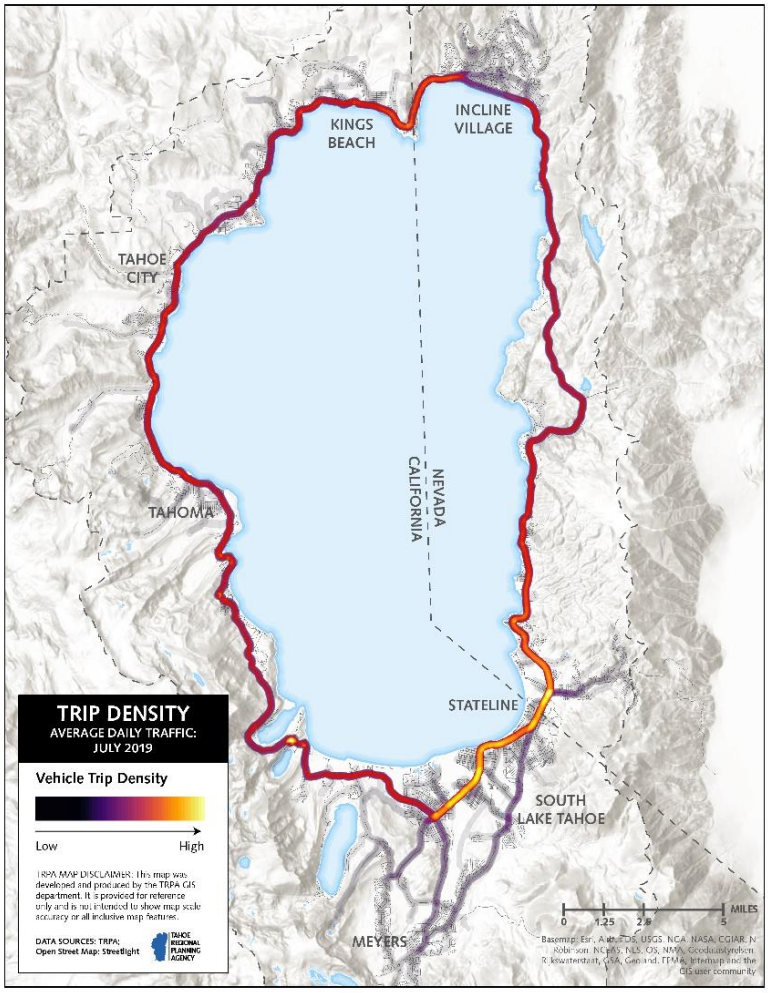


Figure 31: Regional Trip Density July 2019

Visit Tahoe

Visit Tahoe trips are long-distance trips to and from Tahoe from the larger Northern Sierra MegaRegion. Visit Tahoe trips account for 11 percent of all trips made within the Region.

Table 2: Share of Visitation to Tahoe by Entry Point

Basin Entry Point	**% of Mega-Region Travel**
Hwy 89	10%
Hwy 267	12%
Mt. Rose Hwy	17%
Hwy 50 (Echo Summit)	28%
Hwy 50 (Spooner Summit)	21%
Kingsbury Grade	10%
Luther Pass Rd	2%

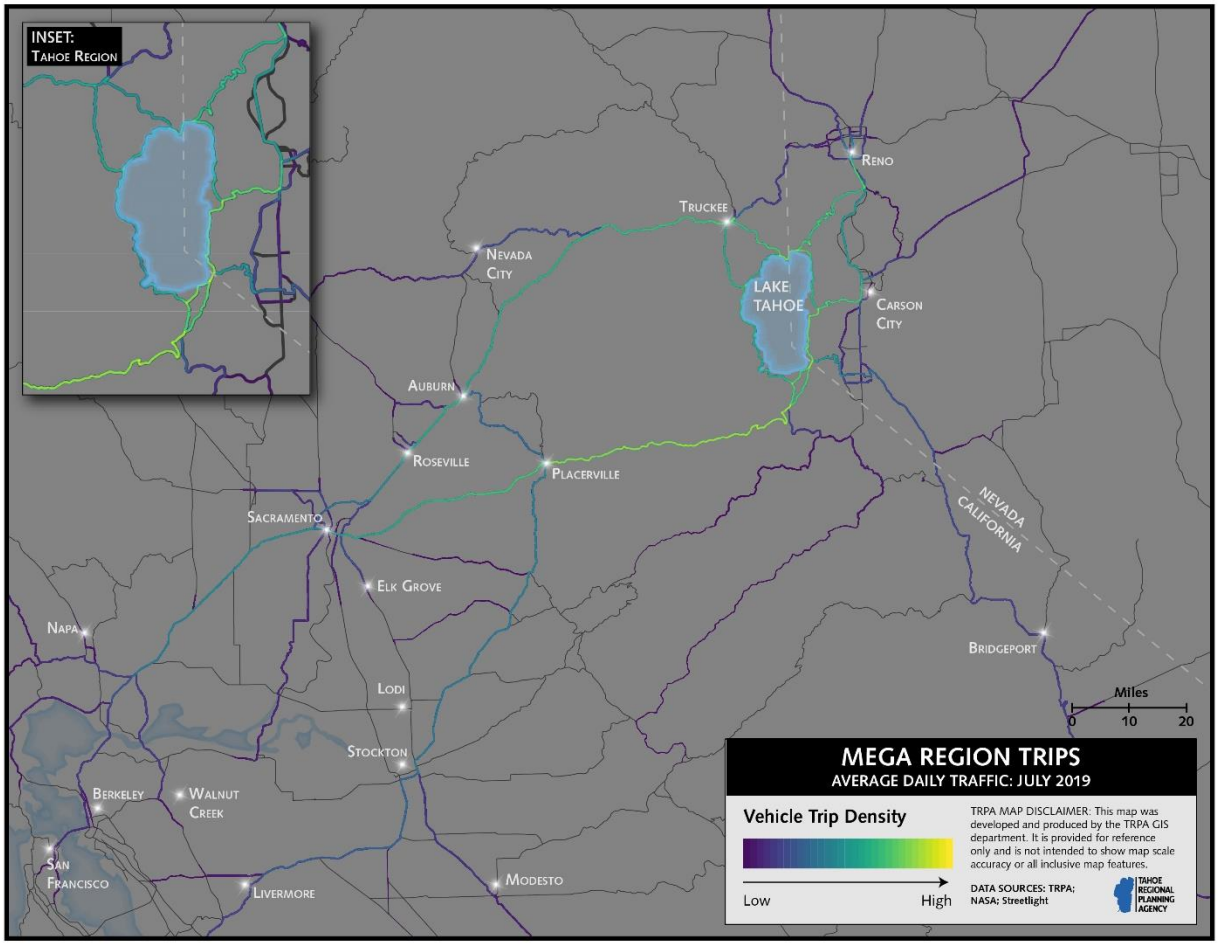


Figure 33: Tahoe Mega-region Map

TRANSPORTATION DEMAND MANAGEMENT

Transportation demand management (TDM) strategies work to inform travelers about travel options and decisions and provide incentives, particularly during peak roadway congestion, to shift travel patterns from the single occupant automobile to walking, biking, transit, and carpooling, and to visit and recreate in Tahoe during less busy travel times when there is more capacity on roadways and at recreation sites.

Outreach is critical to successfully manage travel demand, including strategies to target the three travel groups differently:

Everyday Tahoe – Residential and Workforce Travel: Because Everyday Tahoe trips follow a similar pattern every day, they are the easiest trips to make using transit, biking, or walking. TDM Strategies for Everyday Tahoe travelers include employer trip reduction programs; enhanced transit access to residential neighborhoods, school and work locations; and education and encouragement programs such as the Lake Tahoe Bike Challenge and Bike to School week.

Discover Tahoe – Recreation Travel: Access to popular recreation sites and points of interest is often limited by parking availability and inadequate transit services, which combine to create roadway congestion, and safety concerns and environmental degradation caused by people seeking parking further from their destination. TDM strategies for Discover Tahoe travelers include marketing travel options and incentivizing the use of transit and zero-emission vehicles with projects and programs that provide real-time travel and parking information online, parking management systems, convenient and easy transit, and charging infrastructure and parking incentives for electric vehicles.

Visit Tahoe – Regional Entry and Exit Travel: Peaks in visitor travel to and from Tahoe typically occur over holiday weekends, for special events, and on high snowfall days. TDM strategies targeting the millions of people who visit the Tahoe Region each year encourage them to travel to and from Tahoe during non-peak times, or to leave the car at home and arrive by public or private transit service that provides recreational amenities like carrying gear — knowing that they will be able to access all the Region offers on foot, bike, or transit once here.

In Tahoe, if strategies work for visitors, they become assets for the community, too. As a result, every traveler has a more efficient, safe, and connected transportation system with improved access to Lake Tahoe's world-renowned recreation, reduced daily commute times, improved emergency response times and environmental impacts and enhances security and.

Marketing and Information

Tahoe residents and travelers will use more environmentally friendly travel modes when provided with information and options, and TRPA's "Linking Tahoe" website is the source for both. The site includes information on seasonal travel options, including transit and shuttle routes, walking and biking paths, bike and scooter rentals/share programs, and links to current roadway conditions.

Policy Highlight

Policy 4.3: Promote awareness of travel options through outreach, education, and advertising, particularly in local schools.

The website's "Commute Tahoe" employer portal also provides resources for employee trip reduction programs, including a step-by-step guide to developing a program suited to the specific workplace. Commute Tahoe seeks to reduce vehicle trips and traffic congestion by encouraging employees to walk, bike, use transit, carpool, vanpool, or drive at non-peak times. The program will be widely launched throughout the Region in 2021 and monitored annually by TRPA.

Figure 34: Linking Tahoe Brochures

Since 2017, more than 15,000 "Linking Tahoe" brochures have been distributed to hotels, recreation sites, and retail stores around Tahoe and Truckee to raise awareness and encourage use of non-automotive travel options to, from, and around Tahoe that also benefit the Region's environment and communities.

Creating More Attractive Options

These TDM programs enhance travel options for all types of travelers and incentivizes them to forgo their personal vehicles in favor of walking, biking, or riding transit.

Policy Highlight

Policy 1.5: Collaborate with all jurisdictions and employers in the basin to develop, maintain, and implement programs to reduce employee vehicle trips.

Real-Time Transit Information

People are more willing to ride the bus if they know when it will arrive. The Region's two public transit operators, TART and TTD, have automatic vehicle location systems so riders know the exact location and real-time arrival for every bus. Real-time information also helps TART and TTD monitor and improve transit on-time performance by identifying and addressing inefficiencies in routes, schedules, and maintenance.

Free-to-the-User Transit

Free transit increases ridership. Piloted for several years, TTD's "Spare the Air Days" provided free transit on specific peak visitation days at Tahoe and demonstrated dramatic ridership increases. TART implemented free fares on all routes in December 2019 and saw a nearly 25 percent increase in ridership (prior to the Covid-19 pandemic). TTD also began offering free fares in April 2020 and expects to see ridership increase long-term.

Parking Management

The availability of parking significantly shapes people's travel decisions and paid parking is a powerful disincentive to driving. Where parking is free, disorganized, or not enforced, as it is at many of Tahoe's popular recreation sites, people are less likely to use transit, roadsides become crowded and unsafe with parked cars

and people walking in the street, and the environment is damaged from roadside erosion.

Parking management strategies are dependent on the location and use of an area. For recreational areas, strategies include combinations of higher priced parking lots with no time limit, medium priced time limited roadway parking, and free shuttle service. In developed areas, local jurisdictions develop area plans with parking management strategies designed for the communities' needs. For example, Placer County's Tahoe Basin Area Plan envisions shared public-private partnership parking lots in town centers to better manage limited parking supply during high demand. Jurisdictions may also reduce parking requirements for mixed-use development in town centers where people are more likely to be able to walk, bike, or take transit from their hotel or home to retail locations, restaurants, and other destinations; and dynamic pricing structures with enforced time limits to encourage the use of transit and active transportation.

Transit Priority Access

Making transit faster and more convenient is key to increasing ridership and reducing VMT and associated GHG emissions. One approach is to only allow transit, bike, emergency vehicle, and local traffic in targeted locations during peak periods. Transit signal priority allows buses to move through signalized intersections before cars and keeps transit running on-time. Transit only lanes can make transit a more convenient, reliable, and attractive travel option.

Figure 35: State Route 89 at Emerald Bay on a Typical Summer Day

TRANSPORTATION SYSTEM MANAGEMENT

Transportation system management uses infrastructure projects, transportation services, and system operations to enhance traveler safety, improve traffic flow, and provide more travel options. Coupling these projects with TDM strategies will more efficiently use the existing system and manage roadway congestion.

The transportation system management projects were identified through coordination with implementing partners and a thorough analysis of the existing transportation system.

A Layered Approach

The Regional Transportation Plan will build a transportation system that meets not only the needs of Tahoe's residents and commuters, especially our most vulnerable who live in identified Community Priority Zones, but also the growing numbers of recreation visitors.

As a result, every traveler will be able to leave their car parked as they move about and explore the Region. TRPA and its regional and mega-regional partners will continue to work to create more travel options to Tahoe from neighboring metropolitan areas.

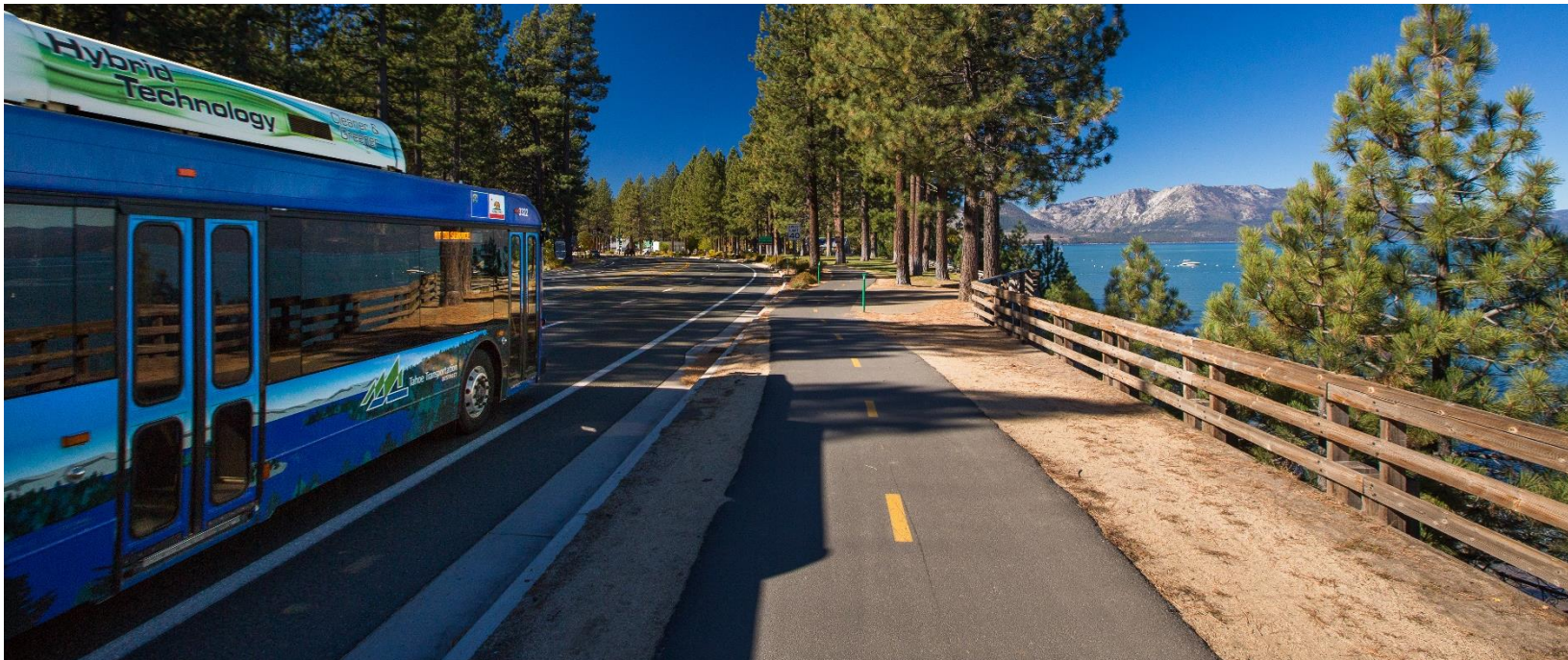
The plan, however, must be implemented in phases for the system to function as intended and because there is not currently adequate funding available to pay for everything to be implemented today.

The plan and its phases are built to flex and adapt, such as for the accelerated implementation envisioned in the Bi-State Consultation or to accommodate pilot projects that advance the plan to its goals. For example, the plan envisions inter-regional transit service between nearby cities and Tahoe be fully in place by 2045. However, inter-regional partnerships between TRPA and the Regional Transportation Commission of Washoe County, Nevada will pilot transit service between Reno and Sparks to Incline Village and Sand Harbor State Park, anticipated to start in summer 2021, implementing the first step towards the plan's larger transit vision.

Policy Highlight

Policy 5.2: Ensure access to public transit in identified Community Priority Zones

Figure 36: Tahoe Transportation District Bus in South Shore
Credit: Tahoe Transportation District



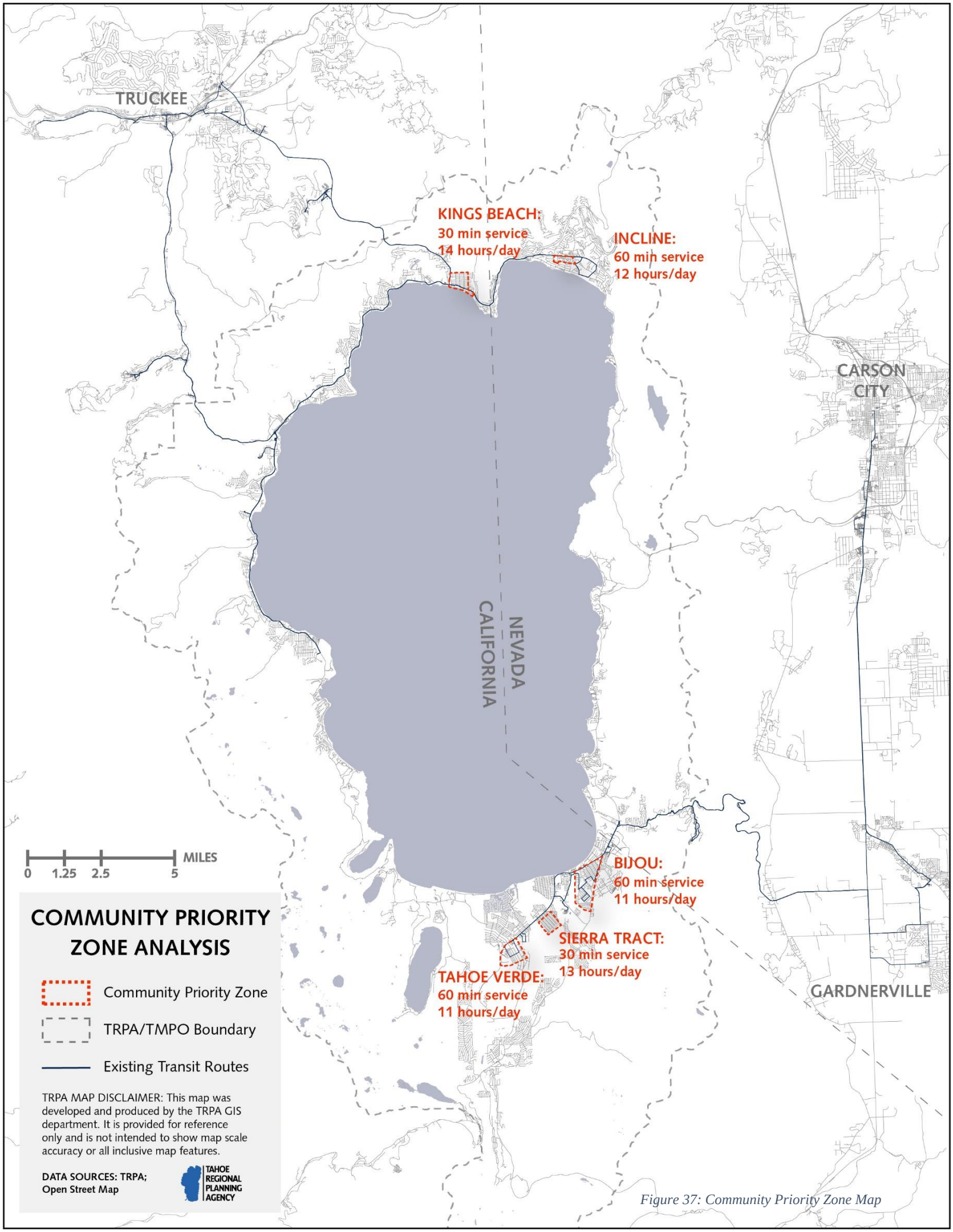


Figure 37: Community Priority Zone Map

Transit in Tahoe will be frequent and coordinated, and serve at the local, community, and regional. Public-private partnerships and advancements in technology will help buses run on time and serve more people.

Policy Highlight

Policy 2.11: Coordinate public and private transit service, where feasible, to reduce costs of service and avoid service duplication.

Frequent services will connect town centers and major recreation destinations with 15-minute fixed route. Local services arrive every 30 to 60-minutes in some neighborhoods and connect to frequent routes. Community service will provide on-demand service within neighborhoods and town centers, link to frequent routes, and provide service to some recreation destinations. Regional service will provide routes to Tahoe for commuters and visitors from neighboring regions such as Stockton, Sacramento, Reno, and Carson City. A ferry service will provide a critical link between the North and South shores, and water taxis will ferry passengers between popular beaches and marinas during the peak summer months. A series of mobility hubs built at major intersections and town centers will provide electric vehicle charging for an electric transit fleet and connect passengers with first and last mile trip options like shared mobility services and park-and-ride lots.

To achieve this vision, transit services will be added incrementally over the next 25 years, with frequent, local, and community routes implemented in the short-term to provide the foundational service every traveler in Tahoe needs, especially those living in identified Community Priority Zones. Recreation and seasonal services are prioritized next to provide more travel options for everyone, including travelers who choose not to use their cars. Achieving the long-term vision of public and private water transit and regional and inter-regional transit services will be fully achieved incremental implementation as partnerships and funding opportunities arise, providing options for commuters and visitors to leave their cars behind.

Transit Goals and Policies

Goals

A transit system that is modern and renewable energy fueled that connects visitors and residents to town centers, jobs, recreation sites, neighborhoods, and surrounding areas. As a result, visitors and residents will choose the fast, frequent, and fun transit system over their personal vehicles, reducing congestion on local roadways and environmental impacts through lower GHG emissions.

Policies

Targeted transit policies focus on regional connectivity, operations and congestion management, and economic vitality and quality of life.

Policies will guide the existing transit system towards greater frequency, efficiency, and regional and mega-regional coordination by clarifying public and private operator roles, reaffirming seasonal service needs to recreation areas and neighboring regions, recognizing new and updated transit plans and technologies, such as microtransit, and ensure that increased

transit service and asset management is a regional priority over the life of the plan.

Policy Highlight

Policy 6.2: *Improve winter transit access by providing shelters, cleared sidewalks and paths around stops, winter accessible bike racks, and warm shelters at mobility hubs and major transit stops.*

Supporting Plans

Transit is shaped by projects identified in Short- and Long-Range Transit Plans for the Region's transit operators, which identify service and capital needs to expand service, add new routes and service types, and purchasing replacement buses and upgrades to maintenance facilities.

Transit for the most vulnerable transit users is informed by the 2019 Coordinated Human Services Plan, which focuses on projects and transportation services that enhance mobility for seniors and individuals with disabilities traveling within Lake Tahoe.

Existing Transit System

Two operators provide local and regional public transit service in the Tahoe Region. The Tahoe Transportation District (TTD) operates on the South and East shores. Tahoe Truckee Regional Transit (TART), jointly operated by Placer County and the Town of Truckee, provides services on the North and West shores. Service tiers are defined as:

Frequent Service are fixed routes that operate on the main thoroughfare through urban cores and provide high-frequency service at 20 minutes or less.

Local Service are fixed routes that provide service to and through some neighborhoods and to the urban cores within the basin. Service is typically offered every 30 to 60 minutes.

Community Service are either fixed route or circulator services that operate within a small zone and provide on-demand **microtransit** service to recreation hot spots and urban centers. Headways vary from 5 to 30 minutes depending on the level of demand.

Microtransit is defined as on-demand, IT-enabled, multi-passenger transportation service that serve passengers using dynamically generated routes. Vehicles can range from large SUVs to vans to shuttles.[1]

Regional Service are fixed route express or commuter routes that provide service from neighboring cities to Tahoe. Regional service typically operates every 60 minutes throughout the day or during peak commute times.

Frequent and Local Services

On the South Shore, TTD operates 30-minute service along Highway 50 from 6:30 a.m. to 8:30 p.m. Another fixed route runs hourly along Highway 50 and into some neighborhoods from 6 a.m. to 7 p.m. TTD also operates hourly local service between Stateline and Daggett Summit along Kingsbury Grade. Complementary

[1]Federal Transit Administration shared mobility definitions: https://www.transit.dot.gov/regulations-and-guidance/shared-mobility-definitions

paratransit services are provided within one mile of these routes and to Meyers.

On the North Shore, TART operates 30-minute service along SR-28 between Tahoma and Incline Village. TART also provides hourly service along SR-89 and SR-267 between North Lake Tahoe and Truckee with connections to Squaw Valley and Northstar Village. All local service operates between 7 a.m. and 7 p.m. and separate night service runs from 7 p.m. to 2 a.m. along SR-28 and to Squaw Valley and Northstar Village.

Community Services

Existing community services are operated by private transit providers on both the North Shore and South Shore. On the North Shore, microtransit company Downtowner operates free microtransit within Squaw Valley with coordinated connections to local TART service along SR-89. Although outside the Tahoe Region boundary, the success of this service serves as a model for the Region. On the South Shore, Heavenly Mountain Resort provides free, frequent, and public winter shuttle service between several of its base lodges.

Regional Services

TTD currently provides regional commuter service between South Lake Tahoe and Minden/Gardnerville and Carson City. The hourly service operates during peak commute hours in the mornings and evenings.

Policy Highlight

Policy 2.3: Collaborate with regional and inter-regional partnerships to establish efficient transportation connections within the Trans-Sierra Region including to and from Tahoe and surrounding metropolitan areas.

Amtrak and Greyhound provide connections to Lake Tahoe from surrounding areas of California and Nevada, including Sacramento, San Francisco, Sparks, and Reno. These services run between the Bay Area and Sacramento and the Town of Truckee three times daily, and South Lake Tahoe one time daily. Trips may require transfers to regional rail or bus service to reach the final destination.

Private operators, such as Tahoe Convoy, provide regional service on weekends during summer and winter peak seasons from the San Francisco Bay Area and the Central Valley to North Lake Tahoe, Truckee, and Squaw Valley.

Shuttles to the Reno/Tahoe airport from both the North and South Shores are provided by public-private partnership between the Region's transit operators and private shuttle operators. The North Lake Tahoe Express is managed by the Truckee North Tahoe Transportation Management Association (TNT/TMA) and the South Tahoe Airporter is a public/private partnership between the South Tahoe Alliance of Resorts and Amador Stage Lines.

Policy Highlight

Policy 2.7: Provide specialized and subsidized public transportation services and programs for individuals with disabilities that is consistent with Coordinated Human Services Transportation plans.

Specialized and ADA Services

Meeting the needs of the most vulnerable transportation users is where transit access begins. Community Priority Zones are neighborhoods where connecting residents and transit-dependent users to their jobs and

shopping centers are essential, based on analysis that included visualizing population centers and employment density.

Under the Americans with Disabilities Act (ADA), TTD and TART must provide on-demand paratransit services to eligible riders over 65 years of age, veterans with a service-connected disability, and persons with disabilities who meet Act established eligibility criteria.

TTD operates an extensive paratransit program in South Lake Tahoe which provides shared, origin to destination, curb-to-curb transportation service to eligible riders. TTD's paratransit service is split into two zones.

Baseline Zone: Baseline paratransit services are available at no cost to eligible ADA riders within a one-mile radius of existing fixed routes.

Extended Zone: Extended paratransit services are available to eligible ADA riders beyond a one-mile radius of existing fixed routes.

TART provides on-demand paratransit services within three-quarters of a mile from existing fixed routes. Placer County also partners with the Town of Truckee to provide daily trips between North Lake Tahoe and the Choices for Children center in Truckee for Choices' program participants.

Figure 38: Tahoe-Truckee Area Regional Transit
Credit: Novus Select/Rachid Dahoun

Proposed Transit Services

Proposed transit services build on existing routes operated by TTD and TART and improve frequency, the duration of service, and provide more and more types of service to recreation hot spots. TART and TTD will continue to provide free-to-the-user service for in-Region public transit through 2045. Private transit providers will help fill gaps in local service to recreation sites and neighborhoods and offer regional services. Public and private partners will implement the proposed transit services using the following framework:

Foundation Riders (Everyday Tahoe)

Frequent, local, and community routes will be prioritized in the short-term and provide necessary services for everyone, and especially for transit-dependent populations.

Persons without Private Transportation (Zero Vehicle Households): Lack of a personal vehicle is a significant factor for transit need. In 2018, 72 percent of TART riders and 61 percent of TTD riders did not have access to a personal vehicle.[2]

Elderly (individuals 65 years and older): Elderly individuals may choose not to drive or can no longer drive due to age.

Persons Below Poverty or Median Income Levels: Purchasing and maintaining a personal vehicle might be difficult for households with lower income.

Individuals with a Disability: Disability status may impact an individual's ability to live independently, including driving a personal vehicle.

Minorities (Latinx/Hispanic, Black, Asian, American Indian, Pacific Islander, Other, Two or More Races): Minority groups are more likely to live in densely populated areas, are less likely to have access to a car, and are more likely to use public transportation to commute to work.[3]

Choice Riders (Discover Tahoe)

Choice riders might have access to a car or other means of personal transportation but choose to take transit if it is a better and more convenient option than driving. Frequent transit service to seasonal recreation hot spots, such as beaches, trailheads, and ski resorts, will help residents and visitors recreate without driving, and will attract choice riders, particularly where parking options are limited or costly.

Regional Riders (Visit Tahoe)

Regional riders are primarily visitors traveling to Tahoe from outside the Region. Frequent transit options to and from neighboring cities like Sacramento, Stockton, Reno, and Carson City, combined with park-and-ride and intercept lots, combined with existing water transit and regional services will provide more options for commuters and visitors to travel to Tahoe and leave their cars behind.

[2] 2018 passenger survey report: https://monitoring.laketahoeinfo.org/FileResource/DisplayResource/137d250d-1271-4071-b47c-349b84d92f65

[3] dependent

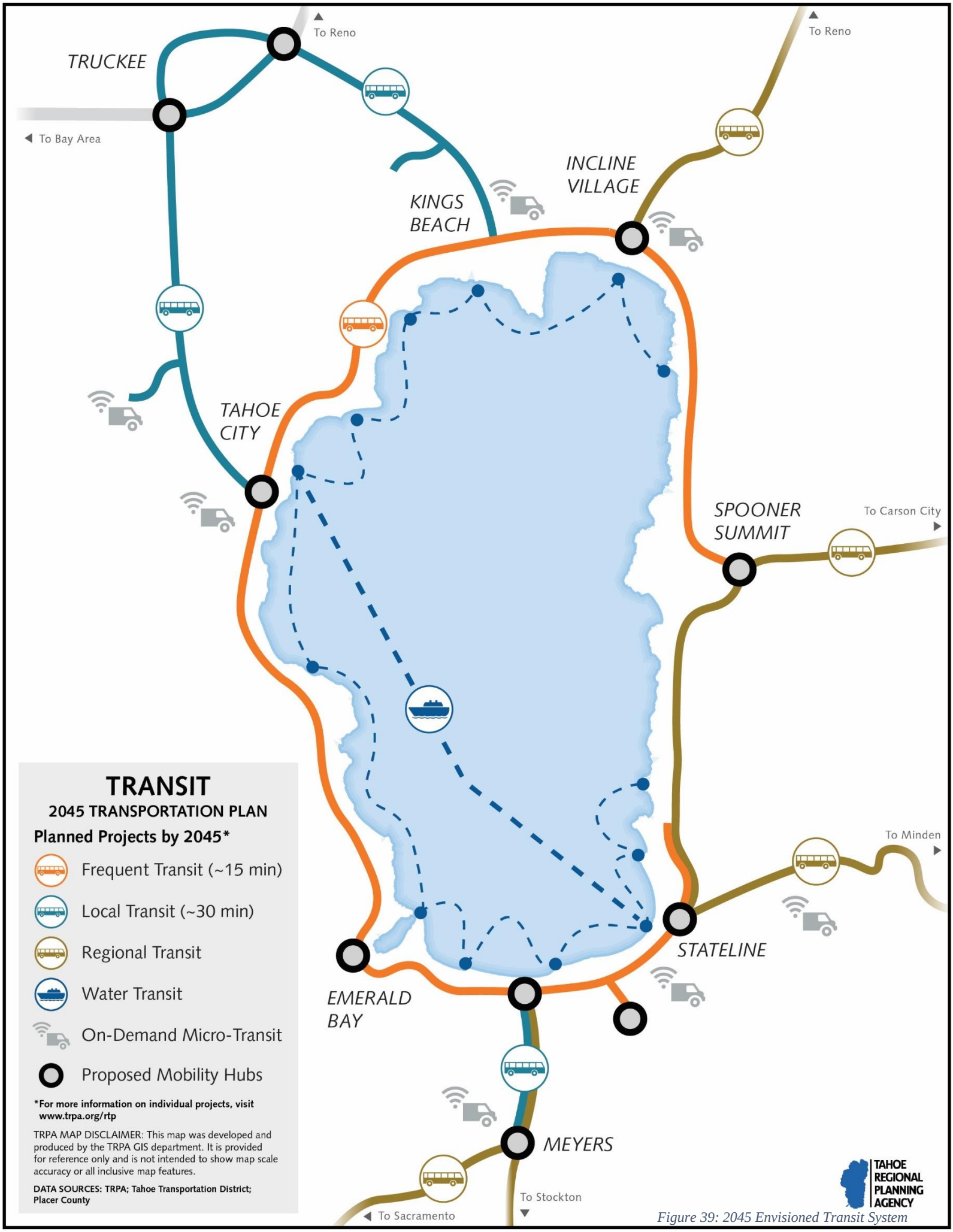


Figure 39: 2045 Envisioned Transit System

Frequent and Local Services

By 2025, TTD will increase frequency on Highway 50 routes to every 30 minutes and extend hours to serve late-night riders. Private transit operators will provide service every 20-30 minutes along the SR-89 recreation corridor between Pope Beach and Emerald Bay for South Shore Riders. TART will continue increasing frequency to 30-minute headways on all core routes along SR-89, SR-267, and SR-28 for North Shore Riders.

By 2035, core service on Highway 50 on the South Shore and SR-28 on the North Shore will be provided every 15 minutes and 20 minutes, respectively. Existing seasonal service to popular recreation sites, like Emerald Bay and Sand Harbor, will become more frequent, and additional transit will be added to ski resorts, Spooner Summit, and Zephyr Cove Resort.

Express bus routes and water taxis will provide additional travel options to Emerald Bay from Tahoe City on the North Shore and Stateline, Nevada on the South Shore, and local service will expand to Meyers.

By 2045, the envisioned transit system will be entirely built with frequent service operating every 15-minutes and local service in place to major hubs and town centers. On the North Shore, service between North Tahoe and Truckee along SR-89 and SR-267 will be offered every 30 minutes or less. On the South Shore, service to Meyers and the top of Kingsbury Grade will be offered every 30 minutes.

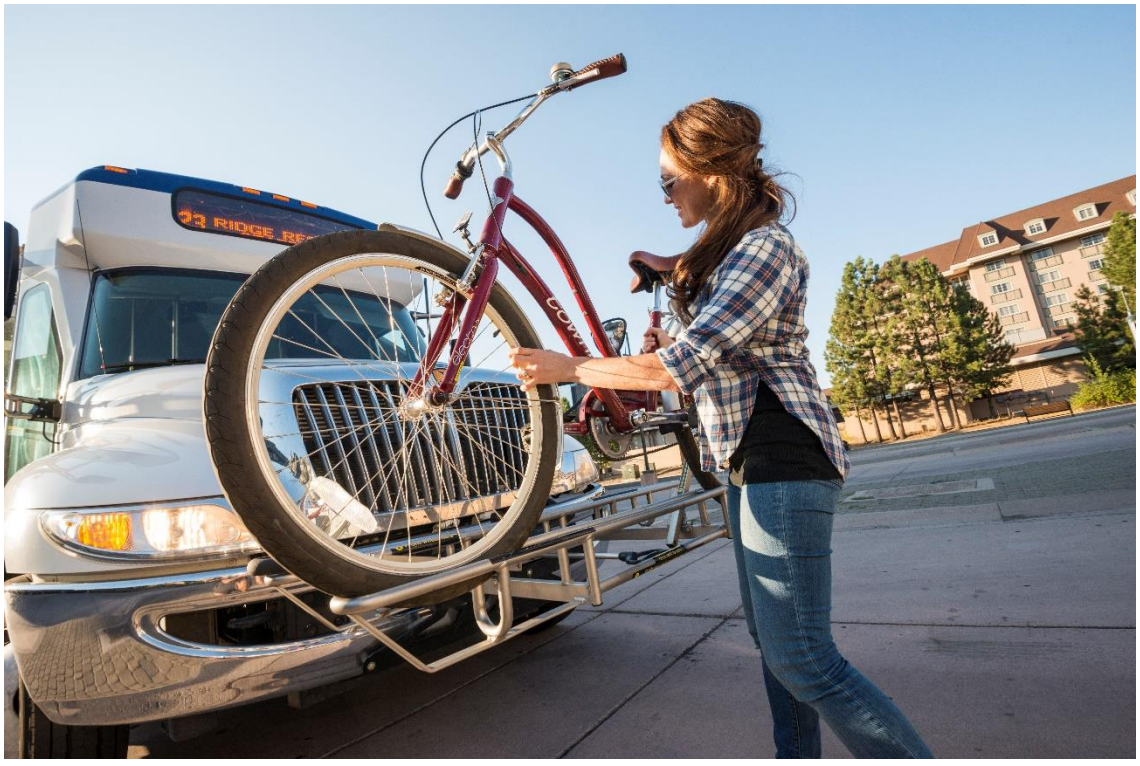


Figure 40: Multi-Modal Transit credit: Novus Select/Rachid Dahoun

Community Services

In 2020, the TRPA Governing Board approved plans for the 6,000-person Tahoe South Events Center in the core of Stateline, Nevada. Beginning in summer 2021, the event center will provide a combination of free fixed route and on-demand microtransit service to the center from Round Hill in Nevada to the Bijou neighborhood in South Lake Tahoe. The service will expand from seasonal to year-round service over a six-year period. Add on areas could further expand service to South Lake Tahoe's Sierra Tract Neighborhood.

By 2025, evening microtransit service will operate on the North Shore throughout Incline Village and Crystal Bay, filling a critical transit gap to the area.

Policy Highlight

Policy 2.14: Support, where feasible, the implementation of on-demand, dynamically routed transit shuttles.

By 2035, free-to-the-user microtransit pilots will expand to Tahoe City and to the West Shore, Kings Beach, Tramway and Upper Kingsbury, and Meyers.

By 2045, every microtransit pilot in Tahoe will become permanent, year-round, and free.

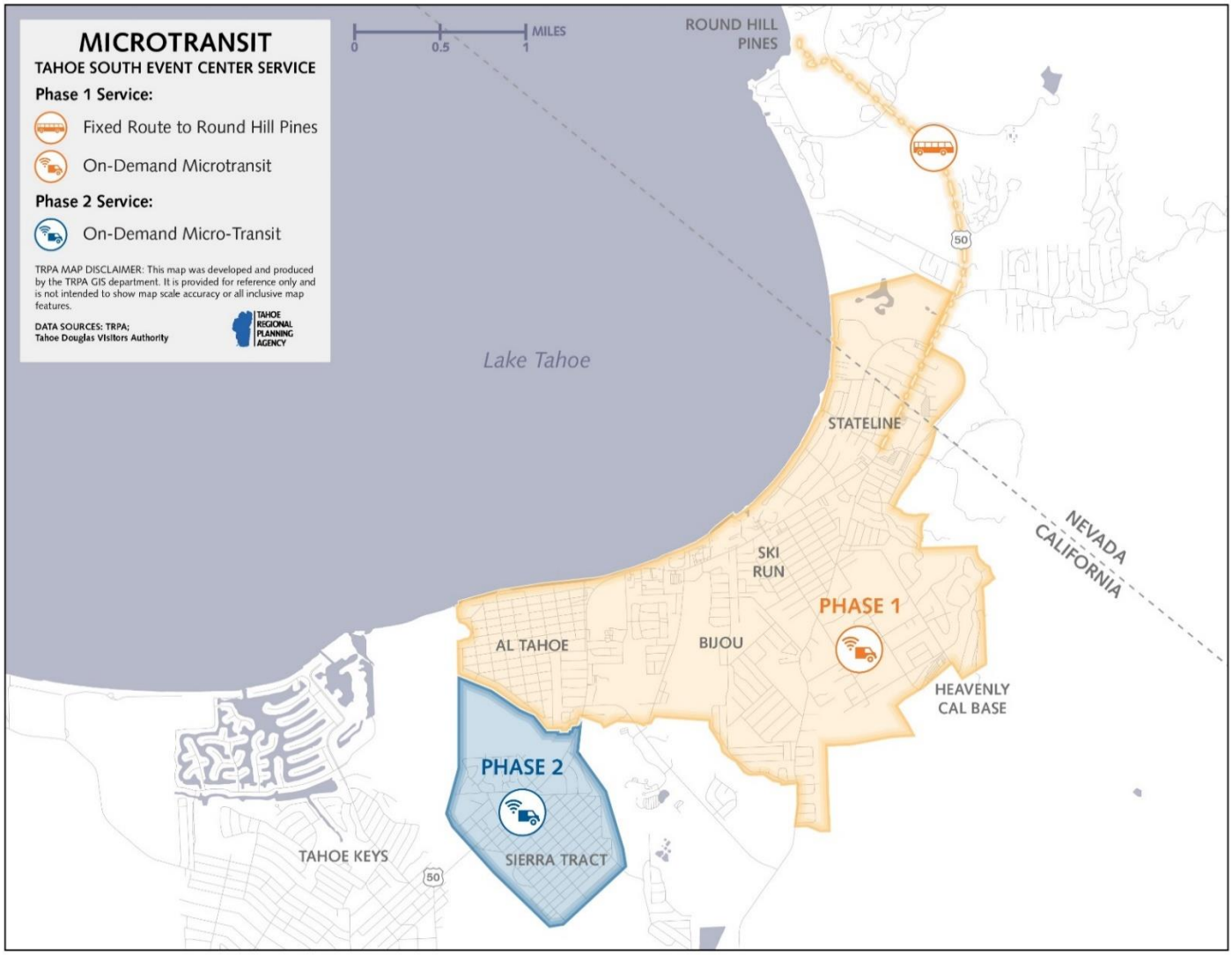


Figure 41: Map of South Tahoe Events Center Microtransit

Inter-Regional Services

By 2025, 24-hour in advance reservable transit service between Reno/Sparks and Tahoe's East Shore will be in place, adding to existing mega-regional routes.

By 2035, TTD will revive Route 21x, via Highway 50, and improve the 19x route, via Kingsbury Grade, to Carson City, and improve route 22 to Minden/Gardnerville, via Kingsbury Grade to serve commuters and day-visitors to Tahoe.

By 2045, hourly transit service from Sacramento, Stockton, Reno, and Carson City, will be in place to meet the travel needs of recreationists who visit Tahoe for the day, and visitors to the Region from the larger cities and connecting airports for a modest fare. These services will be coupled with park-and-ride and intercept lots.

Specialized and ADA Services

By 2025, TTD and TART will ramp up paratransit services to meet increased rider demand from free fares and specialized medical transit services will return from both the North and South shores to California medical centers.

Making Transit a More Attractive Option

Incentive strategies, such as real-time transit information, transit schedule coordination, free-to-the-user transit, and transit signal priority, combined, with improved transit service, will shift Tahoe's culture from car-centric to pro-transit over the next 25 years. As a result, more travelers in Tahoe will opt in for transit and out of driving.

By 2025, parking management strategies and transit enhancements will be implemented simultaneously to encourage transit use. For example, the Tahoe South Events Center microtransit service will operate in tandem with a new parking management program that includes paid parking.

By 2035, SR-89 and SR-267 on the North Shore will have modified lane configurations that allow for bus only lanes during peak congestion periods to improve transit reliability and boost its competitiveness with the personal automobile.

By 2045, signals on Highway 50 on the South Shore will have technology that prioritizes buses to let them pass through before vehicles, ensuring transit is on-time more often and competitive to the personal automobile.

Tracking Transit Efficiency and Effectiveness

In 2018, TRPA adopted the Lake Tahoe Region Transit Monitoring Protocol to establish methods for collecting and analyzing public transit data. Data analysis helps inform transit planning and ensures the transit system is effective and operating efficiently.

See the Measuring & Managing for Success chapter and Appendix I for more information on the Transit Monitoring Protocol.

TRAILS

With limited capacity on roadways, transportation by foot and bike is essential for travel in Tahoe because some users may not have a car while others prefer walking or biking to enjoy the Tahoe landscape and trails access to beaches and other popular recreation destinations.

Tahoe's active transportation network is a robust system of shared-use paths, sidewalks, bicycle lanes, pedestrian crossings, and ADA facilities that accommodates newer modes of active transport, such as e-scooters and e-bikes.

The network links people to critical community resources and recreation and so must be accessible and serve the needs of all users and their varying levels of comfort traveling by foot or bike, including the Region's Priority Communities comprised of the elderly, individuals with a disability, and those without access to a car

Tahoe has excelled for several decades at building new bike paths, sidewalks, and bike lanes. Local jurisdictions have invested in year-round maintenance by sweeping paths in summer and plowing them in the winters to ensure safe, year-round use.

Between 2018 and 2019, bike paths and sidewalks at Tahoe that have monitoring stations recorded a 15 percent increase in summertime use. This increase speaks to the importance of constructing and maintaining paths and to continued investments in Tahoe's active transportation network.

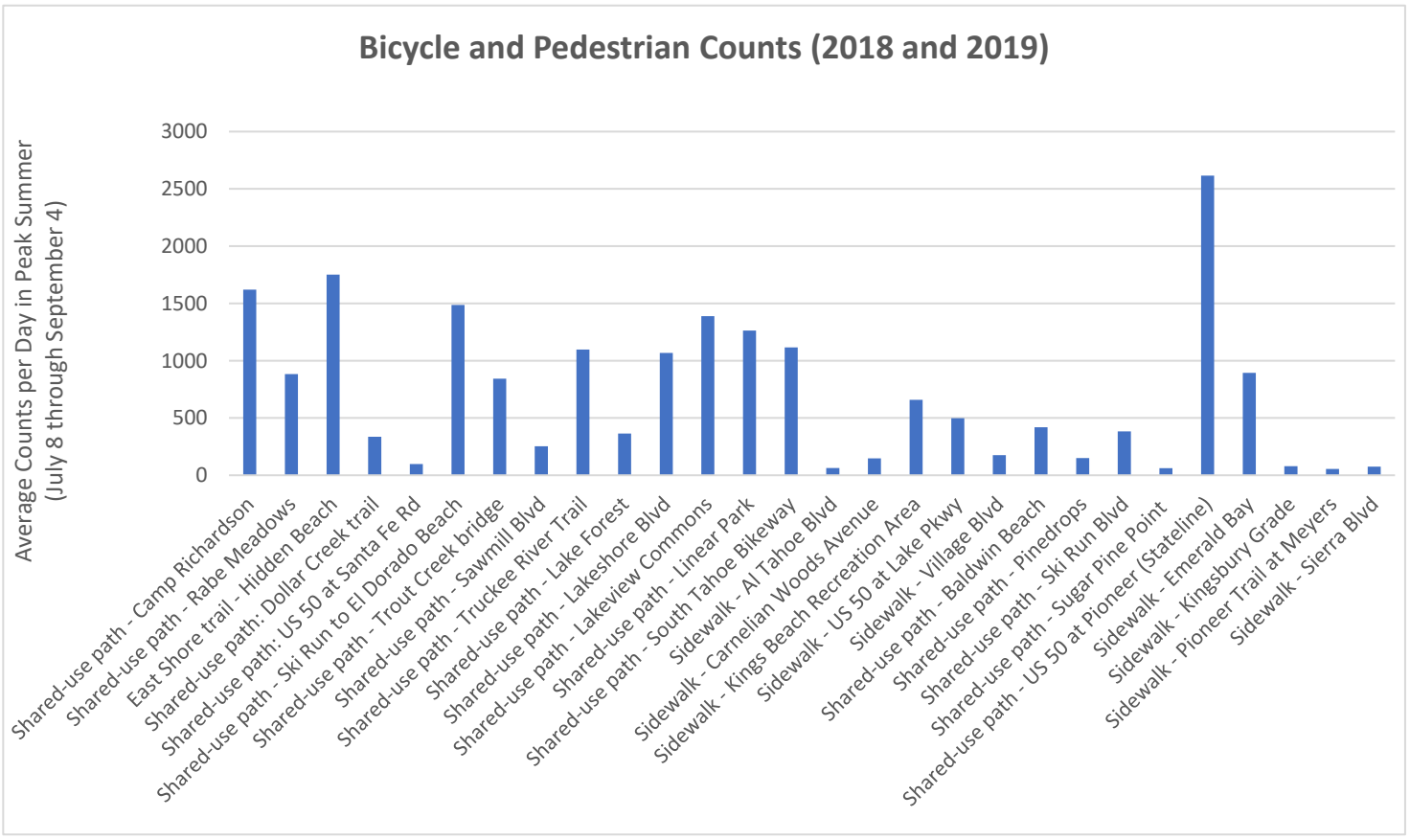


Figure 42: Bicycle and Pedestrian Counts by Location (2018 and 2019)

Trails Goals and Policies

Goals

A well-connected active transportation network of shared-use paths, sidewalks, bike lanes, complete streets, pedestrian crossings, and other facilities that conveniently and safely connect all travelers to work, home, school, town centers, and recreation sites by foot or bike year-round. When implemented, bicycling and walking will help protect Lake Tahoe's environment.

Policies

Policies ensure active transportation priorities are regularly updated and projects are included in regional plans, including the 2016 Active Transportation Plan and Regional Transportation Plan, emphasize safety planning for intersections and high conflict points, give priority to Safe Routes to School improvements and year-round maintenance, and support newer active transportation modes, such as low speed electric scooters and bikes.

Policy Highlight

Policy 2.12: Develop and maintain an Active Transportation Plan as part of the regional transportation plan. Include policies, a project list of existing and proposed bicycle and pedestrian facilities, strategies, and programs for implementation of the Active Transportation Plan.

Bike and scooter-share companies, such as Lime, have expanded operations to cities across the world and over the last four years operated in South Lake Tahoe. Since launching in 2017, Lime bikes and scooters have been used to make over 430,000 trips in South Lake Tahoe. Ensuring the active transportation network is suitable for emerging modes is a key objective of the plan.

Supporting Plans

Trails is shaped by projects and programs identified in supporting plans, including Safe Routes to School plans adopted by school districts in Tahoe and the 2016 Active Transportation Plan, which plans for a network of sidewalks, bike lanes, shared-use paths, pedestrian crossings, and traffic calming (such as roundabouts) to provide connectivity, improve safety, and advance project implementation.

Existing Trails Network

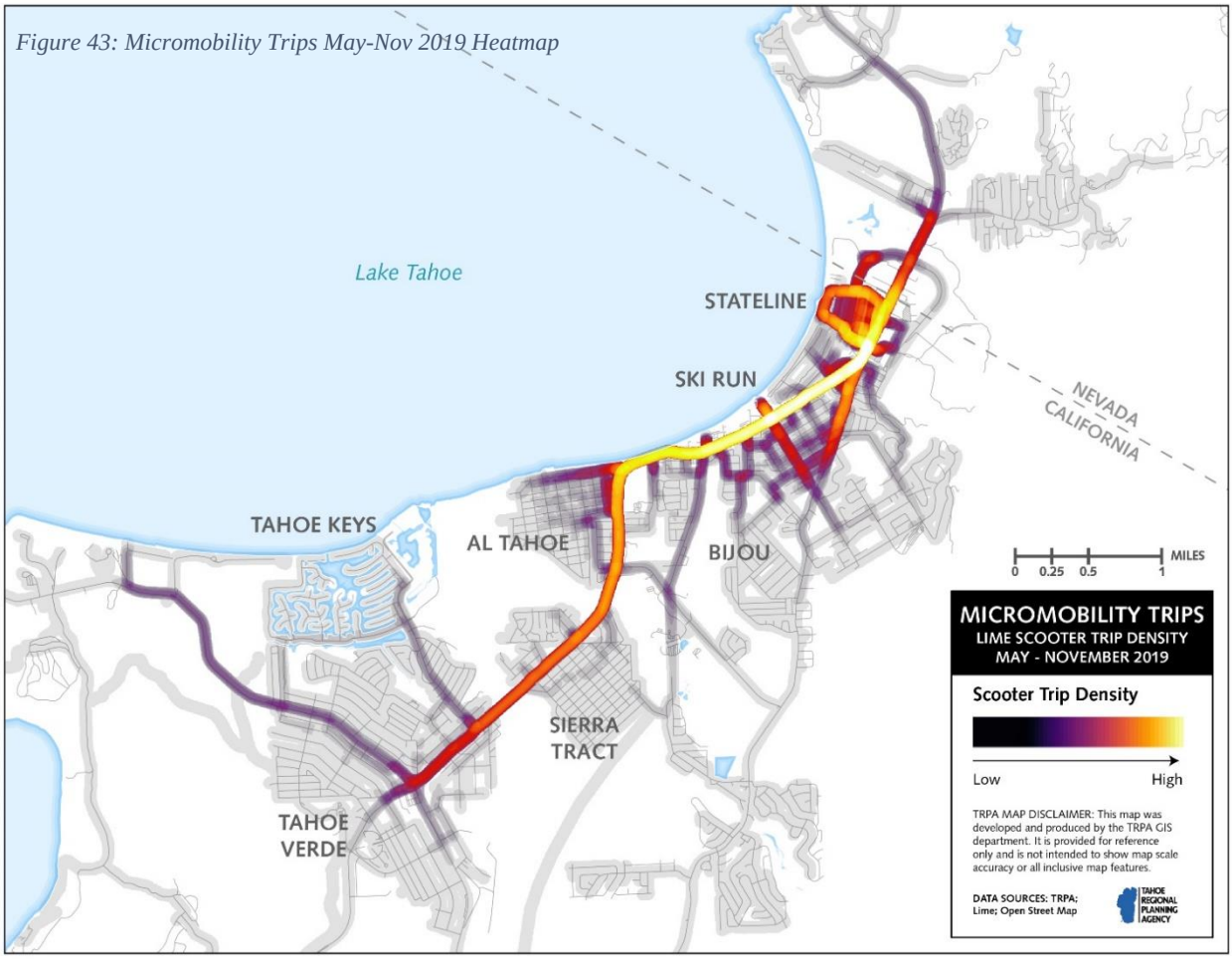
State, local, and regional agencies, such as departments of transportation, local jurisdictions, public utility districts, school districts, and transportation districts, build and maintain the active transportation network of roughly 60 miles of shared-use paths, 46 miles of bicycle lanes, 10 miles of bicycle routes, 25 miles of sidewalks, and 17 enhanced pedestrian crossings. Partners work together to ensure consistency in design standards, and to coordinate maintenance, such as snow removal procedures.

PATHWAY PARTNERSHIP

The Pathway Partnership is a dedicated group of government agencies, nonprofits, and advocacy representatives who work together to build partnerships, leverage funding opportunities, align messaging and policies, and share best practices to achieve regional transportation goals. The Pathway Partnership is working to develop education messaging for the Region with a focus on path etiquette and e-bike usage. As e-bikes and e-scooters grow in popularity, the Pathway Partnership seeks to provide guidance toward developing a unified Regional policy on e-bike and e-scooter usage on paths.

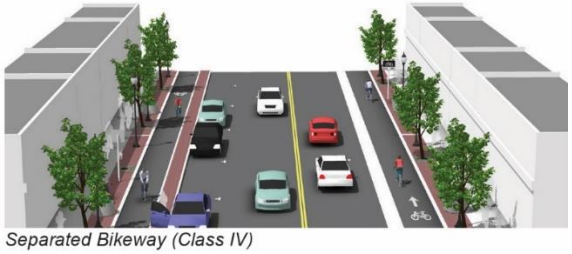
Local jurisdictions remove snow on 32 miles of shared-use paths throughout the winter. These paths see an average of 55,160 users per month when there is snow on the ground, demonstrating the importance of year-round maintenance to keep paths cleared for use

Figure 43: Micromobility Trips May-Nov 2019 Heatmap



Shared-Use Paths (Class I)

On-Street Bikeway (Class II)



Separated Bikeway (Class IV)

Signed Shared Roadway (Class III)

Signed Shared Roadway with Pavement Markings (Class III)

Figure 44: Types of Pedestrian and Bicycle Facilities

Policy Highlight

Policy 6.1: Preserve the condition of sidewalks and bicycle facilities and maintain for year-round use, ensuring bike and walking paths are consistently plowed and safe.

Off-Street Infrastructure: Separated Paths and Sidewalks

Separated bike paths and sidewalks provide safe, off-street infrastructure for pedestrians and bicyclists to travel. There are presently 60 miles of separated (Class I) shared-use paths in the Lake Tahoe Region and 25 miles of sidewalks.

In the last four years partners have planned, designed, and constructed critical paths and sidewalks providing safer and essential travel options, including along U.S. 50 in South Lake Tahoe, one of the most traveled corridors in the Region. Four major sections of the Tahoe Trail around the lake have been constructed including the El Dorado Beach to Ski Run Boulevard segment, the Dollar Creek segment, the Tahoma to Meeks Bay segment, and the Incline to Sand Harbor segment. Other sections of the Tahoe Trail are undergoing planning and design. These include the Sand Harbor to Spooner Summit segment, the North Tahoe Regional Trail, and the proposed path around Emerald Bay.

On-Street Infrastructure: Bike Lanes and Bike Routes

Bicyclists who are comfortable sharing the roadway with vehicles often take the most direct route by using on-street bike lanes and bike routes. The state highway system in Tahoe has dedicated bike lanes, where space allows. In some locations, such as the ascent to Emerald Bay or along the East Shore of U.S. Highway 50, bicyclists may need to use the full vehicle lane for safety because shoulder space and bike lanes are non-existent. On local, low-volume and low-speed roads, bike routes help keep the on- and off-street systems connected. Examples include Eloise Avenue in the City of South Lake

Tahoe and Sequoia Avenue in Sunnyside on the West Shore.

In 2019, the City of South Lake Tahoe created a new bicycle route along Venice Dr. and added bike lanes to Sierra Blvd as part of the complete streets project. Each of these additions help direct and connect bicyclists to the network of separated paths.

Connecting Off-Street to On-Street: Intersection Improvements

Accessing destinations on foot or bike can be severely hindered by the inability to safely cross the street. Enhancing safety at intersections and bike crossings is a top priority for the Region with partners installing safer crossings at several intersections over the last four years.

In 2019, Lodi Avenue at Highway 50 in South Lake Tahoe was upgraded with a signal and four-way pedestrian crossings. On the North Shore, the U.S. Federal Highways Administrations, Placer County, and the Tahoe Transportation District completed work on the Tahoe City Community Revitalization Project which installed three roundabouts at intersections around the Tahoe City Wye to improve connectivity, traffic flow, and pedestrian safety through the area.

Figure 45: Tahoe City Roundabout credit: Tahoe Daily Tribune

Proposed Trails Network

The regional transportation plan projects will close connectivity gaps and increase safety on the existing active transportation network and provide all users more of the facilities they need to recreate and travel to their destinations.

Off-Street Infrastructure: Separated Paths and Sidewalks

The plan proposes 83 additional miles of Class I bike paths plus bike routes and additional sidewalk through "Safe Routes to Schools" improvements near each of the Region's public schools and complete streets projects in local neighborhoods.

By 2025, two sections of the South Tahoe Greenway will be completed to connect two neighborhoods, Sierra Tract and Bijou, through Bijou Meadow; the next eight-miles of the East Shore Tahoe Trail, from Sand Harbor State Park to Spooner Summit, will be constructed; and the second major segment of the Tahoe Trail on the North Shore will connect the Dollar Creek path to the North Tahoe Regional Park, closing a four-mile gap near Kings Beach and Tahoe Vista.

By 2035, the final section of the West Shore Tahoe Trail will be constructed around Emerald Bay, closing a considerable gap between Spring Creek Rd and Meeks Bay; the preferred Class I path alignment from the SR 89 Trail Feasibility study will be advanced to construction; and several more bike paths and sidewalks will be constructed around the Region, including the final sections of the South Tahoe Greenway, connecting Meyers to Van Sickle Bi-State Park.

By 2045, the Tahoe Trail will be completed, providing a safe, separated, and fully connected bicycle and pedestrian route around the Lake, marking a significant milestone for regional partners.

On-Street Infrastructure: Bike Lanes and Bike Routes

Regional partners are working to add bike lanes and bicycle routes around the Region on residential streets and highways through roadway reconstruction and off-street path construction projects which will provide better connections for bicyclists traveling between shared-use paths.

By 2025, El Dorado County will add new bicycle routes on East and West San Bernardino Avenue to connect to the Upper Truckee River path in Meyers to designated bicycle routes between North Upper Truckee and the Lake Tahoe Environmental Magnet School in Meyers.

By 2035, bike lanes will be in place along the new Main Street in the South Lake Tahoe - Stateline corridor and Washoe County will significantly expand their on-street bike infrastructure with new bike lanes and bike routes in Incline Village.

By 2045, bike lanes and routes will connect many neighborhoods to the Tahoe Trail around the lake, to schools, and to commercial centers.

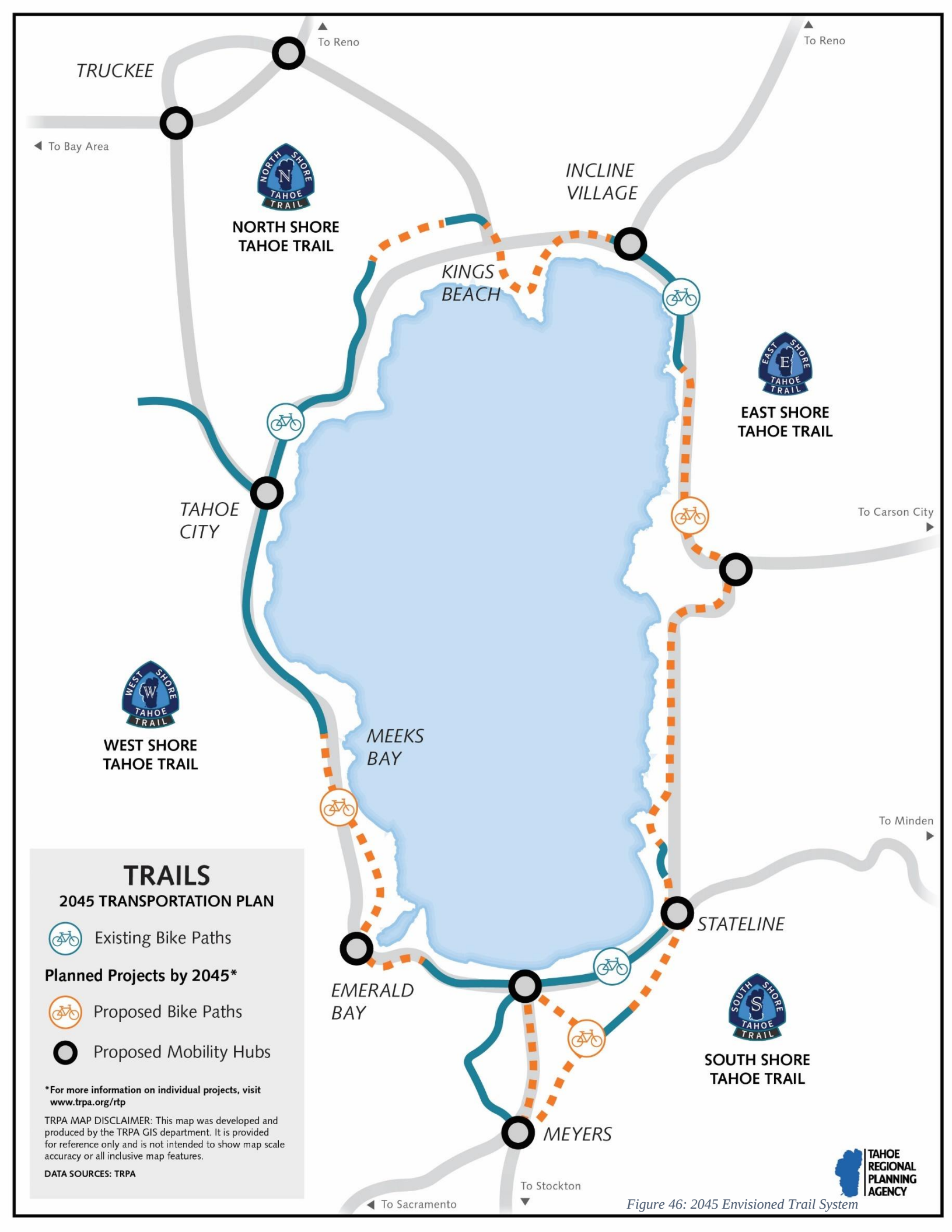


Figure 46: 2045 Envisioned Trail System

Connecting Off-Street to On-Street: Intersection Improvements

In February 2019, TRPA adopted the Lake Tahoe Region Safety Strategy to identify opportunities to reduce the likelihood and risk of crashes on Tahoe roads. Adopted strategies include high visibility markings, pedestrian refuge islands, pedestrian signals, pedestrian scale lighting, vehicle speed feedback signs, and enhanced marked crosswalks at identifies intersections in the Region. These projects are included in the plan's project list (Appendix B).

Policy Highlight

Policy 3.5: Design projects to maximize visibility at vehicular, bicycle, and pedestrian conflict points. Consider increased safety signage, site distance, and other design features, as appropriate.

By 2025, two new roundabouts at SR 28 and SR 267 in Kings Beach, and at Pioneer Trail and Highway 50 in Meyers; a new traffic signal at Highway 50 and Warrior Way in Zephyr Cove; and intersection enhancements at Kahle Drive and Highway 50 in Stateline will provide much needed intersection safety improvements.

By 2045, several more intersections will be enhanced or reconstructed to improve safety for bicyclists, pedestrians, and vehicles.

Making Trails a More Attractive Option

In addition to infrastructure improvements, incentive strategies will encourage more travelers to bike and walk. Commute Tahoe and the Lake Tahoe Bike Challenge motivate Everyday Tahoe travelers to bike and walk more often by working with employers to install end-of-trip facilities for bike commuters, offering incentives for participants, and celebrating those who do switch some of their trips.

Transit and parking management strategies also incentivize people to bike and walk more often. When buses have bike racks riders can make longer trips by combining the two. Paid car parking and safe bike parking at recreation sites and commercial centers provide economic and convenience incentives to walk or bike rather than drive. The Lake Tahoe Bicycle Coalition has worked with local businesses and employers over the last few years to install hundreds of bike racks in town centers, at recreation sites, near schools, and at local businesses to provide safe parking for bicyclists.

Figure 47: Lake Tahoe Boulevard to Sawmill Bike Path

Tracking Trails Efficiency and Effectiveness

In 2015, TRPA adopted the Lake Tahoe Region Bicycle and Pedestrian Monitoring Protocol to consistently track changes in bicycle and pedestrian volumes through the Region's 10 permanent and 36 temporary bicycle and pedestrian counters on bike paths and sidewalks around the Region.

Count data is collected monthly and uploaded to www.monitoring.laketahoeinfo.org/BikePed.

See the Measuring & Managing for Success chapter and Appendix I for more information about the Bicycle and Pedestrian Monitoring Protocol.

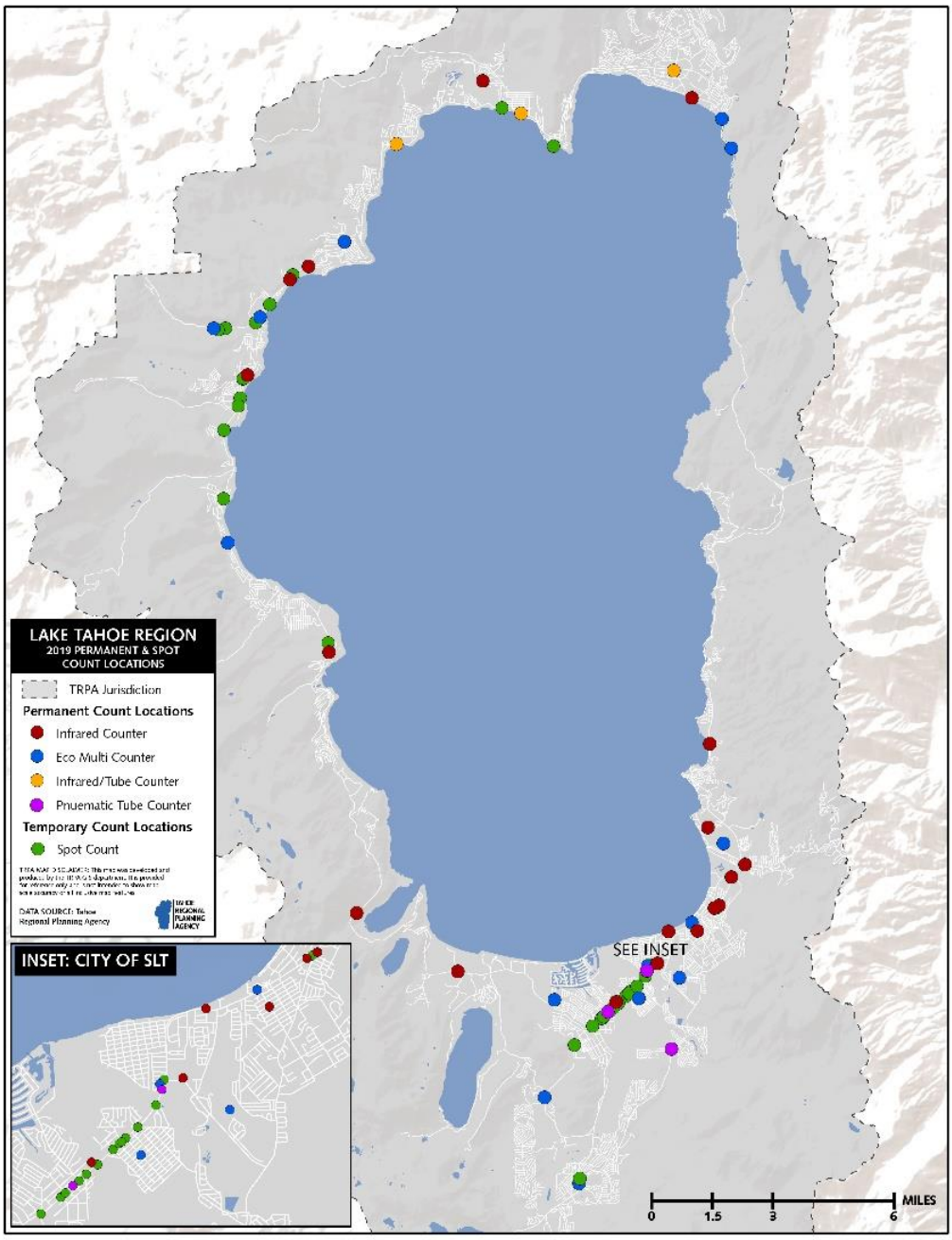


Figure 48: Map of Bicycle and Pedestrian Counters

TECHNOLOGY

Transportation technologies are rapidly advancing and the plan leverages these changes to better connect people with information about the many ways to travel around Tahoe, to provide planners with new insights into the number of people visiting the Region, to ensure electric vehicle charging facilities and infrastructure are widespread, and that the needed fiber optic infrastructure is in place to support these advances.

Technology Goals and Policies

Goals

Technology will catalyze achievement of Tahoe's mobility and environmental goals by connecting people to real-time travel information, transportation options, and alternative fueling stations, self-driving cars, and other advances in transportation.

Policies

Existing and revised technology policies facilitate improvements in communications systems, intersection functionality, electric vehicle use, and emerging mobility services.

Policy Highlight

Policy 1.4: Facilitate and promote the use of zero emission vehicle (ZEV) transit, fleet, and passenger vehicles through implementation of the Tahoe-Truckee Plug-in Electric Vehicle Readiness Plan, education, incentives, funding, and permit streamlining.

Policies support data collection and analysis and data sharing between public jurisdictions and private transportation operators to support collaboration and to promote innovation.

Supporting Plans

Technology is informed by the 2015 Tahoe Basin Intelligent Transportation Systems Strategic Plan, which advances implementation of transportation technology to address the needs and challenges around tourism, adverse weather and road conditions, safety, and environmental concerns, and the 2017 Tahoe Truckee Plug-In Electric Vehicle Readiness Plan (Tahoe-Truckee PEV Plan), which outlines infrastructure, programs and incentives that support widespread adoption and use of zero-emission electric vehicles, consistent with the State of California's goals.

Existing Technology Systems

The Tahoe Region implements technology improvements to benefit all users and to help facilitate the mission of public agencies in three ways: the user experience, transportation infrastructure, and coordination and communication.

Technology for the User

Real-time transit information allows riders to use a smartphone to check when a bus is arriving, see its location on a map, and receive convenient notifications when it is time to leave home to catch the bus.

Policy Highlight

Policy 4.2: Enable growth of shared and on-demand shared ride mobility services (i.e., ride-, car-, and bike-sharing, e-hailing).

California and Nevada departments of transportation provide live video feeds of major roadways in and to Tahoe so that drivers have

all of the information they need to plan ahead to avoid construction delays or winter snow conditions.

New mobility services, such as e-scooters and microtransit, are reservable through app-based technology and use vehicle and smart phone geo-location to link users to the scooter or shuttle.

Technology for Infrastructure

Recent improvements in infrastructure technology at Tahoe include automatic vehicle location technology for transit buses, changeable message signs along highways, and the installation of electric vehicle charging stations around the lake. Better transit scheduling and coordination is now possible with new software systems that provide transit operators information on bus operations to deliver services more efficiently.

Figure 49: Real-Time Changeable Message Sign

Real-time changeable message signs along key travel corridors in the Region, such as U.S. 50 in South Lake Tahoe, relay road condition and travel time information to help drivers make more informed decisions and keep the system moving safely and efficiently.

The Region is rapidly deploying public charging infrastructure and converting public transportation fleets to zero-emission vehicles. Since development of the Tahoe-Truckee PEV Plan, over 65 public charging stations have been installed. The North Shore and South Shore transit operators, TTD and TART, have purchased electric buses and are adding charging stations at mobility hubs around the Region. Lake Tahoe Unified School District was also awarded grant funding to begin converting its school bus fleet to electric buses.

In 2018 the Tahoe Prosperity Center, with funding from the U.S. Economic Development Administration, completed a broadband feasibility study. The study noted how important improvements in broadband services are for the environment (telecommuting reduces VMT and GHG emissions) and public safety (first responders can coordinate faster during catastrophic events). Broadband also supports real-time transit, travel time, and parking availability information sharing. The study promotes Dig Once Policies (DOPs) to lower the cost of Broadband deployment by providing internet providers access to public right of way. The Region furthers this by the mandatory installation of conduit for fiber-optic cable during road construction (or similar excavation projects), and by allowing broadband deployments to be installed during construction projects.

Policy Highlight

Policy 6.4 Make "dig once" the basin-wide standard, requiring public and private roadway projects to accommodate the installation of conduit to support community needs. (e.g.: broadband fiber optic

This infrastructure helps to prepare for emerging technologies, such as autonomous vehicles. Autonomous vehicles (AVs) use information from radar, laser, Global

Positioning Systems, odometry, and computer vision to detect their surroundings. One of the big challenges to AV use in Tahoe is how they perform in inclement weather, such as rain and snow. While AVs have not been tested in Tahoe yet, Nevada has adopted policies and focused economic development towards the advancement of AVs in the state. States oversee testing and each have different approaches, and so TRPA will need to coordinate with each to advance AVs in the Region.

See Appendix D for more information and recommendations on autonomous transit.

Technology for Coordination and Communication

Data sourced from smart phones and vehicle navigation devices provide TRPA new data sources to analyze and forecast travel. This data helps improve and validate the forecasts of the TRPA Travel Demand Model, and provides a better understanding of Everyday, Discover, and Visit Tahoe travel patterns.

Technology plays an important role in tracking and sharing emergency management information to the Region's partners and public. The Department of Homeland Security, and state and local emergency response convened to study the need for and the feasibility of a coordinated dispatch system for Tahoe. Today, the group is assessing possible locations to house this system. In addition to providing an important safety benefit to the Region, this system will also create a coordinated transportation management center that will support congestion management of the Region's roadways.

Figure 50: Electric Vehicle Charging Station

Proposed Technology Improvements

Technology projects proposed in the plan will improve real-time travel information, optimize traffic signals, increase data collection and transparency, support expansion of electric vehicles in public and private fleets, and optimize transit services. Additional technological improvements, such as message feedback signs, a region-wide transportation trip planning tool, and informational kiosks at activity centers will be possible only with new sources of funding. See appendices B and C for more information.

Policy Highlight

Policy 4.11: Establish a uniform method of data collection and forecasting for resident and visitor travel behavior and demographics.

Technology for the User

By 2025, partners will invest in a regional trip planning tool that promotes transit, biking, and walking and helps manage visitation to major recreation destinations. The trip planning tool will be incorporated into TRPA's Linking Tahoe webpage to provide one site for trip planning information, including managed parking at the East Shore Trail.

By 2035, more highway message signs will be in place on major roadways in and to Tahoe, providing real time information on travel time and road conditions.

By 2045, app-based on-demand microtransit services will fill gaps in the transit system, connecting more riders to more frequent transit services directly from their front doors.

Technology for Infrastructure

As zero-emission vehicle technologies advance, local partners and private businesses will continue to expand the availability of charging and fueling infrastructure. Tahoe will also serve as a testing ground for emerging electric and hydrogen powered watercraft technology.

By 2025, Liberty Utilities will install up to nine DCFC Direct Current Fast Charge locations across the Region, and electric bicycles and scooter charging stations will be in place to better support these rapidly growing modes.

By 2035, public transit vehicles throughout the Region will have automatic passenger counters to capture the number of people getting on and off the bus by stop, to improve analysis of ridership trends and to measure transit success.

By 2045, with additional funding the planned cross-lake Ferry will be operating, possibly on hydrogen fuel.

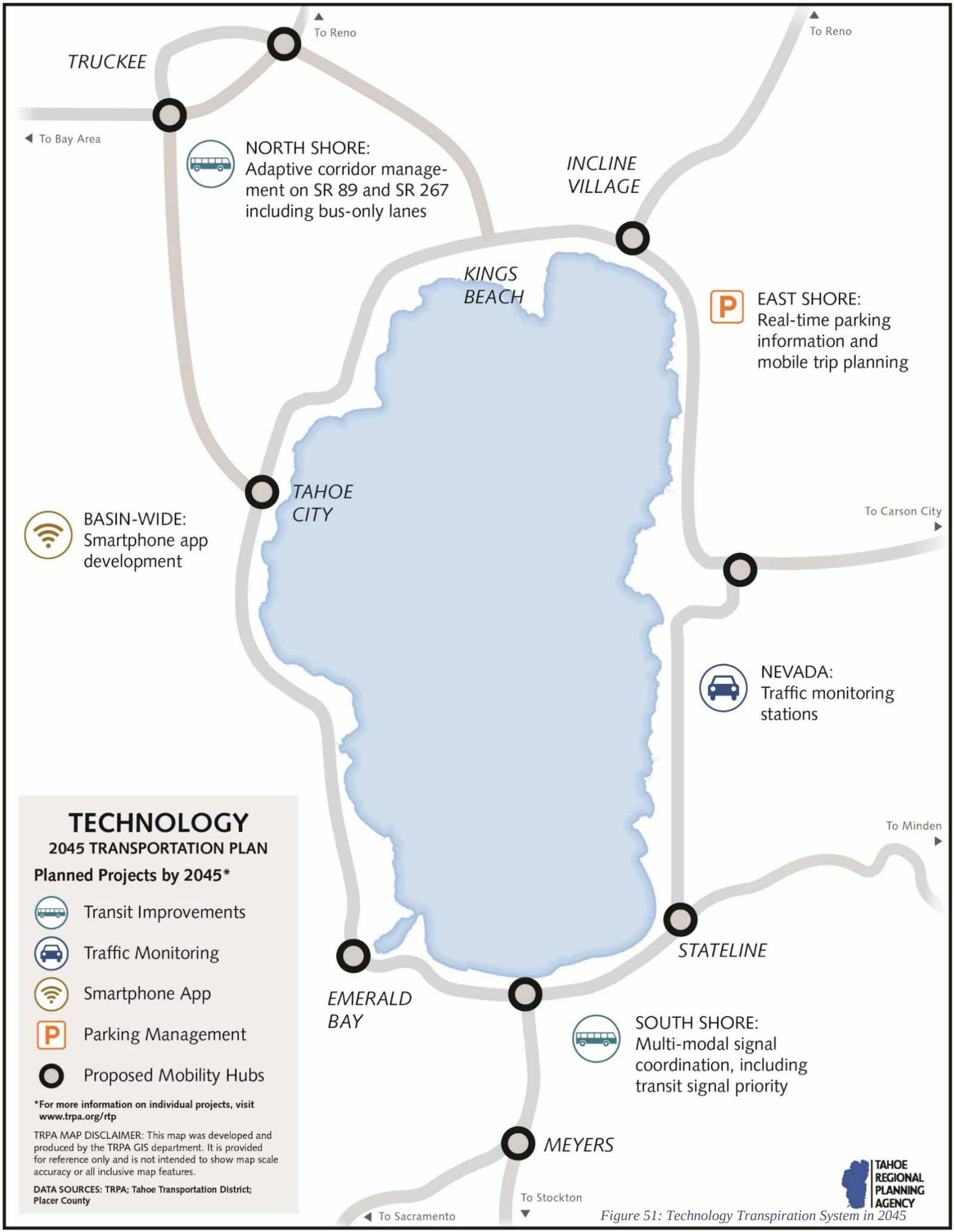


Figure 51: Technology Transpiration System in 2045

Technology Coordination

By 2025, the Caltrans will coordinate traffic signals along U.S. 50 in South Lake Tahoe and incorporate transit, pedestrian, and bicycle detection and prioritization which will prioritize the most vulnerable roadway users, keep buses running on time, improve safety for all travelers, and aid in congestion management.

By 2035, Placer County, California will implement transit signal prioritization at intersections along State routes 89 and 267 in the Resort Triangle to provide better travel options during congested travel times and the Nevada Department of Transportation will invest in AV and vehicle to everything communication infrastructure along its state routes in the Region.

By 2045, the Department of Homeland Security, the states, and local jurisdictions will fund and collaboratively operate an Intelligent Mobile Observation System. The system will remotely monitor roadway conditions, work zone activities, and operate integrated dynamic messaging signs, Highway Advisory Radio (HAR) messages, and roadway gates and barriers using wireless communications.

Figure 52: Nevada Smart & Connected Initiative

Making Travel Options More Attractive with Technology

Transportation technology allows for everyone traveling — whether for a day visit, the weekend, or simply trying to get to work or home — to access real-time information that can make travel safer and more efficient. Providing information about the availability of parking and the many travel options to popular town centers and recreation hot spots help people make better choices that also reduce congestion on the roadways and are better for the environment.

Policy Highlight

Policy 4.13: Establish regional and inter-regional cooperation and cost-sharing to obtain a uniform method of transportation data collection and sharing.

Tracking Technology Efficiency and Efficacy

To ensure Technology implementation is effective, TRPA will track the number of EV charging stations, number of parking lots with real-time capacity and pricing information, changeable message signs, and commitments to dig once policies.

COMMUNITIES

Communities is where elements of transit, trails, and technology come together to provide safe, secure, and efficient transportation and more vibrant communities.

Creating vibrant communities requires collaboration with local, state, and federal jurisdictions, the Washoe Tribe, transit providers, and sometimes with partners outside of the basin, such as neighboring metropolitan planning organizations.

Through corridor planning, land use and transportation are closely linked, and the Region's economic vitality and environmental sustainability are supported by better connecting people to their travel destinations. The connections link workers to homes and jobs, freight and customers to businesses, and people — residents and visitors alike — to recreation sites and town centers.

Policy Highlight

Policy 1.1: Support mixed-use, transit-oriented development and community revitalization projects that encourages walking, bicycling, and easy access to existing and planned transit stops.

Communities ensures affordable and achievable housing connects residents to where they need and want to go through a connected transportation system that is well-maintained and operated, and helps communities become more resilient in the face of climate change. This approach elevates the transportation needs of Priority Communities, including those living below the federal poverty line.

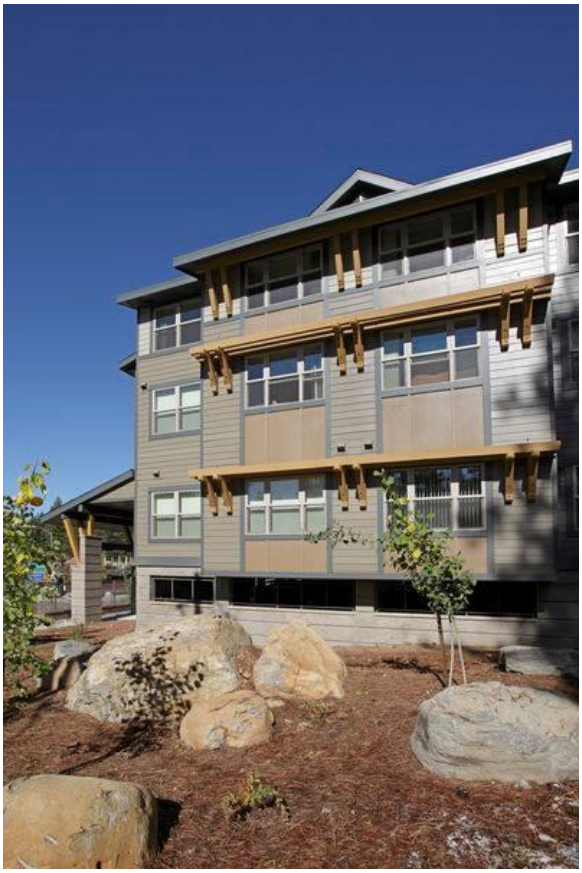


Figure 53: DOMUS Affordable Housing in Kings Beach

Policy Highlight

Policy 2.8: Ensure all transportation projects, programs, and policies meet the transportation needs and minimize negative impacts for disadvantaged communities and people with special needs

Communities Goals & Policies

Goals

A seamless transportation system that provides dynamic and safe travel to all users, agency operators, freight delivery (truck and plane), and emergency response.

Policies

Vibrant, healthy communities are achieved through multiple policies. Some policies focus on creating or strengthening the links between land use and transportation through mixed-use, transit-oriented development, as well as empowering developers to mitigate project impacts to the transportation system and advancing strategies to manage parking.

Policy Highlight

Policy 1.3: Develop and implement project impact analysis, mitigation strategies and fee programs to reduce Vehicle Miles Travelled and auto trips.

Other policies seek to address traffic congestion through travel demand management programs that encourage more people to walk, bike, or use transit. Additional policies ensure that roadway and transit projects in the Region are built for all travel modes, and not designed to meet highway standards which balances road and intersection performance with safety benefits for pedestrians and bicyclists.

To improve safety and security, policies call for traffic calming and safety considerations in project designs, safety awareness campaigns, wayfinding measures so travelers can move around confidently, and ensuring that emergency response measures are in place and public safety and transportation agencies are coordinating.

Policy Highlight

Policy 4.8: Invest resources in marketing and outreach campaigns to promote the use of non-auto travel options.

Policies seek to ensure that transportation projects and programs benefit the most vulnerable people in our communities, benefit the environment by helping achieve and maintain the Region's environmental thresholds, preserve and maintain roadway pavement conditions, and accelerate transportation and community improvements through collaboration and the development of a regional revenue source.

Policy Highlight

Policy 6.2: Maintain and preserve pavement condition to a level that supports the safety of the traveling public and protects water quality.

Supporting Plans

The Communities focus area is supported by multiple plans that coalesce regional and local land use and transportation policies and strategies at a community scale, including area plans (2018 Meyers Area Plan, 2017 Placer County Tahoe Basin Area Plan, 2015 Tahoe Valley Area Plan, 2013 Tourist Core Area Plan, and the 2013 South Shore Area Plan) and plans that provide broad community benefits, such as the 2017 Lake Tahoe Airport Master Plan, 2019 Lake Tahoe Region Safety Strategy, and 2019 Kahle Community Vision Plan.

Existing Communities Approach

Sustainable re-development projects help transform and connect local communities. TRPA and local jurisdictions review proposed projects and their impacts to the transportation system to determine if they will significantly impact the Region's VMT threshold. Projects with a significant impact must include design and transportation improvements to offset the impacts. All projects, large and small, mitigate

their impacts to air quality through the air quality mitigation fee. The North and South shore transportation management associations connect transportation and transit service providers with the business community in a collaborative, solution-oriented forum. This helps forge public-private solutions to the Region's transportation challenges. TRPA advances land use and transportation connections through regional housing plans and with incentivizes for affordable and achievable housing in town centers. Corridor planning connects transportation and land use through collaborations that accelerate implementation of transportation, infrastructure, and recreation projects.

Serving Everyone

TRPA seeks out and considers the needs of Priority Communities, such as low-income, disadvantaged, and minority households. The plan works to address the challenges they face, including accessing affordable housing, education, employment, services, and recreation access. Transportation is critical to economic vitality and quality of life for individuals and families in Indigenous communities as well. Tribal communities face similar deficiencies in the quality of transportation infrastructure and similar barriers to accessing reliable and affordable transportation as those in Priority Communities. The Washoe Tribe of Nevada and California provides input on transportation related plans at Tahoe.

Appendices E and F provide more information on how the plan reached these communities, as well as next steps for addressing environmental justice in the Region.

Land Use and Transportation

Integrating land use and transportation planning is powerful. It can reduce traffic congestion on the roads, reduce transportation's impacts to the environment, and maintain the quality of life for communities. The TRPA is unique among the nation's metropolitan planning organizations with its direct authority over land use regulations through the Lake Tahoe Bi-State Compact. This connection is forged through the Regional Plan, which prioritizes compact mixed-use development in town centers that are connected to the transportation system.

To incentivize town center development, the Regional Plan provides up to six units of development for every one transferred from environmentally sensitive and remote areas not served by transportation to town centers. These incentives are intended to gradually change the development footprint in the Region to reduce impacts to the environment and the transportation system.

The Regional Plan also identifies the need to prioritize transit-oriented housing developments across the Region.

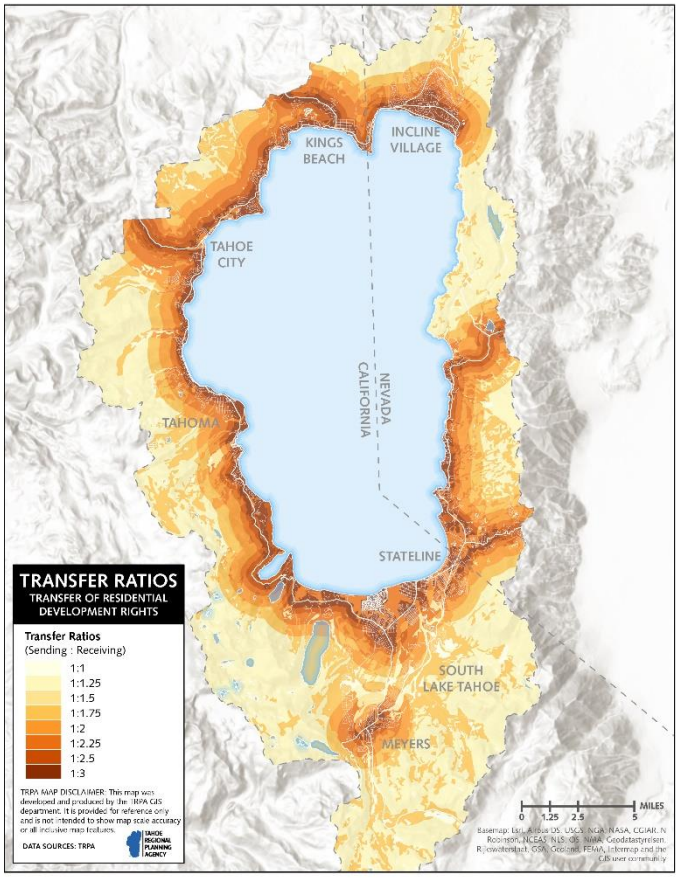


Figure 54: Transfer of Development Rights Transfer Ratio Map

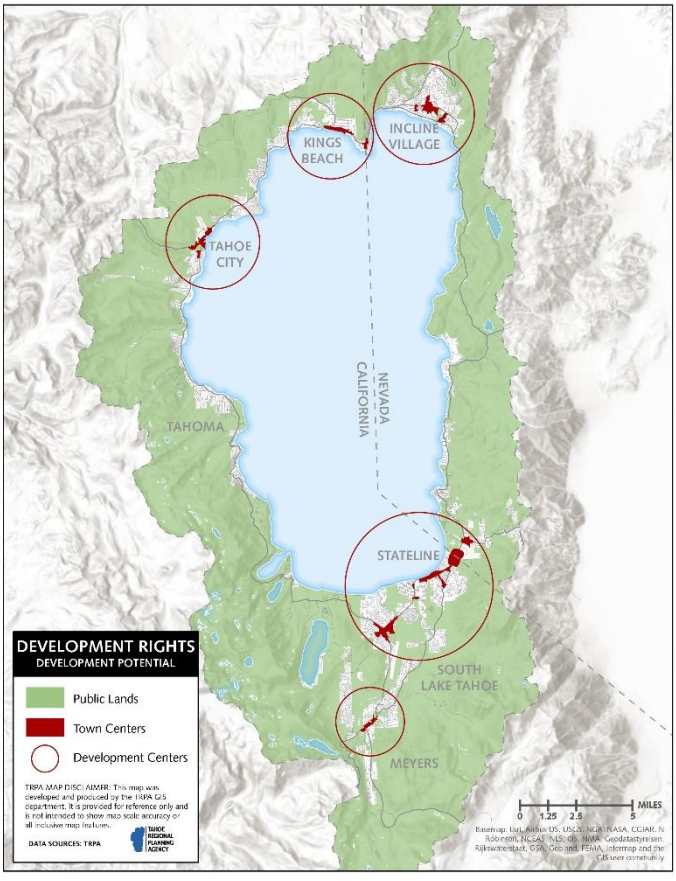


Figure 55: Regional Development Potential Map

A Community System

Safety & Aviation

The 2019 Lake Tahoe Region Safety Strategy was developed in collaboration with transportation partner agencies and stakeholder organizations to collectively reduce crashes on Tahoe roadways. The report analyzed data and made recommendations to change how transportation projects are developed. The recommendations are incorporated into the plan.

Policy 3.4: Support emergency preparedness and response planning, including the development of regional evacuation plans.

Multiple agencies provide broad emergency response services in the Tahoe Region. The South Lake Tahoe Airport is a vital transportation resource for public safety agencies, providing support for air ambulance and firefighting operations. The City of South Lake Tahoe, counties, state departments of transportation, public safety agencies, and local organizations such as the Lake Tahoe Community College, all have incident command systems in place for rapid law enforcement and safety response.

At the state level, California has developed the Standardized Emergency Management System as the framework for procedures to be used in response to disasters by the state and all levels of government. Nevada has the Division of Emergency Management (DEM) to assist and coordinate during large-scale emergency events. Each county and the City of South Lake Tahoe have an Operational Area Emergency Operations Plan.

Passenger air service to the Tahoe Region comes primarily from the Reno-Tahoe International Airport in Reno, followed by Sacramento International Airport. The South Lake Tahoe Airport serves general aviation activities including emergency services, private flights, and air taxi operations. Based on marketing efforts of the South Lake Tahoe community and the forecasted growth of the aviation industry, general aviation operations at the Lake Tahoe Airport are projected to increase by 17.9 percent through 2023. The Tahoe-Truckee Airport is located just North of the Tahoe Basin and serves a high volume of private and charter jets in addition to general aviation activity. Part of the Tahoe-Truckee Airport service area extends into the Tahoe Basin including Kings Beach.

The plan continues to recognize the importance of the airport's role in providing critical emergency services in the Region. TRPA will coordinate with the City of South Lake Tahoe to update its airport master plan.

Policy 1.7: Coordinate with the City of South Lake Tahoe to update and maintain an Airport Master Plan and limit aviation facilities within the Tahoe Region to existing facilities.

Asset Management and System Preservation

There are 110 miles of state and federal highways in the Tahoe Region. They form the backbone of the Region's transportation system by connecting town centers, serving as main streets in some communities, and serving as entry and exit corridors for surrounding regions. These routes are managed by the state departments of transportation. Intersecting and expanding these regional roadways are 619 miles of local streets. Local streets vary in type,

from urban arterials to rural county roads. Local jurisdictions are responsible for maintaining these streets.

Asset management is a critical part of maintaining and operating all roadways in a good and safe condition. Local jurisdictions and implementing agencies in the Region spend over 25 percent of their transportation funding on maintaining the local roadways. Maintenance includes striping, repaving, snow removal, street sweeping, and more. Placer County has been successful in implementing a benefit assessment district in Kings Beach to fund local roadway maintenance. The model may be expanded to other parts of the County and holds promise for the broader Region. Ongoing maintenance of local roads is critical to reducing the amount of fine sediment and other pollutants that flow into Lake Tahoe via stormwater runoff.

Movement of Freight and Goods

The Tahoe Region is considered a final destination for goods. Most arrive by trucks on federal and state highways. The closest freight rail depot is in Truckee and is served by the Burlington Northern and Santa Fe Railway. Due to relatively low goods movement volume on the Region's roadways, there are no projects planned to specifically address freight and goods movement in the plan. The current approach to freight planning recognizes that because most of the Region's goods are delivered by truck. Projects that improve roadway access and mobility will also benefit trucks moving goods. For example, the complete streets approach to project design outlined in the plan includes accommodations for large vehicles to provide for the needs of transit, freight, and public safety vehicles.

New data from cell phones and geo-location navigation devices and forecasts from the updated TRPA travel demand model promise to provide improved understanding of freight and goods movement. That analysis will inform future transportation plans.

As the country's freight fleet is converted to zero emission vehicle (ZEV) and alternative fuels, TRPA will continue to monitor the need for local alternative fueling infrastructure specifically for freight.

State & Local, Conservation and Historic Resources Consultation

TRPA analyzed the effects of the RTP/SCS on natural, cultural and historic resources as required by the California Environmental Quality Act and TRPA. The Initial Study/Initial Environmental Checklist determined that there would be no significant impact to these resources provided mitigation measures are in place. TRPA notified the California Department of Fish and Wildlife and the Nevada Division of Environmental Protection to ensure measures to protect fish and wildlife species are adequate. For cultural resource protection, the California and Nevada state offices of Historic Preservation and the Washoe Tribe were consulted.

Interregional/Mega-Regional Planning

To realize the long-term vision of the plan, regional and mega-regional partnerships and collaboration are being developed to establish more and better travel options for every user. TRPA is working with these partners on strategies to expand passenger rail service to Truckee, expand and enhance park-and-ride and intercept lots located outside of the Tahoe Region, and plan for inter-regional transit service.

Proposed Communities Approach

Six components make up the Communities planning approach to transportation at Tahoe: dense mixed-use land use, complete streets, mobility hubs, operations and maintenance, meeting housing needs, and corridor planning.

Dense Mixed-Use Land Use

The Regional Plan prioritizes compact mixed-use development in town centers that are connected by the regional transportation plan's envisioned transportation system. Incentives are in place to shift development from environmentally sensitive and remote areas in Tahoe to town centers that will be connected by the transit and trails projects discussed in those sections of the plan. The powerful combination of land-use and transportation will gradually change the Region to reduce impacts development and transportation has to the environment.

Complete Streets

Streets make up more than 80 percent of all public space in cities and have the potential to foster business activity, serve as a front yard for residents, and provide a safe place for people to travel, whether on foot, bicycle, car, or transit.

Complete streets are streets designed to serve all travelers by extending planning and infrastructure beyond the roadway to include things such as sidewalks, bike lanes, shared-use paths, and biking and walking amenities along the route, including landscaping, benches, and lighting. When incorporated comprehensively, complete streets encourage travel by foot, bike, and transit.

Recent complete street projects in Kings Beach and South Lake Tahoe have transformed the adjacent communities, increased the number of people biking and walking, reduced vehicle speeds, and increased safety.

Complete streets projects proposed in the plan include the Main Street Management Plan in South Lake Tahoe, which will add pedestrian, bicycle, and transit improvements to a busy commercial and residential travel corridor, and the Tahoe City Downtown Access Improvement Project on the North Shore, which will incorporate traffic calming, pedestrian amenities, and bicycle facilities.

Figure 56: Rendering of Sierra Blvd Complete Streets Project

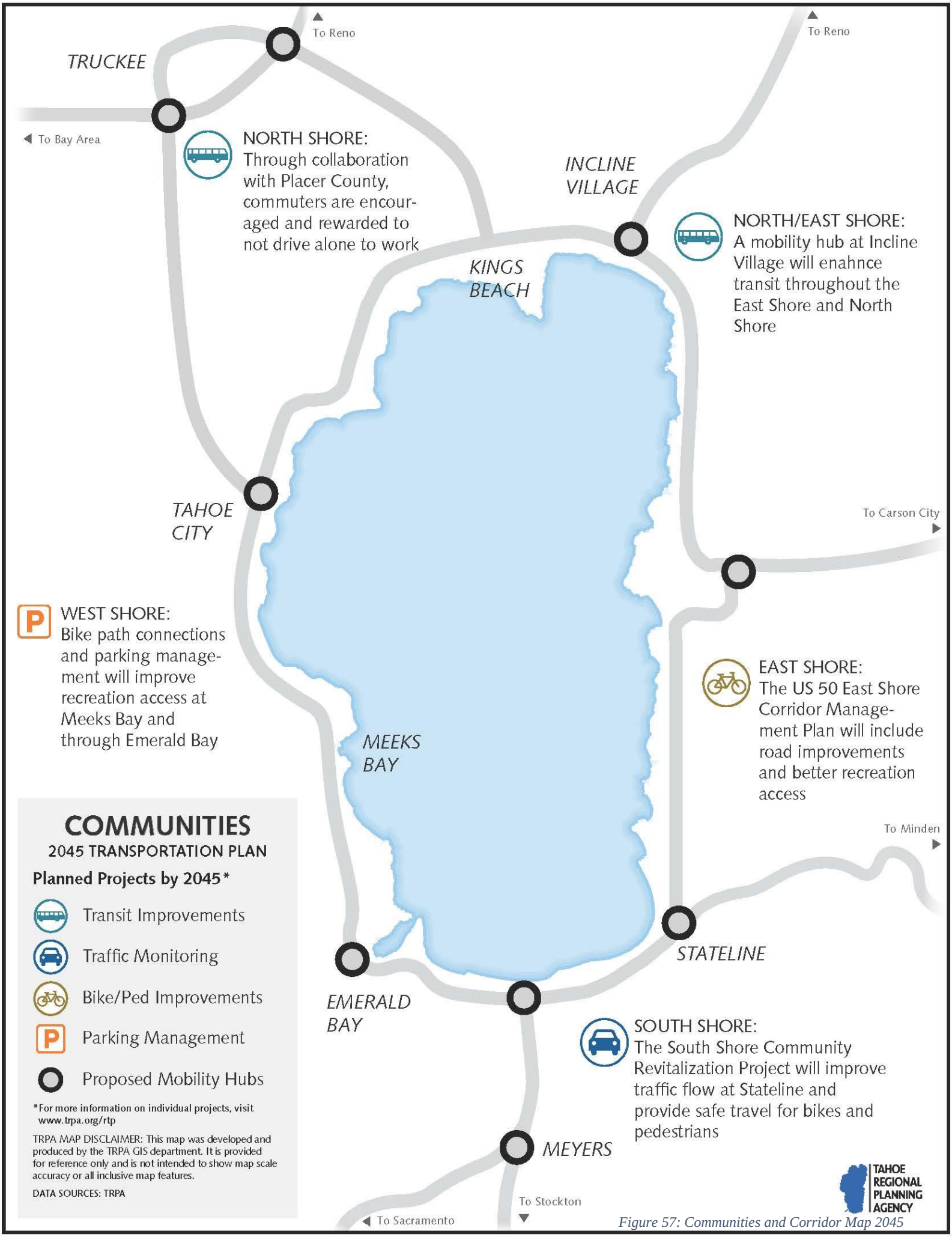


Figure 57: Communities and Corridor Map 2045

Mobility Hubs

Mobility Hubs are multi-faceted. They serve the Region as transit centers, park and ride locations, active transportation connections, and electric vehicle charging facilities. Installing and linking these hubs by transit and trails creates the seamless transportation system the plan envisions.

Mobility hubs function best when they are built to provide travel options for working, living, shopping, and playing. Over the next 25 years, partners will construct 17 mobility hubs and transit centers in various locations around the Tahoe Region and in neighboring regions.

Each hub will have park and ride with parking spaces people can reserve online. Frequent transit routes with buses equipped with storage and rack space will serve mobility hubs, allowing people to bring along their recreation equipment and luggage. Mobility hubs will be sized appropriately for their locations. Larger hubs will be developed in town centers and smaller hubs at recreation facilities and other dispersed areas.

The plan proposes a series of mobility hubs around the Region, including in Incline Village on the North Shore and at the southern and northern gateways to Tahoe's West Shore

Mobility hubs will provide transit service, pedestrian and bicycle path connections, charging facilities for electric vehicles and bikes, and park and ride facilities. TRPA is working with the Carson Area MPO to plan for future park-and-ride and intercept lots, and transit connections, which, over time, could evolve into full mobility hubs for the Region's commuters and day visitors.

The Region's newest mobility hub is located at the Lake Tahoe Community College in South Lake Tahoe. This mobility hub highlights the future of transportation electrification with overhead induction chargers for transit busses, DC and Level 2 chargers for light-duty vehicles and charging for electric bikes and scooters.

Figure 58: Tahoe City Mobility Hub

Operations and Maintenance

Operations and maintenance is about coordination around common goals. Agencies throughout the Region work together to ensure that all types of travel are connected, flow safely, accommodate goods movement (including through the Region's airport), and supports Tahoe's economic vitality, quality of life, and environment.

TRPA continues to prioritize funding for operations and maintenance with local jurisdictions and state partners, though needs continue to outstrip available funding.

Policy Highlight

Policy 6.2: Maintain and preserve pavement condition to a level that supports the safety of the traveling public and protects water quality.

Over the next few years, Nevada Department of Transportation and Caltrans will repave critical state routes including SR-28 from Tahoe City to Incline Village, and U.S. 50 on the East Shore.

El Dorado is now on its third phase of improving Lake Tahoe pavement conditions to provide water quality benefits. Roads in poor condition can lead to more hazardous conditions for drivers and cyclists. Fine sediment from roadway runoff and increased wear and tear impacts lake clarity. El Dorado County is seeking funds to implement the Enhanced Stormwater Resource Plan with multi-benefit stormwater projects.

Figure 5: Elk's Club Drive prior to repaving. (R Wigart)

Figure 6: Elk's Club Drive after repaving. (A Buxton)

Implementation

By 2025, Commuters will be encouraged and rewarded for not driving alone to and from work, every corridor in Tahoe will have a plan for providing more and safer transportation choices, and students can confidently and safely walk, bike, or ride transit to and from school.

By 2035, Main Street improvements on the South Shore will be completed, providing better walking, biking, and transit service in one of the most heavily-visited areas at Tahoe; more people park their cars once and travel around the Region by transit, walking, or biking; and recreation access will be improved with new paths and parking management strategies at Meeks Bay.

By 2045, roads will be paved, potholes filled, and regular maintenance completed on all local roads at Tahoe, and U.S. 50 will be rerouted around popular gathering and recreation areas on the South Shore, and a new main street is built with improved transit service and infrastructure for pedestrians and bicyclists.

Meeting Housing Needs

The Tahoe Region faces a serious shortage of workforce housing. Tahoe's vast protected open space, growth caps and limited development capacity has led to competition for Tahoe's scant housing stock. Rental and home prices climb while local residents that rely on seasonal and minimum wage salaries are priced out of the market. Between 2010 and 2018, the proportion of housing units occupied by local residents in the Tahoe Region has dropped from 46 percent to 42 percent. Recent home sales from both the North and South shores show that the vast majority of homes sold in recent years have been to second-home owners, meaning this percentage has likely dropped further over the last two years. Housing shortages, both regionally and at the state level,

have led to several efforts to quantify and set goals for achieving housing needs.

The State of California sets housing targets for individual jurisdictions through its Regional Housing Needs Assessment (RHNA) process. El Dorado County, Placer County, and the City of South Lake Tahoe are required to show how they will meet these targets through their Housing Elements under RHNA. As the MPO for the Region, TRPA is also required to show in the RTP that it can accommodate the RHNA.

While TRPA can show that it has sufficient development rights to meet the RHNA, studies indicate that significant barriers remain to constructing workforce and affordable housing in the Region.

At the regional level, the Tahoe Prosperity Center on the South Shore and the Tahoe Truckee Community Foundation in the North Tahoe-Truckee area, as well as Placer County, have conducted workforce housing needs assessments[4] that, combined, cover most of the Tahoe Region, with the exception of Washoe County. Taken together, these assessments identify an affordable-achievable housing need of approximately 3,700 homes on the South Shore and in the Tahoe portion of Placer County.

TRPA is committed to working with local governments, agencies, and nonprofits to address Tahoe's housing needs. TRPA is also analyzing and updating its land use planning system to address items that prevent construction of affordable-achievable housing. Two initiatives are key to progress in this area, one which was completed in 2018, the Development Rights Strategic Initiative, and one which was launched in July 2020, the Tahoe Living: Housing and Community Revitalization Initiative.

Development Rights Strategic Initiative

The Development Rights Strategic Initiative made two key changes to the development rights system at Tahoe to better incentivize development of more affordable, moderate, and achievable housing. One change allows conversion of development rights among different types of development. A second change expands the availability of bonus units for affordable, moderate, and achievable housing when projects are sited within ½ mile of transit. These incentives provide development rights at little to no cost, reducing the overall cost of development. Increased options for housing developers to obtain development rights allows development rights to flow to the appropriate need as market demands shift. Regional partners are actively working to reduce other development related costs, such as sewer hook-up fees.

Tahoe Living: Housing and Community Revitalization Initiative

The Tahoe Living initiative aims to achieve RHNA and local housing goals through collaboration with partners. This approach would use TRPA incentives and requirements to complement local jurisdiction strategies to meet the overall housing need. Coordinated efforts could include creating common deed restrictions, aligning TRPA policy with state legislation, simplifying code, and other strategies yet to be identified by the working group.

[4] The Tahoe-Truckee Workforce Housing Needs Assessment (2016) and the South Shore Housing Needs Assessment (2019). Placer County produced estimates of housing (2019).

Corridor Planning

Corridor planning is the bridge between the plan's goals and policies, the implementation and long-term operation of multi-benefit projects, and the Region's approach to comprehensively addressing its largest challenges. The Corridor Planning Framework was developed to increase collaboration and accelerate transportation improvements that often cross jurisdictional boundaries.

The Tahoe Region is divided into six corridors based on the unique transportation, recreation, and quality of life needs of each. Corridor planning allows TRPA to leverage its transportation and land use policies to create synergies and maximize the cost efficiencies and benefits of projects.

The approach to each corridor is adaptive to recognize and respond to localized needs, but planning always includes active transportation, sustainable recreation, housing, and transit-oriented development within town centers.

Corridor Plans

The Corridors approach to the plan is informed by the 2017 Linking Tahoe: Corridor Connection Plan, and completed or draft plans for the corridors in the Tahoe Region, including the 2020 DRAFT SR 89 Recreation Corridor Management Plan, the 2020 DRAFT Main Street Management Plan, and the completed 2014 Nevada State Route 28 Scenic Byway Corridor Plan

Table 3: Housing, Recreation, and Land Use Patterns by Corridor

Housing, Recreation, and Land Use Patterns by Corridor						
	SR 89/28	**NV SR 28**	**US 50 East**	**US 50 South**	**Meyers/Y**	**SR 89 Rec**
# Residential Units	11,264	7,375	2,088	11,272	9,921	2,562
% Single Family Units	84.8%	91.7%	93.4%	60.3%	78.4%	94.2%
% Multi-Family less than 20 du/bldg.	13.8%	6.9%	6.6%	31.2%	8.3%	5.8%
% Multi-Family 20+ du/bldg.	1.4%	1.4%	0%	8.5%	13.3%	0%
# Tourist Accommodation Units (TAUs)	1,217	817	110	7,916	494	113
% Backcountry, Wilderness, Conservation & Recreation Acres	87.8%	85.0%	91.^%	59.4%	86.8%	96.5%

Nevada SR 28 National Scenic Byway Summary

This is the Lake Tahoe Region's first corridor plan, developed in 2014 to comprehensively address safety, environmental, and recreation access concerns on the East Shore. The corridor extends from Incline Village south to Sand Harbor and Spooner Lake state parks, passing through Tahoe's longest stretch of undeveloped shoreline--eleven miles from Lakeshore Drive in Incline Village to U.S. 50.

The Tahoe Transportation District and many partners created this corridor plan, as well as a framework for corridor planning throughout the Region. Implementation has exceeded expectations.

Challenges

Recreation demand was double existing parking capacity. This resulted in in a multitude of challenges. Perhaps the biggest is "shoulder-parking." The areas are narrow, often at the edge of steep inclines with limited sight distance.

Safety and erosion are important concerns. The number of vehicles parked along the shoulder has grown every year – almost 170% between 2000 and 2011 – and is projected to double by 2038. Safety is critical as the fatality trend increased from 2006-2013 in contrast to the statewide average that decreased about 50% per NDOT. Traffic slows and becomes congested as vehicles, trying to enter Sand Harbor's typically full lot, back up for almost a mile.

Vision

Create a platform for effective collaboration to protect and enhance this section of "America's Most Beautiful Drive."

Measuring Success

Many partners are working to improve travel options and parking and protect water quality and natural resources throughout this environmentally sensitive corridor. Partners recently completed a world-class, three-mile stretch of shared-use path paralleling Nevada State Route 28 from Incline Village to Sand Harbor State Park, coupled with parking and water quality improvements, and are now working to extend the path south to Spooner Summit and U.S. Highway 50.

Future Focus

- Sand Harbor to Spooner Path
- Paid Parking
- Parking Management System and reservation

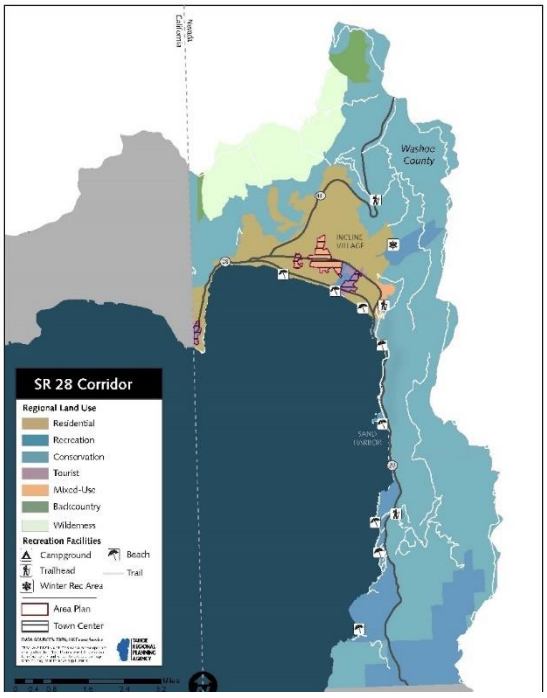
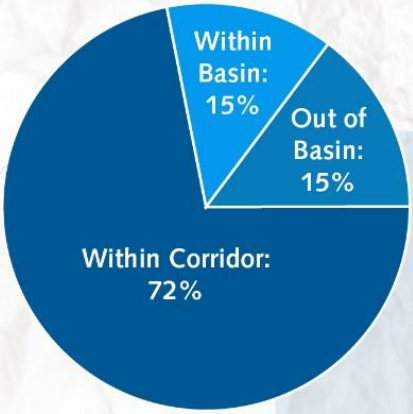


Figure 59: Nevada SR 28 Corridor

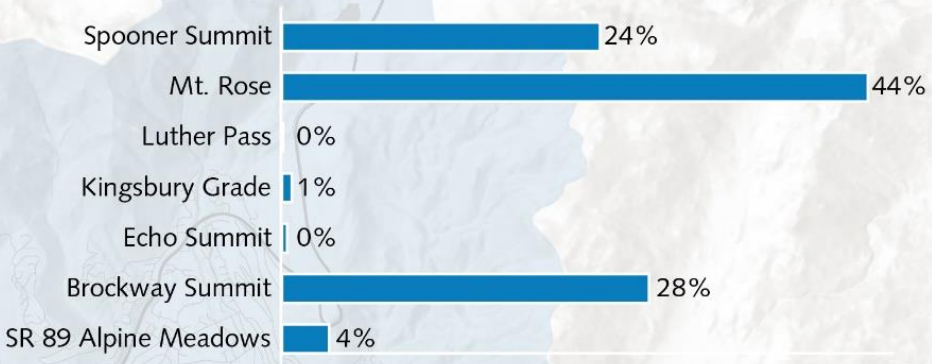
CORRIDOR PROFILE: NEVADA SR 28 SCENIC BYWAY

Source: StreetLight Data

Average Daily Trips:



Trips by Entry Corridor (Out of Basin):



Within Corridor = trips that begin and end within the corridor
Within Basin = trips to or from the corridor that begin or end outside the corridor, but within the Tahoe Basin
Out of Basin = trips to or from the corridor that begin or end outside the Tahoe Basin

Education Level:

17% No High School Diploma

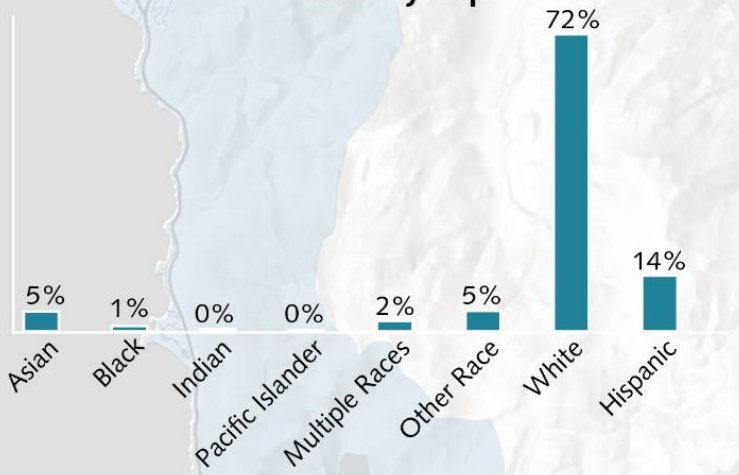
17% High School Diploma

29% Some College

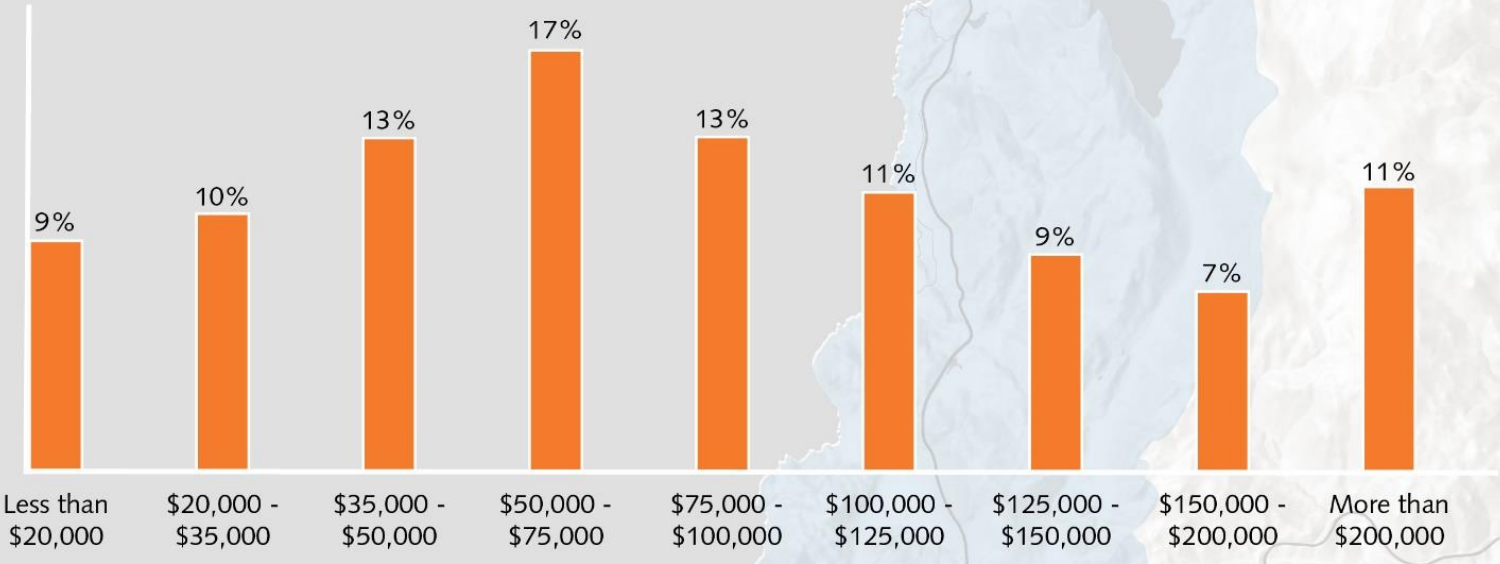
25% Bachelor's Degree

18% Graduate Degree

Race by Trip:



Trips by Annual Household Income:



California SR 89 Recreation Corridor

Summary

State Route Highway 89 Recreation Corridor (SR 89 Recreation Corridor) is a two-lane mountain roadway running from Meyers, California north along the West Shore of Lake Tahoe to the Placer County border. The SR 89 corridor includes 17.5 miles of highway with adjacent recreation uses, extending from West Way in El Dorado County north to the El Dorado/Placer county line at Sugar Pine Point State Park.

The area features some of Lake Tahoe's most popular recreation sites, including beaches, the iconic Emerald Bay, and access to Fallen Leaf Lake and the Desolation Wilderness Area. The roadway serves almost 1.8 million visitors each year, which creates numerous transportation, access, and natural resources challenges.

Led by TRPA, the Tahoe Transportation District, and the U.S. Forest Service Lake Tahoe Basin Management Unit (LTBMU), planning for the State Route 89 Recreation Corridor Management Plan brought together 17 public agencies and stakeholder organizations to develop travel options and visitation management strategies that address challenges related to the corridor's extensive roadway and recreation demand.

Challenges

Demand for recreation in this corridor exceeds the available roadway capacity and recreation infrastructure during peak times of visitation to the Region. This has caused impacts to the environment, heavy traffic congestion, and negative visitor and resident experiences.

Vision

Provide a safe and seamless travel experience that inspires every visitor and resident to walk, bike, or use transit to access the corridor's diverse recreation offerings to better manage congestion, enhance environmental resiliency, and allow people to focus on enjoying the special nature of Lake Tahoe's southwest shoreline.

Measuring Success

- Reduction of vehicles
- Transit mode share goals
- Improvement in natural resource conditions

Future Focus

- Construction of Tahoe Trail
- Parking management system
- Development of corridor implementation team

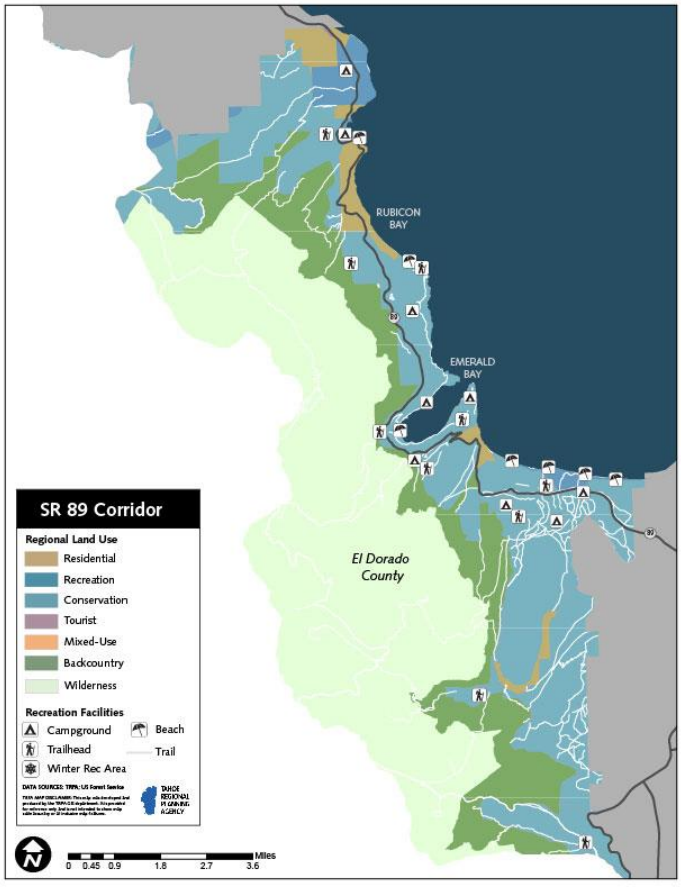
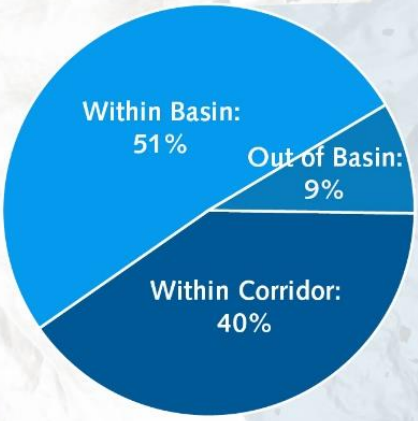


Figure 60: California SR 89 Recreation Corridor

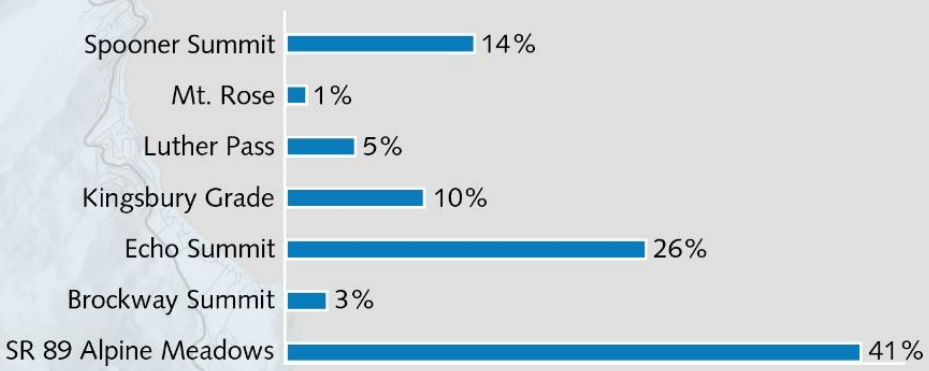
CORRIDOR PROFILE: SR 89 RECREATION

Source: StreetLight Data

Average Daily Trips:



Trips by Entry Corridor (Out of Basin):



Within Corridor = trips that begin and end within the corridor
Within Basin = trips to or from the corridor that begin or end outside the corridor, but within the Tahoe Basin
Out of Basin = trips to or from the corridor that begin or end outside the Tahoe Basin

Education Level:

10% No High School Diploma

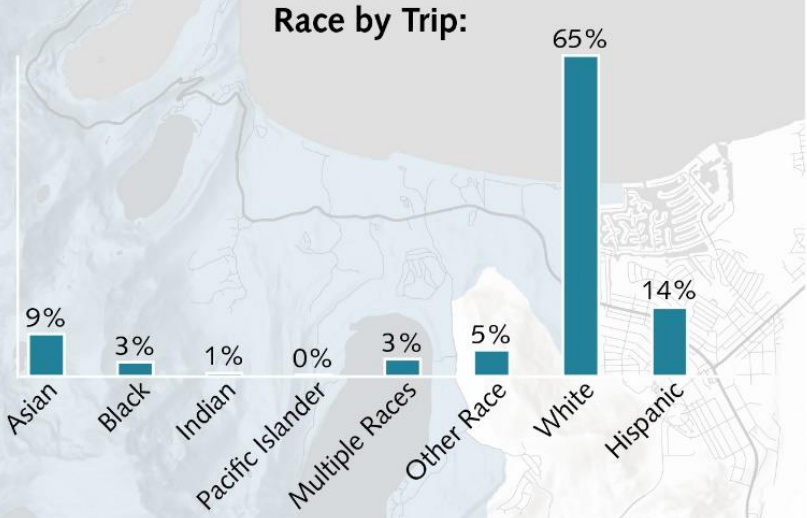
21% High School Diploma

31% Some College

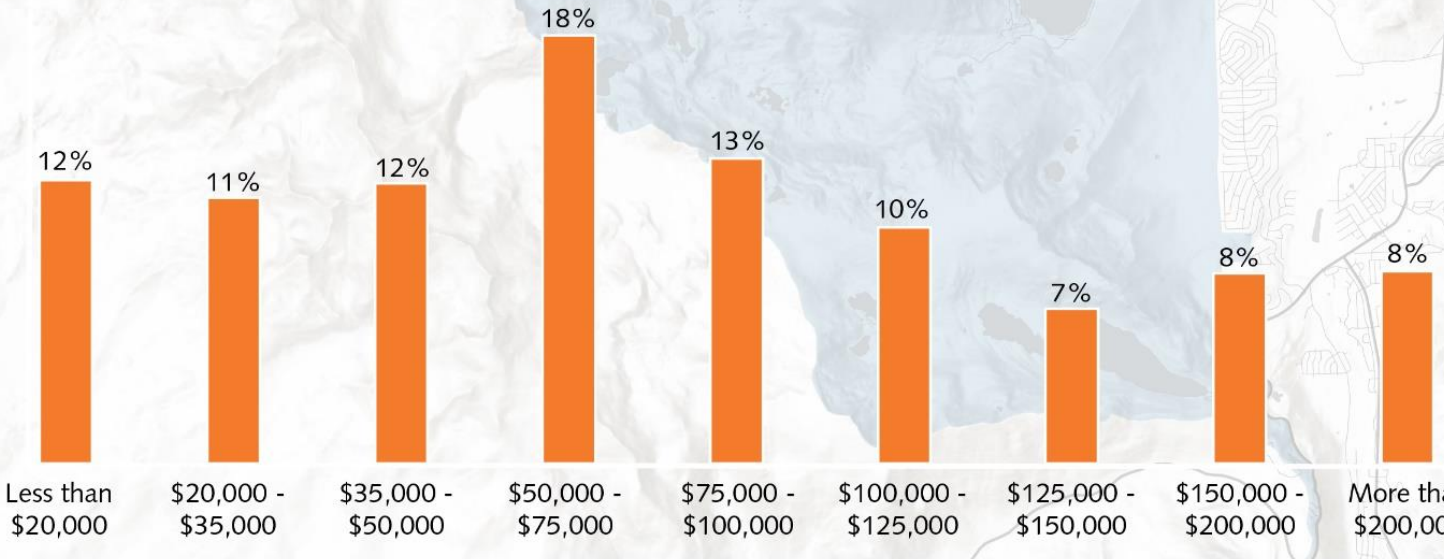
24% Bachelor's Degree

14% Graduate Degree

Race by Trip:



Trips by Annual Household Income:



California SR 89/28

Summary

The corridor includes the residential areas of Tahoma, Homewood, Tahoe City, Dollar Point, Carnelian Bay, Tahoe Vista, and Kings Beach. Recreational attractions are available year-round, skiing, hiking, biking, boating, off-roading, and more.

The corridor begins at Sugar Pine Point State Park and extends north and east to the California/Nevada state line in Crystal Bay, extending through both El Dorado and Placer counties and encompassing two town centers, Tahoe City and Kings Beach, and 11 miles of shoreline.

The Corridor also includes the Tahoe Basin of the Resort Triangle that connects SR89, SR28, and SR267 between Tahoe City, Kings Beach, and Truckee.

Challenges

Public parking is limited, which results in unsafe parking near popular recreation destinations. Transit service is free and becoming more frequent from Kings Beach to Tahoe City, but is less available and less frequent farther east to the Nevada state line and along the West Shore to Sunnyside, Homewood, and Tahoma. Residents and commuters can find it difficult to travel without the need for a personal vehicle.

Vision

The Resort Triangle Transportation Plan presents projects and programs that will provide more reliable and enjoyable ways to travel within the Resort Triangle improving the experience of recreating, shopping, dining, working, and living in North Lake Tahoe. The plans mission is to Create a transportation system for tomorrow which will make more efficient use of existing infrastructure, focus on improving mobility for all, reduce transportation impacts on the environment, improve congestion and travel delay, promote and enhance transit services, and provide linkage for non-motorized travel choices

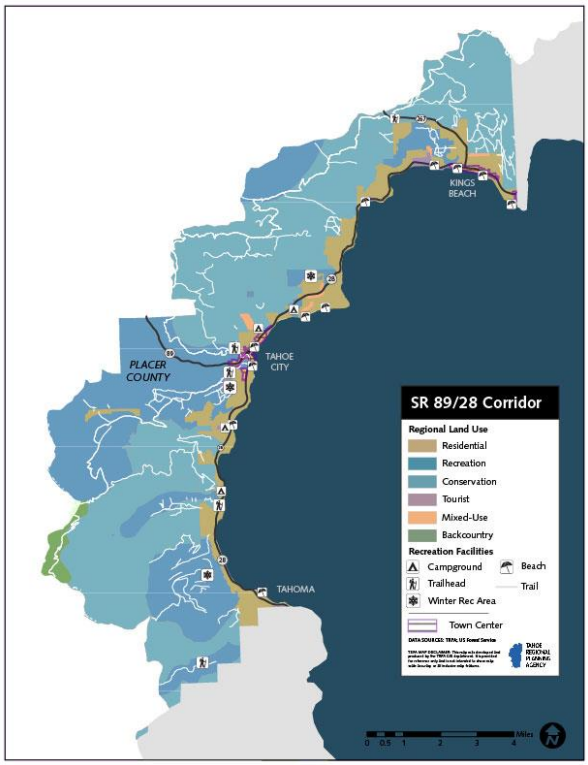


Figure 61: California SR 89/28 Corridor

Measuring Success

- Tahoe Trail: West Shore
- Transit Ridership
- Travel Demand Management

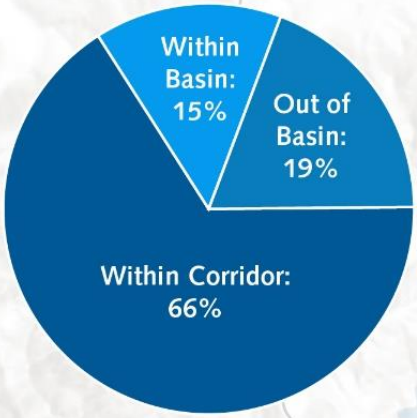
Future Focus

- Pedestrian Crossing Enhancements: Tahoe City
- Fanny Bridge Revitalization Project
- Kings Beach Western Approach

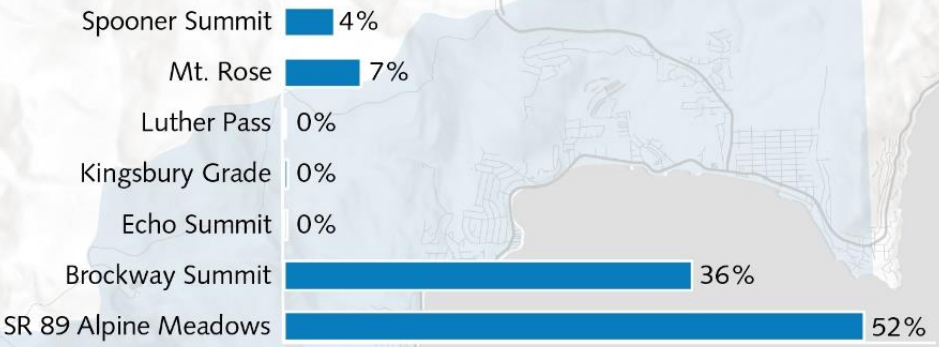
CORRIDOR PROFILE: CALIFORNIA SR 28/89

Source: StreetLight Data

Average Daily Trips:



Trips by Entry Corridor (Out of Basin):



Within Corridor = trips that begin and end within the corridor
Within Basin = trips to or from the corridor that begin or end outside the corridor, but within the Tahoe Basin
Out of Basin = trips to or from the corridor that begin or end outside the Tahoe Basin

Education Level:

12% No High School Diploma

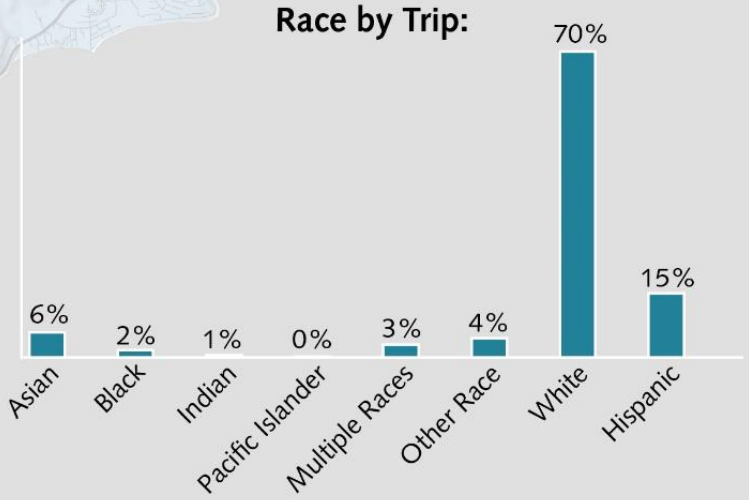
17% High School Diploma

29% Some College

28% Bachelor's Degree

14% Graduate Degree

Race by Trip:



Trips by Annual Household Income:

California/Nevada US 50 South Shore

Summary

The U.S. 50 South Shore Corridor begins at Elks Point Road at Roundhill in the north and continues south to Trout Creek near Al Tahoe Boulevard, extending through Douglas County on the Nevada side and El Dorado County and the City of South Lake Tahoe on the California side. The Main Street Management Plan area extends from Lake Parkway in Stateline, Nevada to the U.S. 50 intersection with Pioneer Trail in South Lake Tahoe, California.

Challenges

The corridor spans two local jurisdictions as well as California and Nevada, requiring continuous coordination, engagement, and support among stakeholders, property owners, and community members. The densely developed nature of some areas of the corridor constrain design possibilities which must serve large volumes of people and varieties of user demands.

Main Street Management Plan

Within this corridor, relocation U.S. Highway 50 around Stateline and the Casino Core through the U.S. 50/South Shore Community Revitalization Project presents a once in a generation opportunity one of the South Shore's most dense commercial areas.

The Main Street Management Plan lays the framework for a world-class space where people can gather and easily travel among the corridor's tourist lodging, shopping, dining, casinos, and adjoining neighborhoods, as well as to nearby recreation sites. Implementing the plan and project for one of Tahoe's most visited areas will enhance resident and tourist experiences and create new business opportunities through mixed-use redevelopment, with parking management, wayfinding, transit services, amenities for biking and walking, and streetscape improvements.

Vision

Create a world-class space for people, enhance the environment for those visiting surrounding properties, and provide for an experience that matches the unique natural environment at Lake Tahoe.

Measuring Success

- Reducing vehicles along the Main Street corridor
- Increasing safety for pedestrians and bicyclists
- Addition of sustainable and green water quality infrastructure
- Enhance street activation and business vitality with space designed for special events, street closures, and pop-up business.

Future Focus

- Implementing a corridor parking management and wayfinding system
- Constructing multi-use path in the corridor
- Developing an operations, management, and funding plan

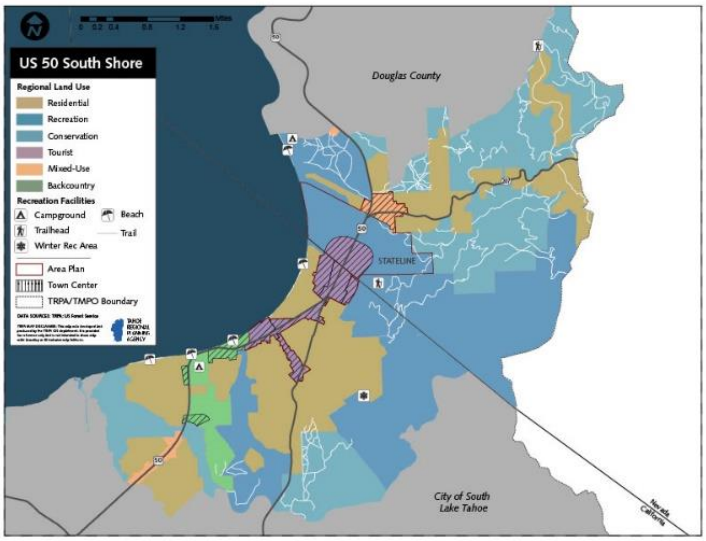
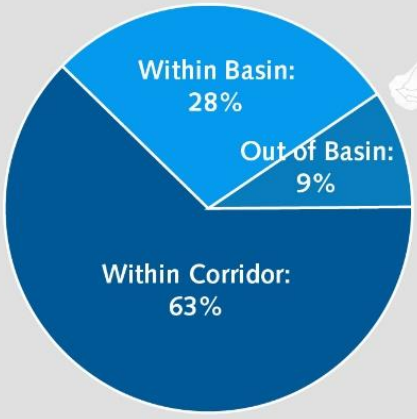


Figure 62: U.S. 50 South Shore Corridor

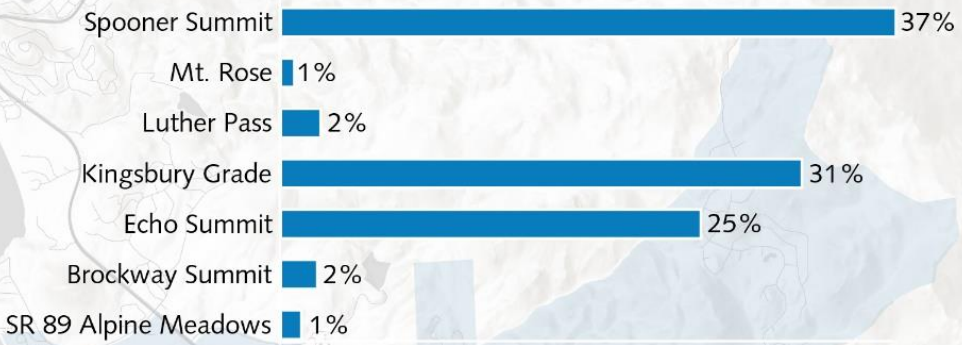
CORRIDOR PROFILE: US 50 SOUTH SHORE

Source: StreetLight Data

Average Daily Trips:



Trips by Entry Corridor (Out of Basin):



Within Corridor = trips that begin and end within the corridor
Within Basin = trips to or from the corridor that begin or end outside the corridor, but within the Tahoe Basin
Out of Basin = trips to or from the corridor that begin or end outside the Tahoe Basin

Education Level:

13% No High School Diploma

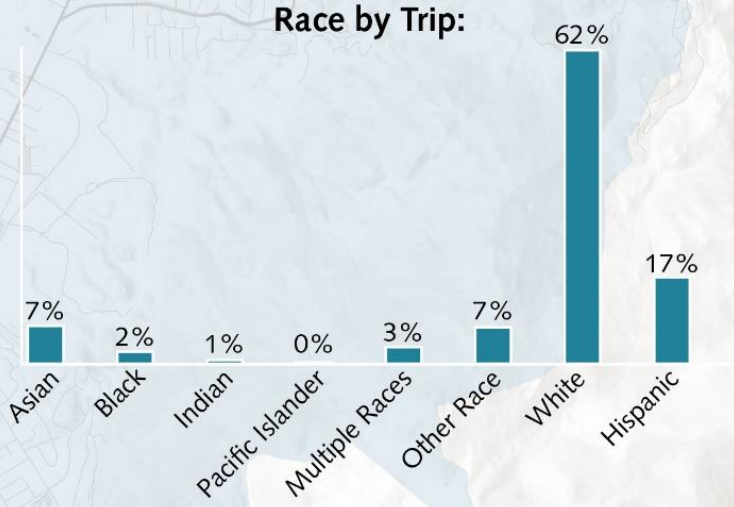
22% High School Diploma

33% Some College

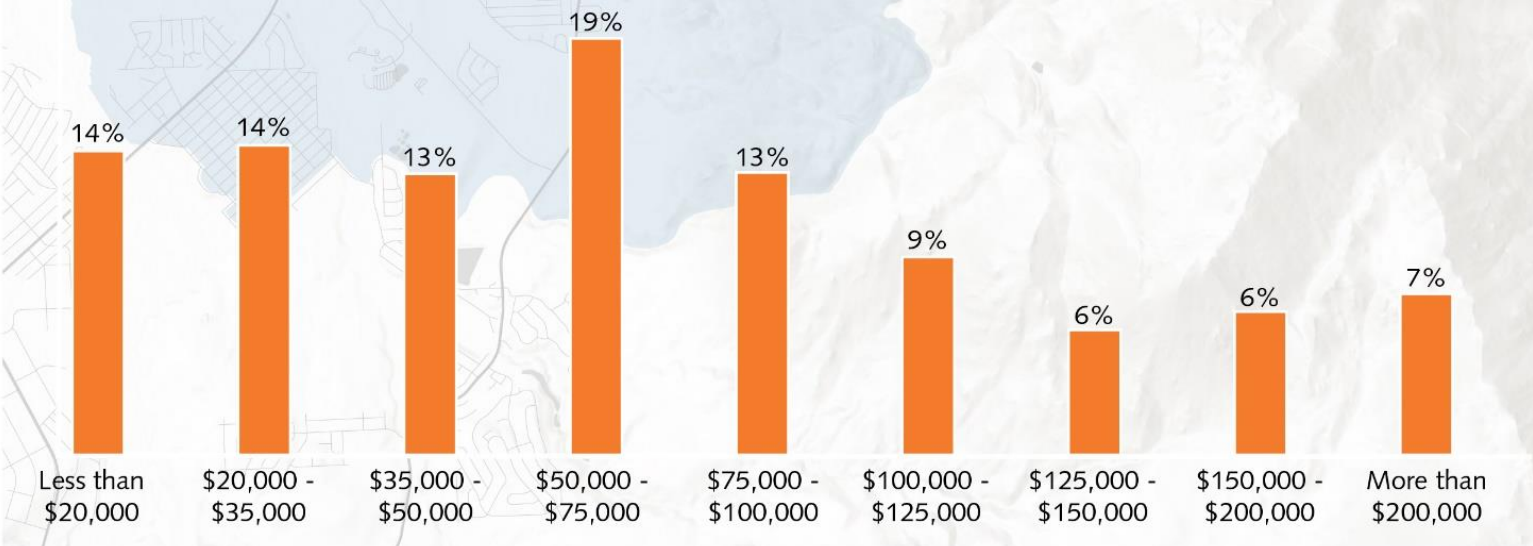
21% Bachelor's Degree

11% Graduate Degree

Race by Trip:



Trips by Annual Household Income:



Nevada US 50 East Shore

Summary

The U.S. 50 East Shore corridor in Nevada begins at the crest of the Carson Range at Spooner Summit and continues south and west to Stateline Avenue, extending through Douglas County. The corridor includes the unincorporated communities of Stateline, Zephyr Cove, Round Hill Village, Glenbrook, Skyland, and Lakeridge along the eastern shore and connects to South Lake Tahoe, California.

The corridor functions as a both a rural transportation system and a busy entry route for visitors, recreation travelers, commuters, and through traffic. The corridor is comprised mostly of public lands. Where development has occurred, it has been for residential and recreation uses. Significant recreation areas within the corridor include Spooner Summit, with public access to the Tahoe Rim Trail and Spooner Summit State Park, Zephyr Cove Resort, Round Hill Pines Beach Resort, Nevada Beach, and sections of the Tahoe trail.

Challenges

Public transit service does not currently exist within the corridor. Pedestrian and bicycle facilities and crossings are limited in the corridor, which isolates neighborhoods from local retail and recreation opportunities. Parking on road shoulders is common at popular recreation sites causing safety issues as vehicles and passengers encroach into travel lanes. The roadway has safety issues, including at the intersection of SR 28 and U.S. 50 at Spooner Summit, as well as at residential, commercial, and recreation access points, which often lack turn pockets.

Vision

The U.S. 50 East Shore Corridor provides safe on- and off-street transportation with connected pedestrian and bicycle paths, transit service, sustainable recreation access, and connectivity to the many neighborhoods and businesses from within the Region and from neighboring regions.

Measuring Success

- Tahoe Trail
- Transit Service
- Rate of Serious Injuries per 100 million VMT

Future Focus

- Round Hill Pines intersection improvements
- Complete the U.S. 50 East Shore Corridor Management Plan
- NDOT Repaving - Broadband

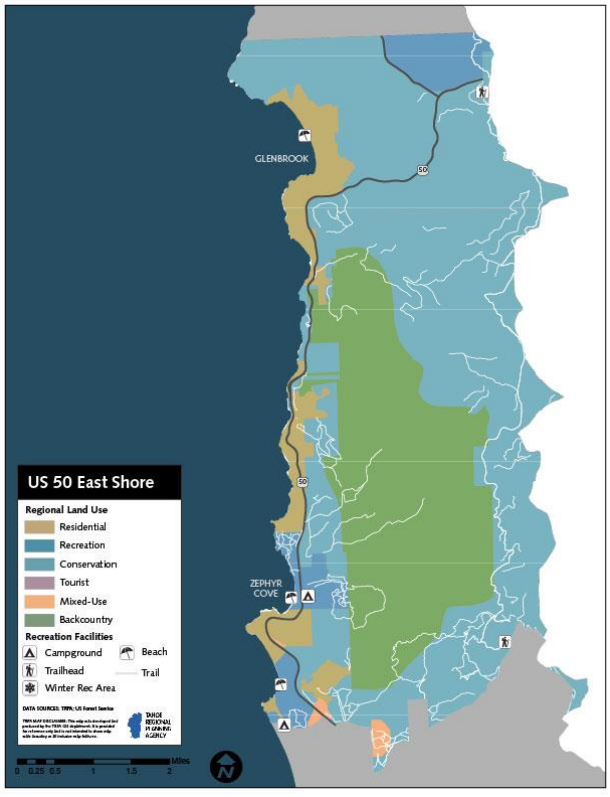
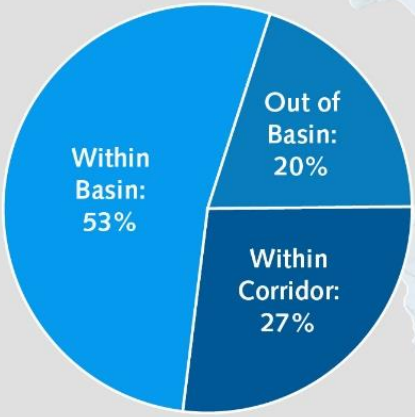


Figure 63: Nevada US 50 East Shore Corridor

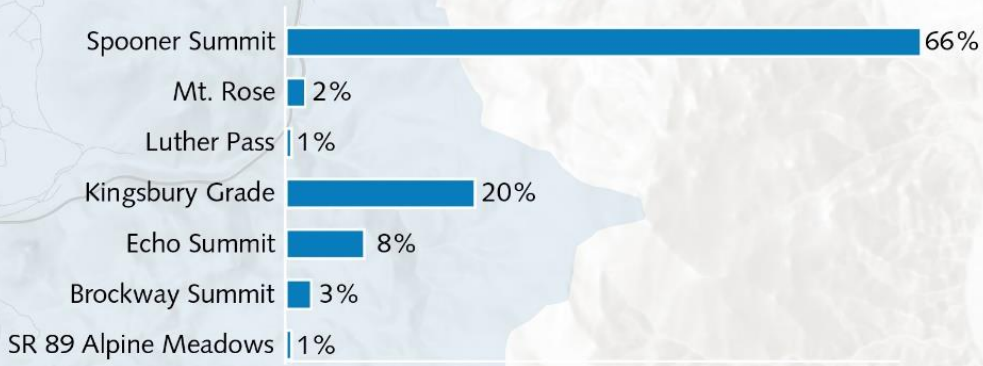
CORRIDOR PROFILE: US 50 EAST

Source: StreetLight Data

Average Daily Trips:



Trips by Entry Corridor (Out of Basin):

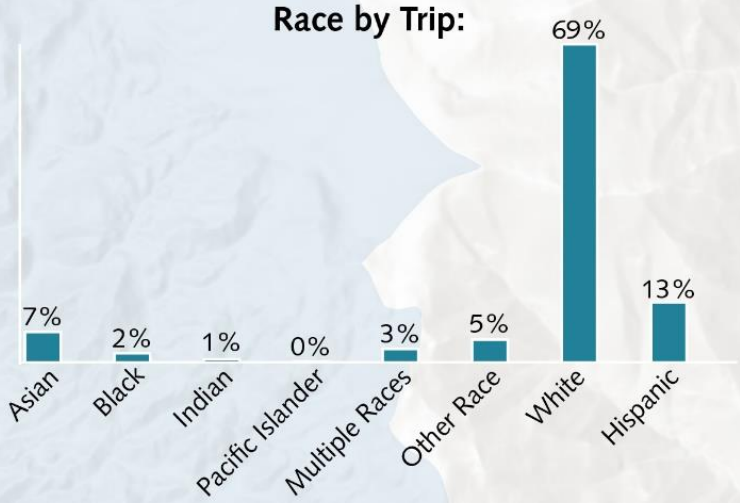


Within Corridor = trips that begin and end within the corridor
Within Basin = trips to or from the corridor that begin or end outside the corridor, but within the Tahoe Basin
Out of Basin = trips to or from the corridor that begin or end outside the Tahoe Basin

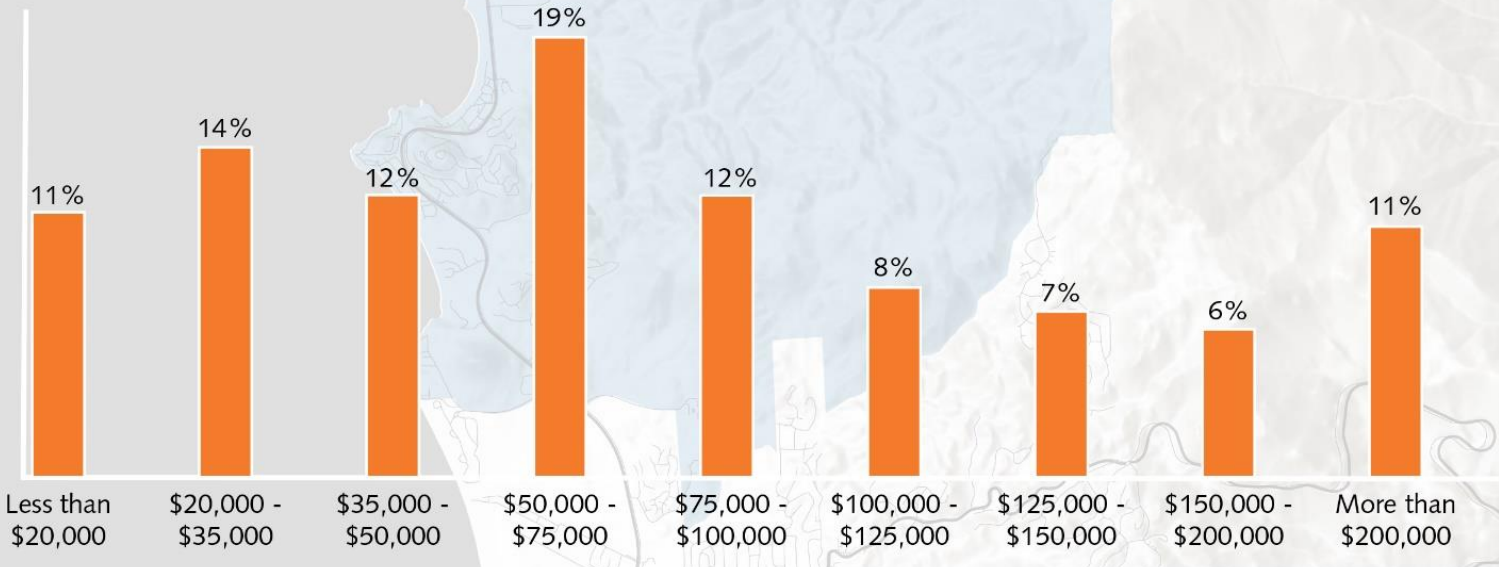
Education Level:

9%	No High School Diploma
20%	High School Diploma
32%	Some College
23%	Bachelor's Degree
16%	Graduate Degree

Race by Trip:



Trips by Annual Household Income:



Meyers/Y Corridor

Summary

The Meyers/Y Corridor stretches along U.S. 50 from Trout Creek to the western edge of South Lake Tahoe at SR 89, as well as almost six miles of U.S. 50 south of the "Y" intersection at U.S. 50 and SR 89. It also includes 5.3 miles of Pioneer Trail.

The Meyers/Y Corridor connects the communities of Meyers and South Lake Tahoe, an area that houses one-quarter of all year-round residents in the Tahoe Region. The corridor has over 20 miles of shared-use path and three miles of sidewalk. It provides access to year-round recreation including hiking and mountain biking trails, golf, and extensive public lands.

Challenges

The corridor also functions as an entry/exit route for Discover and Visit Tahoe users from Sacramento and the San Francisco Bay Area. It holds Tahoe's busiest roads and experiences heavy traffic congestion and long travel delays during peak times of visitation, a situation sometimes compounded by local and visitor traffic as well as severe mountain weather, traffic accidents, and avalanche controls.

Existing transit services do not provide a competitive alternative to the car due to limited coverage and frequency. Many people working in South Lake Tahoe and Stateline live in the Meyers/Y corridor. Home to work car trips by these workers are sometimes impacted by entry/exit travel to the Region, compounding congestion. The Meyers/Y intersection is the busiest in the Tahoe Basin with average annual daily traffic of 47,000 vehicles per day (vpd) and average daily traffic in July exceeding 57,000 vehicles per day.

Vision

A comprehensive pedestrian and bicycle network with convenient transit to effectively connect residents and visitors to the many nearby recreational, residential, and commercial areas. Reliable transit connects the many workers living in Meyers with jobs in South Lake Tahoe, the larger Region, and beyond. Traffic on the roadways traversing the community now moves more smoothly, with intersection improvements and new technologies that improve safety and efficiency.

Measuring Success

- Trails
- Transit
- Travel Demand Management (TDM)

Future Focus

- Complete the Meyers/Y Corridor Plan
- South Tahoe Micro Transit Service

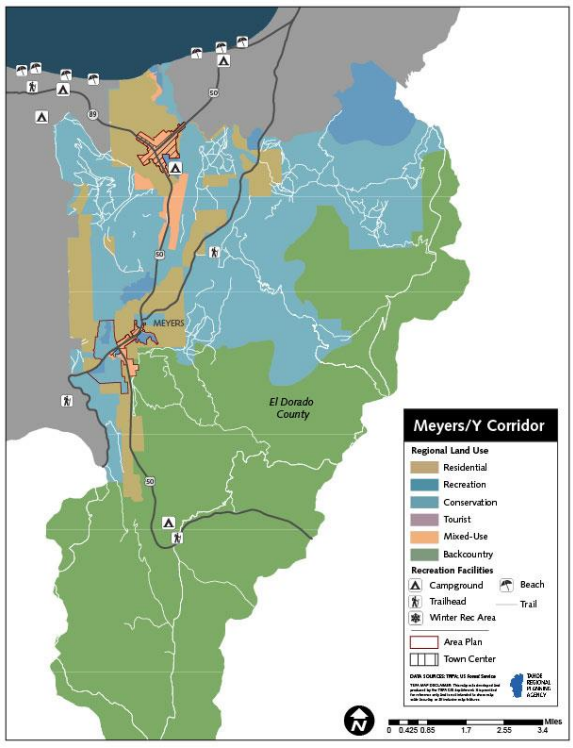
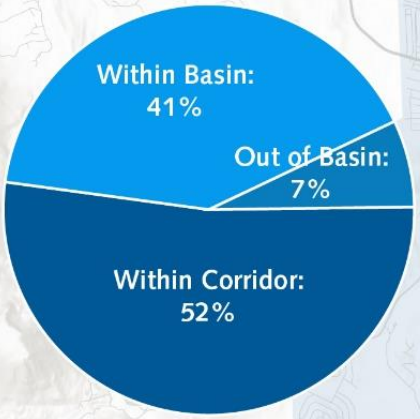


Figure 64: Meyers/Y Corridor

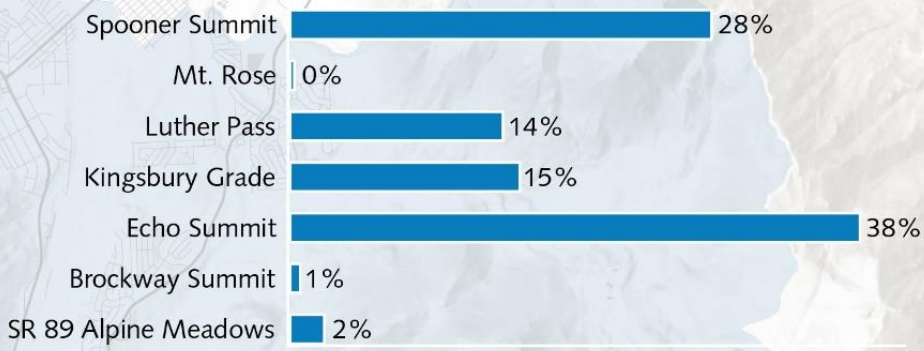
CORRIDOR PROFILE: MEYERS Y

Source: StreetLight Data

Average Daily Trips:



Trips by Entry Corridor (Out of Basin):



Within Corridor = trips that begin and end within the corridor
Within Basin = trips to or from the corridor that begin or end outside the corridor, but within the Tahoe Basin
Out of Basin = trips to or from the corridor that begin or end outside the Tahoe Basin

Education Level:

10% No High School Diploma

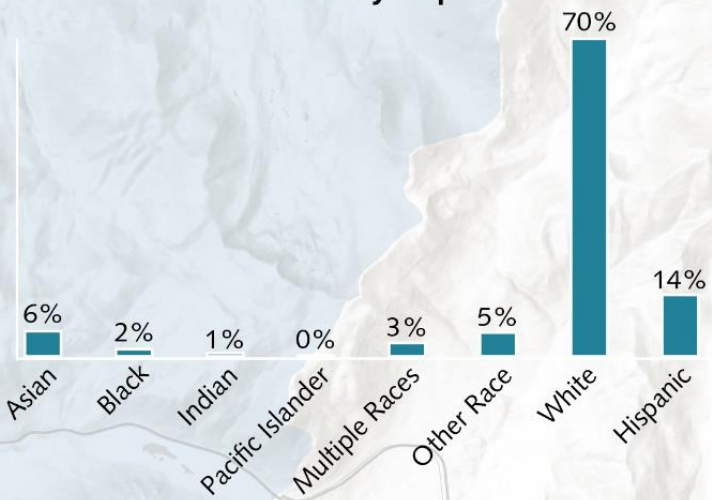
23% High School Diploma

35% Some College

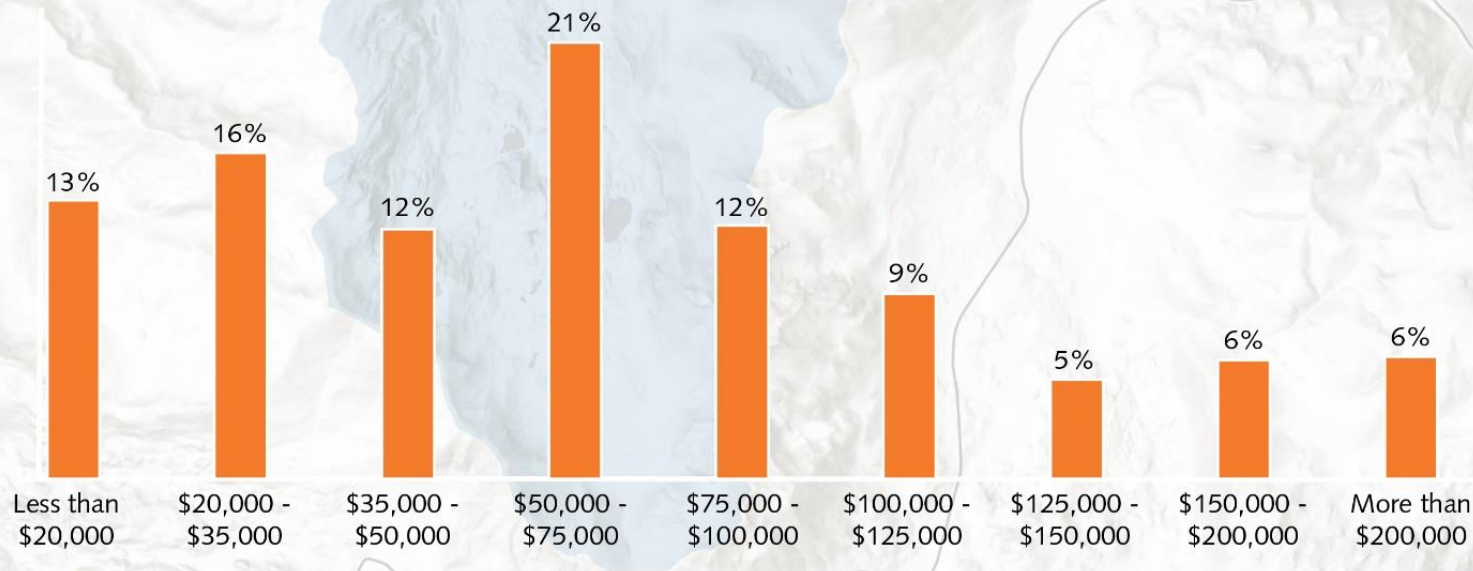
22% Bachelor's Degree

10% Graduate Degree

Race by Trip:



Trips by Annual Household Income:



Tracking Efficiency and Effectiveness of the Communities Approach

TRPA's approach to focusing and incentivizing development in town centers and connecting those centers and popular recreation destinations through the RTP/SCS supports the environmental goal of reducing GHG emissions. Progress is tracked using two performance measures: Daily VMT traveled and VMT per capita. These performance measures reflect the extent to which people are driving to destinations such as work, home, and recreation.

The Communities' focus on building mobility hubs in the Region and in neighboring regions, and the Bi-State Consultation's recommitment to the Corridor Planning Framework, support the Regional Plan and RTP goals for connectivity and economic vitality and quality of life by creating a seamless, efficient, and accessible multi-modal transportation system that operates at the highest possible level and supports the safe and efficient movement of people and goods in the Region. Two key performance measures track progress toward these goals: the percentage of identified Priority Communities with access to transit services (within ¼ mile), bicycle paths (within ¼ mile), and pedestrian paths (within ¼ mile); and the percentage of overnight lodging and recreation areas with access to transit services (within ¼ mile), bicycle paths (within ½ mile), and pedestrian paths (within ¼ mile).

Safety metrics meet federal requirements and TRPA's Regional Plan and RTP goals for safety, systems preservation, and operations and congestion management through the measurement of crash rates, including serious injury crashes per 100 million vehicle miles travelled, as well as pavement and bridge conditions.

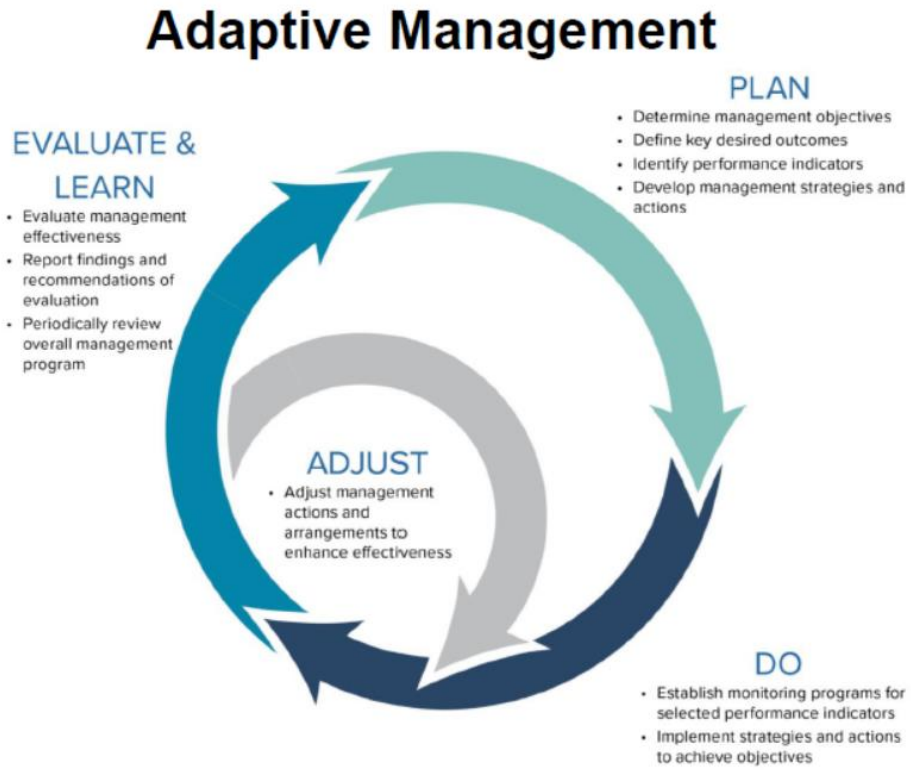
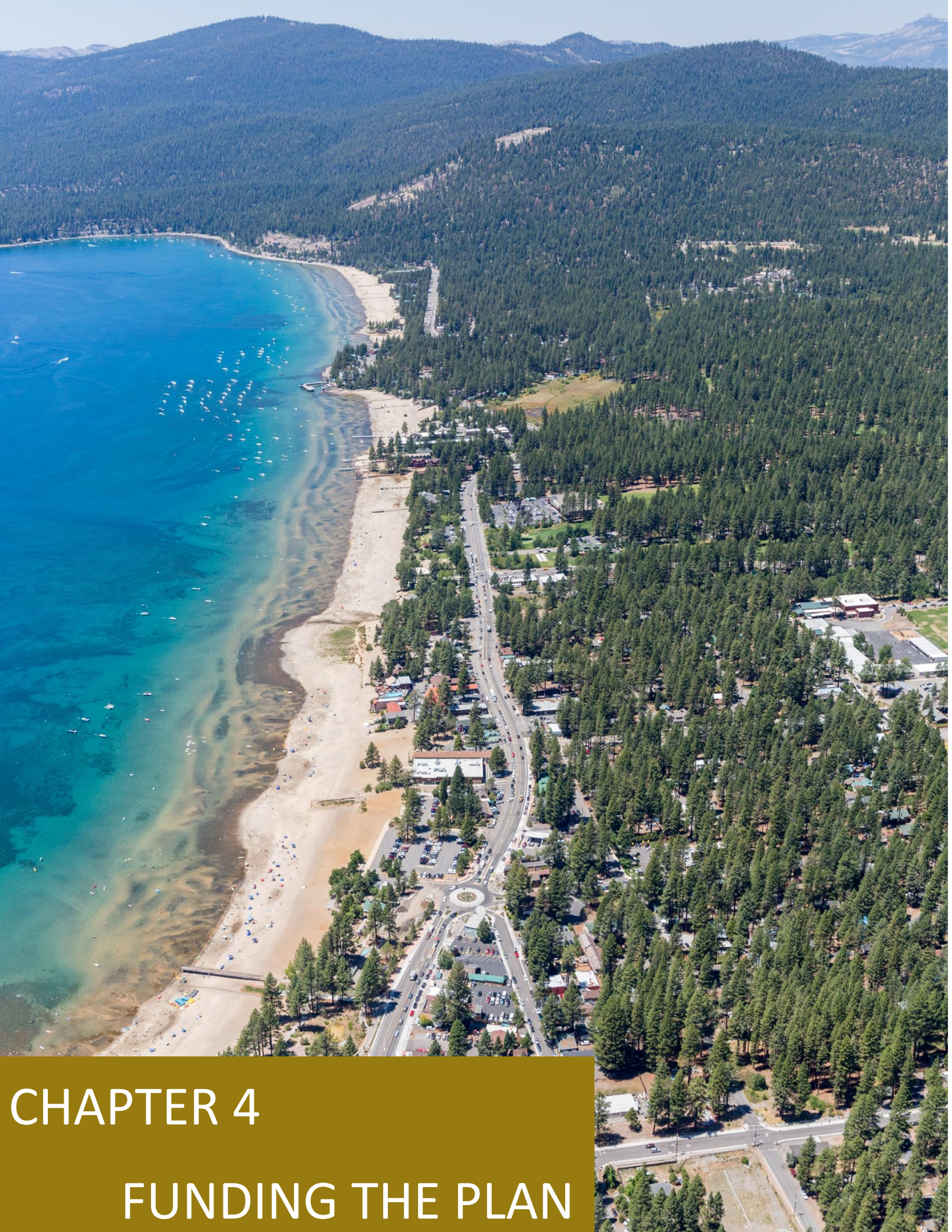


Figure 65: Adaptive Management Process in Monitoring Corridor Performance



CHAPTER 4

FUNDING THE PLAN

Funding the Plan

Tahoe's transportation system is financially supported by federal and state governments providing planning and construction funding through formulas that are calculated based on residential populations, and through competitive grant programs. Local agencies and jurisdictions also support the system through their contributions to transit and/or by participating in public/private partnerships.

Policy Highlight

Policy 5.3: Collaborate with local, state, regional, federal, and private partners to develop a regional revenue source to fund Lake Tahoe transportation and water quality projects.

Federal law requires the planned transportation in the RTP be "financially constrained," or based on a reasonably foreseeable forecast of future revenues. TRPA forecasted projected revenues needed to fund the plan's projects and programs over the next 25 years and found insufficient reasonably foreseeable revenues to implement the plan's projects by 2045.

The Bi-State Consultation on Transportation, TRPA, and its regional partners have agreed to collaborate to identify dedicated regional revenue sources to fill the funding gap.

Figure 66: TTD Bus, Bike Lane, and Shared-Use Path

The TTD is advancing regional revenue through the One Tahoe initiative, which will require bi-state legislative changes. That work has been integrated into the Bi-State Consultation funding discussion.

FUNDING THE VISION

Lake Tahoe saw federal and state funding increases with the December 2015 passage of the Fixing America's Surface Transportation Act, which recognized the Region functions as an urbanized area with an effective population base of 210,000. The changed population assumption increased overall federal and state transportation funding for the Region to approximately $7 million per year, from $3.4 million. The funding increase made it possible to deliver improved transit services, continue to close gaps in the active transportation network, and improve corridors. Tahoe continues to receive transportation funding from local, private, and regional sources.

However, even the combination of these funds is not sufficient. Resort destinations like Lake Tahoe, which see high visitation and seasonal travel demand, require funding sources for transportation services that reach beyond the basic needs of residents and nearby commuters.

The revenue forecasted in the plan is a reasonable estimate of what the Region is likely to receive from anticipated funding sources

during the life of the plan (Appendix C). The forecast reflects historically available funding levels, including the variability in federal, state, private, and local funding priorities. The average rate of inflation used for the revenue forecast is 2 percent. This is based on the last 20 years of data from the U.S. Bureau of Labor Statistics inflation calculator website.

An estimated $2.2 billion in revenue is anticipated to be available over the 25-year planning period. TRPA forecasts needed investments totaling nearly $3.2 billion to implement the plan's project list (Appendix B). With this funding shortfall, the Region cannot afford to build and maintain all the transportation infrastructure and services that it needs and will be strategic in how and when it chooses to invest in the transportation system.

FUNDING PROJECT IMPLEMENTATION

Once projects are identified in the RTP the next step is to secure funding. Projects are typically implemented by state departments of transportation, transit districts, and/or local agencies, but funded by incremental contributions from multiple agencies and nonprofit partners.

Project implementation partners may receive funds through a local program, a statewide formula or competitive process, a federal competitive process, or through the MPO Regional Grant Program that TRPA administers. The Regional Grant Program scores projects based on how well it achieves the goals of the RTP. Adequate funding sources are not always available, so projects often seek to implement and fund in phases.

After funding is secured, funds are programmed in the Transportation Improvement Program (TIP). Federal legislation requires projects to be in the RTP to be included in the TIP and for the first 4 years of the plan's fund estimate to n consistent with the 4-year TIP fund estimate.

TRPA, in its role as the Tahoe MPO, prepares and adopts a TIP at least every four years, and bi-annually prepares both a California TIP (including all projects) and a Nevada TIP (including only projects in that state).

The RTP is financially constrained, meaning the amount of funding programmed in the plan does not exceed the amount of funding that is forecasted to be available within the next 25 years.

Policy Highlight

Policy 2.2: Provide frequent transit service to recreational areas, including trailheads and shoreline access points.

The constrained projects in the plan will result in nearly 80 new miles of sidewalks and shared-use paths, including complete street projects in high use areas, public-private partnerships that expand local transit services and connections to recreation, free-to-the-user transit, and electric buses and charging stations. These projects and programs are funded with the reasonably foreseeable sources listed below.

Receiving these funds is discretionary, and project delivery requires a concerted and vigilant commitment by agency partners, ongoing communication with the public, an active pursuit of grant funding, and political leadership to move voter-approved initiatives onto the ballot.

Foreseeable Revenue Sources

The funding sources that support the plan's constrained project list come from federal, state, local, and public/private partnerships. A brief description of each funding category is included below.

Federal

The plan accounts for just over $618 million in federal funds that are expected to be available over the next 25 years.

Federal funding sources include the Surface Transportation Block Grant Program, Congestion Mitigation & Air Quality Program, the Federal Lands Access Program, and Federal Transit Administration grants.

Many of these funds are formula based. Competitive federal grant programs are also available.

State

Approximately $428 million in funding are projected from California and Nevada over the next 25 years.

State funding includes, among other sources, Transportation Development Act (TDA), California State Highway Operation and Protection Program (SHOPP), the California State Transportation Improvement Program (STIP), California SB1 Programs, the California Active Transportation Program, and Nevada State funds.

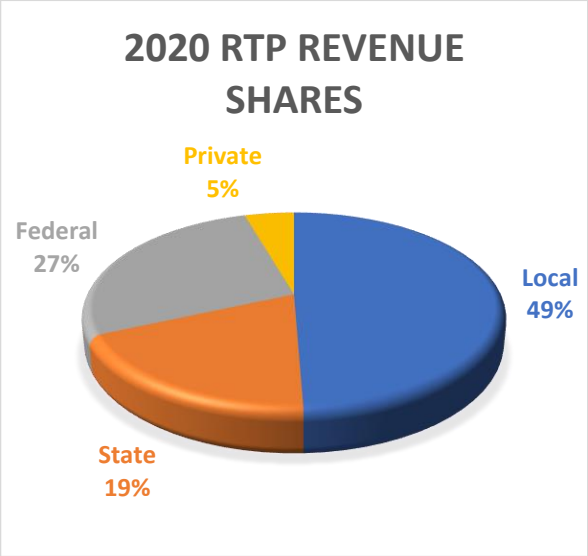


Figure 67: Constrained Revenue by Source

Many of these revenues are linked to gasoline taxes. The power of gasoline taxes has been undercut by inflation, improved vehicle fuel economy, and reduced gas purchases caused by the COVID-19 pandemic and stay-home orders.

These state tax revenue reductions will have impacts on near- and long-term funding.

Local

Forecasted local funding is estimated to provide just over $1.1 billion in revenue to support transportation improvements and operation and maintenance over the next 25 years.

Local revenue sources include transit farebox revenues, Placer County transient occupancy taxes (TOT), air quality and rental car mitigation fees, operation and maintenance funds, a parcel tax for dedicated maintenance of bicycle and pedestrian facilities (South Lake Tahoe and El Dorado County voter approved); a five-cent increase to the gasoline tax (Douglas County Commissioners); and an annual sales tax allocation dedicated to TART operations (Washoe RTC). Parking revenues are another potential source of funding.

Keeping parking revenues at the source can help pay for parking lot maintenance as well as pay for transit services such as those serving park and ride lots.

Private Sector

Private funding accounts for over $101 million in revenue and pay for transit investments over the course of the plan. These private funds will be generated from ski shuttles, water taxis, inter-regional transit, and microtransit services.

Private funding is being added to the plan's revenue forecast to reflect how privately run transportation is providing more travel options at Tahoe, for example North Shore microtransit service and the Heavenly ski shuttles serving the core of the South Shore.

The Tahoe South Event Center, currently under construction in Stateline on the South Shore, will provide a combination of fixed route, zone-based, and on-demand transit service that is free to the user with a goal of 15-minute headways to mitigate the projected increases in VMT and vehicle trips.

Figure 68: South Tahoe Events Center with Transit

UNFUNDED PARTS OF THE VISION

The combination of the constrained and unconstrained project lists represents the complete vision of the Regional Transportation Plan. All projects must be identified in the plan's project list so that they are ready to move forward if additional funds are identified in the future, such as through a new regional revenue source, grant funds, or transportation stimulus funding programs.

The approximate $1 billion revenue forecast shortfall is needed to fund the unconstrained project list.

By 2025, $97 million is needed, $3 million for active transportation projects and $94 million for deferred operations and maintenance is needed.

By 2035, $240 million is needed to address shortfalls of $22 million for transit and $218. million for deferred operations and maintenance

By 2045, $674 million is needed, $9 million for technology improvements, $266 million for deferred operations and maintenance, and $399 million for transit.

Additional unconstrained project funding will result in mobility hubs and transit centers coupled with park and ride and intercept lots at key locations to serve the Region and neighboring areas; local, regional, and inter-regional transit vehicles would be prioritized through adaptive corridor management that includes transit only travel lanes and traffic signal prioritization; a cross-lake passenger ferry would carry all users between Tahoe City and South Lake Tahoe; and smaller water taxis would connect users to trails and land based transit.

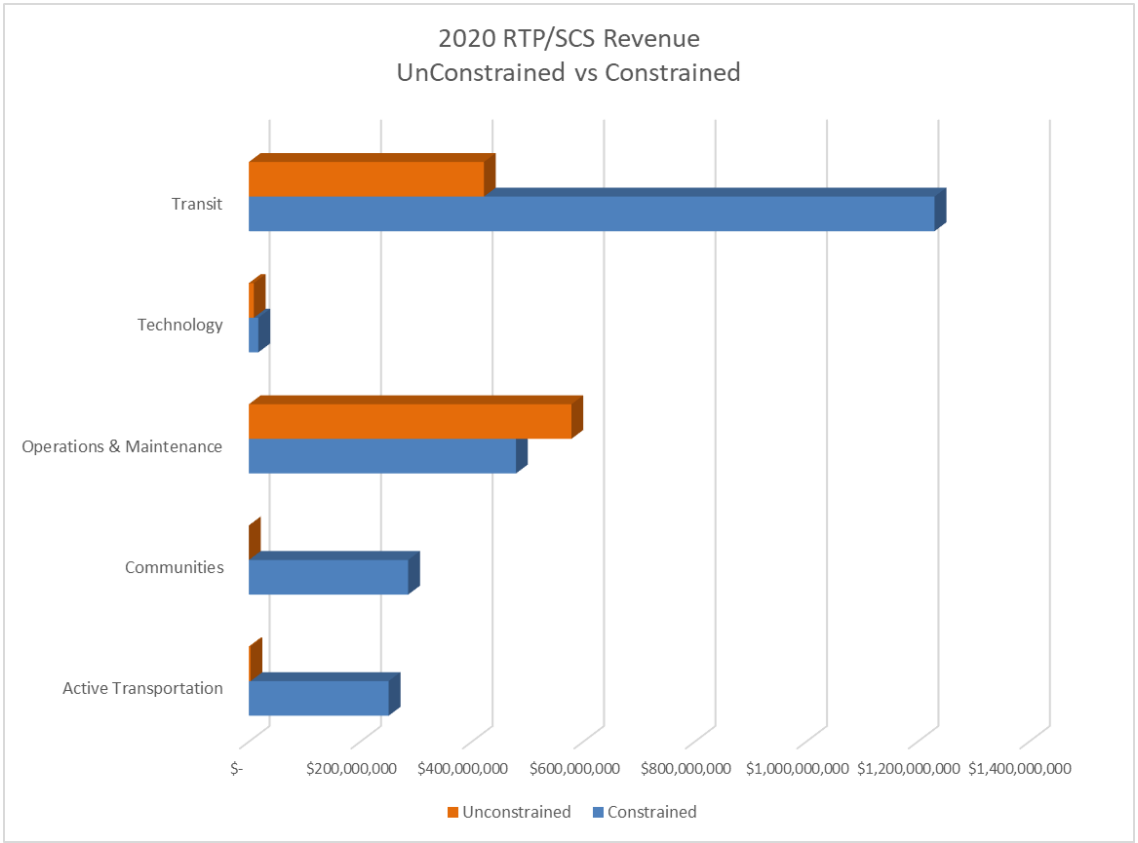


Figure 69: Constrained and Unconstrained Revenue

Potential Revenues

The transportation system transformation that Lake Tahoe's environment deserves and communities around the lake demand will require dedication, collaboration, and difficult political decisions – creating new sustainable funding sources to help pay for high-priority projects, services, and programs is vital.

State and federal transportation funding sources can vary dramatically from year to year based on the economy, budget decisions, and political priorities.

Regional Funding

Reliable funding is needed to accelerate the implementation of the unfunded vision of the plan. Lake Tahoe partners are exploring, through the leadership of the Bi-State Consultation, new regional sources of locally and regionally generated funding.

Dynamic Pricing

Dynamic pricing strategies generate revenue to fund transportation improvements, shift users to travel at non-peak times or to different travel modes, reduce impacts to the environment, and improves resident and visitor quality of life. For example, dynamic parking pricing charges a higher rate to park at popular locations during busier times, such as 10 a.m. on a Saturday in July, versus a less busy times, such as 10 a.m. on a Thursday in July. These costs incentivize travelers to walk, bike, or take transit instead, which are funded by dynamic parking revenue.

Self-Help Funding (Transit Occupancy Tax TOT, Tourism Business Improvement District TBID)

As federal and state transportation funding continues to decline, many communities across the country are making the necessary choices to become self-help jurisdictions through various local ballot measures that are tied to a supported multi-year transportation investment program.

North Shore TOT has supported transportation investments over the most recent regional transportation planning cycle and those funds will continue through the RTP. The TOT funding most recently allowed the local transit agency to transition to free fares for riders.

TBID initiatives are underway on the North and South shore but have had to pause due to the Covid-19 pandemic.

CHAPTER 5

MEASURING AND MANAGING FOR SUCCESS

Measuring and Managing for Success

Tahoe is unique not only in its natural beauty and quality of life, but in its transportation needs. Unlike most places, where morning and evening commutes define transportation priorities, travelling in Tahoe is much more variable — defined by the seasons, recreation activities, and even weather.

Knowing what is happening on Tahoe's roads, paths, and bus routes is important — and why TRPA monitors the transportation system. That information is used to adapt planning approaches, respond to issues, and evolve projects and programs for better outcomes, and is how TRPA manages for success.

This chapter provides an overview of TRPA's performance measurement framework. It discusses how the transportation system is monitored using collected data, specified measures, and regional tools. It reviews key measures for the transportation system and links the information back to the planning that results in the regional transportation plan and future updates to it. Additional information on performance measurement can be found in Appendix I.

PERFORMANCE MEASUREMENT FRAMEWORK

Based on best available science and a recommendation from the Tahoe Science Advisory Council, TRPA recently adopted a system of best practices for measuring and evaluating Tahoe's systems. As with other programs, TRPA's performance measurement framework for transportation is results-chain based.

Policy Highlight

Policy 4.12: Maintain monitoring programs for all modes that assess the effectiveness of the long-term implementation of local and regional mobility strategies on a publicly accessible reporting platform.

Results chains link management actions to desired outcomes or goals. The results chain that TRPA uses to gather, structure, and adaptively manage planning include three different types of information: inputs, outputs, and outcomes. Inputs identify what was done, for example the miles of paths that were plowed in the winter.

This type of information is necessary to demonstrate what actions are being taken.

Outputs are measures of the effectiveness of the inputs, for example, how many people rode the paths that were plowed in winter.

Finally, outcomes are the desired goals, for example, reduced reliance on the automobile. Sometimes outcomes are represented by a threshold, such as targets for Total Vehicle Miles Traveled, and sometimes by a supporting performance metric, such as goals for Non-Auto Mode Share (the percentage of trips taken not in a personal automobile).

The framework ensures that needed information is collected at each level so program managers can successfully evaluate the effectiveness of implemented programs and projects, reliably identify strategies that work, and change strategies that do not.

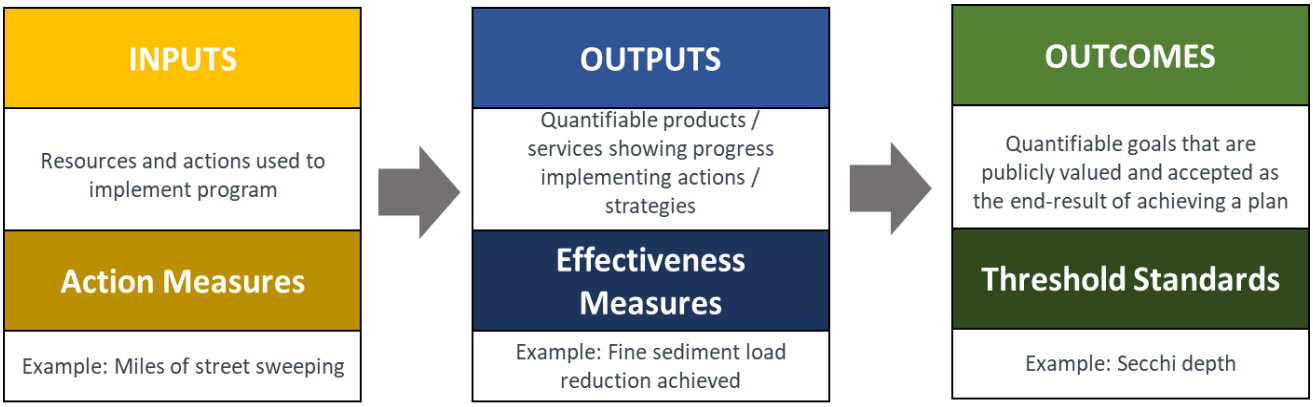


Figure 70: Performance Measure Framework

The example below illustrates the framework and how it is used to continuously monitor progress toward achieving transportation goals:

TRPA identifies shared-use paths as an important approach to achieving the Bi-State Compact mandate to reduce reliance on the personal automobile.

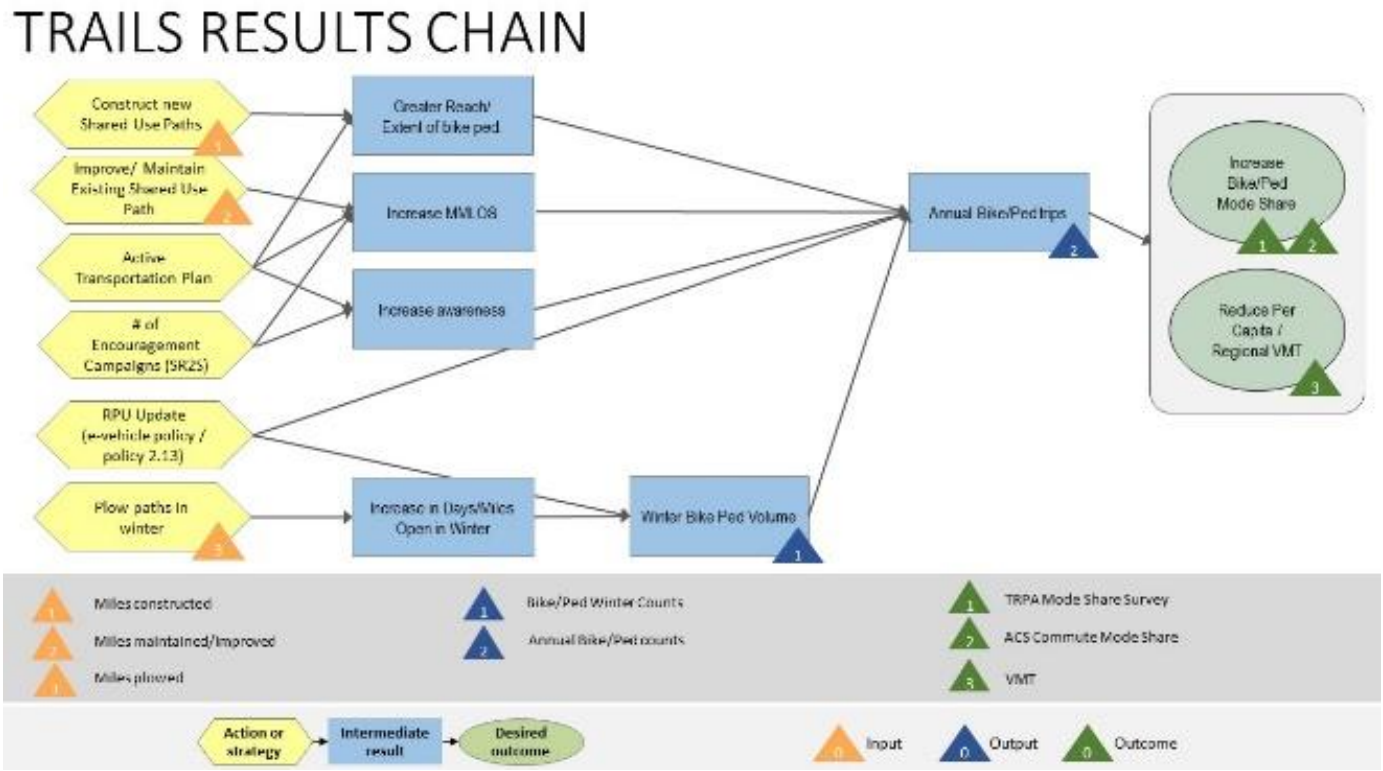


Figure 71: Trails Results Chain Demonstrating the Performance Measurement Framework

That importance is reflected in the plan's goal of building seven new miles of paths by 2025, 47 new miles of paths by 2035, and 110 new miles of path by 2045.

Establishing those goals in the regional transportation plan results in projects that build shared-use paths being prioritized for funding, as well as programs that educate and encourage travelers to use the paths.

Every two years, TRPA measures the plan's progress by calculating how many miles of paths and trails have been built — and this data is publicly reported to everyone at LakeTahoeInfo.org, the online information exchange for the Lake Tahoe Region.

The reason for building those shared-use paths, however, was to reduce reliance on the personal automobile. Progress toward that goal is also measured every two years through TRPA's travel survey and the Bicycle and Pedestrian Monitoring Protocol, each of which calculates the number of trips in Tahoe that are made by people walking and biking versus driving in a car.

This information, combined with data on the number of people riding transit buses, represents all travelers in Tahoe that use what is called a non-auto mode share, a performance measure discussed later in this section.

See Appendix I for more information on this framework and monitoring protocols.

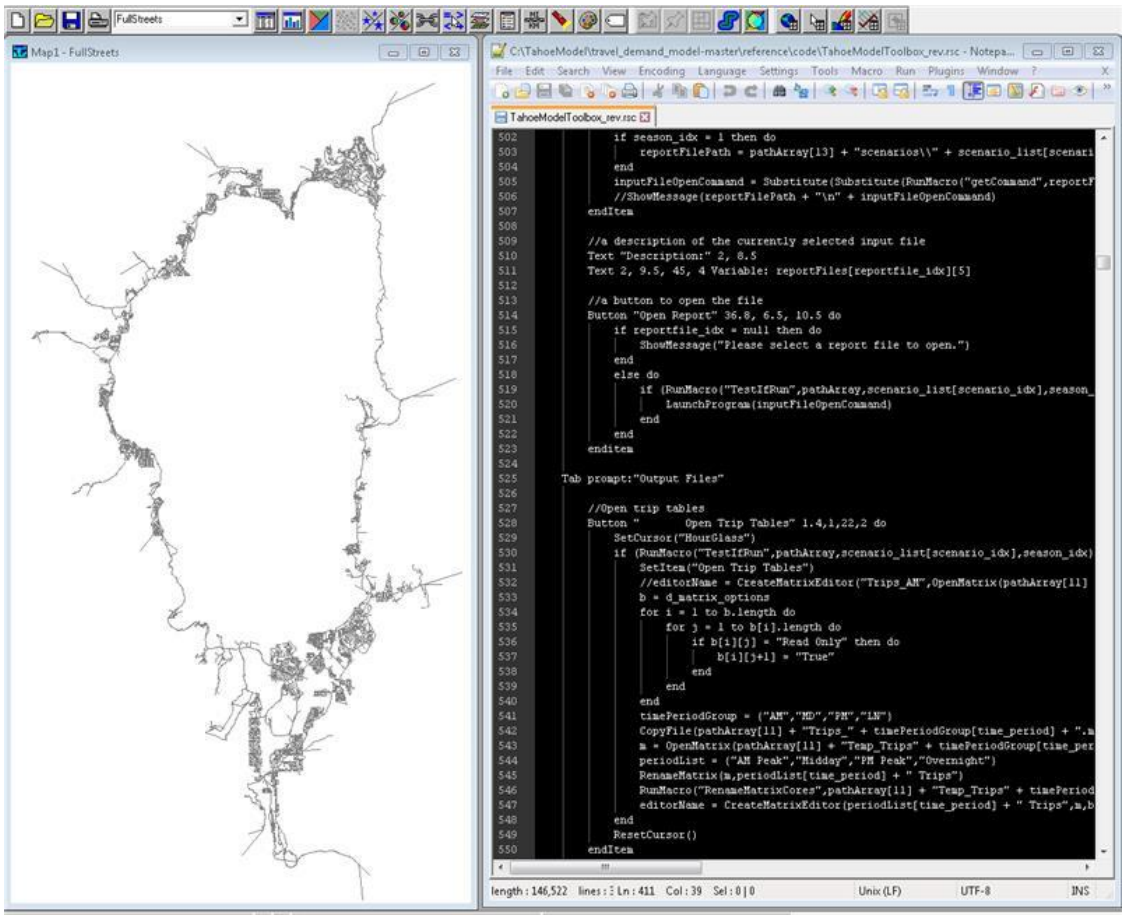


Figure 72: Transportation Model for Lake Tahoe

Tracking the performance of the roads, paths, and transit services in Tahoe happens in many ways. Transit surveys provide first-person information about people riding the bus — why they are riding, when, how often, and what would help their trips be even better. People biking and walking the many trails and paths in Tahoe are counted using infrared detection in many cases. Big data for traffic analysis provides real time congestion information for roads in the Region.

Roadways are monitored and measured for congestion, but congestion-free roadways are not the goal of the regional transportation plan. Instead, the Congestion Management Process (Appendix H) is used. It emphasizes using existing roadways in the Region more efficiently and enhancing the entire transportation system through more travel options.

Policy Highlight

Policy 4.11: Establish a uniform method of data collection and forecasting for resident and visitor travel behavior and demographics

The interrelationships between the performance measurement framework, data collection, and analysis tools are discussed in the following sections.

Data Collection

TRPA collects data from a variety of sources. Since 2006, TRPA has conducted basin-wide travel surveys every two years to better understand basic travel characteristics of both residents and visitors. The data collected — which includes how people are traveling, where they are travelling from and to, and why — is used for evaluating regional performance metrics, project planning, and travel demand modeling.

Figure 73: Trail Counter along the East Shore Tahoe Trail

Demographic and socioeconomic data is gathered from the U.S. Census, counties, states, and/or other organizations, such as the Nevada Gaming Control Board. These data provide more information about residents and employees in Tahoe, helping to ensure projects and programs best serve their needs.

Roadway congestion is analyzed using traffic analysis data from industry leader, Inrix. Intersection performance is evaluated every four years with the update to the regional transportation plan. Big data from cellular phone service providers and vehicle location and navigation systems also creates new opportunities to better understand and evaluate roadway congestion and travel patterns in the Region, for planning transit services, and more sustainable recreation travel options.

Partners

Data collected by partners in the Region also informs transportation analysis. For example, Placer County, California collected vehicle trip

generation (VTG) rates and parking inventories as part of its Resort Triangle Transportation Plan planning process. These Tahoe specific data are valuable for planning and implementing projects and programs that reduce automobile trips. Tahoe transit providers, TTD and TART, each survey riders which informs transit service planning. TRPA and its local partners developed the Bicycle and Pedestrian Monitoring Protocol and the Transit Monitoring Protocol to gather more detailed and more consistent information. See the Transportation System Management Section and Appendix I for more information on the protocols.

Tools

TRPA utilizes multiple tools to advance the performance measurement framework, each with distinct strengths that provide invaluable information for the plan.

Travel Demand Model

TRPA utilizes the Tahoe Travel Demand Model (Tahoe Model) to analyze travel behavior, estimate daily regional VMT and GHG emissions for a base year and future forecast periods. The model is activity-based, which means it estimates and forecasts travel behavior on the transportation system to provide a better understanding of travel behavior into and around Tahoe and roadway congestion in the Region. It also provides the best available data and methods to determine compliance with required standards, including the regional VMT threshold standard, and GHG reduction targets set in California by CARB.

The Tahoe Model is designed to estimate VMT by various traveler types (residents, day and overnight visitors, external workers, etc.) and represent travel on a typical early or late summer weekday. The Tahoe Model is an aggregate of three separate models: A Resident Model, a Visitor Model, and an External Worker model. Each model has slightly different activity and destination category options: Residents make work, school, and discretionary (eating, shopping, and recreation) trips; visitors, second-home owners, and guests make recreation, shopping, and other trips; and external workers make work commute trips. The model estimates the expected travel mode, e.g., auto, transit, walk, or bike, for each type of user and produces traffic projections for intersections and roadways on the model day and for peak periods during that day. Since these estimates are based on regional data, they are useful for understanding region-wide impacts.

The recently completed model update is the foundation for updating TRPA's project-level impact assessment to create consistency between redevelopment projects and regional transportation plan implementation through project level mitigations. This update also supports SB 743 requirements for the Region's California jurisdictions. See Appendix G for more information on the model.

Transportation Model Update

To help guide future investments in the model, TRPA convened the Tahoe Model Working Group in 2019. The group included representatives from neighboring metropolitan planning organizations, non-governmental organizations, technical experts, and community stakeholders. The process was essential for more comprehensive analysis of project impacts, including accounting for VMT both in and outside the Region, and realizing the suite of complementary GHG reduction targets established by each state (AB32, SB475, SB391, SB275) and associated executive orders (OPR 2018). The working group also coordinated investments in data collection and modeling tools.

The group prioritized several improvements to the Tahoe Model to support plan forecasting.

Highlights include:
1. Incorporation of External Trip Lengths: The Tahoe Model is designed to focus on trips and trip distances that occur within TRPA's jurisdictional boundary. It accounts for all vehicle trips that enter and exit the basin and has basic capability to account for trip lengths coming from outside the Region. To update the model for more robust assessment of VMT resulting from inter-regional travel and SB 743 analysis, traffic analysis zones (TAZs) outside the Region are being added to capture the full distances of travelers to and from Lake Tahoe.

2. Updated Entry/Exit Traffic Volume Composition: New external station count data was analyzed using Streetlight Data (smart phone and navigation based data) to inform several key model parameters, including the percentage of through travel (passenger and truck), external worker, resident, visitor, and truck volumes that make up the daily external station traffic volumes.

3. Updated Visitor Travel Patterns: The visitor sub-model sample records were updated based on the 2018 Summer Travel Survey. The updates better represent recent changes in visitor composition and behavior. The frequency distributions of the patterns observed in the 2018 Summer Travel Survey were tabulated and compared with the calibrated patterns of the prior 2014 base year model run.

4. Updated External Worker Travel: The 2012-2016 five-year ACS Data and LEHD Origin-Destination Employment Statistics Data was used to update the travel patterns of external workers (in-commuters) and residents who work outside the Region. StreetLight data was used to further refine worker flow patterns. The work included an update to the origin-destination matrix, and recalibration of the external worker sub-model.

5. Updated Recreation Travel Patterns: The model uses a "relative attractiveness score" for visitation location attractiveness to estimate how likely travelers are to visit a specific destination. Recreation travel is another area where TRPA has explored the use of big data sources, such as StreetLight, in conjunction with traditional parameters (e.g. venue capacity, parking availability, cost) to better represent visitor behavior. The visitor destination choice sub-model was calibrated using the newly collected data.

Interactive Tools

TRPA has developed multiple online and interactive tools to make it easier for anyone to find, download, and analyze Tahoe transportation information. These tools include:

LakeTahoeInfo.org: Provides details about all Environmental Improvement Program (EIP) projects, including plan projects.

LinkingTahoe.com: Provides links to regional transportation plans and transportation projects.

TRPA.org/rtp: Interactive website for the plan.

Project Impact Assessment Tool

In the Tahoe Region, traffic congestion and parking shortages can be addressed by reducing the number of trips that are made by car and improving and incentivizing the use of other types of travel such as carpooling, transit, walking, and biking. To attribute impacts and mitigation requirements fairly and consistently to development and redevelopment projects, a state-of-the-art project level analysis tool is being developed to quantify the VMT generated by a project and the mitigations needed to offset its impact to the transportation system. These mitigations are the projects and strategies featured in the plan. As a result, private development helps to improve mobility in Tahoe and attain and maintain the VMT threshold standard. The project level analysis tool will coordinate with local governments to uniformly seamlessly assess and mitigate new development and redevelopment project impacts to VMT.

VMT Threshold Update

The VMT Threshold standard, which was established through the Bi-State Compact in 1982, is being updated. The threshold has been used to improve water quality by reducing NOx emissions from cars and trucks in the Region, but those emissions have declined by more than 66% since the threshold was created and it no longer serves the purpose for which it was created.

However, reducing VMT per capita in Tahoe has benefits, such as reducing mobile source GHG emissions, reducing dependency on the personal automobile, and creating more sustainable communities.

Work is underway to establish a VMT threshold standard that shifts away from the old-NOx based threshold standard, promotes attainment of both California and Nevada GHG reduction goals, and furthers the desired future development vision of the Regional Plan by concentrating mixed-use development in town centers and connecting those town centers and recreation sites with biking, walking, and transit options.

The VMT Threshold standard update is anticipated to be completed by the end of 2020.

Mitigation Fee

Most development projects pay an air quality mitigation fee, which is being updated to a mobility mitigation fee to align with the project impact assessment tool and project and funding needs outlined in the plan. The fee will ensure that new development projects contribute their fair share of funding to promote regional mobility and implement the plan.

Performance measures ensure the plan's goals and policies are advanced through its projects and programs. The plan identifies several measures for monitoring progress, including goals for how many people are walking, biking, and using transit. Federal and state performance measures require tracking of key safety measures, such as the number and severity of crashes, and roadway infrastructure, including pavement and bridge condition, to make sure routine maintenance is completed. These measures are collected and evaluated every one to four years, depending on the measure.

Leading performance measures are reviewed in this chapter. Additional supporting performance measures and analysis are discussed in Appendix I.

Threshold (Regional)

In 1982, TRPA adopted threshold standards in nine environmental threshold categories. These environmental standards indirectly define the capacity of the Tahoe Region to accommodate additional land development.

Two performance measures relate to transportation goals: Daily Vehicle Miles Traveled (VMT) and VMT per capita. See Appendix I for more performance measure information on VMT per capita.

Daily VMT Traveled

Originally adopted as a TRPA air quality threshold, Daily VMT Traveled measures the distance of all trips on a typical summer day in Tahoe. This measure reflects a complex set of factors at play within the Region: gasoline prices, employment rates, housing costs, demand for and accessibility of recreational opportunities in the Region, access to alternative forms of transportation, and second-home ownership.

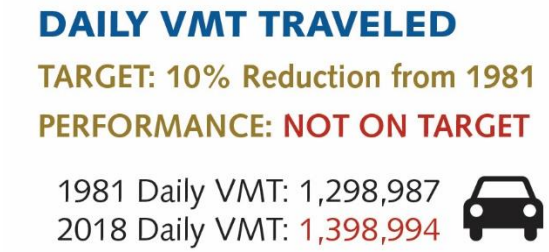


Figure 74: Daily VMT Traveled

The measure can also be used to evaluate the effectiveness of land use and transportation policy decisions, such as the location of affordable and achievable housing; the effectiveness of travel demand management strategies that encourage employees to bike, walk, or carpool to work; the effectiveness of inter-regional transit services, such as the proposed Reno-Carson-Tahoe inter-regional transit service; and the value of sustainable recreation solutions, such as transit service to Emerald Bay and other popular recreation destinations.

This threshold measure is calculated using the Tahoe Travel Demand Model. For more information on the Tahoe Model, see Appendix G.

Transit, Trails, and Communities

Multiple measures report progress toward meeting the goals of key focus areas in the plan: Transit, Trails, and Communities. Some of these measures reflect goals that are specific to this Region, while others are federal or state requirements. Collectively, these measures provide reliable information needed to track progress, adapt planning approaches, and improve outcomes.

Non-Auto Mode Share

Mode share refers to the percentage of all trips made by everyone traveling on a typical summer day in Tahoe by each type of transportation: walking, biking, using transit, or driving a personal automobile. The plan tracks non-auto mode share, which is the proportion of all trips that are made by foot, bike, scooter, and transit. Tracking this performance measure guides planning and the implementation of trail and transit projects and travel demand management programs.

Policy Highlight

Policy 2.18: In roadway improvements, construct, upgrade, and maintain active transportation and transit facilities along major travel routes. In constrained locations, all design options should be considered, including but not limited to restriping, roadway realignment, signalization, and purchase of right of way

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This performance measure is calculated using the average of the prior two TRPA travel surveys.

Non-Auto Mode Share Target

Improve average non-auto mode share.

Table 4 Non-Auto Mode Share Performance Measure

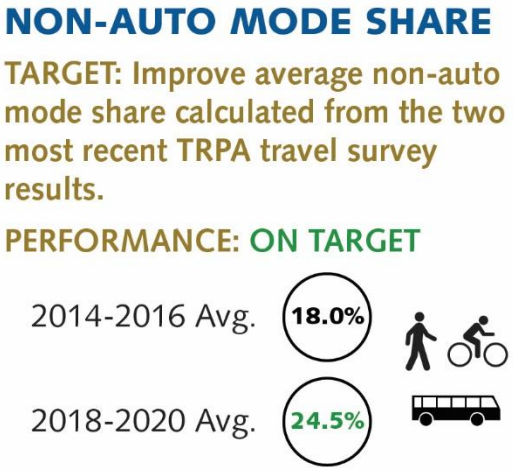


Figure 75: Non-Auto Mode Share

Note: TRPA will be reviewing its travel survey methodology to consider improvements to measuring non-auto mode share, including the potential for using real-time data to allow more frequent and more accurate measuring.

Safety

Maintaining a transportation system that is safe for everyone is one of the most important goals of the plan. Addressing transportation safety in Tahoe relies on collaboration among numerous partners; regular and consistent data collection, analysis, and reporting on key safety measures; and responding to identified safety needs in plans and project designs.

Policy 3.1: Coordinate the collection and analysis of safety data, identify areas of concern, and propose safety-related improvements and user awareness that support state and federal safety programs and performance measures.

Rate of Serious Injuries per 100 million VMT

This performance measure is one of several national standards for tracking the safety of a region's roadways. See Appendix I for additional roadway safety measures.

TRPA and its partners collect and report on multiple additional crash performance metrics (Appendix I). This measure is tracked using the Tahoe Model and crash data provided by the California and Nevada departments of transportation and local jurisdictions.

Rate of Serious Injuries per 100 Million VMT Target

Reduce by 1.5% in California and .05% in Nevada the respective state targets, based on a five-year rolling average.

2020 Rate of Serious Injuries Per 100 Million VMT Performance

Auto rate is a 5-Yr. Rolling Average CA, 2011-2015 NV, 2012-2016

Figure 76: Rate of Serious Injuries

Economic Vitality and Quality of Life

TRPA monitors a variety of performance measures to gauge how well the transportation system supports the Region's residents, their economic vitality, and quality of life. See Appendix I for additional quality of life measures and Appendix F for more information on Environmental Justice.

This measure assesses how well the most vulnerable in Tahoe, including people living below the federal poverty line or that are disabled, are able to connect to needed services, such as health care and grocery stores, and to community resources such as schools, colleges, and employment centers.

See Appendix F for more information on Environmental Justice. This measure is tracked using census data and land use and transportation geospatial map-based analysis.

Priority Communities' Transportation Access TO Transit SERVICE (1/4 mile) AND Bicycle (1/2 mile), AND PEDESTRIAN (1/4-mile, Class I) INFRASTRUCTURE

Increase the proportion of access to each mode for each identified Priority Community in the Region, with the goal of providing 100% access for each mode by 2045.

Priority Communities' Transportation Access in 2020 and in 2045 with implementation of the plan:

Note: Priority Communities are those that have three or more environmental justice criteria: low-income, minority, disabled, zero vehicle household, senior household. This is a new Performance Measure and so cannot be compared to prior measures.

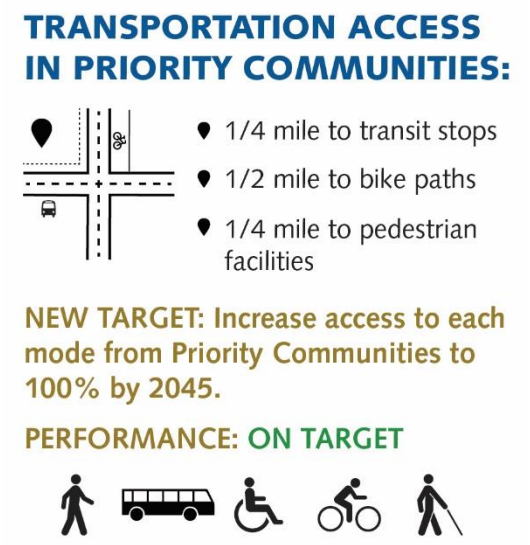


Figure 77: Transportation Access in Priority Communities

Pavement Condition

Maintaining roadway pavement condition in a good condition is key to providing safe travel for people driving and bicycling on-street, ensuring the efficient movement of people and goods, and efficiently using public funds, because as roadways degrade they become more costly to maintain.

The pavement condition performance measure provides key information about maintenance efforts and needs in the Region and helps direct operations and maintenance plans and funding.

This measure is tracked using data from state departments of transportation and local jurisdictions.

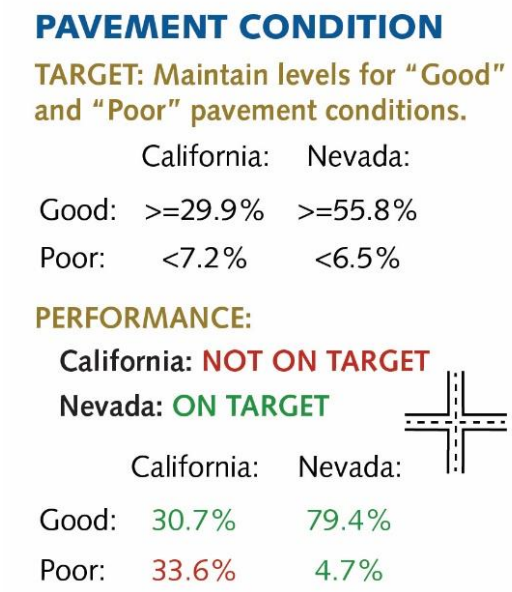


Figure 78: Pavement Condition

Transportation planning is a cyclical process, with lessons learned from performance monitoring informing future planning and funding. Adaptive management ensures that future transportation planning in Tahoe is responsive and evolves with changing transportation needs in the Region.

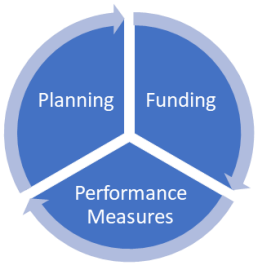


Figure 79: Plan-Fund-Measure Diagram

Transit Monitoring

TRPA distributes California Transportation Development Act (TDA) and Federal Transit Authority (FTA) funds and lends planning support and technical assistance to the Region's public transit providers, TTD and TART. Per TDA Public Utilities Code (PUC) Section 99244, TRPA is required to "annually identify, analyze, and recommend potential productivity improvements, which could lower the operating costs of those operators who operate at least 50 percent of their vehicle service miles, as defined by subdivision (i) of PUC Section 99247, within the area under its jurisdiction."[5]

To fulfill the requirement, the transit productivity improvement program and the Lake Tahoe Region Transit Monitoring Protocol are part of the plan's implementation. The protocol identifies transit performance measures, establishes targets, and outlines data collection methods for each transit operator. Funding allocations depend upon the operator implementing recommended improvements and meeting established performance measure targets. See Appendix I for more information about the transit monitoring protocol performance measures.

Bicycle and Pedestrian Monitoring

Since 2015, the Lake Tahoe Region Bicycle and Pedestrian Monitoring Protocol has been part of the plan's approach to managing for success.

The protocol established a system for the collection of year-round active transportation data that includes permanent counting stations, biennial count locations, and spot count locations, depending on need.

Partners across the Region assist in monitoring bicycle and pedestrian activity throughout the Region to understand high use areas, mode-split, and support grant applications and reporting. A monitoring report that analyzes historical trends, provides detailed information by location, and compares use at similar sites supplements the regional transportation monitoring report and supports the plan. For more information on the Bicycle and Pedestrian Monitoring Protocol see Appendix I.

Congestion Management Monitoring

A Congestion Management Process (CMP) is required by the FHWA for data collection and analysis once RTP projects and programs are implemented. The CMP guides evaluation and monitoring of the effectiveness of each RTP strategy. For more information on the CMP see Appendix H

[5] CA TDA PUC Section 99244

CHAPTER 6

MOVING FORWARD

Moving Forward

The regional transportation plan moves transportation in the Region forward by addressing demand for travel and by building a transportation system with greater travel options that provide equitable access to everyone, including the most vulnerable in Tahoe's communities, reduces transportation's harmful impacts to the environment, strengthens community revitalization and housing initiatives, and improves overall mobility.

Addressing demand for travel begins at the project level with private development helping to improve mobility in Tahoe, reduce regional VMT to attain and maintain TRPA's VMT threshold, reduce mobile source GHG emissions, and reduce roadway congestion. TRPA and its many partners will further reduce demand on Tahoe's roadways by creating travel options that are more attractive than the personal automobile, such as making transit free and easy to use and making the passage of transit vehicles a priority on roadways by letting buses through first at traffic signals and dedicating bus-only lanes on busy travel corridors.

Ensuring real and equitable access is achieved by delivering the most impactful projects and programs in the most efficient manner, including expanded transit service, completing the Tahoe Trail, and implementing improvements identified in corridor plans. This builds on the momentum created by the Bi-State Consultation.

With continued innovation and broader partnerships, solutions needed to move the Lake Tahoe Region forward are within reach.

IMPLEMENTING THE PLAN

Implementing the plan will be further advanced by the following concurrent planning efforts:

Better Understanding Tahoe Travel

Working with the Bi-State Tahoe Science Advisory Council, the University of California-Davis Institute of Transportation Studies, and a transportation geographer at the University of Nevada-Reno, TRPA will establish methods for understanding and reporting on Everyday, Discover, and Visit Tahoe travelers to better understand each user, their travel needs, and how much VMT each produces. This work will be based on best practices using "Big Data," as well as traditional sources of data, such as the Tahoe Model and traffic counts.

This work will establish new performance measures that provide meaningful ways of counting, tracking, and reporting on visitation and environmental, economic, and demographic metrics for the Lake Tahoe Region.

Addressing Congestion Through Mobility

When viewed in its entirety, the Tahoe Region's transportation system has potential to address traffic congestion, though not by building new roads or additional travel lanes. Instead, strategies rely on reducing congestion by providing ready access to alternative modes of travel on new trails and expanded, free to-the-user transit services, improving traffic signals to prioritize non-auto modes, parking management at popular destinations, real-time

travel information, and implementing adaptive corridor management with transit priority and/or reversible travel lanes.

Efficient and Accelerated Implementation

Transportation corridor planning formalizes coordination across jurisdictions and adds efficiency to transportation project implementation by combining related actions and stretching limited transportation funding further. Seventeen agencies committed to the corridor planning framework through the 2019 Bi-State Consultation on Transportation, ensuring that a collaborative approach to transportation planning will continue and funding corridor improvements remains a regional priority.

Transportation Demand Management

Travel demand management (TDM) strategies shift travel patterns from the single occupancy automobile to walking, biking, transit, and carpool. They also shift car travel to less busy travel times when there is more capacity on roadways and at recreation sites.

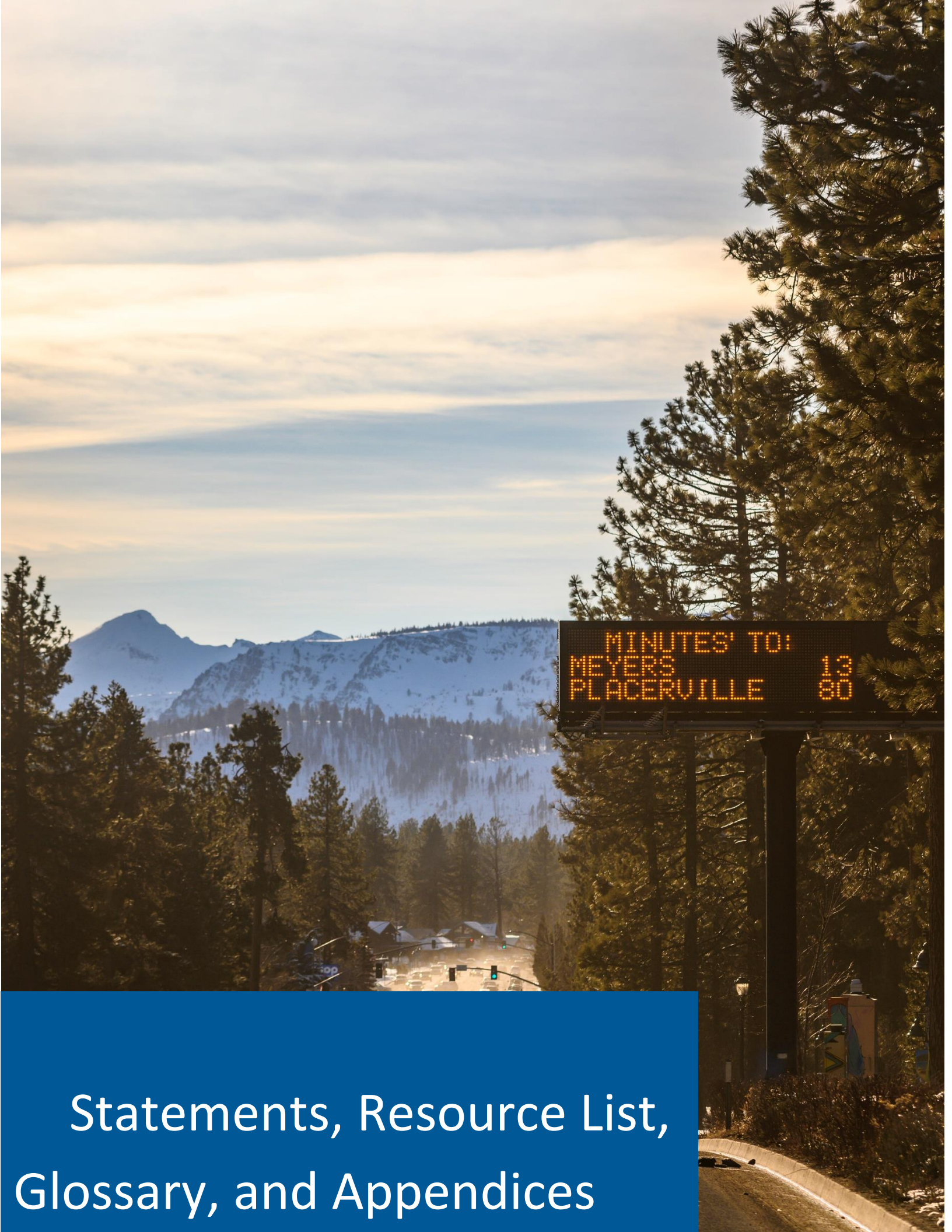
The plan's TDM approach strategies target each transportation system user group differently, providing appropriate travel options and programs for Everyday, Discover, and Visit Tahoe travelers.

Both the North and South Shore transportation management associations are key partners in developing and implementing the right mix of transportation demand management strategies for Tahoe, and Placer County, California offers opportunity to align TDM approaches at the local and regional level.

CONCLUSION

Achieving a Tahoe transportation system that is interconnected, inter-regional, and sustainable that connects people and places in ways that reduce reliance on the private automobile will require collaboration within and across regions, dedication to the strategies and phases identified in the plan, and smart investment that include added regional revenue sources to better fund the Region's transportation projects and programs.

The regional transportation plan is the blueprint and framework for the Tahoe Region to deliver that vision over the next 25 years. Once complete, Tahoe will truly be a sustainable destination for year-round outdoor recreation with a world-class transportation system that complements local communities and helps preserve the Region's unique natural environment.



Statements, Resource List, Glossary, and Appendices

Statements

Federal Highway Administration Credit/Disclaimer

This report was funded in part through grants from the Federal Highway Administration, U.S. Department of Transportation. The views and opinions of TRPA expressed herein do not necessarily state or reflect those of the U.S. Department of Transportation.

TITLE VI PROGRAM

TRPA/TMPO, as a federal grant recipient, is required by the Federal Highway Administration (FHWA) to conform to Title VI of the Civil Rights Act of 1964 and its amendments TRPA/TMPO's sub-recipients and contractors are required to prevent discrimination and ensure non-discrimination in all of their programs, activities and services.

The TRPA/TMPO Title VI Program is embedded in all aspects of the programs and planning activities carried out by TRPA/TMPO. This includes contractors and sub-recipients that provide services for TRPA/TMPO. Other documents that speak to Title VI include the Public Participation Plan, Regional Transportation Plan, Federal Transportation Improvement Program, and TRPA Contracting Procedures.

TRPA meets all Federal Highway Administration (FHWA) Title VI requirements. For more information on Title VI compliance please visit www.trpa.org/document/title-vi-program/

METROPOLITAN PLANNING ORGANIZATION PROFILE

The Tahoe Regional Planning Agency is the federally designated Metropolitan Planning Organization (MPO) for the Lake Tahoe Region which plans and funds transportation and transit improvements to support attainment of regional environmental thresholds. The MPO planning process is carried out by the transportation staff at TRPA and actions are taken by MPO Board, which consist of the full TRPA Governing Board plus an additional representative from the U.S. Forest Service.

Acknowledgements

This update to the Regional Transpiration Plan, is a collaborative process that includes robust community stakeholder and staff participation. Everyone plays an important role in shaping the vision and developing the content of these documents.

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Glossary: Acronyms and Definitions

Term	**Definition**
100-year flood zone	An area within which a flood can be expected to occur every 100 years on average
AADT	Annual Average Daily Traffic
ABAG	Association of Bay Area Governments
Active Transportation	Transportation that does not rely entirely on a car to travel between origin and destination. This can include walking, biking, skateboarding, roller-skating, cross country skiing, using public transit, or driving to an intercept lot, parking, and then using another form of travel.
ADA	Americans with Disabilities Act
ADS	Automated Driving System, fully automated cars, and trucks.
ATP	Active Transportation Plan
ACS	American Community Survey
AMI	Area Median Income
ARB	California Air Resources Board
ATTRI	Accessible Transportation Technology Research Initiative, USDOT, FHWA, AND FTA LED efforts to develop and implement transformative applications to improve mobility options for all travelers, particularly those with disabilities.
AV	Autonomous Vehicles or self-driving car.
BID Business Improvement Districts	Local funding mechanism for economic development and improvement via self-assessment by businesses
BID Business Improvement Districts	Local funding mechanism for economic development and improvement via self-assessment by businesses

Caltrans	California Department of Transportation
CAMPO	Carson Area Metropolitan Planning Organization
CCTV	Closed circuit television
CEQA	California Environmental Quality Act
CFA	Commercial Floor Area
CFR	Code of Federal Regulation
CIP	Capital Improvement Program
Class I	Shared-use paths
Class II	On-street bike lanes
Class III	On-street bike routes
CMAQ	Congestion Mitigation & Air Quality
CMP	Congestion Management Process
CO	Carbon Monoxide
CO2	Carbon Dioxide
COVID-19	COVID-19 is a disease caused by a new strain of coronavirus that is spread from person to person. In response to the disease, restrictions on business and travel were put in place in 2020 impacting the local, regional, states, and national economies.
Clean Water Act Section 303(d)	Authorizes EPA to assist states, territories and authorized tribes in listing impaired waters and developing Total Maximum Daily Loads (TMDLs) for these waterbodies.
Complete Streets	Streets built and managed to be comfortable and safe for all users and modes
CTC	California Tahoe Conservancy
DCFC	Direct Current Fast Charger A type of electric vehicle supply equipment (PEV charger) that requires a dedicated circuit of 20-100 amperage, with a 480-volt

	service connection that allows for rapid charging of plug-in electric vehicles. The time to charge ranges from 50 to 70 miles of range per 20 minutes of charging. This is the fastest type of plug-in electric vehicle charger (examples: CHAdeMO, SAE Combo, and Tesla Super-Chargers), only compatible to battery electric vehicles. This charger requires special infrastructure and safety features and is more expensive to build than the Level 1 and 2 PEV chargers.
DEM	Nevada Division of Emergency Management
DOT	U.S. Department of Transportation
DOP	Requires public and private excavators to coordinate with local government on the installation of extra fiber or conduit whenever ground will be broken in the public right-of-way.
DUE	Dwelling Unit Equivalent
EDCTC	El Dorado County Transportation Planning Commission
EIP	Environmental Improvement Program
EIPPOC	Environmental Improvement & Public Outreach Committee
EJ	Environmental Justice, fair treatment, and meaningful involvement of all people, regardless of race, ethnicity, income, national origin, or educational level with respect to the development, implementation and enforcement of environmental laws, regulations, and policies.
EMCC	Emergency Management Community Council
EMFAC20114 model	Emissions estimation model used by the California Air Resources Board
EVSE	Electric Vehicle Supply The charging equipment for plug-in electric vehicles. EVSE is typically differentiated by the maximum amount of power that can be delivered to the plug-in electric vehicle's battery.
FAST Act	Fixing America's Surface Transportation Act, the latest federal transportation bill, approved December 4, 2015.
FAA	Federal Aviation Administration

Financial Constraint	A demonstration that the amount of dollars planned must not exceed the amount of funding estimated to be reasonably available throughout the planning period.
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FTA 5307 (CARES Act)	Provides funds to prevent, prepare for, and respond to COVID-19.
FTA 5311	Nevada CARES Act competitive provides funds to prevent, prepare for, and respond to COVID-19.Provides funds to prevent, prepare for, and respond to COVID-19.Provides funds to prevent, prepare for, and respond to COVID-19.Federal Transit Authority
FTIP	Federal Transportation Improvement Program
GHG	Greenhouse Gas
HAR Highway Advisory Radio	Provides real time highway information to travelers
HBR	Harvard Business Review
HIP	Highway Infrastructure Program, provides flexible highway funds for projects located on the Federal-Aid System
HOV	High Occupancy Vehicle, typically referencing automobile travel lanes open only to vehicles carrying a defined number of riders.
ITE	Institute of Transportation Engineers
ITS	Intelligent Transportation Systems
L1 Level 1 alternating current	A type of electric vehicle supply equipment (PEV charger) that uses a standard plug with 120 volt and a three-prong electrical outlet at 15-20 amperage. The time to charge ranges from two to five miles of range per one hour of charging. This typically provides residential or workplace charging and is the least expensive and slowest type of charger for plug-in electric vehicles due to low power delivery.

L2 Level 2 alternating current	A type of electric vehicle supply equipment (PEV charger) with 240 volt and alternating current split phase service that is less than or equal to 80 amperage. The time to charge ranges from 10 - 25 miles per one hour of charging. This typically provides residential, workplace, or opportunity electric vehicle charging and provides a faster charge than L1 electric vehicle supply equipment.
LOS Level of Service	A measure of the quality of vehicle traffic flow at an intersection or on a road segment
LTBMU	Lake Tahoe Basin Management Unit, United States Forest Service
Maa	Mobility as a Service, integration of various forms of transport services into a single mobility service accessible on demand.
Micromobility	Small, single-user mobility devices that offer both flexible scheduling and flexible pickup and drop-off sites.
Microtransit	IT-enabled multi-passenger transportation services that typically use smaller transit vehicles, such as vans
MOD	Mobility on Demand, fully accessible end-to-end journeys that improve mobility options for all travelers and seamless delivery of goods and services on demand
MPO	Metropolitan Planning Organization
MMLOS	Multi-Modal Level of Service
NACTO	National Association of City Transportation Officials
NCHRP	National Cooperative Highway Research Program, provides guidance to support greater quality and consistency of roadway infrastructure for AV deployment.
NDOT	Nevada Department of Transportation
OES	Office of Emergency Services
PADMA	Park Avenue Development Management Association
PBD	Parking Benefit District: funding mechanism for local streetscape and transportation improvements from revenues generated by parking management strategies

PDT	Project Development Team
PCTPA	Placer County Transportation Planning Agency
PEV Plug-In Electric Vehicles	Vehicles, including plug-in hybrid electric vehicles and battery electric vehicles, designed to plug into the electric grid to be powered by energy which charges a rechargeable lithium-ion battery. Electricity is used as transportation fuel for PEVs.
PHEV Plug-In Hybrid Electric Vehicle	A type of plug-in electric vehicle that is powered by an internal combustion engine and an electric motor. PHEVs can use Level 1 Chargers and Level 2 Chargers though different models require plug adapters to gain compatibility with different chargers. The electric mile range is typically lower than the electric range in BEVs. Example PHEV models include Chevy Volt, Honda Accord, Hyundai Sonata, Volvo XC90, and Mercedes C350.
PPP	Public Participation Plan
PUC	Public Utilities Code
RHNA	Regional Housing Needs Assessment
RSA	road safety audits, studies that identify safety concerns within roadway corridors.
RTAC	Regional Targets Advisory Committee
RTIA	Reno/Tahoe International Airport
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RTPA	Regional Transportation Planning Agency
RUU	Residential units of use combining a potential residential unit of use (PRU) and a residential allocation
SACOG	Sacramento Area Council of Governments
SAFETEA-LU Safe Accountable, Flexible, Efficient,	2005 Federal Transportation Investment bill

Transportation Equity Act	
SB 375 California Senate Bill 375	Requires MPOs to develop a Sustainable Communities Strategy to focus regional land use and transportation policies to reduce GHGs from cars and light trucks2005 Federal Transportation Investment bill2005 Federal Transportation Investment bill
SCS Sustainable Communities Strategy	Required by California's SB 375, a plan for integrating transportation investments with land use plans to help a region meet targets for reducing greenhouse gas emissions
Secchi depth	Depth at which the pattern on a circular disk lowered into a body of water is no longer visible; used to measure water clarity
SEMS	Standardized Emergency Management System
SHOPP	California State Highway Operation and Protection Program
SLT	South Lake Tahoe
SNPLMA	Southern Nevada Public Lands Management Act
SRTS	Safe Routes to School
SSTAC	Social Services Transportation Advisory Council, advisory body to TRPA on the transit needs of transit dependent and transit disadvantaged persons.
STA	State of Good Repair Program provides formula funding from sales taxes on fuel for transit investments.
STAR	Strategic Transit Automation Research, FTA research agenda for transit bus automation over five years.
STBG	Surface Transportation Block Grant Program provides flexible formula funding to address state and local transportation needs.
STIP	State Transportation Improvement Program
STRSTIP	Short Term Rentals State Transportation Improvement Program

TAC	Technical Advisory Committee: convened to review and provide input on the RTP
TART	Tahoe Truckee Area Regional Transit
TAZ	Traffic analysis zone, usually consists of one or more census blocks, block groups, or census tracts.
TAU	Tourist Accommodation Unit
TBID	Tourism Business Improvement District, type of business improvement district aimed at increasing the number of overnight visitors using businesses and services in a specific area.
TCPUD	Tahoe City Public Utility District
TDA	California Transportation Development Act provides funding to be allocated to transit and non-transit related purposes that comply with regional transportation plans.
TDM	Transportation Demand Management
TDTD	Tahoe Douglas Transportation District
TERM	Transit Economic Requirements Model assesses the current physical condition and future investment needs of the nation's transit assets / operators.
Threshold	TRPA Environmental Threshold Carrying Capacities which set environmental standards for the Lake Tahoe basin and indirectly define the capacity of the Region to accommodate additional land development.
TIP	Transportation Improvement
TMA	Transportation Management Association
TMDL Total Maximum Daily Load	Federally legislated maximum amount of certain pollutants in a body of water
TMPO	Tahoe Metropolitan Planning Organization
TNT/TMA	Truckee North Tahoe Transportation Management Association

TNC	Transportation Network Company
TOT	Transient Occupancy Tax
TRIA	Trip Reduction Impact Analysis spreadsheet tool to evaluate the trip and VMT reduction impacts of various transportation policies and programs in the RTP/SCS.
TRPA	Tahoe Regional Planning Agency
TSM Transportation System Management	Measures such as dedicated turn lanes, signal synchronization, bicycle-activated signals, roundabouts
TTAC	Transportation Technical Advisory Committee guides complex information, data, and policy decisions requires input and guidance from non-governmental organizations, technical experts, community stakeholders, and the development community.
TTIC	Transportation Technical Implementation Committee, coordinates recommendations for transportation project prioritization and funding, and provides technical support to develop regional revenue sources.
TTC	Tahoe Transportation Commission
TTD	Tahoe Transportation District
U.S.	United States
USFS	United States Forest Service
VMT	Vehicle Miles Traveled
VTG	Vehicle Trip Generation
ZEV – Zero Emission Vehicle	Broad term to identify all vehicles that use renewable sources of energy such as electricity or hydrogen Vehicle Trip Generation
VPD	Vehicles per Day, the number of vehicles traveling on the roadway in one day.
Washoe RTC	Transportation Commission of Washoe County, Nevada.

Appendices

Appendix A: Goals and Policies

Appendix B: Project List

Appendix C: Revenue Narrative

Appendix D (New): Innovation in Transportation

Appendix E: Public Participation, Consultation, and Cooperation

Appendix F (New): Environmental Justice

Appendix G: Data and Forecasting

Appendix H (New): Congestion Management Process

Appendix I: Performance Measures

Appendix J: Regional Transportation Plan and Sustainable Communities Strategy Checklist