# Plumas County
# Active Transportation Program
# Pedestrian/Bicycle Plan

January 2018

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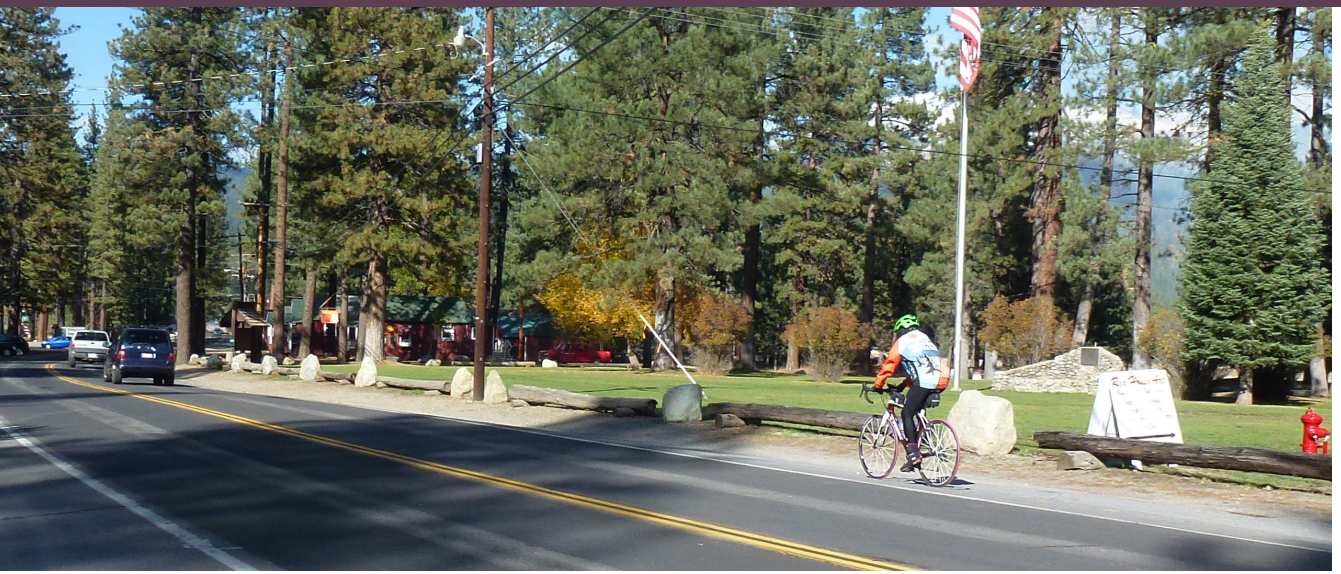
Caltrans Sustainable Communities Grant




Prepared by
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for Plumas County Public Works
on behalf of the
Plumas County Transportation Commission

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# Chapter 1. Project Area Setting

## Setting

Plumas County lies at the far north end of California's Sierra Nevada mountain range, marking the transition to the Cascade Range to the north.

The rural county offers a wealth of outdoor recreation opportunities for residents and visitors year-round, from hiking and camping to watersports in the summer, and skiing or snowmobiling in winter.

Plumas County is also popular among long-distance adventure bicycling groups, many of whom recommend routes that traverse the county as they head towards San Francisco or Nevada. It is home to many organized bike rides throughout the county.

Portola is the only incorporated city in Plumas County. Communities are often great distances apart, and connected by relatively narrow, curving roads and highways.

### Land Use

The majority of Plumas County is under federal ownership, with over 70 percent of land in the county managed by the US Forest Service (USFS). The southeast portion of the county is home to Sierra Valley, the largest alpine valley in North America, and is the largest agricultural area in the county. Together, timber and agricultural designations comprise the largest land use areas in the county.

Communities within the county are comprised of a varying combination of residential, commercial, recreation, and industrial land uses. For a map of countywide land uses, see **Figure 1-1**.

Pedestrian/bicycle pathway along Spanish Creek looking towards Feather River College

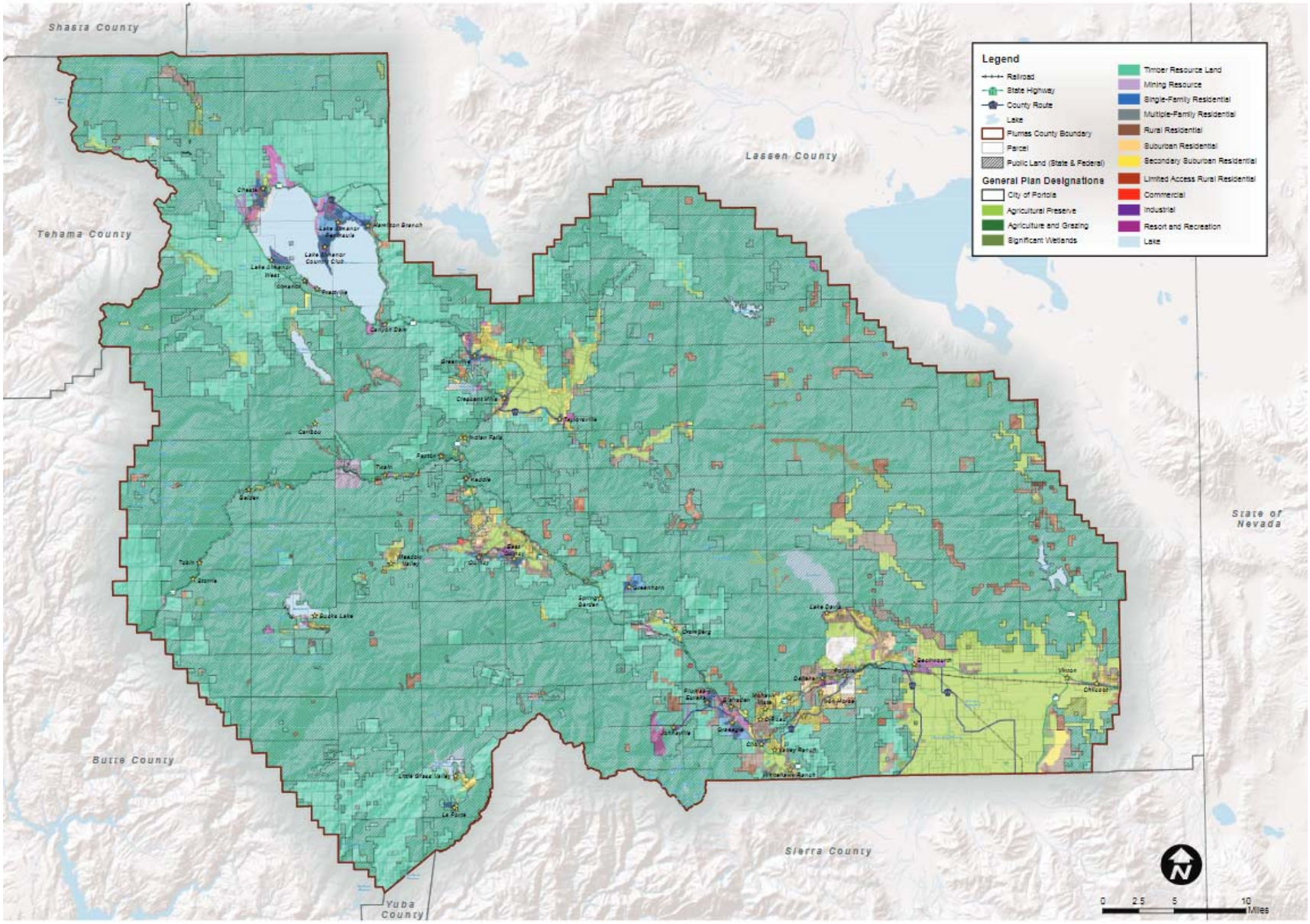



*Figure 1-1: General Plan land use designations*

# Demographics

Demographic data presented in the following section relies on the 2013 American Community Survey 5-year estimates.

## Population

Plumas County is home to approximately 19,586 residents. The county is largely rural, with population concentrated in a few communities. This Active Transportation Plan – Bicycle/Pedestrian Plan is organized around six key communities, outlined in **Table 1-1**.

*Table 1-1: Population by Community*

| Community | Population |
|---|---|
| Chester | 1,908 |
| Graeagle | 548 |
| Greenville | 922 |
| La Porte | 13 |
| City of Portola | 1,484 |
| Quincy | 4,102 |
| Other county areas | 10,609 |
| **TOTAL** | **19,586** |

Portola is the only incorporated city in Plumas County; all other populations are based on census-designated place boundaries. Quincy and East Quincy are evaluated as a unit.

For a map showing population density data throughout Plumas County, see **Figure 1-3**.

## Age

Over 40 percent of Plumas County residents are 55 years or older, representing a significant aging population. See **Figure 1-2**.

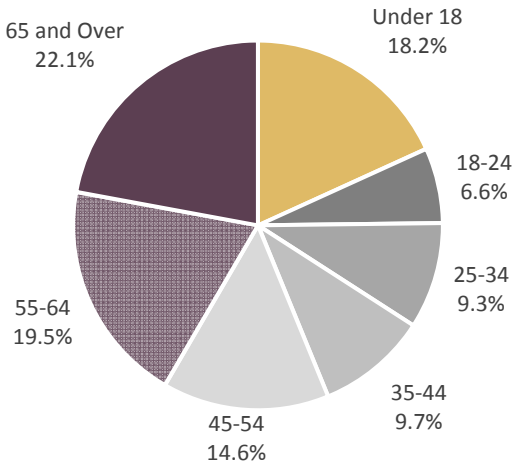



*Figure 1-2: Age of Plumas County residents*

## Income

The median annual household income in Plumas County is $45,794, according to 2013 American Community Survey 5-year estimates.

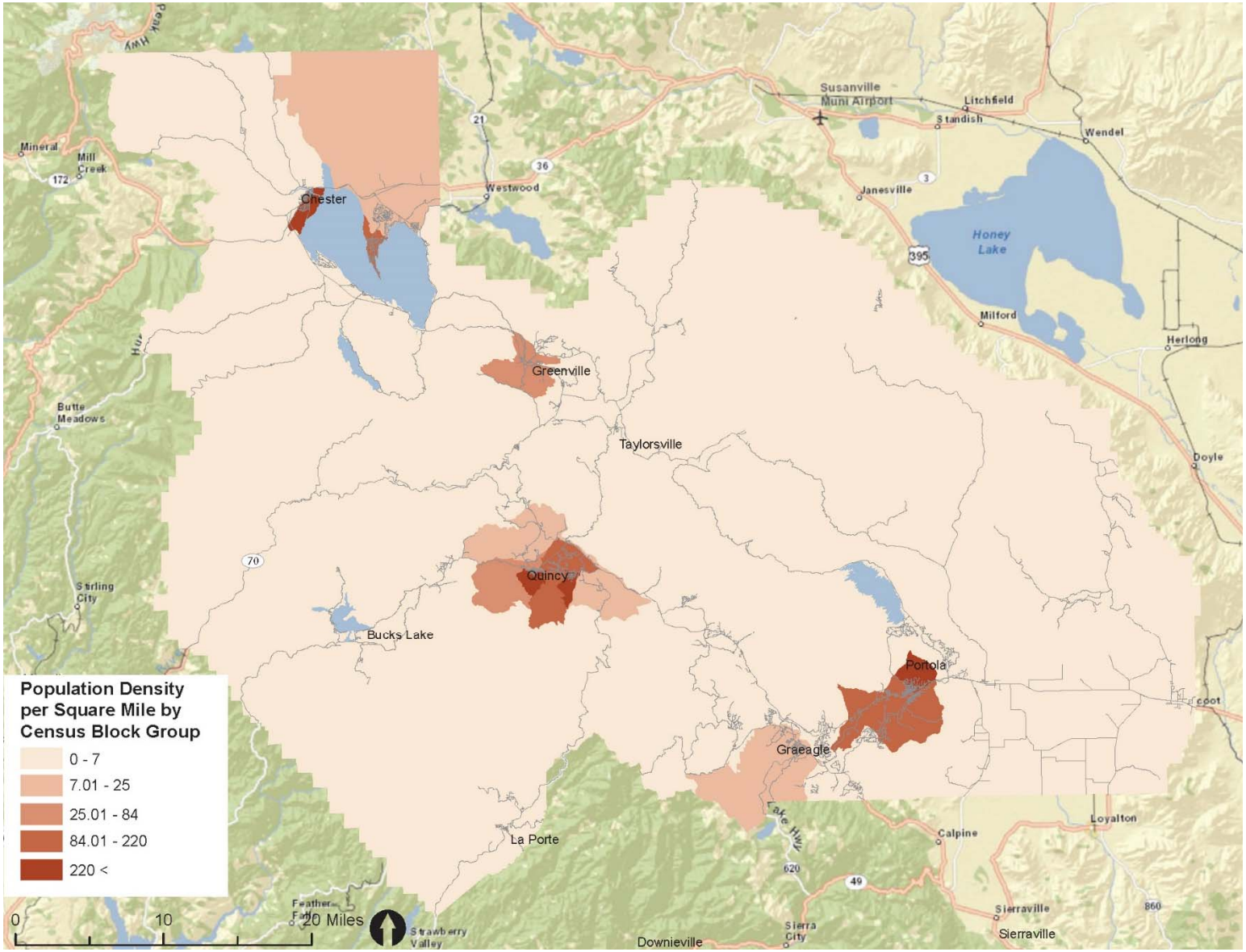



*Figure 1-3: Population density*

## Travel Patterns

Nearly 75 percent of workers in Plumas County currently drive alone to work, according to the 2013 American Community Survey 5-year estimates. Less than one percent of commuters bicycle to work, and 4.6 percent walk. For all modes of transportation used to commute to work in Plumas County, see **Figure 1-5**.

More than 32 percent of households (2,908 households) in Plumas County have access to only one vehicle, although there may be two or more employed adults in the household. An additional six percent (540 households) do not have access to any vehicles for their transportation needs, as shown in **Figure 1-4**.

Based on the average household size of 2.13 people, this means as many as 7,344 Plumas County residents may rely on walking, bicycling, or public transportation for their daily needs.

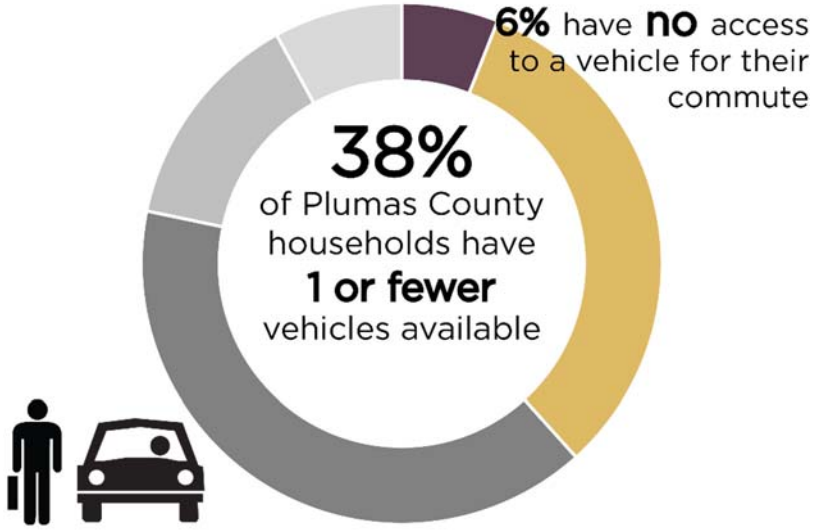



*Figure 1-4: Vehicles available*

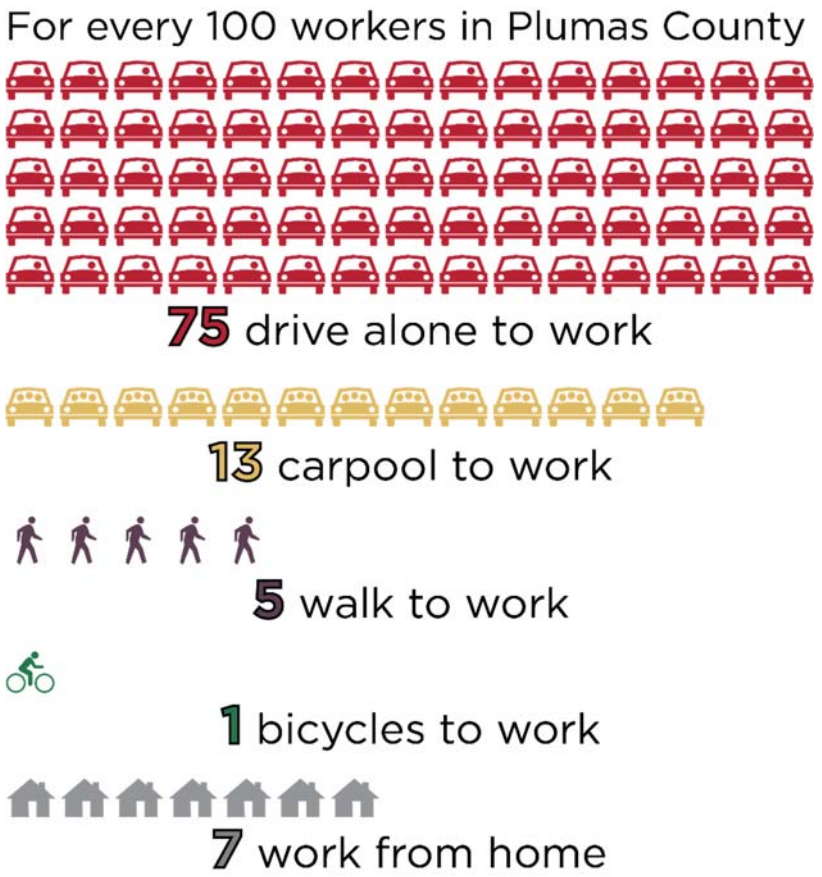



*Figure 1-5: Mode of transportation to work*

## Mode Share Goal

Plumas County has set a mode share goal to increase bicycle and pedestrian mode share by 50 percent by 2030. As 2030 approaches, Plumas County will re-evaluate and update this goal.

## Transportation Network

This section present county-wide transportation conditions. **Chapter 2: Existing Conditions** will provide details and map the pedestrian and bicycle facilities for each community in Plumas County.

### Road Network

Inter-community access in Plumas County is provided by key segments of the state highway system, with additional access provided by City of Portola, County, and US Forest Service roads. East-west connections are provided by State Route (SR) 36 and SR 70 in the northern and southern parts of the county, respectively. SR 89 provides north-south connections. SR 147 accesses the east side of Lake Almanor, while SR 49 and SR 284 connect the Frenchman Reservoir and Loyalton region in the southeast. Shoulder widths along these routes vary widely, and are inconsistent.

Current roadway mileage is summarized in **Table 1-2**.

*Table 1-2: Existing Roadway Mileage*

| Type | Miles |
|---|---|
| Major Roads | 1,770 |
| Local Roads | 4,721 |

### Rail Network

Two active freight rail operations use a number of rail lines in Plumas County. Union Pacific Railroad operates a connection from Roseville, California to Salt Lake City, Utah which primarily follows SR 70. Burlington Northern Santa Fe Railroad operates a north-south line from Keddie to Lake Almanor and north into Lassen County and Oregon.

The Almanor Railroad spur near the Collins Pine mill in Chester is no longer an active line, and the rails have been dismantled. This corridor is owned by Collins Pine Company.

### Transit Network

Plumas Transit offers daily bus service connecting Quincy, Portola, Chester, and Greenville. Regional transit connections are also provided by transferring to Lassen County Bus Service or Susanville Rancheria Public Transportation at the Holiday Market in Chester.

Some transit stops are equipped with transit shelters that provide seating and protection from weather. Transit routes and stops are shown on network maps on the following pages.

State Route 89 in Graeagle

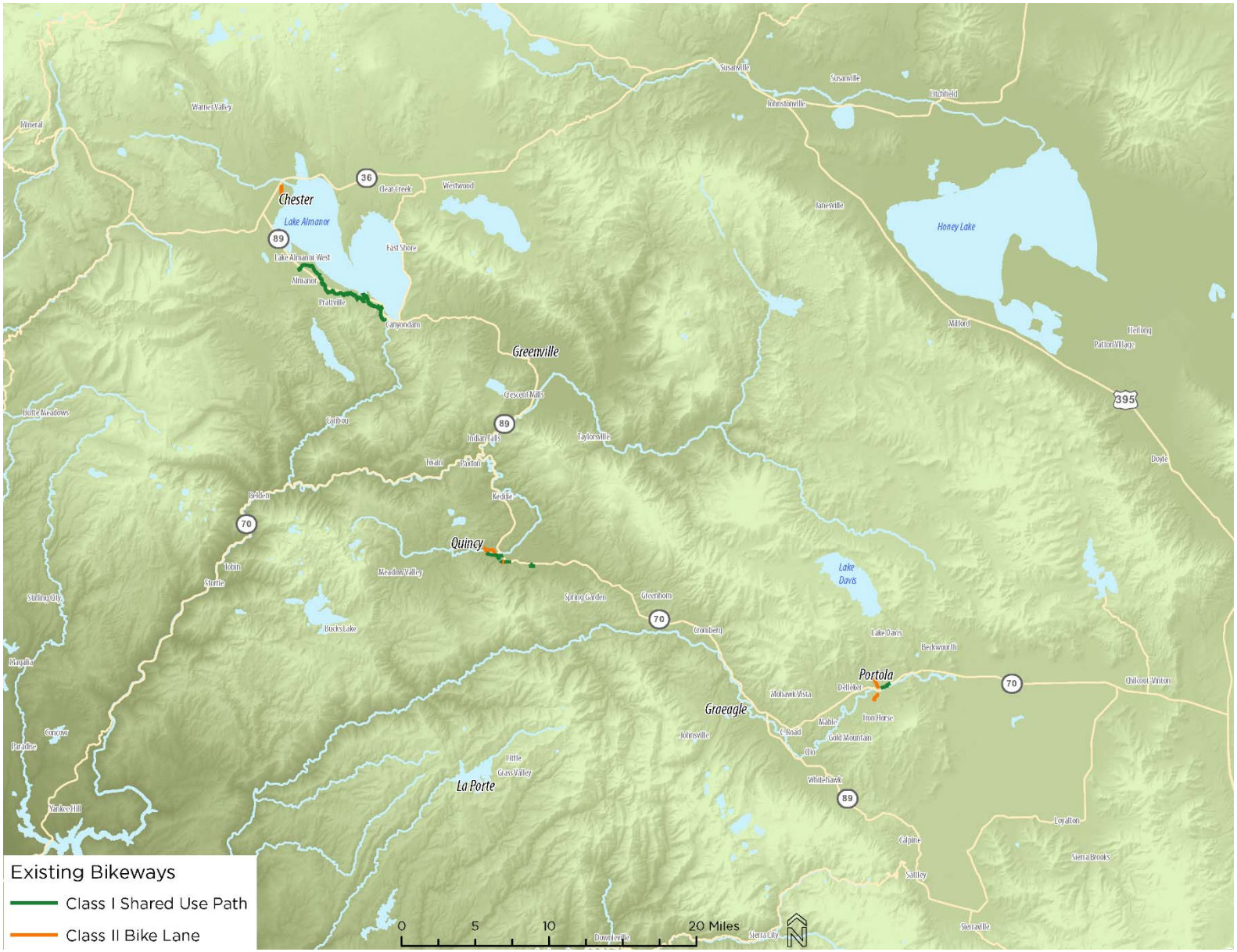
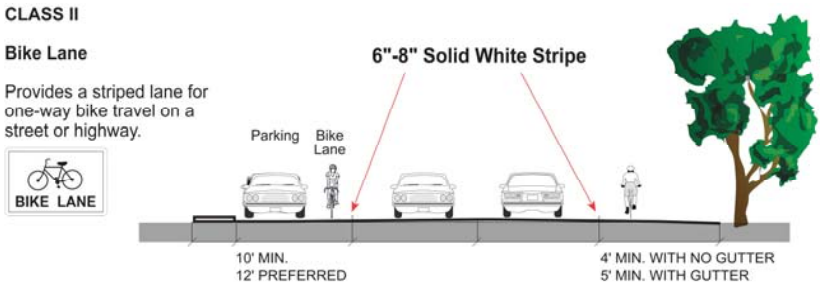



*Figure 1-6: Existing conditions – Countywide*

## Bicycle Network

Caltrans defines four 'classes' of bikeways that vary in the separation from motor vehicles provided (**Figure 1-7**: Class I bikeway




through

**Figure** 1-9**)**. See **Table 1-3** for a summary of existing bikeway mileage in Plumas County.

A **Class I shared use path** is a paved right-of way completely separate from the street or highway. Class I shared use paths exist in Plumas County along the west shore of Lake Almanor, in Quincy, and along the Feather River in Portola.

**Class II bicycle lanes** provide a signed, striped, and stenciled lane for one-way travel on both sides of a roadway. Bicycle lanes are often recommended on roadways where traffic volumes or speeds are too high for bicyclists and motorists to share a travel lane comfortably. On roadways with posted speed limits greater than 40mph, minimum bike lanes should be at least six feet wide.

**Class III bicycle routes** provide for shared travel lane use by bicyclists and motorists and are generally only identified by signs. Bike routes may have a wide travel lane or shoulder that allows for parallel travel with automobiles, and may be enhanced with additional features including shared-lane markings ("sharrows") or traffic calming treatments. See "Bikes May Use Full Lane" Route section in **Chapter 5**.

**Class IV protected bikeways** are on-street facilities similar to Class II, but include a physical barrier such as flexible bollards, concrete planters, or on-street parking between the bikeway and vehicle lanes. They may provide for one- or two-way bicycle travel.

*Table 1-3: Existing Bikeway Mileage by Class*

| Bikeway Class | Existing Miles |
|---|---|
| Class I Shared-Use Paths | 15.0 |
| Class II Bicycle Lanes | 3.7 |
| Class III Bicycle Routes | 0 |
| **Total** | **18.7** |

*Source: Plumas County Transportation Commission data*

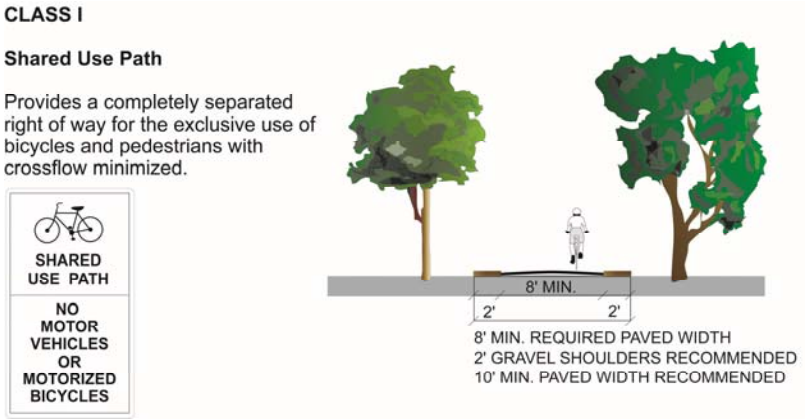
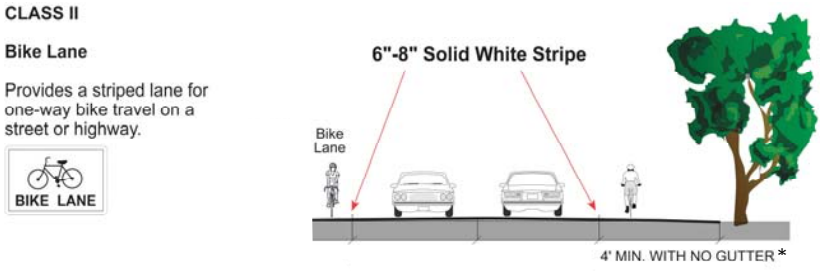



*Figure 1-7: Class I bikeway*



*except where:

- Adjacent to on-street parking, the minimum bike lane should be 5 feet.
- Posted speeds are greater than 40 miles per hour, the minimum bike lane should be 6 feet, or
- On highways with concrete curb and gutter, a minimum width of 3 feet measured from the bike lane stripe to the joint between the shoulder pavement and the gutter shall be provided.

Figure 1-8: Class II bikeway

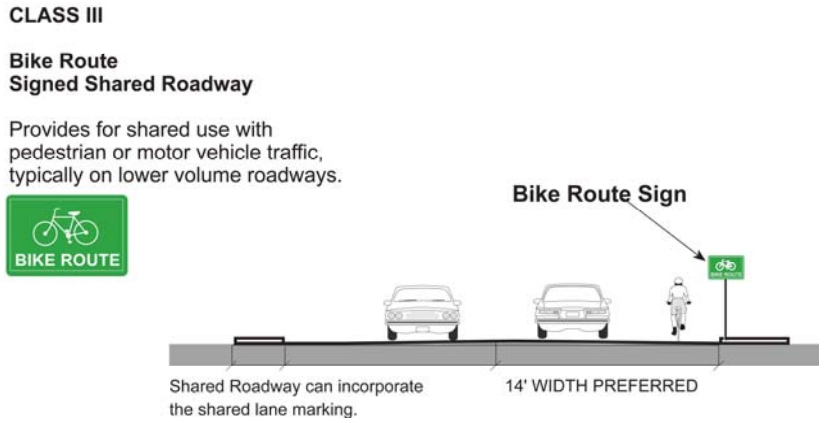


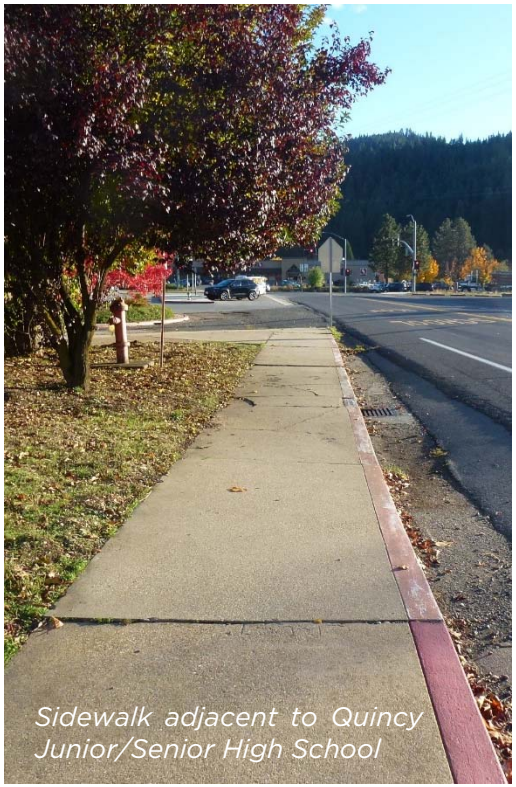

*Figure 1-9: Class III bikeway*

## Pedestrian Network

Sidewalks in Plumas County, when present, are located within the various communities. The sidewalk network has been constructed by various entities including Caltrans, the County, local districts, and property owners meaning they can be discontinuous, in need of maintenance or repairs, or obstructed by overgrown vegetation and utility fixtures.

Maintenance for sidewalks is an ongoing challenge, as funds for maintenance are limited. Formal agreements for sidewalk maintenance are often lacking.

Marked crosswalks are sometimes provided across major roads, but are infrequent along the state routes that form the main street through many communities.



*Sidewalk adjacent to Quincy Junior/Senior High School*

# Chapter 2. Existing Conditions

This chapter provides an overview of existing walking and bicycling conditions based on the outcomes from the Team Facilities Meeting, field work, and development of the GIS database and maps. The findings are organized by a countywide overview followed by more detailed information for the six communities where field work was conducted.

## Countywide

Communities in Plumas County are often great distances apart, and are connected by relatively narrow, curving roads and state routes. State Route (SR) 70 and SR 89 together form the backbone of the transportation network in Plumas County.

- SR 70 provides east-west connectivity across the central and southern part of the county, linking communities such as Belden, Quincy, Blairsden, Portola, and Beckwourth.
- SR 89, which runs concurrently with SR 70 between Blairsden and Paxton, provides north-south connectivity to Lake Almanor, Greenville, and Graeagle, as shown in Figure 2-1.
- SR 36 runs east-west across the north part of the county, linking Chester to SR 89 and neighboring counties.

*Figure 2-1: SR 89 near Lake Almanor is one location with shoulders*

Few walking or bicycling facilities are provided on these routes. Paved shoulders have been provided along many of the state routes, where feasible, but are inconsistent and vary in width. Where rights-of-way are constrained on passes or waterways, many segments have no shoulders and minimal sight distances around curves.

"Share the Road" signs are occasionally present, often on the outskirts of communities. A few locations, at tunnel approaches, have button-activated beacons that alert motorists when a bicyclist or pedestrian may be ahead, as shown in **Figure 2-2**.

*Figure 2-2: Bicycle/pedestrian in tunnel beacon and constrained right-of-way on SR 70*

Heavy traffic, Log trucks and large recreational vehicles create an uncomfortable environment for people walking or bicycling on the roadway edge along constrained roadways.

Pavement on some roadways is cracked or uneven and creates challenges for bicyclists. Workshop participants reported this as a particular concern in southwest Portola. Winter conditions limit connectivity to most areas in Plumas County (see **Figure 2-3**).

*Figure 2-3: Quincy-La Porte Road has minimal shoulders*

Throughout Plumas County, bikeway signage is applied sporadically across bike paths, bike lanes, and bike routes, as shown in **Figure 2-4** and **Figure 2-5**. The Plumas County Active Transportation Program – Pedestrian/Bicycle Plan will identify where appropriate pedestrian and bikeway signage should be utilized.

Where state routes pass through communities, they often serve as the main street and commercial centers. Related challenges are discussed for each community on the following pages.

**Figure 2-6** shows existing bikeways in Plumas County.


*Figure 2-4: "Begin Bike Route" sign at the entrance to a bike path*


*Figure 2-5: "End Bike Lane" sign at the exit of a bike path*

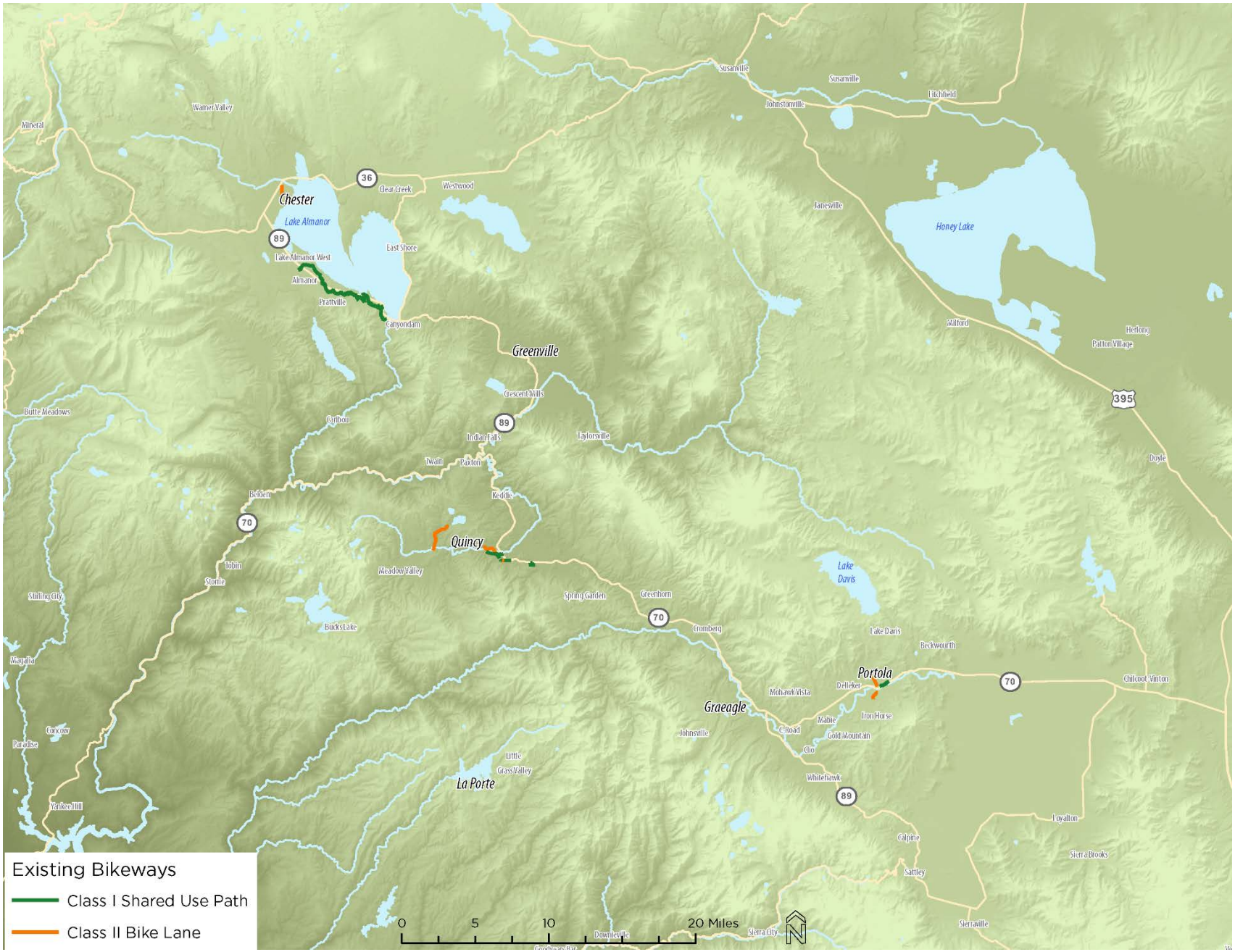



*Figure 2-6: Countywide existing bikeway types*

## Chester

Chester is located in northern Plumas County, north of Lake Almanor. State Route 36 (Main Street) passes through Chester and services as the main commercial corridor. An elementary school and a junior/senior high school serve the community, along with shops and restaurants located on SR 36 (Main Street).

Chester is accessed by a number of bridges, including those across the flood control ditch and spillway for Lake Almanor, as well as one that crosses the north fork of the Feather River.

Additional residential developments exist around the lake, including Lake Almanor West, Lake Almanor Country Club, Bailey Creek, Walker Ranch and Hamilton Branch. Numerous campgrounds are located along the west shore of Lake Almanor.

A railroad right-of-way owned by Collins Pine runs parallel to SR 36 across the north end of Lake Almanor, as shown in **Figure 2-7**. The Almanor Railroad was a Class III short-line railroad operating out of Chester in northern California. The railroad was named after Lake Almanor, which the railroad ran over (at the causeway) and adjacent to the Lake. The Almanor Railroad was a separate division of The Collins Companies. The 12-mile railroad ran west from a connection with the BNSF Railway (former Western Pacific) at Clear Creek Junction to the Collins Pine Company Mill in Chester. In 2010, Almanor Railroad applied for abandonment with the U.S. Surface Transportation Board and the Collins Pine Company (a division of The Collins Companies) was granted the status of Interim Trail Manager. These actions allow the Almanor Railroad to be considered "railbanked," which is a method by which a rail line can be preserved for future rail use through interim conversion to trail use. Railbanking allows the rails and ties to be removed, and this has been completed. Although the Almanor Railroad right-of-way is now technically considered a trail, the remaining ballast material at grade (about two to eight feet in thickness) is coarse making walking, hiking, and bicycling awkward and unpleasant to most users. However, this ballast material could make an excellent, cost-saving, subbase for a thin surface material such as small-diameter crushed rock over geotextile fabric or for a thin section of asphalt.

*Figure 2-7: A railroad right-of-way (right) runs parallel to SR 36 east of Chester*

## Pedestrian Facilities

Sidewalks are generally lacking in Chester (see **Figure 2-8**), with the exception of a few segments on SR 36 and near Chester Elementary School (see **Figure 2-9**). Where sidewalks do exist, there are often, gaps between sidewalks and marked crossings that create a disconnected pedestrian environment (see **Figure 2-10**).

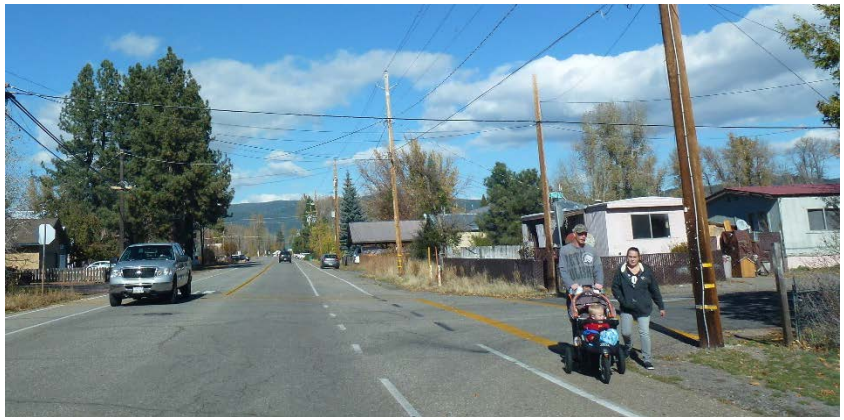


*Figure 2-8: Few sidewalks are present in Chester*

*Figure 2-9: A sidewalk in front of Chester Elementary school stops short of a marked crosswalk at Aspen Street and Cross Street*

*Figure 2-10: Sidewalks on SR 36 over the north fork of the Feather River*

Four marked crosswalks are provided across SR 36, including one with a pedestrian hybrid beacon that was installed after a recent pedestrian fatality, as shown in **Figure 2-11**. On local streets, crosswalks are generally marked along school routes.


*Figure 2-11: Pedestrian beacon on SR 36 near Chester Elementary School*

Sidewalks, where present, were generally in an acceptable condition, although some segments show cracks and other are in need of maintenance or repair.

Roadway widths are constrained on bridges in the Lake Almanor Basin, including the flood control ditch west of Chester, the Lake Almanor Spillway near Canyon Dam, and the North Fork of the Feather River in Chester. In some cases, pedestrian facilities exist on one side of the bridge. **Figure 2-12** shows one example of this.

*Figure 2-12: A walkway is provided between guardrails on County Road A-13*

## Bicycle Facilities

A Class I path runs along the west shore of Lake Almanor (see **Figure 2-14**). This path begins at the southern end, near the boat ramp near the Lake Almanor Spillway andends at the northern end near the Lake Almanor West Subdivision.

Class II bike lanes are striped on a few local streets in Chester, primarily in the eastern part of the community near the schools. These include:

- First Avenue from SR 36 to Lorraine Drive (see **Figure 2-13**)
- Aspen Street from Cross Street to First Avenue
- Feather River Drive from Wagon Road to State Route 36) Main Street.)

*Figure 2-13: Bike lanes on First Avenue in Chester*

Wide parking aisles or shoulders are also striped on much of SR 36 through Chester, which may be used by some bicyclists.

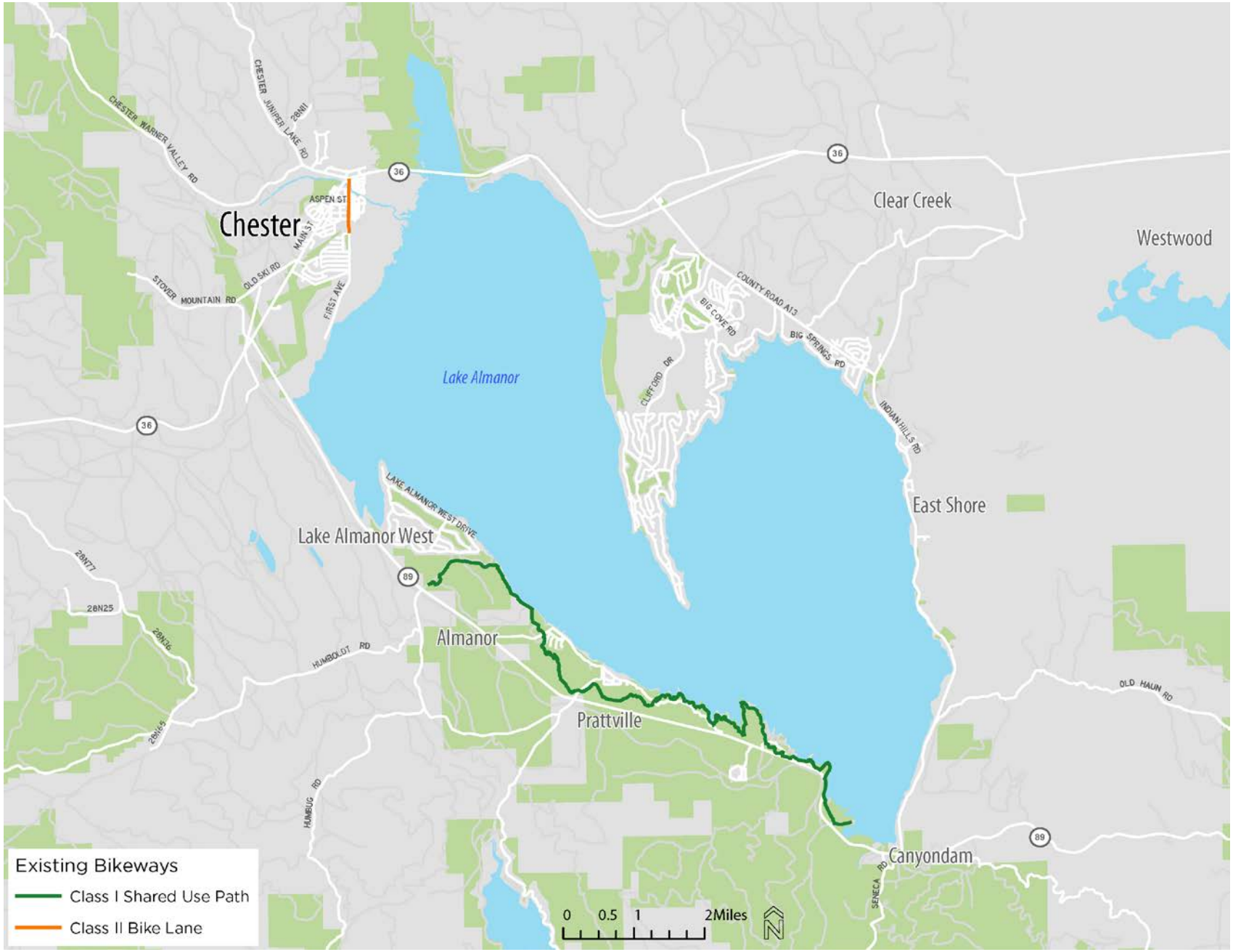



*Figure 2-14: Lake Almanor existing conditions*


*Figure 2-15: Chester existing conditions*

## Graeagle

Graeagle lies along State Route 89 in the southern part of Plumas County. Small shops and restaurants line the highway in picturesque red bungalows, as shown in **Figure 2-16**. Residential neighborhoods with many second homes and vacation rentals on large lots comprise the residential areas of Graeagle.

*Figure 2-16: Downtown Graeagle*

Wide shoulders through the commercial area provide informal space for walking and bicycling. Just north of the community, at the intersection of SR 89 and SR 70, is a park-and-ride lot and an unimproved transit stop.

### Pedestrian Facilities

No sidewalks or marked crossings were documented in Graeagle.

### Bicycle Facilities

**Figure 2-17** shows a bicyclist on State Route 89 in Graeagle. There are no formal bicycle facilities in Graeagle

*Figure 2-17: Bicyclist in Graeagle*

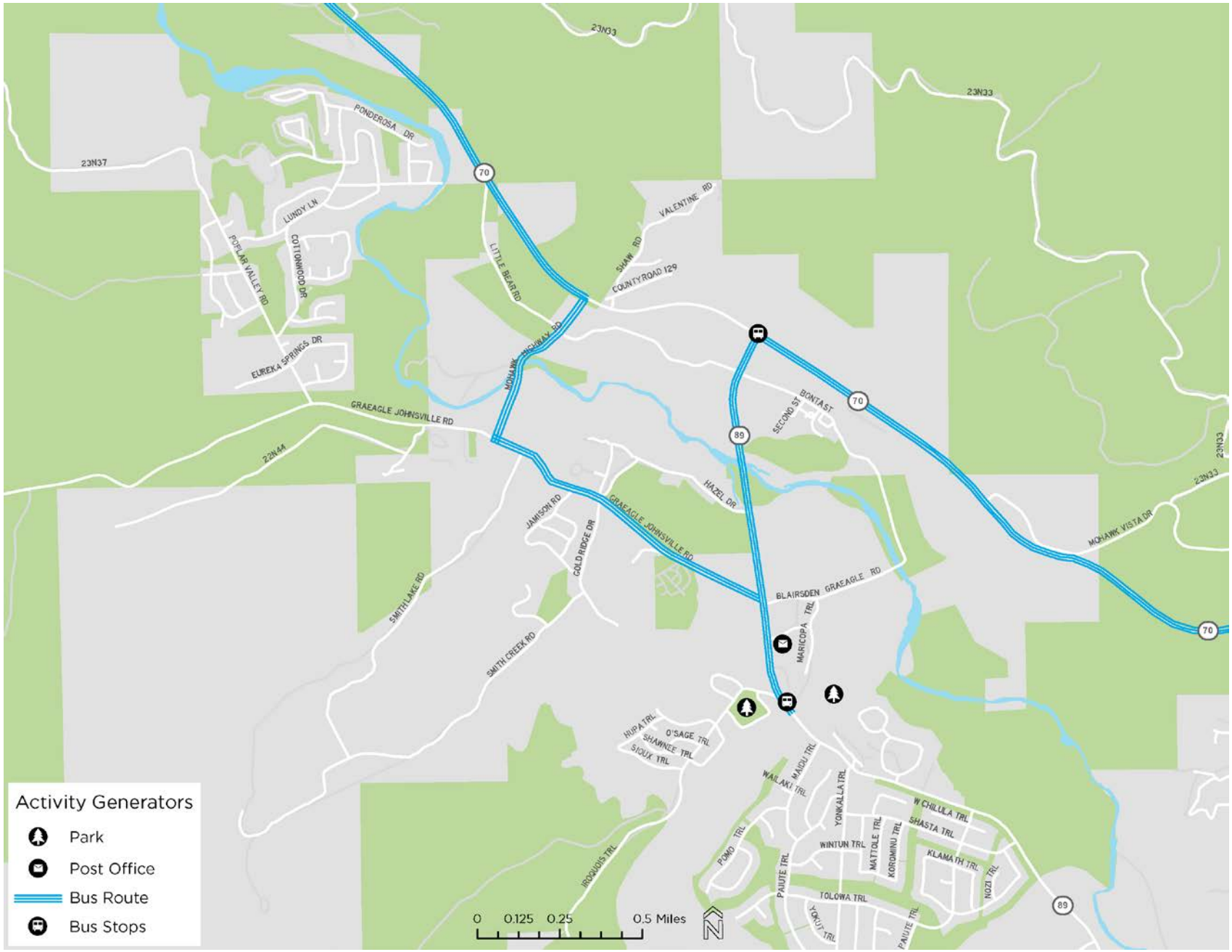



*Figure 2-18: Graeagle existing conditions*

## Greenville

Greenville lies on State Route 89 southeast of Lake Almanor, in Indian Valley. The town is centered on the intersection of State Route 89 and Main Street, with many local shops and businesses located along the State Route 89 corridor.

A major State Route 89 rehabilitation project through Greenville was completed in the fall of 2017. This renovation project included the construction of new sidewalks, pedestrian crossings, bicycle lanes and bus stops.

### Pedestrian Facilities

New sidewalks are now present along SR 89 from the intersection of Hot Springs Road to Bidwell Street. Older sidewalks still exist along Main Street. Some sidewalks are also present along Bush Street and Grand Street, connecting to Greenville Elementary School and Greenville Junior/Senior High School. Some sidewalks are in reasonably good condition; however many have accessibility issues such as steps and other obstructions (see **Figure 2-19.**)


*Figure 2-19: A utility pole obstructs a sidewalk on Bush St in Greenville*

Where sidewalks were absent, pedestrians were observed walking along the shoulder (**Figure 2-20**.)

*Figure 2-20: Pedestrians walk on the shoulder of Main Street near Wolf Creek*

Numerous new pedestrian crosswalks were constructed through the State Route 89 corridor as part of the State Route 89 rehabilitation project (see **Figure 2-21 and 2.24.**)


*Figure 2-21: Before State Route 89 Rehabilitation Project showing marked crosswalks at SR 89 and Main Street in Greenville*


*Figure 2-22: After State Route 89 Rehabilitation Project showing marked crosswalks and bike lanes at SR 89 and Main Street in Greenville*

*Figure 2-23: Before State Route 89 Rehabilitation Project at SR 89 and Jessie Street*

*Figure 2-24: After State Route 89 Rehabilitation Project at SR 89 and Jessie Street showing new sidewalks and bike lanes*

## Bicycle Facilities

New bicycle lanes are now present along SR 89 from the intersection of Hot Springs Road to Bidwell Street.

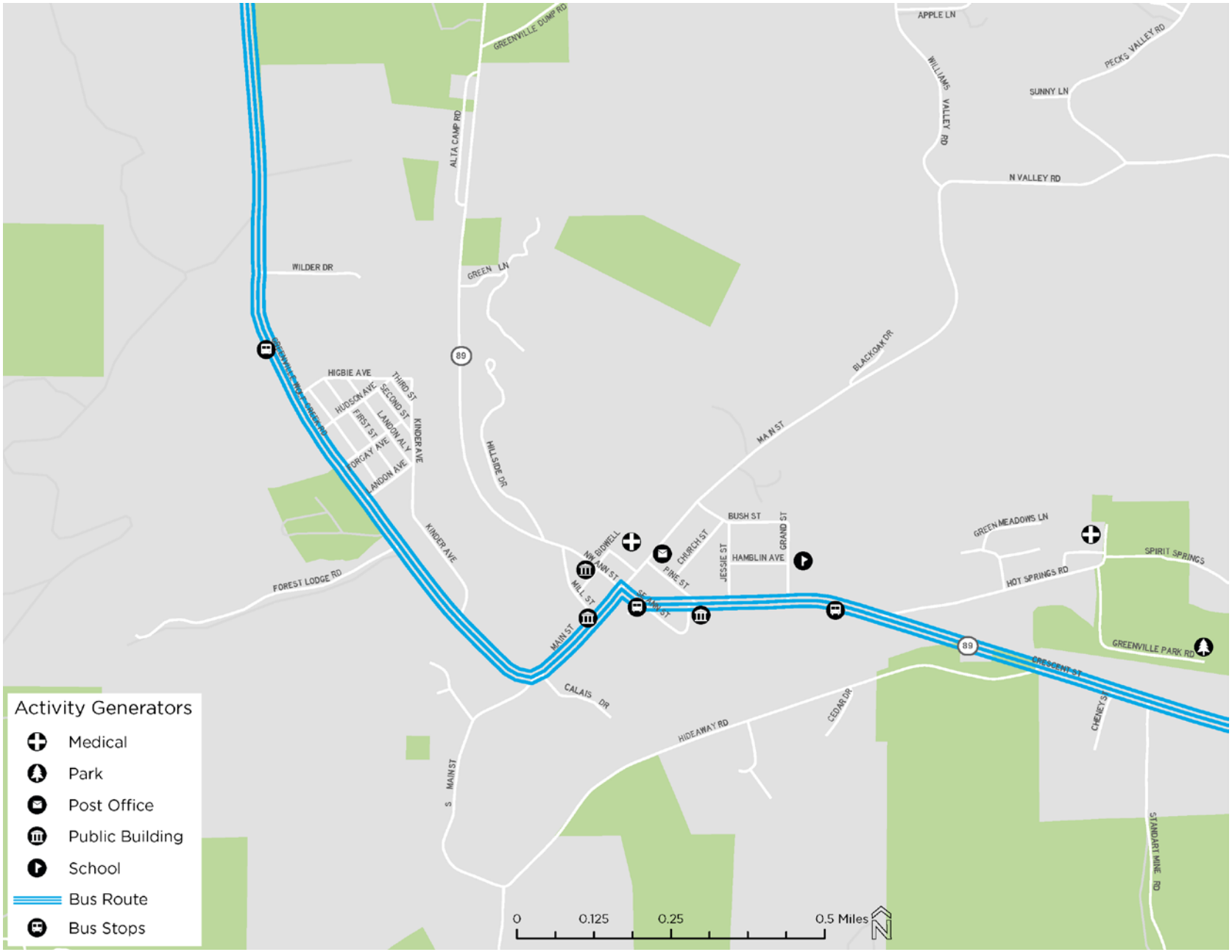



*Figure 2-25: Greenville existing conditions*

## La Porte

La Porte is a small community located in the mountains in the southwest part of Plumas County. Quincy-La Porte Road provides access to the town. Access to La Porte during winter months is from the Yuba County side of Quincy La Porte Road.

In addition to the town of La Porte, centered on Main Street between Pike Road and Mooreville Road, a number of campgrounds and cabins are along Little Grass Valley Road near Little Grass Valley Reservoir to the north. Little Grass Valley Road is narrow and curving, and has an unpaved section near the northwest corner of the reservoir that creates a gap in connectivity. **Figure 2-26** shows Little Grass Valley Road.

*Figure 2-26: Little Grass Valley Road connects La Porte to cabins and recreation opportunities, but lacks shoulders or walking and biking facilities*

Roads in La Porte often have narrow shoulders or no shoulders, because of the mountainous terrain (see **Figure 2-27**). Some roads are paved only a short distance off the main street before ending or transitioning to dirt.

*Figure 2-27: No shoulders on Church Street in La Porte*

### Pedestrian Facilities

No sidewalks or marked crossings exist in La Porte, as shown in **Figure 2-28**.

*Figure 2-28: No sidewalks are provided through downtown La Porte*

### Bicycle Facilities

No formal bicycle facilities exist in La Porte (see **Figure 2-29**).

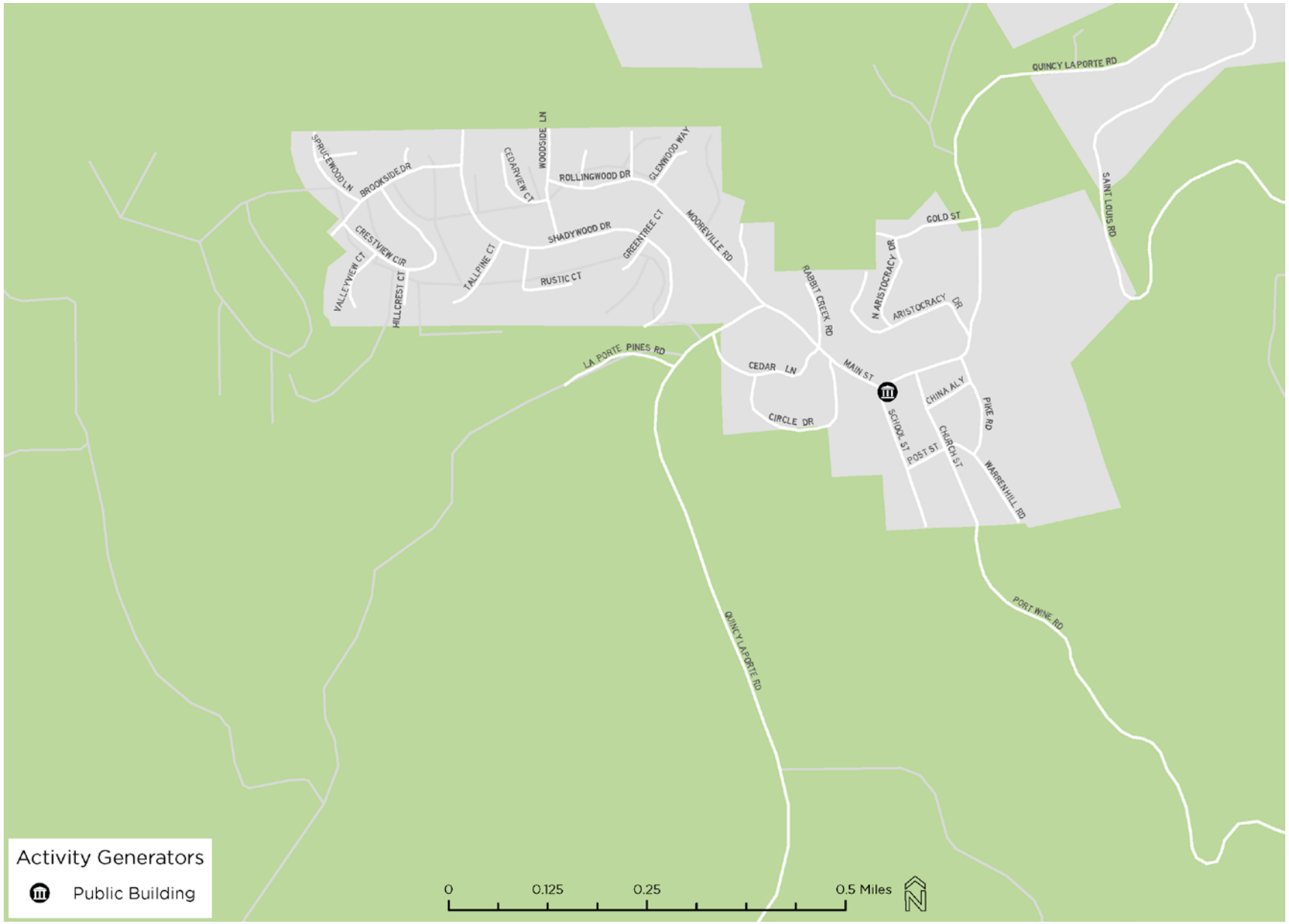



*Figure 2-29: La Porte existing conditions*

## Portola

Portola is the only incorporated city in Plumas County, and is located on State Route 70 in the southeastern portion of the County. State Route 70, a rail line, and the Middle Fork of the Feather River divide the city into northern and southern parts, each with small commercial districts serving local residents. The Gulling Street bridge is the only connection across the river and rail line between the two sides of the city.

Portola has exceptional wayfinding signage that guides residents and visitors to important community destinations such as the library, parks, government services, and trails. **Figure 2-30** shows an example of the signage.

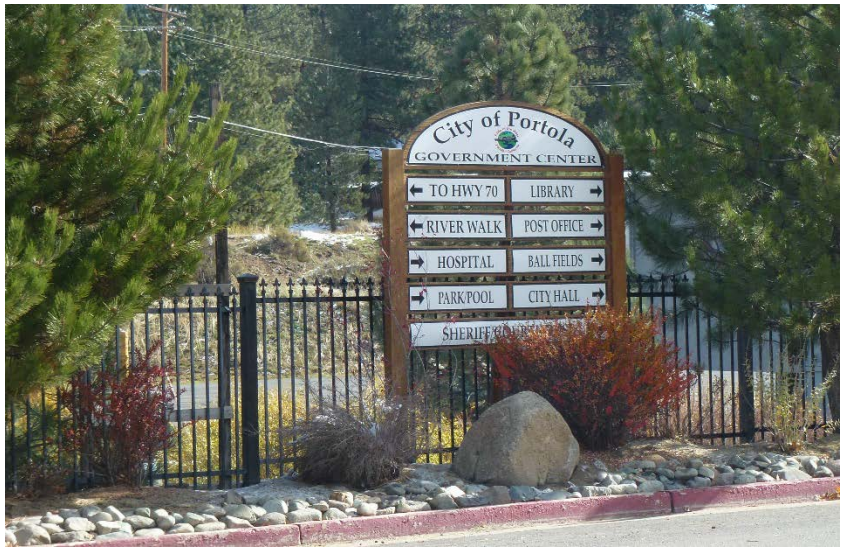



*Figure 2-30: Wayfinding sign in Portola*

### Pedestrian Facilities

Sidewalks are provided along State Route 70 through Portola, and are in good condition. No buffer is provided between the sidewalks and the highway, which may discourage some pedestrians. Frequent driveways that do not meet current standards create an uneven walking surface, presenting difficulties for pedestrians using wheelchairs or other mobility devices, or pushing strollers. **Figure 2-31** shows one example of this.

*Figure 2-31: Sidewalks are provided along SR 89 in Portola, but the pedestrian environment is not buffered from the roadway*

Along Commercial Street, wider sidewalks and frequent marked crossings are provided in the historic downtown. Sidewalks and crosswalks are also provided around the Government Center and city park near Gulling Street and 3rd Avenue, as shown in **Figure 2-32** and **Figure 2-33**.

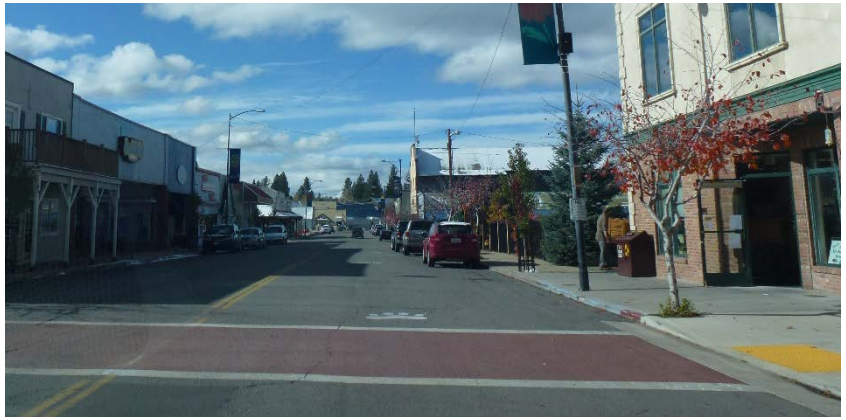


*Figure 2-32: Wide sidewalks and marked crosswalks on Commercial Street the Gulling Street bridge, a key connection between the two sides of the city, sidewalk is provided only on the west side.*

*Figure 2-33: Sidewalk on the west side of the Gulling Street bridge*

Outside the historic downtown and SR 70, sidewalks are infrequent. Informal parking on the roadway edges, as on Beckwith Street, can create challenges for pedestrians, and may create conflicts if motorists are backing into the roadway across the shoulder where pedestrians are walking (see **Figure 2-34**).


*Figure 2-34: Parking for businesses on Beckwith St requires motorists to drive across the shoulder, where pedestrians may be walking*

Around Portola Senior High School and Feather River Junior High School, some accessibility challenges were documented with sidewalks. In some locations, stairs or very tall curbs must be navigated by pedestrians who wish to cross the street or exit the sidewalk, as shown in **Figure 2-35**.

*Figure 2-35: Stairs at 4th Ave and Nevada St create ADA challenges*

## Bicycle Facilities

Portola's Riverwalk is a Class I path that extends east from the Gulling Street bridge along the north side of the Feather River (see **Figure 2-36**). During workshops, residents expressed a desire for this path to be extended and enhanced with lighting and other amenities.

*Figure 2-36: Portola Riverwalk*

Portola has a robust mountain biking community, and offers a number of unique bicycle recreation facilities in the City. A staging area provides parking for visitors, maps of trails in the surrounding area, and a bicycle wash area (see **Figure 2-37**).


*Figure 2-37: A bicycle wash area, with a bike and skate park in the background*

A bicycle skills area is also provided at the park, with space and obstacles for bicyclists to practice balance and bike handling, as shown in **Figure 2-38**.


*Figure 2-38: Bicycle Skills Area*

Bike lanes on Lake Davis Road provide a connection from Joy Way to C Roy Carmichael School. This was the only documented on-street bikeway in Portola. **Figure 2-39** shows these bike lanes and **Figure 2-40** shows a map of the facilities in Portola.

*Figure 2-39: Bike lanes on Lake Davis Road in Portola*

Bicycle parking is provided at the park and at the Riverwalk, in addition to racks on private property provided by business owners.

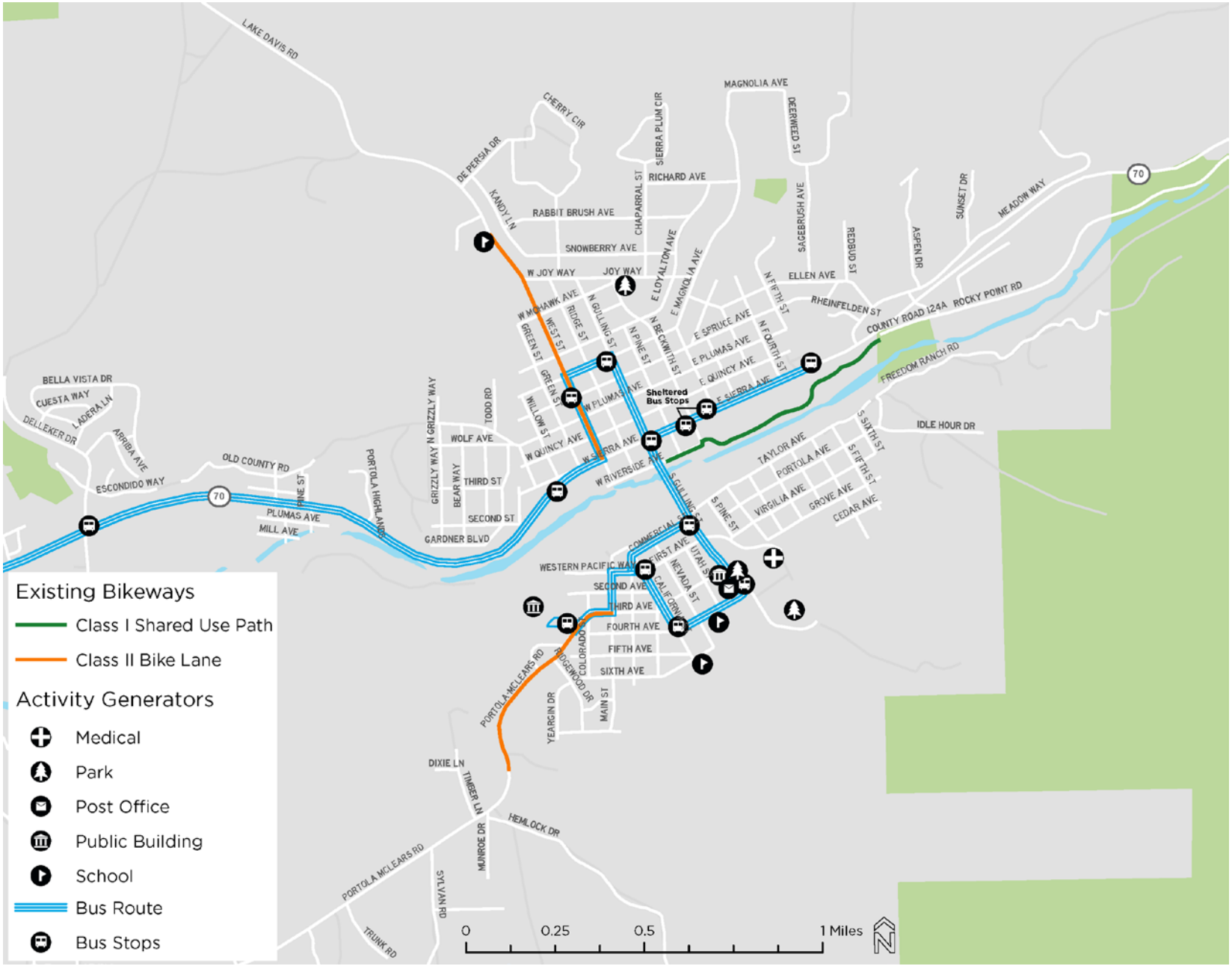



*Figure 2-40: Portola existing conditions*

## Quincy

Quincy and East Quincy are located on State Route 70 in central Plumas County. In Quincy, State Route 70 is divided and becomes a one-way couplet on Main Street eastbound, and on Lawrence Street westbound. Between Quincy and East Quincy, State Route 70 is five lanes side with a wide shoulder on one side and a standard sidewalk on the other, as shown in **Figure 2-41**.

*Figure 2-41: State Route 70 between Quincy and East Quincy*

### Pedestrian Facilities

Wide sidewalks are provided throughout downtown Quincy, with curb extensions and accessible ramps along Main Street (see **Figure 2-42**). Driveways on Lawrence Street create sloped sections of sidewalk, contributing to a challenging environment for people using wheelchairs or other mobility devices.


*Figure 2-42: Wide sidewalk in downtown Quincy*

In the residential neighborhoods and around Pioneer Quincy Elementary School, sidewalks are intermittent and less consistently maintained than those downtown. Vegetation and debris encroach into the walkways, and gaps exist. **Figure 2-43** shows and example of this.

*Figure 2-43: A narrow residential sidewalk is obscured by debris*

East Quincy has sidewalks along both sides of State Route 70 through the east part of town, but many gaps exist at the western end. Three crosswalks are marked across State Route 70, limiting pedestrian connectivity.

## Bicycle Facilities

Several Class I paths exist in Quincy, though there are key gaps between the paths. Closing these gaps is a key opportunity to improve the walking and bicycling network in the communities.

The Gansner Path is located along Spanish Creek, north of Quincy off SR 70 (see **Figure 2-44**). In addition to providing a recreational trail through Gansner Park along the river, the path includes one segment that crosses under SR 70 and connects to Feather River College to the north, and a second segment that extends south along SR 70.

*Figure 2-44: Gansner Path in Quincy as it passes under State Route 70*

Two segments of shared use paths run along the northern edge of Quincy, near SR 70 on the west end (**Figure 2-45**) and near Quincy Junior/Senior High School on the east side (**Figure 2-46**). They are connected in the middle by low-volume streets with no bicycle facilities.

*Figure 2-45: The west end of a Class I path aligns with an unpaved private road across SR 70. No crossing is provided, but this route is used by residents of the neighborhood west of State Route 70.*

*Figure 2-46: Class I path near Quincy Junior/Senior High School*

In East Quincy, there is a segment of Class I path along SR 70 through the western part of the community, and a second segment to the north off of Pioneer Road.

**Figure 2-47** shows the bike lanes were documented on a short segment of SR 70 north of Quincy.

*Figure 2-47: Bike lanes on SR 70 north of Quincy*

Jackson Street parallels SR 70 south of downtown Quincy, and is a popular route for bicyclists avoiding Main Street. No bicycle facilities are provided, and angled parking may create additional conflicts with motorists backing into the roadway (shown in **Figure 2-48**).

*Figure 2-48: Angled parking on Jackson Street*

**Figure 2-49, Figure 2-50** and **Figure 2-51** show the existing conditions for Quincy and East Quincy.


*Figure 2-49: Quincy existing conditions overview*

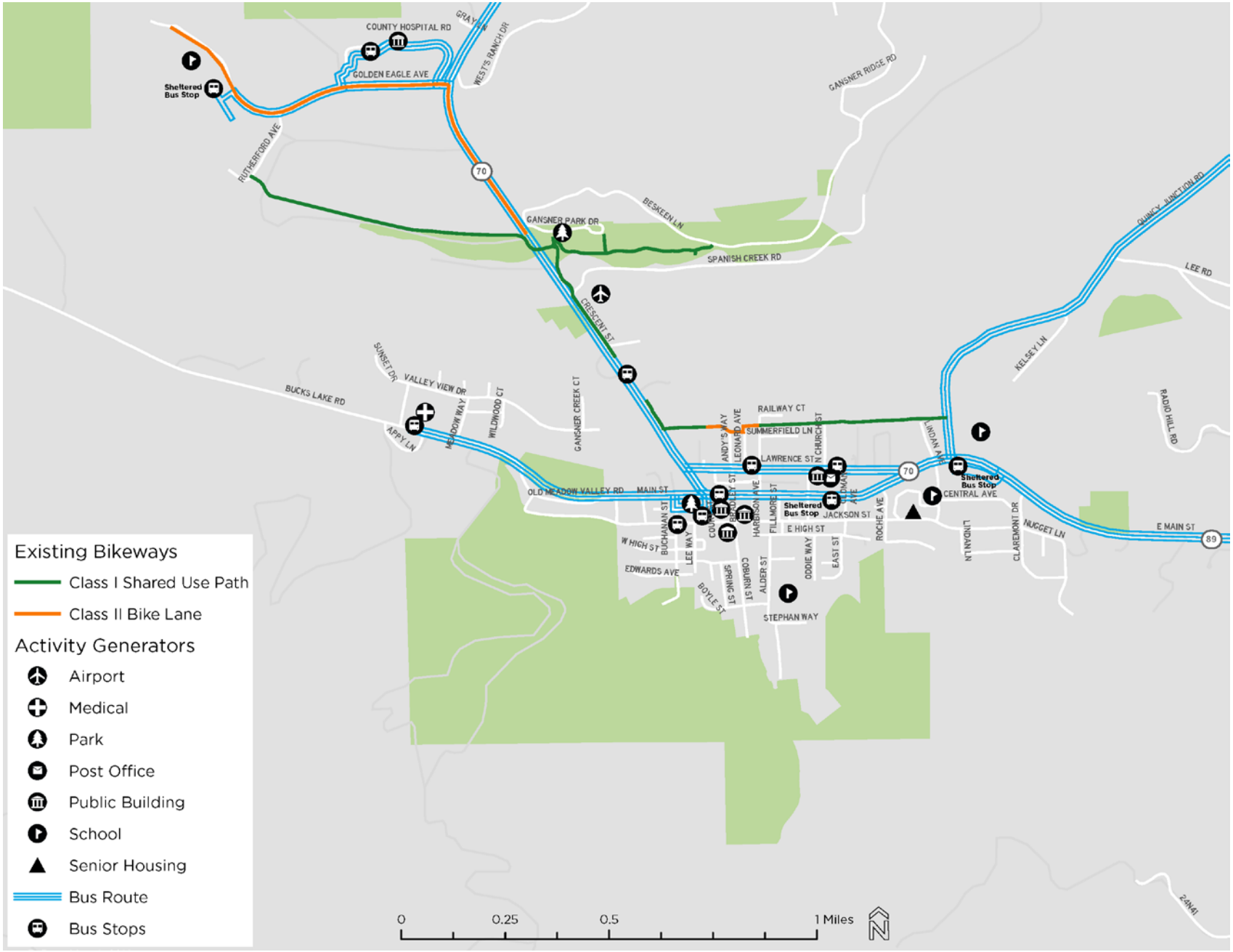



*Figure 2-50: Quincy existing conditions*

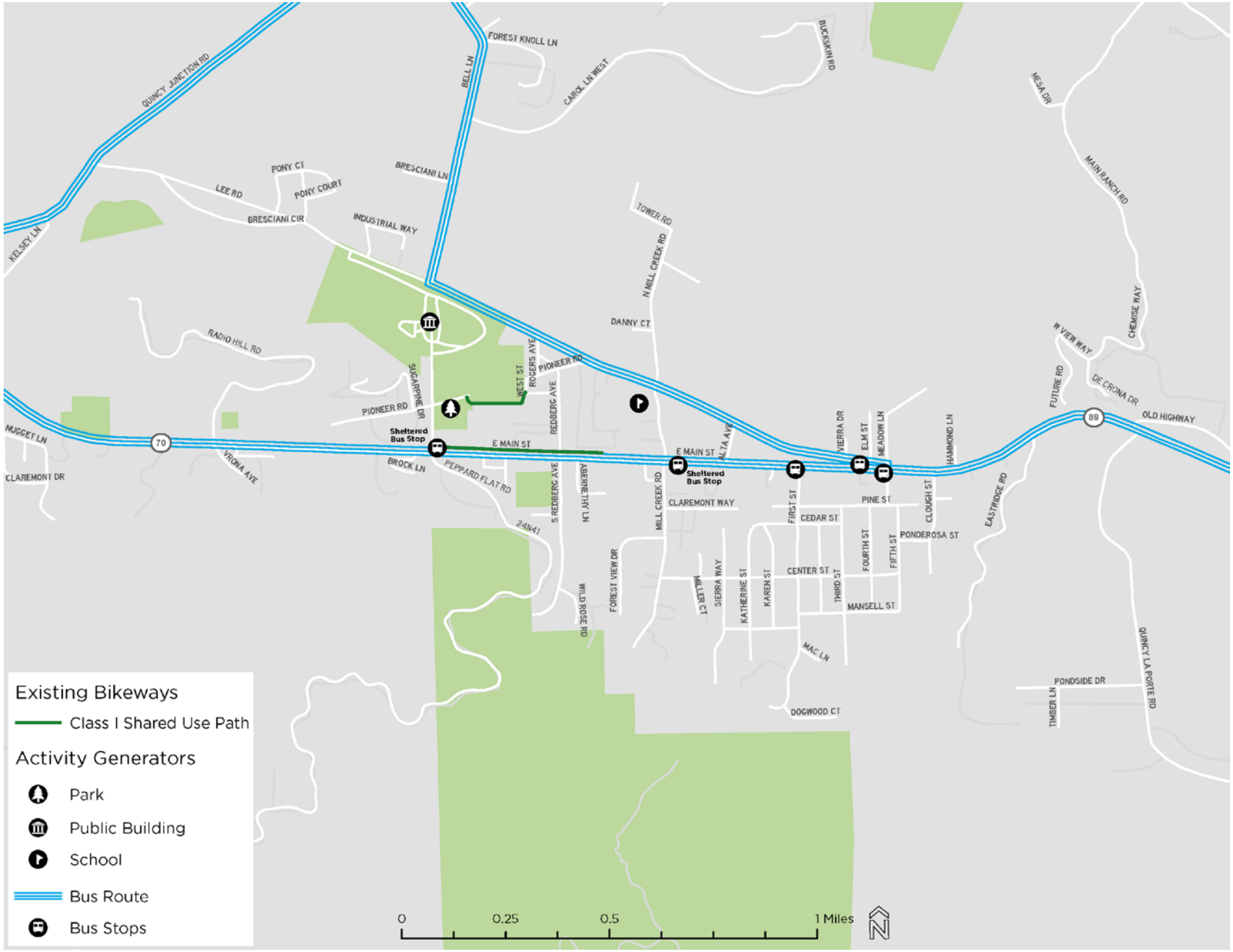



*Figure 2-51: East Quincy existing conditions*

# Chapter 3. Vision, Goals, and Objectives

This Pedestrian/Bicycle Plan will guide the development and implementation of projects to improve the county's walking and bicycling environments for years to come. The foundation for recommendations and implementation strategies are directly informed by this Plan's Vision, Goals, and Objectives.

A **vision** is a broad inspirational statement for the desired future state.

**Goals** are general statements of what the County and residents hope to achieve over time.

**Objectives** are more specific statements that mark progress towards the goal.

**Strategies** are actions that guide the County to achieve the objectives and goals.

The vision, goals, and objectives in this chapter were developed based on input from community members as well as discussions with County and other agency staff.

## Vision

*Plumas County envisions a walking and bicycling environment that supports active living, provides for safer and healthy transportation, addresses the mobility needs for people of all ages and abilities, and improves the economic health of the county.*

Although not a formal goal, Plumas County envisions a non-motorized "superhighway" system throughout the County made up of high-quality, continuous, and level routes that connect between communities, internal and neighboring. The system would help accommodate camping services for travelers and way stations.

## Goals & Objectives

This Plan uses local input to establish goals and objectives for Plumas County as it moves forward with advancing walking and bicycling. Specific goals and objectives are listed on the following pages.

## Goal 1: Safety

**Improve walking and bicycling safety through the design and maintenance of roadway improvements.**

Objective 1.A: Reduce the number and severity of walking and bicycling related collisions, injuries, and fatalities.

*Strategy 1.A.1: Annually review the number, locations, and contributing factors of walking and bicycling related collisions to identify and implement ongoing improvements at key locations throughout the transportation network.*

*Strategy 1.A.2: Identify opportunities to reduce exposure for people walking or bicycling by reducing crossing distances or providing dedicated facilities.*

*Strategy 1.A.3: Develop and implement a program to record community complaints and requests for maintenance and review this data annually to identify trends.*

*Strategy 1.A.4: Coordinate with local agencies and Caltrans regarding a) improvements to crosswalks and provision of new crosswalks, and b) maintenance of shoulders and provision of new or wider shoulders.*

## Goal 2: Mobility

**Increase and improve walking and bicycling access to community destinations for all ages and abilities.**

Objective 2.A: Plan, design, construct, and manage a Complete Streets transportation network that accommodates the needs of all mobility types, users, and ability levels.

*Strategy 2.A.1: Integrate walking and bicycling facilities as part of the design and construction of new roadways and, where there is available right-of-way, upgrades or resurfacing of existing roadways. Prioritize improvements for walking and bicycling near commercial, retail, and major employer centers.*

*Strategy 2.A.2: Provide safe and convenient walking and bicycling access to existing and future transit facilities and stops.*

*Strategy 2.A.3: Coordinate with local agencies and Caltrans regarding the implementation of the proposed system.*

Objective 2.B: Work to eliminate barriers to walking and bicycling.

*Strategy 2.B.1: Prioritize projects that close gaps in the existing walking and bicycling networks within communities, between communities, and to major destinations.*

*Strategy 2.B.2: Work with mobility-impaired community members, including children and senior citizens, to identify and address barriers within the active transportation environment, particularly for walking and bicycling.*

*Strategy2.B.3: Provide support facilities, such as bicycle parking and wayfinding, at appropriate locations such as employment centers, parks, trailheads, schools, lodging, and commercial centers.*

*Downtown Quincy*

## Goal 3: Programs

**Increase awareness and value of walking and bicycling through education, encouragement, enforcement, promotion, and evaluation programs.**

Objective 3.A: Identify and support a) education programs for those who drive, walk, and bicycle about their rights and responsibilities, and b) enforcement to improve safety.

*Strategy 3.A.1: Partner with and support local groups that offer or promote walking and bicycling education.*

*Strategy3.A.2: Partner with and support schools and organizations to implement educational Safe Routes to School activities recommended in this plan.*

*Strategy 3.A.3: Work with law enforcement agencies to review collision locations and 'close-call' reports and identify locations for increased enforcement of motorist, bicyclist, and pedestrian behavior.*

Objective 3.B: Identify and support encouragement programs for walking and bicycling.

*Strategy 3.B.1: Partner with and support local groups that offer or promote walking and bicycling encouragement.*

*Strategy 3.B.2: Encourage agencies to incorporate messaging that promotes the benefits of walking and bicycling and raises awareness of available routes and resources.*

Objective 3.C: Incorporate active transportation into promotion of tourism and economic development.

*Strategy 3.C.1: Partner with tourism and economic development agencies to promote Plumas County as a destination for active recreation and active lifestyles.*

*Strategy 3.C.2: Collaborate with county and regional partners to promote active recreation in the region*

Objective 3.D: Identify and support evaluation programs that measure how well Plumas County is progressing to meet this Plan's goals.

*Strategy 3.D.1: Partner with tourism and economic development agencies to evaluate the existing impact and the potential for increased impact of recreational walking, running, and bicycling on local economies.*


## Goal 4: Vibrancy

**Develop a walking, bicycling and broader multi-use environment that supports vibrant county plan areas adjacent to core communities and enhances regional economic development and community connectivity.**

Objective 4.A: Enhance existing and/or create new vibrant recreational trails that encourage walking and bicycling.

*Strategy 4.A.1: Prioritize recreational trail improvements a) to existing alignments that include abandoned or out-of-operation railroad lines or County roads with a high potential for recreation trails, and b) to new alignments that include railroad lines or County roads with a high potential for joint use trails.*

*Strategy 4.A.2: Connect recreational trails that close gaps in the existing walking and bicycling networks between communities, adjacent counties, and/or national forest and statewide trail systems or major destination that are in reasonable proximity to core community centers.*

Objective 4.B: Optimize the use of recreational trails to include skiing, snowshoeing, motorized wheel-chairing, and snowmobiling in order to accommodate the needs of more mobility types, users and ability levels and to expand recreational trail's seasonal usage.

*Strategy 4.B.1: Expand non-motorized recreational trail improvement/creation to add uses permitted by exceptions listed Framework for Considering*

*Motorized Use on Non-motorized Trails and Pedestrian Walkways under 23 U.S.C. [sect] 217.*

*Strategy 4.B.2: Incorporate trailside facilities, where feasible, that meet accessibility guidelines and provide safe access to existing and future transit facilities.*

*Strategy 4.B.3: Provide support facilities such as parking, restrooms, bicycle parking and way finding at appropriate joint-use locations such as trailheads, transit facilities, and parks.*

Objective 4.C: Jointly team with large landholders (e.g. National Forest Service, National Park Service, PG&E, railroad companies, timber companies) to improve and enhance trails, trailheads, and campgrounds in proximity to core communities to promote community health, outdoor access, and accessibility as well as expanded tourist opportunities

*Strategy 4.C.1: Create joint agreements to share funding and coordinate large landholder volunteers for trail, trailhead, and campground improvements.*

*Strategy 4.C.2: Plan and install jointly agreed on improvements such as trailhead facilities, information kiosks, benches, equestrian mounting ramps and hitching posts, rest rooms and water, bike racks and erosion control.*

# Chapter 4. Needs Analysis

This chapter presents the reasoning behind this Pedestrian/Bicycle Plan, including a summary of the community outreach, collision analysis, and the methods and key findings of Alta Planning + Design's application of its Bicycle and Pedestrian Suitability Index (BPSI) for Plumas County.

## Community Input

The Pedestrian/Bicycle Plan involved extensive community outreach throughout the process. Community workshops were held, a survey was distributed, and Plan materials and outreach information was shared through the project website. This section presents the details for each aspect of the Plan outreach. **Appendix B: Community Outreach** presents the detailed outreach and feedback heard throughout the process.

### Community Survey

A community survey made available online to Plumas County residents and visitors to gather feedback on the development of this Plan. The online survey was available from October 13, 2015, through December 16, 2015. A total of 223 responses to the survey were received. Questions were divided by bicycling and walking and asked why people walk or ride a bike around Plumas, the most difficult places to walk or bike, and where respondents would walk or bike if given the option. These responses helped shaped the recommendations presented in **Chapter 5: Project and Program Recommendations.**

### Community Workshops

Three rounds of workshops were held for the development of this Plan. The first round was held in November 2015 and gathered feedback on the challenges and opportunities to improve walking and bicycling in Plumas County.

The second round was held in March 2016 to gather feedback on the draft goals, objectives, and evaluation criteria for the plan. The evaluation criteria is used to score projects to determine prioritization for implementation.

The third round of workshops, held in August 2017, presented the draft recommendations. The public was asked to provide comments on the recommendations.

## Community Website

A publicly accessible website was developed for this Plan. The website domain name was www.walkandbikeplumas.org and made available in October 2015 through the end of the project. All project noticing included a link to the website. The website served as the repository for Plan documents and meeting information. The website also allowed the public to provide comments about the Draft Plan during that phase.

## Collision Analysis

This section reviews collision data from the Statewide Integrated Traffic Records System (SWITRS), a statewide repository of collision reports submitted by local enforcement agencies.

While collision data are sometimes incomplete and do not capture 'near misses,' they do provide a general sense of the safety issues facing pedestrians and bicyclists in Plumas County. Five years of data were evaluated, from 2009 to 2013.

A summary of bicycle and pedestrian-involved collisions in Plumas County is shown in **Table 4-1**. Maps of collisions are shown in **Figure 4-2** through **Figure 4-5**.

*Table 4-1: Collision Summary*

| Community | Bicycle Collisions | Pedestrian Collisions |
|---|---|---|
| Chester | 5 | 2 |
| Graeagle | - | - |
| Greenville | 4 | - |
| La Porte | - | - |
| Portola | 1 | - |
| Quincy | 12 | 6 |
| Other County Area | 3 | 2 |
| **TOTAL** | **25** | **8** |

There were 535 total reported collisions in Plumas County during the study period. Bicyclists were involved in 4.7 percent of all collisions, and pedestrians were involved in 1.5 percent.

### Bicycle-Involved Collisions

There were a total of 25 bicycle-involved collisions in Plumas County during the study period, shown by year in **Figure 4-1**. Twenty-seven bicyclists were involved in the collisions, 25 of whom were classified as victims.

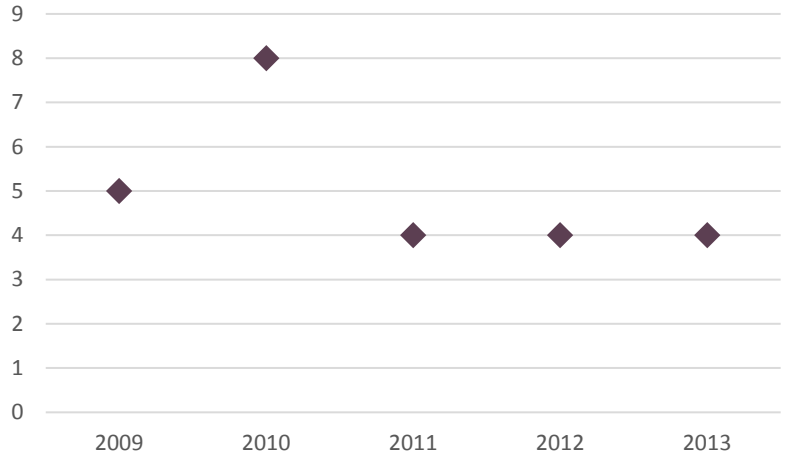



*Figure 4-1: Annual bicycle-involved collisions*

Of the 25 reported collisions, seven were solo bicycle crashes that did not involve any other parties. One collision involved two bicyclists but no motor vehicles, and two collisions involved one bicyclist and one parked vehicle each.

### Top Collision Locations

SR 70 in Quincy had the highest number of bicycle-involved collisions during the study period, with eight collisions along the corridor. Other locations with relatively higher numbers of collisions are listed in **Table 4-2**.

*Table 4-2: Top Bicycle-Involved Collision Locations*

| Community | Location | Collisions |
|---|---|---|
| Chester | SR 36 | 3 |
| Greenville | Main Street | 2 |
| Quincy | SR 70 | 8 |
| Quincy | Center Street | 2 |

There were two bicycle-involved collisions at the intersection of SR 70 and Fairground Road, which is at the western entrance to East Quincy.

### Age

When the age distribution of bicyclists injured in collisions is compared to that of the general population in **Figure 4-6**, it is evident that bicyclists between 18 and 24 and between 35 and 44 are overrepresented among collision victims.

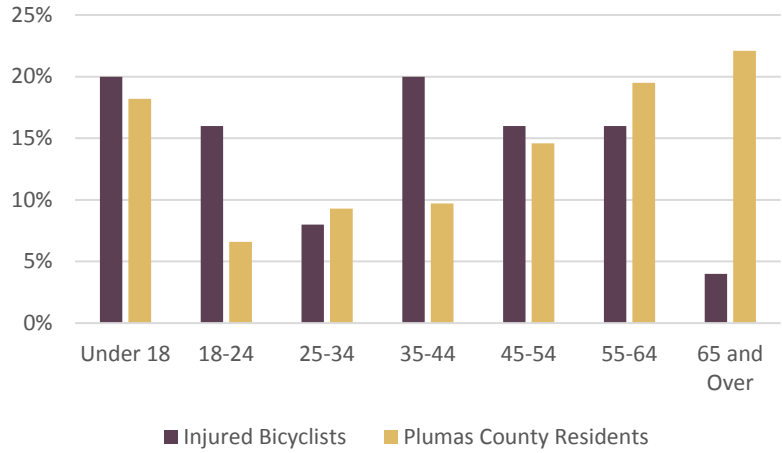



*Figure 4-2: Age of injured bicyclists*

### Collision Severity

During the study period, five bicyclists were severely injured in collisions, as shown in **Figure 4-7**. The remaining 20 bicyclists sustained more minor injuries.

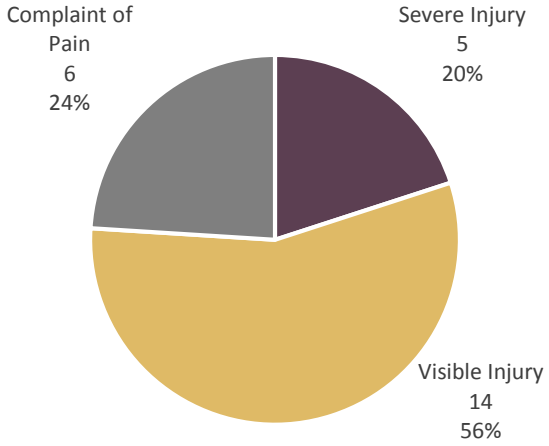



*Figure 4-3: Bicyclist injury severity*

### Fault and Primary Collision Factors

Bicyclists were found to be at fault in 16 of the 25 collisions during the study period. Motorists were deemed at fault for five of the collisions, and no fault determination was reported for the remaining four collisions.

When bicyclists were found at fault, the most common violation was riding on the wrong side of the road. Additional violations that contributed to collisions are listed in **Table 4-3**.

*Table 4-3: Primary Collision Factors in Bicycle-Related Collisions*

| Violation | Party at Fault | | |
|---|---|---|---|
| | Motorist | Bicyclist | Other |
| Wrong Side of Road | 1 | 9 | |
| Improper Turning | 1 | 4 | |
| Unsafe Speed | 1 | 1 | |
| Violated Automobile Right-of-Way | 2 | | |
| Driving or Bicycling Under the Influence | | 1 | |
| Unsafe Starting or Backing | | | 1 |
| Other/Unknown | | 1 | 3 |
| **Total** | **5** | **16** | **4** |

### Movement Preceding Collision

Among bicyclists involved in collisions during the study period, 14 were proceeding straight when the collision occurred. Ten were riding the wrong way, which may suggest a lack of adequate bicycle facilities, or a lack of safe opportunities to cross to the correct side of the road. For a complete list of movements preceding the bicycle-involved collisions, see Table 4-4.

*Table 4-4: Movement Preceding Bicycle-Involved Collisions*

| Movement | Motorist | Bicyclist |
|---|---|---|
| Proceeding straight | 3 | 14 |
| Making right turn | 3 | 1 |
| Making left turn | 3 | |
| Backing | 1 | |
| Slowing or stopping | 2 | |
| Entering traffic | 1 | |
| Other unsafe turning | | 2 |
| Crossed into opposing lane | 1 | |
| Parked | | |
| Traveling wrong way | | 10 |

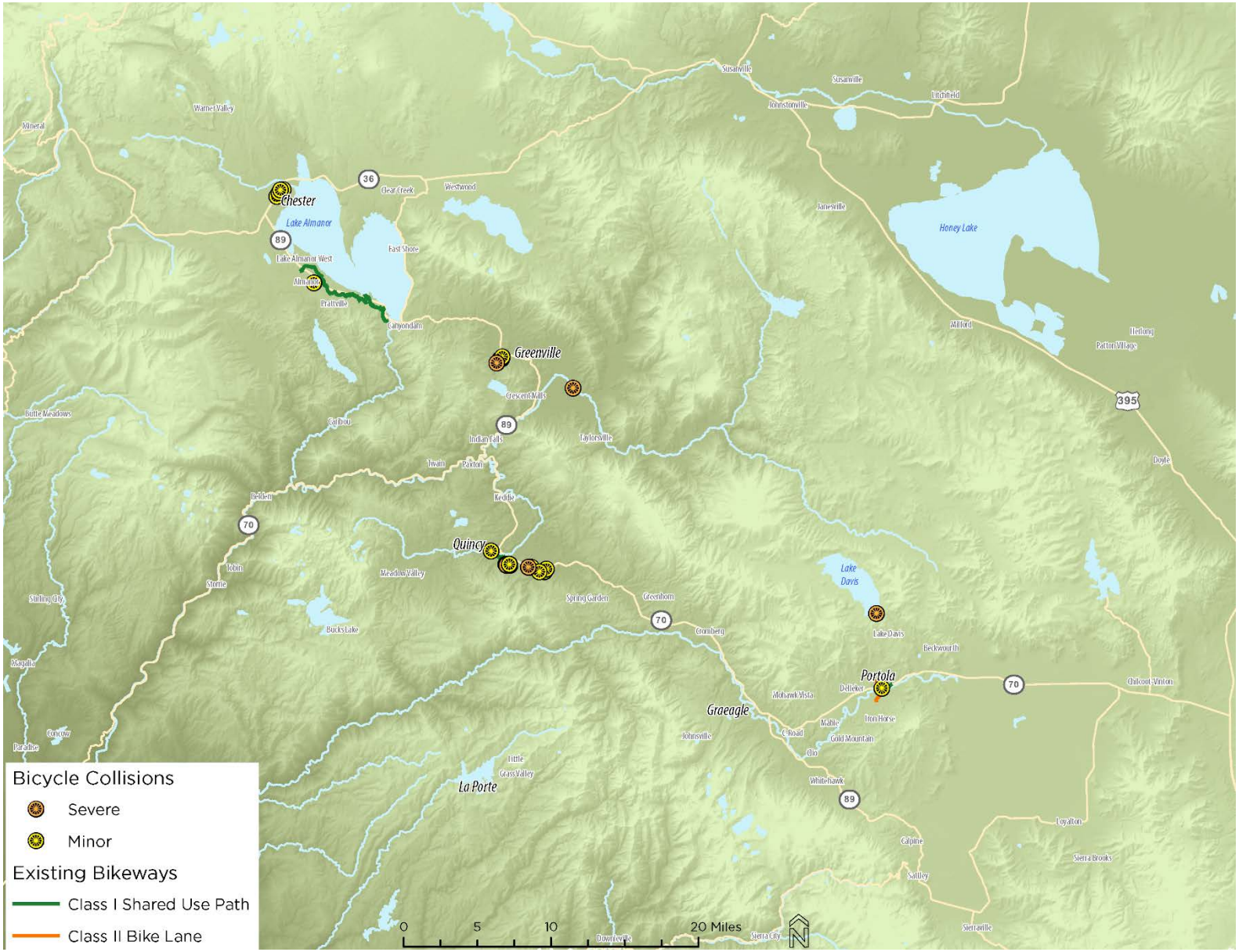



*Figure 4-4: Bicycle-involved collisions – Countywide*

## Pedestrian-Involved Collision Data

There were a total of 10 pedestrian-involved collisions in Plumas County during the study period, as shown by year in **Figure 4-8**. The collisions involved a total of ten pedestrians, all of whom were classified as victims.

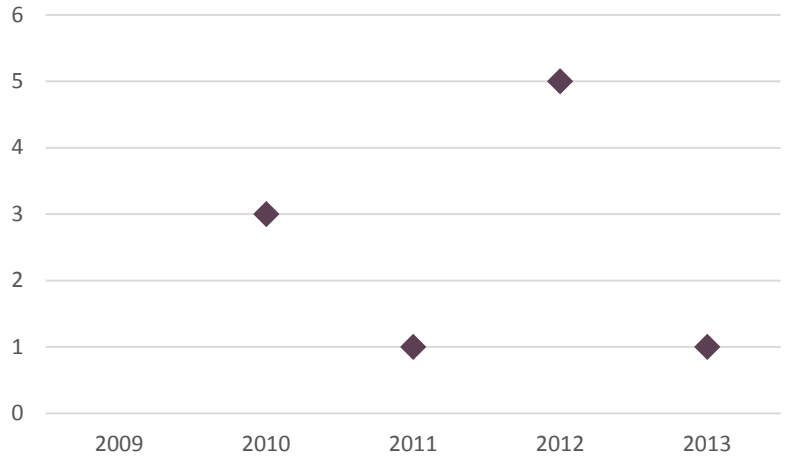



*Figure 4-5: Annual pedestrian-involved collisions*

### Top Collision Locations

The only corridor with more than one pedestrian-involved collision during the study period is SR 70 in Quincy, with four collisions. No intersection had more than one collision.

### Age

When the age distribution of pedestrians injured in collisions is compared to that of the general population in **Figure 4-9**, pedestrians older than 65 or between 25 and 34 seem to be most significantly overrepresented among collision victims.

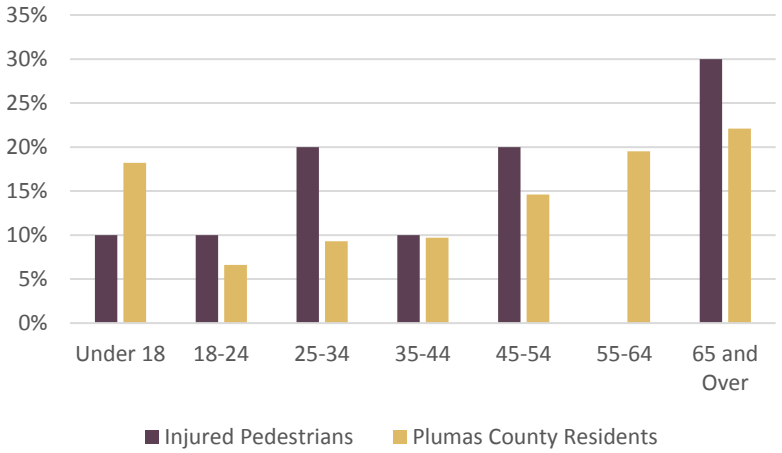



*Figure 4-6: Age of injured pedestrians*

### Collision Severity

Two pedestrians were severely injured in collisions during the study period, and the remaining eight suffered more minor injuries. See Figure 4-10.

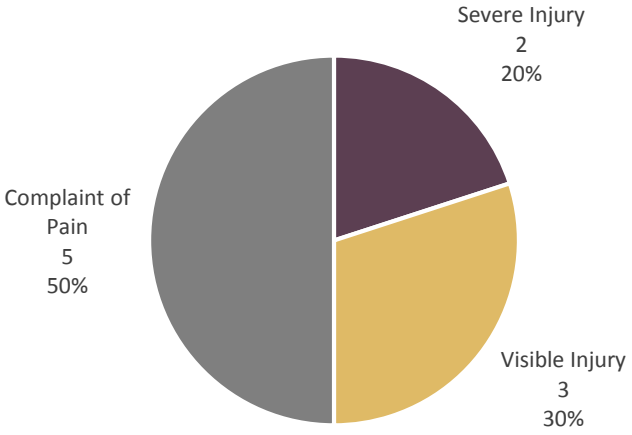



*Figure 4-7: Pedestrian injury severity*

### Fault and Primary Collision Factors

Pedestrians were found to be at fault in only one of the ten collisions during the study period. Motorists were deemed at fault in seven collisions, including three that resulted from improper turning. Other violations that contributed to collisions are listed in Table 4-5.

*Table 4-5: Primary Collision Factors in Pedestrian-Involved Collisions*

| Violation | Party at Fault | | |
|---|---|---|---|
| | Motorist | Pedestrian | Other |
| Improper Turning | 3 | | |
| Unsafe Speed | 1 | | 1 |
| Violated Pedestrian Right-of-Way | 2 | | |
| Pedestrian Violation | | 1 | 1 |
| Unsafe Starting or Backing | 1 | | |
| **Total** | 7 | 1 | 2 |

### Movement Preceding Collision

Motorists were most commonly proceeding straight or making a left turn when collisions occurred, as shown in Table 4-6. Movements were likely reported as 'not stated' for most of the pedestrians because similar information is captured in the 'pedestrian action' field of the collision report.

*Table 4-6: Movement Preceding Pedestrian-Involved Collisions*

| Movement | Motorist | Pedestrian |
|---|---|---|
| Proceeding straight | 5 | 1 |
| Making left turn | 4 | |
| Backing | 1 | |
| Parked | 1 | 2 |
| Not Stated | | 8 |

Pedestrian actions preceding the collisions were divided fairly evenly, with three pedestrians crossing in a crosswalk at an intersection, three crossing outside of a designated crosswalk, and three walking along the road, as shown in Table 4-7. The latter two actions may indicate a lack of adequate pedestrian crossings or walkways along desired routes.

*Table 4-7: Pedestrian Action Preceding Pedestrian-Involved Collisions*

| Pedestrian Action | Number |
|---|---|
| Crossing in crosswalk at intersection | 3 |
| Crossing not in crosswalk | 3 |
| In road, including shoulder | 3 |
| Not in road | 1 |

## Collision Reduction Goal

Plumas County has set a goal to reduce the number of pedestrian- and bicyclists-involved serious collisions and fatalities to zero by 2050. This is consistent with many other jurisdictions nationwide.

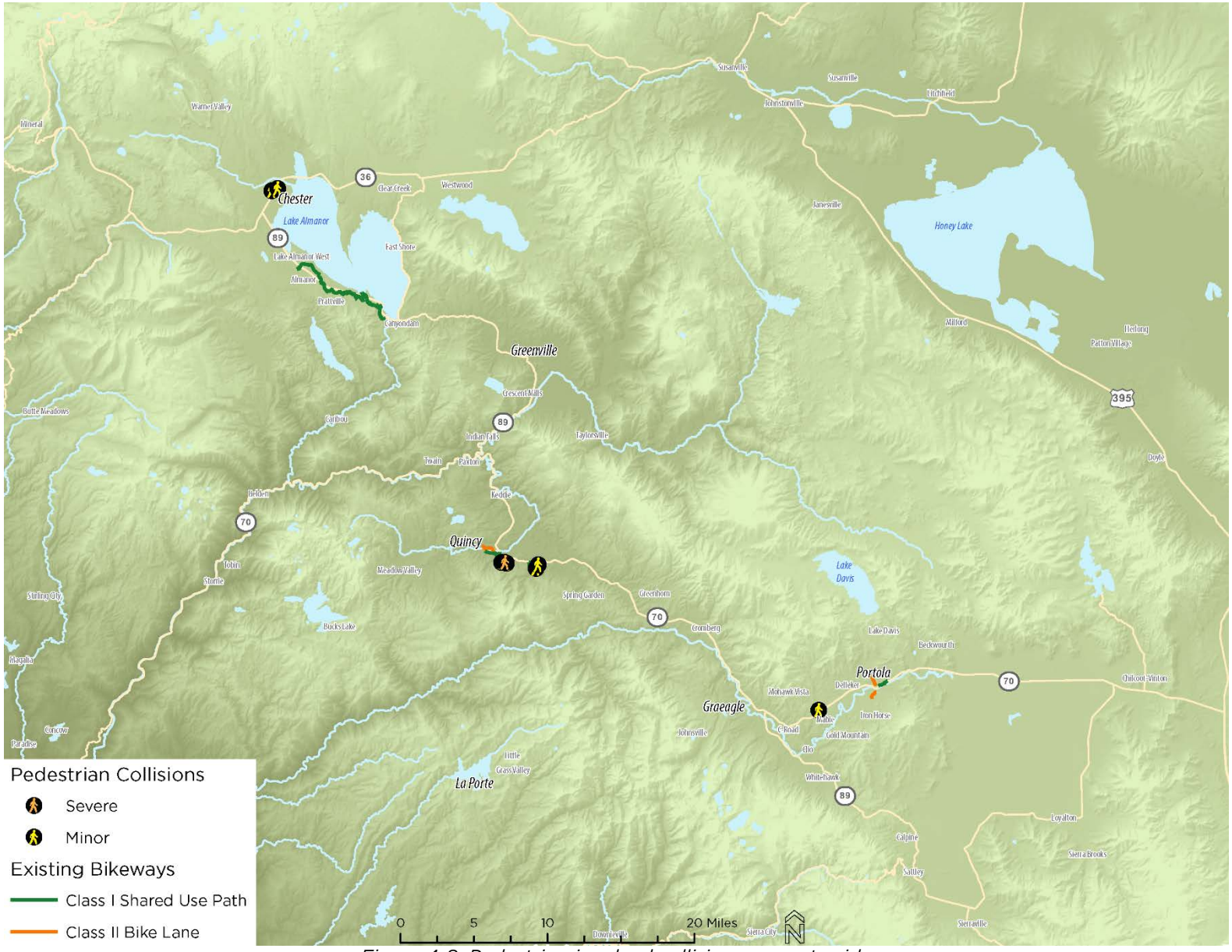



*Figure 4-8: Pedestrian-involved collisions – countywide*

The next several figures show the bicyclist- and pedestrian-involved collisions by community from 2009 to 2013.


*Figure 4-9: Bicyclist- and pedestrian-involved collisions in Chester*

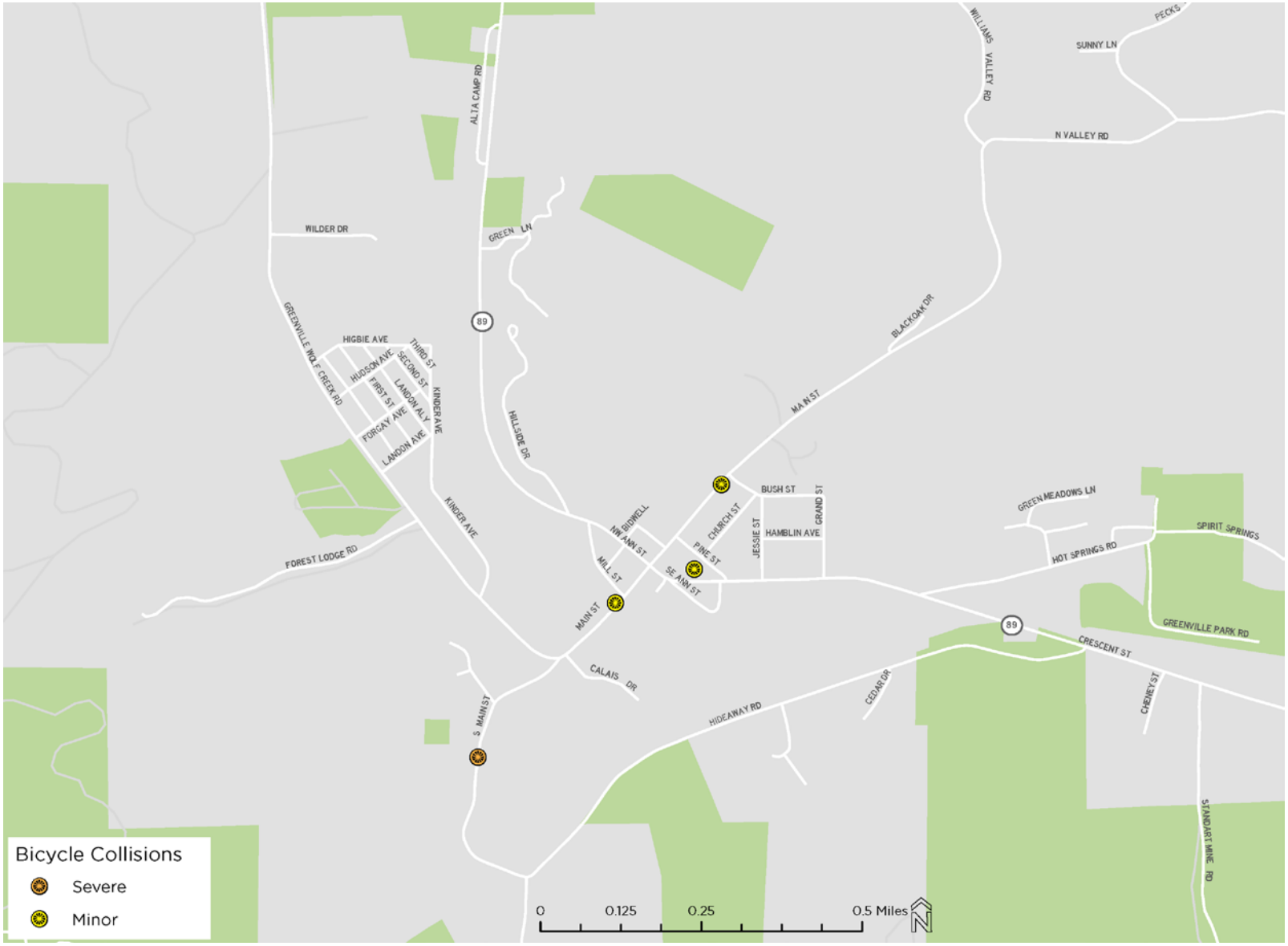



*Figure 4-10: Bicyclist- and pedestrian-involved collisions in Greenville*

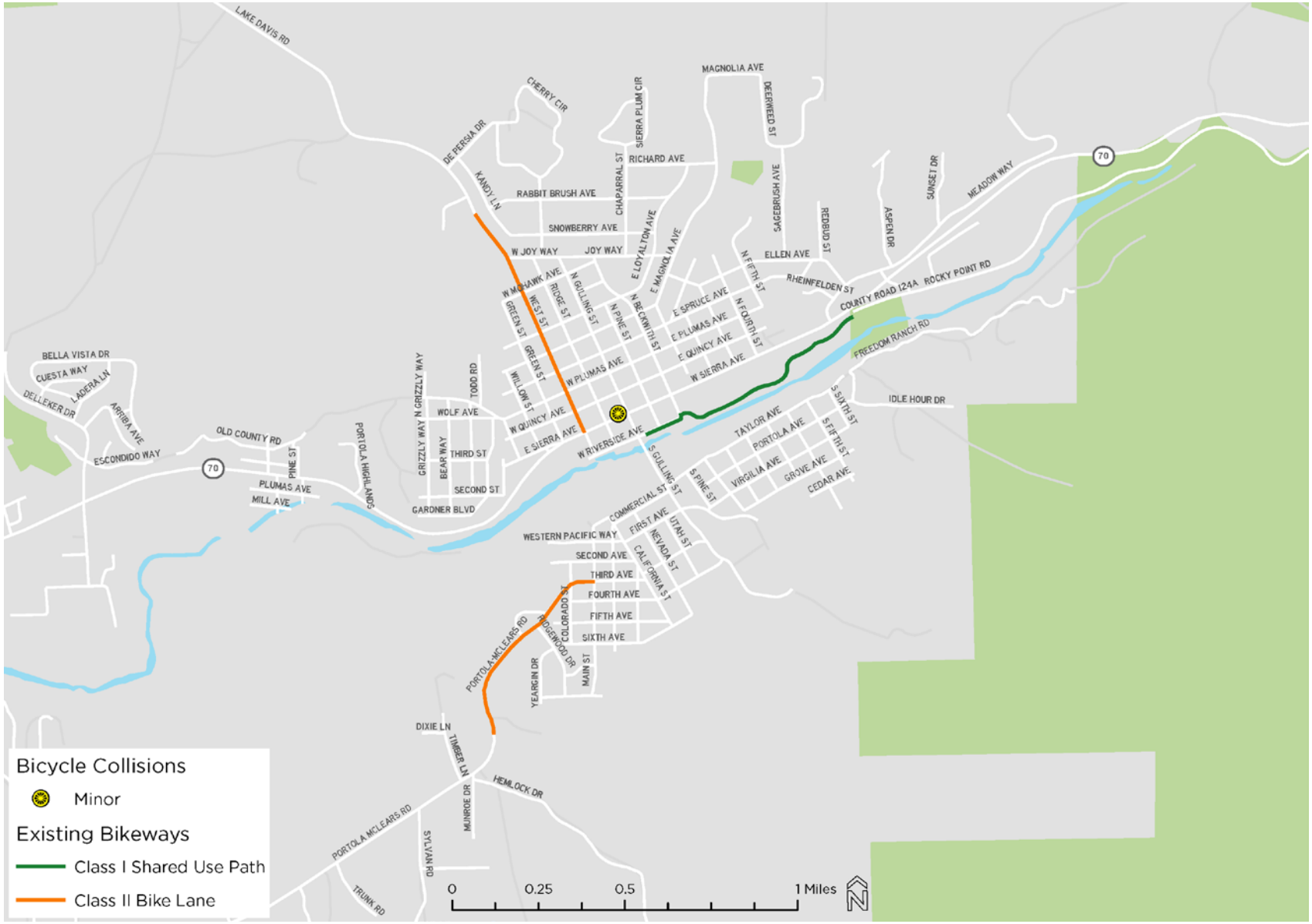



*Figure 4-11: Bicyclist- and pedestrian-involved collisions in Portola*

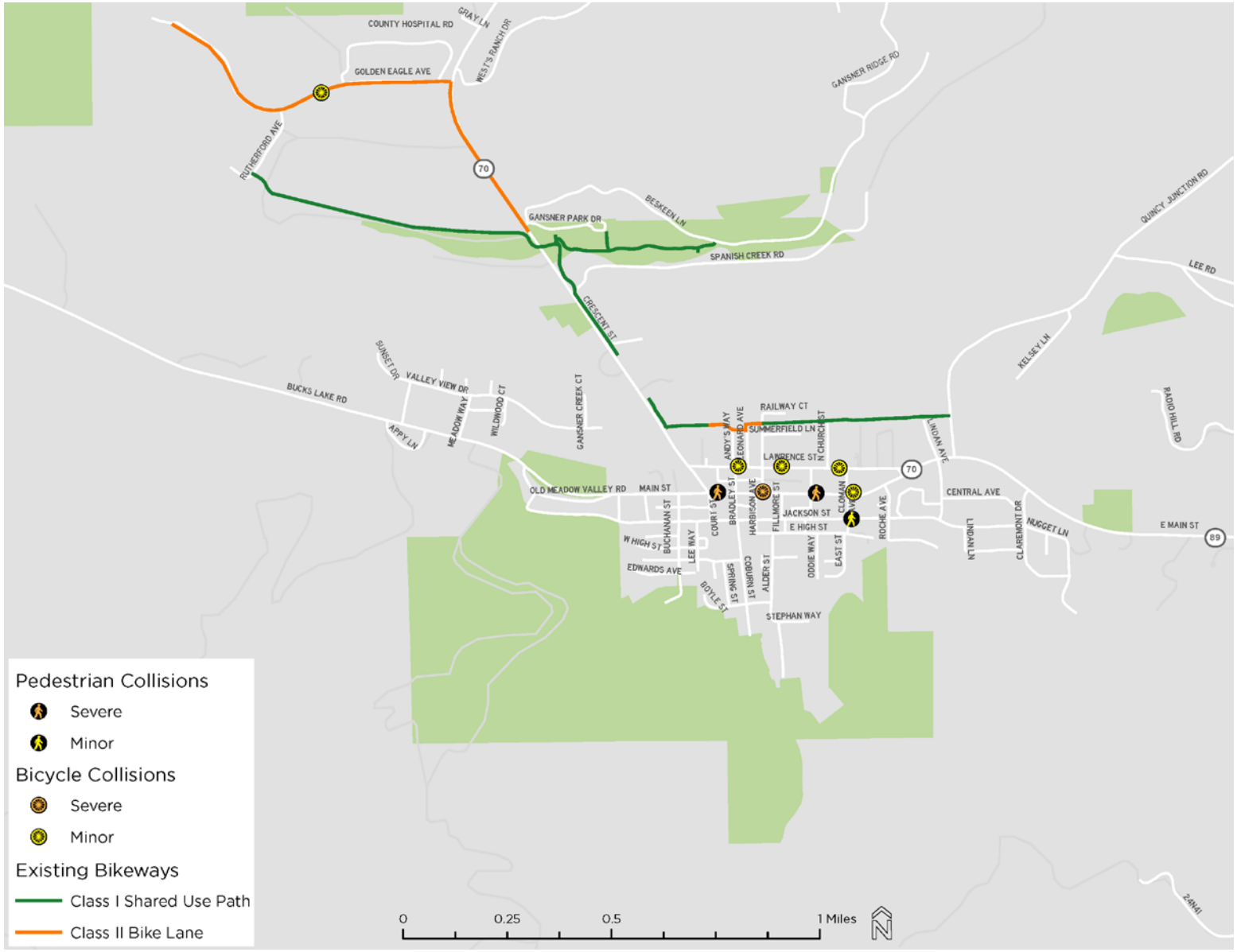



*Figure 4-12: Bicyclist- and pedestrian-involved collisions in Quincy*

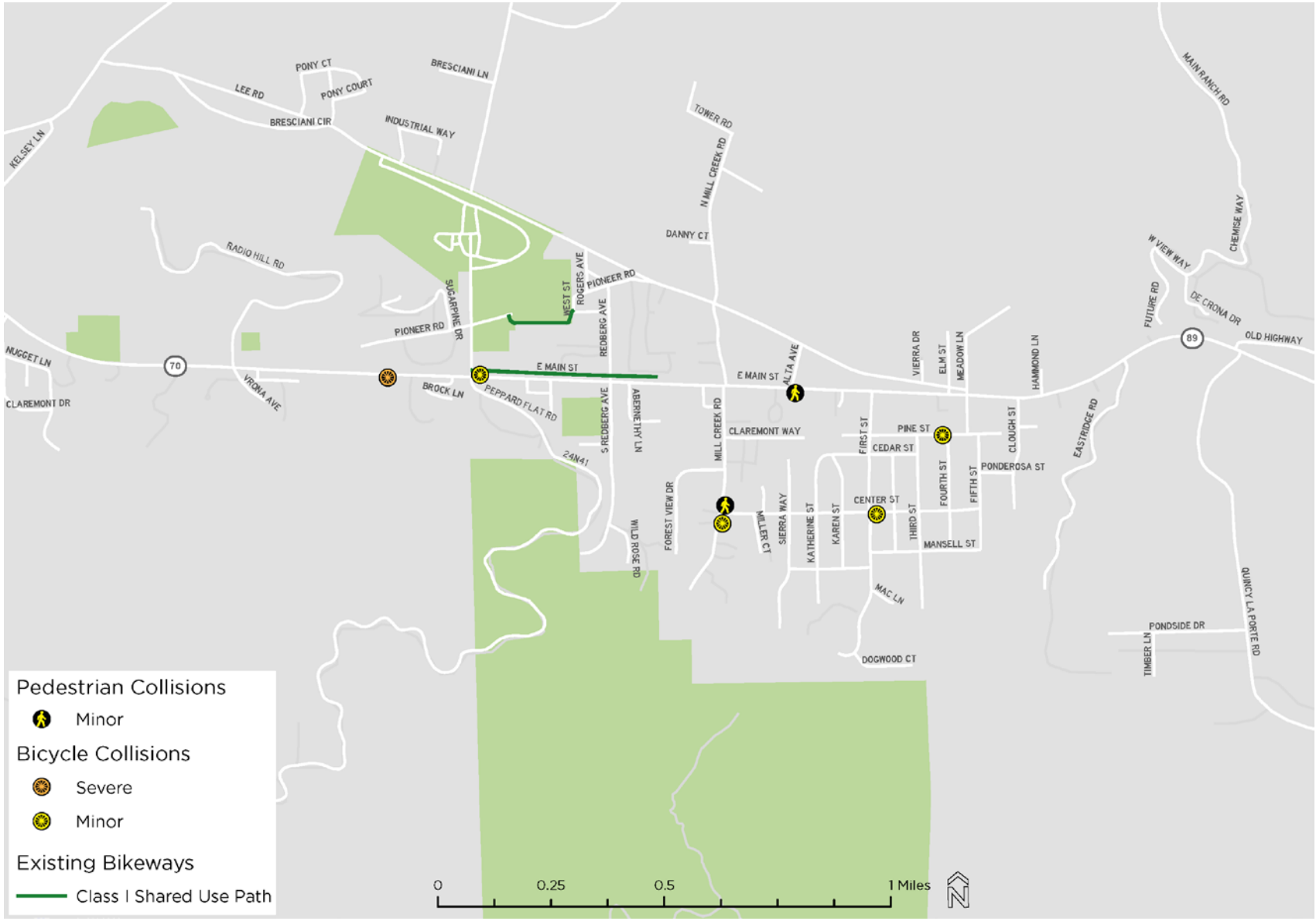



*Figure 4-13: Bicyclist- and pedestrian-involved collisions in East Quincy*

## Health and Active Transportation Snapshot

The relationship between community design, active transportation, and health is well documented. Fostering conditions where bicycling and walking are accepted and encouraged contributes to residents' health and wellbeing in a variety of ways, including physical activity, clean air, mental health, disease prevention, and safety. This section identifies the health challenges and opportunities that relate to active transportation in Plumas County.

### Physical Activity

The Centers for Disease Control and Prevention (CDC) recommends 60 minutes per day for children and adolescents and 150 minutes of physical activity per week for adults. The rates for adult and youth physical activity in Plumas County are consistent with or exceed the State level, but still have room for improvement.

In Plumas County, about one-third of youth (age 5-17) get regular physical activity (at least 60 minutes daily). Although this exceeds the State level of 21 percent, the majority of youth in Plumas County do not get adequate physical activity. Similarly, almost one-third of adults (age 18+) in Plumas County walk for at least 150 minutes per week, meeting the CDC's recommended amount of physical activity through walking alone. Adult physical activity levels in Plumas County are consistent with the State of California, yet only one in three adults is meeting the minimum recommended activity level through walking. **Figure 4-11** shows physical activity levels for Plumas County and the State.[1]

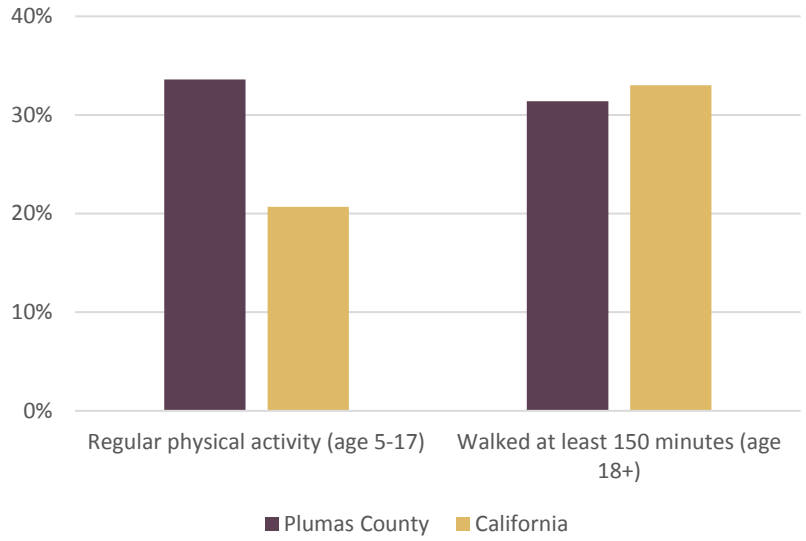



*Figure 4-14: Physical activity*

For both adults and youth, there is an opportunity to increase physical activity levels through built environment improvements that support walking and biking. Research suggests that physically active adults have lower rates of all-cause mortality, heart disease, high blood pressure, stroke, type 2 diabetes, metabolic syndrome, and depression than their physically inactive peers.[2] Developing healthy habits with youth can help reduce their risk of developing chronic health conditions as adults.

[1] UCLA Center for Health Policy Research, "California Health Interview Survey Neighborhood Edition, 2014," *AskCHIS Neighborhood Edition*.

[2] U. S. Department of Health and Human Services, Physical Activity and Health: A Report of the Surgeon General, report (1996).

## Obesity

As shown in **Figure 4-12**, the adult obesity level in Plumas County is consistent with the State. Although youth in Plumas County are less likely to be overweight or obese than their peers statewide (see **Figure 4-13**), obesity prevention is important for minimizing the risk of associated chronic illnesses including high blood pressure, high cholesterol, stroke, and type 2 diabetes.[3] Healthy eating and active living can help to prevent and reverse the obesity trend, and the built environment can influence healthy behaviors. In particular, being able to take short walking and biking trips to the places where people live, work, learn, and play allows them to incorporate more physical activity into their daily routines.

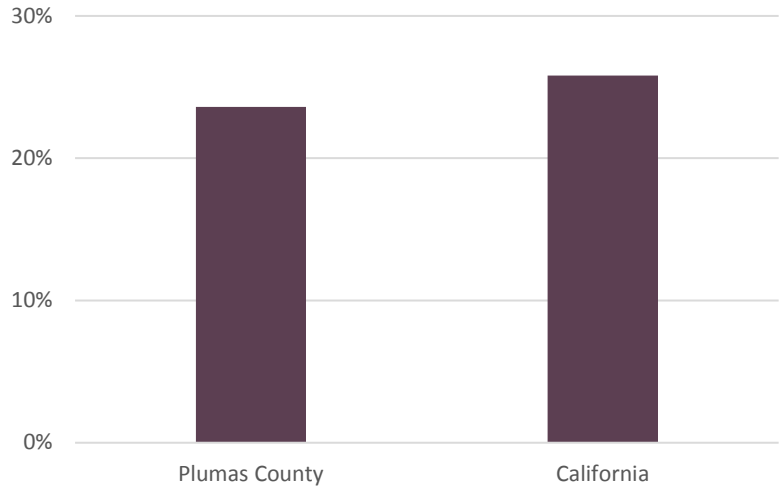



*Figure 4-15: Adult obesity*

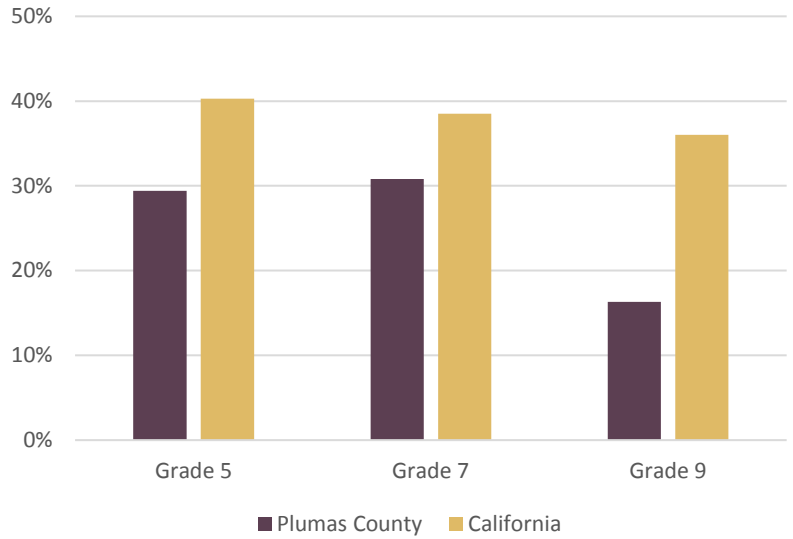



*Figure 4-16: Youth overweight and obesity*

[3] UCLA Center for Health Policy Research, "California Health Interview Survey Neighborhood Edition, 2014," *AskCHIS Neighborhood Edition*.

## Air Quality and Asthma

Walking and bicycling reduces motor-vehicle miles traveled and subsequent traffic-related pollution such as fine particulate matter (PM 2.5) and diesel. CalEnviroScreen 2.0 is a tool developed by the Office of Environmental Health Hazard Assessment to measure pollution and population factors and rank census tracts in California by a percentile score, where a higher percentile indicates a higher relative burden, showing where risks and potential adverse health effects are disproportionately distributed. While the potential health effects of pollution exposure are well understood, individuals may be more sensitive or tolerant to exposures and may react differently.

According to CalEnviroScreen 2.0, census tracts in Plumas County range from the 1st to 50th percentile for PM 2.5 emissions, and the 1st and 2nd percentile for diesel emissions. Exposure to traffic pollution can have adverse health effects, such as asthma, respiratory issues, and heart and lung disease.[4] While asthma can be caused by a variety of genetic and environmental factors, air pollution is a well-established trigger. As shown in **Figure 4-14**, about 15 percent of youth and adults in Plumas County have been diagnosed with asthma, consistent with State asthma rates.

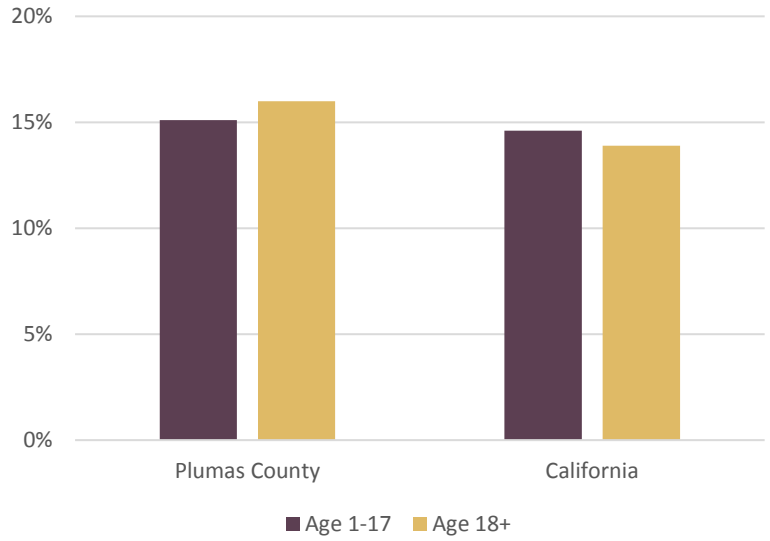



*Figure 4-17: Asthma*

[4] "Proximity to Major Roadways." Transportation and Health Tool. February 2, 2016. https://www.transportation.gov/mission/health/proximity-major-roadways

## Mental Health

The design, land use patterns, and transportation systems that comprise the built environment also impact mental health. Studies have found that people living in communities with built environments that promote bicycling and walking tend to be more socially active, civically engaged, and are more likely to know their neighbors.[5,6] These social benefits can serve as preventative and coping mechanisms for stress and depression. In Plumas County, 11 percent of adults reported having serious psychological distress in the past 12 months,[7] a higher rate than the State (eight percent).[8]

## Safety

Traffic related injuries and fatalities are public health and economic concerns, resulting in medical costs, economic loss, and decreased quality of life from injuries. Both the perception and reality of risk for traffic collisions act as barriers to walking and bicycling. Between 2009 and 2013, 25 bicycle-related and 8 pedestrian-related collisions occurred in Plumas County, resulting in five severely injured bicyclists and two severely injured pedestrians. About 20 percent of the bicyclists involved were under 18 years old, and almost 20 percent of bicyclists involved were 55 years old or over. Additionally, about 10 percent of the pedestrians involved were under 18 years old, and about 30 percent of pedestrians involved were 55 years old or over. Research shows that young people and minorities have a higher risk for pedestrian fatalities, but older adults have a higher risk of fatality if they are hit.[9]

## Climate Change

Climate change can have negative impacts on public health impacts, including extreme heat events, air quality, vector- and water-borne diseases, food safety and nutrition, and mental health. Vulnerable populations, such as children, seniors, low income communities, and communities of color are especially sensitive to these impacts and may also have lower adaptive capacity to cope with the potential hazards.[10] Non-motorized transportation can help to reduce greenhouse gas emissions and minimize climate change. Plumas County has an older population compared to California, with over 18 percent of residents under 18 years old in Plumas County (25 percent in California) and over 40 percent of residents 55 years or older (23 percent in California). The annual median household income in Plumas County is $45,794, compared to $61,094 in California.

[5] Frumkin, H. "Urban Sprawl and Public Health", *Public Health Reports* 117(2002): 201–17.

[6] Leyden, K. "Social Capital and the Built Environment: The Importance of Walkable Neighborhoods." *American Journal of Public Health* 93(2003): 1546–51.

[7] Based on standardized Kessler 6 scale

[8] UCLA Center for Health Policy Research, "California Health Interview Survey Neighborhood Edition, 2014," *AskCHIS Neighborhood Edition*,

[9] Committee on Injury, Violence, and Poison Prevention; American Academy of Pediatrics 2009 & U.S. DOT, 2012 ,https://www.transportation.gov/mission/health/road-traffic-fatalities-mode

[10] "Human Health Impacts." United States Environmental Protection Agency. August 9, 2016. https://www3.epa.gov/climatechange/impacts/health.html

## Summary of the Bicycle & Pedestrian Suitability Index (BPSI)

The purpose of the BPSI is to identify areas with high demand that will help inform and prioritize potential bicycle and pedestrian projects. The BPSI measures potential demand (bicycle and pedestrian activity) by quantifying factors that generate bicycle and pedestrian movement. Results of the BPSI demand model are used to characterize the geographic distribution of bicycle and pedestrian demand within Plumas County.

BPSI provides the following benefits:

- Quantify factors that impact bicycle and pedestrian activity and objectively identify areas where bicycles and pedestrians are most likely to be
- Identify network gaps that have the greatest impact on existing network connectivity and greatest potential improvement benefits for bicycles and pedestrians
- Provide a data-driven foundation for a project list that is informed by the spatial distribution of relevant demographics and demand factors
- Guide community leaders and the public on one aspect of the project prioritization process

### Introduction

The analytical methods in the Bicycle & Pedestrian Suitability Index (BPSI) provide an objective, data-driven process to help identify network gaps and potential projects in areas with high bicycle and pedestrian activity. **The purpose of the demand analysis is to identify areas with the greatest relative bicycle and pedestrian activity and use the demand outputs to inform project recommendations.** The BPSI provides a general profile of expected activity in bicycle and pedestrian environments by showing cumulative demand representative of where people live, work, learn and play, shop, and access transit. The County's specific land use and transportation factors are considered in conjunction with a range of demographic factors that correlate with high bicycle and pedestrian trip generation.

### BPSI Demand – Where People Live

Where people live includes 2009-2013 American Community Survey (ACS) data by census block group level. The "live" category evaluates locations representing potential trip origins. Three variables comprise the "live" demand metric:

- Total population
- Percentage of zero-automobile households
- Percentage of working age adults using active transportation modes (i.e., walking/biking) to get to work

A greater number of trips can be made in areas with higher population density if network conditions are amenable. Therefore, high demand areas on the map represent higher concentrations of households without vehicles and working age adults who walk or bike to work.

**Figure 4-15** illustrates this category for Plumas County.

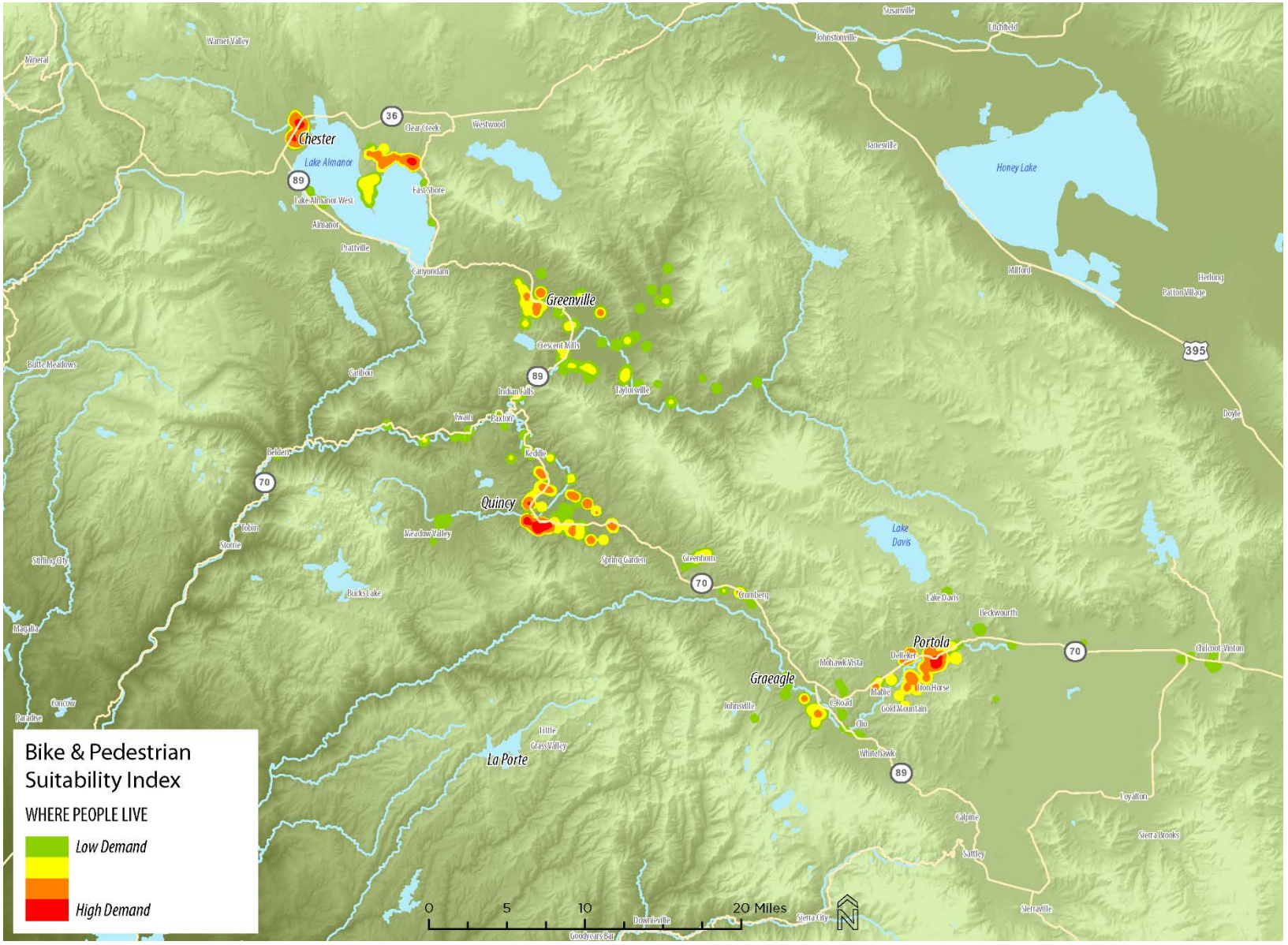



*Figure 4-18: Where people live*

## BPSI Demand – Where People Work

Where people work primarily represents trip destinations for people working within the County, regardless of residency. The data is derived from 2011 total employment by census block. Depending on the job type, this category can represent both trip attractors (i.e., retail) and trip generators (i.e., office parks and office buildings) in terms of base employment population. It is therefore also used in the where people learn and play category by overlaying specific job types, such as arts, recreation, and retail.

High demand areas on the map represent high density trip destinations and ¼ mile surrounding them.

Figure 4-16 illustrates this category for Plumas County.

## BPSI Demand – Where People Play & Learn

Where people learn and play is a combination of land use types and destinations. Overlays such as schools, parks, trailheads, community centers, libraries, recreation employment, and hotel and lodging employment are used to capture areas likely to experience higher levels of bicycle and pedestrian activity. While all destinations are not exactly where one would expect to "play," many of the civic amenities included in this category are still destinations of importance due to the temporary nature of the visit. This category includes K-12 schools and the Feather River College.

Using a ¼ mile search radius, areas with a high density of categories resulting in "play and learn" are determined. High demand areas on the map represent higher concentrations of destinations for "play and learn".

Figure 4-17 illustrates this category for Plumas County.

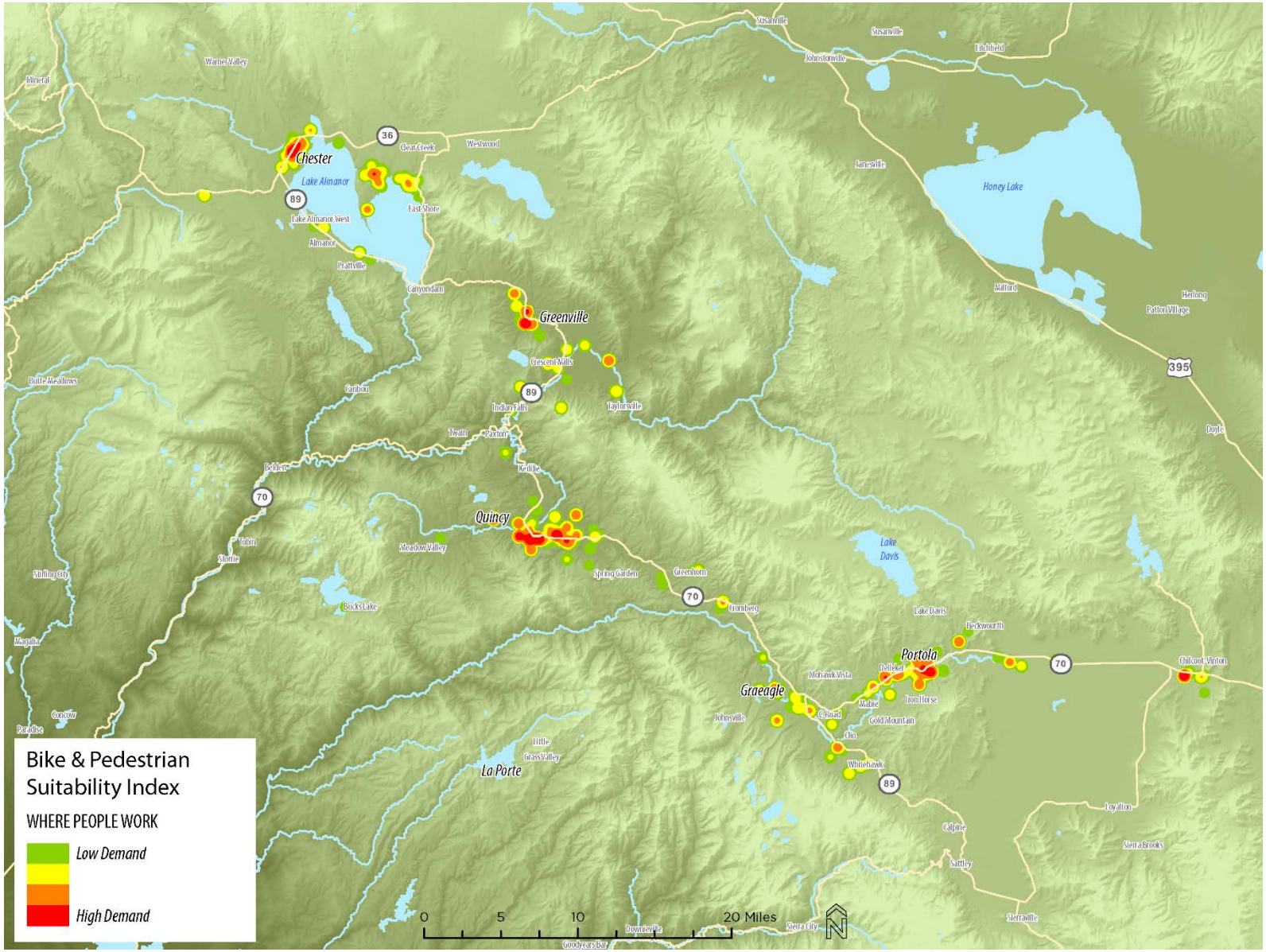



*Figure 4-19: Where people work*

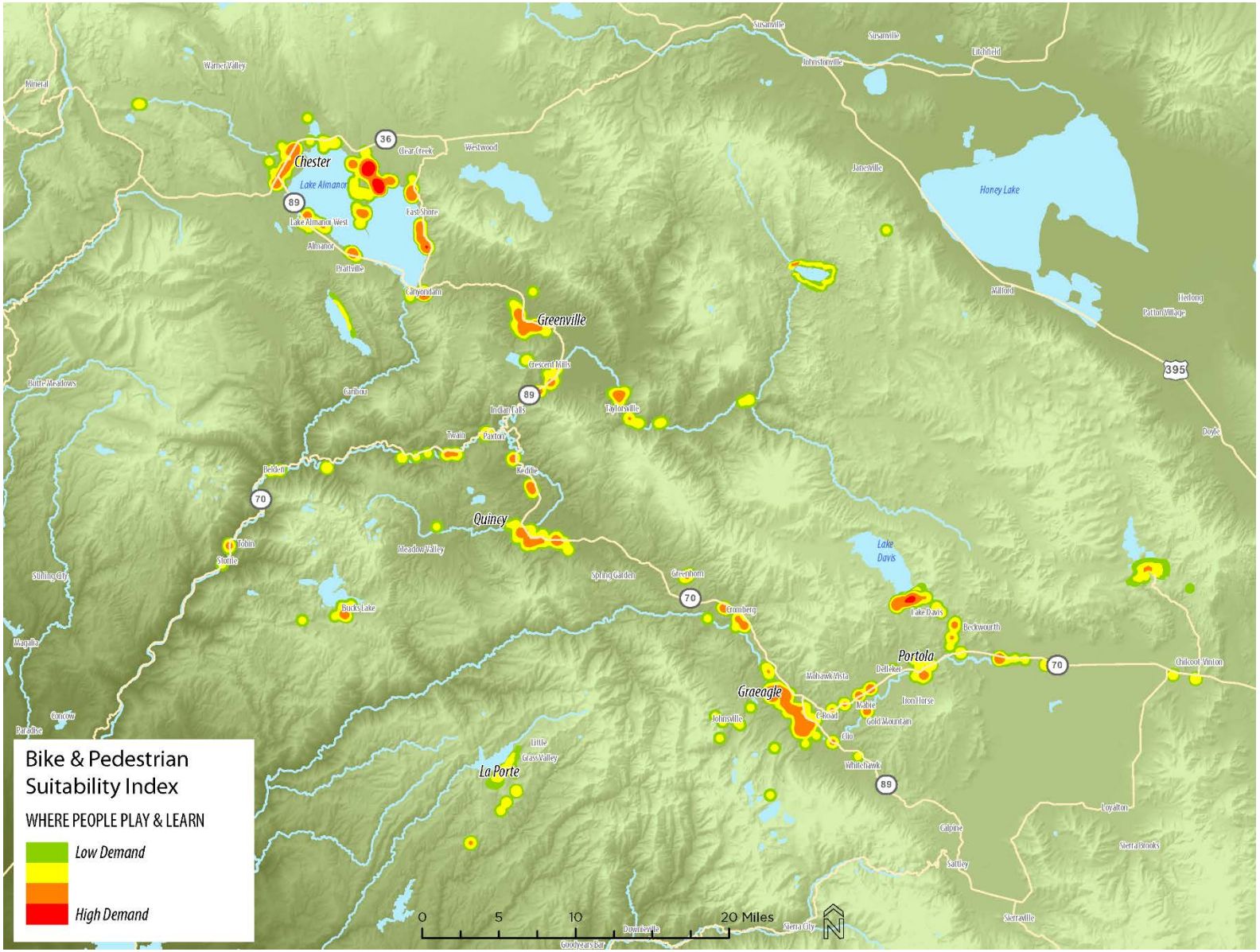



*Figure 4-20: Where people play & learn*

## BPSI Demand – Where People Access Transit

Where people access transit is gauged using bus stops and transit routes. Density of pedestrian and bicycle demand is measured using a ¼ mile search radius of transit access points and networks. High demand areas on the map represent higher concentrations of access points to public transportation.

Figure 4-18 illustrates this category for Plumas County.

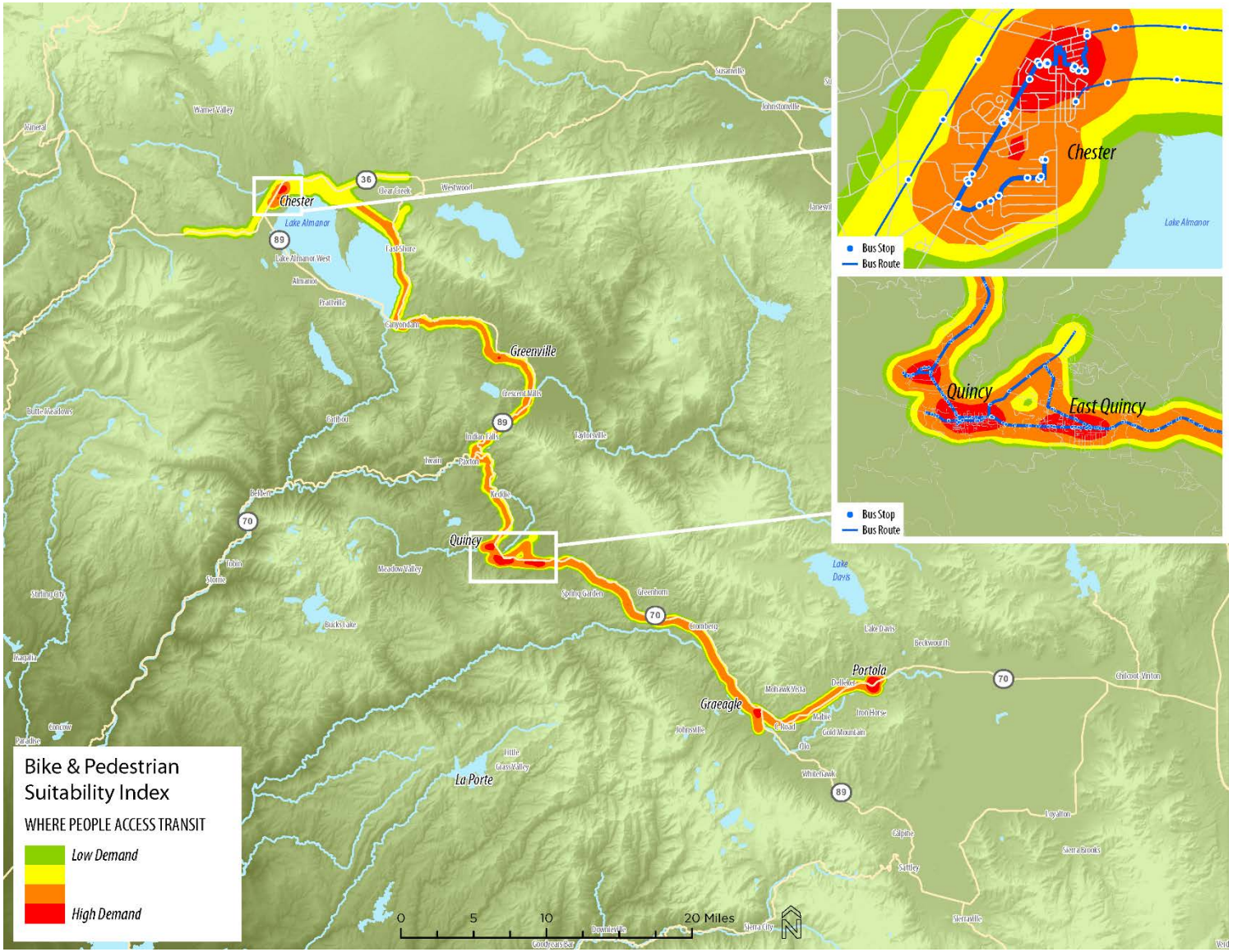



*Figure 4-21: Where people access transit*

## Benefit Impact Analysis

This section contains a summary of the Benefit Impact Analysis, which quantifies the benefits that might occur as the result of implementing the recommended bicycle and pedestrian projects included in the Pedestrian/Bicycle Plan. The analysis estimates the number of bicycle and walking trips that would directly result from the implementation of the project list, approximates the corresponding reduction in vehicle trips and vehicle-miles traveled (VMT), and assesses the potential health-, environmental-, and transportation-related benefits.

### Methodology

The impact analysis uses a standard methodology for calculating health-, environmental-, and transportation-related benefits. All projections are based on the recent five-year estimates from the American Community Survey (ACS), which are then extrapolated through the use of various multipliers derived from national studies and quantified in terms of monetary value where appropriate. The estimated monetary values are then calibrated to baseline values and compared to walking and bicycle commute mode shares of aspirational counties.

#### Selecting Peer Counties

In order to estimate potential future increases in bicycle and walking mode share that may result from the implementation of the recommended bicycle projects listed in the Pedestrian/Bicycle Plan, the consultant team examined travel patterns in five similar or comparable counties that have bicycle and pedestrian infrastructure similar to that of the network proposed in the Plumas County Pedestrian/Bicycle Plan. Summit County (CO), Benton County (CO), Grand County (UT), Clallam County (WA), and Teton County (WY) were chosen as aspirational counties based on similarities in the design of their roadway networks, regional proximity, climates, terrain, population size and demographics, and existing walking and bicycle infrastructure (See **Table 4-8**).

*Table 4-8: Aspirational County Comparison*

| Counties | Region | Climate[i] | Elevation[ii] | Population[iii] | Population Density[iv] | Percent Minority Population[v] | Bicycle Friendly Community Award[vi] | Walk Friendly Community Award |
|---|---|---|---|---|---|---|---|---|
| Plumas County (CA) | West | Csb | 3,422 ft | 19,286 | 8/sq mi | 9% | None | None |
| Summit County (CO) | West | Bsk | 7,976 ft | 28,482 | 46/sq mi | 5% | Bronze[vii]/ Gold[viii] | None |
| Benton County (OR) | West | *Csb* | 325 ft | 86,034 | 127/sq mi | 12% | Gold[ix] | Gold[x] |
| Grand County (UT) | West | *Bsk* | 3,983 ft | 9,348 | 3/sq mi | 8% | Silver | None |
| Clallam County (WA) | West | *Csb* | 174 ft | 72,024 | 41/sq mi | 12% | Bronze | None |
| Teton County (WY) | West | *Dfb* | 9,416 ft | 21,956 | 5/sq mi | 5% | Gold | None |

After the identification of aspirational counties based on general characteristics, the consultant team analyzed the walking and bicycle commute data from each county. Compared to the selected aspirational counties, Plumas County has the lowest bicycle commute mode share (0.8 percent) and second lowest walk commute mode share (5.1 percent), according to 2010-2014 ACS data. **Table 4-9** shows the existing bicycle and walking commute mode shares for Plumas County and its five aspirational counties, as well as the range of forecasted bicycle and walking commute mode shares for Plumas County.

*Table 4-9: Existing and Forecasted Commute Bicycle Mode Split*

| Cities | Employed Population | Existing Bicycle Commute Trips per Day | Existing Bicycle Commute Mode Split | Existing Walking Commute Trips per Day | Existing Walking Commute Mode Split | Forecasted Future Bicycle/Walking Mode Split | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Low[xi] | Mid[xii] | High[xiii] |
| Plumas County (CA) | 7,116 | 56 | 0.8% | 365 | 5.1% | 1.9%/ 5.5% | 2.5%/ 8.6% | 5.6%/ 9.2% |
| Summit County (CO) | 17,351 | 330 | 1.9% | 1,587 | 9.2% | | | |
| Benton County (OR) | 38,407 | 3,095 | 8.1% | 3,305 | 8.6% | | | |
| Grand County (UT) | 4,651 | 261 | 5.6% | 254 | 5.5% | | | |
| Clallam County (WA) | 27,001 | 278 | 1.0% | 1,197 | 4.4% | | | |
| Teton County (WY) | 13,381 | 330 | 2.5% | 1,481 | 11.1% | | | |

If Plumas County increased its bicycle mode share to the 25th percentile of its five aspirational counties, it would see a 138 percent increase in the number of bicycle commuters (0.8 percent to 1.9 percent). At the 50th percentile, it would see a 213 percent increase in the number of bicycle commuters (0.8 percent to 2.5 percent). And at the 75th percentile, it would see a 600 percent increase in the number of bicycle commuters (0.8 percent to 5.6 percent).

If Plumas County increased its walking mode share to the 25th percentile of its five aspirational counties, it would see an eight percent increase in the number of walking commuters (5.1 percent to 5.5 percent). At the 50th percentile, it would see a 63 percent increase in the number of bicycle commuters (5.1 percent to 8.6 percent). And at the 75th percentile, it would see an 80 percent increase in the number of bicycle commuters (5.1 percent to 9.2 percent).

## Total Benefits

If all of the bicycle projects on the Plumas County Pedestrian/Bicycle Plan recommended project list are implemented, the county could experience between $1,023,000 and $1,827,000 in additional health-, environmental-, and transportation-related benefits per year.

Table 4-10 summarizes all calculated benefits. The full analysis including methodology and limitations is presented in Appendix C: Plan Analysis.

*Table 4-10: Total Annual Benefits*

| | Baseline | Future Estimates | | | | | |
|---|---|---|---|---|---|---|---|
| | | Low | | Mid | | High | |
| | Total | Total | Difference | Total | Difference | Total | Difference |
| Health Benefits | $70,000 | $88,000 | $18,000 | $133,000 | $63,000 | $179,000 | $109,000 |
| Environmental Benefits | $26,000 | $37,000 | $11,000 | $53,000 | $27,000 | $81,000 | $55,000 |
| Transportation Benefits | $999,000 | $1,412,000 | $413,000 | $2,051,000 | $1,052,000 | $3,152,000 | $2,153,000 |
| Total Benefits | $1,095,000 | $1,537,000 | $442,000 | $2,237,000 | $1,142,000 | $3,412,000 | $2,317,000 |

[i] Köppen Climate Classification System:

**Dfb** Warm summer continental or hemiboreal climates

***Csb*** *Dry-summer or Mediterranean climates*

***Bsk*** *Dry, semiarid climates*

[ii] USGS, Geographic Names Information System (GNIS), <http://geonames.usgs.gov/>
[iii] US Census, American Community Survey, five-year estimates (2010-2014)
[iv] US Census, Quick Facts, Population Density (2010), <http://www.census.gov/quickfacts/table>
[v] US Census (2010)
[vi] The League of American Bicyclists (2015), http://www.bikeleague.org/sites/default/files/BFC_Master_Spring_2015.pdf.
[vii] Summit County (CO) received a bronze-level Bicycle Friendly Community Award.
[viii] Breckenridge (CO) received a gold-level Bicycle Friendly Community Award.
[ix] Corvallis (OR) received a gold-level Bicycle Friendly Community Award.
[x] Corvallis (OR) received a gold-level Walk Friendly Community Award.
[xi] The low estimate for future bike commute mode share is the difference between Coalinga's existing bike commute mode share and the 25th percentile bike mode share of the six selected peer cities
[xii] The low estimate for future bike commute mode share is the difference between Coalinga's existing bike commute mode share and the 50th percentile bike mode share of the six selected peer cities
[xiii] The low estimate for future bike commute mode share is the difference between Coalinga's existing bike commute mode share and the 75th percentile bike mode share of the six selected peer cities

# Chapter 5. Project and Program Recommendations

This chapter presents programmatic recommendations and examples of the types of project recommendations for Plumas County. Specific project recommendations can be found in **Chapter 6: Implementation.** The recommendations in this chapter set the foundation for improving safety for those who currently use active transportation modes in the County and to encourage more trips by walking or bicycling and connecting to regional destinations.

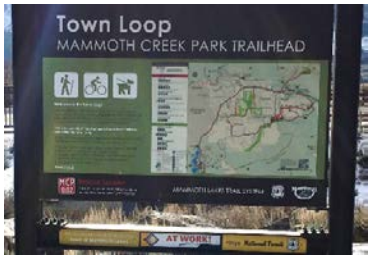
## Countywide Project Recommendations

### Bicycle Wayfinding

A high quality bicycling environment includes not only bicycle facilities, but also an easily navigable network. Bicycle wayfinding assists residents, tourists and visitors in finding key community destinations by bicycle. Signs may also include "distance to" information, which displays mileage to community destinations, as seen in **Figure 5-1**. **Appendix B: Design Guidelines** provides more information about wayfinding.

It is recommended Plumas County develop a Countywide Wayfinding program that offers guidance to destinations including schools, trails, County communities, landmarks, and civic buildings. This program should be MUTCD compliant and be implemented Countywide including within communities, on Caltrans roadways, and on local streets. Encourage Portola to adopt the same design and implement the program.


*Standard bikeway wayfinding*




*Enhanced wayfinding*

*Figure 5-1: Wayfinding*

### Bicycle Parking

Bicycle parking can range from a simple bicycle rack to storage in a bicycle locker or cage that protects against weather, vandalism and theft. The majority of existing bicycle parking facilities are located downtown. Many of these existing facilities do not meet current bicycle rack standards. Across the County, bicyclists visiting downtown, parks, schools and places of employment do not have available bicycle parking and instead may lock their bikes to street fixtures such as trees, telephone poles, and sign poles. Bicycle parking is an essential element of any bikeway network and this section presents recommended types of bicycle parking and general requirements for bicycle parking.

#### Recommended Types of Bicycle Parking

Bicycle parking can be categorized into short-term and long-term parking. Bicycle racks are the preferred device for short-term bike parking, shown in **Figure 5-2**. These racks shown are consistent with Association of Pedestrian and Bicycle Professionals (APBP) and provides two points of contact to support the bicycle frame, and that allow the frame and at least one wheel to be secured with a standard U-lock. These racks serve people who leave their bicycles for relatively short periods of time, typically for shopping or errands, eating or recreation. Bicycle racks provide a high level of convenience and moderate level of security.

U-Rack | Post & Loop | Horseshoe | Wheelwell Secure

*Figure 5-2: Types of bicycle racks*

Long-term bike parking includes bike lockers and bike rooms and serve people who intend to leave their bicycles for longer periods of time and are typically found in multifamily residential buildings and commercial buildings. These facilities provide a high level of security but are less convenient than bicycle racks.

The County should also consider the needs of electric bicycle users in any study of the provision of bike parking. The needs of e-bike users are different than typical bicyclists, including capabilities for charging bicycle batteries and enhanced safety/anti-theft options.

APBP also provides recommendations on the location and quantity of bicycle parking for new developments, shown in Table 5-1.

*Table 5-1: Guidelines for Bicycle Parking Locations and Quantities*

| Land Use or Location | Physical Location | Quantity |
|---|---|---|
| Parks | Adjacent to restrooms, picnic areas, fields, and other attractions | 8 bicycle parking spaces per acre |
| Schools | Near office and main entrance with good visibility | 8 bicycle parking spaces per 40 students |
| Public Facilities (libraries, community centers) | Near main entrance with good visibility | 8 bicycle parking spaces per location |
| Commercial, retail and industrial developments over 10,000 square feet | Near main entrance with good visibility | 1 bicycle parking space per 15 employees or 8 bicycles per 10,000 square feet |
| Park n' Ride | Near main entrance with good visibility | 1 bicycle parking space or locker per 30 automobile parking spaces |
| Multi-Family Residential | Near main entrance with good visibility | 1 short-term bicycle parking space per 10 residential units AND 1 long-term bicycle parking space per 2 residential units |
| Trailheads | Near restrooms if applicable | 4 bicycle parking spaces per location |

***Recommendation***

Adopt an ordinance requiring all new major developments to provide bicycle parking in accordance with **Table 5-1. Table 5-2** identifies recommended bike parking locations that are publicly-owned. Locations were determined by County staff and members of the public.

Plumas County should work with local land owners to ensure adequate bike parking is installed at all school sites, commercial shopping centers, medical facilities, post offices, parks, trailheads, and transit stops. Additionally, Plumas County should identify existing non-APBP-compliant bicycle parking and replace in accordance to this Plan.

*Table 5-2: Recommended Bicycle Parking Locations*

| Community | Location | Type |
|---|---|---|
| Quincy | Bradley St at Main St | 2 bike racks |
| | Harrison St at Main St | 2 bike racks |
| | Main St at Crescent St | 2 bike racks |
| | Main St and 160ft west of Bradley St | 4 bike racks |
| Graeagle | Highway 89 and 300ft south of Iroquois Trail | 2 bike racks |
| | Highway 89 and 350ft north of Iroquois Trail | 2 bike racks |
| | Highway 89 and 330ft south of Wasco Trail | 2 bike racks |
| | Highway 89 at Highway 70 | 2 bike lockers |
| Chester | Laurel Ln and 100ft south of E Willow St | 2 bike racks |
| | 1st Ave and 200ft north of Willow Wy | 2 bike racks |
| | Brentwood Dr and 250ft north of Riverwood Dr | 2 bike racks |
| Greenville | Main St at Pine St | 2 bike racks |
| | Ann St and Bidwell St | 4 bike racks |
| | Main St and 95ft north of Pine St | 2 bike racks |
| Portola | 1st Ave and 1,100ft east of Gullng St | 4 bike racks |
| | Gulling St and 150ft north of 4th Ave | 2 bike racks |
| | Sierra Ave and 60ft east of Ridge St | 2 bike racks |

# Bicycle Projects

The recommendations on following pages include a number of treatments that are described below in greater detail.

## Trails

In a more rural context such as Plumas County, trails can take multiple forms including paved pathways, unpaved paths, or dirt trails. The following sections describe these conditions.

### Class I Shared Use Path

A Class I shared use path provides for bicycle and pedestrian travel on a paved right-of-way completely separated from streets or highways. These recommended facilities can be popular for recreational bicycling as well as for commuting.

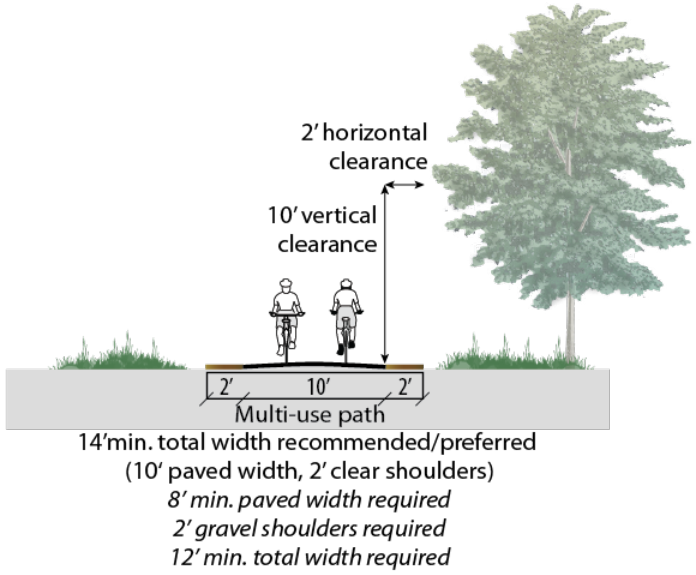



*Figure 5-3: Class I shared use paths*

### Rails to Trails

A rail trail is the conversion of a disused railway track into a multi-use path, typically for walking, cycling and sometimes horse riding and snowmobiling. Plumas County has several unused railroad lines that can be converted to a trail.

### Unpaved Path

Unpaved paths are formal trails that are unpaved (gravel or dirt). They can be signed and could be used by snowmobiles in the winter months. These will mostly be used for recreation.

### Converted Fire Road

Plumas County has several fire roads, accessible for emergency access only, that can be upgraded by signage and minimal maintenance that would allow for bicycle access. These routes should only be used by recreational mountain bikers.

## Class II Bike Lanes

Class II bike lanes provide a signed, striped, and stenciled lane on a roadway. Bicycle lanes are often recommended on roadways where traffic volumes and speeds are too high for comfortably sharing the travel lane.

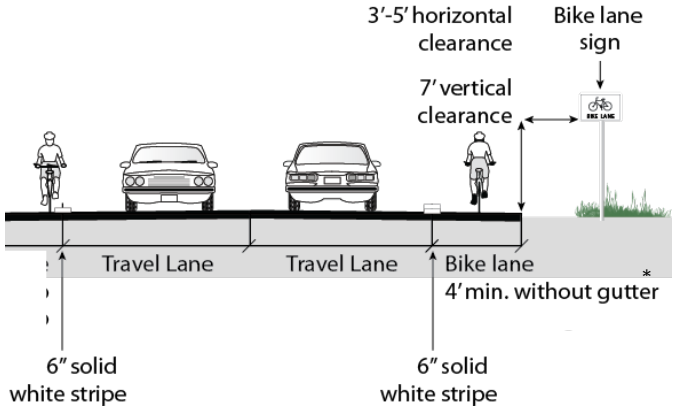



*Figure 5-4: Class II bike lanes*

*The minimum Class II bike lane width shall be four feet, except where:

- Adjacent to on-street parking, the minimum bike lane should be five feet.
- Posted speeds are greater than 40 miles per hour, the minimum bike lane should be six feet, or
- On highways with concrete curb and gutter, a minimum width of three feet measured from the bike lane stripe to the joint between the shoulder pavement and the gutter shall be provided.

Bicycle lanes can be further enhanced by green paint (which highlights areas of potential conflict) and paint buffers (providing greater lateral separation from either travel lanes or parking lanes).

One objective of this Plan is to expand Class II bicycle lanes on state routes within Plumas County wherever feasible. Caltrans is the owner and operator of these roadways and will need to approve any changes to the roadway. Many of Caltrans' Transportation Concept Reports (long-range plans) already include recommendations to "consider non-motorized, transit and complete streets opportunities." Further analysis will be required to determine Class II feasibility and specific design considerations.

### Advisory Bike Lanes

Advisory Bike Lanes, or Dashed Bike Lanes or Advisory Shoulders, create usable shoulders for bicyclists on a roadway that is otherwise too narrow to accommodate one. Unlike a conventional shoulder, an advisory shoulder is a part of the traveled way, and it is expected that vehicles will regularly encounter meeting or passing situations where driving in the advisory shoulder is necessary and safe. The shoulder is delineated by pavement marking and optional pavement color. Motorists may only enter the shoulder when no bicyclists are present and must overtake these users with caution due to potential oncoming traffic.

An approved Request to Experiment is required to implement Advisory Shoulders, called "dashed bicycle lanes" in the FHWA experimentation process.

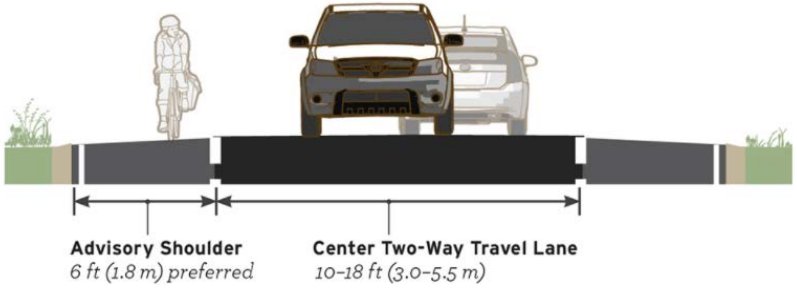



*Figure 5-5: Advisory Bike Lanes*

## Class III Bike Route

Class III bike routes provide for shared travel lane use and are generally only identified with signs. Bike routes are typically appropriate on low volume, low speed streets; however, there are instances where bike routes may occur on streets with higher volumes and/or speeds.

In a more rural context such as Plumas County, bike routes can take multiple forms. The following sections describe these conditions.

### Standard Bike Routes

Figure 5-6 shows an example of bike routes on the residential streets in towns such as Quincy or Portola.

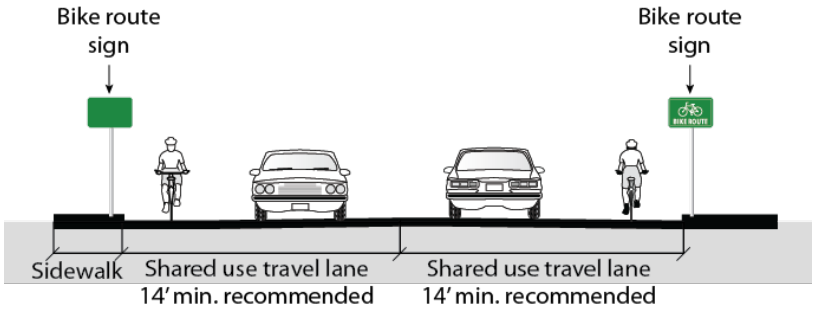



*Figure 5-6: Class III bike routes in town*

### Bicycle Boulevard

Bike routes can be enhanced through traffic calming elements such as curb extensions or speed bumps that slow vehicles down and prioritize bicycle travel. This type of design is called a "bicycle boulevard."

### "Bikes May Use Full Lane" Routes

Bike May Use Full Lane routes are routes that connect between communities in Plumas County. They are roadways where speed limits are not low enough to be identified as Class III bike routes, but no space is available for a separate bicycle facility like a shared use path or bike lanes. These routes were formerly identified through signs that say "Share the Road." However, this nomenclature is no longer industry standard and signs should be replaced with "Bikes May Use Full Lane."

In some cases, roads pass through tunnels with no separate space for bicycles. Due to poor lighting and excess vehicle speeds, these tunnels can be dangerous for users. To increase visibility, this Plan recommends installing "Bicycle Ahead" beacons on all tunnel approaches that detect when a bicyclist is entering the tunnel and flashes to warn people driving to expect a bicyclist in the tunnel and proceed with caution. See "Bicyclists Ahead Actuated Beacon" section below for more information.


### Wide Shoulders

Sometimes county roads and highways will have a wide enough paved shoulder to accommodate bicycles. Plumas County has hundreds of miles of roadways that are a mix of wide shoulders and Bike May Use Full Lane routes. Where possible, Plumas County should ensure that wide shoulders are present on roadways, especially for locations with several curves or limited sight distance.

## Pedestrian Projects

The recommendations on following pages include a number of treatments that are described below in greater detail.

### Crosswalk Enhancements

Crosswalk markings guide pedestrians across roadways by defining and delineating the path of travel. Crosswalk markings also alert motorists and bicyclists of a pedestrian crossing point across roadways not controlled by highway traffic signals or STOP signs. Crosswalks are typically painted white, except near schools, where markings are painted yellow.

#### Crosswalk Selection

There are several types of crosswalk markings, including standard (or transverse) markings and high visibility or "continental" markings. See **Figure 5-7** for examples of each marking type. Continental, ladder, and textured concrete are typically considered higher visibility than transverse and should be used in places with lower visibility or higher number of pedestrians. This Plan recommends only using textured concrete in towns.

Crosswalks may be placed at intersections and at mid-block locations. Careful consideration must be made when considering crosswalk locations, including: traffic control, distance between controlled locations, average daily traffic, traffic speeds and other factors.

Very careful consideration should be made when considering marked crosswalks at locations where there is no stop sign or traffic signal. The California Manual on Uniform Traffic Control Devices notes an engineering study should be performed that considers factors such as the number of lanes, presence of a median, pedestrian and vehicle volumes, vehicle speeds, and other factors. Additional engineering treatments, referred to as traffic calming, can be installed at crosswalks to slow down drivers and make pedestrians feel safer.

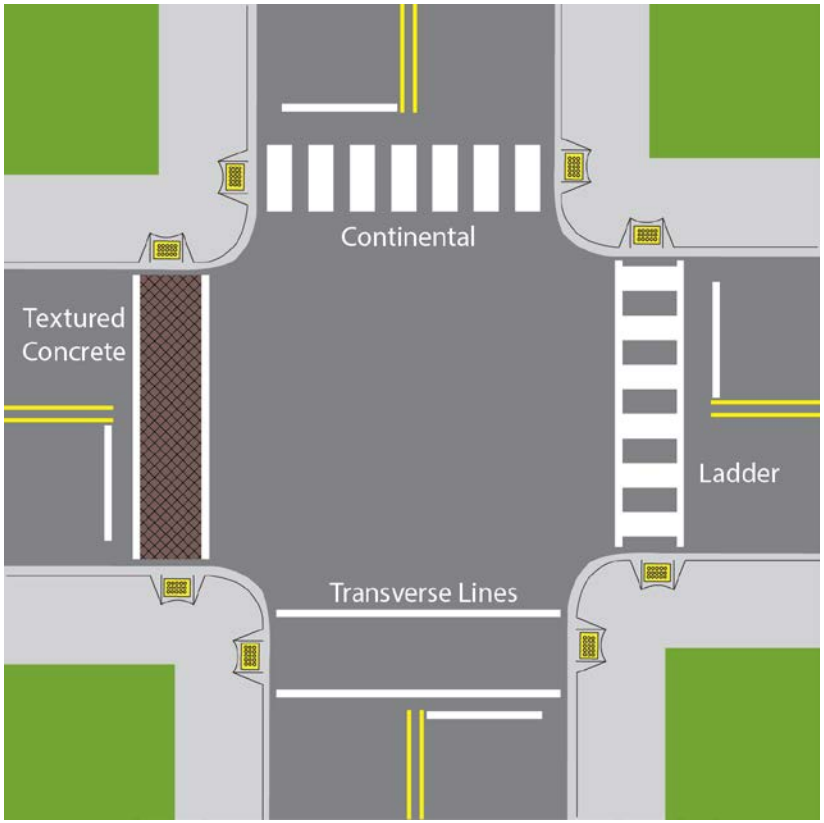



*Figure 5-7: Crosswalk types*

### Crossing Improvements (Traffic Calming)

Traffic calming treatments at crosswalks help slow down drivers as they travel through an intersection. Examples include median refuge islands and curb extensions, intended to reduce the distance pedestrians travel to cross the roadway. Median refuge islands are protected spaces placed in the center of the street to facilitate bicycle and pedestrian crossings. Crossings of two-way streets are facilitated by allowing bicyclists and pedestrians to navigate only one direction of traffic at a time (Figure 5-8).

*Figure 5-8: Median refuge island*

Curb extensions (Figure 5-9) visually and physically narrow the roadway, creating shorter crossings for pedestrians while increasing the available space for street furniture, benches, plantings, and street trees. They may be implemented on downtown, neighborhood, and residential streets of all sizes.

*Figure 5-9: Curb extensions*

### Rectangular Rapid Flashing Beacon

Rectangular Rapid Flashing Beacons (RRFBs) are user-actuated amber flashing lights that supplement warning signs at unsignalized intersections or mid-block crosswalks. RRFBs use an irregular flash pattern similar to emergency flashers on police vehicles and can be installed on either two-lane or multi-lane roadways. Beacons can be actuated either manually by a push-button or passively through detection. Figure 5-10 shows an example of an RRFB.

*Figure 5-10: RRFB*

### Pedestrian Hybrid Beacons

A pedestrian hybrid beacon, also known as a High-intensity Activated CrosswalK (HAWK), consists of a signal-head with two red lenses over a single yellow lens on the major street, and pedestrian and/or bicycle signal heads for the minor street. They are used to improve non-motorized crossings of major streets in locations where side-street volumes do not support installation of a conventional traffic signal (or where there are concerns that a conventional signal will encourage additional motor vehicle traffic on the minor street). Hybrid beacons may also be used at mid-block crossing locations (e.g., trail crossings), as shown in **Figure 5-11**.

The hybrid beacon can significantly improve the operations of a bicycle route, particularly along bicycle boulevards and where trails cross roadways. Because of the low traffic volumes on these facilities, intersections with major roadways are often unsignalized, creating difficult and potentially unsafe crossing conditions for bicyclists. Hybrid beacons may be supplemented with a bike signal and signal detection for the minor street approaches to facilitate bicycle crossings.

*Figure 5-11: Hybrid beacon*

**Table 5-5** shows the locations where crossing improvements are recommended. Projects that provide access to or are located within 350 feet of a school are indicated by "SRTS" in the Notes column.

## Sidewalks

As conduits for pedestrian movement and access, sidewalks enhance connectivity and promote walking. As public spaces, sidewalks serve as the front steps to a community, activating streets socially and economically. Safe, accessible, and well-maintained sidewalks are a fundamental and necessary investment, and have been found to enhance general public health and maximize social capital. Just as roadway expansions and improvements have historically enhanced travel for motorists, superior sidewalk design can encourage walking by making it more attractive.

## Spot Improvements

There are several recommended projects that benefit all modes of transportation, referred to as spot improvements. The subsections below provide details on some of these projects.

### Bicyclists Ahead Actuated Beacon

This type of beacon is pressed by bicyclists prior to traveling on a narrow roadway, a road with lots of turns, or through a tunnel. Once actuated, a beacon will flash for approximately five minutes at both ends of the roadway to warn drivers that a bicyclist is also traveling on the road and to use extreme caution.

### Pedestrian-Scale Lighting

Major intersections and walkways should be adequately lit with pedestrian-scale lighting (in addition to vehicle oriented lighting) to enhance visibility. Taller, brighter lighting with infrequent placement directed toward the center of the street generally create light and dark pockets and make pedestrians feel less safe. Pedestrian scale lighting has more frequent spacing of lampposts at a lower height which create a more even light level for pedestrians, as shown in **Figure 5-12**.

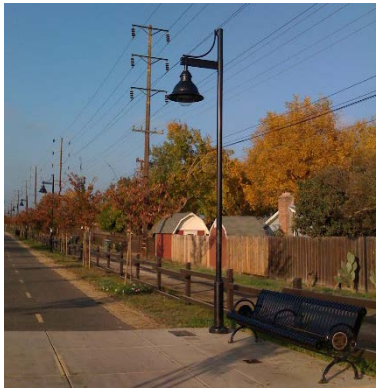


*Figure 5-12: Pedestrian-scale lighting*

### Back-In Angled Parking

Back-in angle parking provides motorists with better vision of bicyclists, pedestrians, cars, and trucks as they exit a parking space and enter moving traffic. It eliminates any risk present with parallel parking situations where a motorist may open the car door into the path of a bicyclist. Additionally, it can remove the difficulty that drivers, particularly older drivers, have when backing into moving traffic. Back-in angled parking is popular in commercial areas where people can load items into their trunk without the risk of standing in a vehicle or bicycle lane. **Figure 5-13** shows a graphic of where a bike lane is present between the vehicle lane and parking lane.

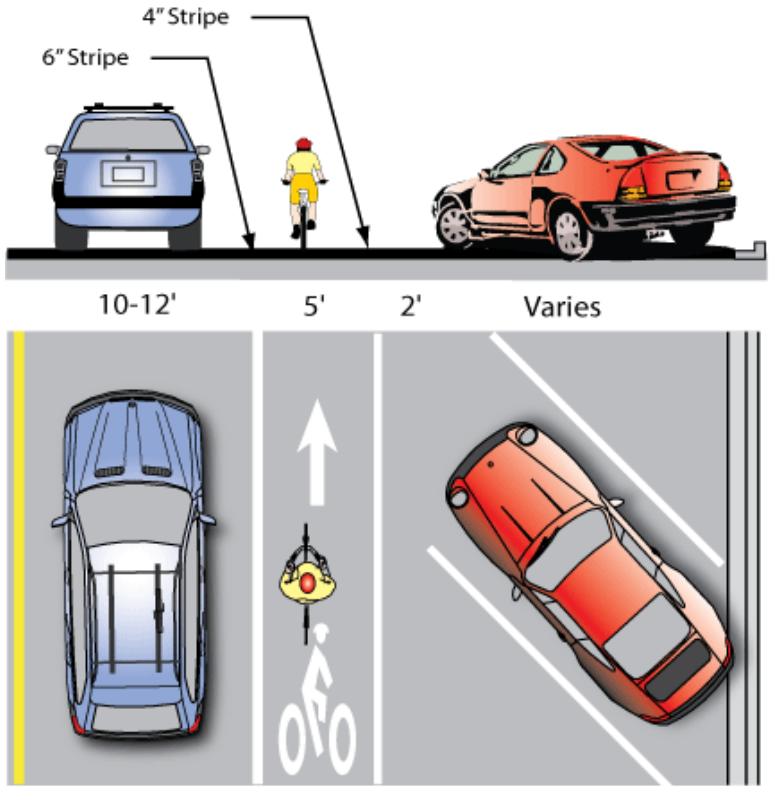



*Figure 5-13: Back-in angled parking with bike lane*

## Trailhead Staging Area

Trailhead staging areas act as an entry to many trails. They can contain kiosks with maps and wayfinding, toilets, and other amenities to better serve trail users. They can also provide a gateway entry to a trail, as shown in **Figure 5-14**.

*Figure 5-14: Trailhead area for the Live Oak Community Trail*

## Complete Streets

This Plan recommends several Complete Streets projects that will require further study. This Plan recommends Plumas County study the feasibility and design of several projects to know more about their location or other factors to determine the best course of action. The section below provides further detail on traffic calming in general and elaborates on the Crossing Improvement (Traffic Calming) section above.

### Traffic Calming

Motor vehicle speeds affect the frequency at which automobiles pass bicyclists as well as the severity of collisions that can occur. Maintaining motor vehicle speeds closer to those of pedestrians and cyclists greatly improves comfort for pedestrians, cyclists and other vulnerable road users on a street. Slower vehicular speeds also improve motorists' ability to see and react to pedestrians and cyclists and minimize conflicts at driveways and other turning locations.

All traffic calming operates on the principle of deflecting the direction of motor vehicles and interfering with the ability to travel a straight, level path. Vertical deflection such as speed humps, speed cushions, and raised intersections, maintains a vehicles straight path, but requires a sudden, brief elevation change. Horizontal shifts, such as chicanes and traffic circles, require vehicles to travel a tightly meandering path and can narrow the visual field to reduce travel speeds. **Figure 5-15** shows several traffic calming features. The recommended studies will determine the best traffic calming features needed at each location.

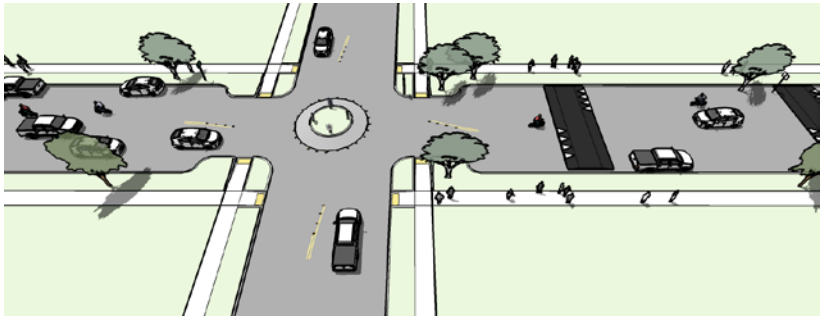


*Figure 5-15: Example traffic calming features*

## Program Recommendations

The following section presents recommended bicycle and pedestrian related program recommendations. The recommendations are organized in four E's:

- Education programs are designed to improve safety and awareness. They can include programs that teach students how to safely cross the street or teach drivers to expect pedestrians. They may also include brochures, posters, or other information that targets pedestrians or drivers.
- Encouragement programs provide incentives and support to help people leave their car at home and try walking instead.
- Enforcement programs enforce legal and respectful walking, bicycling, and driving. They include a variety of tactics, ranging from police enforcement to neighborhood signage campaigns.
- Evaluation programs are an important component of any investment. They help measure success at meeting the goals of this plan and to identify adjustments that may be necessary.

## Education

Education programs are important for teaching safety rules and laws as well as increasing awareness regarding walking and bicycling opportunities and existing facilities. Education programs may need to be designed to reach groups at varying levels of knowledge and there may be many different audiences: pre-school age children, elementary school students, teenage and college students, workers and commuters, families, retirees, the elderly, new immigrants, and non-English speakers.

### Student Bicycle and Pedestrian Traffic Safety Education

Student education programs are an essential component of bicycle and pedestrian education. Students are taught traffic safety skills that help them understand basic traffic laws and safety rules.

Example pedestrian education curriculum elements include traffic sign identification and how to use a crosswalk. Bicycle education curriculum typically includes two parts: knowledge and skills. Knowledge lessons are typically in-class, while skills are practiced on a bicycle. Lessons can include helmet and bicycle fit, hand signals, and riding safely with traffic.

This Plan recommends Plumas Unified School District develop a Traffic Safety Education class to be taught to all students in grades K-8 in all district schools participate in at least two to three education and encouragement activities each year.

<u>Bicycle Rodeo, Grades K-5</u>

A bicycle rodeo consists of multiple stations that students rotate through over the course of a physical education class. The stations educate students about bike skills and safety and include discussion of the environmental benefits of active transportation and physical activity. All stations are interactive. Station themes can range from checking to ensure helmets fit properly to properly signaling turns and

weaving through an obstacle course of cones. Instruction and teaching materials become more advanced for older grades so students are able to refine their skills and learn new ones each year.

Pump Track Event, Grades 6-8

This event is similar to a bicycle rodeo, but is designed specifically for middle school students. In this activity, students learn bicycling skills in a mountain environment. Learning how to ride on dirt paths is important for Plumas County residents, as many bike paths used for recreation or getting around town are dirt paths. By participating in this event, middle school students will become more comfortable with mountain biking skills and have the opportunity to learn more advanced skills in a safe and fun environment. There are also national associations and clubs with local chapters, such as the National Interscholastic Cycling Association (http://www.nationalmtb.org/), which seeks to develop high school mountain biking skillsets.

In-Class Education Series, Grades 2, 4, and 6

The in-class education series teaches students about bicycle safety and the environmental benefits of active transportation. The program is an opportunity to keep students informed and bike-aware during winter months. The proposed curriculum includes activities such as mapping safe routes to school as well as interactive presentations. In-class education allows greater topic depth and facilitates student discussion. Parent and local organization volunteers, Plumas Unified, and Plumas County would partner to teach the series. The series would consist of 45-minute sessions for each classroom of second, fourth, and sixth graders. In second grade, the focus is on safe walking and street safety, such as street crossing. In fourth and sixth grade, the focus is on bike safety and the traffic regulations that govern active transport.

### Bicycle Related Ticket Diversion Class

Diversion classes are classes offered to bicyclist offenders of certain traffic violations, such as running a stoplight.

California Assembly Bill 209, signed by Governor Brown on September 21, 2015 allows for such programs for violations not committed by a driver of a motor vehicle. This program is a good way to educate bicyclists about rights and responsibilities.

Similar programs existing throughout California. More information:

- www.marinbike.org/Campaigns/ShareTheRoad/Index.shtml#StreetSkills
- http://www.cityoflivermore.net/citygov/police/ops/traffic/bikesafety/diversion.asp

## Encouragement

Everyone from young children to elderly residents can be encouraged to increase their rates of walking and bicycling or to try walking or bicycling instead of driving for short trips.

### Media Campaign

Media campaigns enhance awareness of transportation related issues such as safety. They can be developed for print, social media, and video collateral for advertising on billboards, in newspapers, online, and on the radio. Campaign topics include the new 3 feet passing law and using shared use paths.

This Plan recommends Plumas County develop pedestrian and bicycle safety focused media campaigns.

### Parklet Program

A parklet is a sidewalk extension that provides more space and amenities for people using the street. Parklets are

typically installed on parking lanes and use several parking spaces. They can be used for seating (restaurant/café seating or public seating), bike parking, among other uses.

This Plan recommends the County work with local jurisdictions to develop a parklet program. The program can begin as a pilot with local cafes, restaurants, or other businesses who may want more sidewalk presence. If possible, parklets should be made modular and stored in winter for snow clearing.

### Back-to-School Encouragement Marketing

Families set transportation habits during the first few weeks of the school year and are often not aware of the multiple transportation options and routes available to them. Because of this, many families will develop the habit of driving to school using the same route as everyone else, leading to congestion.

A back-to-school encouragement marketing can promote bus, carpool, walking and bicycling to school. The marketing campaign can include suggested route maps, safety education materials, volunteer opportunities, event calendars, and traffic safety enforcement notices.

### Walk to School Day

International Walk to School Day is typically held in early October. Students and families are encouraged to walk to school. The event celebrates the many students who already walk to school, and encourages additional families to try walking to school.

Volunteers can form Walking School Buses. Schools can leverage the enthusiasm by holding other contests and events during the week or on the day of the event.

### Bike to School Day

Bike to School Day is typically held in mid-May. Students and families are encouraged to walk to school. Similar to Walk to School Day events, this program celebrates students who already bike to school and encourages additional families to try bicycling to school.

Volunteers can form Bike Trains. Schools can leverage the enthusiasm by holding other contests and events during the week or on the day of the event.

### Walking School Buses and Bike Trains

A Walking School Bus is an organized group of students who walk to school under the supervision of a parent/adult volunteer. Bike Trains are similar to Walking School Buses, with students bicycling together. Parent champions take turns walking or bicycling along a set route to and from school, collecting children from designated “bus stops” along the way.

Schools and parent champions can encourage parents to form Walking School Buses or Bike Trains at the back-to-school orientation or other fall events. The School District can provide safety vests or marked umbrellas to indicate the

leader(s). Incentives for the parent volunteers can include coffee at the school or gift cards for coffee shops.

Example outreach materials:

- Michigan Safe Routes 2 School's Walking School Bus program: http://saferoutesmichigan.org/wsb
- Sonoma Safe Routes to School's Walking School Bus Basics: http://sonomasaferoutes.org/resources/walking-school-bus-basics.pdf/view
- Sonoma Safe Routes to School's Bike Train Guide for Volunteers: http://sonomasaferoutes.org/resources/bike-train-guide-for-volunteers.pdf/view
- Marin County Safe Routes to Schools' SchoolPool Marin materials: http://www.schoolpoolmarin.org/

### Monthly Walk & Roll Days

Walk and Bike to School Days are events to encourage students to try walking or bicycling to school. The most popular events of this type are International Walk to School Day (held in early October) and Bike to School Day (held in early May). Many communities have expanded on this once a year event and hold monthly or weekly events such as Walk and Roll the First Friday (of every month) or Walk and Roll Wednesdays (held every Wednesday).

Holding weekly or monthly Walk & Roll to School Day promotes regular use of active transportation and helps establish good habits. Events can take on a wide range of activities, with some schools choosing to make them weekly rather than monthly, such as with a "Walk & Roll Wednesday."

Volunteers can set up a welcome table for walkers and bikers. The welcome table could provide refreshments, incentive prizes, and an interactive poster letting students document their mode to school. Walking School Buses and Bike Trains and Golden Sneaker Contests can be organized and promoted on these days.

It is recommended to participate in the annual Walk to School and Bike to School events. After one year, it is recommended to try monthly Walk & Roll to School days depending on the weather, in addition to the annual events.

### Golden Sneaker Contest

In the Golden Sneaker Contest, classrooms compete to see which class has the highest rate of students walking, biking, or carpooling to and from school. The class tracks how many students commute by these modes and calculates the percent of total trips by each mode. The winner of the contest receives a "golden sneaker" trophy, along with other incentive prizes.

A Golden Sneaker Contest can be expanded from classroom competitions to intra-school competitions or district-wide competitions. Some schools hold celebrations for winning classrooms.

## Enforcement

Enforcement programs enforce legal and respectful use of the transportation network. These programs will help educate motorists, bicyclists, and pedestrians about the rules and responsibilities of the road.

### Crossing Guard Program

The effectiveness of a crossing guard can be the deciding factor in a parent feeling comfortable enough to let their child walk or bicycle to school. Currently, adult crossing guards in the County are school staff.

California developed an on-line training guide, available at https://www.cdph.ca.gov/HealthInfo/injviosaf/Documents/CASchoolCrossingGuardTrainingGuidelines.pdf.

### Crosswalk Stings/Enforcement Campaigns

In a crosswalk sting operation, the Sherriff's Office targets drivers who fail to yield to pedestrians in a school crosswalk. A plain-clothes decoy police officer ventures into a crosswalk and motorists who do not yield are given a citation by a second officer stationed nearby. The Sherriff's Office or School District may alert the media to the crosswalk stings to increase public awareness of the crosswalk safety issue. Other common enforcement campaigns include targeting driver violations including speeding or talking/texting on cellphones.

It is recommended the County and School District work with the Sherriff's Office to conduct crosswalk stings and enforcement campaigns near schools and other key destinations for bicyclists and pedestrians.

## Evaluation

Evaluation programs help the County measure how well it is meeting the goals of this Plan and the General Plan and evaluation is a key component of any engineering or programmatic investment. It is also a useful way to communicate success with elected officials as well as local residents.

### Annual Collision Data Review

Reviewing bicycle and pedestrian related collisions and near-misses on an annual basis can help the City identify challenging intersections or corridors. This review should include an assessment of the existing infrastructure to determine whether improvements can be made to reduce the number of collisions in the community.

This Plan recommends the County and Sherriff's Office review bicycle and pedestrian related collision data on an annual basis to identify needed improvements.

### Parent Surveys

The National Center for Safe Routes to School provides a standard parent survey, collecting information on modes of travel, interest in walking or biking to school, and challenges to walking and bicycling to school. The information gathered from the parent surveys can help Plumas County and School District provide programs that are attractive to parents. Parent surveys can also help measure parent attitudes and changes in attitude towards walking and biking to school.

It is recommended that Plumas County and Plumas County Unified School District work together to conduct parent surveys every three years.

### Student Walking and Biking Counts

Student hand tallies are one way to count the number of students who walk, bicycle, take transit or carpool to school. The National Center for Safe Routes to School provides the standard tally form.

It is recommended the Plumas County Unified School District conduct student tallies on an annual basis. Counts can also be held on annual walking or bicycling to school events. These are an excellent way to track the number of students who walk or bicycle to school over time. Grant applications will often require this information.

# Chapter 6. Implementation

This chapter presents a strategy for implementing individual infrastructure projects. These proposed criteria are based on extensive community and stakeholder input, discussions with agency staff, and this Plan's goals, objectives, and strategies.

The intent of providing a tool for evaluating projects is to assist in prioritizing projects based on need and funding availability. The evaluation criteria were developed to measure how strongly a project meets this Plan's goals, objectives, and policies as well as how it adheres to best practices.

One objective of this Plan is to expand Class II bicycle lanes on state routes within Plumas County wherever feasible. Caltrans is the owner and operator of these roadways and will need to approve any changes to the roadway. Many of Caltrans' Transportation Concept Reports (long-range plans) already include recommendations to "consider non-motorized, transit and complete streets opportunities." Further analysis will be required to determine Class II feasibility and specific design considerations.

## Evaluation Strategy

The scoring criteria from **Table 6-1** and **Table 6-2** below provide a ranking mechanism that applicants may use to make decisions on project priorities and implementation for projects within community centers and projects outside community centers. Each set of criteria have a maximum of 100 points. The strategies and objectives listed can be found in **Chapter 3: Goals and Objectives.** Local and regional projects could be broken down into short-, medium, and long-term priority projects.

The project list and individual projects to be included in this Plan are flexible concepts that serve as a guideline. The project list may change over time as a result of changing walking patterns, land use patterns, implementation constraints and opportunities, and the development of other transportation improvements.

*Table 6-1: Potential Project Evaluation Criteria for Projects Within Community Centers*

| Goal | Strategy/Objective | Max Points |
|---|---|---|
| Safety | Strategy 1.A.1 | 5 |
| | Strategy 1.A.2 | 5 |
| | Strategy 1.A.3 | 5 |
| | Strategy 1.A.4 | 10 |
| Mobility | Strategy 2.A.1 | 10 |
| | Strategy 2.A.2 | 5 |
| | Strategy 2.A.3 | 5 |
| | Strategy 2.B.1 | 10 |
| | Strategy 2.B.2 | 5 |
| | Strategy 2.B.3 | 5 |
| Programs | Objective 3.A | 4 |
| | Objective 3.B | 4 |
| | Objective 3.C | 4 |
| | Objective 3.D | 4 |
| Vibrancy | Strategy 4.B.3 | 5 |
| Other | Public participation and planning | 3 |
| | Improved public health | 3 |
| | Cost effectiveness | 5 |
| | Leveraging of non-ATP funds | 3 |
| | **Total Points** | **100** |

*Table 6-2: Potential Project Evaluation Criteria for Projects Outside Community Centers*

| Goal | Strategy/Objective | Max Points |
|---|---|---|
| Safety | Strategy 1.A.1 | 5 |
| | Strategy 1.A.2 | 5 |
| Mobility | Strategy 2.A.2 | 5 |
| | Strategy 2.A.3 | 5 |
| Programs | Objective 3.C | 5 |
| | Objective 3.D | 5 |
| Vibrancy | Strategy 4.A.1 | 10 |
| | Strategy 4.A.2 | 10 |
| | Strategy 4.B.1 | 10 |
| | Strategy 4.B.2 | 5 |
| | Strategy 4.B.3 | 10 |
| | Strategy 4.C.1 | 5 |
| | Strategy 4.C.2 | 6 |
| Other | Public participation and planning | 3 |
| | Improved public health | 3 |
| | Cost effectiveness | 5 |
| | Leveraging of non-ATP funds | 3 |
| | **Total Points** | **100** |

## Local Projects

The following maps show the project recommendations for each of the Plumas County communities. The tables of project recommendations including extents and cost estimates are found in **Appendix F: Project Recommendations.** The projects that fall within 350 feet of a school are considered Safe Routes to School projects and a consolidated list of those projects is provided in **Appendix E: Safe Routes to School.**

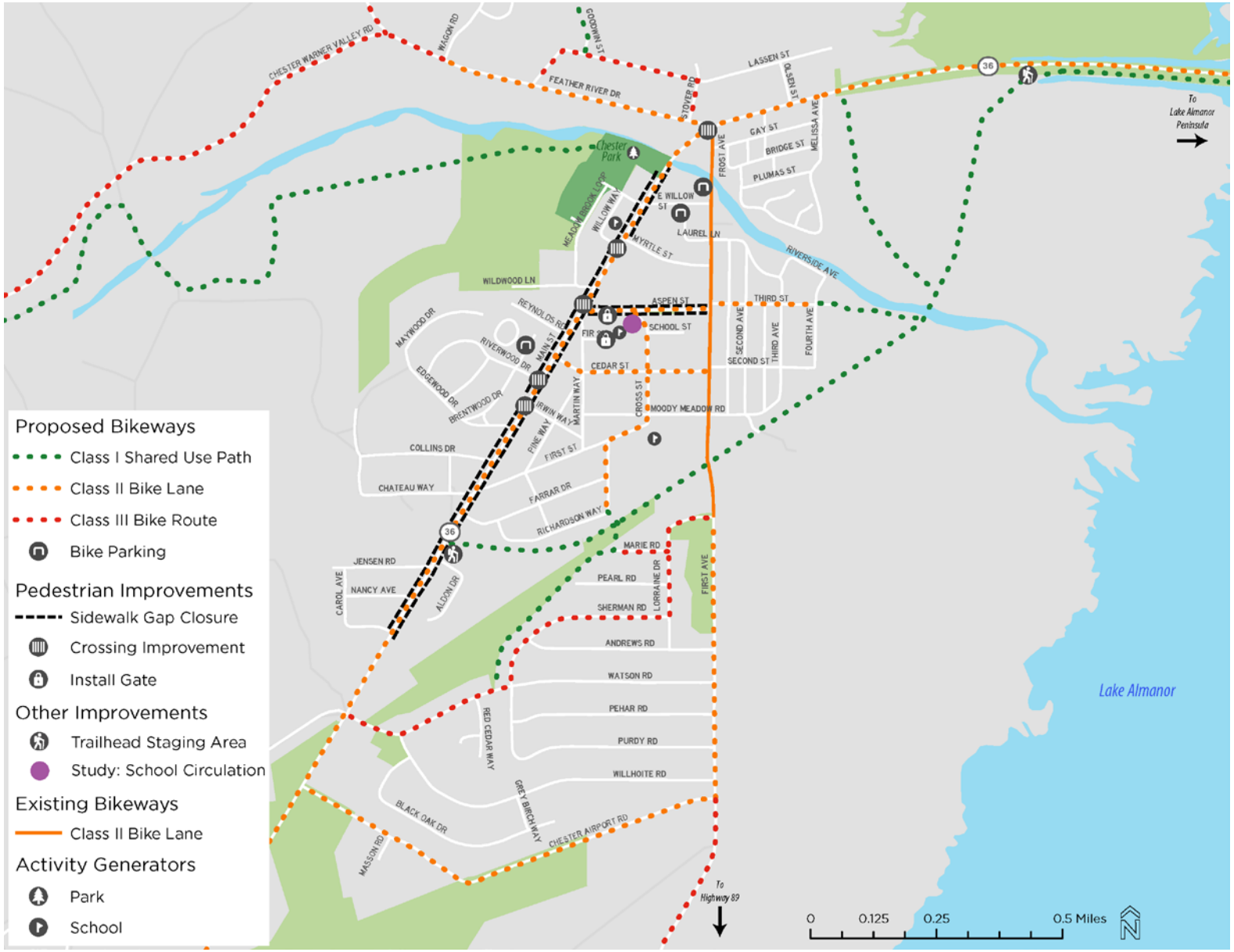



*Figure 6-1: Project recommendations in Chester*

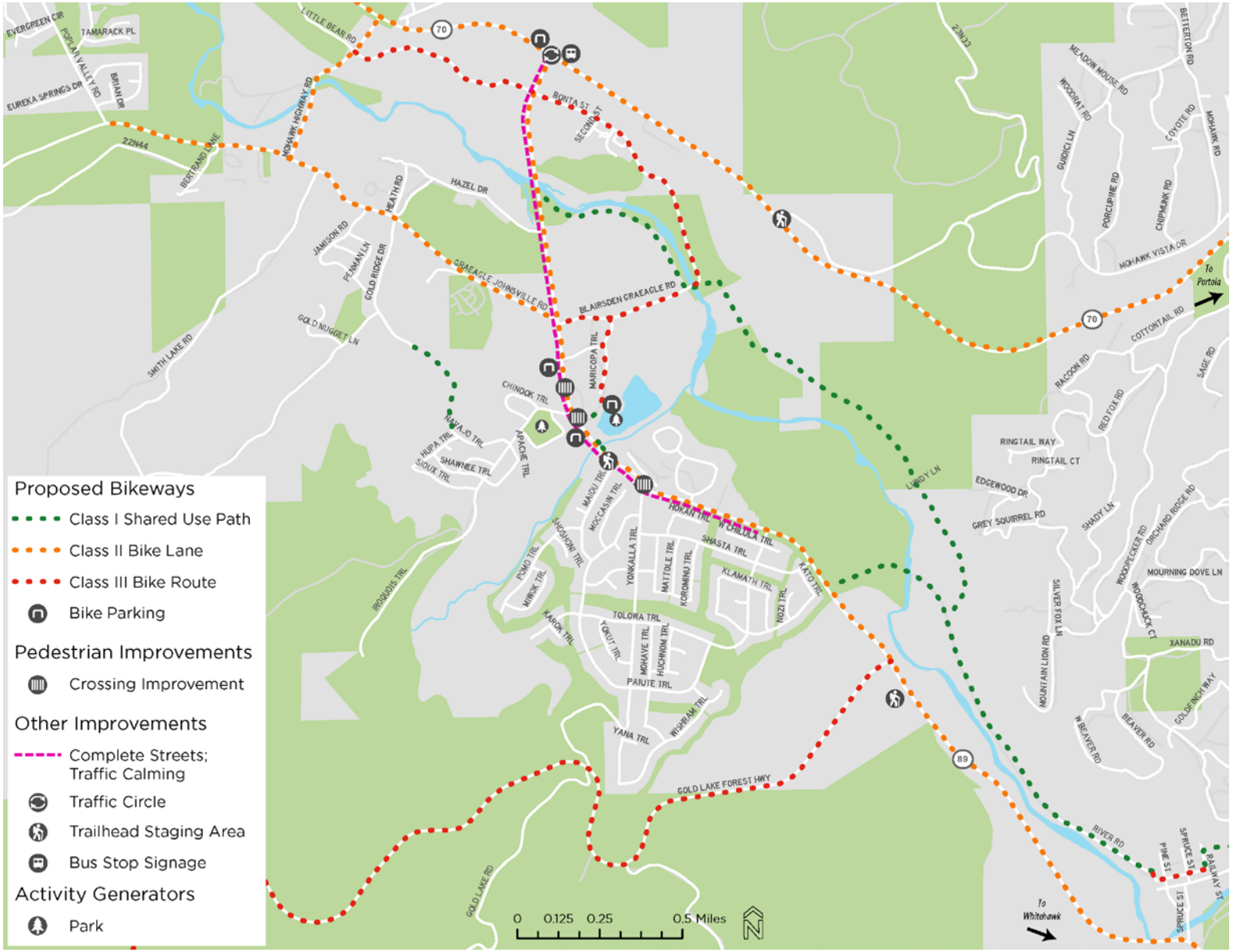



*Figure 6-2: Project recommendations in Graeagle*


*Figure 6-3: Project recommendations in Greenville*


*Figure 6-4: Project recommendations in La Porte*

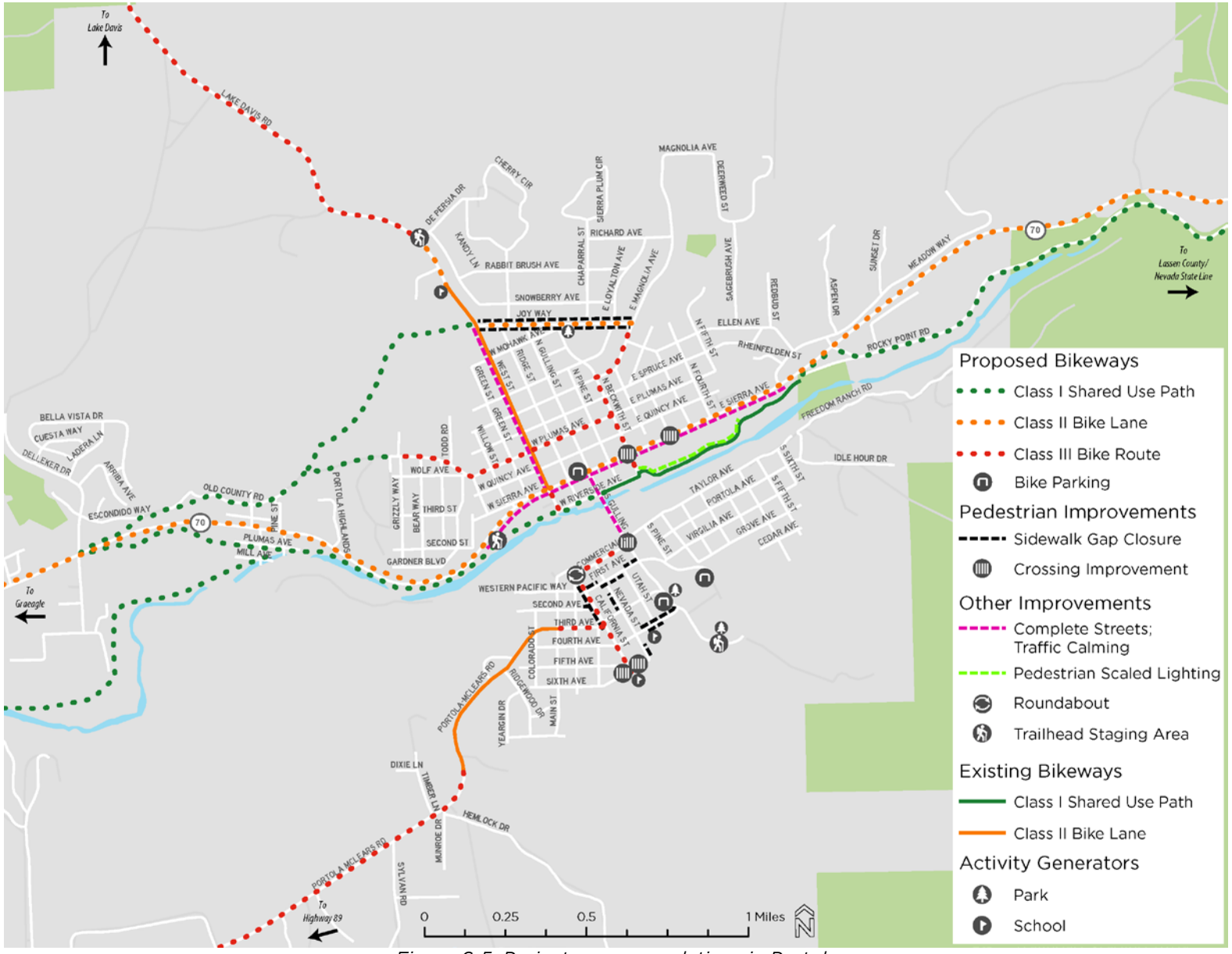



*Figure 6-5: Project recommendations in Portola*

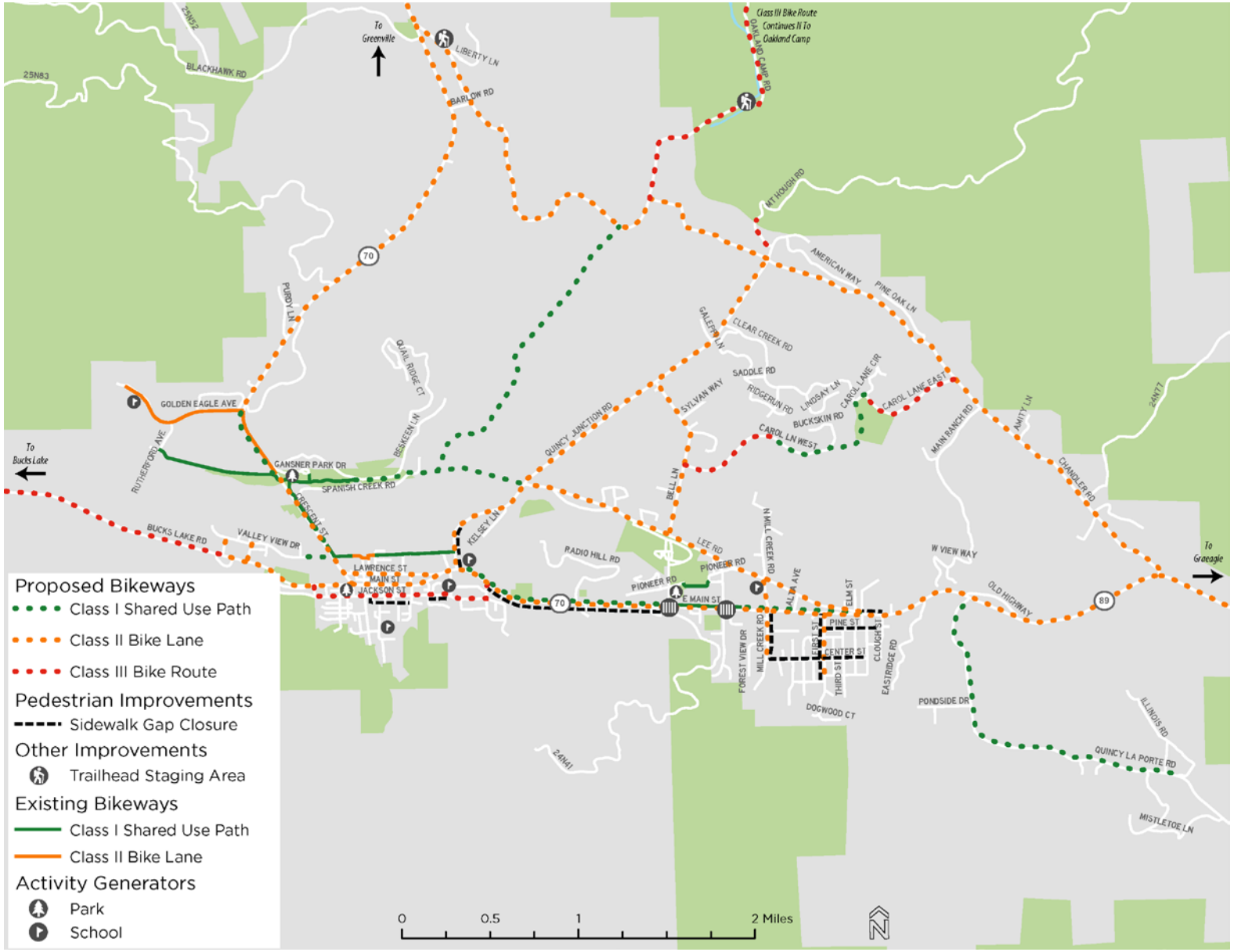



*Figure 6-6: Project recommendations in Quincy overview*

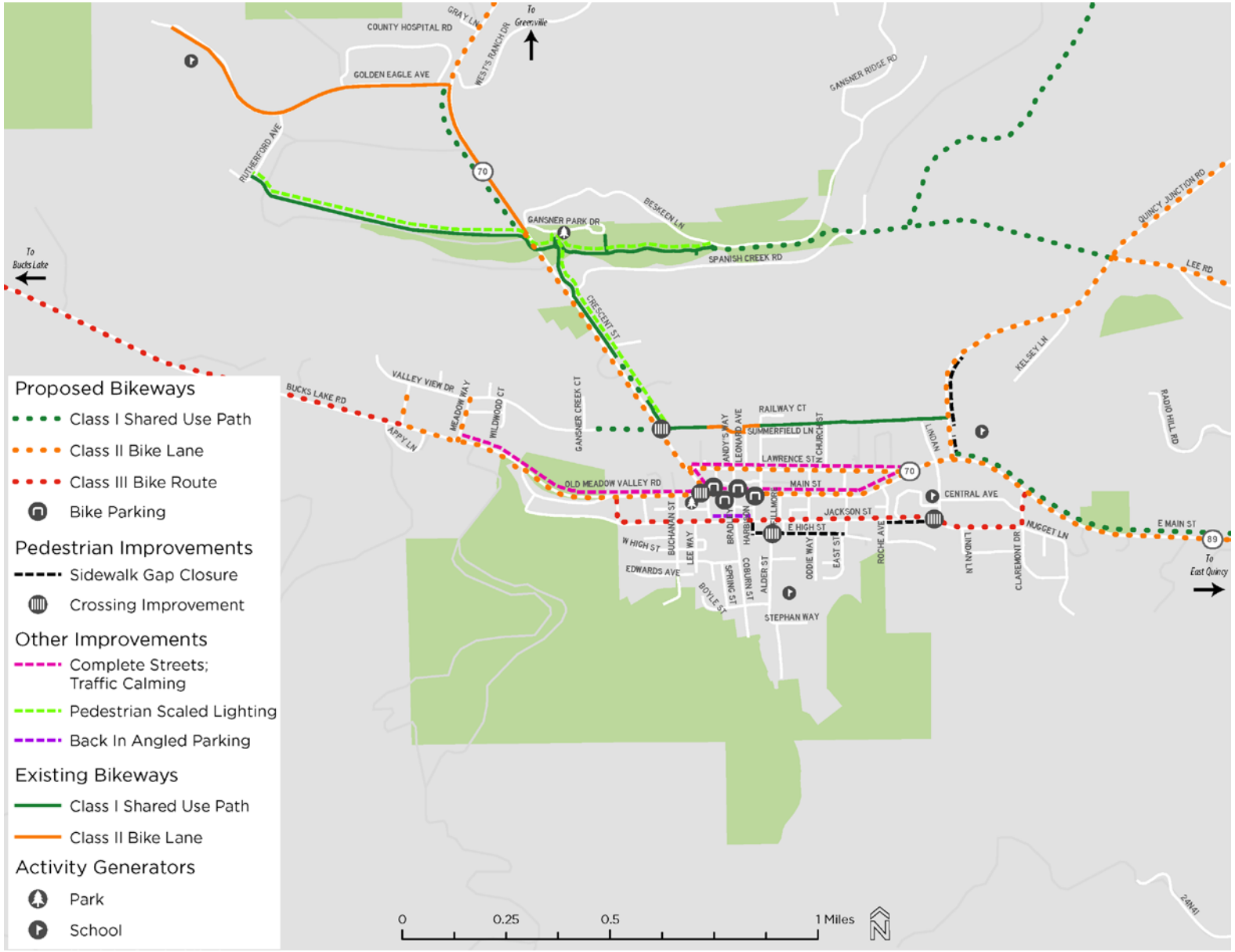



*Figure 6-7: Project recommendations in Quincy*

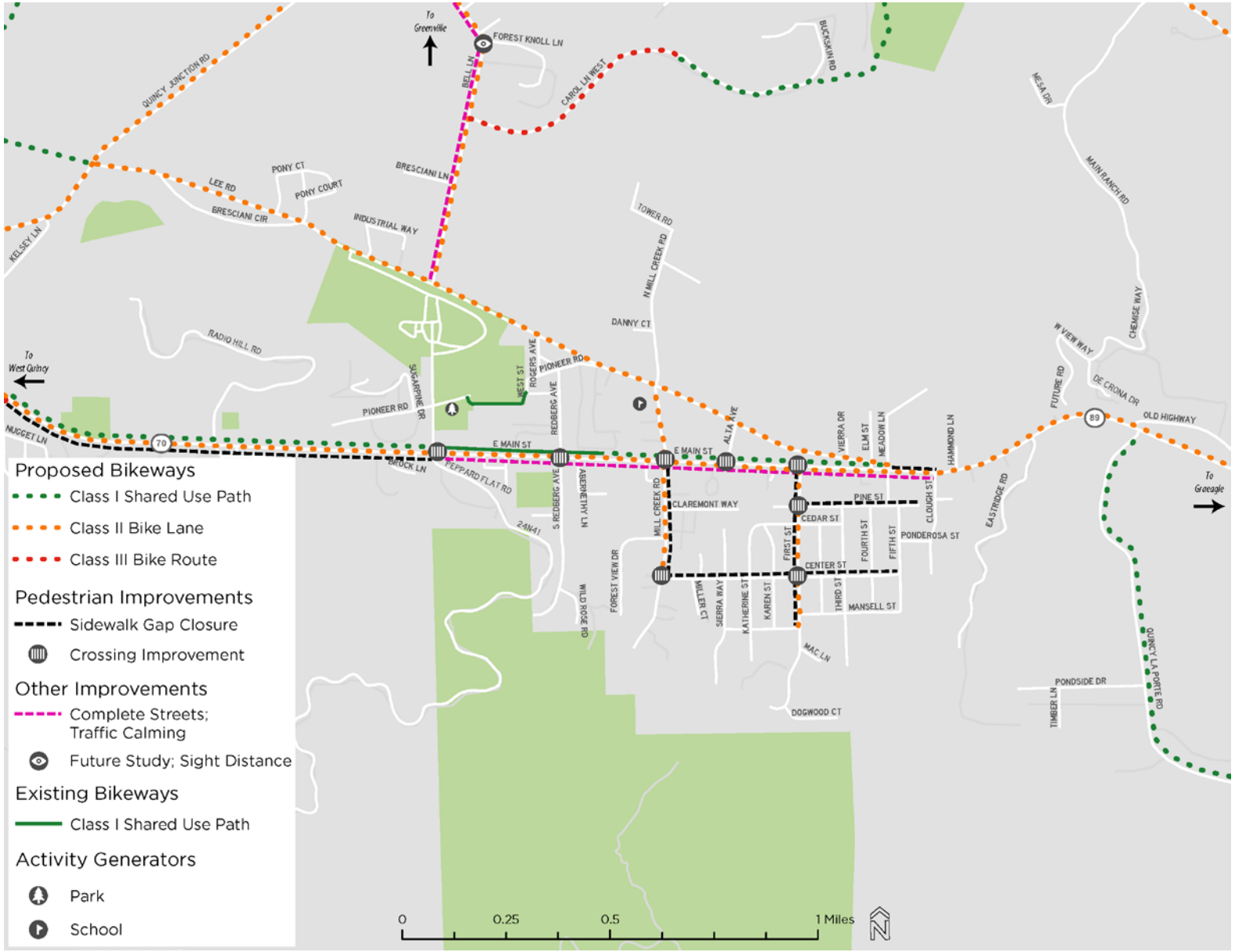



*Figure 6-8: Project recommendations in East Quincy*

## Regional Projects

The following figures show the regional project recommendations. The table of project recommendations including extents and cost estimates be found in Appendix F: Project Recommendations.


*Figure 6-9: Countywide bicycle project recommendations*

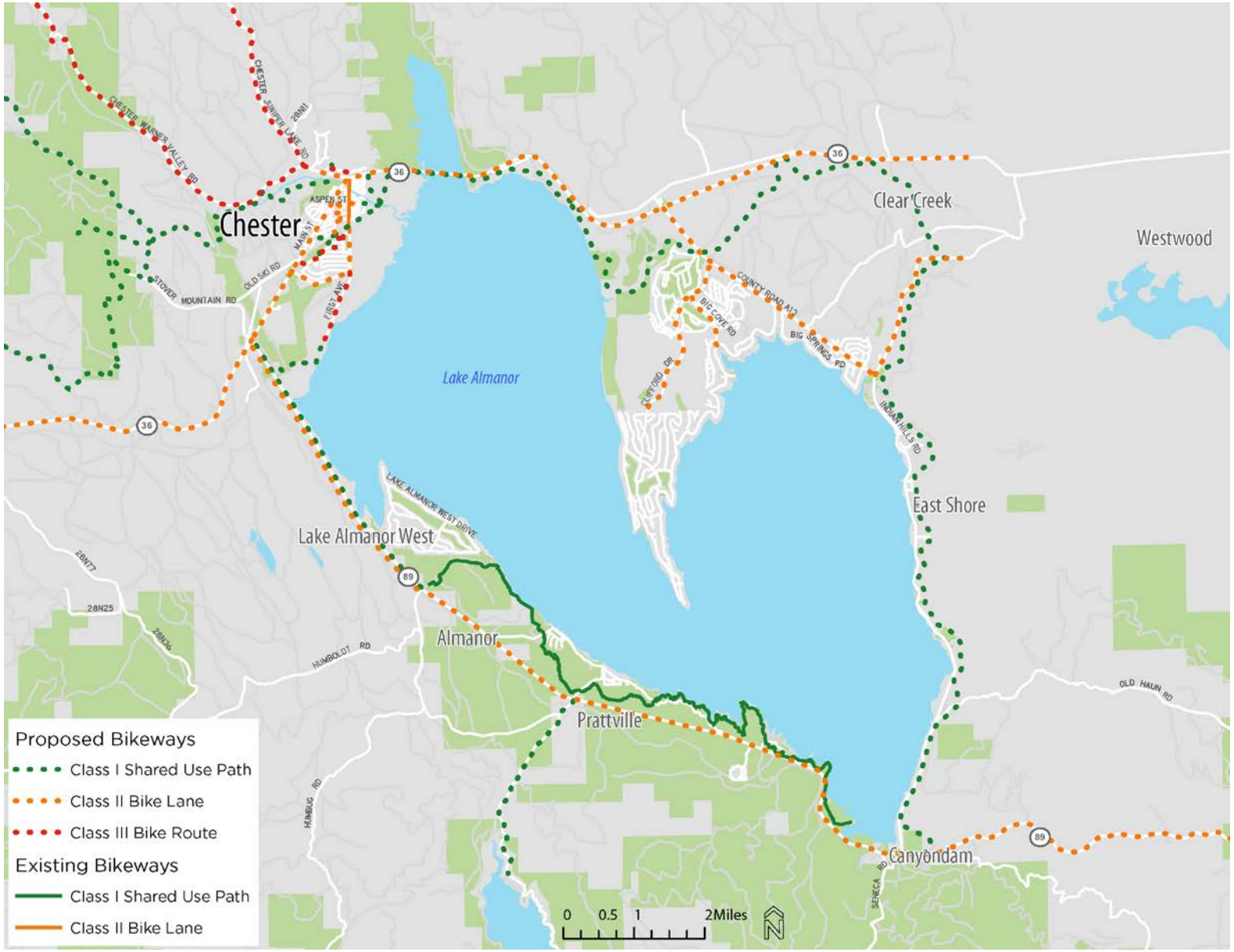



*Figure 6-10: Project recommendations around Lake Almanor*

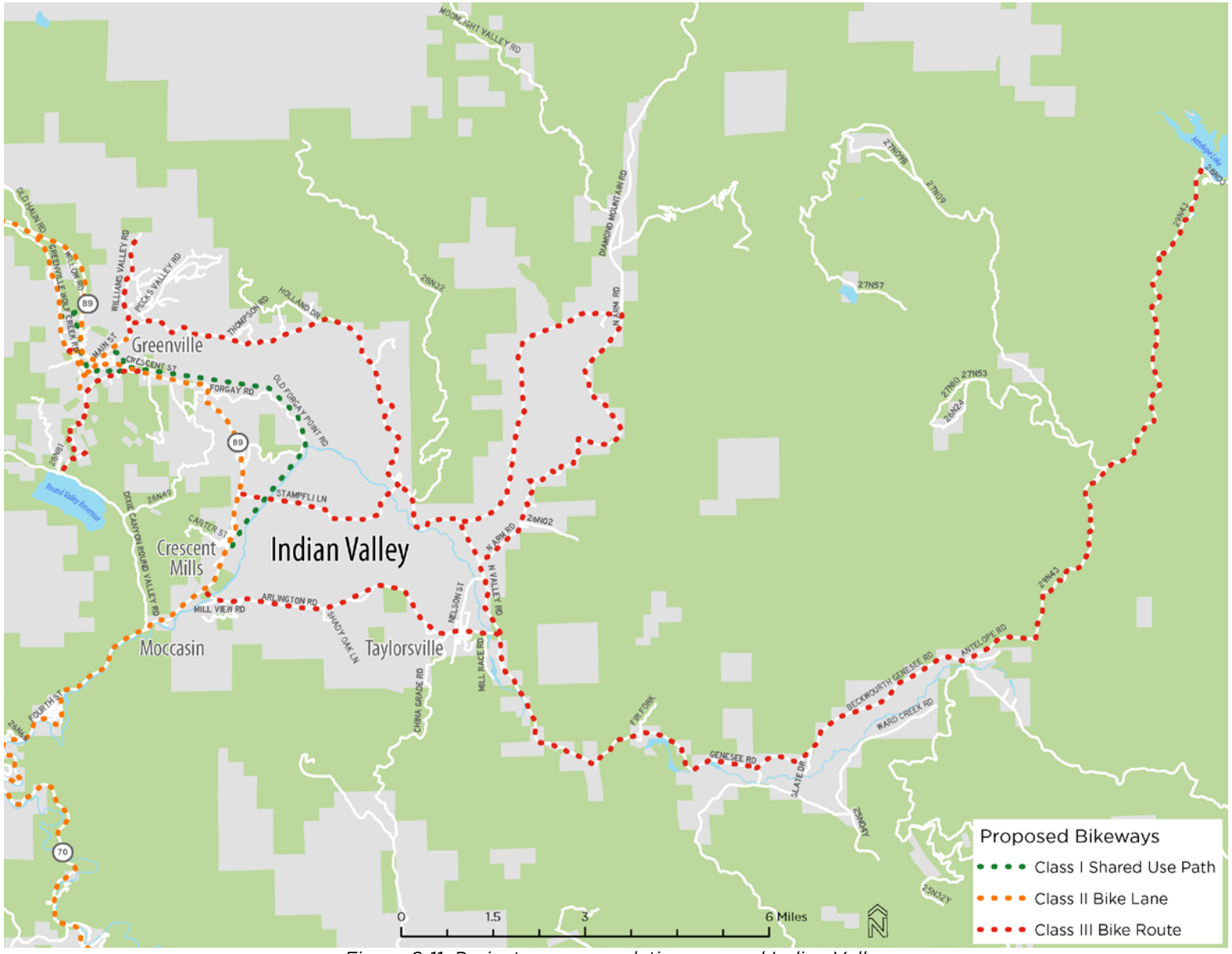



*Figure 6-11: Project recommendations around Indian Valley*

## Cost Estimate Assumptions

**Table 6-3** presents the 2016 planning-level cost assumptions used to determine project cost estimates, shown in **Appendix F: Project Recommendations**. Unit costs are typical or average costs informed by Alta Planning + Design's experience working with California communities. While they reflect typical costs, unit costs do not consider project-specific factors such as intensive grading, landscaping, or other location-specific factors that may increase actual costs. For some projects, costs may be significantly greater.

*Table 6-3: Cost Estimate Assumptions*

| Treatment | Unit | Cost | Notes |
|---|---|---|---|
| Class I Shared Use Path | Mile | $550,000 | 10′ Asphalt path, 2′ shoulders, signage, minimal grading |
| Gravel Path | Mile | $400,000 | 12′ wide gravel path, signage, minimal grading |
| Dirt Path | Mile | $200,000 | Assumes signage and some grading and drainage improvements |
| Class II Bike Lane | Mile | $70,000 | Two sides |
| Class III Bike Boulevard | Mile | $50,000 | |
| Class III Bike Route | Mile | $15,000 | |
| Crosswalk | Linear Foot | $20.00 | |
| High-Visibility Crosswalk | Linear Foot | $70.00 | |
| Sidewalk | Linear Foot | $180 | 6′ wide, includes curb & gutter |
| Crosswalk Beacon | Each | $50,000 | |
| Signage | Each | $600 | |
| Widen Shoulder | Linear Foot | $50 | 6′ wide |
| Pedestrian-Scale Lighting | Each | $5,000 | |
| Bicyclist Ahead Actuated Beacon | For two | $30,000 | Both |
| Bike/Pedestrian Bridge | Linear Foot | $7,500 | |
| Pave Road | Linear Foot | $300 | 36′ wide roadway |
| Roundabout | Each | $1,000,000 | |
| Trailhead Plaza Area | Each | $50,000 | 5-10 parking spaces |
| Bike Rack | Each | $500 | |
| Bike Locker | Each | $1,500 | |

## Maintenance

Maintaining the walking and bicycling environment once it has been implemented preserves the investment and will help support a high quality of life for Plumas County residents. Maintenance costs are a concern for most jurisdictions, as there are grants available to build projects, but not to maintain them.

On-street bikeways should be maintained as part of the normal roadway maintenance program and emphasis should be placed on keeping bike lanes and roadway shoulders clear of debris and keeping vegetation overgrowth from blocking visibility.

Plumas County should develop a separate trail maintenance program to address timeline and prioritization for trail maintenance. Maintenance includes snow removal as well as keeping vegetation overgrowth from blocking visibility.

**Table 6-4** lists typical maintenance costs and frequencies. All estimated costs are in 2016 dollars.

*Table 6-4: Maintenance Cost Assumptions*

| Activity | Frequency | Unit | Estimated Cost |
|---|---|---|---|
| Crosswalk restriping | Arterials: 5-7 years<br>Minor streets: 10 years | Each | $2,800 |
| Sidewalk and curb ramp repair | As needed | | varies |
| Class I Path repair and maintenance | Ongoing, annually | Mile | $8,750 |
| Sign repair | As needed | Each | $300 |
| Class II Bike Lane restriping, replacing stencils and signs as needed | Ongoing, annually | Mile | $2,000 |
| Class III Bike Route sign and sharrow stencil replacement | Ongoing, annually | Mile | $1,250 |

# Appendix A. Plan and Policy Review

This appendix contains a review of adopted planning and policy documents relevant to the Plumas County Active Transportation Program – Pedestrian/Bicycle Plan. Documents are grouped into local and regional, statewide, and federal efforts. This appendix includes:



Goals, policies, and other language that relates directly to walking and bicycling is included in this review, while items that are less relevant have been omitted for clarity. As a result, numbering may be nonconsecutive.

## Local and Regional Documents

### Plumas County General Plan (2013)

The Plumas County General Plan lays out the following vision statement for the county:

> *Promote a healthy physical and aesthetic environment, a vital economy, and a supportive social climate that can accommodate the expected growth and change over the next 20 years.*

The following goals and policies in various General Plan elements are relevant to the development of this Pedestrian/Bicycle Plan:

#### Land Use Element

- GOAL LU 1.2: Range of Land Uses. Recognize and allow for a range of land uses that preserve the qualities of existing communities and rural areas. […] Provide an appropriate range of land use designations to serve the needs of the residents of the County with an adequate amount of land in each designation to provide a balanced pattern of development.
  - POLICY LU 1.2.4: Mixed Use. The County shall allow on-site residential development as an integral part of the primary building or development site for all commercial and industrial development.

### Circulation Element

The circulation element begins by identifying a number of challenges and key policy issues related to transportation, including:

- A lack of adequate and consistent funding to improve and maintain the transportation system. If roadway maintenance projects are delayed due to limited funding, routine maintenance can turn into much more costly repairs. [...] At a local level, it is important that policies allow for funding of appropriate circulation improvements as part of the development process.
- The concept of "complete streets" to address both environmental and mobility goals which reflect roadway corridors that need to serve, as appropriate, travel by all modes rather than by motor vehicles only. Reflecting the importance of this concept, in 2008 the state enacted the California Complete Streets Act which requires the "complete streets" concept be included in General Plan Circulation Elements throughout the state.
- Transportation issues that have substantial local and global impacts on the environment, such as water quality, air quality, noise and overall "livability." At a much broader scale, transportation generates a very significant proportion of overall GHG emissions. This Circulation Element includes policies that address these important issues.
- The lack of bicycle and pedestrian facilities, particularly within communities. In addition, the community needs Class II bikeways or wider roadway shoulders along roadways between communities. Without these improvements, the conditions are unsafe for cyclists and non-auto travel is discouraged.
- Operational issues associated with limited mountain highways, including the need for snow removal, truck climbing lanes, pullouts and safety improvements, such as providing wider shoulders. Although these types of improvements are needed to maintain the safety and efficiency of the roadways, construction can be limited by rugged topography and may have a significant environmental impact.

The following goals and policies are most relevant to this Pedestrian/Bicycle Plan:

- GOAL CIR 4.2: Complete Streets. The County shall seek to develop or upgrade all State Highways, arterials and collectors, as Complete Streets that accommodate all travel modes with appropriate strategies, based on planning area designation.
    - POLICY CIR 4.2.1: The County shall support the elements of Complete Streets design, including the following:
        - Balanced design that accommodates walking, cycling, transit, driving, parking, snow removal, [...] emergency vehicle access and deliveries
        - Appropriate street design that relates well to the uses bordering the street and allows for contiguous development
        - Interconnected network of facilities that increases travel route options and allows short trips to be completed off arterial roadways
        - Appropriate pedestrian and bicycling facilities that promote safety and maximize access
        - Well-designed and low-impact street lighting where appropriate within community areas
        - Appropriate landscaping that benefits the surroundings and encourages travel speeds compatible with all uses and adjacent land uses
        - Well-maintained facilities

- POLICY CIR 4.2.2: Support of Multimodal Projects. The County shall support and promote plans that propose multimodal use of the highway system. Encourage the use of roundabouts over stoplights where feasible.

- GOAL CIR 4.4: Bicycle and Pedestrian. Encourage non-auto transportation throughout Plumas County by providing a safe, comprehensive and integrated system of facilities for pedestrians, cyclists and other non-motorized modes of transportation.
  - POLICY CIR 4.4.1: Bicycle and Pedestrian Facility Network. The County will support or consider establishing a network of multi-use trails, sidewalks and lanes to facilitate safe and direct off-street bicycle and pedestrian travel and will provide bike racks where appropriate.
  - POLICY CIR 4.4.2: Bicycle and Pedestrian Facilities in New Development. The County will amend the County Code to include standards for safe pedestrian and bicyclist accommodations, including:
    - "Complete Streets" policies that foster equal access by all users in the roadway design
    - Bicycle and pedestrian access internally and in connection to other areas through bikeways and pedestrian paths
    - Safe access to public transportation and other non-motorized uses through construction of dedicated paths
    - Safe road crossings at major intersections, especially for school children and seniors
    - Adequate, convenient and secure bike parking at public and private facilities and destinations in all urban areas
    - Requiring new development and redevelopment projects to include bicycle facilities, as appropriate with the new land use
  - POLICY CIR 4.4.3: Inclusion of Bicycle and Pedestrian Access in New Transportation Projects. The County shall include safe and convenient bicycle and pedestrian access, where feasible and warranted, in all transportation improvement projects. Provide separated, safe and secure bicycle and pedestrian access as part of any roadway improvement work, where feasible and warranted. Ensure that access for pedestrians and bicyclists is available during construction.
- GOAL CIR 4.6: Environmental Enhancements/Climate Change. Protect and enhance the environment, both locally and globally, in the development and maintenance of the transportation network.
  - POLICY CIR 4.6.3: Greenhouse Gas (GHG) Reductions. The County shall consider GHG emissions as part of every transportation capital-improvement project decision and aggressively pursue projects that have positive GHG impacts and that are realistic given the rural nature of Plumas County, including transit programs, ridesharing programs, bicycle and pedestrian improvements, driver information strategies and maintenance of existing roadways to reduce vehicle emissions.
- IMPLEMENTATION MEASURES:
  - Complete and adopt an updated Bicycle Transportation Plan and Pedestrian Transportation Plan focusing on non-motorized travel within and between communities and use it to guide funding decisions to enhance the network.
  - Apply Complete Street design criteria in reviewing transportation and development projects.
  - Amend the County code to require consideration of bicycle and pedestrian facilities in new developments.

- Review roadway standards to require paving of additional roadways to reduce air and water pollution.

**Economics Element**

- GOAL ECON 5.2: Expand the Tourism Economy.
  - POLICY ECON 5.2.3: Development of Plumas County as a Recreation Destination. The County shall support projects and activities that help to enhance Plumas County's appeal as a recreation destination.
- GOAL ECON 5.9: Energy Efficiency and Transportation. Develop a sufficient connection between land use and transportation systems to maximize energy efficiency and minimize vehicle miles traveled.
  - POLICY ECON 5.9.6: Reduction in Single-Occupant Vehicular Travel. The County shall reduce the need for single-occupant vehicular travel by encouraging measures that ensure more occupants per vehicle, including making land-use provisions and incentives for the use of van pools, shared rides, and alternative modes of transportation.
  - POLICY ECON 5.9.7: Encouragement of Pedestrian and Bicycle Traffic. The County shall encourage pedestrian and bicycle traffic by including provision for bike lanes and bicycle-friendly communities, bicycle parking and for pedestrian amenities in site design and facility improvements in all major residential, commercial and industrial development projects or retrofits. Encourage the widening of shoulders along County roads and State highways to promote safe bicycle travel.
- IMPLEMENTATION MEASURES:
  - The County shall support the development of recreational events and activities that attract visitors on a year-round basis, including but not limited to, athletic events and outdoor activities.
  - The County shall encourage destination recreation and tourism through projects on private lands. On public lands, coordinate efforts with Federal and State agencies. Some examples of activities are:
    - Promoting motorcycle tourism, fishing, boating, golf, destination education facilities, viewing fall colors, ice fishing, and other outdoor activities during the four seasons
    - Developing snowmobile staging areas with parking and restrooms open in winter
    - Establishing routes, an overnight hut system, parking and trailhead facilities, etc. for back-country ski touring/snowshoeing
    - Developing destination mountain biking and whitewater rafting/kayaking destinations within the County; including provision of parking and river put-in/takeout facilities
    - Developing guidebooks for mountain routes, etc.
    - Installing "Share the Road – Bicycles" signs to support organized bike rides and events and independent cycle touring as visitor activities
    - Establishing bicycle touring routes and the pursuit of funding to widen shoulders to safe widths for cyclists on these routes
    - Promoting agritourism and the development of specialty agricultural products
    - Promoting winter sports, destination hunting, fishing, and wildlife viewing
    - Coordinating the marketing message promoting recreational resources and the availability of lodging and food services to accommodate visitors

**Public Health and Safety Element**

- GOAL PHS 6.8: Healthy Communities. To support the community values for healthy lifestyles and access to health care facilities among residents of Plumas County

through the built environment and land-use decisions that play an important role in shaping the pattern of community development and in promoting good health and food security for visitors and County residents.

- POLICY PHS 6.8.1: Promotion of Healthy Communities. To the maximum extent feasible, the County shall strive through its land-use decisions to promote community health and safety for all neighborhoods in the County by encouraging patterns of development that are safe and influence crime prevention, promote a high-quality physical environment and encourage physical activity by means such as sidewalks and walking and biking paths that discourage automobile dependency in existing communities.
- POLICY PHS 6.8.2: Walkable Communities. The County shall require where feasible the development of parks, open space, sidewalks, and walking and biking paths that promote physical activity and discourage automobile dependency in all towns and communities.

- IMPLEMENTATION MEASURES:
  - The County shall develop a healthy community checklist for new residential, commercial, office and public developments that lists standards for land use, transportation, street design, parks, and open space.

**Conservation and Open Space Element**

- GOAL COS 7.8: Trails and Bikeway. To update and develop a countywide multiuse trail and bikeway system that is protective of private property interests and public resources and consistent with federal land management objectives.
  - POLICY COS 7.8.1: Regional Trail Network. The County shall consider development of a connected system of recreational trails to link communities and recreation areas throughout the county.
  - POLICY COS 7.8.2: Planning for Multi-use Trail Needs within the County. The County shall strive to prepare a Trial and Bikeway Master Plan in collaboration with other local, state and federal land managers that addresses countywide and individual community trail and bikeway needs. The plan shall evaluate the feasibility of a variety of alternative modes of transportation and trail types.
  - POLICY COS 7.8.3: Prioritize Trail Development. In developing new trial projects, the County shall consider as the highest priority those trails or bikeways that are on lands owned by the county or by cooperating State, Federal and private entities, or are located in public rights of way. Additional priorities will include those trail projects that complete a trail corridor, where only small portions are missing.
  - POLICY COS 7.8.5: Trail Signage. As part of future trail projects, the County shall ensure that adequate trail signage is included as part of trail design to help identify permitted trial uses, provide directions to relevant public areas, and address safety and public nuisance concerns to trail users and adjacent private property owners.
- IMPLEMENTATION MEASURES:
  - The County shall strive to prepare and maintain a Trails and Bikeways Master Plan as necessary to implement the goals, policies, and actions of the Conservation and Open Space Elements.
  - The County shall consider the establishment of and adjust, as appropriate, a recreation area/trail development impact fee based on a level of service to provide for funding that meets the actual cost, park acquisition, and development.
  - County staff shall pursue State and Federal grant funding, as staffing levels allow, for the acquisition and maintenance of recreational facilities, trails, and other programs consistent with the General Plan.

## Plumas County Regional Transportation Plan (2011)

The Plumas County Regional Transportation Plan (RTP) is divided into Policy, Action, and Financial elements. Items from each of these elements that are relevant to this Pedestrian/Bicycle Plan are listed below.

In describing the existing walking and bicycling environment in Plumas County, the RTP notes a lack of safe crossings on major roadways as a key challenge to pedestrian travel.

### Policy Element

- GOAL 5: A safe, convenient, and efficient non-motorized transportation system for bicyclists and pedestrians, which is part of a balanced overall transportation system.
  - OBJECTIVE 5.1: Encourage Development of Non-Motorized Facilities. Encourage the development of non-motorized facilities that will be convenient to use, easy to access, continuous, safe and integrated into a multimodal transportation network. The facilities should serve as many segments of the population, both resident and tourist, as possible.
    - POLICY 5.1.1: Include Non-Motorized Travel Modes in Planning. Include non-motorized transportation as a part of a complete street and transportation system.
    - POLICY 5.1.2: Bikeway System in the Region. Plan for, and provide a continuous and easily accessible bikeway system within the region.
    - POLICY 5.1.3: Multi-Modal Use of Road and Highway System. Support and promote plans that propose multimodal use of the highway system.
    - POLICY 5.1.4: Promote Non-Motorized Transportation. Promoting the County as a safe and enjoyable destination for bicycling and pedestrian use. This may include bicycle and pedestrian related ITS applications.

### Action Element

The following actions support Goal 5 or other initiatives related to walking and bicycling.

- SAFETY. Safety is monitored by evaluating SWITRS, National Highway Traffic Safety Administrations Traffic Accident Statistics and local agency incident data. By evaluating the type, location and fault of traffic safety incidents the County can work to identify solutions and to reduce the potential for accidents.
- EQUITY AND COST EFFECTIVENESS. Equity can be measured by comparing the distribution of transportation funds to the prioritized transportation needs as established in the RTP. Since funding mechanisms are typically very constrained as to what they can be spent on, the evaluation should occur per funding source and compared to mode of travel and demographic group benefited. Cost effectiveness can be evaluated through asset management systems and performing a cost benefit analysis on proposed projects as well as monitoring the effectiveness of completed projects.
- AIR QUALITY. Air quality in Plumas County is monitored by the Northern Sierra Air Quality Management District (NSAQMD) whose mission is to achieve and maintain the Federal and State Ambient Air Quality Standards. Other responsible parties in the monitoring of air quality are the CEQA lead agencies, which have the responsibility to show that the projects they propose to approve do not substantially contribute to greenhouse gas emissions per the requirements of the California Global Warming Solutions Action. Local lead agencies can monitor actions that contribute to GHG through land use, transportation and infrastructure investment decisions that lead to a reduction in VMT.
- PEDESTRIAN MOBILITY. Pedestrian mobility can be monitored through surveys for the availability of contiguous and full service pedestrian infrastructure.

Other data sources to monitor pedestrian mobility may come from the US Census statistics on travel mode and the availability of mixed land uses that may promote walking and other non-motorized transportation modes.

- BICYCLE MOBILITY. Similar to the methods for monitoring pedestrian mobility, bicycle mobility can be monitored through the assessment of contiguous and complete bicycle facilities, monitoring of bike rack use, and general trends in the US Census statistics.

### Financial Element and Project List

The only project relevant to this Active Transportation Plan listed in the RTP is a sidewalk project in Greenville that is scheduled for construction in 2016.

## Non-Motorized Pathways Feasibility Study (2003)

This Non-Motorized Pathways Feasibility Study focuses primarily on the Quincy area, identifying opportunities to close gaps in the existing disconnected bicycle and pedestrian network. Equestrian needs were also considered when developing recommendations.

Preferred alignments in this plan are shown in Figure A-1.

## American Valley Recreational Trails Master Plan (2005)

The American Valley Recreational Trails Master Plan outlines a vision for multi-use non-motorized trails through the American Valley. It identifies existing formal or user-defined trails, and includes recommendations to improve trails where necessary and provide upgraded access and amenities for trail users.

A map of the trails is shown in Figure A-2.

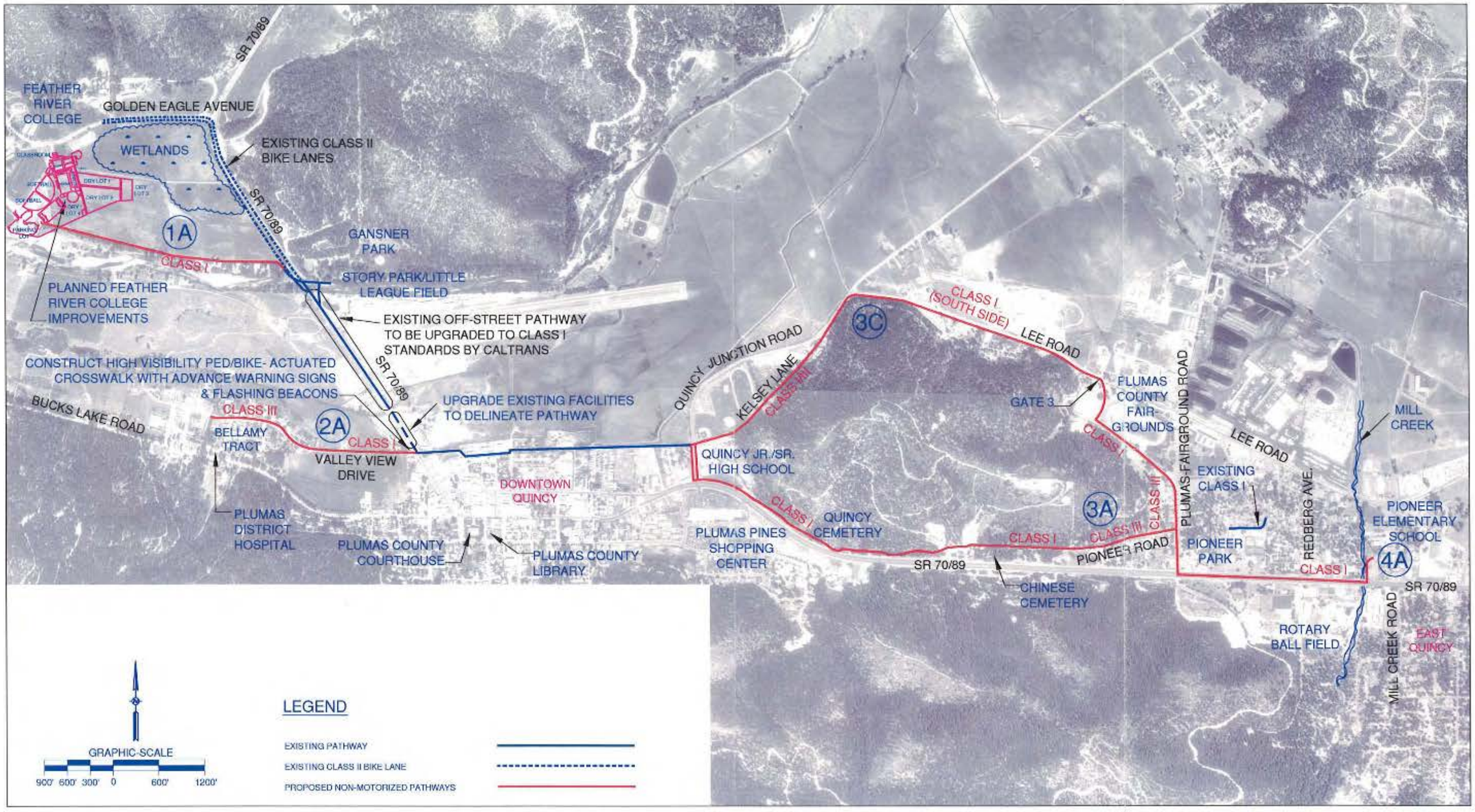



*Figure A-1: Non-Motorized Pathways Feasibility Study – Preferred Alignments*

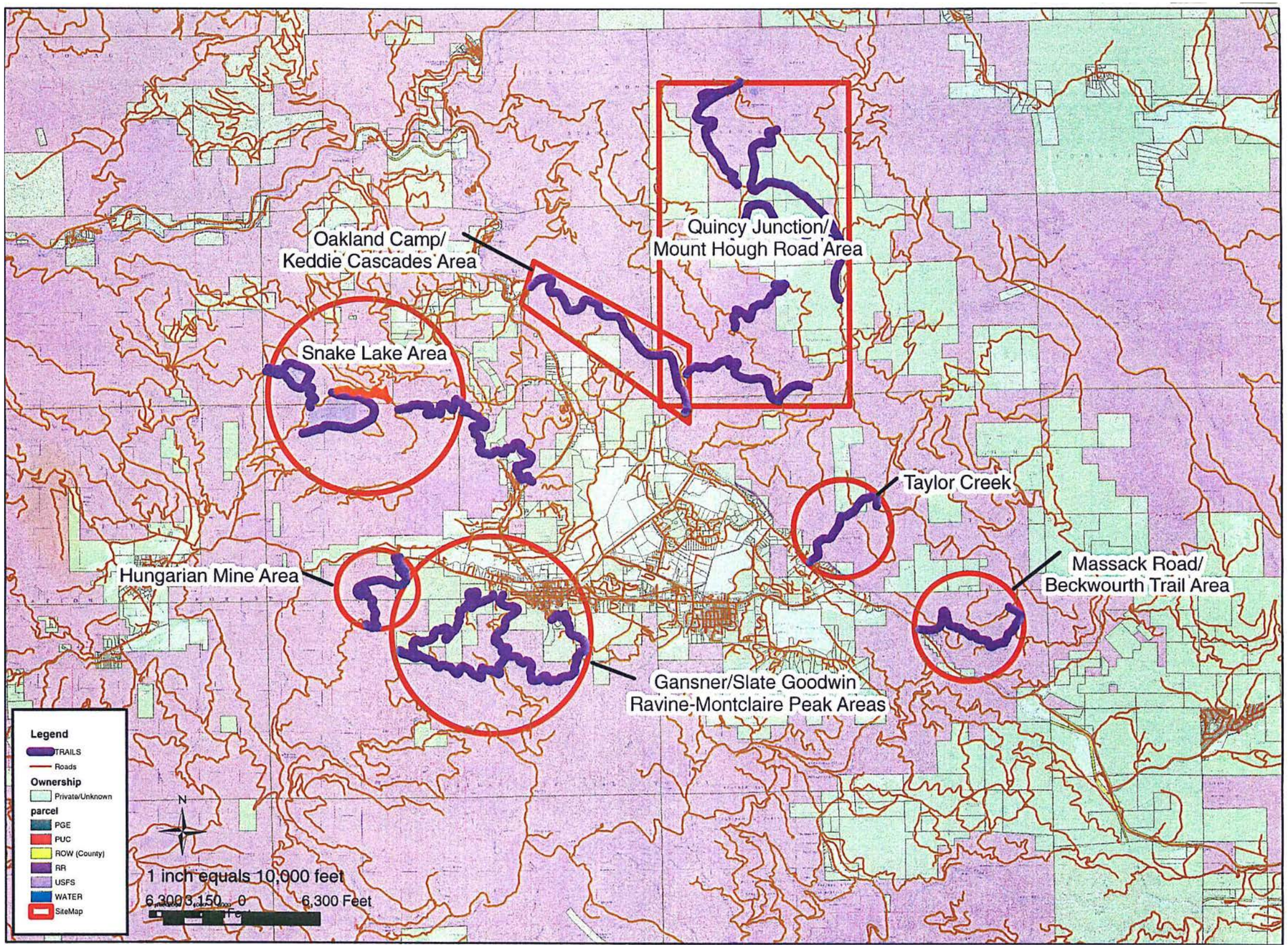



*Figure A-2: American Valley Recreational Trails*

## City of Portola General Plan 2020 (2012)

The City of Portola is the only incorporated city in Plumas County. Its General Plan, last updated in 2012, emphasizes recreation and tourism as key economic drivers for the community. Relevant goals and policies for this Active Transportation Plan are listed below.

**Circulation Element**

- GOALS
  - GOAL C-2: Extend the circulation network, including streets, bike and pedestrian paths, and transit routes to in-fill areas and new growth areas in a manner that is energy and cost efficient, safe, and minimizes impact on the natural environment.
  - GOAL C-3: Improve the circulation network, including streets and parking, rail, transit, and pedestrian paths to enhance economic development and tourism.
  - GOAL C-4: Expand transportation alternatives within the City, including public transit, walking and bicycling.
- POLICIES
  - POLICY C-P-4: New development will pay a fair share of the costs of street and other traffic and transportation improvements based on the traffic generated and impacts on service levels.
  - POLICY C-P-7: All roads must be designed to minimize hazards from snow and ice conditions and facilitate snow plowing.
  - POLICY C-P-8: Street improvements will be designed to minimize traffic patterns that will increase air pollution.
- IMPLEMENTATION
  - IMPLEMENTATION C-I-5: Require new development to participate in the funding of collector and arterial street improvements identified in the Master Street Plan.
  - IMPLEMENTATION C-I-6: Adopt street standards that provide flexibility in design with regard to topography and sensitive environmental conditions, and land use intensity.

The Circulation Element also includes policies and implementation strategies specific to walking and bicycling. These include:

- POLICIES
  - POLICY C-P-20: Develop a system of sidewalks and bikeways that promote safe walking and bicycle riding for both residents and tourists.
  - POLICY C-P-21: Establish a primary pedestrian system linking the Federal Park land with the Railroad Museum via Commercial Street.
  - POLICY C-P-23: Provide spur or branch walkways connecting to the residential neighborhoods and primary public destinations.
  - POLICY C-P-24: Route sidewalks so that they connect to major public parking areas, transit stops, and intersections with the bikeway system.
  - POLICY C-P-25: Provide pedestrian links to hiking trails in the area around the City.
  - POLICY C-P-26: Provide adequate bicycle parking facilities at commercial, business/professional, and light industrial uses.
  - POLICY C-P-27: Improve safety conditions, efficiency, and comfort for bicyclists, transit riders, and pedestrians, while ensuring compliance with Americans with Disabilities Act (ADA) requirements.
    - Use steps to avoid steeper grades on sidewalks.

- Give the walks a minimum cross pitch of approximately 2 percent.
- Locate important walkways and intersections where they will not be in prolonged shade.

- IMPLEMENTATION POLICIES
  - IMPLEMENTATION C-I-22: Install prominent signs at the east and west entries to the City on Sierra Street warning motorists of the presence of pedestrians and bicyclists.
  - IMPLEMENTATION C-I-23: Develop a design for improvement and re-striping of Gulling Street Bridge to accommodate, at minimum, a Class II bike path in both directions.
  - IMPLEMENTATION C-I-24: Seek funding to expand the width of the Gulling Street Bridge to accommodate a bike path in each direction and provide access to the open space area along the south side of the river.
  - IMPLEMENTATION C-I-25: Seek funding to provide a pedestrian/bike bridge across the river connecting a bike and pedestrian path on the south side of the river to the Riverwalk Park on the north side.
  - IMPLEMENTATION C-I-26: Any future crossing of the river and railroad shall include bike lanes in each direction.
  - IMPLEMENTATION C-I-27: Increase bicycle safety by:
    - Providing bicycle paths and lanes that promote bicycle travel.
    - Sweeping and repairing bicycle lanes and paths on a continuing, regular basis.
    - Ensuring that bikeways are delineated and signed in accordance with Caltrans standards and lighting is provided, where needed.
    - Ensuring that all new and improved streets have bicycle-safe drainage grates and are free of hazards such as uneven pavement and gravel.
  - IMPLEMENTATION C-I-28: Add bike lanes whenever possible in conjunction with road reconstruction or re-striping projects and subdivision development and related off-site improvements.
  - IMPLEMENTATION C-I-29: Acquire the right-of-way for the bike and pedestrian path along the north side of the river linking the Gulling Street Bridge to the Federal Park (the Riverwalk Bike Trail).
  - IMPLEMENTATION C-I-30: Seek funding from the US Forest Service to connect the Riverwalk Bike Trail through the Federal Park to Rocky Point Road.
  - IMPLEMENTATION C-I-31: Make bikeway improvements an on-going funding objective by:
    - Continuing to consider financing bikeway design and construction as part of the City's annual construction and improvement budget.
    - Incorporating bikeway improvements as part of a five year Capital Improvements Plan.
    - Pursuing grant funding and other sources for new bikeways.
    - Pursuing funding for ancillary facilities such as river access for handicapped persons, secured bicycle parking, parking areas at mountain bike and touring bike trail heads, drinking fountains and restrooms.
  - IMPLEMENTATION C-I-32: Require provision of secure covered bicycle parking at all parks and public gathering places, multifamily residential, commercial, industrial and office/institutional uses.
  - IMPLEMENTATION C-I-33: Encourage Plumas County Transit to provide bike racks on the buses serving the Portola community. Provide bike racks on a local shuttle service or jitneys used for special events.
  - IMPLEMENTATION C-I-34: Encourage resident and tourist use of the bike trail system by preparing a

map of the bikeways and trail heads within and near the City.

- IMPLEMENTATION C-I-35: Ensure that City standards for pedestrian facility design conform to the Americans with Disabilities Act (ADA) requirements. Implement a program to install handicapped ramps at all intersections as street improvements are being installed. Intersections in the core area along Sierra Street, Gulling Street, and Commercial Street shall have priority for funding the handicap accessibility improvements.
- IMPLEMENTATION C-I-36: Provide for pedestrian access in the Old Town area, along Sierra Street and in other high-use areas by:
  - Constructing wide sidewalks where feasible to accommodate increased pedestrian use.
  - Providing pedestrian bulbs extending into intersections and at crosswalks to reduce walking distances and provide a safe peninsula for pedestrians.

## Statewide Plans and Policies

### AB 32 – Global Warming Solutions Act (2006) & SB 375 – Sustainable Communities and Climate Protection Act (2009)

The past ten years have seen an expansion of legislative and planning efforts in California to reduce emissions of greenhouse gases (GHGs) in order to mitigate climate change. Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, aims to reduce the state's GHG emissions to 1990 levels by 2020 and to 80 percent below 1990 levels by 2050. Meanwhile, Senate Bill (SB) 375, passed into law in 2008, is the first in the nation that will attempt to control GHG emissions by directly linking land use to transportation. The law required the state's Air Resources Board to develop regional targets for reductions in GHG emissions from passenger vehicles for 2020 and 2035 as a way of supporting the targets in AB32. These bills apply to counties with populations greater than 50,000.

### AB 1358 – Complete Streets Act (2008)

In future years, all jurisdictions will have to incorporate complete streets into their planning. Assembly Bill 1358 requires "that the legislative body of a city or county, upon any substantive revision of the circulation element of the general plan, modify the circulation element to plan for a balanced, multimodal transportation network that meets the needs of all users [including] motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation...." This provision of the law went into effect on January 1, 2011, and has resulted in a new generation of circulation elements and a surge in complete streets policies around the state as general plans continue to be updated over time.

### SB 99 – Active Transportation Program Act (2013)

The Active Transportation Program was established by this legislation in 2013, and serves as the mechanism for distributing federal funds for local and regional efforts to promote walking and bicycling. It specifies goals that the funding will be disbursed to help meet, including increasing the mode shares of biking and walking trips, increasing safety for non-motorized users, and providing support to disadvantaged communities to promote transportation equity.

### California Transportation Plan 2040 (2016)

The California Transportation Plan (CTP 2014) is a long-range policy plan that presents a vision for California's future transportation system. It takes a comprehensive approach to provide for the state's future mobility needs in a manner that is economically, equitably, and environmentally responsible, and supports the overall vision of a low carbon and sustainable transportation system that enhances the quality of life. The CTP 2040 addresses the existing status and expected needs of the state's transportation system to optimize the movement of people, goods, services, and information to meet the state's future multimodal mobility needs for the people who live, work, and visit California. Through defined goals, policies, and strategies, the plan provides a common framework to help guide transportation decisions and investments that support a statewide, sustainable, and integrated multimodal transportation system.

## Toward an Active California: California State Bicycle and Pedestrian Plan (2017)

This Bicycle and Pedestrian Plan is the first for California. Mainly a policy document, the plan complements local and regional active transportation plans being developed across the state and supports agencies as they undertake their own efforts to improve the walking and bicycling environment in California. While Caltrans has the greatest control over state transportation facilities, it exerts considerable influence on bicycling and walking facilities on local roads through funding programs, design, and design guidance.

## Senate Bill 1 – Transportation Funding (2017)

Senate Bill 1, signed by the Governor on April 28, 2017, provides an additional $100 million per year statewide for the Active Transportation Program, which is a program that dedicates funding for bike lanes, pedestrian paths, sidewalks, safe routes to schools, and other projects that help reduce reliance on the automobile.

## Caltrans Complete Streets Policy (2001) and Deputy Directive 64 (Revised, 2014)

In 2001, the California Department of Transportation (Caltrans) adopted Deputy Directive 64, "Accommodating Non-Motorized Travel," which contained a routine accommodation policy. The directive was updated in 2008 as "Complete Streets – Integrating the Transportation System." The policy includes the following language:

> The Department views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in California and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system.
>
> The Department develops integrated multimodal projects in balance with community goals, plans, and values. Addressing the safety and mobility needs of bicyclists, pedestrians, and transit users in all projects, regardless of funding, is implicit in these objectives. Bicycle, pedestrian and transit travel is facilitated by creating "complete streets" beginning early in system planning and continuing through project delivery and maintenance operations.

In part to address these issues, Caltrans adopted the Complete Streets Implementation Action Plan in 2010. The plan sets forth actions under seven categories to be completed by various Caltrans districts and divisions within certain timelines to institutionalize complete streets concepts and considerations within the department. The action categories include updating departmental plans, policies, and manuals; raising awareness; increasing opportunities for training; conducting research projects; and actions related to funding and project selection. As one of its implementation activities, Caltrans updated the Highway Design Manual in large part to incorporate multi-modal design standards.

# Federal Plans and Policies

## US DOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations (2010)

The United States Department of Transportation (US DOT) issued this Policy Statement to support and encourage transportation agencies at all levels to establish well-connected walking and bicycling networks. The following Policy Statement and actions are relevant to the Plumas County ATP.

### Policy Statement

The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide – including health, safety, environmental, transportation, and quality of life – transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes.

### Recommended Actions

The DOT encourages States, local governments, professional associations, community organizations, public transportation agencies, and other government agencies, to adopt similar policy statements on bicycle and pedestrian accommodation as an indication of their commitment to accommodating bicyclists and pedestrians as an integral element of the transportation system. In support of this commitment, transportation agencies and local communities should go beyond minimum design standards and requirements to create safe, attractive, sustainable, accessible, and convenient bicycling and walking networks. Such actions should include:

- Considering walking and bicycling as equals with other transportation modes: The primary goal of a transportation system is to safely and efficiently move people and goods. Walking and bicycling are efficient transportation modes for most short trips and, where convenient intermodal systems exist, these non-motorized trips can easily be linked with transit to significantly increase trip distance. Because of the benefits they provide, transportation agencies should give the same priority to walking and bicycling as is given to other transportation modes. Walking and bicycling should not be an afterthought in roadway design.
- Ensuring that there are transportation choices for people of all ages and abilities, especially children: Pedestrian and bicycle facilities should meet accessibility requirements and provide safe, convenient, and interconnected transportation networks. For example, children should have safe and convenient options for walking or bicycling to school and parks. People who cannot or prefer not to drive should have safe and efficient transportation choices.
- Going beyond minimum design standards: Transportation agencies are encouraged, when possible, to avoid designing walking and bicycling facilities to the minimum standards. For example, shared-use paths that have been designed to minimum width requirements will need retrofits as more people use them. It is more effective to plan for increased usage than to retrofit an older facility. Planning projects for the long-term should anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements.
- Integrating bicycle and pedestrian accommodation on new, rehabilitated, and limited-access bridges: DOT encourages bicycle and pedestrian accommodation on

bridge projects including facilities on limited-access bridges with connections to streets or paths.

- Collecting data on walking and biking trips: The best way to improve transportation networks for any mode is to collect and analyze trip data to optimize investments. Walking and bicycling trip data for many communities are lacking. This data gap can be overcome by establishing routine collection of non-motorized trip information. Communities that routinely collect walking and bicycling data are able to track trends and prioritize investments to ensure the success of new facilities. These data are also valuable in linking walking and bicycling with transit.
- Setting mode share targets for walking and bicycling and tracking them over time: A byproduct of improved data collection is that communities can establish targets for increasing the percentage of trips made by walking and bicycling.
- Improving non-motorized facilities during maintenance projects: Many transportation agencies spend most of their transportation funding on maintenance rather than on constructing new facilities. Transportation agencies should find ways to make facility improvements for pedestrians and bicyclists during resurfacing and other maintenance projects.

# Appendix B. Community Outreach

The Plumas County Pedestrian/Bicycle Plan involved extensive community outreach throughout the process. Community workshops were held, a survey was distributed, and Plan materials and outreach information was shared through the project website. This appendix presents the details for each aspect of the Plan outreach.

## Community Survey

This section presents the results of a community survey made available online to Plumas County residents and visitors to gather feedback on the development of this Plan.

The online survey was available from October 13, 2015, through December 16, 2015. A total of 223 responses to the survey were received.

Summary data for each question is presented on the following pages.

### Survey Respondents

**What area of the County do you live in?**

More than one-third of survey respondents live in the Chester area and just over one-quarter live in Quincy, as shown in Figure B-1.

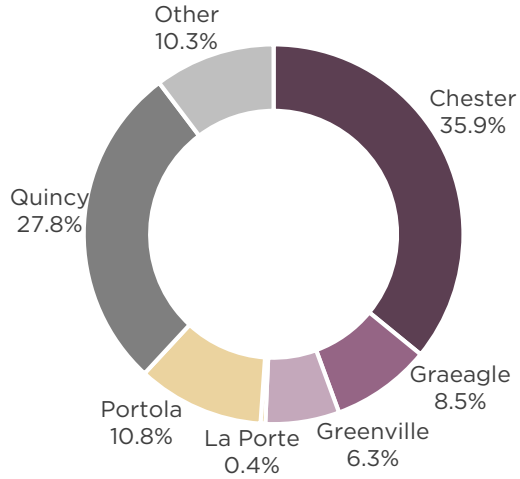



*Figure B-1: Survey respondents by community*

Communities listed by respondents who selected "other" included:

- Beckwourth
- Clear Creek
- Clio (2 respondents)
- Cromberg

- Indian Valley (2)
- Lake Almanor (2)
- Lake Davis
- Maybe
- Meadow Valley (5)
- Sierra Valley
- Taylorsville (3)

Additionally, one respondent reported living in Quincy but working in Chester, and one respondent lives in Sierra County but frequently shops in Portola and Graeagle.

## Bicycling in Plumas County

### Why do you bike? (Check all that apply)

Survey respondents most commonly reported bicycling for pleasure, as shown in Figure B-2. Other popular reasons for bicycling include exercise or health purposes, on-road recreation, and off-road recreation.

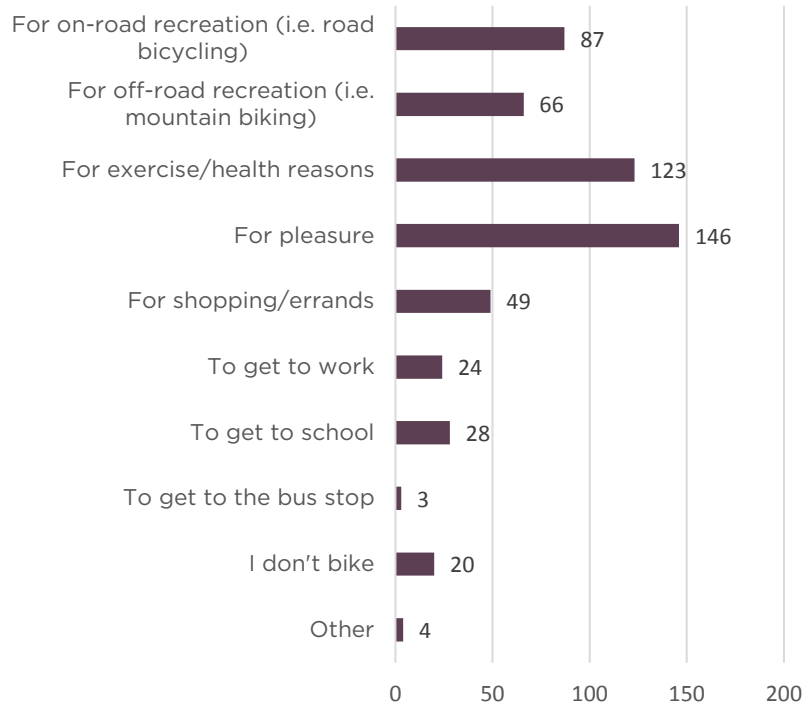



*Figure B-2: Reasons for bicycling*

Respondents who selected "other" provided the following comments:

- Bicycling is faster than walking
- I drive to Quincy to bicycle for recreation, because the roads feel unsafe
- Desire for family bicycling facilities separated from traffic

**On a scale of 0 to 4, where 0 is "never" and 4 is "several times per week," how often do you bicycle?**

Most respondents indicated they bike most often for exercise or recreation and rarely to access transit, as shown in **Figure B-3**.

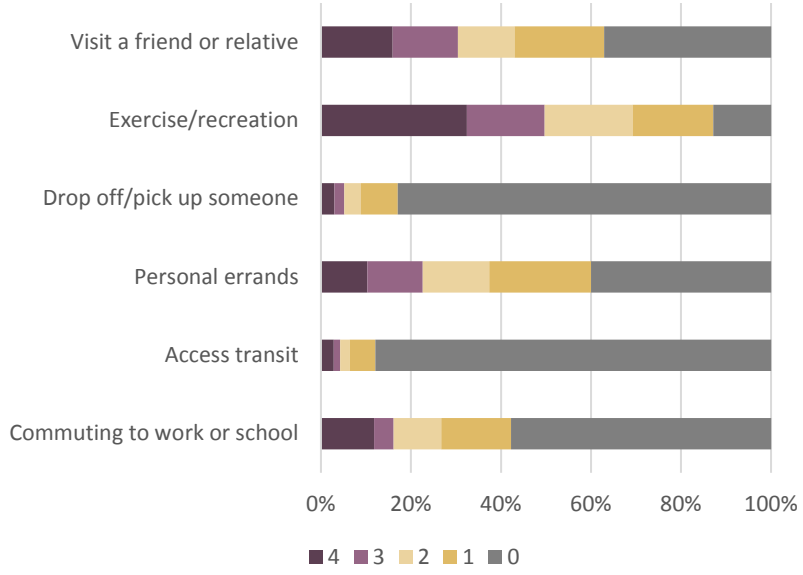



*Figure B-3: Frequency of bicycling*

**What is the average distance of your bicycle trips?**

Survey respondents indicated their bicycle trips are mostly between two and five miles (**Figure B-4**).

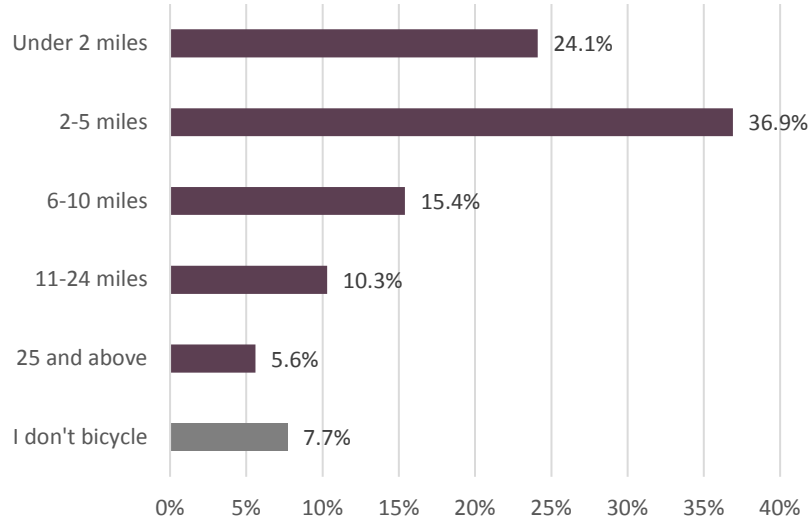



*Figure B-4: Distance of bike trips*

**Where are your favorite places or routes to bike? Please be specific.**

Due to the open-ended nature of this question, respondents often answered in three ways: destination, trip purpose, and/or trip route. As shown in Figure B-5, most respondents provided route information.

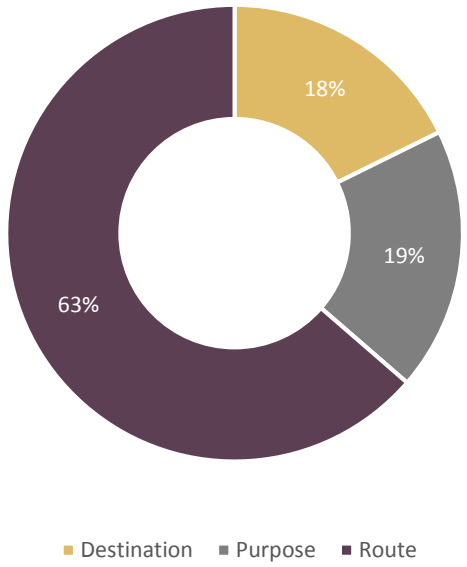



*Figure B-5: Response types of favorite routes and places to bike*

Destinations included downtown areas, grocery stores, and local parks. Trip purposes included shopping, visiting friends, work/school, or for exercise. The respondents who provided route information mostly identified off-street trails and fire roads that they prefer to ride a bike on. On-street routes mostly included those with low vehicle traffic or with wide shoulders.

**What prevents you from biking more often?**

The three most common response to this question involved too many cars or cars driving too fast, and no separate space for bicycles. Figure B-6shows the full responses.

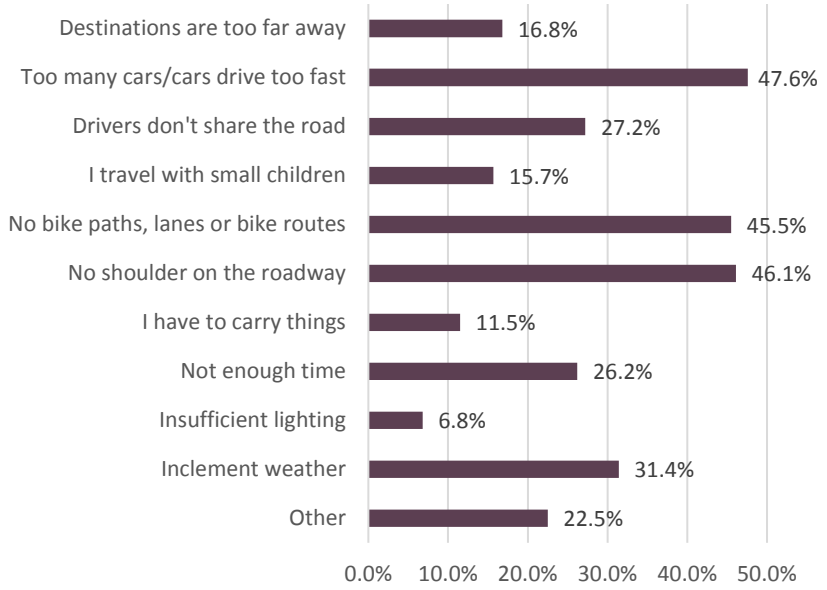



*Figure B-6: Things that prevent more bicycle riding*

"Other" responses included laziness, lack of maintenance on existing roads and trails, destinations are too far away, and weather.

**Where are the most difficult places for you to bike and why?**

Most respondents report that Highway 70 is the most difficult place to bicycle in Plumas County (see **Figure B-7**).

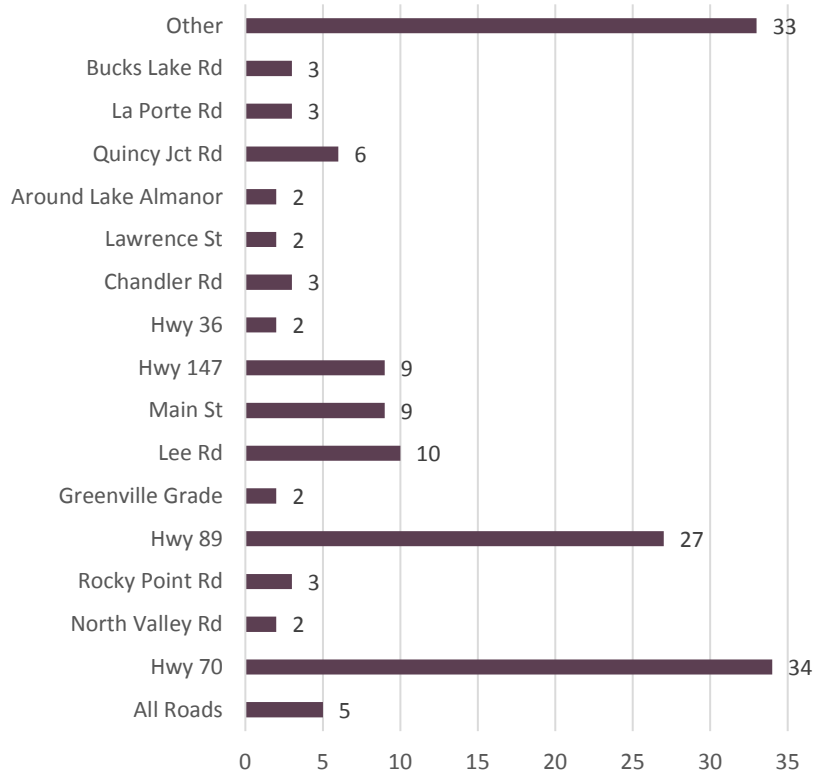



*Figure B-7: Difficult places to bike*

Locations noted as "other" include Magnolia Avenue, Joy Way, West Avenue, Genesee Road, Feather River Drive, First Avenue, Lakes Basin, Beckwourth Peak Road, Commercial Street, A15, and Forgay Road. Seven respondents noted that roadways with rocks, gravel, or mud on the shoulders make it difficult to bike. Also, 12 respondents noted that it is hard to ride a bicycle uphill.

**Where would you bike if you could?**

This open-ended question garnered two types of responses. Most answered with specific places they would like to ride to, as shown in **Figure B-8**.

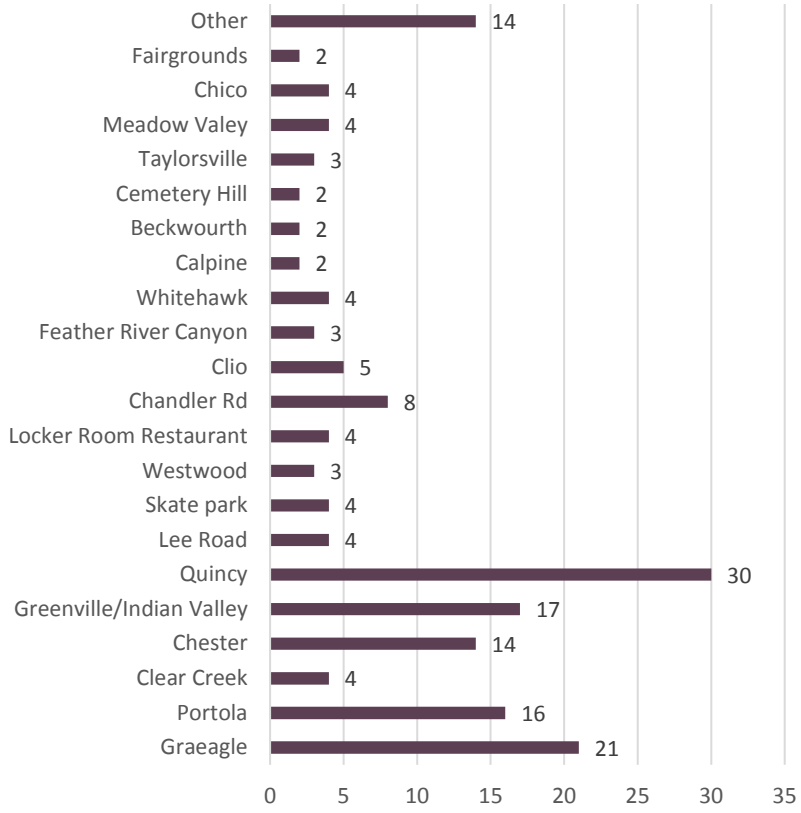



*Figure B-8: Places respondents would like to ride to*

The single answers listed under "other" mostly consisted of locations within or close to Plumas County including Cromberg, Main Street, Johnsville, Sierra City, Indian Falls,

Hallelujah Junction, Red Bluff, Susanville, Crescent Mills, Blairsden, and Feather River College. Other single responses included Truckee, Portland, Oregon, and Paris.

The other types of responded were more general, as shown in Figure B-9.

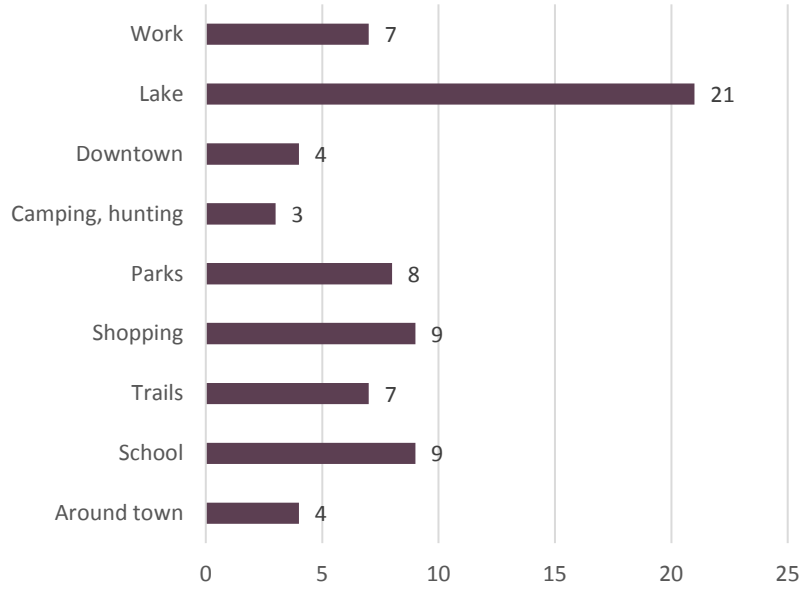



*Figure B-9: General places respondents would like to bike to*

The "lake" response was mostly generic, but did include two for Lake Davis and four for Lake Almanor.

**What can be done to encourage you to bicycle in Plumas County?**

Most respondents report that more trails or on-street bicycle facilities would encourage them to ride a bike more (Figure B-10).

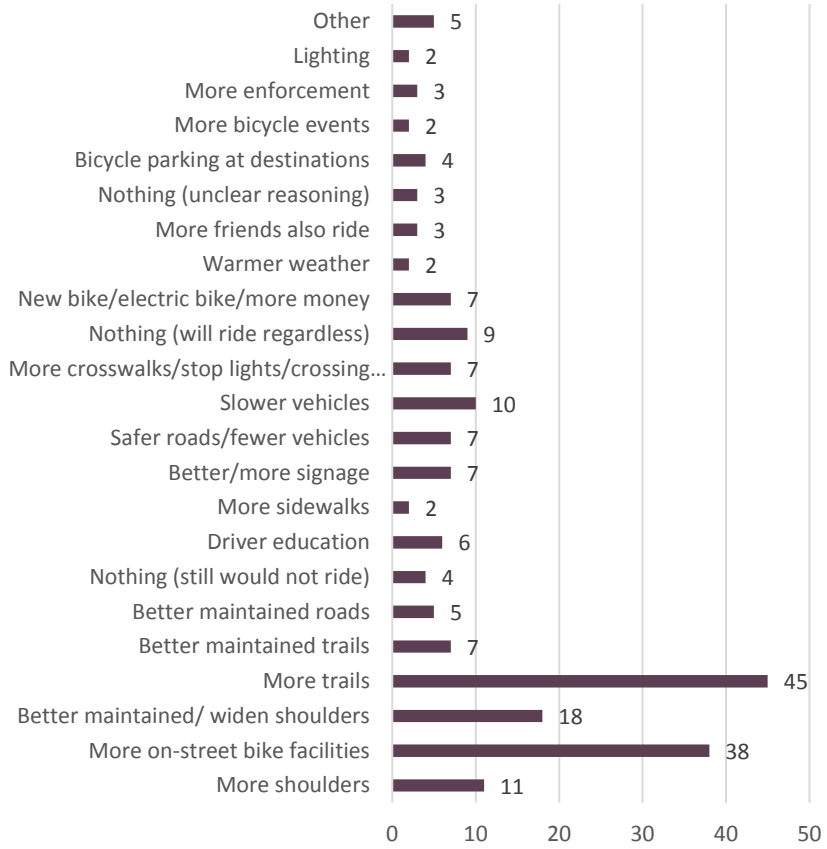



*Figure B-10: Bicycling encouragement*

"Other" category responses include bike racks on buses, more bike rest stops, more bicycle/pedestrian bridges, better trail maps, or learning how to ride a bicycle.

**Why do you walk?**

The top three answers for why respondents walk were for exercise or their health, for recreation, and for pleasure or to walk their pets, as shown in **Figure B-11**.

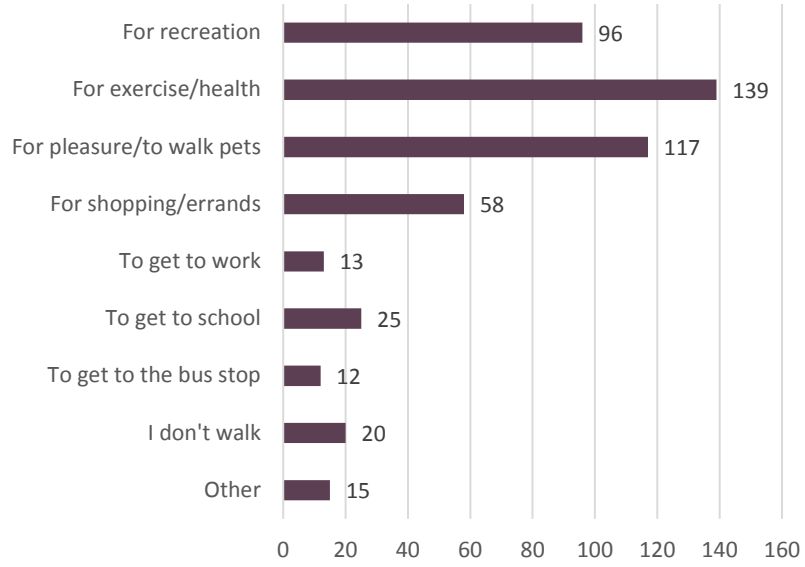



*Figure B-11: Why repsondents walk*

Respondents who selected other indicated they walk to go hunting, on field trips, to visit a friend/neighbor, or for photography.

**On a scale of 0 to 4, where 0 is "never" and 4 is "several times per week," how often do you walk?**

Respondents indicated they mostly walk several times per week for exercise or recreation. About 20 percent report that they walk to visit a friend or relative multiple times per week (**Figure B-12**).

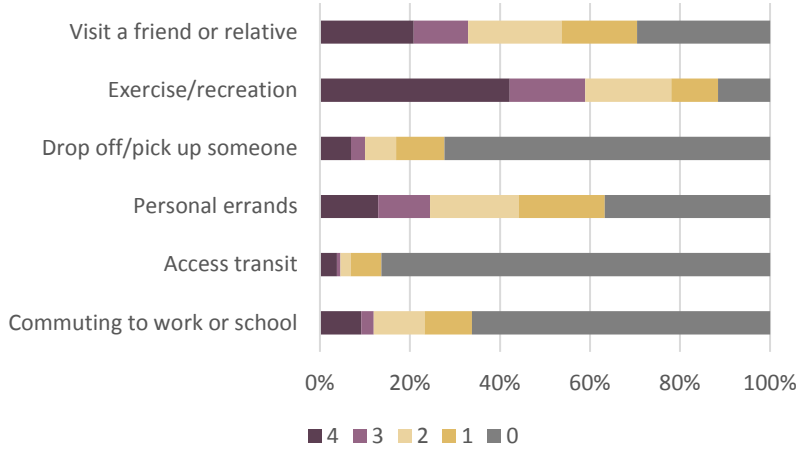



*Figure B-12: How often respondents walk*

**What is the average distance of your walking trips?**

Nearly 40 percent of respondents indicated their average walking distance is more than two miles, followed closely by respondents who walk between one to two miles on average (see **Figure B-13**).

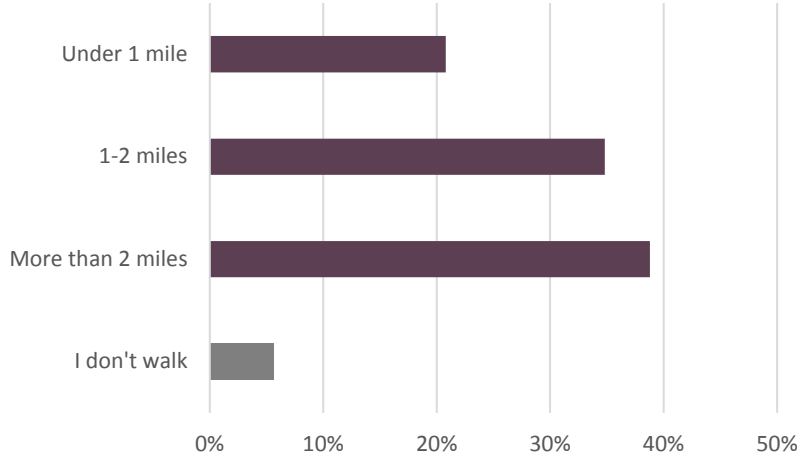



*Figure B-13: Average walking distance*

**Where are your favorite places to walk?**

This open-ended question garnered both specific locations and generic answers. **Figure B-14** shows the specific locations reported.

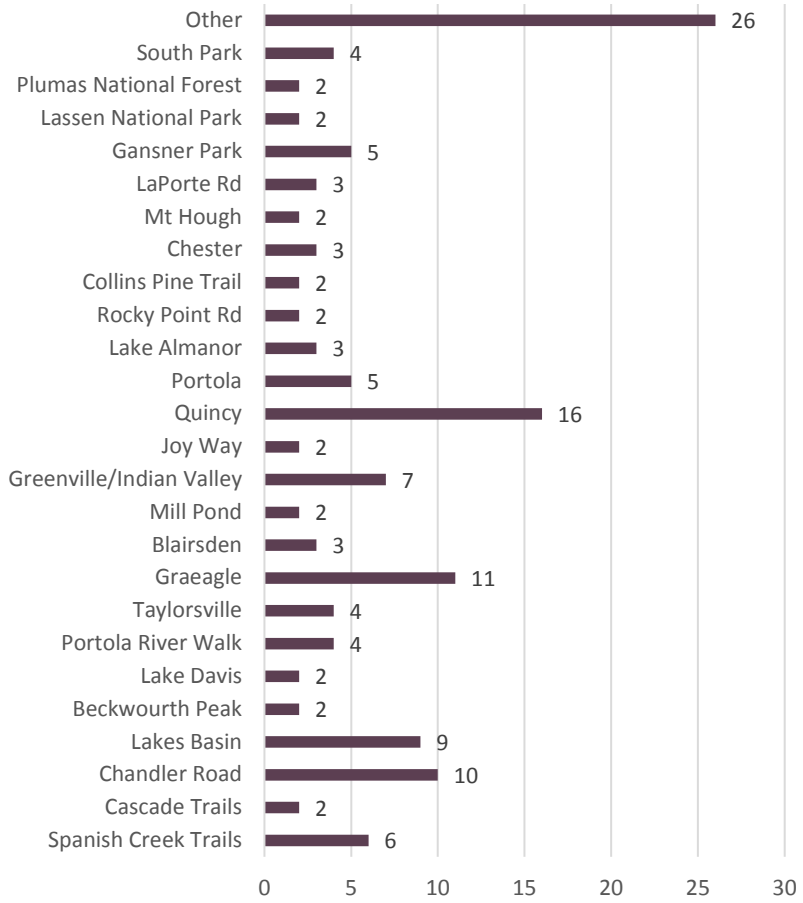



*Figure B-14: Favorite places to walk in Plumas County*

The single responses listed under "other" include Mills Peak, water tower, Magnolia Avenue, Sierra Avenue, Meadow Valley, Stover Mountain, First Avenue, West Shore Bike Trail, Johnsville, C Road, Whitehawk, Crocker Meadow, Grizzly Valley, Eureka Peak, Gold Valley, Spencer Lake, Pacific Crest Trail, Smith Lake, Rock Lake Trail, Squaw Queen, the airport, Fairgrounds, Juniper Lake Road, Ski Hill, and Butt Valley Reservoir.

General responses are shown in **Figure B-15**. The most common answer was in the woods or on trails.

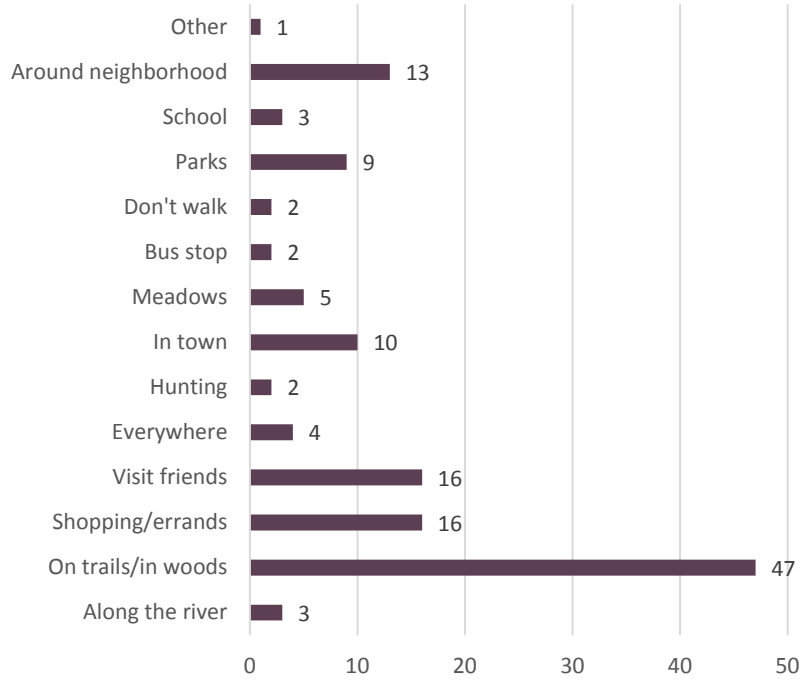



*Figure B-15: General favorite places to walk*

The single "other" answer was "the beach."

**What prevents you from walking more often?**

**Figure B-16** shows that the highest response for why respondents do not walk more was the lack of time. However, this is closely followed by the distance to destinations is often too great, there are too many cars on the road that travel fast, lack of sidewalks, and inclement weather. Respondents could select more than one answer; values will not add to 100 percent.

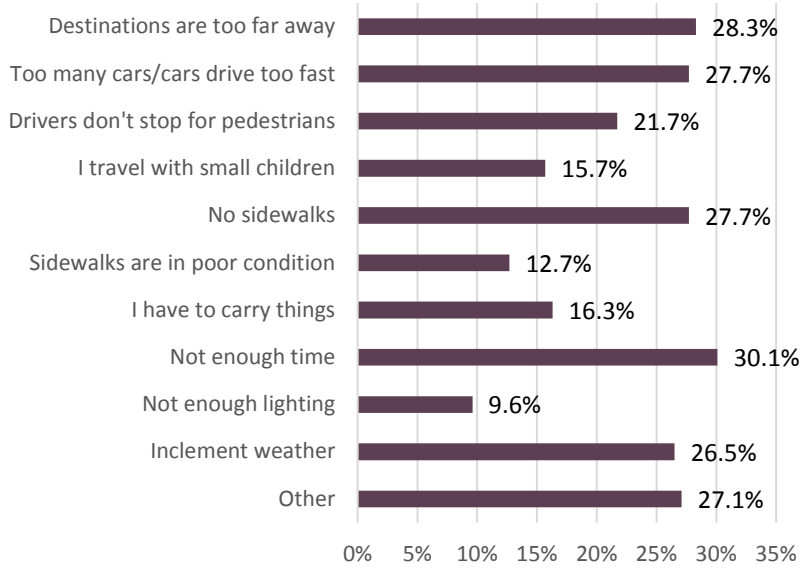



*Figure B-16: What prevents more walking*

Those who responded with "other" reported issues such as health, laziness, lack of sidewalks, safety, and far destinations prevent them from walking more. Others noted that they prefer riding a bicycle to walking.

**Where are the most difficult places for you to walk and why?**

This open-ended question garnered both specific and generic locations. Specific locations are shown in **Figure B-17**.

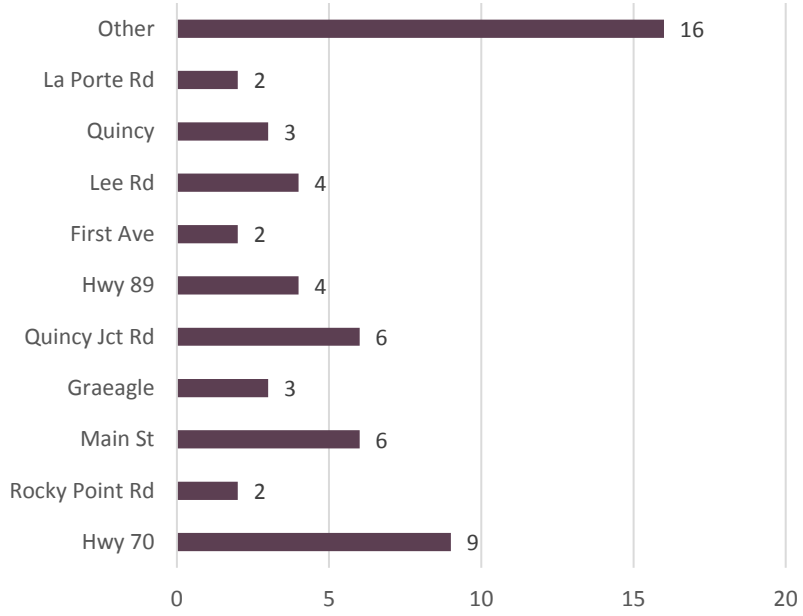



*Figure B-17: Difficult places to walk in Plumas County*

Single, specific responses that are listed under "other" include North Valley Road, Joy Way, Chester, Greenville, Feather River Drive, the downtown trailer park, Reno, Warner Valley, Bell Lane, Crescent Grade, Genesee Road, Chandler Road, Highway 36, Bucks Lake Road, and Portola.

General answers are shown in **Figure B-18** with roads without sidewalks getting the most responses. However, 10 respondents indicated they have no trouble walking around Plumas County.

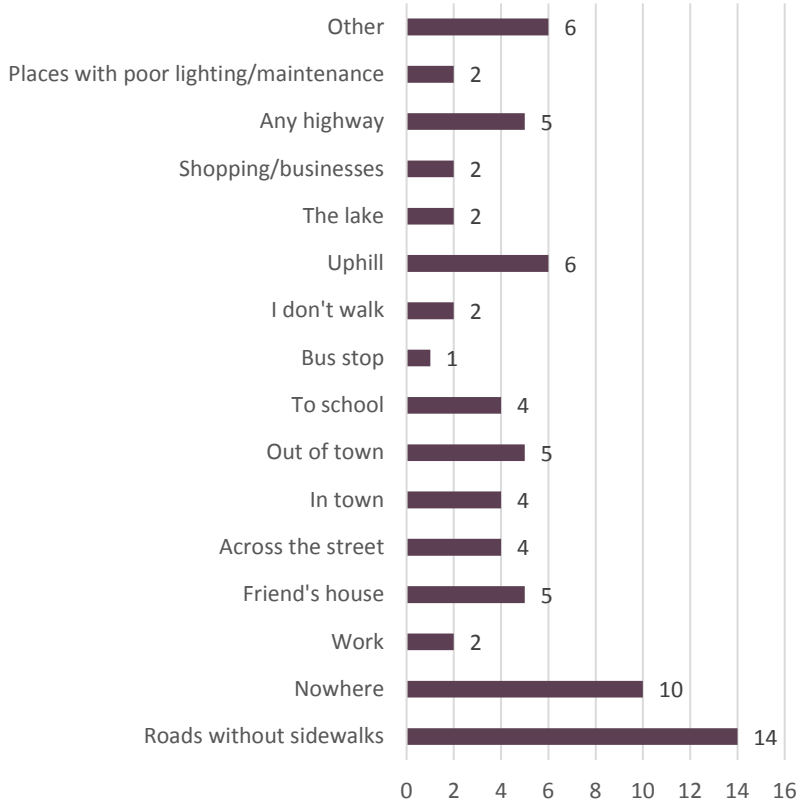



*Figure B-18: General difficult places to walk*

The single, generic responses listed under "other" include bus stops, meadows, parking lots, to town, the woods, and places with lots of traffic.

**Where would you walk if you could?**

This open-ended question garnered specific and generic responses. Figure shows the specific locations indicated by respondents.

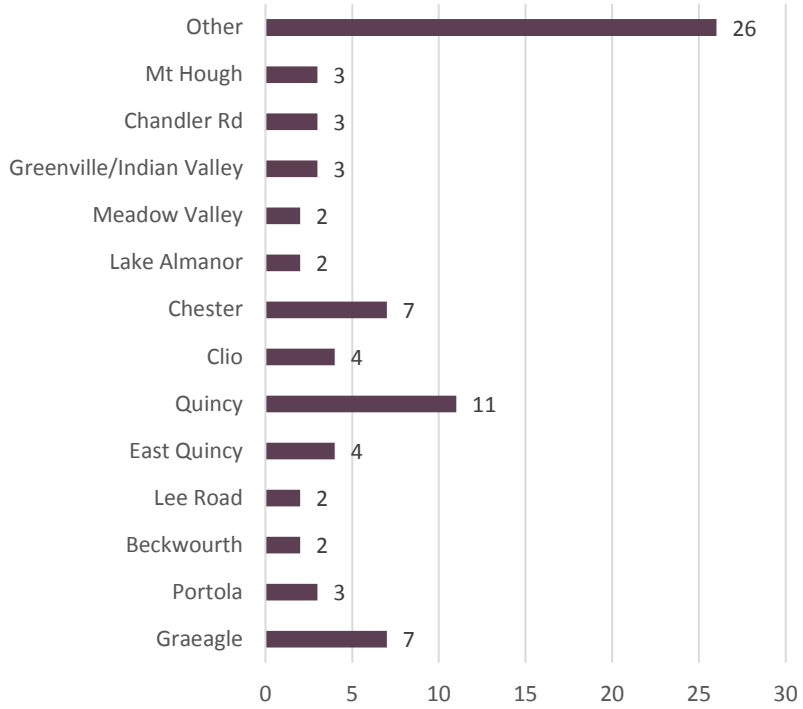



*Figure B-19: Where to walk in Plumas County*

The single, "other" responses included Taylorsville, Joy Way, Susanville, Lassen National Park, Whitehawk, Blairsden, Deer Lake, Westwood, Collins Pine Trail, Locker Room (restaurant), Bell Lane, Highway 70, Quincy Junction Road, Crescent Mills, and several specific schools around Plumas County. Some respondents also noted out of town locations such as Chico, Sacramento, and Disneyland.

General responses are shown in **Figure B-20**. Five responses tied for where people like to walk. They were "everywhere," to visit a friend or relative, school, shopping, or "I already walk."

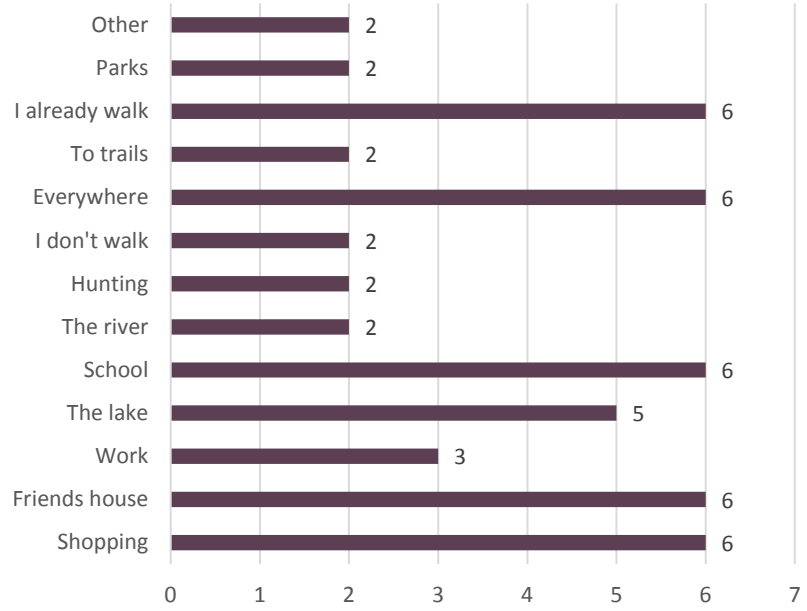



*Figure B-20: General places to walk*

The "other" responses were waterfalls and the movies.

**What can be done to encourage you to walk in Plumas County?**

Adding more trails was the most common answer for what would encourage respondents to walk more in Plumas County, as shown in Figure B-21.

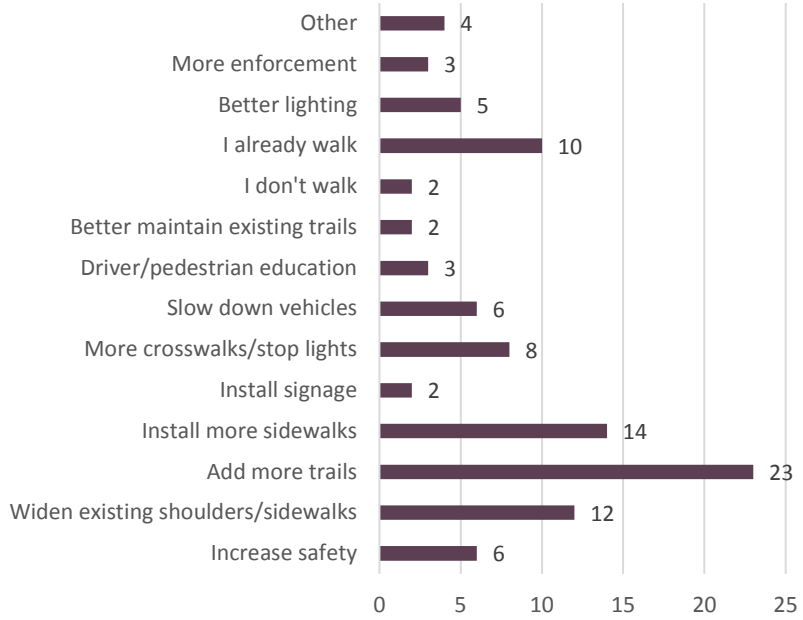



*Figure B-21: Walking encouragement*

Single responses listed under "other" include having shuttles to local destinations such as shopping areas or hiking, reroute logging trucks away from towns, having fewer vehicles on the roadways, and have more things to do on the trails.

**Is there one specific project (for example, a new sidewalk or bike path) you would like to see completed?**

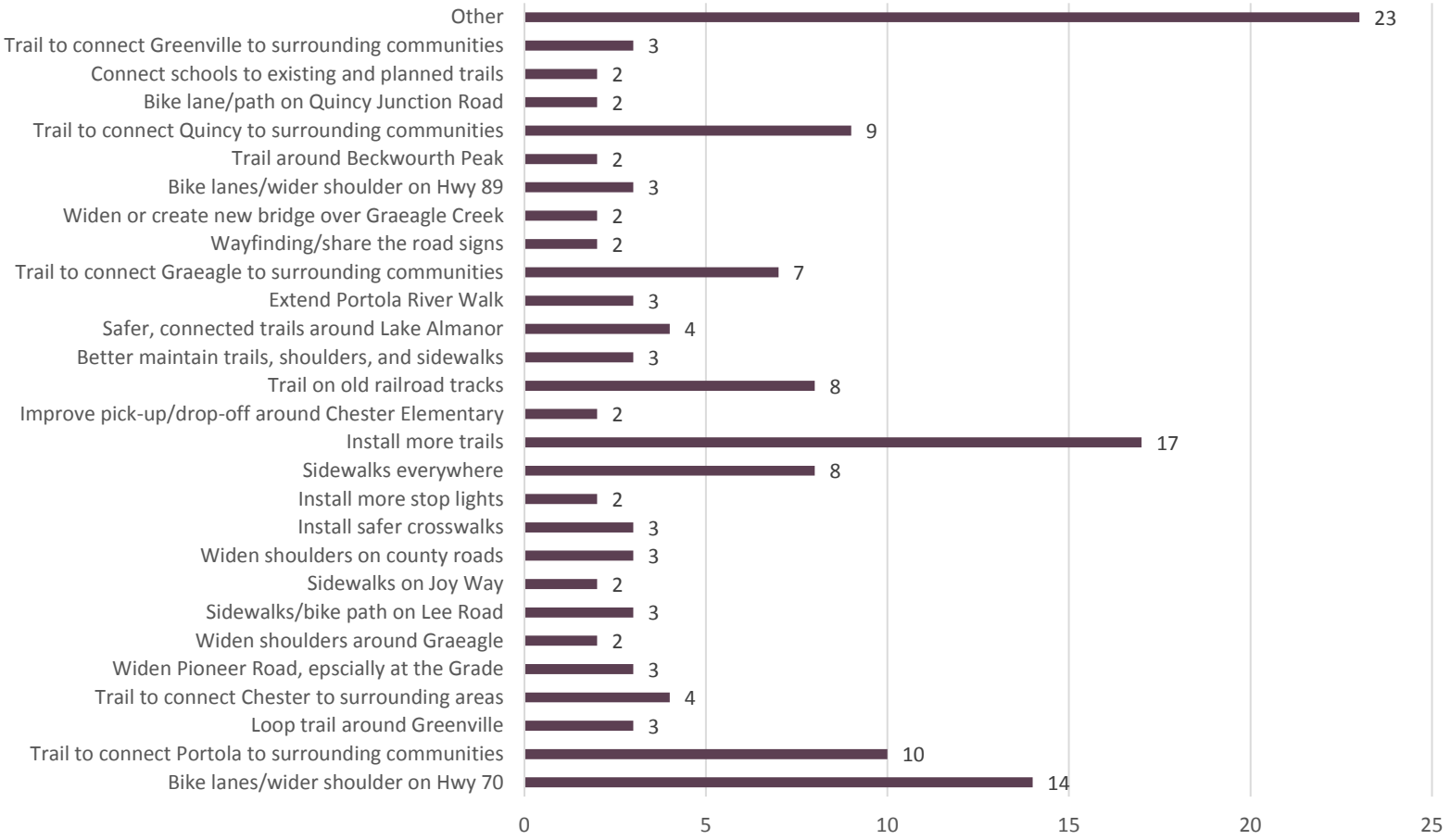



*Figure B-22: Specific projects for Plumas County*

"Other" responses include crosswalks from Greenville High School to Evergreen Market and from Peppard Flat Road to Fairgrounds Road, bike lanes on Joy Way and Golden Eagle Avenue, lower speed limits, more bike lanes, sidewalks on Lake Davis Road, more enforcement, safe route from Meadow Valley Post Office to Meadow Valley Park, recreational trail loops around communities including Mohawk Rim, American Valley, improve access to Chandler Road, build a BMX bike park or allow bikes in the skate park, widen trails to divide users, complete Lake Davis Trail, ban cars, safer crossings on Highway 70, install more lighting, extend trail over highway to hospital, don't allow bicycles on narrow roads, and continue bike lane on A-15.

## Community Workshops

Several workshops were held in Plumas County for this Plan, in three different "rounds." The first round was held in November 2015. The second was held in March 2016. The third was held in August 2017.

### Workshops Round 1

Workshop locations and attendance are summarized in **Table B-1** below.

*Table B-1: Workshop Round 1 Locations and Attendance*

| Community | Workshop Date | Attendees |
|---|---|---|
| Quincy | November 3, 2015 | 23 |
| La Porte | November 4, 2015 | 8 |
| Portola | November 5, 2015 | 11 |
| Graeagle | November 6, 2015 | 29 |
| Greenville | November 7, 2015 | 6 |
| Chester | November 7, 2015 | 10 |

Workshop participants were presented with a brief overview of the project, and invited to provide input on challenges and opportunities to improve walking and bicycling in Plumas County. Comments were recorded on large maps at each workshop.

Feedback received included the following key themes:

- Lack of consistent shoulders on state highways
- Need for crosswalks at key locations near schools and downtown areas
- Need for bicycle facilities that accommodate all ages and abilities, from families with children to long-distance adventure cyclists
- Need for continuous sidewalks or walkways in population centers
- Lack of secure bicycle parking at destinations
- Need for maintenance policies that support bicycle travel on roadways and shoulders
- Need for traffic calming at key locations
- Need for increased awareness of 3-foot passing law and presence of cyclists on state routes

### Workshops Round 2

The second round of workshops presented the draft goals, objectives, and evaluation criteria to the public. Additionally, an officer from California Highway Patrol presented information about the 3-foot law and other new laws that affect both bicyclists and motorists.

The meeting was held at the Plumas County Fairgrounds in Quincy on March 15, 2016. **Table B-2** shows the comments received during this workshop. The "+1" column identifies those comments that received support from other attendees.

*Table B-2: Workshop Round 2 Comments*

| Topic | Comment | +1s |
|---|---|---|
| **Vision** | | |
| | (no comments) | |
| **Goals** | | |
| | (no comments) | |
| **Objectives** | | |
| | (no comments) | |

| Topic | Comment | +1s |
|---|---|---|
| **Strategies** | | |
| | (no comments) | |
| **Evaluation Criteria** | | |
| Distance | Distances. Rural communities have greater distances. | |
| Connectivity | Change ¼ to ½ mile or maybe more. 2 tier categorization (in/out of community). | |
| Connectivity | Rural distances are much farther. | |
| Economic development | This should relate to areas outside a community. Focus on recreational facilities. | |
| Economic development | But also nearby community to nearby community | |
| Economic development | Move community/retail center to connectivity | |
| Economic development | Trailhead and recreational network 2-3 miles | |
| Economic development | Very important- needs to be greater emphasis- more weighting | |
| Economic development | Re-evaluate distance to that to groceries, school, that people travel in Plumas | |
| Community identified improvement | Define "community-identified challenge area" | +1 |
| Estimated demand | Explain BPSI in report | |
| Maintenance | Include in evaluation criteria? | |
| **General** | | |
| | Community Areas- distance/density | |
| | Recreational projects- trip purpose, economic development- greater weight distance- longer | |
| | Recreation vs. utility/transport- different weights? | |

## Workshops Round 3

Community workshops were held in August 2017 to present the Draft Plan. Workshop participants were presented with a brief overview of the project then invited to provide comments on maps of the draft recommendations for each of the communities along with the County. Approximately 50 people attended the six workshops during this round.

## Plan Website

A publicly accessible website was developed for this Plan. The website domain name was www.walkandbikeplumas.org and made available in October 2015 through the end of the project.

All project noticing included a link to the website. The website served as the repository for Plan documents and meeting information. Members of the public were also invited to submit comments on the Plan.

# Appendix C. Plan Analysis

This appendix presents the detailed methodology and outputs from the two analysis models ran for this Plan: Bicycle and Pedestrian Suitability Index and Benefit Impact Analysis.

## Bicycle and Pedestrian Suitability Index

The purpose of the BPSI is to identify areas with high demand that will help inform and prioritize potential bicycle and pedestrian projects. The BPSI measures potential demand (bicycle and pedestrian activity) by quantifying factors that generate bicycle and pedestrian movement. Results of the BPSI composite demand model are used to characterize the geographic distribution of bicycle and pedestrian demand within Plumas County.

BPSI provides the following benefits:

- Quantify factors that impact bicycle and pedestrian activity and objectively identify areas where bicycles and pedestrians are most likely to be
- Identify network gaps that have the greatest impact on existing network connectivity and greatest potential improvement benefits for bicycles and pedestrians
- Provide a data-driven foundation for a project list that is informed by the spatial distribution of relevant demographics and demand factors
- Guide community leaders and the public on one aspect of the project prioritization process

### Introduction

The analytical methods in the Bicycle & Pedestrian Suitability Index (BPSI) provide an objective, data-driven process to help identify network gaps and potential projects in areas with high bicycle and pedestrian activity. The BPSI provides a general profile of expected activity in bicycle and pedestrian environments by showing cumulative demand representative of where people live, work, learn and play, shop, and access transit. The County's specific land use and transportation factors are considered in conjunction with a range of demographic factors that correlate with high bicycle and pedestrian trip generation.

The remainder of this section serves to describe the use of GIS data for the demand analysis, partially through which recommendations are developed.

## BPSI Demand Analysis Density Metrics

The BPSI's Demand Analysis requires small geographic areas as inputs to generate logical distribution profiles. Modified census block centroids (a point representing the geographic center of a census block) were used for the analysis of each BPSI factor because they most accurately represent population centers. This method is based in part on the "Low-Stress Bicycling and Network Connectivity" report (Mineta Transportation Institute, May 2012).

## Demand Analysis Scoring Method

The BPSI scores each of the categories of the model – live, work, learn and play, and access transit. Scores are calculated for each category and then averaged into an overall composite score; each demand score is independent within each category (i.e., demand scores should not be compared across categories), and each category is weighted equally in the overall score. The categorical scores used in the BPSI reflect the relative impact of walking or biking between census blocks. In essence, the score is the intersection of distance and density. More specifically, the BPSI scores effectively capture two important spatial considerations: distance decay – greater distances yield lower scores for features over ¼ mile away from other features; and spatial density – closely clustered features yield higher scores than those that are spread out. Scores will increase in high density areas with factors that are known to contribute to higher pedestrian activity and decrease in low density areas without such activity factors. Based on the density of census block corners and the presence of demographic and geographic factors that contribute to pedestrian activity, BPSI categories are assigned a normalized score ranging from 1 to 5.

## Demand Analysis Application

The following expression describes how each demand category is calculated:

$$DC = \frac{\sum_{i=1}^{n}(F_i)}{n}$$

*DC = Demand category*

*F = normalized density layer for categorical variable*

*n = number of variables combined to determine categorical demand*

Because densities vary for each demand category, maps from one category cannot be directly compared to maps from another category. Instead, one should use the composite demand map to visually understand how different demand categories interact to produce overall demand.

**The purpose of the demand analysis is to identify areas with the greatest relative bicycle and pedestrian activity and use the demand outputs to inform project recommendations.** The demand model relies on spatial consistency to generate logical distance and density patterns. Data for each demand factor (e.g., live, work, play) are first analyzed individually at the census block level, which tends to align closely with street networks. In rural communities especially, census blocks with small populations often span wide areas of land and it is difficult to accurately predict population spread within the census block. For example, a rural census block may cover ten square miles yet its residents live only in one small corner of the census block boundary. In order to account for this, Alta used modified census block population centers provided by Plumas County to more accurately predict demand. This resulted in a much more focused demand output.

## BPSI Demand – Where People Live

Where people live includes 2009-2013 American Community Survey (ACS) data by census block group level. The "live" category evaluates locations representing potential trip origins. Three variables comprise the "live" demand metric:

- Total population
- Percentage of zero-automobile households
- Percentage of working age adults using active transportation modes (i.e., walking/biking) to get to work

A greater number of trips can be made in areas with higher population density if network conditions are amenable. Therefore, high demand areas on the map represent higher concentrations of households without vehicles and working age adults who walk or bike to work.

Figure C-1 illustrates this category for Plumas County.

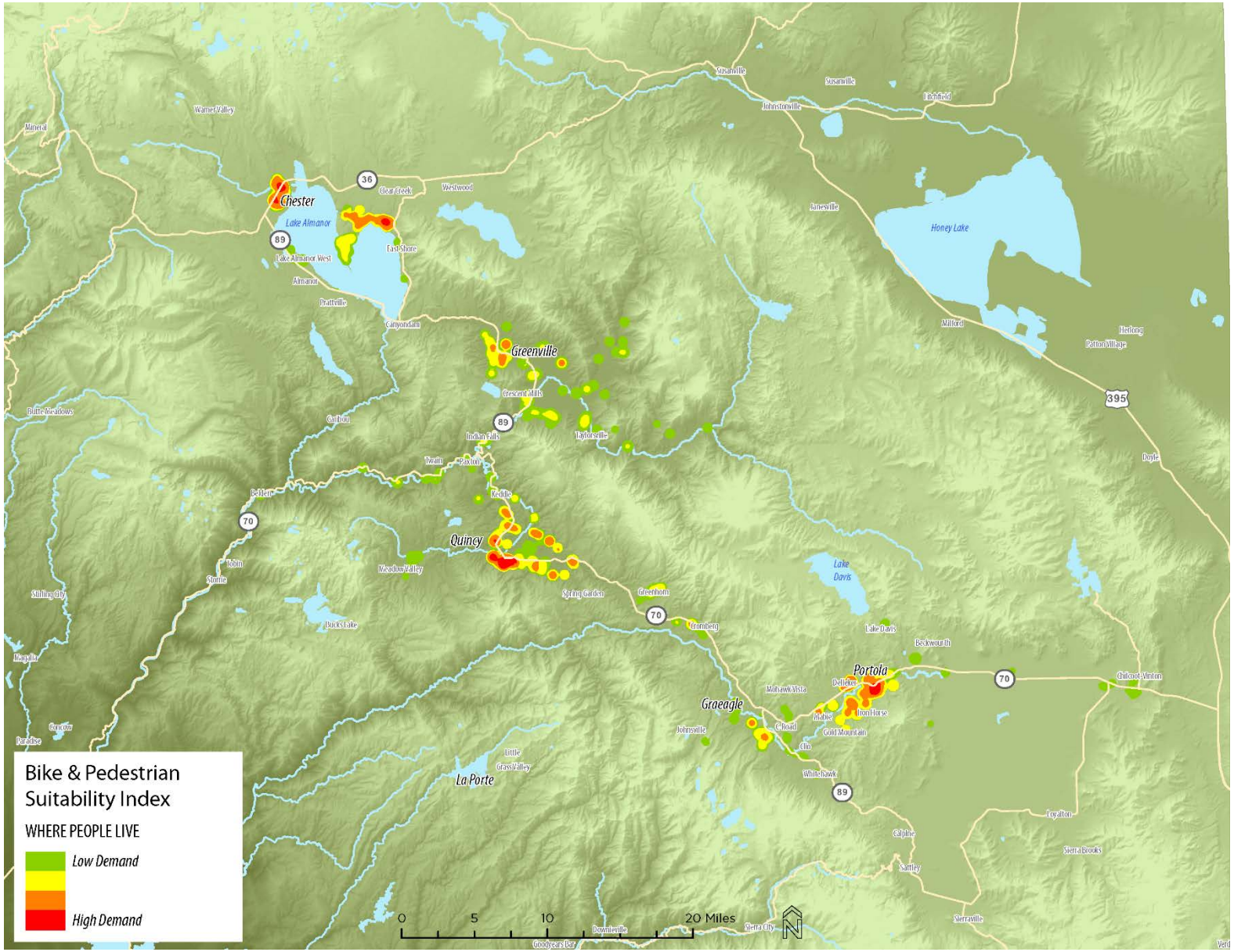



*Figure C-1: Where people live*

## BPSI Demand – Where People Work

Where people work primarily represents trip destinations for people working within the County, regardless of residency. The data is derived from 2011 total employment by census block. Depending on the job type, this category can represent both trip attractors (i.e., retail) and trip generators (i.e., office parks and office buildings) in terms of base employment population. It is therefore also used in the where people learn and play category by overlaying specific job types, such as arts, recreation, and retail.

High demand areas on the map represent high density trip destinations and ¼ mile surrounding them.

Figure C-2 illustrates this category for Plumas County.

## BPSI Demand – Where People Play & Learn

Where people learn and play is a combination of land use types and destinations. Overlays such as schools, parks, trailheads, community centers, libraries, recreation employment, and hotel and lodging employment are used to capture areas likely to experience higher levels of bicycle and pedestrian activity. While all destinations are not exactly where one would expect to "play," many of the civic amenities included in this category are still destinations of importance due to the temporary nature of the visit. This category includes K-12 schools and the Feather River College.

Using a ¼ mile search radius, areas with a high density of categories resulting in "play and learn" are determined. High demand areas on the map represent higher concentrations of destinations for "play and learn".

Figure C-3 illustrates this category for Plumas County.

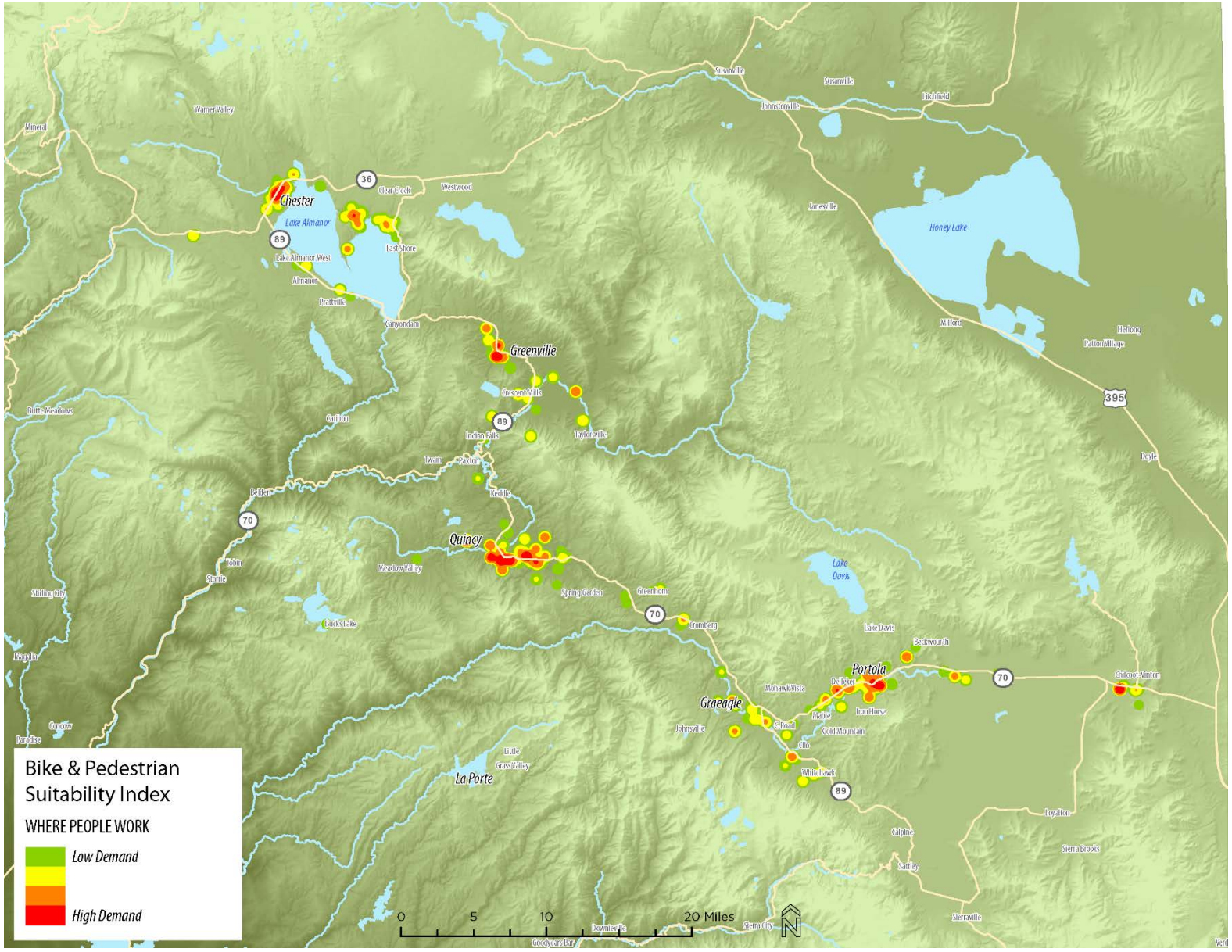



*Figure C-2: Where people work*

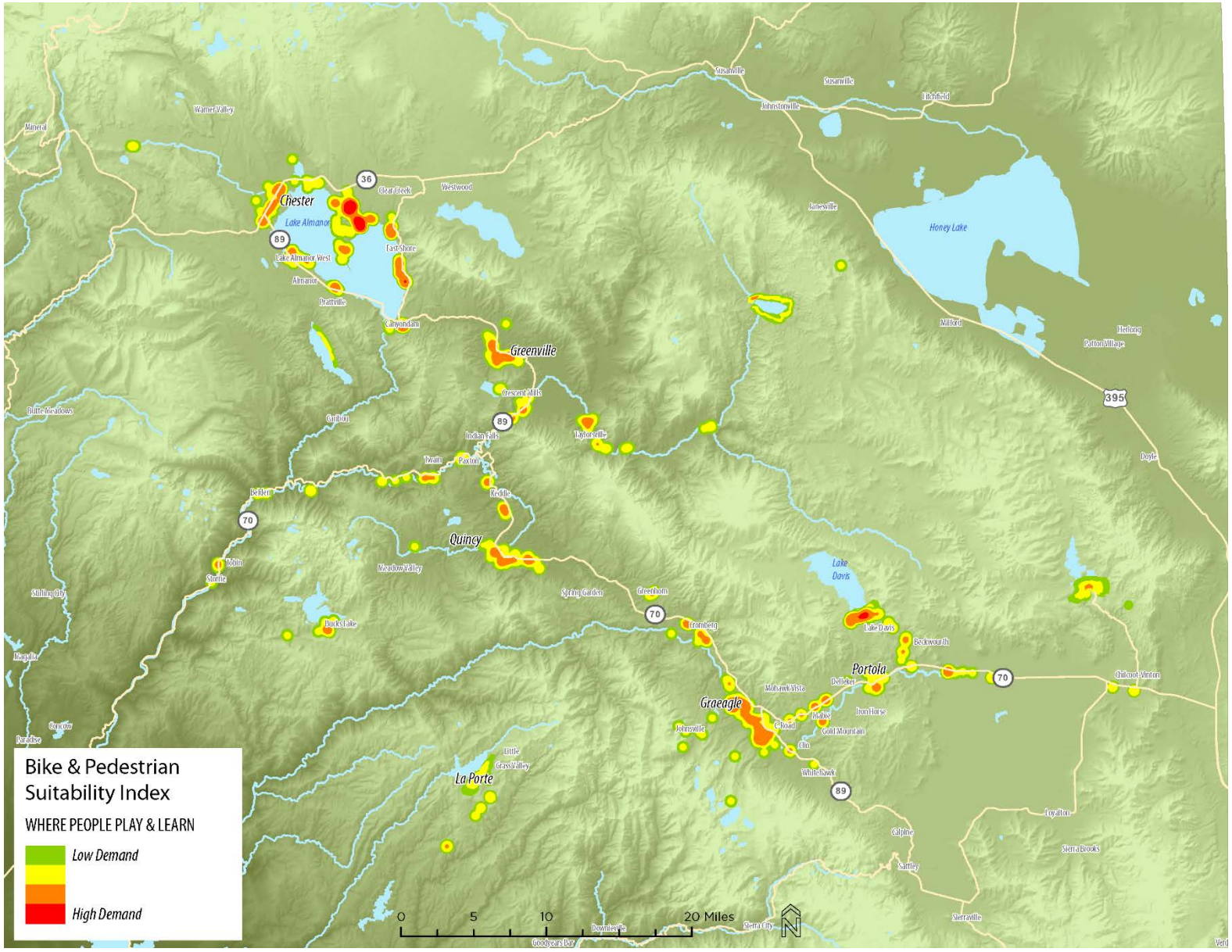



*Figure C-3: Where people play & learn*

## BPSI Demand – Where People Access Transit

Where people access transit is gauged using bus stops and transit routes. Density of pedestrian and bicycle demand is measured using a ¼ mile search radius of transit access points and networks. High demand areas on the map represent higher concentrations of access points to public transportation.

Figure C-4 illustrates this category for Plumas County.

## BPSI Demand – Composite Model

After independently processing the features, a composite map was created using the Live, Work, Play, and Transit layers that were created as independent components of the BPSI. Areas that yielded the highest demand include the confluence of retail land uses, school grounds, high employment, multi-family housing, and transit stations/stops. Areas largely dominated by single-family homes, although trip generators, are the lowest demand areas.

In addition to the countywide composite demand map (Figure C-5), maps for each of the six major communities in Plumas County have also been prepared.

For Chester, see Figure C-6.

For Graeagle, see Figure C-7.

For Greenville, see Figure C-8.

For La Porte, see Figure C-9.

For Portola, see Figure C-10.

For Quincy and East Quincy, see Figure C-11.

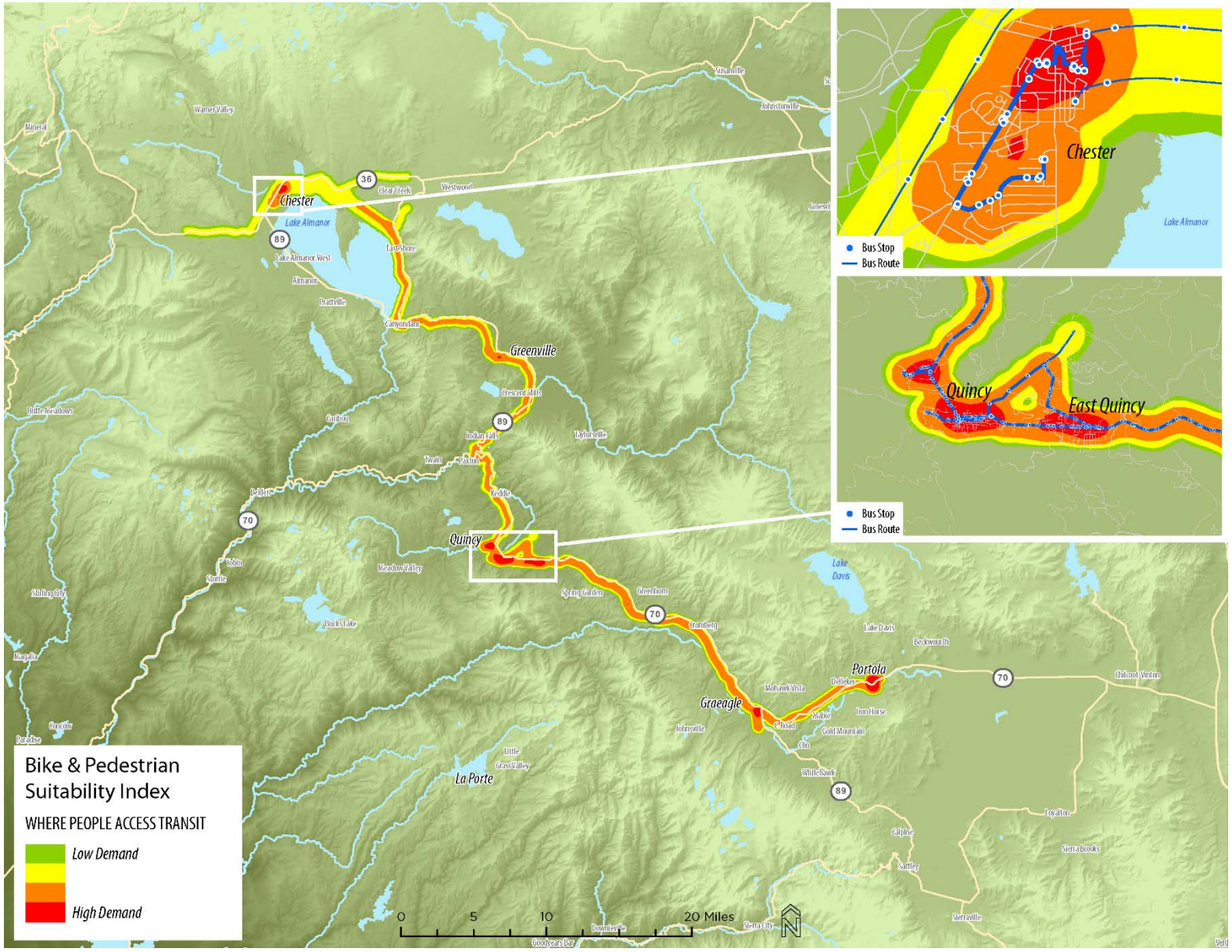



*Figure C-4: Where people access transit*

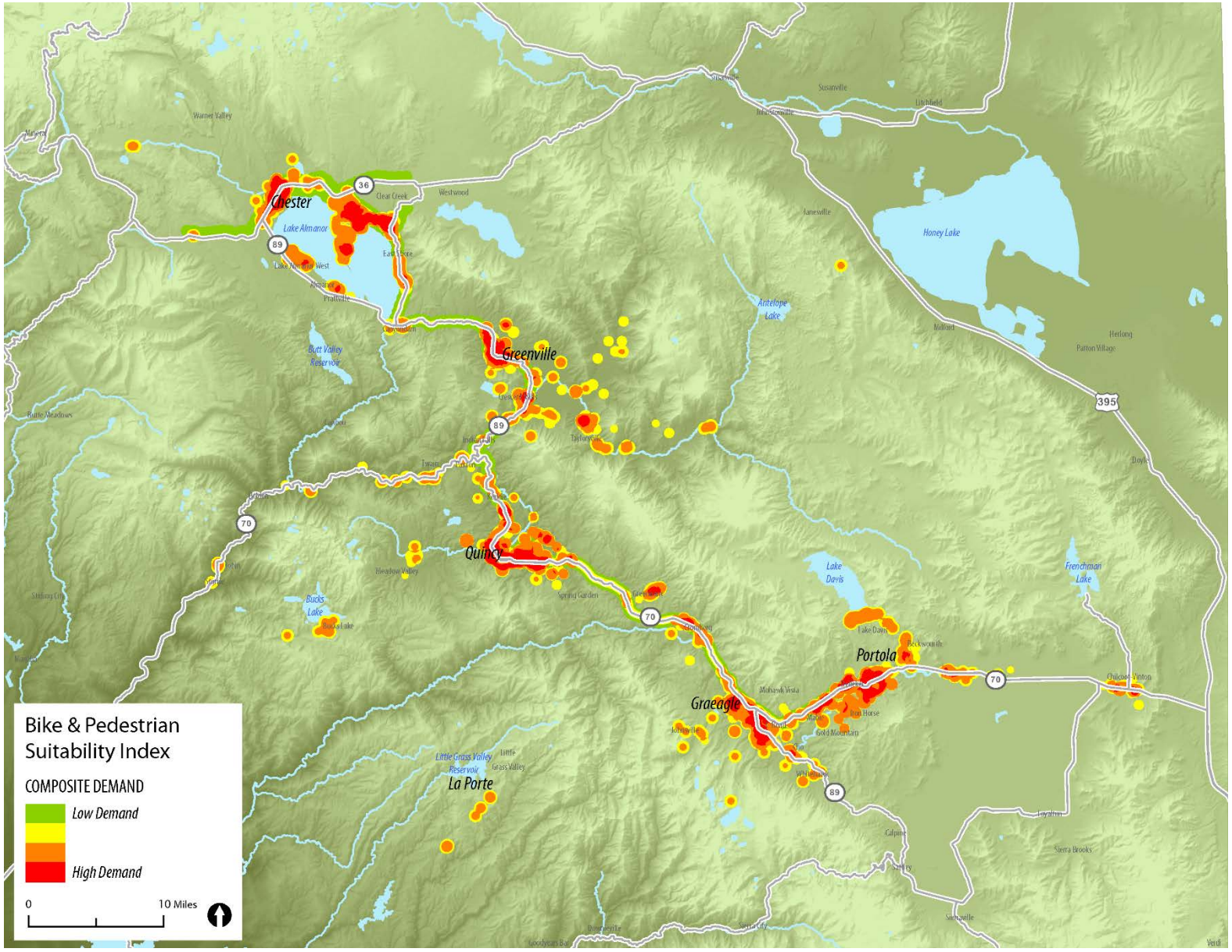



*Figure C-5: Composite demand - Countywide*

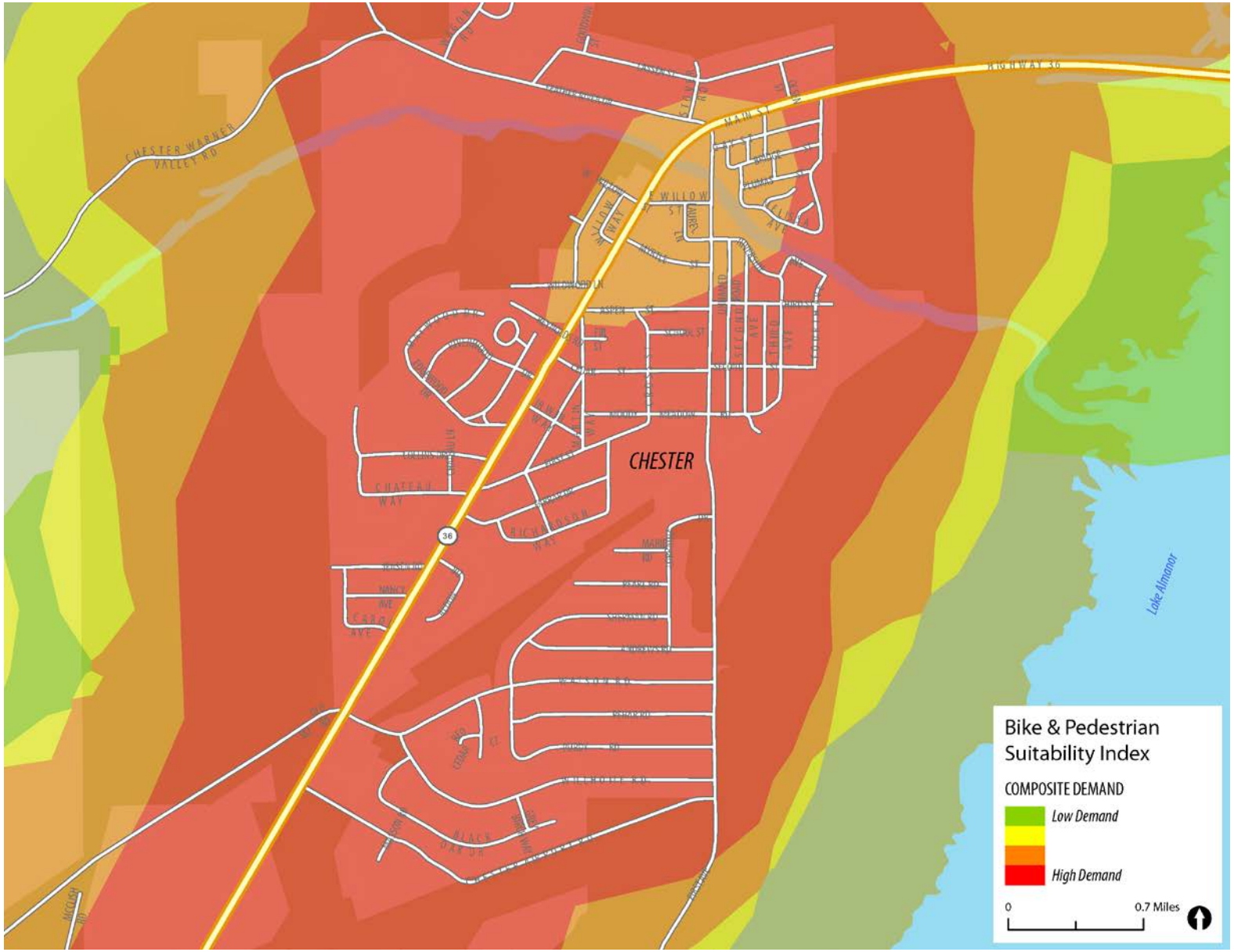



*Figure C-6: Composite demand - Chester*

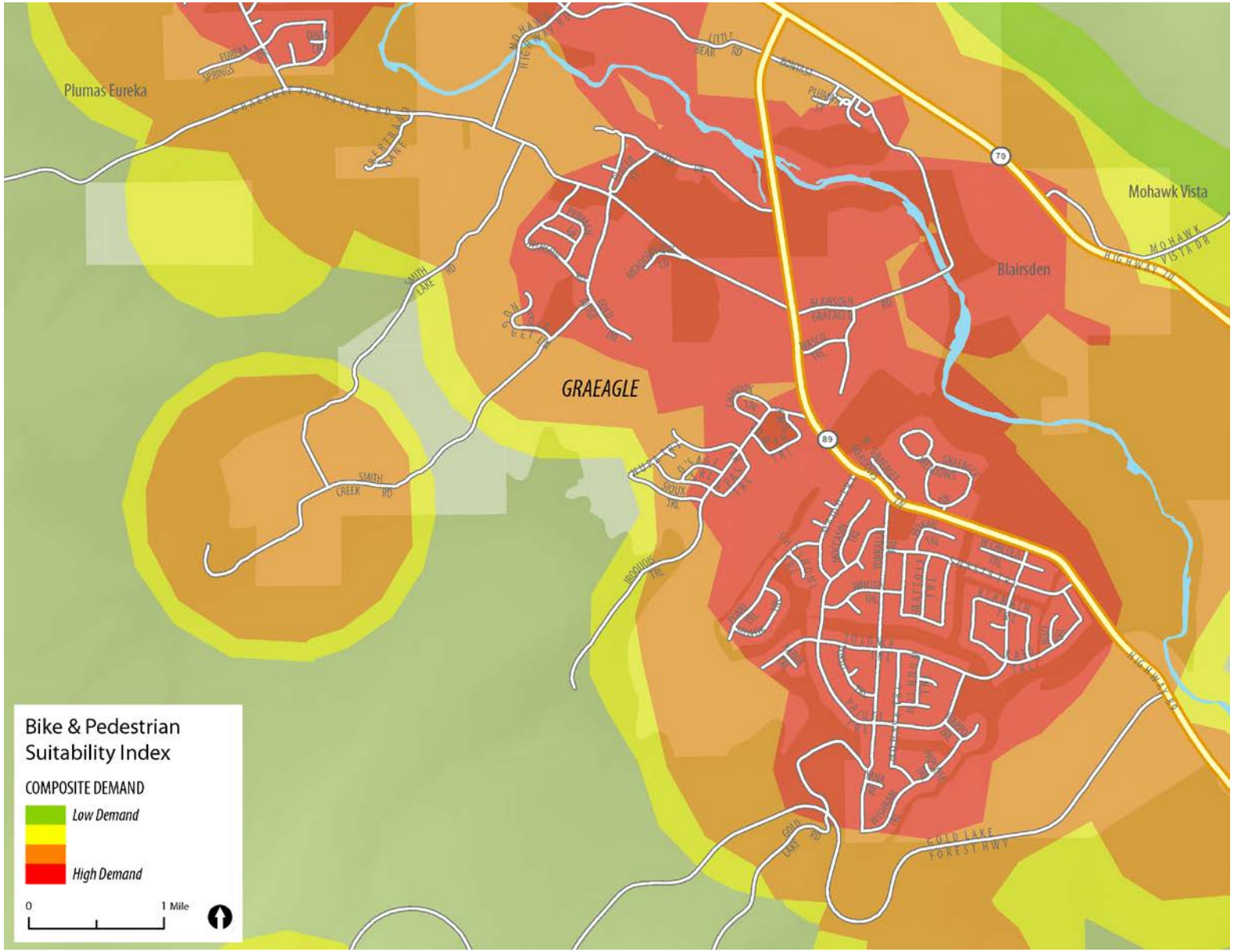



*Figure C-7: Composite demand - Graeagle*

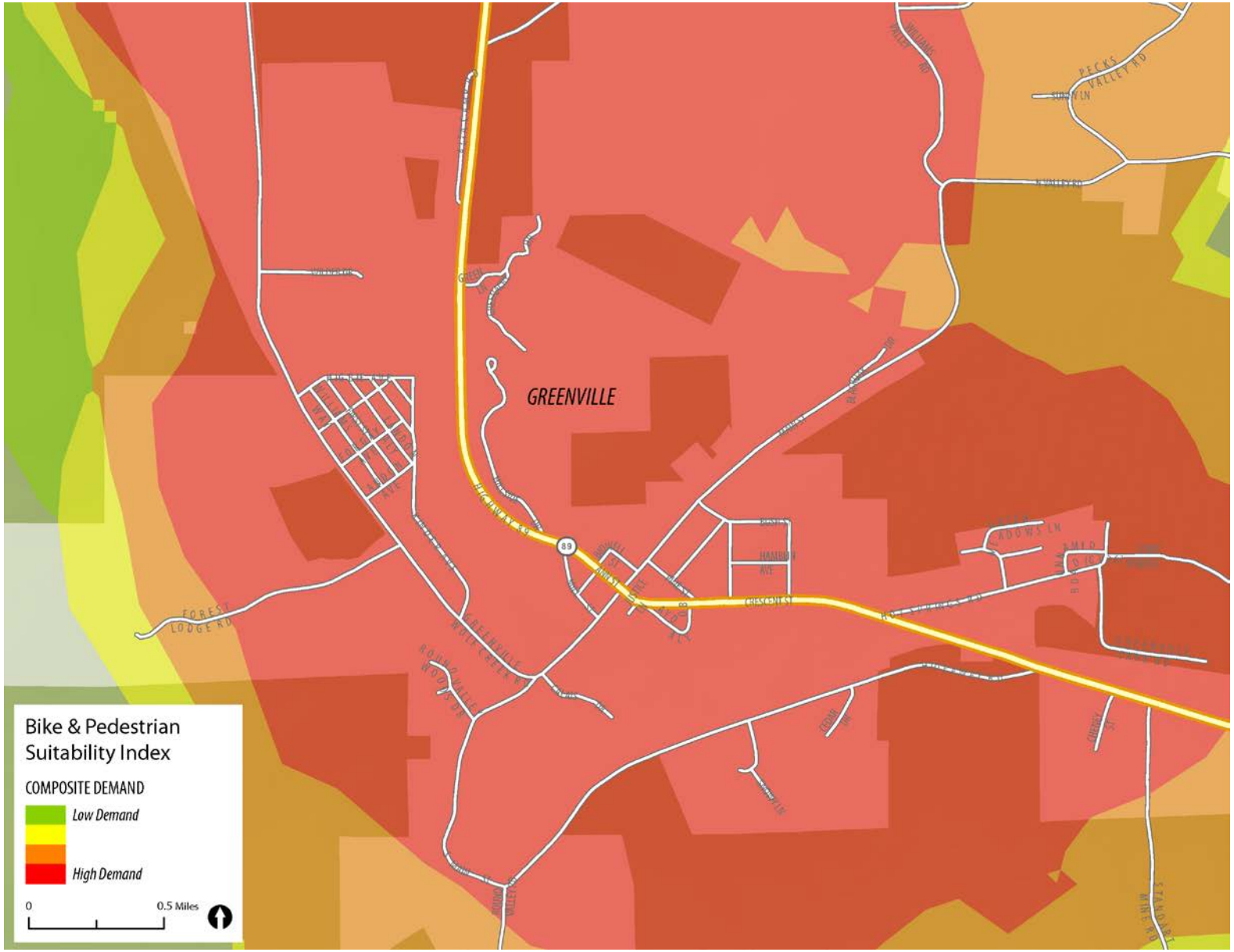



*Figure C-8: Composite demand - Greenville*

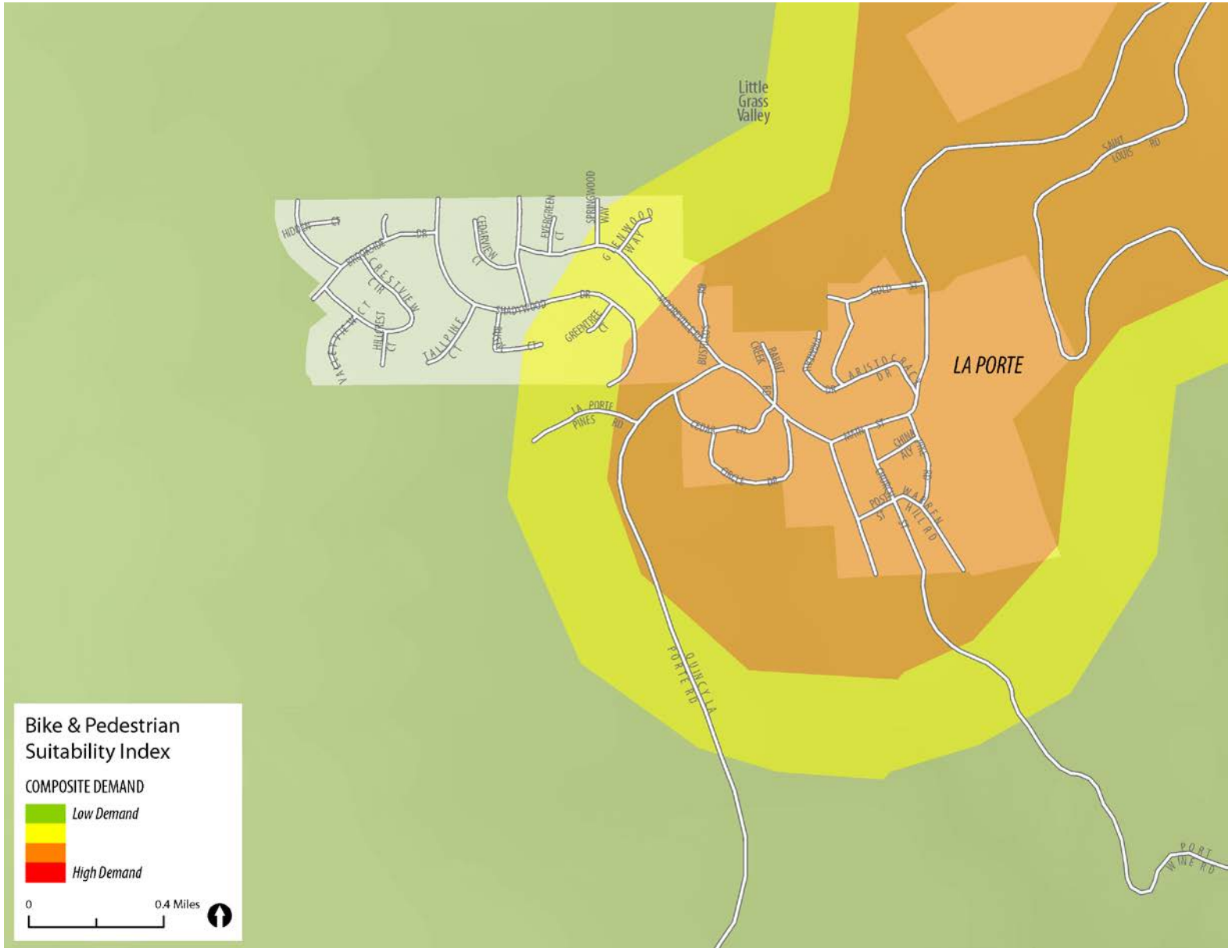



*Figure C-9: Composite demand – La Porte*

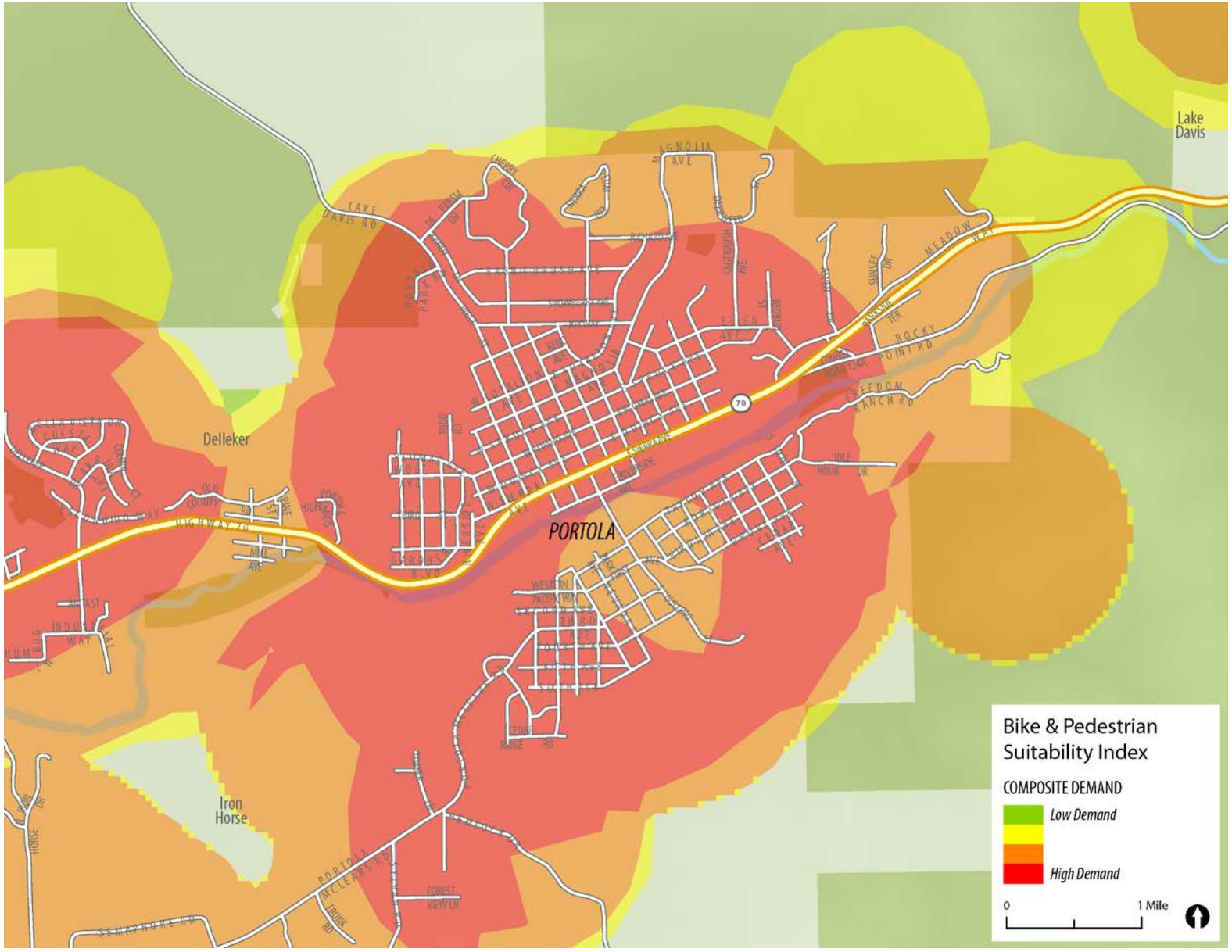



*Figure C-10: Composite demand – City of Portola*

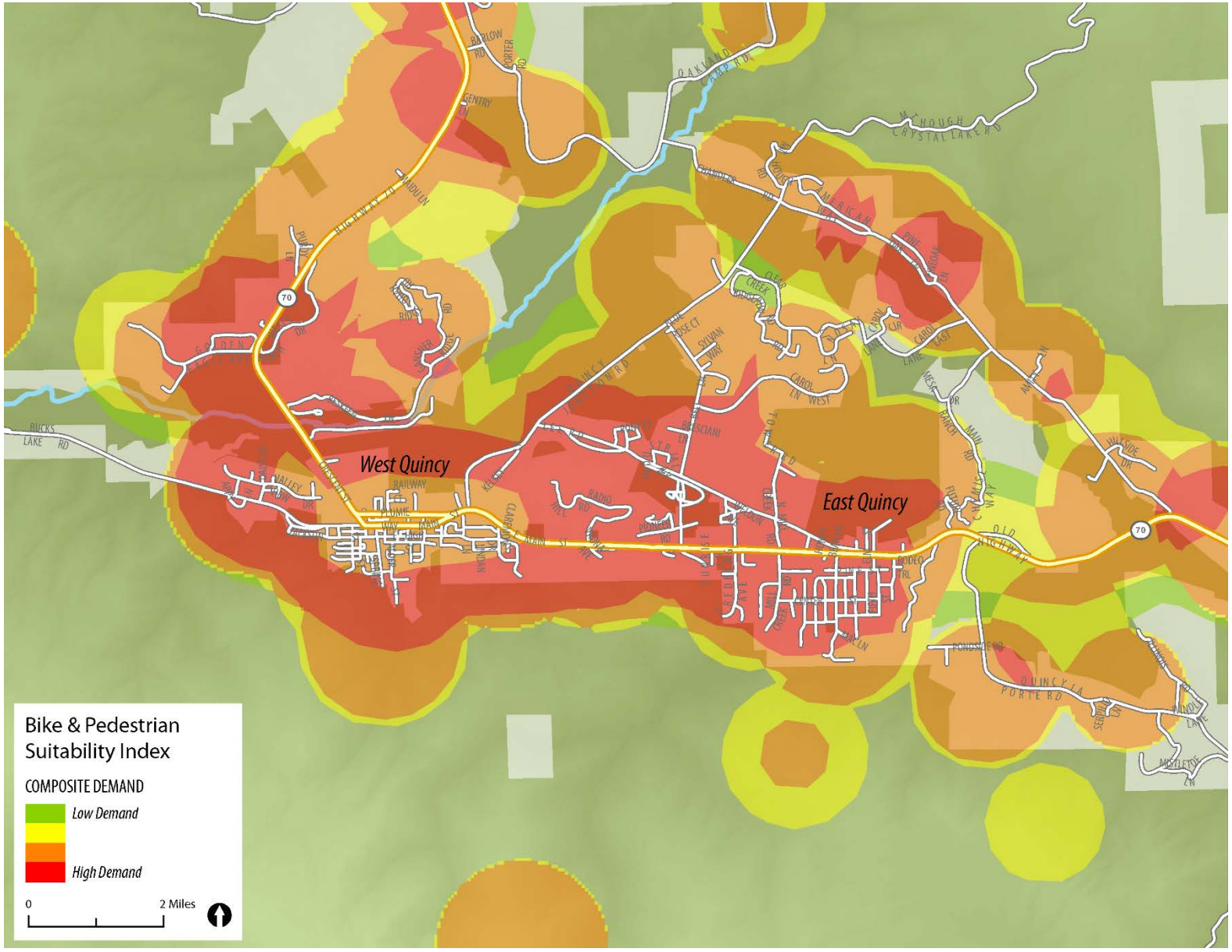



*Figure C-11: Composite demand – Quincy and East Quincy*

# Benefit Impact Analysis

## Introduction

This section contains an analysis of the quantified benefits that might occur as the result of implementing the recommended bicycle and pedestrian projects included in the Plumas County Pedestrian/Bicycle Plan. The analysis estimates the number of bicycle and walking trips that would directly result from the implementation of the project list, approximates the corresponding reduction in vehicle trips and vehicle-miles traveled (VMT), and assesses the potential health-, environmental-, and transportation-related benefits.

## Methodology

The impact analysis uses a standard methodology for calculating health-, environmental-, and transportation-related benefits. All projections are based on the most recent five-year estimates from the American Community Survey (ACS), which are then extrapolated through the use of various multipliers derived from national studies and quantified in terms of monetary value where appropriate. The estimated monetary values are then calibrated to baseline values and compared to walking and bicycle commute mode shares of aspirational counties.

### Selecting Peer Cities

In order to estimate potential future increases in bicycle and walking mode share that may result from the implementation of the recommended bicycle projects listed in the Plumas County Pedestrian/Bicycle Plan, the consultant team examined travel patterns in five aspirational counties that have bicycle and pedestrian infrastructure similar to that of the network proposed in the Plumas County Pedestrian/Bicycle Plan. Summit County (CO), Benton County (CO), Grand County (UT), Clallam County (WA), and Teton County (WY) were chosen as aspirational counties based on similarities in the design of their roadway networks, regional proximity, climates, terrain, population size and demographics, and existing walking and bicycle infrastructure (See **Table C-1**).

*Table C-1: Aspirational County Comparison*

| Counties | Region | Climate[i] | Elevation[ii] | Population[iii] | Population Density[iv] | Percent Minority Population[v] | Bicycle Friendly Community Award[vi] | Walk Friendly Community Award |
|---|---|---|---|---|---|---|---|---|
| Plumas County (CA) | West | Csb | 3,422 ft | 19,286 | 8/sq mi | 9% | None | None |
| Summit County (CO) | West | Bsk | 7,976 ft | 28,482 | 46/sq mi | 5% | Bronze[vii]/ Gold[viii] | None |
| Benton County (OR) | West | *Csb* | 325 ft | 86,034 | 127/sq mi | 12% | Gold[ix] | Gold[x] |
| Grand County (UT) | West | *Bsk* | 3,983 ft | 9,348 | 3/sq mi | 8% | Silver | None |
| Clallam County (WA) | West | *Csb* | 174 ft | 72,024 | 41/sq mi | 12% | Bronze | None |
| Teton County (WY) | West | *Dfb* | 9,416 ft | 21,956 | 5/sq mi | 5% | Gold | None |

After the identification of aspirational counties based on general characteristics, the consultant team analyzed the walking and bicycle commute data from each county. Compared to the selected aspirational counties, Plumas County has the lowest bicycle commute mode share (0.8 percent) and second lowest walk commute mode share (5.1 percent), according to 2010-2014 ACS data. **Table C-2** shows the existing bicycle and walking commute mode shares for Plumas County and its five aspirational counties, as well as the range of forecasted bicycle and walking commute mode shares for Plumas County.

*Table C-2: Existing and Forecasted Commute Bicycle Mode Split*

| Cities | Employed Population | Existing Bicycle Commute Trips per Day | Existing Bicycle Commute Mode Split | Existing Walking Commute Trips per Day | Existing Walking Commute Mode Split | Forecasted Future Bicycle/Walking Mode Split | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Low[xi] | Mid[xii] | High[xiii] |
| Plumas County (CA) | 7,116 | 56 | 0.8% | 365 | 5.1% | 1.9%/ 5.5% | 2.5%/ 8.6% | 5.6%/ 9.2% |
| Summit County (CO) | 17,351 | 330 | 1.9% | 1,587 | 9.2% | | | |
| Benton County (OR) | 38,407 | 3,095 | 8.1% | 3,305 | 8.6% | | | |
| Grand County (UT) | 4,651 | 261 | 5.6% | 254 | 5.5% | | | |
| Clallam County (WA) | 27,001 | 278 | 1.0% | 1,197 | 4.4% | | | |
| Teton County (WY) | 13,381 | 330 | 2.5% | 1,481 | 11.1% | | | |

If Plumas County increased its bicycle mode share to the 25th percentile of its five aspirational counties, it would see a 138 percent increase in the number of bicycle commuters (0.8 percent to 1.9 percent). At the 50th percentile, it would see a 213 percent increase in the number of bicycle commuters (0.8 percent to 2.5 percent). And at the 75th percentile, it would see a 600 percent increase in the number of bicycle commuters (0.8 percent to 5.6 percent).

If Plumas County increased its walking mode share to the 25th percentile of its five aspirational counties, it would see an 8 percent increase in the number of walking commuters (5.1 percent to 5.5 percent). At the 50th percentile, it would see a 63 percent increase in the number of bicycle commuters (5.1 percent to 8.6 percent). And at the 75th percentile, it would see an 80 percent increase in the number of bicycle commuters (5.1 percent to 9.2 percent).

### Multipliers

Multipliers were developed through an analysis of the relationship between two or more model inputs, such as the number of vehicle-miles traveled and the cost of road maintenance. The model used for this study includes over 50 multipliers in order to extrapolate annual trip rates, trip distance, vehicle trips replaced, emission rates, physical activity rates, and other externalities linked to an increase in bicycling trips and to a decrease in motor vehicle trips.

### Limitations

The primary purpose of the analysis is to enable a more informed policy discussion on whether and how best to invest in an active transportation network in Plumas County. Even with extensive primary and secondary research incorporated into the impact analysis model, it is impossible to accurately predict the *exact* impacts of various factors. Accordingly, all estimated benefit values are rounded and should be considered order of magnitude estimates, rather than exact amounts.

## Health Benefits

The implementation of a well-designed, connected pedestrian and bicycle network across Plumas County will encourage a shift from energy-intensive modes of transportation such as cars and truck to active modes of transportation such as bicycling. The Benefit Impact Model evaluated and quantified the estimated increase in bicycling trips, the estimated increase in hours of physical activity, and the annual savings resulting from reduced healthcare costs. The primary inputs into the health component of the Benefit Impact Model derived from 2010-2014 ACS journey to work data, 2009 National Household Travel Survey, and historic Safe Routes to School data. Existing bicycle commute data was multiplied by national trip purpose ratios to generate mode split data that includes all trip purposes. This balanced mode split data was indexed against the mode split data of Plumas County's five aspirational counties, and multiplied by various health factors.

If Plumas County implements all of the recommended active transportation projects, the county could experience between 429,000 and 3,157,000 more bicycling and pedestrian trips per year and between 454,000 and 1,856,000 miles bicycled and walked per year, resulting in an annual reduction of 319,000 to 1,669,000 VMT. These annual distance estimates and VMT reduction estimates were used to calculate changes in physical activity rates among Plumas County residents. Implementation of the recommended projects could result in between 54,000 and 325,000 more hours of physical activity per year among Plumas County residents over current activity rates. This increase in physical activity means that between 400 and 2,500 more residents will be meeting the Centers for Disease Control and Prevention's guidelines for the minimum recommended number of hours of physical activity per day, which is equal to a jump from approximately 18.7 percent of the regional physical activity need being met to between 20.9 and 31.7 percent of the regional physical activity need being met. This growth in the percent of people within the county exercising equates to an $18,000 to $109,000 reduction in healthcare expenses per year.

**Table C-3** summarizes the annual health benefits for Plumas County.

*Table C-3: Annual Health Benefits*

| | Baseline | Future Estimates | | | | | |
|---|---|---|---|---|---|---|---|
| | | Low | | Mid | | High | |
| | Total | Total | Difference | Total | Difference | Total | Difference |
| Annual Bike Trips | 220,000 | 532,000 | 312,000 | 690,000 | 470,000 | 1,570,000 | 1,350,000 |
| Annual Miles by Bike | 497,000 | 915,000 | 418,000 | 3,039,000 | 1,227,000 | 3,231,000 | 1,419,000 |
| Annual Walk Trips | 1,812,000 | 1,929,000 | 117,000 | 1,126,000 | 629,000 | 2,304,000 | 1,807,000 |
| Annual Miles by Walking | 1,256,000 | 1,292,000 | 36,000 | 1,634,000 | 378,000 | 1,693,000 | 437,000 |
| Annual Hours of Physical Activity | 469,000 | 523,000 | 54,000 | 658,000 | 189,000 | 794,000 | 325,000 |
| Rec. Physical Activity Minimum Met | 3,600 | 4,000 | 400 | 5,000 | 1,400 | 6,100 | 2,500 |
| Regional Physical Activity Need Met | 18.7% | 20.9% | 2.2% | 26.2% | 7.5% | 31.7% | 13.0% |
| Healthcare Cost Savings | $70,000 | $88,000 | $18,000 | $133,000 | $63,000 | $179,000 | $109,000 |

## Environmental Benefits

The Benefit Impact Model evaluated and quantified the estimated increase in bicycle trips and the annual savings from reduced vehicle emissions. In order to evaluate these environmental factors, a number of readily-available data inputs were analyzed. Using the estimates of VMT reductions calculated in the health benefits analysis, changes in hydrocarbon, particulate matter, nitrous oxides, carbon monoxide, and carbon dioxide were analyzed.

In total, the replacement of motor vehicle trips with active transportation trips may result in an estimated range of 933,000 to 4,358,000 fewer pounds of $CO_2$ emissions per year and between 11,000 and 54,000 fewer pounds of other vehicle emissions. Based on a review of air emissions studies, each pound of emissions was assigned an equivalent dollar amount based on how much it would cost to clean up the pollutant or the cost equivalent of how much damage the pollutant causes to the environment. The total reduction in vehicle emissions is equal to a savings between $11,000 and $55,000 in related environmental damage or clean-up per year. Other potential ecological services associated with the active transportation projects such as water regulation, carbon sequestration, carbon storage, and waste treatment exist, but the quantifiable value of these services are negligible on the overall impact of the recommended project list. **Table C-4** summarizes the annual environmental benefits for Plumas County.

*Table C-4: Annual Environmental Benefits*

| | Baseline | Future Estimates | | | | | |
|---|---|---|---|---|---|---|---|
| | | Low | | Mid | | High | |
| | Total | Total | Difference | Total | Difference | Total | Difference |
| $CO_2$ Emissions Reduced (lbs) | 1,262,000 | 2,195,000 | 933,000 | 3,034,000 | 1,772,000 | 5,620,000 | 4,358,000 |
| Other Vehicle Emissions Reduced (lbs) | 25,000 | 36,000 | 11,000 | 51,000 | 26,000 | 79,000 | 54,000 |
| Total Vehicle Emission Costs Reduced | $26,000 | $37,000 | $11,000 | $53,000 | $27,000 | $81,000 | $55,000 |

## Transportation Benefits

The most readily-identifiable benefits of the recommended project list exist in its ability to increase transportation options and access to activity centers for Plumas County residents and visitors. While money rarely changes hands, real savings can be estimated from the reduced costs associated with congestion, vehicle crashes, road maintenance, and household vehicle operations. Using the same annual VMT reduction estimates highlighted in the health and environmental components, transportation-related cost savings were calculated.

By multiplying the amount of VMT reduced by established multipliers for traffic congestion, vehicle collisions, road maintenance, and vehicle operating costs, monetary values were assigned to the transportation-related benefits. In total, an annual cost savings between $413,000 and $2,153,000 is estimated for the county. **Table C-5** summarizes the annual transportation benefits for Plumas County.

*Table C-5: Annual Transportation Benefits*

| | Baseline | Future Estimates | | | | | |
|---|---|---|---|---|---|---|---|
| | | Low | | Mid | | High | |
| | Total | Total | Difference | Total | Difference | Total | Difference |
| Annual VMT Reduced | 775,000 | 1,094,000 | 319,000 | 1,589,000 | 814,000 | 2,444,000 | 1,669,000 |
| Reduced Traffic Congestion Costs | $54,000 | $77,000 | $23,000 | $112,000 | $58,000 | $171,000 | $117,000 |
| Reduced Vehicle Crash Costs | $387,000 | $547,000 | $160,000 | $795,000 | $408,000 | $1,222,000 | $835,000 |
| Reduced Road Maintenance Costs | $116,000 | $164,000 | $48,000 | $238,000 | $122,000 | $366,000 | $250,000 |
| Household Vehicle Operation Cost Savings | $442,000 | $624,000 | $182,000 | $906,000 | $464,000 | $1,393,000 | $951,000 |
| Total Transportation Benefits | $999,000 | $1,412,000 | $413,000 | $2,051,000 | $1,052,000 | $3,152,000 | $2,153,000 |

## Total Benefits

If all of the bicycle projects on the Plumas County Pedestrian/Bicycle Plan recommended project list are implemented, the county could experience between $1,023,000 and $1,827,000 in additional health-, environmental-, and transportation-related benefits per year.

**Table** C-6 summarizes all calculated benefits.

*Table C-6: Total Annual Benefits*

| | Baseline | Future Estimates | | | | | |
|---|---|---|---|---|---|---|---|
| | | Low | | Mid | | High | |
| | Total | Total | Difference | Total | Difference | Total | Difference |
| **Health Benefits** | $70,000 | $88,000 | $18,000 | $133,000 | $63,000 | $179,000 | $109,000 |
| **Environmental Benefits** | $26,000 | $37,000 | $11,000 | $53,000 | $27,000 | $81,000 | $55,000 |
| **Transportation Benefits** | $999,000 | $1,412,000 | $413,000 | $2,051,000 | $1,052,000 | $3,152,000 | $2,153,000 |
| **Total Benefits** | $1,095,000 | $1,537,000 | $442,000 | $2,237,000 | $1,142,000 | $3,412,000 | $2,317,000 |

[i] Köppen Climate Classification System:

**Dfb** Warm summer continental or hemiboreal climates

***Csb*** *Dry-summer or Mediterranean climates*

***Bsk*** *Dry, semiarid climates*

[ii] USGS, Geographic Names Information System (GNIS), <http://geonames.usgs.gov/>
[iii] US Census, American Community Survey, five-year estimates (2010-2014)
[iv] US Census, Quick Facts, Population Density (2010), <http://www.census.gov/quickfacts/table>
[v] US Census (2010)
[vi] The League of American Bicyclists (2015), http://www.bikeleague.org/sites/default/files/BFC_Master_Spring_2015.pdf.
[vii] Summit County (CO) received a bronze-level Bicycle Friendly Community Award.
[viii] Breckenridge (CO) received a gold-level Bicycle Friendly Community Award.
[ix] Corvallis (OR) received a gold-level Bicycle Friendly Community Award.
[x] Corvallis (OR) received a gold-level Walk Friendly Community Award.
[xi] The low estimate for future bike commute mode share is the difference between Coalinga's existing bike commute mode share and the 25th percentile bike mode share of the six selected peer cities
[xii] The low estimate for future bike commute mode share is the difference between Coalinga's existing bike commute mode share and the 50th percentile bike mode share of the six selected peer cities
[xiii] The low estimate for future bike commute mode share is the difference between Coalinga's existing bike commute mode share and the 75th percentile bike mode share of the six selected peer cities

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PLANNING + DESIGN

Plumas County Active Transportation Plan

# Appendix D:

# Bicycle and Pedestrian Facility Design Guidelines

**Prepared by:**
**Alta Planning + Design**

# Table of Contents

# Context

**These guidelines serve as a general catalog of active transportation treatments Plumas County and other agencies may use to make traveling around Plumas County safer for all modes of travel. These guidelines are subject to modification based on environmental and economic constraints. It is important to note that design treatments must be tailored to individual situations and good engineering practices based on non-motorized modes of transportation. These guidelines do not constitute an adopted standard, specification or regulation by the County of Plumas.**

## Guidance Basis

The sections that follow serve as an inventory of non-motorized design treatments and provide guidelines for their development. These treatments and design guidelines are important because they represent the tools for creating a pedestrian- and bicycle-friendly, safe, accessible community. The guidelines are not, however, a substitute for a more thorough evaluation by a landscape architect or engineer upon implementation of facility improvements. The following standards and guidelines are referred to in this guide.

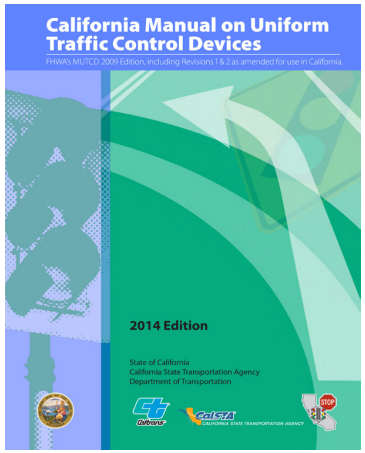
## National Guidance

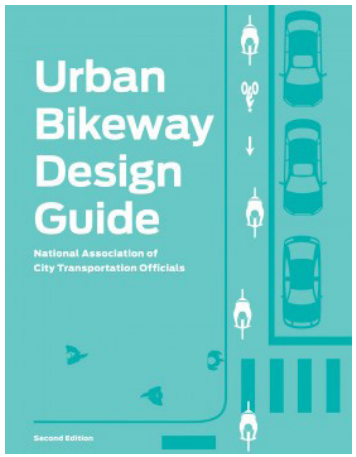
The **California Manual on Uniform Traffic Control Devices (CaMUTCD) (2014)** is an amended version of the FHWA MUTCD 2009 edition modified for use in California. While standards presented in the CA MUTCD substantially conform to the FHWA MUTCD, the state of California follows local practices, laws and requirements with regards to signing, striping and other traffic control devices.

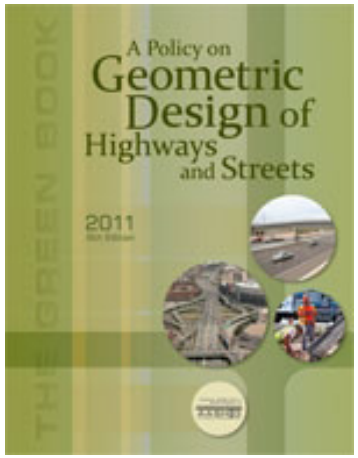
The National Association of City Transportation Officials' **(NACTO) Urban Bikeway Design Guide (2012)** is a collection of nationally recognized bikeway design standards, and offers guidance on the current state of the practice designs.

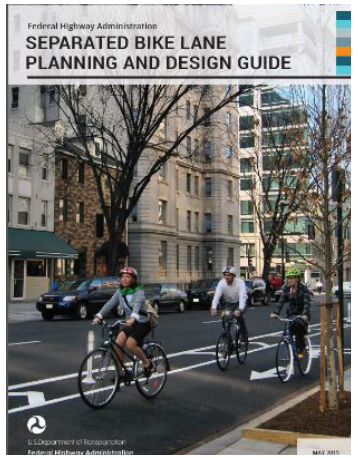
The 2011 **AASHTO A Policy on Geometric Design of Highways and Streets (2011)** commonly referred to as the "Green Book," contains the current design research and practices for highway and street geometric design.

The FHWA **Separated Bike Lane Planning and Design Guide** (2015) provides federal endorsement of physically separated bike lanes and preferred design standards.



HIGHWAY DESIGN MANUAL

May 7, 2012

FOREWORD

**Purpose**

This manual was prepared for the California Department of Transportation (Department) by the Division of Design for use on the California State highway system. This manual establishes uniform policies and procedures to carry out the State highway design functions of the Department. It is neither intended as, nor does it establish, a legal standard for these functions.

The standards, procedures, and requirements established and discussed herein are for the information and guidance of the officers and employees of the Department.

Many of the instructions given herein are subject to amendment as conditions and experience warrant. Special situations may call for deviation from policies and procedures, subject to Division of Design approval, or such other approval as may be specifically provided for in the text of this manual.

It is not intended that any standard of conduct or duty toward the public shall be created or imposed by the publication of this manual. Statements as to the duties and responsibilities of any given classification of officers or employees mentioned herein refer solely to duties or responsibilities owed by these in such classification to their superiors. However, in their official contacts, each employee should recognize the necessity for good relations with the public.

**Scope**

This manual is not a textbook or a substitute for engineering knowledge, experience, or judgment. It includes techniques as well as graphs and tables not ordinarily found in textbooks. These are intended as aids in the quick solutions of field and office problems. Except for new developments, no attempt is made to detail basic engineering techniques; for these, standard textbooks should be used.

**Form**

The loose-leaf form was chosen because it facilitates change and expansion. New instructions or updates will be issued as sheets in the format of this manual and made available on-line on the Department Design website: http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm. The new instructions or updates may consist of additional sheets or ne those superseded. encouraged to utiliz available on-line on th

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DESIGN INFORMATION BULLETIN NUMBER 89

Department of Transportation
Division of Design
Office of Standards and Procedures

CLASS IV BIKEWAY GUIDANCE
(Separated Bikeways / Cycle Tracks)

APPROVED BY:

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DIVISION OF DESIGN

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DIVISION CHIEF
DIVISION OF TRAFFIC OPERATIONS

December 30, 2015

Main Street, Cali

A Guide for Improving Community and Tran

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

*Serious drought. Help Save Water!*

To: HIGHWAY DESIGN MANUAL HOLDERS

Date: April 10, 2014

File:

From: TIMOTHY CRAGGS
Chief
Division of Design

Subject: **DESIGN FLEXIBILITY IN MULTIMODAL DESIGN**

The Caltrans Program Review, and more recently the SSTI report, identified a need to provide more flexibility in Caltrans' highway design standards and procedures, especially in the context of urban environments and multimodal design.

Caltrans is continually improving its standards and processes to provide flexibility while maintaining the safety and integrity of the state's transportation system. This commitment is evident in the recent update to the Highway Design Manual (HDM) to facilitate the design of Complete Streets, recognizing that the State highway system needs to be multimodal, not just for cars and trucks.

Caltrans' philosophy and flexible approach toward designing multimodal transportation projects on the State highway system is reflected in the HDM, Chapter 80, which states in part:

*"The Project Development process seeks to provide a degree of mobility to users of the transportation system that is in balance with other values."*

*"A 'one-size-fits-all' design philosophy is not Departmental policy."*

*"The highway design criteria and policies in this manual provide a guide for the engineer to exercise sound judgment in applying standards, consistent with the above Project Development philosophy, in the design of projects. This guidance allows for flexibility in applying design standards and approving design exceptions that take the context of the project location into consideration; which enables the designer to tailor the design, as appropriate, for the specific circumstances while maintaining safety."*

For improvements on local systems, the responsible local entities have long been delegated authority to exercise their engineering judgment when utilizing applicable standards, including those for bicycle facilities established by Caltrans pursuant to Streets and Highways Code sections 890.6 and 890.8. This delegation and delegation process is outlined in the Caltrans Local Assistance Procedures Manual, Chapter 11, page 11-26. See http://www.dot.ca.gov/hq/LocalPrograms/lam/prog_p/ch11-2012-10-05.pdf.

*"Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability"*

The **California Highway Design Manual (HDM) (2014)** establishes uniform policies and procedures to carry out highway design functions for the California Department of Transportation. The 2012 edition incorporated Complete Streets focused revisions to address the Department Directive 64 R-1.

**Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians (2010)** is a reference guide presents information and concepts related to improving conditions for bicyclists and pedestrians at major intersections and interchanges. The guide can be used to inform minor signage and striping changes to intersections, as well as major changes and designs for new intersections.

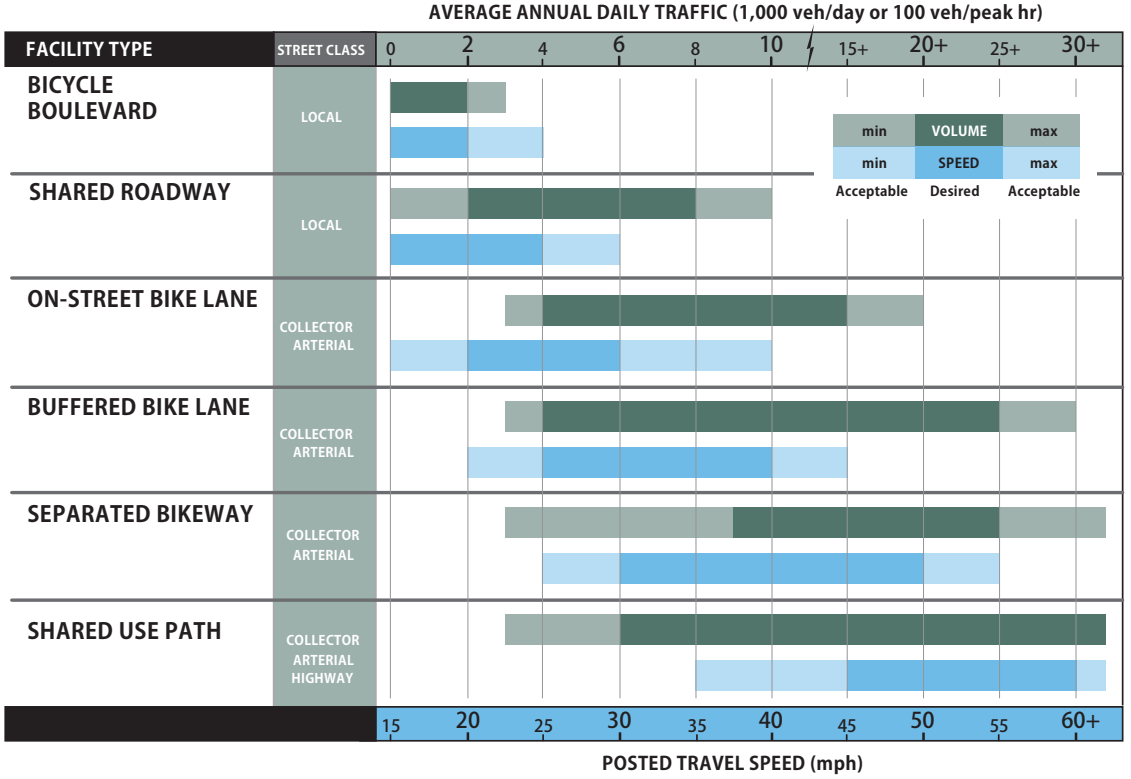
**Main Street, California: A Guide for Improving Community and Transportation Vitality (2013)** reflects California's current manuals and policies that improve multimodal access, livability and sustainability within the transportation system. The guide recognizes the overlapping and sometimes competing needs of main streets.

The Caltrans Memo: **Design Flexibility in Multimodal Design (2014)** encourages flexibility in highway design. The memo stated that "Publications such as the National Association of City Transportation Officials (NACTO) "Urban Street Design Guide" and "Urban Bikeway Design Guide," ... are resources that Caltrans and local entities can reference when making planning and design decisions on the State highway system and local streets and roads."

The Caltrans Memo: **Design Information Bulletin #89 (2015)** formally acknowledges separated bike lanes as a facility type eligible for use in the state of California.

## Facility Selection

Selecting the best bikeway facility type for a given roadway can be challenging, due to the range of factors that influence bicycle users' comfort and safety. There is a significant impact on cycling comfort when the speed differential between bicyclists and motor vehicle traffic is high and motor vehicle traffic volumes are high.




### Facility Selection Table

As a starting point to identify a preferred facility, the chart above can be used to determine the recommended type of bikeway to be provided in particular roadway speed and volume situations. To use this chart, identify the appropriate daily traffic volume and travel speed on the existing or proposed roadway, and locate the facility types indicated by those key variables.

Other factors beyond speed and volume which affect facility selection include traffic mix of automobiles and heavy vehicles, the presence of on-street parking, intersection density, surrounding land use, and roadway sight distance. These factors are not included in the facility selection chart below, but should always be considered in the facility selection and design process.

# Facility Classification

## Discussion

Consistent with bicycle facility classifications throughout the nation, these Bicycle Facility Design Guidelines identify the following classes of facilities by degree of separation from motor vehicle traffic.

**Shared-Use Paths (Class I)** are facilities separated from roadways for use by bicyclists and pedestrians. These facilities provide a completely separated right-of-way for the exclusive use of bicycles and pedestrians with crossflow minimized. A total width of 10 feet is required, but 12 feet is recommended.

**On-Street Bikeways (Class II)**, such as conventional or buffered bike lanes, use signage and striping to delineate the right-of-way assigned to bicyclists and motorists. Bike lanes encourage predictable movements by both bicyclists and motorists. Another variant of on-street bikeway is **Separated Bikeways (Class IV)** which are exclusive bike facilities that combine the user experience of a separated path with the on-street infrastructure of conventional bike lanes. Bicycle lanes of 6-7 feet are recommended, while minimum dimensions are 4-5 feet depending on if a gutter is present.

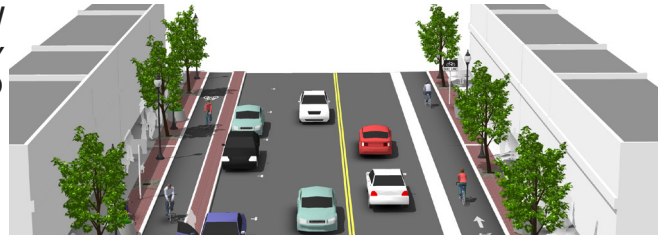
**Signed Shared Roadways (Class III)** are bikeways where bicyclists and cars operate within the same travel lane, either side by side or in single file depending on roadway configuration. The most basic type of bikeway is a signed shared roadway. This facility provides continuity with other bicycle facilities (usually bike lanes), or designates preferred routes through high-demand corridors. The recommended width of a shared use travel lane is 14 feet.

**Bike Routes** are designated bicycle route alignments within a street network, identified as the preferred streets and facilities to be used for bicycle travel. A bike routes is a designation, not a facility type, and may be made up of various facilities in order to provide a connected network for bicycle travel.

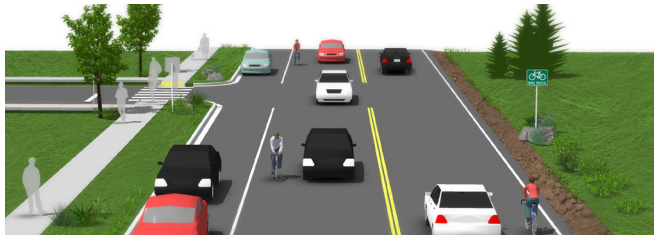
*Shared-Use Paths (Class I)*

*On-Street Bikeway (Class II)*

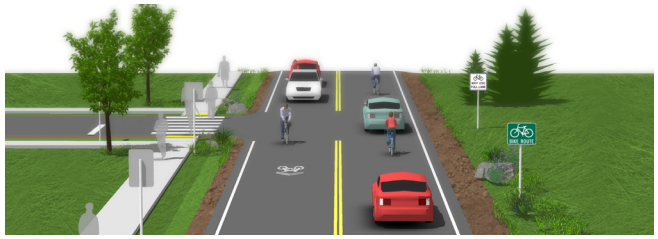
*Separated Bikeway (Class IV)*



*Signed Shared Roadway (Class III)*

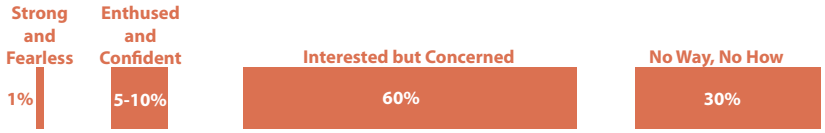


*Signed Shared Roadway with Pavement Markings (Class III)*



## Bicyclist User Type

The current AASHTO Guide to the Development of Bicycle Facilities encourages designers to identify their rider type based on the trip purpose (Recreational vs Transportation) and on the level of comfort and skill of the rider (Causal vs Experienced). An alternate framework for understanding the US population's relationship to transportation focused bicycling is illustrated in the figure below. Developed by planners in Portland, OR* and supported by research**, this classification identifies four categories to address varying attitudes towards bicycling in the US.




*Typical Distribution of Bicyclist Types*

### Four Types of Transportation Bicyclists

**Strong and Fearless** (approximately 1% of population) – Characterized by bicyclists that will typically ride anywhere regardless of roadway conditions or weather. These bicyclists can ride faster than other user types, prefer direct routes and will typically choose roadway connections -- even if shared with vehicles -- over separate bicycle facilities such as shared-use paths.

**Enthused and Confident** (5-10% of population) - This user group encompasses bicyclists who are fairly comfortable riding on all types of bikeways but usually choose low traffic streets or shared-use paths when available. These bicyclists may deviate from a more direct route in favor of a preferred facility type. This group includes all kinds of bicyclists such as commuters, recreationalists, racers and utilitarian bicyclists.

**Interested but Concerned** (approximately 60% of population) – This user type comprises the bulk of the cycling population and represents bicyclists who typically only ride a bicycle on low traffic streets or shared-use paths under favorable weather conditions. These bicyclists perceive significant barriers to their increased use of cycling, specifically traffic and other safety issues. These people may become "Enthused & Confident" with encouragement, education and experience.

**No Way, No How** (approximately 30% of population) – Persons in this category are not bicyclists, and perceive severe safety issues with riding in traffic. Some people in this group may eventually become more regular cyclists with time and education. A significant portion of these people will not ride a bicycle under any circumstances.

* Roger Geller, City of Portland Bureau of Transportation. Four Types of Cyclists. http://www.portlandonline.com/transportation/index.cfm?&a=237507. 2009.

** Dill, J., McNeil, N. Four Types of Cyclists? Testing a Typology to Better Understand Bicycling Behavior and Potential. 2012.

## Design Needs of Bicyclists

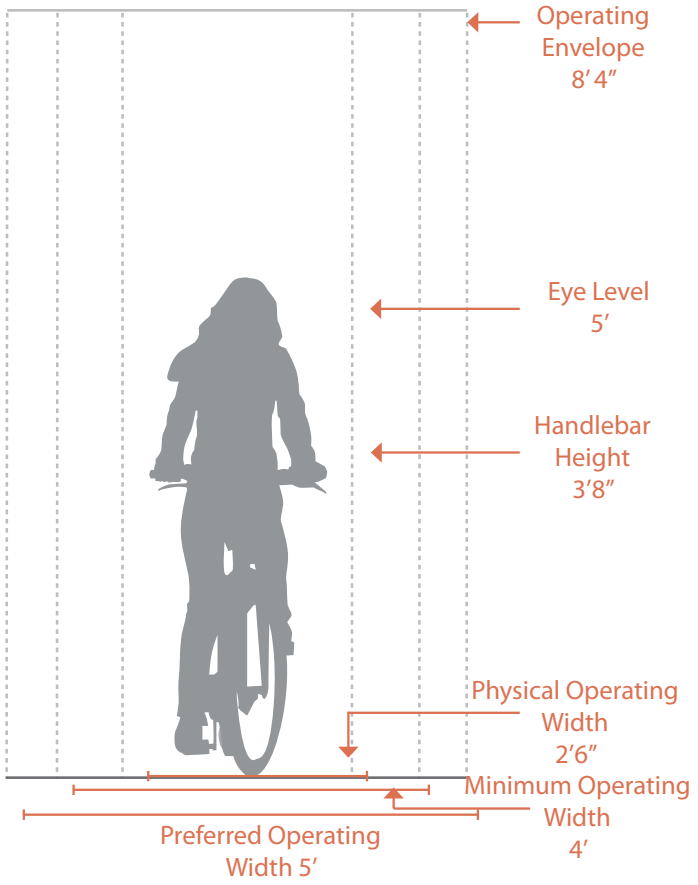
The facility designer must have an understanding of how bicyclists operate and how their bicycle influences that operation. Bicyclists, by nature, are much more affected by poor facility design, construction and maintenance practices than motor vehicle drivers.

Bicyclists lack the protection from the elements and roadway hazards provided by an automobile's structure and safety features. By understanding the unique characteristics and needs of bicyclists, a facility designer can provide quality facilities and minimize user risk.

### Bicycle as a Design Vehicle

Similar to motor vehicles, bicyclists and their bicycles exist in a variety of sizes and configurations. These variations occur in the types of vehicle (such as a conventional bicycle, a recumbent bicycle or a tricycle), and behavioral characteristics (such as the comfort level of the bicyclist). The design of a bikeway should consider reasonably expected bicycle types on the facility and utilize the appropriate dimensions.

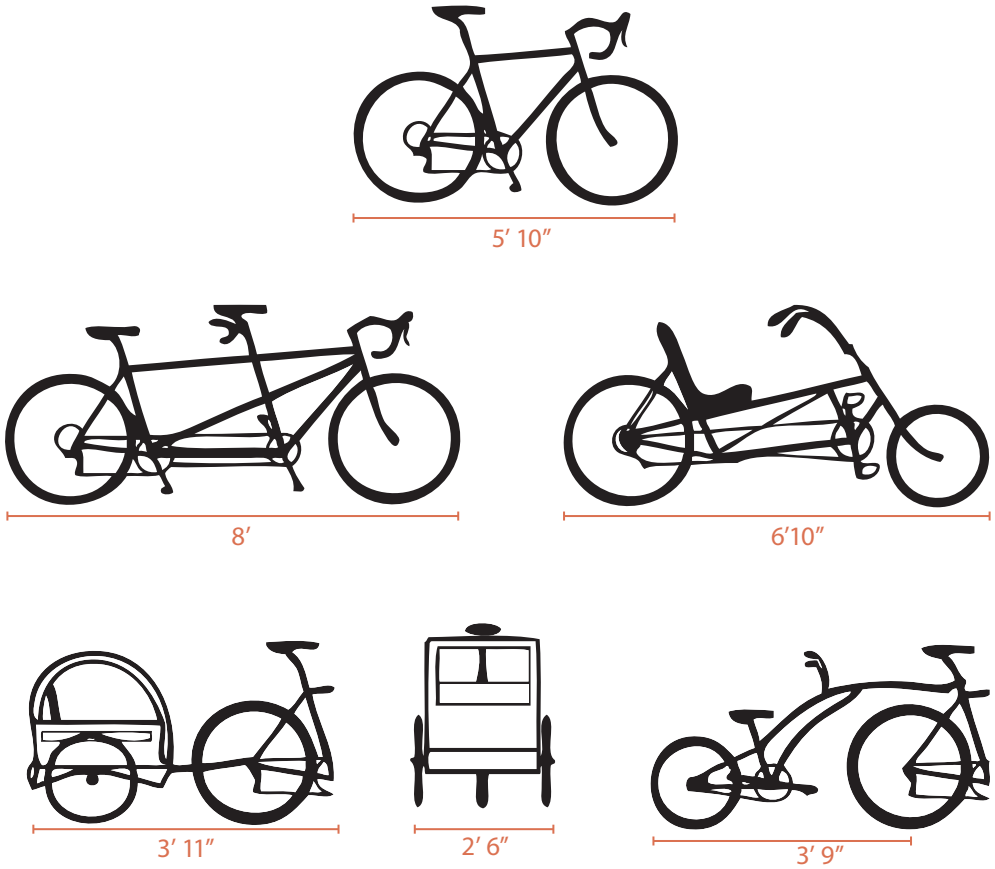
The figure to the right illustrates the operating space and physical dimensions of a typical adult bicyclist, which are the basis for typical facility design. Bicyclists require clear space to operate within a facility. This is why the minimum operating width is greater than the physical dimensions of the bicyclist.




*Bicycle Rider - Typical Dimensions*

Bicyclists prefer five feet or more operating width, although four feet may be minimally acceptable.

In addition to the design dimensions of a typical bicycle, there are many other commonly used pedal-driven cycles and accessories to consider when planning and designing bicycle facilities. The most common types include tandem bicycles, recumbent bicycles, and trailer accessories. The figure to the left summarizes the typical dimensions for bicycle types.




*Bicycle Rider - Typical Dimensions*

## Design Speed Expectations

The expected speed that different types of bicyclists can maintain under various conditions also influences the design of facilities such as shared use paths. The table to the right provides typical bicyclist speeds for a variety of conditions.

*Bicycle as Design Vehicle - Design Speed Expectations*

| Bicycle Type | Feature | Typical Speed |
|---|---|---|
| Upright Adult Bicyclist | Paved level surfacing | 8-12 mph* |
| | Crossing Intersections | 10 mph |
| | Downhill | 30 mph |
| | Uphill | 5 -12 mph |
| Recumbent Bicyclists | Paved level surfacing | 18 mph |

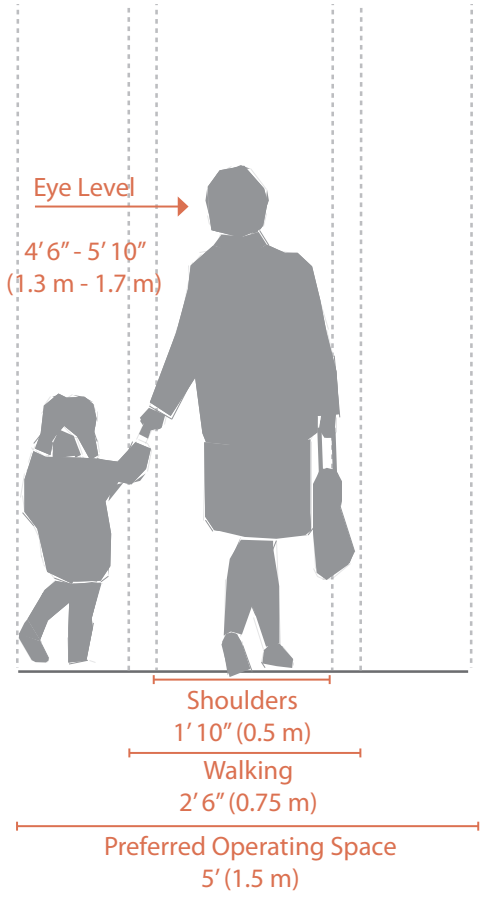
*Typical speed for casual riders per AASHTO 2013.

## Design Needs of Pedestrians

The MUTCD recommends a normal walking speed of 3.5 feet per second when calculating the pedestrian clearance interval at traffic signals. The walking speed can drop to 3 feet per second for areas with older populations and persons with mobility impairments. While the type and degree of mobility impairment varies greatly across the population, the transportation system should accommodate these users to the greatest reasonable extent.

### Types of Pedestrians

Pedestrians have a variety of characteristics and the transportation net-work should accommodate a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians' physical characteristics, walking speed, and environmental perception. Children have low eye height and walk at slower speeds than adults. They also perceive the environment differently at various stages of their cognitive development. Older adults walk more slowly and may require assistive devices for walking stability, sight, and hearing. The table below summarizes common pedestrian characteristics for various age groups.




*Pedestrian - Typical Dimensions*

### Disabled Pedestrian Design Considerations

The tables on the following page summarize common physical and cognitive impairments, how they affect personal mobility, and recommendations for improved pedestrian-friendly design.

*Pedestrian Characteristics by Age*

| Age | Characteristics |
|---|---|
| 0-4 | Learning to walk |
| | Requires constant adult supervision |
| | Developing peripheral vision and depth perception |
| 5-8 | Increasing independence, but still requires supervision |
| | Poor depth perception |
| 9-13 | Susceptible to "darting out" in roadways |
| | Insufficient judgment |
| | Sense of invulnerability |
| 14-18 | Improved awareness of traffic environment |
| | Insufficient judgment |
| 19-40 | Active, aware of traffic environment |
| 41-65 | Slowing of reflexes |
| 65+ | Difficulty crossing street |
| | Vision loss |
| | Difficulty hearing vehicles approaching from behind |

*Disabled Pedestrian Design Considerations*

| Impairment | Effect on Mobility | Design Solution |
|---|---|---|
| Wheelchair and Scooter Users | Difficulty propelling over uneven or soft surfaces. | Firm, stable surfaces and structures, including ramps or beveled edges. |
| | Cross-slopes cause wheelchairs to veer downhill. | Cross-slopes of less than two percent. |
| | Require wider path of travel. | Sufficient width and maneuvering space. |
| Walking Aid Users | Difficulty negotiating steep grades and cross slopes; decreased stability. | Smooth, non-slipperly travel surface. |
| | Slower walking speed and reduced endurance; reduced ability to react. | Longer pedestrian signal cycles, shorter crossing distances, median refuges, and street furniture. |
| Hearing Impairment | Less able to detect oncoming hazards at locations with limited sight lines (e.g. driveways, angled intersections, channelized right turn lanes) and complex intersections. | Longer pedestrian signal cycles, clear sight distances, highly visible pedestrian signals and markings. |
| Vision Impairment | Limited perception of path ahead and obstacles; reliance on memory; reliance on non-visual indicators (e.g. sound and texture). | Accessible text (larger print and raised text), accessible pedestrian signals (APS), guide strips and detectable warning surfaces, safety barriers, and lighting. |
| Cognitive Impairment | Varies greatly. Can affect ability to perceive, recognize, understand, interpret, and respond to information. | Signs with pictures, universal symbols, and colors, rather than text. |

# Pedestrian Crossing Location and Facility Selection

The specific type of treatment at a crossing may range from a simple marked crosswalk to full traffic signals or grade separated crossings. Crosswalk lines should not be used indiscriminately, and appropriate selection of crossing treatments should be evaluated in an engineering study should be performed before a marked crosswalk is installed.

## Crossing Facility Selection

As a starting point to identify a preferred facility, the chart below can be used to determine the recommended type of bikeway to be provided in particular roadway speed and volume situations. To use this chart, identify the appropriate daily traffic volume and travel speed on or the existing or proposed roadway, and locate the facility types indicated by those key variables.

**PEDESTRIAN CROSSING CONTEXTUAL GUIDANCE**
At unsignalized locations

| FACILITY TYPE | | Local 15-25 mph | | Collector 25-30 mph | | | Arterial 30-45 mph | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2 lane | 3 lane | 2 lane | 2 lane with median refuge | 3 lane | 2 lane | 2 lane with median refuge | 3 lane | 4 lane | 4 lane with median refuge | 5 lane | 6 lane | 6 lane with median refuge |
| 1 | Crosswalk Only (high visibility) | ✓ | ✓ | EJ | EJ | X | EJ | EJ | X | X | X | X | X | X |
| 2 | Crosswalk with warning signage and yield lines | EJ | ✓ | ✓ | ✓ | ✓ | EJ | EJ | EJ | X | X | X | X | X |
| 3 | Active Warning Beacon (RRFB) | X | EJ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | X | ✓ | X | X | X |
| 4 | Hybrid Beacon | X | X | EJ | EJ | EJ | EJ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 5 | Full Traffic Signal | X | X | EJ | EJ | EJ | EJ | EJ | EJ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 6 | Grade separation | X | X | EJ | EJ | EJ | X | EJ | EJ | ✓ | ✓ | ✓ | ✓ | ✓ |

**LEGEND**

| | |
|---|---|
| Most Desirable | ✓ |
| Engineering Judgement | EJ |
| Not Recommended | X |

Other factors beyond speed and volume which affect facility selection include traffic mix of automobiles and heavy vehicles, the presence of on-street parking, intersection density, surrounding land use, and roadway sight distance. These factors are not included in the facility selection chart below, but should always be considered in the facility selection and design process.

An engineering study should consider the number of lanes, the presence of a median, the distance from adjacent signalized intersections, the pedestrian volumes and delays, the average daily traffic (ADT), the posted or statutory speed limit or 85th-percentile speed, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.

# Class I: Shared Use Paths

A shared use path allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers, equestrians, and other non-motorized users. These facilities are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles. Path facilities can also include amenities such as lighting, signage, and fencing.

## Shared Use Paths

A shared use paths can provide a desirable facility, particularly for recreation, and users of all skill levels preferring separation from traffic. Paths should generally provide directional travel opportunities not provided by existing roadways. Many shared use paths are open to use by equestrians, in addition to pedestrians, cyclists, and other non-motorized users.


### Typical Application

- Commonly established in natural greenway corridors, utility corridors, or along abandoned rail corridors.
- May be established as short accessways through neighborhoods or to connect to cul-de-sacs.
- May be established along roadways as an alternative on on-street riding. This configuration is called a sidepath.

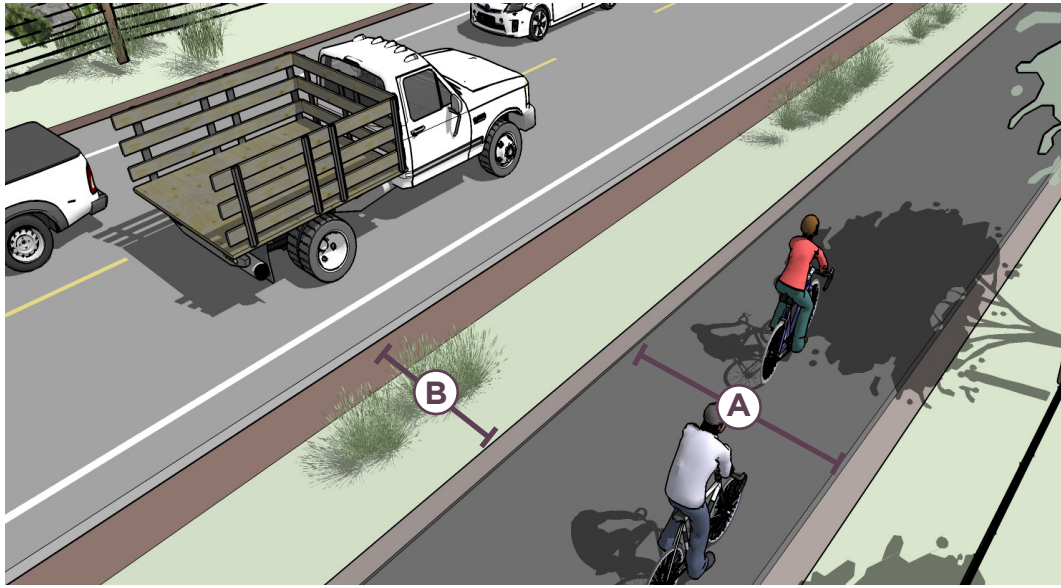
### Design Features

(A) Recommended 10' width to accommodate moderate usage (12' preferred for heavy use). Minimum 8' width for low traffic situations only.

- Minimum 2' shoulder width on both sides of the path, with an additional foot of lateral clearance as required by the MUTCD for the installation of signage or other furnishings. 3' shoulders when equestrian use is anticipated.
- Recommended 10' clearance to overhead obstructions (8' minimum). 12' recommended when equestrian use is anticipated.
- When striping is required, use a 4" dashed yellow centerline stripe with 4" solid white edge lines. Solid centerlines can be provided on tight or blind corners, and on the approaches to roadway crossings.

## Sidepaths

A sidepath is a bidirectional shared use path located immediately adjacent and parallel to a roadway. Sidepaths can offer a high-quality experience for users of all ages and abilities as compared to on-roadway facilities in heavy traffic environments, allow for reduced roadway crossing distances and maintain community character.




### Typical Application

- For completing networks where existing roads provide the only corridors available.
- To connect sections of independent paths or low-stress local routes such as shared use paths and bicycle boulevards.
- Work best on roadways with high operating speeds and high motor vehicle volumes.

### Design Features

(A) Preferred minimum pathway width is 10 ft. In low volume situations, 8 ft minimum may be adequate.

(B) Preferred minimum roadways separation width is 6.5 ft, with an absolute minimum separation width of 5 ft. Minimum dimension separation is only appropriate on low speed roadways. (AASHTO 2012)

- Separation narrower than 5 feet is not recommended, but may be accommodated with the use of a physical barrier between the sidepath and the roadway. (AASHTO Bike Guide, 2012, pp. 5-11).

## Causeways

Causeways or "berm" type path construction may be used to minimize disturbance of water flow in stream environment zones. Paths are elevated above wet ground using a permeable fill material as a base.

### Design Features

Design criteria for causeways should meet AASHTO and Caltrans design recommendations for paved shared-use paths.

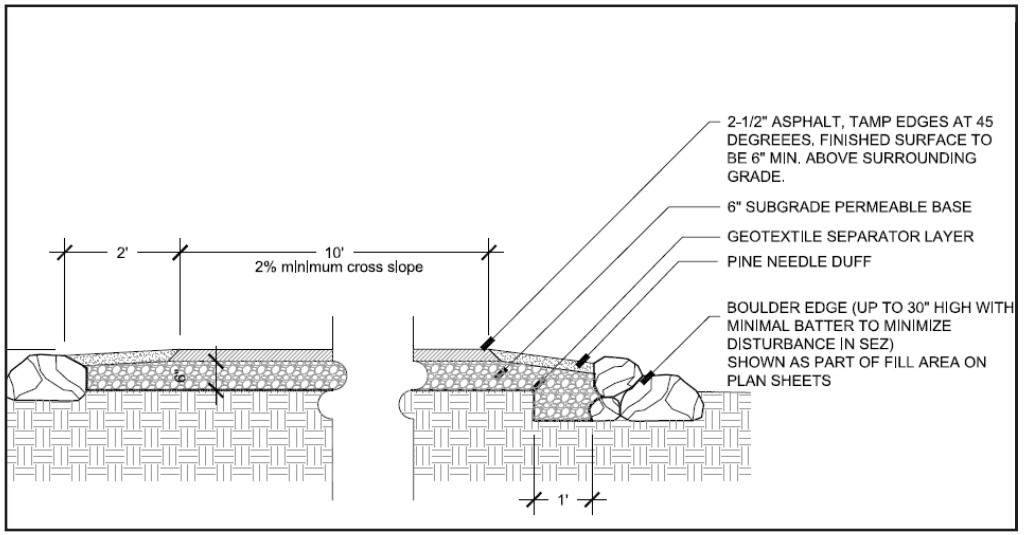
Path edges incorporate small boulders or a rock riprap to contain the permeable fill. Geotextile mats and other construction materials such as geocells can be incorporated to ensure a stable base on which asphalt or concrete paving may be applied. The path should be built up to an elevation no greater than 30 inches above natural grade.

#### Base

Path construction and detailing depends on water table and surface flows through site. A stable base for paving must be established while allowing for water flow under path. Base materials should be designed so as not to be compromised by future water flows. Firm mineral soil, coarse-grained soils or granular material, or small, well-graded angular rocks are needed for fill.

It should be noted that AASHTO recommends 42" high railings on any structured path.

*Causeway Cross Section*



## Aggregate Surface Trails

Aggregate surface trails are most applicable in non-urban environments and in multi-use areas where a variety of recreational use is anticipated. This includes hiking, biking, mountain biking, and equestrian use. Aggregate surface trails composed of crushed rock using pine tar or other trail stabilization techniques can fit in well with a natural setting and can cost less to construct than an asphalt trail.

### Typical Application

Sustainable design must consider these forces – compaction, displacement, and erosion – that are caused by water and trail use. Compaction will deepen the heavily traveled portion of the trail. Displacement deepens the tread and raises the untraveled edges. Erosion follows and further deepens the tread. Understanding the site soils, topography, water movement, and anticipated use patterns should be considered during the trail design.

This type of trail may be considered for both permanent and temporary use. As a temporary facility, future phasing would then include returning to the site and paving the surface. This allows for major grading and stabilization to be completed during the first phase and paving completed during the second phase.

### Design Features

#### Width

Trail widths vary depending upon anticipated type and volume of use.

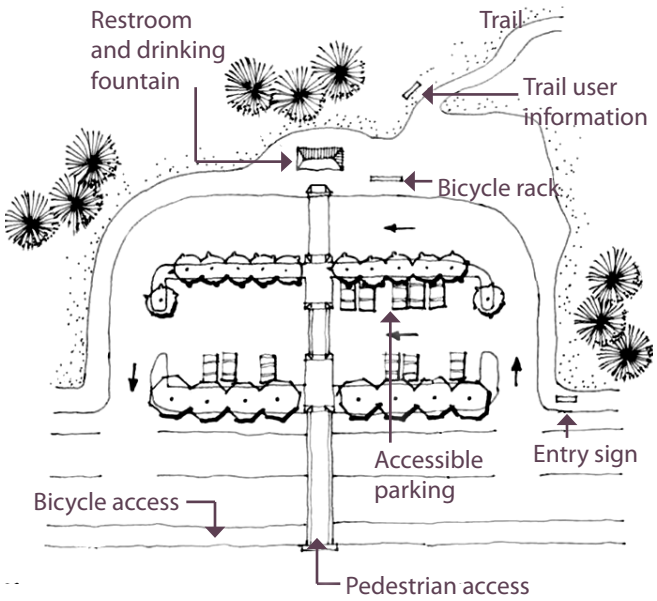
## Trailhead Area

Good access to a path system is a key element for its success. Trailheads serve the local and regional population arriving to the path system by car, transit, bicycle or other modes. Trailheads provide essential access to the shared use path system and include amenities like parking for vehicles and bicycles, restrooms (at major trailheads), and posted maps.

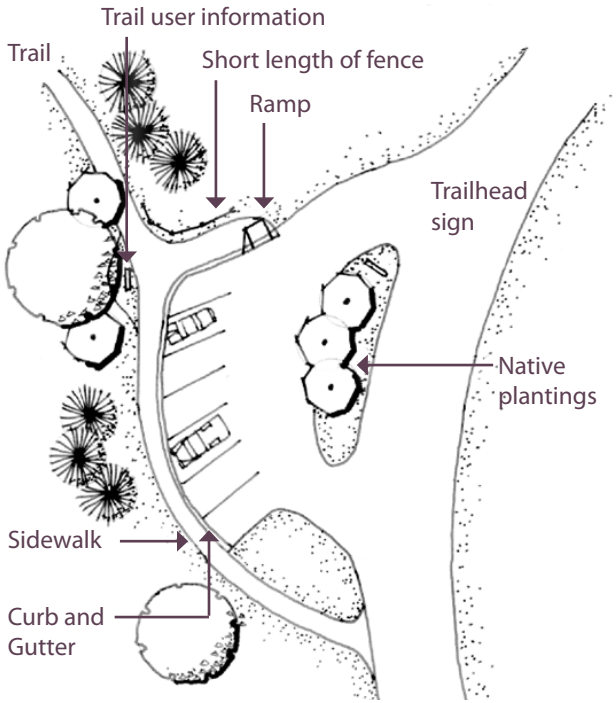
### Design Features

- Major trailheads should include automobile and bicycle parking, trail information (maps, user guidelines, wildlife information, etc.), garbage receptacles and restrooms.
- Minor trailheads can provide a subset of these amenities.

**Major Trailhead**

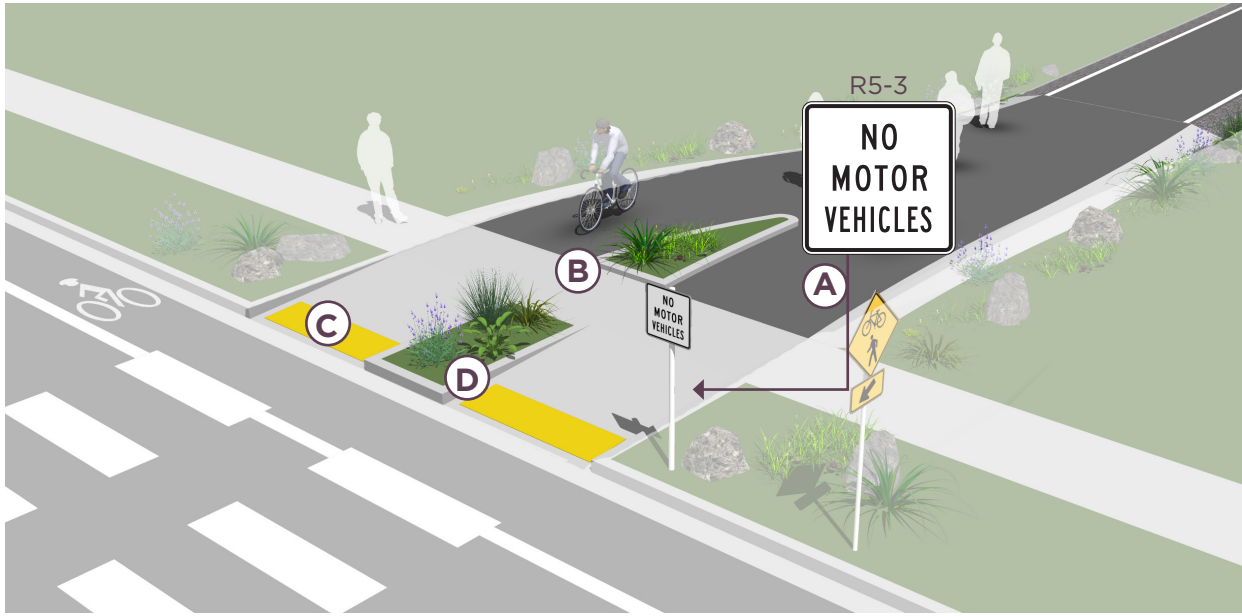



**Minor Trailhead**



## Bollard Alternatives

Bollards are physical barriers designed to restrict motor vehicle access to the multi-use path. Unfortunately, physical barriers are often ineffective at preventing access, and create obstacles to legitimate trail users. Alternative design strategies use signage, landscaping and curb cut design to reduce the likelihood of motor vehicle access.




### Typical Application

- Bollards or other barriers should not be used unless there is a documented history of unauthorized intrusion by motor vehicles.
- If unauthorized use persists, assess whether the problems posed by unauthorized access exceed the risks and issues posed by bollards and other barriers.

### Design Features

(A) "No Motor Vehicles" signage (MUTCD R5-3) may be used to reinforce access rules.

(B) At intersections, split the path tread into two sections separated by low landscaping.

(C) Vertical curb cuts should be used to discourage motor vehicle access.

- Consider targeted surveillance and enforcement at specific intrusion locations

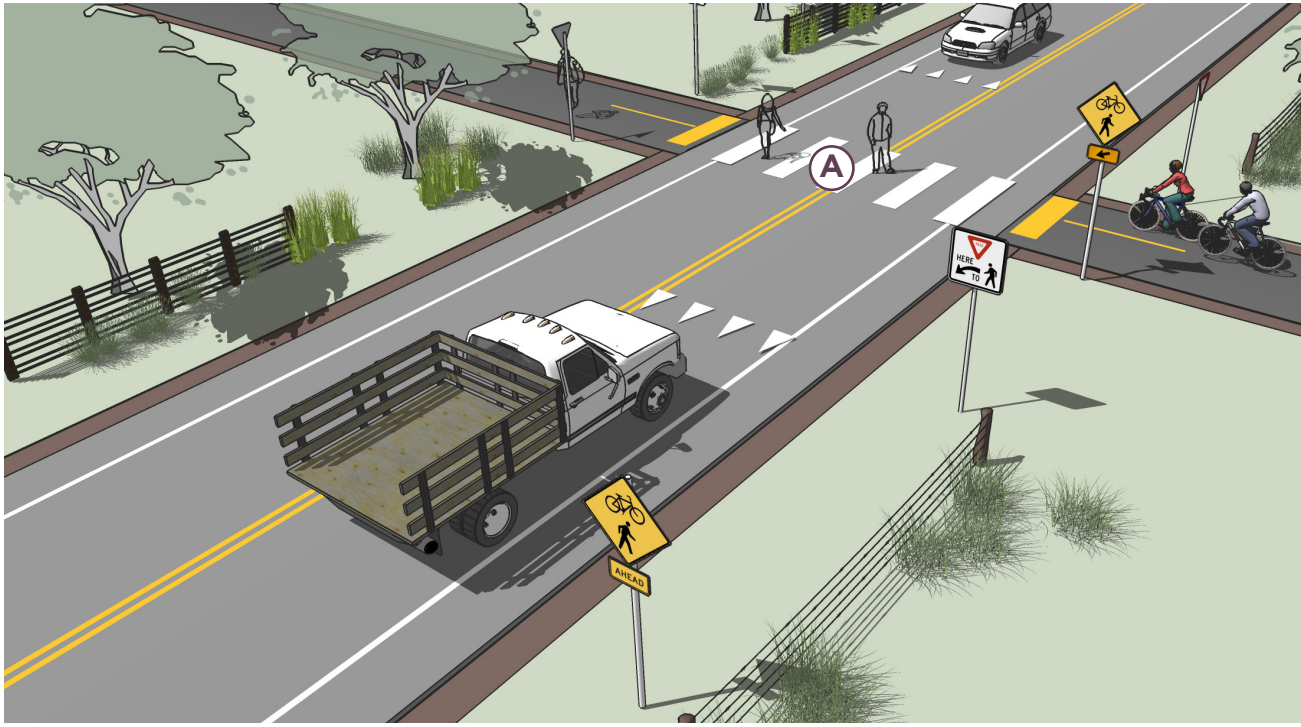
(D) Low landscaping preserves visibility and emergency access

# Shared Use Path and Sidepath Crossings

Intersections are junctions at which different modes of transportation meet and facilities overlap. An intersection facilitates the interchange between bicyclists, motorists, pedestrians and other modes in order to advance traffic flow in a safe and efficient manner. Designs for intersections with bicycle facilities should reduce conflict between bicyclists and motor vehicles by heightening the level of visibility, denoting clear right-of-way and facilitating eye contact and awareness with other modes.

## Basic Path Crossings

At non intersection areas, markings must be used to establish a legal crosswalk. Well–designed midblock crossings can provide many safety benefits to path user safety and comfort.




### Typical Application

- Where shared use paths intersect with collector or minor arterial streets.
- Path crossings should not be provided within approximately 400 feet of an existing signalized intersection. If possible, route path directly to the signal.

### Design Features

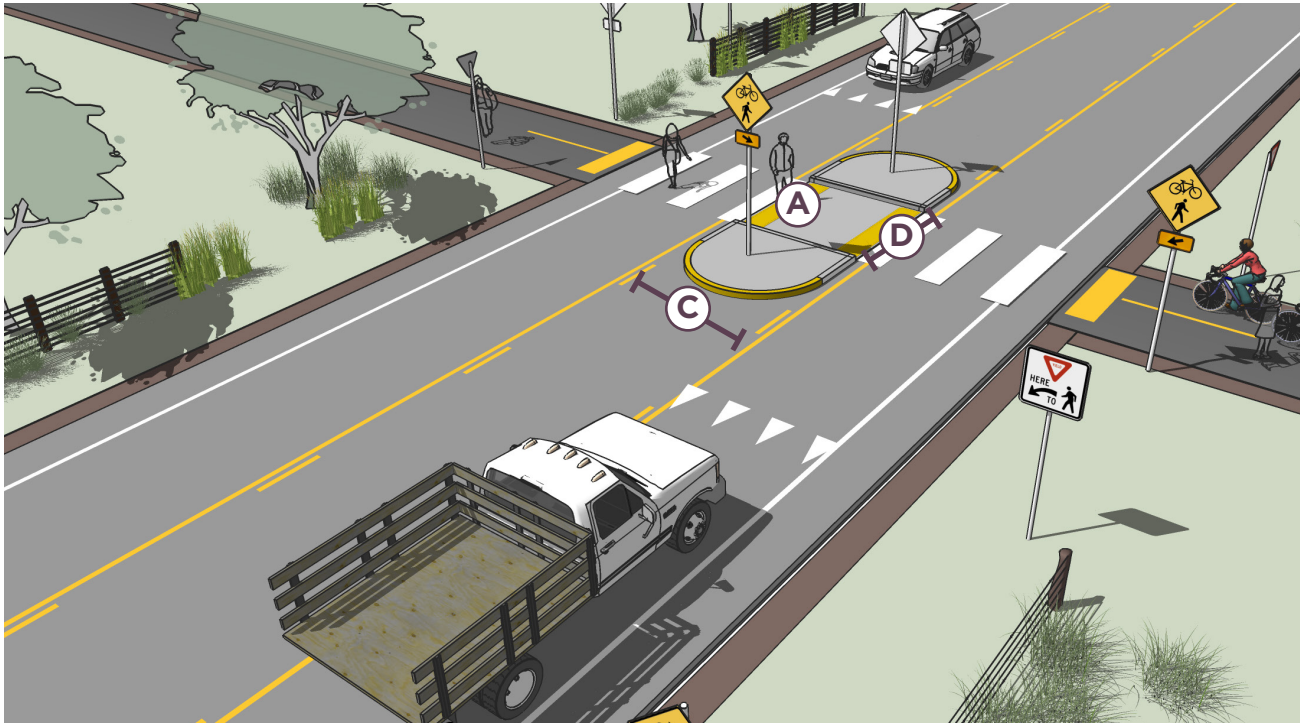
(A) Crosswalk markings legally establish midblock shared use path crossing. (FHWA 2009)

(B) Crossing assemblies draw attention to the crossing

- Where feasible, traffic calming features such as speed humps or median islands may be integrated into the crossing to improve yielding by motorists.

## Median Crossings

Median safety islands are located at the mid-point of a marked crossing and help improve path user safety by allowing pedestrians to cross one direction of traffic at a time. Safety islands minimize pedestrian exposure by shortening crossing distance and increasing the number of available gaps for crossing.




### Typical Application

- Can be applied on any roadway with a left turn center lane or median that is at least 8' wide, or where wide traffic lanes and/or shoulders can be narrowed enough to provide at least 8' of space for the crossing island.
- May be appropriate on multi-lane roadways depending on speeds and volumes. Consider configuration with active warning beacons for improved yielding compliance.
- Appropriate at signalized or unsignalized crosswalks. Where unsignalized, refuge areas are recommended when pedestrians cross two or more through traffic lanes in one direction.

### Design Features

(A) The island must be accessible, preferably with at-grade passage through the island rather than ramps and landings. Detectable warning surfaces must be full-width and 2 ft deep to warn blind pedestrians.

(B) Pair MUTCD W11-15 and W16-7P crossing sign assembly.

(C) Requires 8' width between travel lanes and 20 ft length (40' preferred). (AASHTO 2012)

(D) The path through the median should be the same width of the crosswalk. Minimum clear width of 4 ft required.

## Active Enhanced Crossings

Active enhanced crossings feature user-actuated warning beacons to increase motor vehicle yielding compliance at crossings of multi lane or high volume roadways. Types of active warning beacons include conventional circular yellow flashing beacons, in-roadway warning lights, or Rectangular Rapid Flash Beacons (RRFB) or pedestrian hybrid beacons.


### Typical Application

- Located at high-volume pedestrian crossings, or at priority bicycle route crossings, including shared-use paths.
- Implemented at mid-block locations or at intersections where signals are not warranted or desired.
- Where driver yield compliance at shared use path crossings is low.

### Design Features

(A) Includes MUTCD W11-15 and W16-7P signage.

(B) Providing multi-beacon installations on mast arms or center islands improves driver yielding behavior

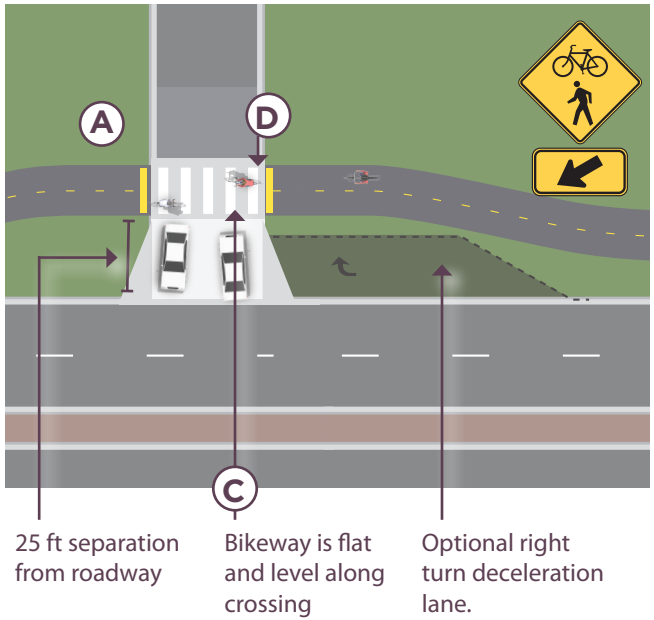
(C) Painted yield line markings with MUTCD R1-5 signage at yield location.

(D) Pushbuttons should be easy to identify and access and be user-responsive.

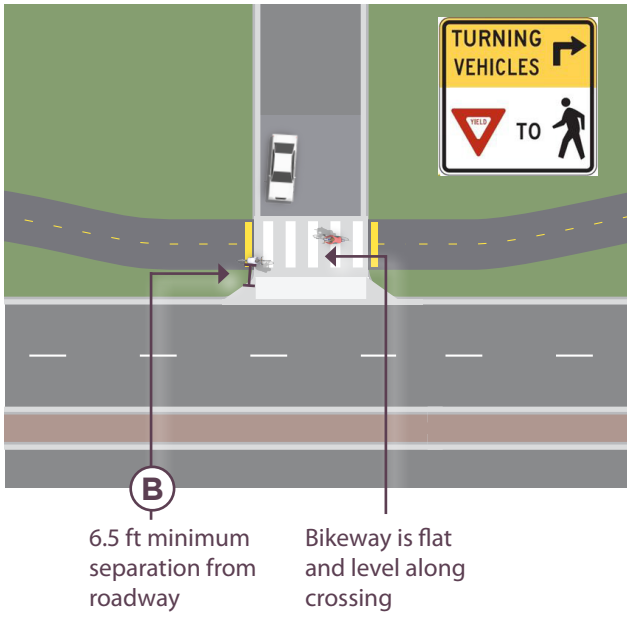
## Sidepath Crossings

Sidepaths provide a high degree of comfort on long uninterrupted roadway segments, but have operational and safety concerns at driveways and intersections with secondary streets. Crossings should be designed to promote awareness, and facilitate proper yielding of motorists to bicyclists and pedestrians.

***High Speed Conditions***




***Low/Intermediate Speed Conditions***




### Typical Application

- At controlled and uncontrolled sidepath crossings of driveways or minor streets.
- Used to provide for visibility and awareness of the crossing by motorist in advance of the crossing.
- Increases the predictability of sidepath and road user behavior through clear, unambiguous right of way priority.

### Design Features

(A) The sidepath should be given the same priority as the parallel roadway at all crossings.

- Provide clear sight triangles for all approaches of the crossing.

(B) Maintain physical separation to the crossing of 6.5 to 25 ft. As speeds on the parallel roadway increase, so does the preference for wider separation distance.

(C) Configure crossings with raised speed table and median safety island

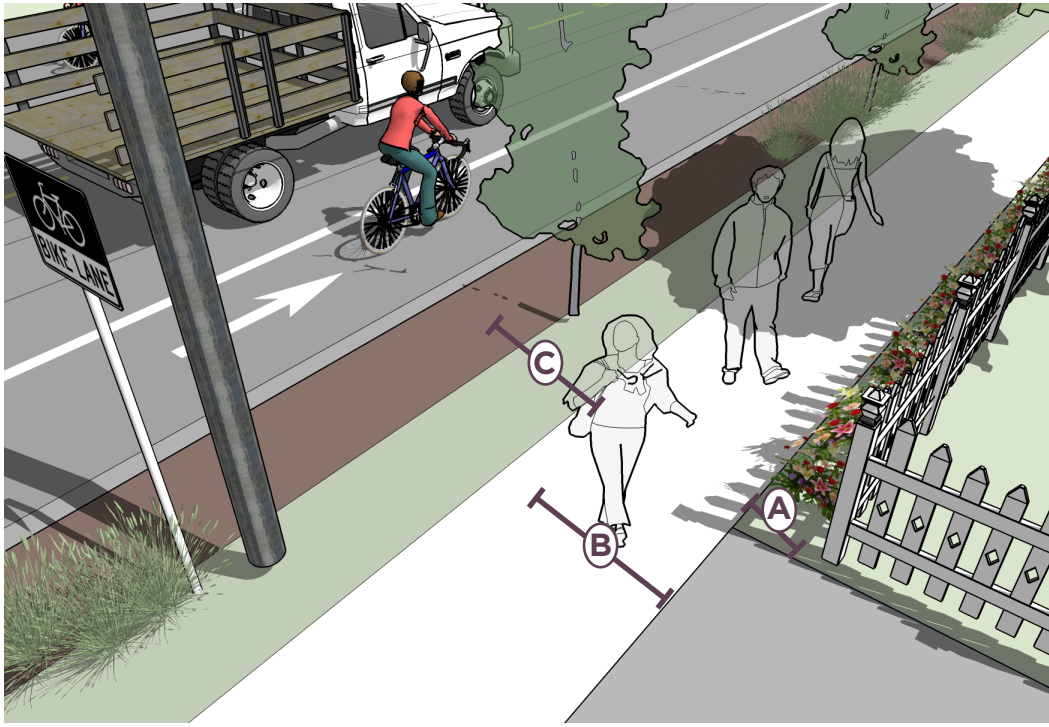
(D) Use high visibility crosswalk markings to indicate the through area of the crosswalk.

# Pedestrian Infrastructure

Sidewalks should be more than areas to travel; they should provide places for people to interact. There should be places for standing, visiting, and sitting. Sidewalks should contribute to the character of neighborhoods and business districts, strengthen their identity, and be an area where adults and children can safely participate in public life.

## Sidewalk Zones and Widths

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel separated from vehicle traffic. Providing adequate and accessible facilities can lead to increased numbers of people walking, improved safety, and the creation of social space.




### Typical Application

- Sidewalks should be provided on both sides of commercial streets and should be required in areas of moderate residential density (1-4 dwelling units per acre).
- When retrofitting gaps in the sidewalk network, locations near transit stops, schools, parks, public buildings, and other areas with high concentrations of pedestrians should be the highest priority.

### Design Features

(A) **Frontage Zone:** On most sidewalks, a frontage zone of 1 to 2 ft (0.3 – 0.6 m) back from the property line is recommended to provide a shy distance to fences and building walls.

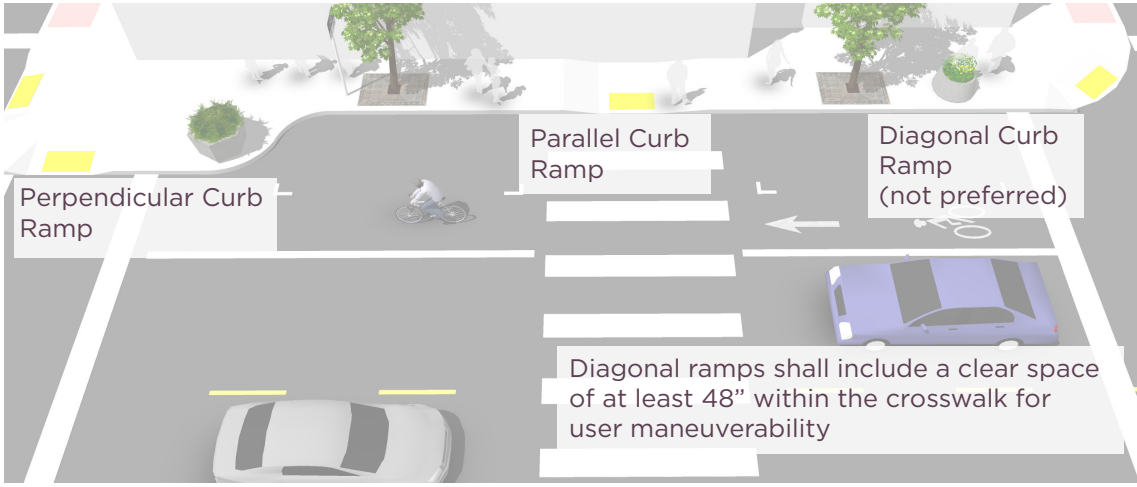
(B) **Pedestrian Through Zone:** The pedestrian through zone of a sidewalk should be at least 5 ft (1.2 m) wide. This permits side-by-side walking, meeting and passing events, and meets accessibility guidelines for turning and maneuvering.

(C) **Furnishing Zone:** A buffer zone of 4 to 6 ft (1.2 - 1.8 m) is preferred for pedestrian comfort. This width allows for signs, trees, utilities, mailboxes and snow storage.

## ADA Compliant Curb Ramps

Curb ramps are the design elements that allow all users to make the transition from the street to the sidewalk. There are a number of factors to be considered in the design and placement of curb ramps at corners. Properly designed curb ramps ensure that the sidewalk is accessible from the roadway. A sidewalk without a curb ramp can be useless to someone in a wheelchair, forcing them back to a driveway and out into the street for access.

Curb ramps shall be located so that they do not project into vehicular traffic lanes, parking spaces, or parking access aisles. Three configurations are illustrated below.




Crosswalk spacing not to scale. For illustration purposes only.

### Typical Application

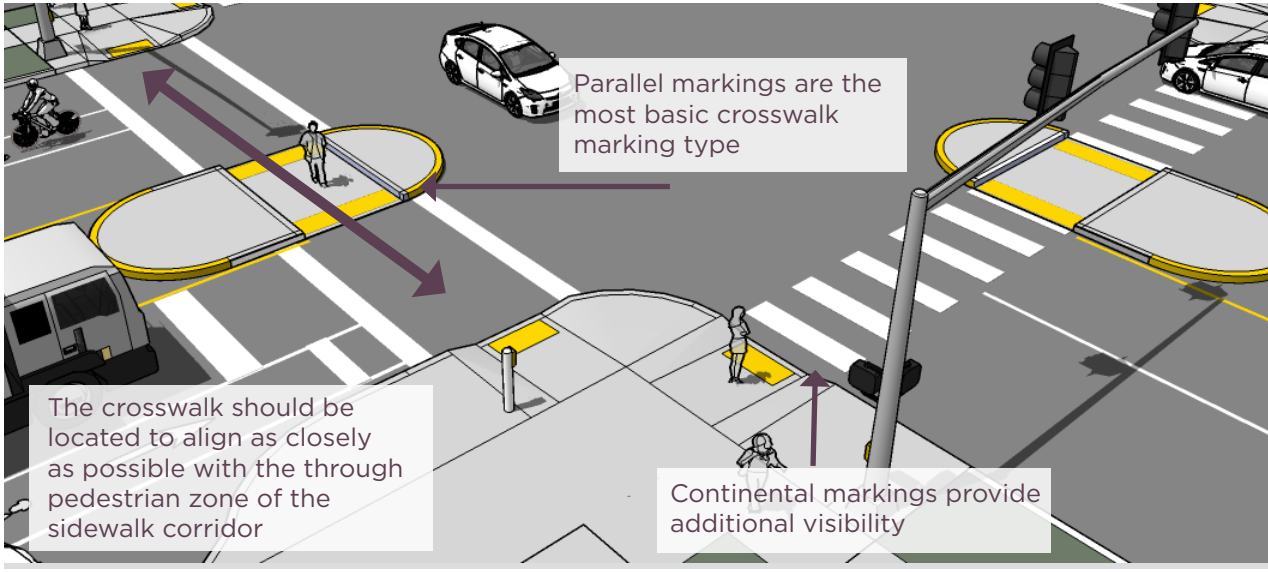
- Curb ramps are used to assist people with mobility devices to cross the street at intersections. They also accommodate individuals with strollers, bicycles, carts and strollers.
- ADA requires all new and rebuilt curb ramps to provide accessibility for people with disabilities, including blind pedestrians.

### Design Features

- The landing at the top of a ramp shall be at least 4 feet long and at least the same width as the ramp itself.
- The ramp shall slope no more than 1:12, with a maximum cross slope of 2.0%.
- If the ramp runs directly into a crosswalk, the landing at the bottom will be in the roadway.
- If the ramp lands on a dropped landing within the sidewalk or corner area where someone in a wheelchair may have to change direction, the landing must be a minimum of 5’-0” long and at least as wide as the ramp, although a width of 5’-0” is preferred.

## Marked Crosswalks

A marked crosswalk signals to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer especially on multi-lane roadways. At mid-block locations, crosswalks can be marked where there is a demand for crossing and there are no nearby marked crosswalks.




### Typical Application

All crosswalks should be marked at signalized intersections. At unsignalized intersections, crosswalks may be marked under the following conditions:

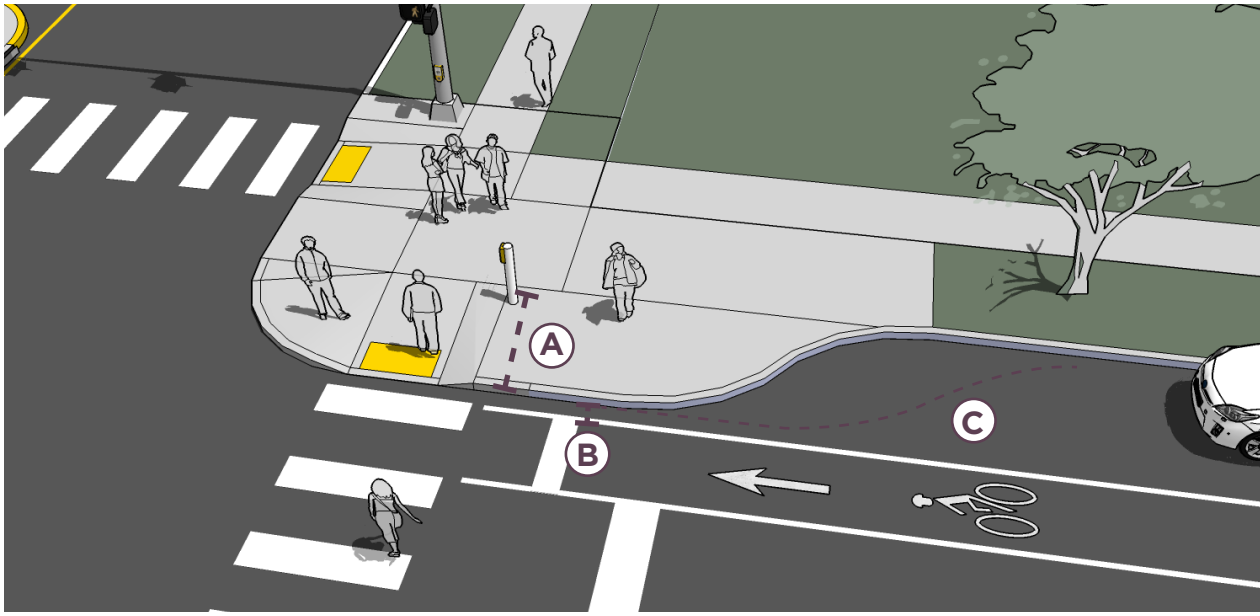
- At a complex intersection, to orient pedestrians in finding their way across.
- At an offset intersection, to show pedestrians the shortest route across traffic with the least exposure to vehicular traffic and traffic conflicts.
- At an intersection with visibility constraints, to position pedestrians where they can best be seen by oncoming traffic.
- At an intersection within a school zone on a walking route.

### Design Features

- The landing at the top of a ramp shall be at least 4 feet long and at least the same width as the ramp itself.
- The ramp shall slope no more than 1:12, with a maximum cross slope of 2.0%.
- If the ramp runs directly into a crosswalk, the landing at the bottom will be in the roadway.
- If the ramp lands on a dropped landing within the sidewalk or corner area where someone in a wheelchair may have to change direction, the landing must be a minimum of 5’-0” long and at least as wide as the ramp, although a width of 5’-0” is preferred.

## Curb Extensions

Curb extensions minimize pedestrian exposure during crossing by shortening crossing distance and giving pedestrians a better chance to see and be seen before committing to crossing.




### Typical Application

- Within parking lanes appropriate for any crosswalk where it is desirable to shorten the crossing distance and there is a parking lane adjacent to the curb.
- May be possible within non-travel areas on roadways with excess space.
- Particularly helpful at midblock crossing locations.

### Design Features

(A) Extended curb shortens pedestrian crossing distance.

- For purposes of efficient street sweeping, the minimum radius for the reverse curves of the transition is 10 ft and the two radii should be balanced to be nearly equal.

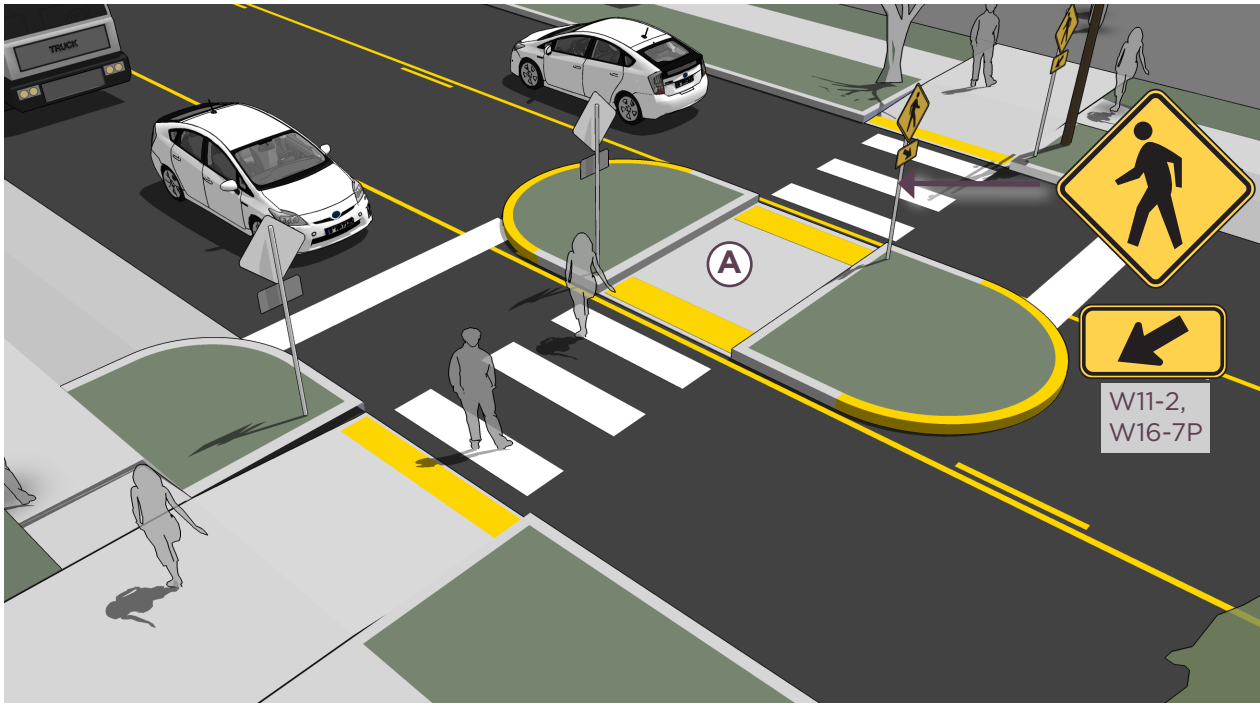
(B) When a bike lane is present, the curb extensions should terminate one foot short of the parking lane to maximize bicyclist safety.

- Planted curb extensions may be designed as a bioswale for stormwater management.

(C) Curb extension length can be adjusted to accommodate bus stops or street furniture.

## Median Refuge Island

Median refuge islands are located at the mid-point of a marked crossing and help improve pedestrian safety by allowing pedestrians to cross one direction of traffic at a time. Refuge islands minimize pedestrian exposure by shortening crossing distance and increasing the number of available gaps for crossing.




### Typical Application

- Can be applied on any roadway with a left turn center lane or median that is at least 6' wide.
- May be appropriate on multi-lane roadways depending on speeds and volumes. Consider configuration with active warning beacons for improved yielding compliance.
- Appropriate at signalized or unsignalized crosswalks. Where unsignalized, Caltrans encourages refuge areas where pedestrians cross 2 or more through traffic lanes in one direction (HDM).

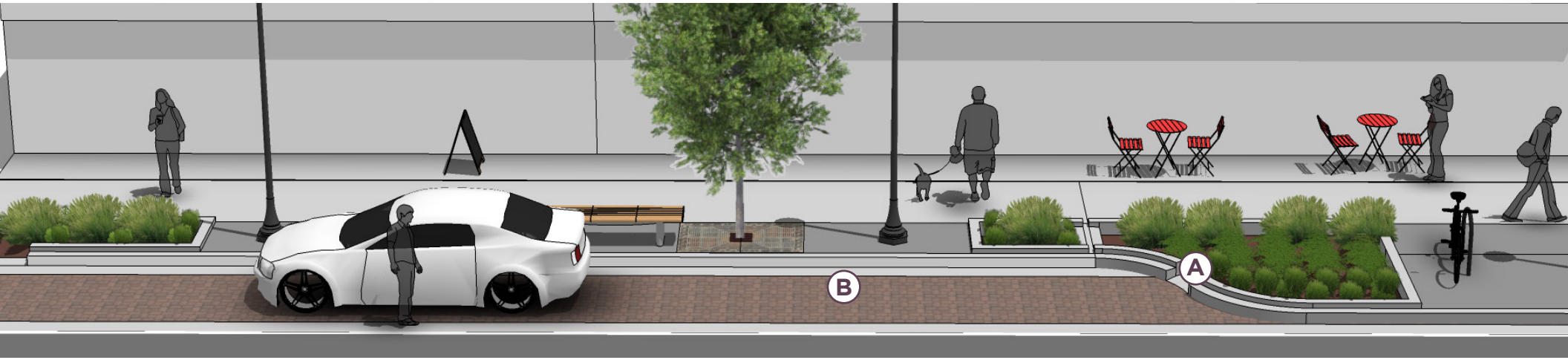
### Design Features

(A) The island must be accessible, preferably with at-grade passage through the island rather than ramps and landings to better accommodate wheelchair users. Detectable warning surfaces must be full-width and 3' deep to warn blind pedestrians (DIB 82-05, 2013).

- Requires 6' width between travel lanes (8-10' preferred to accommodate bikes with trailers and wheelchair users) and 20' length (40' preferred). Clear width of 4' required, but preferably same width as crosswalk.
- On streets with speeds higher than 25 mph, there should also be double centerline marking, reflectors, and "KEEP RIGHT" signage.

## Green Infrastructure

Green infrastructure treats and slows runoff from impervious surface areas, such as roadways, sidewalks, and buildings. Sustainable stormwater strategies may include bioretention swales, rain gardens, tree box filters, and pervious pavements (pervious concrete, asphalt and pavers).




### Typical Application

- Install in areas without conventional stormwater systems that are prone to flooding to improve drainage and reduce costs compared to installing traditional gutter and drainage systems.
- Bioswales and rain gardens are appropriate at curb extensions and along planting strips.
- Street trees and plantings can be placed in medians, chicanes, and other locations.
- Pervious pavers can be used along sidewalks, street furniture zones, parking lanes, gutter strips, or entire roadways.

### Design Features

**Bioswales**

(A) Bioswales are shallow depressions with vegetation designed to capture, treat, and infiltrate stormwater runoff by reducing velocity and purifying the water while recharging the underlying groundwater table.

**Pervious Pavement**

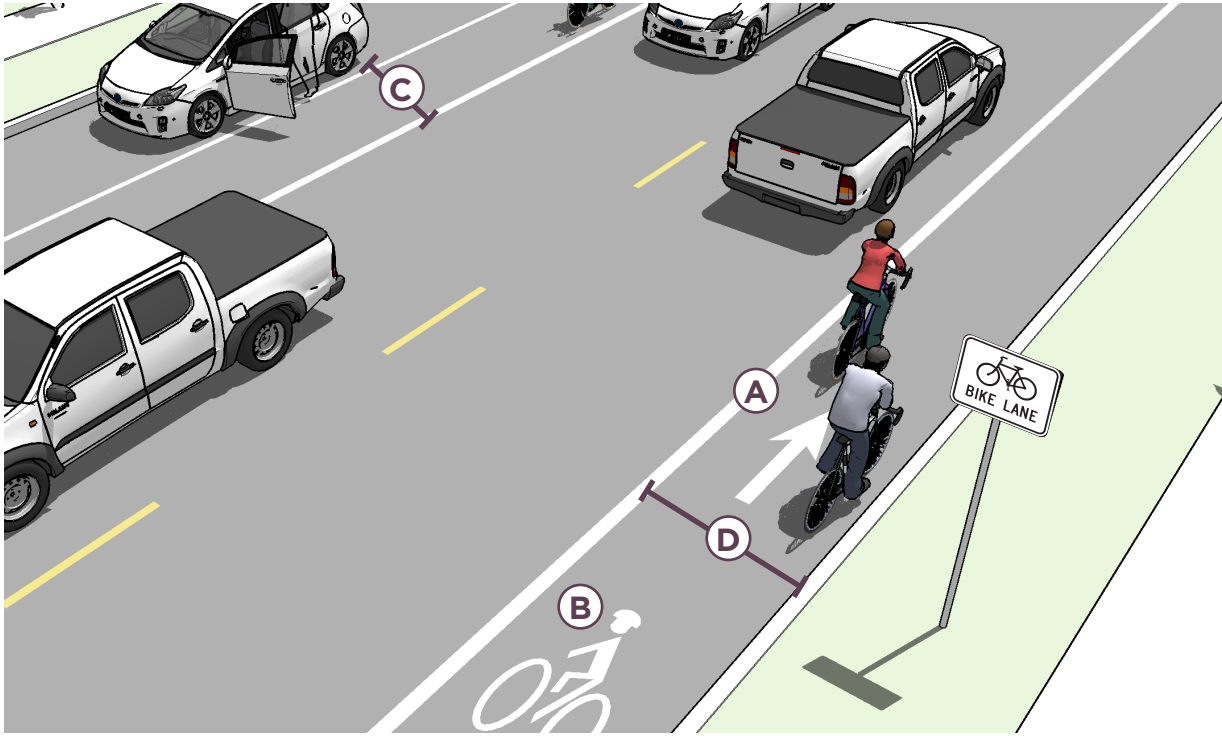
(B) In areas where landscaping such as swales are less desired or feasible, pervious pavement can also effectively capture and treat stormwater runoff.

## Class II: On-Street Bike Lanes

Designated exclusively for bicycle travel, on-street bike lanes are separated from vehicle travel lanes by striping, and can include pavement stencils and other treatments. On-street bike lanes are most appropriate on collector streets with single-lane of traffic in each direction where moderate traffic volumes and speeds are too high for shared-roadway use.

## Bike Lanes

On-street bike lanes (Class II Bikeways) designate an exclusive space for bicyclists through the use of pavement markings and signage. The bike lane is located directly adjacent to motor vehicle travel lanes and is used in the same direction as motor vehicle traffic. Bike lanes are typically on the right side of the street, between the adjacent travel lane and curb, road edge or parking lane.




### Typical Application

- Streets with moderate volumes ≥ 6,000 ADT (≥ 3,000 preferred).
- Streets with moderate speeds ≥ 25 mph.
- Appropriate for skilled adult riders on most streets.
- May be appropriate for children when configured as 6+ ft wide lanes on lower-speed, lower-volume streets with one lane in each.

### Design Features

(A) Mark inside line with 6"stripe. (CAMUTCD 9C.04) Mark 4" parking lane line or "Ts".*

(B) Include a bicycle lane marking (CAMUTCD Figure 9C-3) at the beginning of blocks and at regular intervals along the route. (CAMUTCD 9C.04)

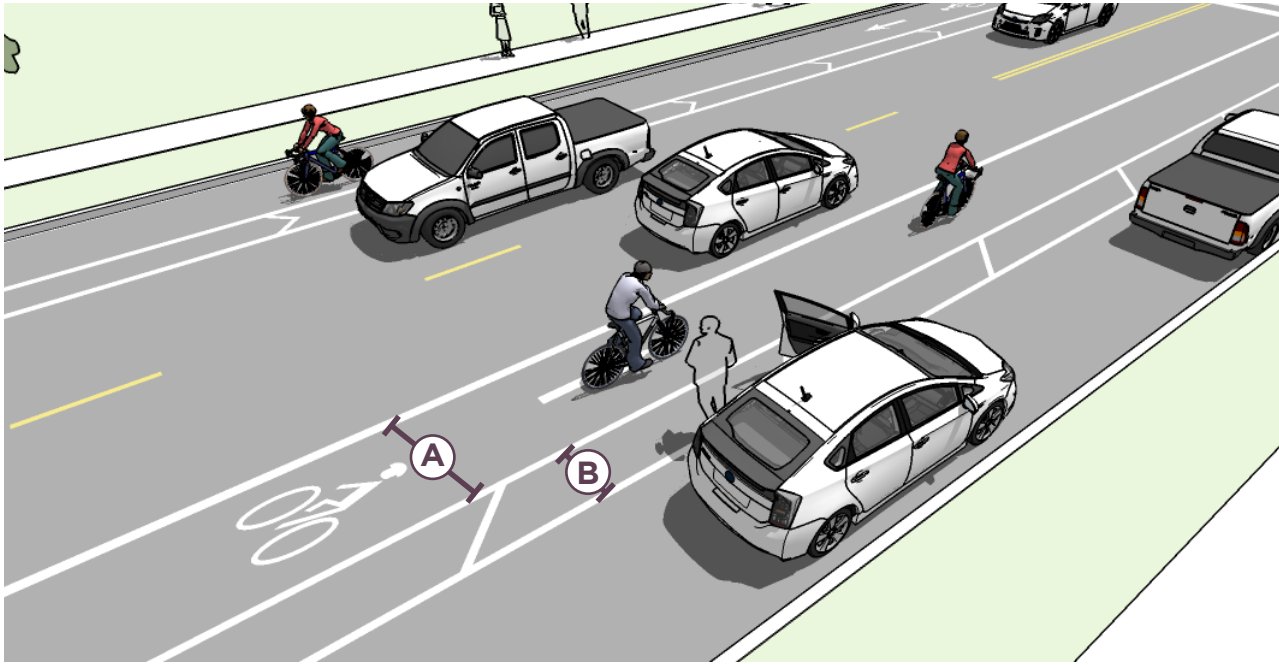
(C) 6 foot width preferred adjacent to on-street parking, (5 foot min.) (HDM)

(D) 5–6 foot preferred adjacent to curb and gutter. (4 foot min.) or 3 feet more than the gutter pan width. (HDM)

* Studies have shown that marking the parking lane encourages people to park closer to the curb. FHWA. Bicycle Countermeasure Selection System. 2006.

## Buffered Bike Lanes

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space, separating the bike lane from the adjacent motor vehicle travel lane and/or parking lane.




### Typical Application

- Anywhere a conventional bike lane is being considered.
- On streets with high speeds and high volumes or high truck volumes.
- On streets with extra lanes or lane width.
- Appropriate for skilled adult riders on most streets.

### Design Features

(A) The minimum bicycle travel area (not including buffer) is 5 feet wide.

(B) Buffers should be at least 2 feet wide. If buffer area is 4 feet or wider, white chevron or diagonal markings should be used. (CAMUTCD 9C-104)

- For clarity at driveways or minor street crossings, consider a dotted line.
- There is no standard for whether the buffer is configured on the parking side, the travel side, or a combination of both.

# Bike Lanes at Intersections

Intersections are junctions at which different modes of transportation meet and facilities overlap. An intersection facilitates the interchange between bicyclists, motorists, pedestrians and other modes in order to advance traffic flow in a safe and efficient manner. Designs for intersections with bicycle facilities should reduce conflict between bicyclists and motor vehicles by heightening the level of visibility, denoting clear right-of-way and facilitating eye contact and awareness with other modes.

# Bike Lanes at Intersections

Design strategies for bicycle lanes at intersections emphasize reducing speeds, minimizing exposure, raising awareness, and communicating right-of-way priority.

## Typical Application

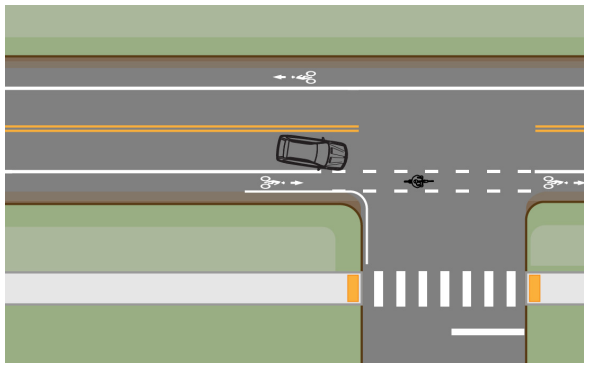
- A variety of design treatments exist depending on the roadway configuration, available curb-to-curb width, traffic volumes and desire to provided a dedicated turn lane.

## Design Features

Potential bicycle lane intersection treatments include:

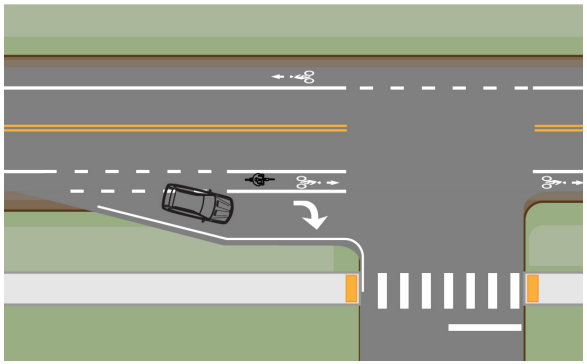
- Intersection crossing markings
- Combined bike lane/turn lane
- Bike Box
- Through bicycle lane
- Solid or dashed green colored bicycle lanes
- Protected bicycle signal phase

***Intersection Crossing Markings***



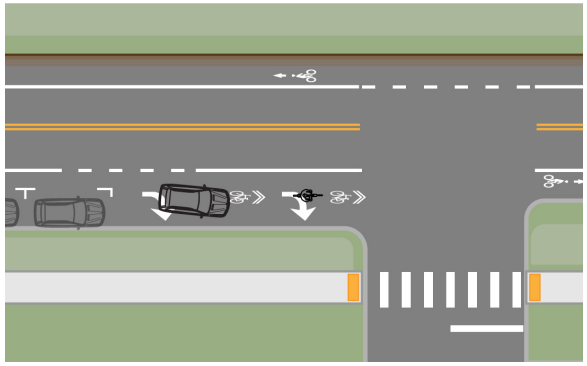
Dotted bike lane line extensions through intersections can guide bicyclists and alert motorists to the bike lane path. (FHWA 2009)

***Through Bike Lane***



At intersections with increased right turn volume, an added right turn lane to the right of a bike lane allows users to negotiate potential conflicts before the intersection. (FHWA 2009)

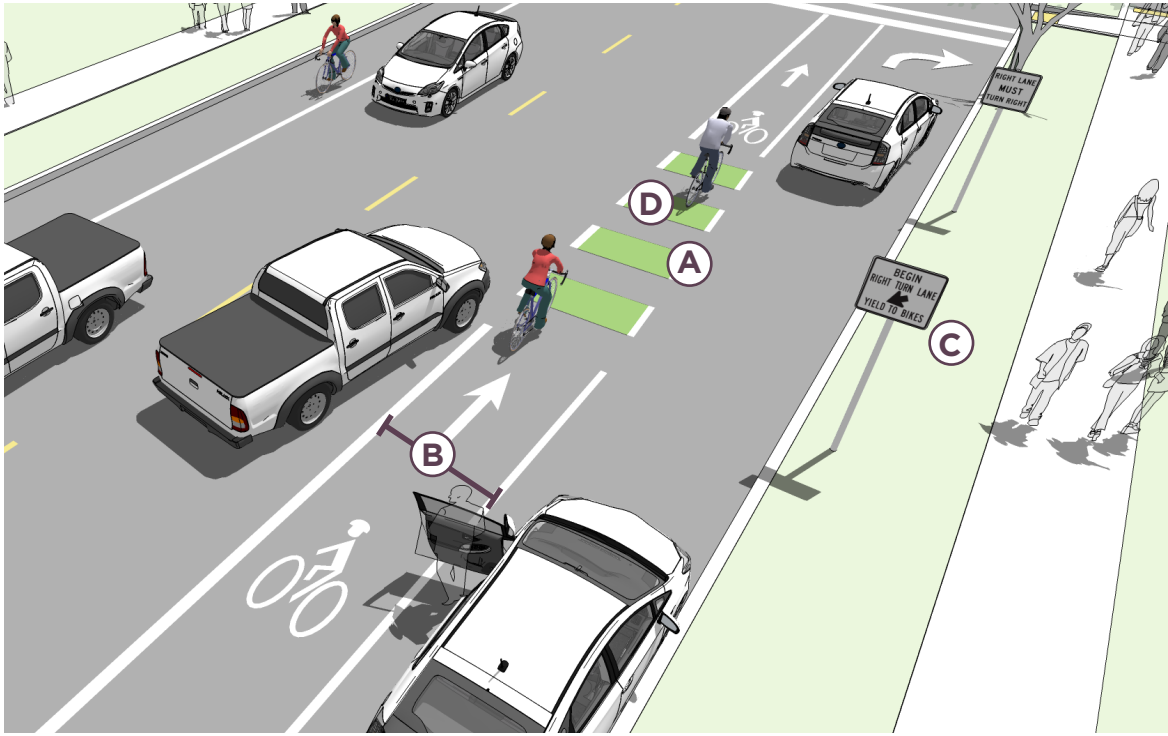
***Combined Bike Lane/Turn Lane***



Where there isn't room to provide both a through bike lane and right turn only lane, A combined bike lane/turn lane creates a shared-lane condition in advance of the intersection. (NACTO 2012)

## Bike Lanes at Added Right Turn Lanes

The appropriate treatment at right turn only lanes is to introduce an added turn lane to the outside of the bicycle lane. The area where people driving must weave across the bicycle lane should be marked with dotted lines and dotted green pavement to identify the potential conflict areas. Signage should indicate that motorists must yield to bicyclists through the conflict area.




### Typical Application

- Streets with right-turn lanes and right side bike lanes.
- Streets with left-turn lanes and left side bike lanes.

### Design Features

(A) Mark inside line with 6" stripe.

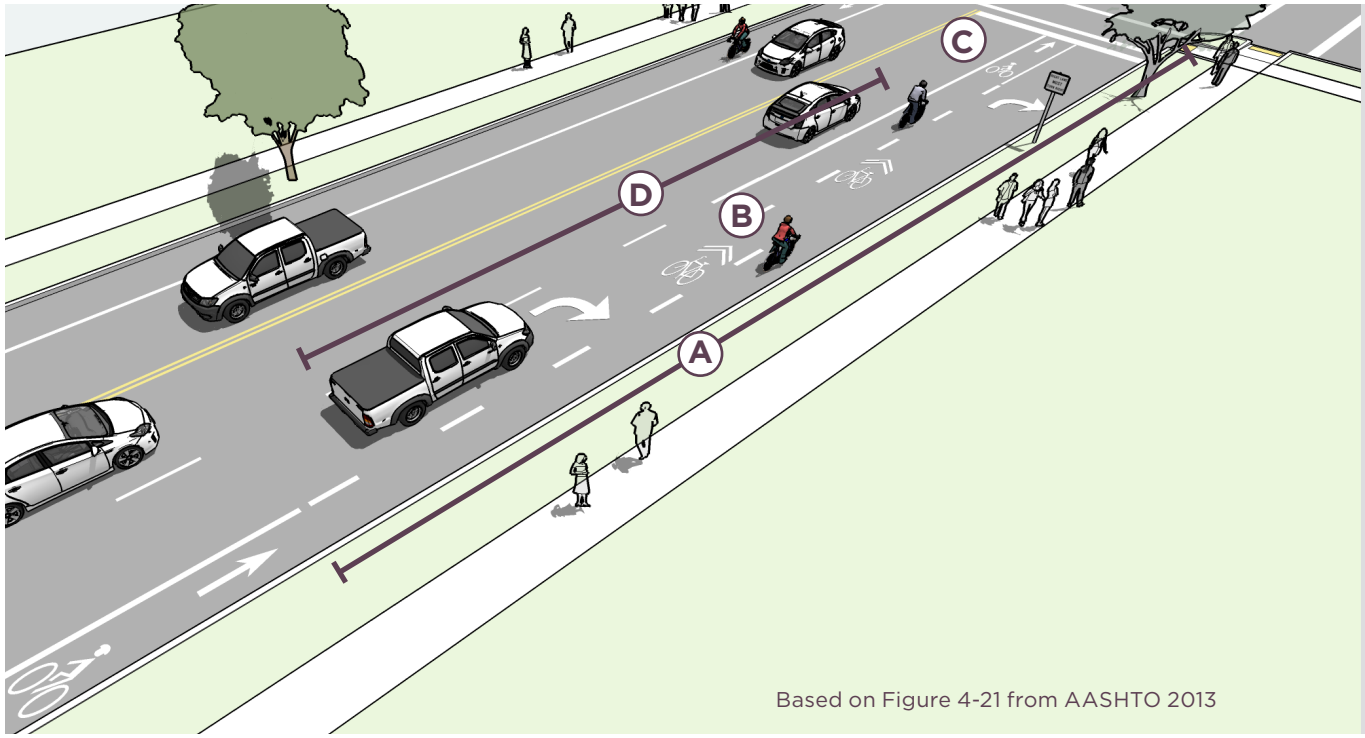
(B) Continue existing bike lane width; standard width of 5 to 6 feet (4 feet in constrained locations.)

(C) Use R4-4 BEGIN RIGHT TURN LANE YIELD TO BIKES signage to indicate that motorists should yield to bicyclists through the conflict area.

(D) Consider using colored in the conflict areas to promote visibility of the dashed weaving area.

## Bike Lanes at Through Lane to Right Turn Lane Transition

When a through lane transitions directly into a right turn only lane, bicyclists traveling in a curbside bike lane must move laterally to the left of the right turn lane. Designers should provide the opportunity for bicyclists to accept gaps in traffic and control the transition.




Based on Figure 4-21 from AASHTO 2013

### Typical Application

- Streets with curbside bike lanes where a moderate-high speed (≥30 mph) through travel lane transitions into a right turn only lane.
- This treatment functions for skilled riders, but is not appropriate for riders of all ages and abilities. If a low stress crossing is desired in these locations, consider a Protected Bicycle Signal Phase.

### Design Features

(A) End the curbside bike lane with dashed lines at least 125 feet in advance of the intersection to indicate to bicyclists to enter the general purpose travel lane. (CAMUTCD 9C.04)

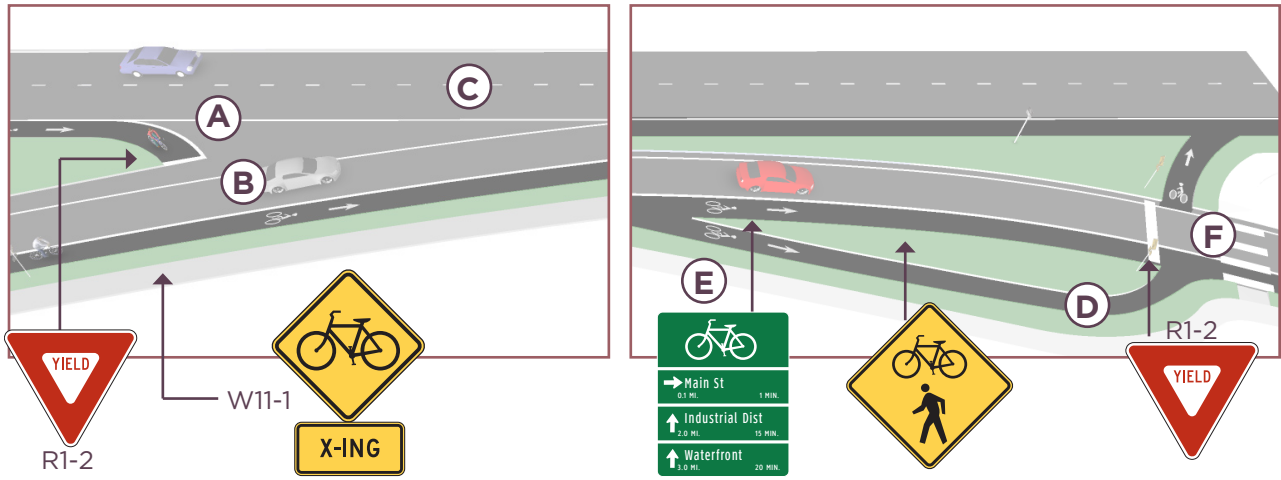
(B) Use Shared Lane markings in the general purpose to raise awareness to the presence of bicyclists in the travel lanes during the transition segment..

(C) Reestablish a standard or wide bicycle lane to the left of the right turn only lane.

(D) The transition area should be a minimum of 100 feet long. (CAMUTCD Figure 9C-4b)

## Bike Lanes at Entrance and Exit Ramps

Some arterials may contain high speed freeway-style designs such as merge lanes and exit ramps, which can create difficulties for bicyclists. The entrance and exit lanes typically have intrinsic visibility problems because of low approach angles and feature high speed differentials between bicyclists and motor vehicles. Strategies to improve safety focus on increasing sight distances, creating formal crossings, and minimizing crossing distances.




### Typical Application

- Streets with high speed freeway style merge lanes and exit ramps.
- Where users are skilled adult riders.
- Design strategies differ for low-speed and high-speed configurations.

### Design Features

Entrance Ramps

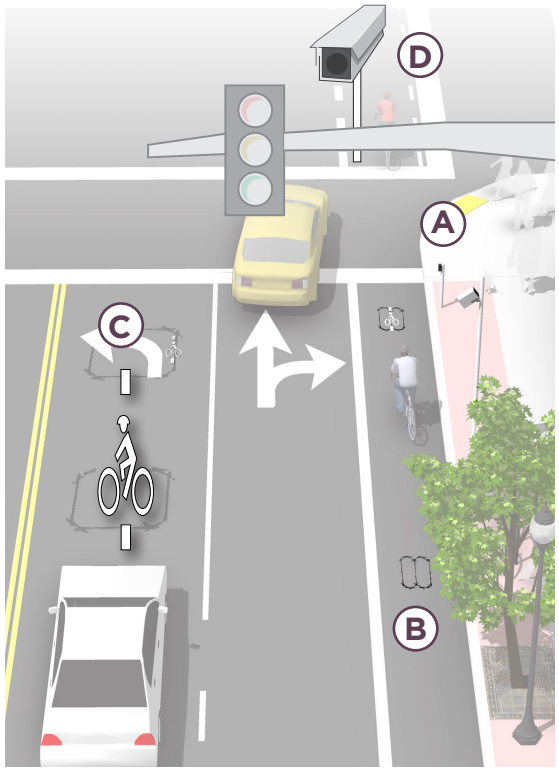
- (A) Angle the bike lane to increase the approach angle with entering traffic. Position crossing before drivers' attention is focused on the upcoming merge.
- (B) Crossing located before drivers' attention is focused on the upcoming merge.
- (C) Dashed lane lines for confident bicyclist to continue through.

Exit Ramps

- (D) Use a jug handle turn to bring bicyclists to increase the approach angle with exiting traffic, and add yield striping and signage to the bicycle approach.
- (E) Wayfinding signage should clarify path to destinations.
- Ramp geometrics minimize speed for exiting vehicles.
- (F) Crossing located in location with lowest speed and highest visibility.

## Bicycle Detection and Actuation

Proper bicycle detection should meet two primary criteria: 1) accurately detects bicyclists and 2) provides clear guidance to bicyclists on how to actuate detection (e.g., what button to push, where to stand). Bicycle loops and other detection mechanisms can also provide bicyclists with an extended green time before the light turns yellow so that bicyclists of all abilities can reach the far side of the intersection.




### Typical Application

- All new or modified traffic signals in California must be equipped for bicyclist detection, or be placed on permanent recall or fixed time operation. (CalTrans Traffic Operations Policy Directive (TOPD) 09-06.
- Detection shall be place where bicyclists are intended to travel and/or wait.
- On bicycle priority corridors with on-street bike lanes or separated bikeways, consider the use of advance detection placed 100-200' upstream of the intersection to provide an early trigger to the signal system and reduce bicyclist delay.

### Design Features

(A) User-activated button mounted on a pole facing the street. Device location should not require bicyclists to dismount or be rerouted out of the way or onto the sidewalk to activate the phase.

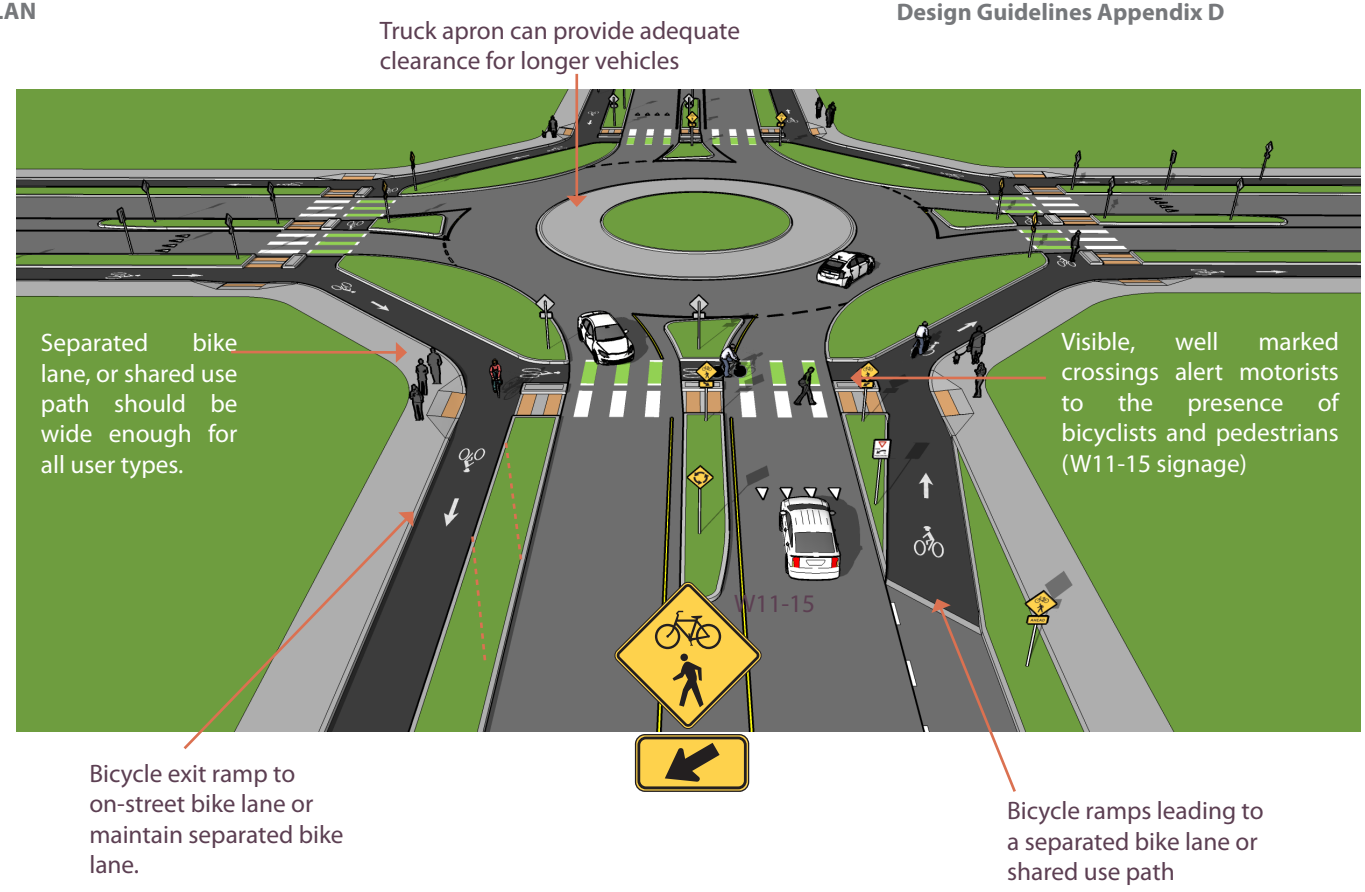
(B) Bicycle-activated loop detectors are installed within the roadway to allow the presence of a bicycle to trigger a change in the traffic signal.

(C) Loops should be supplemented with pavement markings to instruct bicyclists how to trip them.

(D) Video detection systems use digital image processing

## Single Lane Roundabouts

In single lane roundabouts it is important to indicate to motorists, bicyclists and pedestrians the right-of-way rules and correct way for them to circulate, using appropriately designed signage, pavement markings, and geometric design elements.




### Typical Application

Research indicates that while single-lane roundabouts may benefit bicyclists and pedestrians by slowing traffic, multi-lane roundabouts may present greater challenges and significantly increase safety problems for these users.

While some bicyclists will operate within the roadway, provide separated facilities for bicyclists who prefer not to navigate in mixed traffic.

### Design Features

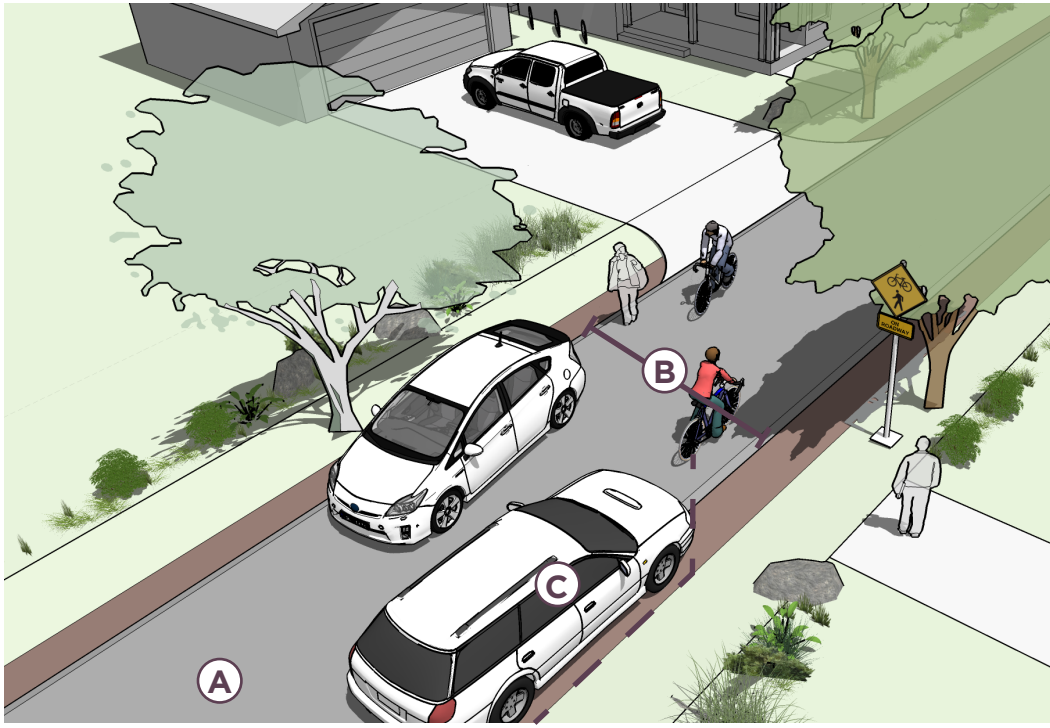
- Design approaches/exits to the lowest speeds possible. 10-15 mph preferred with 25 mph maximum circulating design speed.
- Allow bicyclist to exit the roadway onto a separated bike lane or shared use path that circulates around the roundabout.
- Maximize yielding rate of motorists to pedestrians and bicyclists at crosswalks.

## Class III: Shared Roadways

On shared roadways, bicyclists and motor vehicles use the same roadway space. These facilities are typically used on roads with low speeds and traffic volumes, however they can be used on higher volume roads with wide outside lanes or shoulders. A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist, unless a wide outside lane or shoulder is provided.

## Local Shared Roadway

A local shared roadway is a simple road designed to serve pedestrians, bicyclists and motor vehicle traffic within the roadway. The facility can serve local traffic volumes and maintain aesthetic preferences, and should be considered the typical form for residential local roads in a variety of urban, suburban or rural contexts.




### Typical Application

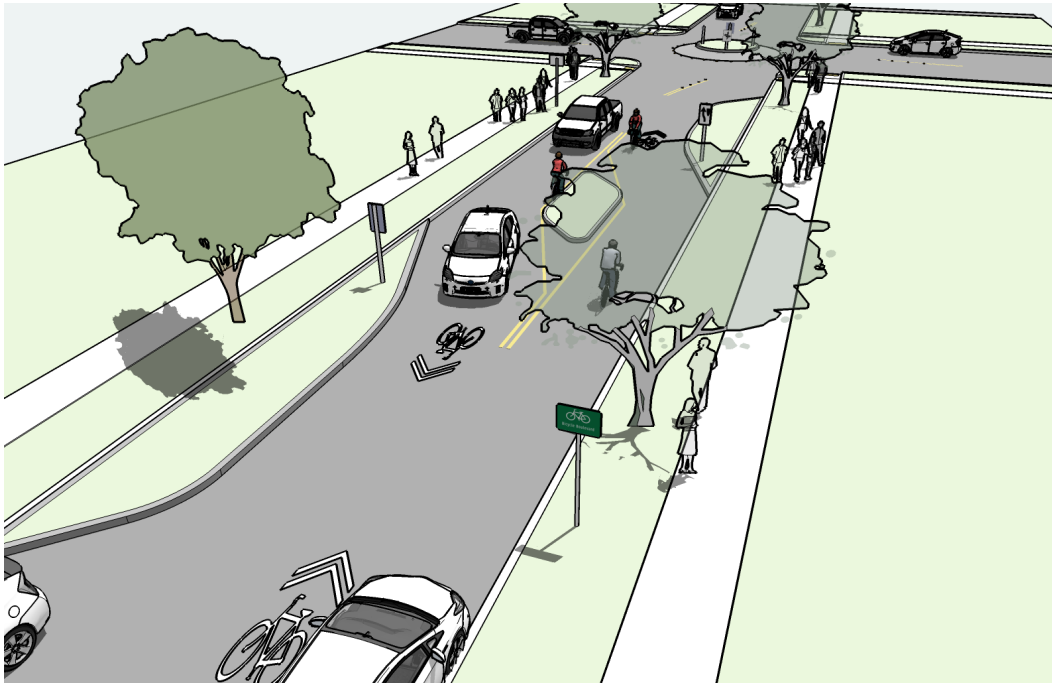
- On low volume roads, particularly near residential land uses where most traffic is familiar with prevailing road conditions.
- Most appropriate on very-low volume roads with ≤ 400 vehicles per day.
- May operate on volumes up to 1,000 ADT. Beyond this threshold, pedestrians shy away from the roadway due to traffic intensity.
- Maintaining low speed motor vehicle speeds of 15-to-20 mph are critical for pedestrian safety and comfort.
- If speeds of volumes are too high, access management and speed reduction tools should be used to create comfortable conditions.

### Design Features

- No center lane should be marked. This creates traffic friction from two-way traffic operating within one bidirectional travel area.
- A travel area width of 12 to 18 ft (3.6 – 5.5 m) is appropriate for low volumes of two-way traffic and may require queueing or slowing during motor vehicle meeting events.
- Narrow road widths ≤ 14 ft (4.2 m) will require regular pull-out areas to allow for infrequent meeting and passing events between motor vehicles. Pull out areas may be established in the parking lane, driveway or roadside area.

## Bicycle Boulevards

Bicycle boulevards are low-volume, low-speed streets modified to enhance bicyclist comfort by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow through movements of bicyclists while discouraging similar through-trips by non-local motorized traffic.



### Typical Application

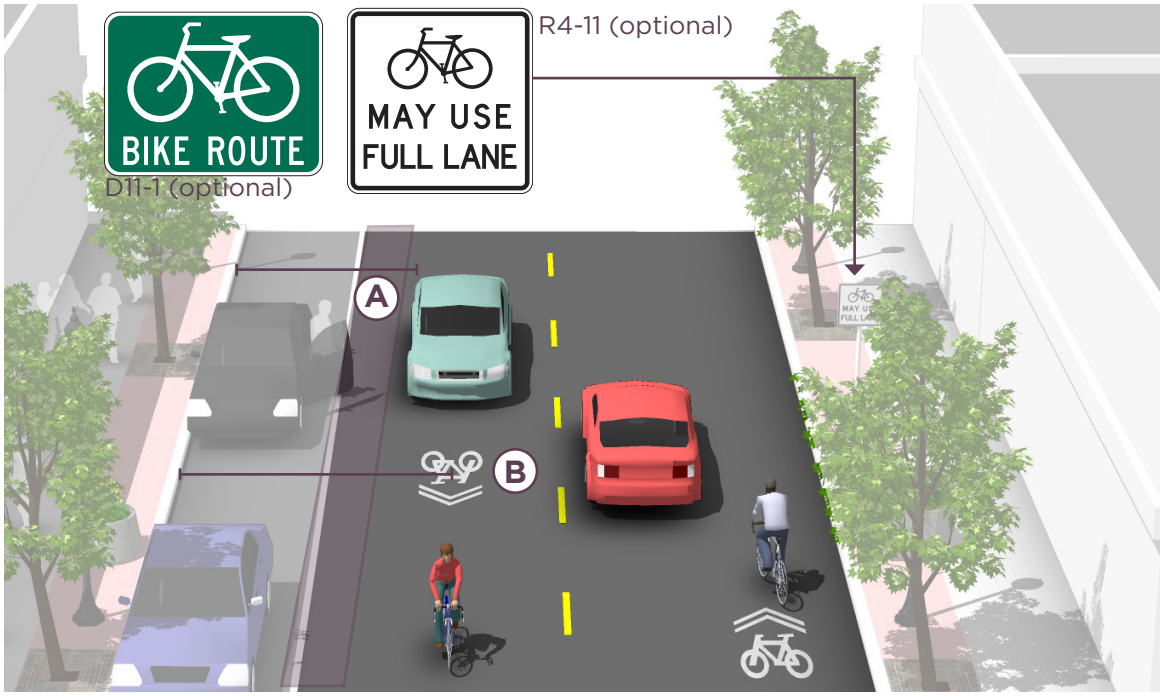
- Parallel with and in close proximity to major thoroughfares (1/4 mile or less).
- Follow a desire line for bicycle travel that is ideally long and relatively continuous (2-5 miles).
- Avoid alignments with excessive zigzag or circuitous routing. The bikeway should have less than 10% out of direction travel compared to shortest path of primary corridor.
- Streets with travel speeds at 25 mph or less and with traffic volumes of fewer than 3,000 vehicles per day. These conditions should either exist or be established with traffic calming measures.

### Design Features

- Signs and pavement markings are the minimum treatments necessary to designate a street as a bicycle boulevard.
- Bicycle boulevards should have a maximum posted speed of 25 mph. Use traffic calming to maintain an 85th percentile speed below 22 mph.
- Implement volume control treatments based on the context of the bicycle boulevard, using engineering judgment. Target motor vehicle volumes range from 1,000 to 3,000 vehicles per day.
- Intersection crossings should be designed to enhance safety and minimize delay for bicyclists.

## Shared Lane Markings

Shared Lane Marking stencils are used as an additional treatment for Bike Route facilities and are currently approved in conjunction with on-street parking. The stencil can serve a number of purposes, such as making motorists aware of the need to share the road with bicyclists, showing bicyclists the direction of travel, and, with proper placement, reminding bicyclists to bike further from parked cars to prevent "dooring" collisions.




### Typical Application

- Shared lane markings are not appropriate on paved shoulders or in bike lanes, and should not be used on roadways that have a speed limit above 35 mph.
- Shared Lane Markings pair well with Bikes May Use Full Lane signs.

### Design Features

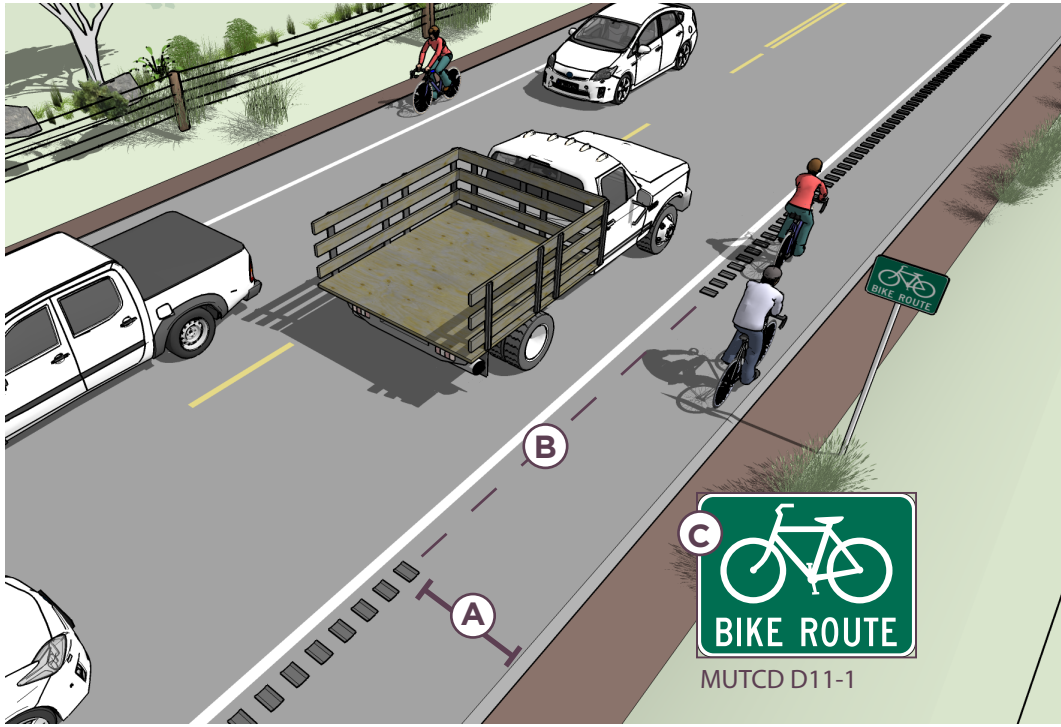
(A) When placed adjacent to parking, sharrows should be outside of the "door zone". Minimum placement is 11' from curb.

(B) Placement in center of the travel lane is preferred in constrained conditions.

- Markings should be placed immediately after intersections and spaced at 250 ft intervals thereafter.

## Bicycle-Accessible Shoulders

Typically found in less-dense areas, shoulder bikeways are paved, striped shoulders (4' min.) wide enough for bicycle travel. Shoulder bikeways may include signs alerting motorists to expect bicycle travel along the roadway.




### Typical Application

- Located in more rural environments where there are no curbs or gutters.
- Suitable for roadways with higher speeds and lower bicycle volumes.
- Shoulder bikeways should be considered a temporary treatment, with full bike lanes planned for construction when the roadway is widened or completed with curb and gutter.

### Design Features

(A) A minimum of 4 feet of ridable surface should be available for bicycle travel. (AASHTO 2012)

(B) Rumble strips are not recommended on shoulders used by bicyclists unless there is a minimum 4 foot clear path. 12 foot gaps every 40-60 feet should be provided to allow access as needed.

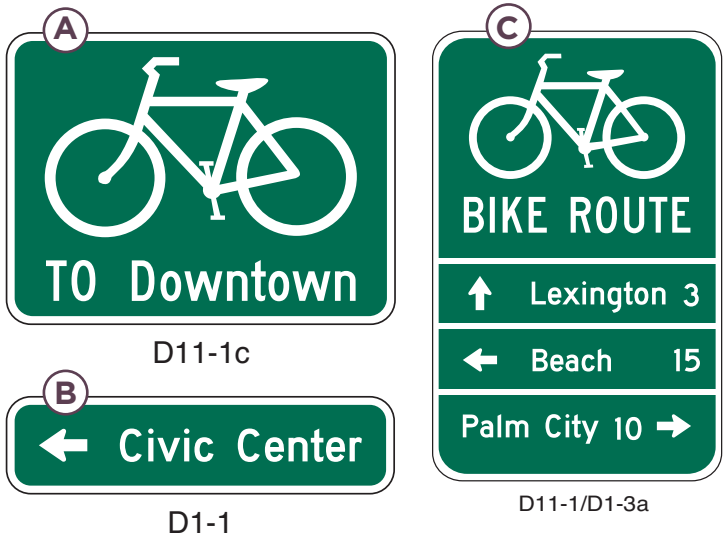
(C) MUTCD D11-1 "Bike Route" wayfinding signage is optional.

# Bikeway Wayfinding

The ability to navigate an area is informed by landmarks, natural features and other visual cues. Bicycle wayfinding can assist in navigation to guide bicyclists to their destinations along preferred bicycle routes. Signs are typically placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes. Interpretive signs enhance a trail or bikeway experience by providing information about the history and culture of the area.


## Wayfinding Sign Types

The ability to navigate through a city is informed by landmarks, natural features and other visual cues. Signs throughout the city should indicate to bicyclists the direction of travel, the locations of destinations and the travel time/distance to those destinations. A bicycle wayfinding system consists of comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes.




### Typical Application

- Wayfinding signs will increase users' comfort and accessibility to the bicycle systems.
- Signage can serve both wayfinding and safety purposes including:
    - Helping to familiarize users with the bicycle network
    - Helping users identify the best routes to destinations
    - Helping to address misperceptions about time and distance
    - Helping overcome a "barrier to entry" for people who are not frequent bicyclists (e.g., "interested but concerned" bicyclists)

### Design Features

(A) Confirmation signs indicate to bicyclists that they are on a designated bikeway. Make motorists aware of the bicycle route. Can include destinations and distance/time but do not include arrows.

(B) Turn signs indicate where a bikeway turns from one street onto another street. These can be used with pavement markings and include destinations and arrows.

(C) Decisions signs indicate the junction of two or more bikeways and inform bicyclists of the designated bike route to access key destinations. These include destinations, arrows and distances. Travel times are optional but recommended.

## Wayfinding Sign Placement

Signs are placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes.

### Typical Application

**Confirmation Signs**

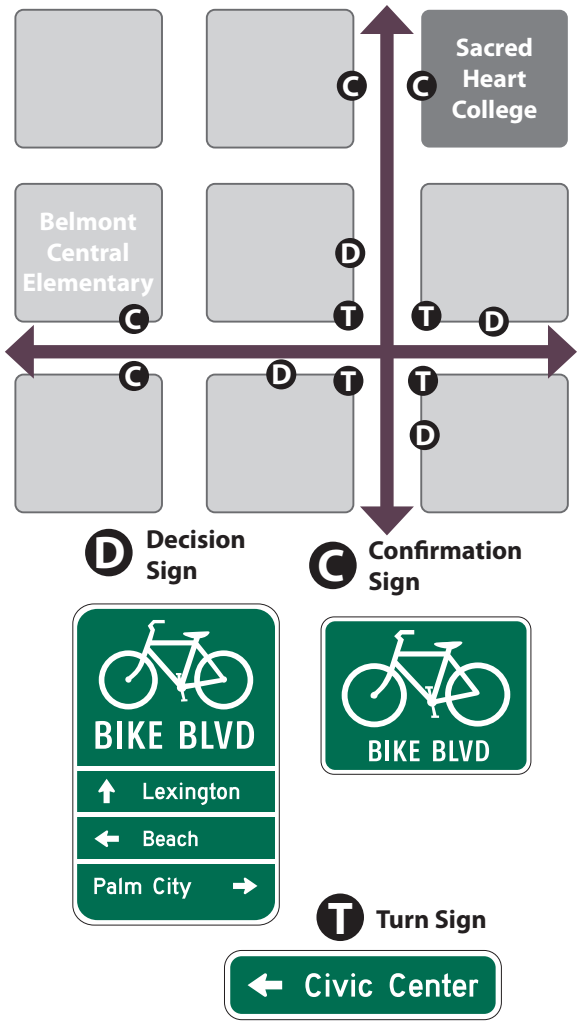
- Placed every ¼ to ½ mile on off-street facilities and every 2 to 3 blocks along on-street bicycle facilities, unless another type of sign is used (e.g., within 150 ft of a turn or decision sign).
- Should be placed soon after turns to confirm destination(s). Pavement markings can also act as confirmation that a bicyclist is on a preferred route.

**Turn Signs**

- Near-side of intersections where bike routes turn (e.g., where the street ceases to be a bicycle route or does not go through).
- Pavement markings can also indicate the need to turn to the bicyclist.

**Decision Signs**

- Near-side of intersections in advance of a junction with another bicycle route.
- Along a route to indicate a nearby destination.




### Design Features

- MUTCD guidelines should be followed for wayfinding sign placement, which includes mounting height and lateral placement from edge of path or roadway.
- Pavement markings can be used to reinforce routes and directional signage.

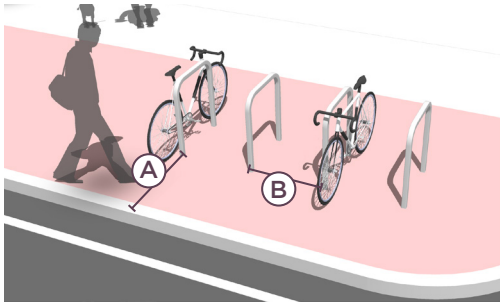
## Bike Parking

Short-term bicycle parking is meant to accommodate visitors, customers, and others expected to depart within two hours. Bicycle racks are located on city sidewalks within the furnishing zone and can typically be occupied by two bicycles at one time. Bicycle corrals, which consist of a group of racks, move bicycles off sidewalks and leave more space for pedestrians, sidewalk café tables, etc.

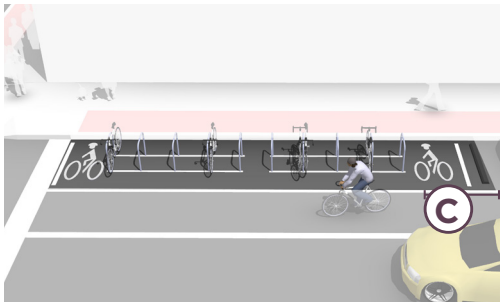
## Bike Parking

Bicyclists expect a safe, convenient place to secure their bicycle when they reach their destination. Short-term parking allows riders to store their bicycle for a few hours at a time.

*Perpendicular Bike Racks*




*Bike Corral*




### Typical Application

- Bike racks provide short-term bicycle parking and are meant to accommodate visitors, customers, and others expected to depart within two hours. It should be an approved standard rack, appropriate location and placement, and can include weather protection.
- On-street bike corrals consist of bicycle racks grouped together in a common area within the street traditionally used for automobile parking. Bicycle corrals can be implemented by converting one or two on-street motor vehicle parking spaces into on-street bicycle parking. Each motor vehicle parking space can be replaced with approximately 6-10 bicycle parking spaces.

### Design Features

Bike Racks

(A) 2 feet minimum from the curb face to avoid 'dooring.'

(B) 4 feet between racks to provide maneuvering room.

- Locate close to destinations; 50 feet maximum distance from main building entrance.
- Minimum clear distance of 6 feet should be provided between the bicycle rack and the property line.

Bike Corrals

(C) Bicyclists should have an entrance width from the roadway of 5-6 feet.

- Can be used with parallel or angled parking.
- Parking stalls adjacent to curb extensions are good candidates for bicycle corrals since the concrete extension serves as delimitation on one side.

# Bikeway Maintenance

Regular bicycle facility maintenance includes sweeping, maintaining a smooth roadway, ensuring that the gutter-to-pavement transition remains relatively flush, and installing bicycle-friendly drainage grates. Pavement overlays are a good opportunity to improve bicycle facilities. The following recommendations provide a menu of options to consider to enhance a maintenance regimen.

## Manholes And Drainage Gates

Utility infrastructure within the roadway can present significant hazards to bicyclists. Manholes, water valve covers, drain inlets and other obstructions can present an abrupt change in level, or present a situation where the bicyclist's tire could become stuck, potentially causing a collision. Every effort should be made to avoid placing these hazards within the likely travel path of bicyclists on new roadway construction.

### Typical Application

For existing roadways, the roadway surface can be ground down around the manhole or drainage grate to be no more than half an inch of vertical drop. When roadways undergo overlays, this step is often omitted and significant elevation differences can result in hazardous conditions for bicyclists.

Bicycle drainage grates should not have longitudinal slats that can catch a bicycle tire and potentially cause a crash. Acceptable grate designs are presented (top right) as A: patterned, B: transverse grate, or C: modified longitudinal with no more than 6" between transverse supports). Type C is the least desirable as it could still cause problems with some bicycle tires.

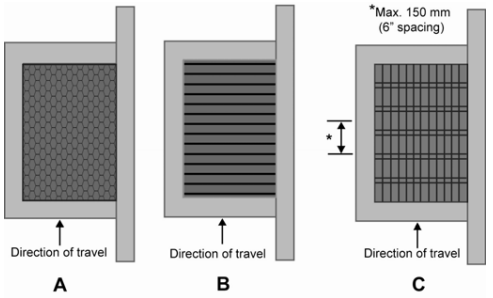
The drop in-inlet voids all issues with grates in the bicyclists' line of travel. However, these drainage inlets are less efficient than grate inlets, and therefore require installing more closely spaced inlets, much longer inlets and perhaps supplemental means of capturing runoff.

The MUTCD recommends providing a diagonal solid white line for hazards or obstructions in bikeways (see right).

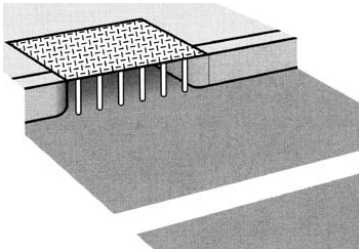
### Design Features

#### Placement:

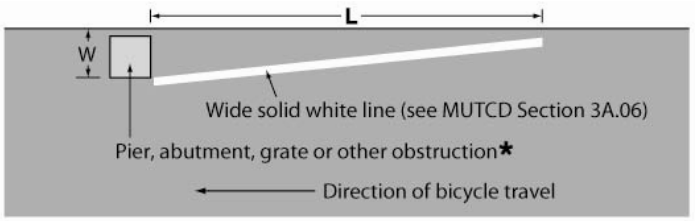
Manholes should be placed outside of any bike lanes. Drainage grates should be of one of the types below.




*Bicycle Compatible Drainage Grates*



*Drop-in inlet flush with in the curb face (Oregon DOT)*
*(Not approved for use on California Highways)*




L = WS, where W is the offset in feet and S is bicycle approach speed in mph

* Provide an additional foot of offset for a raised obstruction and use the formula L = (W+1) S for the taper length

*Figure 9C-8B (National MUTCD)*

## Bicycle Access During Construction Activities

When construction impedes a bicycle facility, the provision for bicycle access shall be developed during the construction project planning. Long detour routing should be avoided because of lack of compliance. Where there is no detour, provide for passage of bicyclists through or adjacent to the construction area, with signage or other indication of where cyclists should go.


### Typical Application

Advance warning of the detour should be placed at appropriate locations and clear wayfinding should be implemented to enable bicyclists to continue safe operation along travel corridor. Traffic control signs should not be placed within bike lanes or road shoulders.

### Design Features

#### Construction Detour Signs:

Detours should be adequately marked with standard temporary route and destination signs (M409a and M4-9c).

The Pedestrian/Bicycle Detour sign should have an arrow pointing in the appropriate direction.


*National MUTCD*

# Shared-Use Path Maintenance Standards

## Standards Summary

### SURFACE GAP REPAIR

To provide for accessibility and functionality for all users, shared use paths must be maintained to provide a continuous clear width of firm stable surface.

#### Path Surface

- The surface of the pedestrian access route shall be firm, stable and slip resistant (US Access Board, PROWAG, Section R302.7).

#### Vertical Changes in Level

- Surface discontinuities shall not exceed ½ inch maximum. Vertical discontinuities between ¼ inch and ½ inch maximum shall be beveled at 1:2 minimum. The bevel shall be applied across the entire level change (PROWAG, Section R302.7.2). Changes in level greater than ½ inch shall be accomplished by means of an accessible ramp.

#### Gaps and Elongated Openings

- Walkway Joints and Gratings. Openings shall not permit passage of a sphere more than ½ inch in diameter. Elongated openings shall be placed so that the long dimension is perpendicular to the dominant direction of travel (PROWAG, Section R302.7.3).

## Discussion

#### Basic Maintenance

- Path pavement should be repaired as needed to avoid safety issues and to ensure ADA compliance.
- Paths should be swept regularly.
- Shoulder vegetation should be cleared and trimmed regularly.

#### Long-Term Maintenance

- Paths should be slurry sealed, at minimum, 10 years after construction.
- Paths should receive an overlay, at minimum, 15 years after construction.

| Maintenance Activity | Frequency |
|---|---|
| Surface gap repair | As needed (see additional guidance below) |
| Inspections | Monthly |
| Pavement sweeping/blowing | As needed, weekly in Fall |
| Snow removal | As needed, or as feasible |
| Pavement markings replacement | 1-3 years, or as needed |
| Signage replacement | 1-3 years, or as needed |
| Shoulder plant trimming (weeds, trees, brambles) | Twice a year, middle of growing season and early Fall |
| Tree and shrub plantings, trimming | 1-3 years |
| Major damage response (washouts, fallen trees, flooding) | As soon as possible |

## Maintenance Challenges

- Most agencies pay for sidewalk and path maintenance out of their maintenance and operations budget. Funding is currently not available for seasonal maintenance, and is not enough to fund long-term preventative maintenance, such as overlays.
- Grant funding is currently not available for maintenance activities.
- Provided funding availability, paths with year-round use or with commuting utility should be cleared of snow.
- If snow is removed from paths, snow must be removed far enough back from the pavement so that it does not melt, refreeze and create black ice.

# On-Street Facility Maintenance Standards

## Discussion

### Basic Maintenance

Bicyclists often avoid shoulders and bike lanes filled with sanding materials, gravel, broken glass and other debris; they will ride in the roadway to avoid these hazards, causing conflicts with motorists. A regularly scheduled inspection and maintenance program helps ensure that roadway debris is regularly picked up or swept. Roadways should also be swept after automobile collisions.

### Long-Term Maintenance

Roadway surface is a critical issue for bicyclists' quality. Bicycles are much more sensitive to subtle changes in roadway surface than are motor vehicles. Examine pavement quality and transitions during every roadway project for new construction, maintenance activities, and construction project activities that occur in streets.

| Maintenance Activity | Frequency |
|---|---|
| Inspections | Seasonal - at beginning and end of summer |
| Pavement sweeping/blowing | Twice per year |
| Snow removal | As needed, or as feasible |
| Pavement sealing, potholes | 5 - 15 years |
| Culvert and drainage grate inspection | Before Winter and after major storms |
| Pavement markings replacement (includes crosswalks) | Annually |
| Signage replacement | 1-5 years |
| Shoulder plant trimming (weeds, trees, brambles) | Once per year, middle of growing season and early Fall |
| Tree and shrub plantings, trimming | 1-3 years |
| Major damage response (washouts, fallen trees, flooding) | As soon as possible |

Note: All of the maintenance activities listed above are dependent on funding. There is currently no funding available for maintenance.

# Appendix E. Safe Routes to School

This appendix to the Plumas County Pedestrian/Bicycle Plan presents the school-related projects and program recommendations in a consolidated format.

## Program Recommendations

Safe Routes to School (SRTS) program recommendations are recommended for all schools in Plumas County. These recommendations are organized in four E's:

- Education programs are designed to improve safety and awareness. They can include programs that teach students how to safely cross the street or teach drivers to expect pedestrians. They may also include brochures, posters, or other information that targets pedestrians or drivers.
- Encouragement programs provide incentives and support to help people leave their car at home and try walking instead.
- Enforcement programs enforce legal and respectful walking, bicycling, and driving. They include a variety of tactics, ranging from police enforcement to neighborhood signage campaigns.
- Evaluation programs are an important component of any investment. They help measure success at meeting the goals of this plan and to identify adjustments that may be necessary.

### Education

Education programs are important for teaching safety rules and laws as well as increasing awareness regarding walking and bicycling opportunities and existing facilities. Education programs may need to be designed to reach groups at varying levels of knowledge and there may be many different audiences: pre-school age children, elementary school students, and teenagers.

#### Student Bicycle and Pedestrian Traffic Safety Education

Student education programs are an essential component of bicycle and pedestrian education. Students are taught traffic safety skills that help them understand basic traffic laws and safety rules.

Example pedestrian education curriculum elements include traffic sign identification and how to use a crosswalk. Bicycle education curriculum typically includes two parts: knowledge and skills. Knowledge lessons are typically in-class, while skills are practiced on a bicycle. Lessons can include helmet and bicycle fit, hand signals, and riding safely with traffic.

This Plan recommends Plumas Unified School District develop a Traffic Safety Education class to be taught to all students in grades K-8 in all district schools participate in at least two to three education and encouragement activities each year.

<u>Bicycle Rodeo, Grades K-5</u>

A bicycle rodeo consists of multiple stations that students rotate through over the course of a physical education class. The stations educate students about bike skills and safety and include discussion of the environmental benefits of

active transportation and physical activity. All stations are interactive. Station themes can range from checking to ensure helmets fit properly to properly signaling turns and weaving through an obstacle course of cones. Instruction and teaching materials become more advanced for older grades so students are able to refine their skills and learn new ones each year.

Pump Track Event, Grades 6-8

This event is similar to a bicycle rodeo, but is designed specifically for middle school students. In this activity, students learn bicycling skills in a mountain environment. Learning how to ride on dirt paths is important for Plumas County residents, as many bike paths used for recreation or getting around town are dirt paths. By participating in this event, middle school students will become more comfortable with mountain biking skills and have the opportunity to learn more advanced skills in a safe and fun environment. There are also national associations and clubs with local chapters, such as the National Interscholastic Cycling Association (http://www.nationalmtb.org/), which seeks to develop high school mountain biking skillsets.

In-Class Education Series, Grades 2, 4, and 6

The in-class education series teaches students about bicycle safety and the environmental benefits of active transportation. The program is an opportunity to keep students informed and bike-aware during winter months. The proposed curriculum includes activities such as mapping safe routes to school as well as interactive presentations. In-class education allows greater topic depth and facilitates student discussion. Parent and local organization volunteers, Plumas Unified, and Plumas County would partner to teach the series. The series would consist of 45-minute sessions for each classroom of second, fourth, and sixth graders. In second grade, the focus is on safe walking and street safety, such as street crossing. In fourth and sixth grade, the focus is on bike safety and the traffic regulations that govern active transport.

## Encouragement

Students of all ages can be encouraged to increase their rates of walking and bicycling or to try walking or bicycling instead of driving for short trips.

### Back-to-School Encouragement Marketing

Families set transportation habits during the first few weeks of the school year and are often not aware of the multiple transportation options and routes available to them. Because of this, many families will develop the habit of driving to school using the same route as everyone else, leading to congestion.

A back-to-school encouragement marketing can promote bus, carpool, walking and bicycling to school. The marketing campaign can include suggested route maps, safety education materials, volunteer opportunities, event calendars, and traffic safety enforcement notices.

### Walk to School Day

International Walk to School Day is typically held in early October. Students and families are encouraged to walk to school. The event celebrates the many students who already walk to school, and encourages additional families to try walking to school.

Volunteers can form Walking School Buses. Schools can leverage the enthusiasm by holding other contests and events during the week or on the day of the event.

### Bike to School Day

Bike to School Day is typically held in mid-May. Students and families are encouraged to walk to school. Similar to Walk to School Day events, this program celebrates students who already bike to school and encourages additional families to try bicycling to school.

Volunteers can form Bike Trains. Schools can leverage the enthusiasm by holding other contests and events during the week or on the day of the event.

### Walking School Buses and Bike Trains

A Walking School Bus is an organized group of students who walk to school under the supervision of a parent/adult volunteer. Bike Trains are similar to Walking School Buses, with students bicycling together. Parent champions take turns walking or bicycling along a set route to and from school, collecting children from designated "bus stops" along the way.

Schools and parent champions can encourage parents to form Walking School Buses or Bike Trains at the back-to-school orientation or other fall events. The School District can provide safety vests or marked umbrellas to indicate the leader(s). Incentives for the parent volunteers can include coffee at the school or gift cards for coffee shops.

Example outreach materials:

- Michigan Safe Routes 2 School's Walking School Bus program: http://saferoutesmichigan.org/wsb
- Sonoma Safe Routes to School's Walking School Bus Basics: http://sonomasaferoutes.org/resources/walking-school-bus-basics.pdf/view
- Sonoma Safe Routes to School's Bike Train Guide for Volunteers: http://sonomasaferoutes.org/resources/bike-train-guide-for-volunteers.pdf/view
- Marin County Safe Routes to Schools' SchoolPool Marin materials: http://www.schoolpoolmarin.org/

### Monthly Walk & Roll Days

Walk and Bike to School Days are events to encourage students to try walking or bicycling to school. The most popular events of this type are International Walk to School Day (held in early October) and Bike to School Day (held in early May). Many communities have expanded on this once a year event and hold monthly or weekly events such as Walk and Roll the First Friday (of every month) or Walk and Roll Wednesdays (held every Wednesday).

Holding weekly or monthly Walk & Roll to School Day promotes regular use of active transportation and helps establish good habits. Events can take on a wide range of activities, with some schools choosing to make them weekly rather than monthly, such as with a "Walk & Roll Wednesday."

Volunteers can set up a welcome table for walkers and bikers. The welcome table could provide refreshments, incentive prizes, and an interactive poster letting students document their mode to school. Walking School Buses and Bike Trains and Golden Sneaker Contests can be organized and promoted on these days.

It is recommended to participate in the annual Walk to School and Bike to School events. After one year, it is recommended to try monthly Walk & Roll to School days depending on the weather, in addition to the annual events.

### Golden Sneaker Contest

In the Golden Sneaker Contest, classrooms compete to see which class has the highest rate of students walking, biking, or carpooling to and from school. The class tracks how many students commute by these modes and calculates the percent of total trips by each mode. The winner of the contest receives a "golden sneaker" trophy, along with other incentive prizes.

A Golden Sneaker Contest can be expanded from classroom competitions to intra-school competitions or district-wide competitions. Some schools hold celebrations for winning classrooms.

## Enforcement

Enforcement programs enforce legal and respectful use of the transportation network. These programs will help educate motorists, bicyclists, and pedestrians about the rules and responsibilities of the road in order to help students get to and from school as safely as possible.

### Crossing Guard Program

The effectiveness of a crossing guard can be the deciding factor in a parent feeling comfortable enough to let their child walk or bicycle to school. Currently, adult crossing guards in the County are school staff.

California developed an on-line training guide, available at https://www.cdph.ca.gov/HealthInfo/injviosaf/Documents/CASchoolCrossingGuardTrainingGuidelines.pdf.

## Evaluation

Evaluation programs help the County and school district measure how well it is meeting the goals of this Plan, the General Plan, and any SRTS program. Evaluation is also key component of any engineering or programmatic investment. It can be useful way to communicate success with elected officials as well as local residents.

### Parent Surveys

The National Center for Safe Routes to School provides a standard parent survey, collecting information on modes of travel, interest in walking or biking to school, and challenges to walking and bicycling to school. The information gathered from the parent surveys can help Plumas County and School District provide programs that are attractive to parents. Parent surveys can also help measure parent attitudes and changes in attitude towards walking and biking to school.

It is recommended that Plumas County and Plumas County Unified School District work together to conduct parent surveys every three years.

### Student Walking and Biking Counts

Student hand tallies are one way to count the number of students who walk, bicycle, take transit or carpool to school. The National Center for Safe Routes to School provides the standard tally form.

It is recommended the Plumas County Unified School District conduct student tallies on an annual basis. Counts can also be held on annual walking or bicycling to school events. These are an excellent way to track the number of students who walk or bicycle to school over time. Grant applications will often require this information.

## Project Recommendations

It is recommended to install adequate bicycle parking at all schools in Plumas County. **Chapter 5: Project and Program Recommendations** states that there should be eight bicycle parking spaces per 40 students.

Project recommendations are divided by community. The following communities and schools have nearby projects recommended that would greatly improve the walking and bicycling environment for the school communities. Nearby projects are defined by those that are within 350 feet of any school or where a direct SRTS benefit could be observed.

- Chester Schools: Chester Elementary, Chester Junior/Senior High
- Greenville Schools: Indian Valley Elementary, Greenville Junior/Senior High, Indian Valley Academy
- Portola Schools: C. Roy Carmichael Elementary, Portola Junior/Senior High
- Quincy Schools: Quincy Junior/Senior High, Plumas Charter School

### Schools in Chester

The two schools in Chester are Chester Elementary and Chester Junior/Senior High School. Chester Learning Center was also identified for project recommendations, as shown in **Figure E-1**. **Table E-1** shows the recommended projects that are within 350 feet of a school or where a direct SRTS benefit could be observed. This table includes the type of recommendations, the extent, and the planning-level cost estimate.

*Table E-1: Chester SRTS Project Recommendations*

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Class II Bike Lane | Cross St | Aspen St | Moody Meadow Rd | SRTS | 0.21 | | $14,600 |
| Class II Bike Lane | First St | Moody Meadow Rd | Richardson Way | Class II Bike Lane, SRTS | 0.24 | | $16,800 |
| Class III Bike Route | Lassen St | Feather River Dr | Feather River Dr | SRTS | 0.44 | | $6,600 |
| Crosswalk with Beacon or Signal | - | Main St | Willow Way | SRTS | - | Yes | $50,000 |
| Crosswalk with Beacon or Signal | - | Main St | Riverwood Dr | Actuated pedestrian crossing; SRTS | - | Yes | $50,000 |
| Crosswalk with Beacon or Signal | - | Main St | Meadowbrook Loop | Actuated pedestrian crossing; SRTS | - | Yes | $50,000 |
| Sidewalk | Main St | Riverwood Dr | W Willow St | SRTS; Caltrans | 0.51 | E | $485,700 |
| Sidewalk | Main St | Myrtle St | E Willow St | SRTS; Caltrans | 0.16 | W | $154,200 |
| Sidewalk | Aspen St | Main St | First Ave | SRTS | 0.23 | N | $220,700 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Sidewalk | Aspen St | Cross St | First Ave | SRTS | 0.14 | S | $128,700 |
| Sidewalk | Aspen St | Main St | Cross St | SRTS | 0.04 | S | $42,300 |
| Spot: School Circulation | - | Aspen St | 260ft East of Main St | Install gate. To be unlocked for AM and PM school bus access, locked during day to prevent cut-through traffic on school property; SRTS | - | No | $4,000 |
| Spot: School Circulation | - | Fir St | 250ft East of Martin Way | Install gate. To be unlocked for AM and PM school bus access, locked during day to prevent cut-through traffic on school property; SRTS | - | No | $4,000 |
| Study: School Circulation | - | Aspen St | Cross St | Future study for bus loading/drop-off, parent loading/drop-off, and faculty parking; SRTS | - | Yes | $50,000 |
| Trail | - | Meadow Rd | Goodwin St | Class I Shared Use Path; SRTS; Bridge crossing needed at the creek | 0.16 | | $87,500 |
| Trail | - | Hwy 36/Main St | W end of Hwy 36 Causeway | Class I Shared Use Path; Connect from Almanor RR to Hwy 36 north of Aldon Dr; SRTS | 1.69 | | $931,300 |

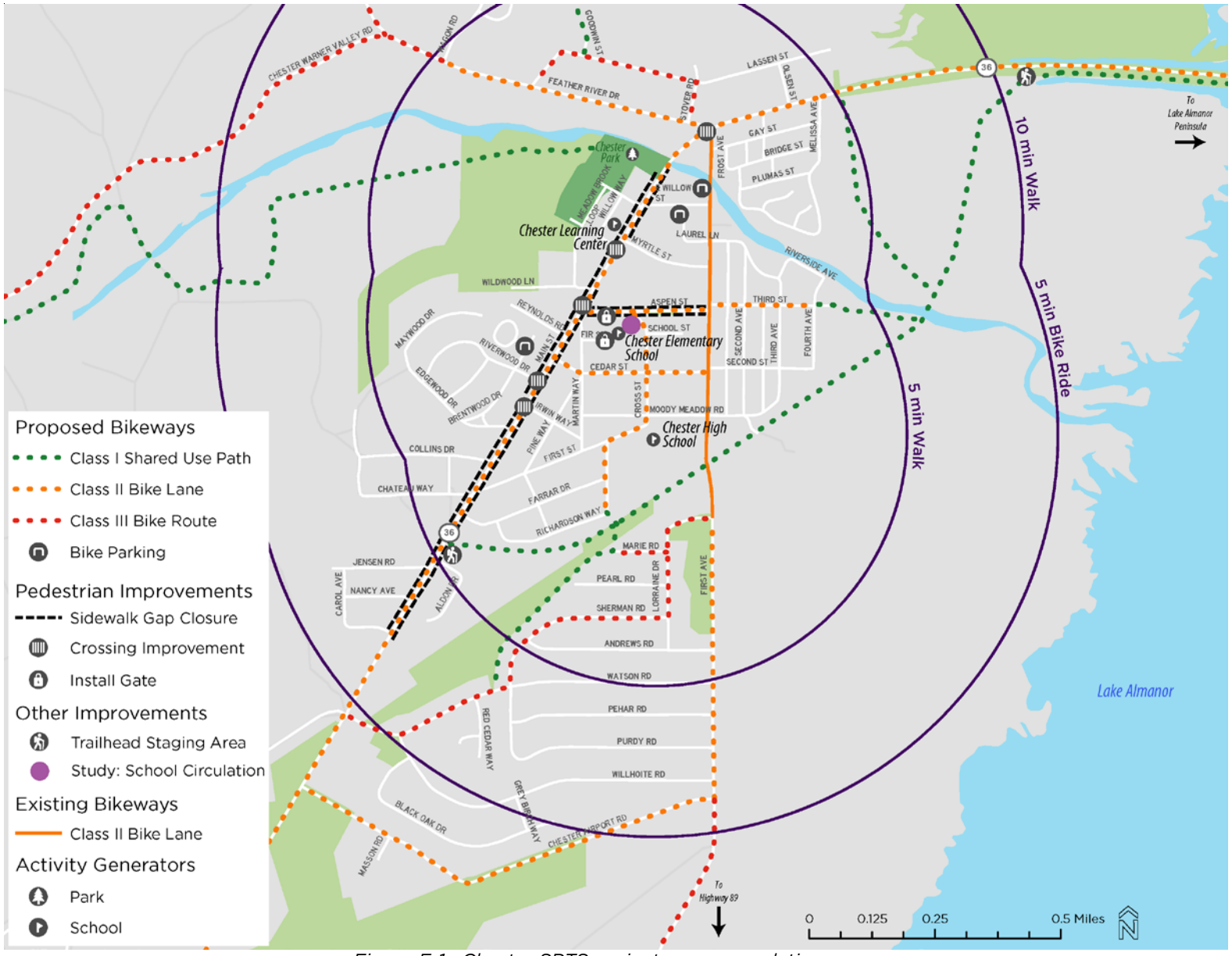



*Figure E-1: Chester SRTS project recommendations map*

## Schools in Greenville

There are two main schools in Greenville: Greenville Elementary School and Greenville Junior/Senior High School. Indian Valley Academy is located between the two schools and would therefore benefit from the implementation of the project recommendations. Table E-2 and Figure E-2 shows the projects that will provide a SRTS benefit for Greenville schools.

*Table E-2: Greenville SRTS Project Recommendations*

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Cost Estimate |
|---|---|---|---|---|---|---|
| Class II Bike Lane | Main St | Round Valley Rd | 600 ft NE of Blackoak Dr | SRTS | 1.28 | $89,800 |
| Class II Bike Lane | Setzer Rd | Main St | Higbie Ave | SRTS | 0.62 | $43,500 |
| Class II Bike Lane | Kinder Ave | Hudson Ave | Setzer Rd | SRTS | 0.35 | $24,700 |
| Sidewalk | - | Crescent St | Hideaway Rd | Provide connection from community center playground to Wolf Creek; SRTS | 0.12 | $114,400 |
| Trail | - | Main St | Hot Springs Rd | Class I Shared Use Path; SRTS | 0.45 | $246,300 |

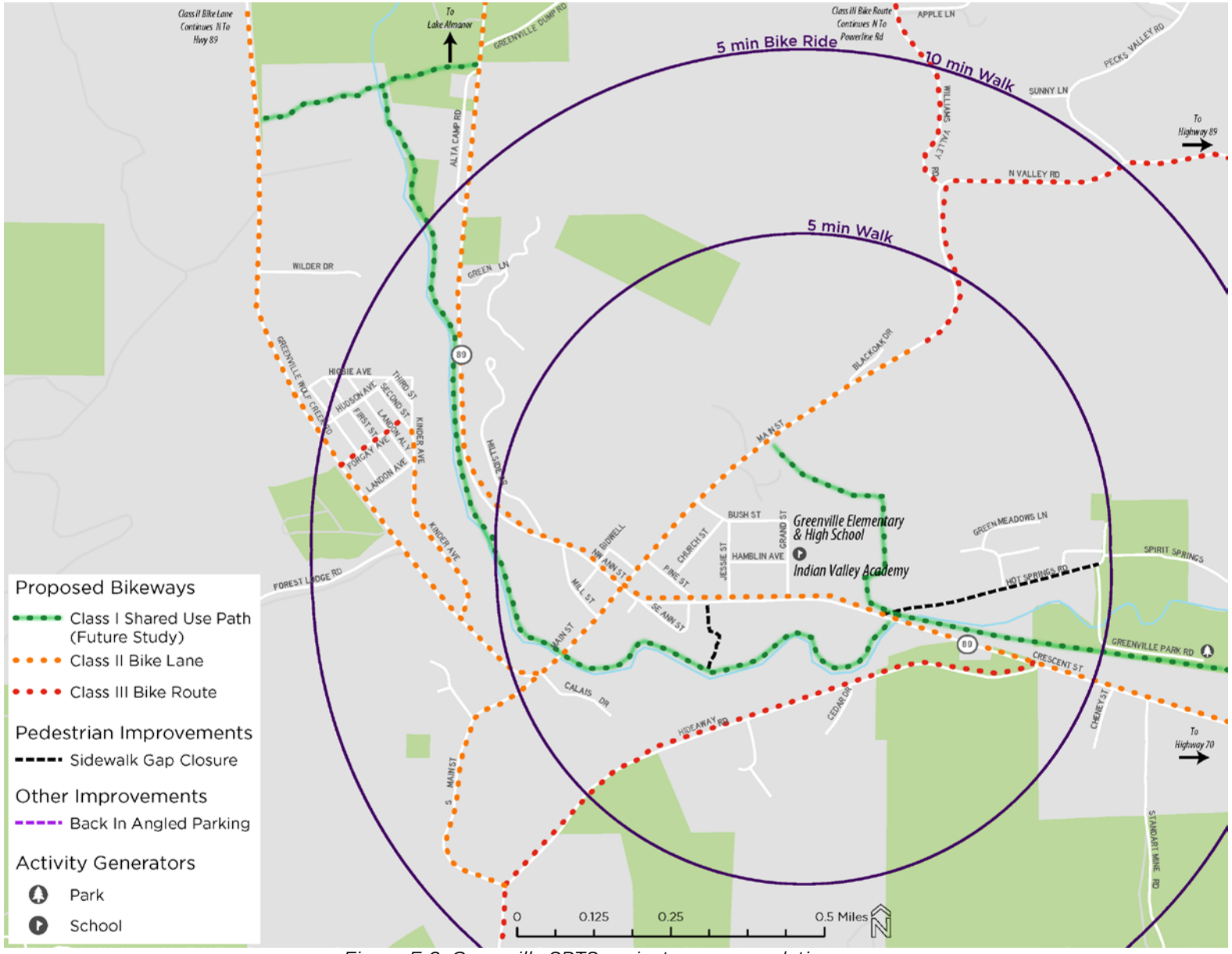



*Figure E-2: Greenville SRTS project recommendations map*

## Schools in Portola

There are two main schools in Portola on opposite sides of town, as shown in **Figure E-3**. **Table E-3** lists the recommended projects that would benefit these schools.

*Table E-3: Portola SRTS Project Recommendations*

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Bridge | S Gulling St | W Riverside Ave | Taylor Ave | Widen bridge to accommodate bike lanes and a sidewalk on the E side; SRTS | 0.16 | | $6,511,600 |
| Class II Bike Lane | Joy Way | West St | E Magnolia Ave | Would require removal of on-street parking; SRTS | 0.47 | | $33,000 |
| Class II Bike Lane | Lake Davis Rd | De Persia Dr | 300 ft S of Portola Park Rd | SRTS | 0.16 | | $11,200 |
| Class III Bike Route | Commercial St | S Gulling St | California St | SRTS | 0.19 | | $2,800 |
| Yellow High-visibility Crosswalk | - | Sixth Ave | 90ft West of California St | SRTS | - | No | $3,300 |
| Yellow High-visibility Crosswalk | - | Sixth Ave | California St | SRTS | - | Yes | $2,500 |
| Sidewalk | Joy Way | West St | E Magnolia Ave | SRTS | 0.47 | N | $450,900 |
| Sidewalk | Joy Way | West St | E Magnolia Ave | SRTS | 0.46 | S | $441,000 |
| Sidewalk | California St | Commercial St | Third Ave | SRTS | 0.16 | E | $154,900 |
| Sidewalk | Second Ave | Pacific St | California St | SRTS | 0.02 | N | $18,700 |
| Sidewalk | Nevada St | 300ft North of Third Ave | Third Ave | SRTS | 0.06 | E | $55,100 |
| Sidewalk | Nevada St | First Ave | 60ft South of First Ave | SRTS | 0.01 | E | $8,900 |
| Sidewalk | First Ave | California St | Nevada St | SRTS | 0.04 | N | $37,300 |
| Sidewalk | First Ave | California St | Nevada St | SRTS | 0.03 | S | $28,300 |
| Sidewalk | First Ave | Nevada St | Utah St | SRTS | 0.05 | S | $48,700 |
| Sidewalk | First Ave | Utah St | S Gulling St | SRTS | 0.04 | N | $42,400 |
| Sidewalk | S Gulling St | First Ave | Third Ave | SRTS | 0.01 | E | $13,700 |
| Sidewalk | Fourth Ave | Nevada St | S Gulling St | SRTS | 0.13 | N | $128,100 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Sidewalk | Fourth Ave | Nevada St | Utah St | SRTS | 0.05 | S | $49,000 |
| Sidewalk | California St | Fifth Ave | Sixth Ave | SRTS | 0.01 | E | $12,900 |
| Sidewalk | Sixth Ave | California St | Nevada St | SRTS | 0.03 | N | $24,900 |
| Sidewalk | Nevada St | Fourth Ave | Sixth Ave | SRTS | 0.05 | W | $46,000 |
| Traffic Calming | West St | W Joy Way | W Sierra Ave | Narrow vehicle lanes; Beacon at Hwy 70 crossing; consider buffer to bike lanes; SRTS | 0.54 | | $88,000 |

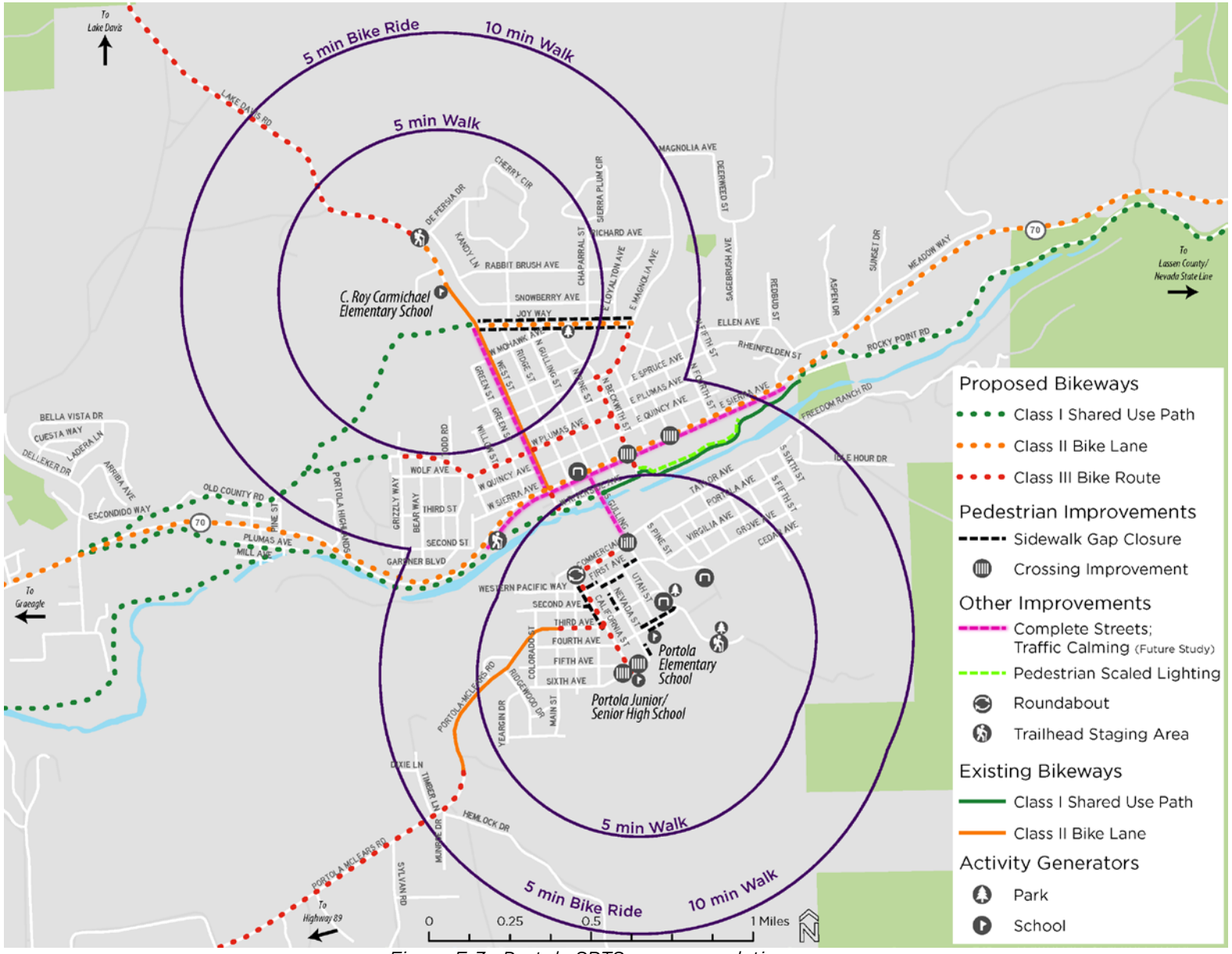



*Figure E-3: Portola SRTS recommendations map*

## Schools in Quincy

There are two main schools in Quincy. Quincy Junior/Senior High School is in Quincy proper while Plumas Charter School is in East Quincy, as shown in **Figure E-4**. **Table E-4** lists the projects that would provide SRTS benefits to Quincy students.

*Table E-4: Quincy SRTS Project Recommendations*

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Class II Bike Lane | Lee Rd | Quincy Junction Rd | Main St | Widen shoulder; SRTS | 2.05 | | $143,600 |
| Class II Bike Lane | Bucks Lake Rd | Court St | Bellamy Ln | SRTS | 0.77 | | $53,800 |
| Class II Bike Lane | Hwy 70 | Beskeen Ln | Main St | SRTS; Caltrans | 0.77 | | $54,100 |
| Class III Bike Boulevard | Jackson St | Main St | Main St | Bicycle boulevard: Consider traffic calming treatments; SRTS | 1.11 | | $55,600 |
| Yellow High-visibility Crosswalk | - | E Main St | N Mill Creek Rd | All legs; SRTS | - | Yes | $19,300 |
| Yellow High-visibility Crosswalk | - | Jackson St | S Lindan Ave | SRTS | - | Yes | $2,800 |
| Yellow High-visibility Crosswalk | - | Alder St | E High St | SRTS | - | Yes | $2,000 |
| Sidewalk | Jackson St | S Lindan Ave | Roche Ave | SRTS | 0.11 | S | $108,500 |
| Sidewalk | Main St | Reese St | Clough St | SRTS | 0.11 | | $106,300 |
| Trail | E Main St | Plumas Fairgrounds Rd | Quincy Junction Rd | Formalize unpaved trail; may require easement or property owner cooperation; SRTS; Caltrans | 1.24 | | $681,400 |

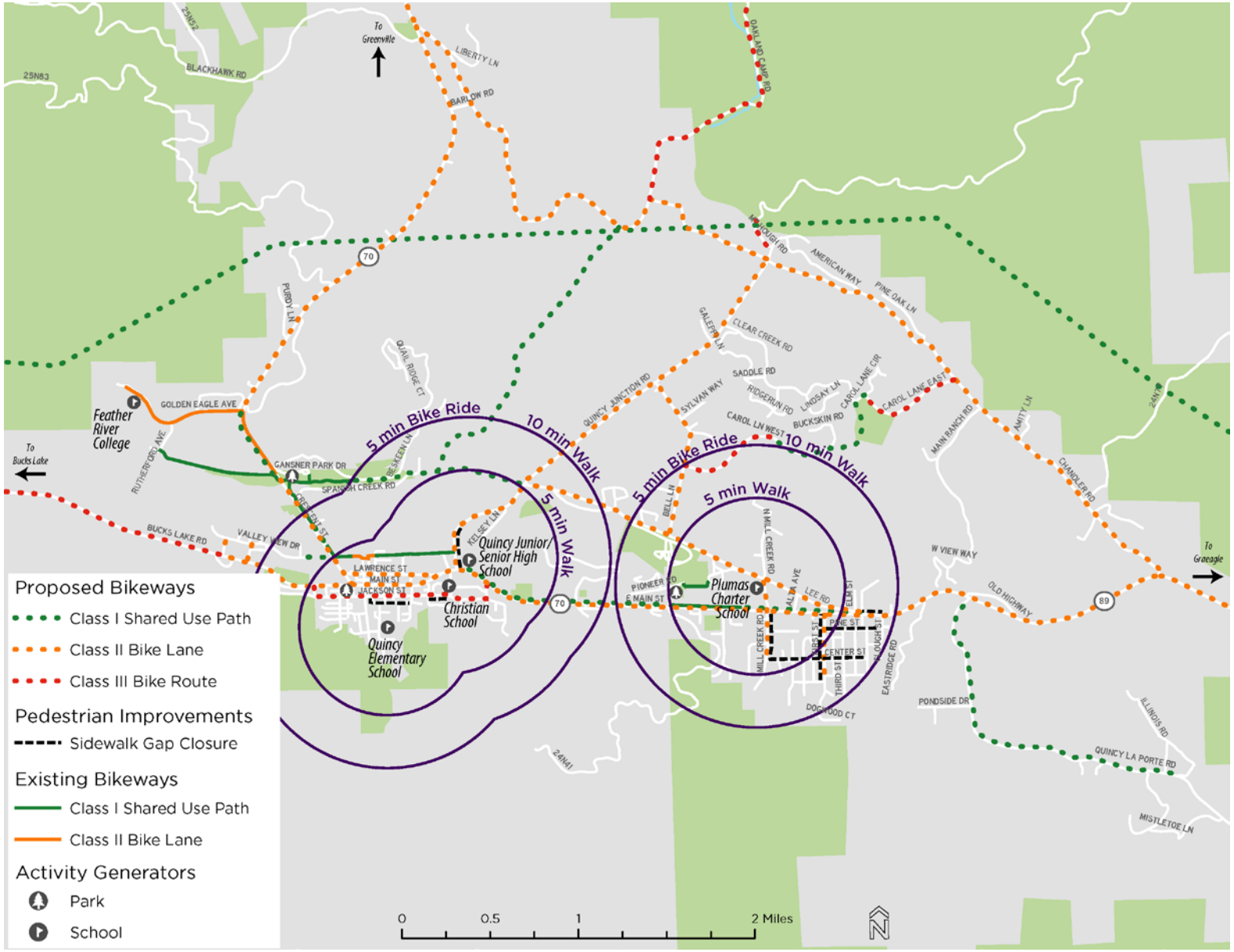



*Figure E-4: Quincy SRTS project recommendations map*

# Appendix F. Project Recommendations

This appendix presents the detailed project recommendations for Plumas County. The tables are divided by community. Projects that impact schools are indicated with "SRTS" in the Notes column. A consolidated list of Safe Routes to School projects is provided in Appendix E: Safe Routes to School.

*Table F-1: Project Recommendations for Chester*

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Bike Parking | - | Laurel Ln | 100ft South of E Willow St | 2 Bike Racks at Chester Post Office | - | No | $1,000 |
| Bike Parking | - | 1st Ave | 200 ft N of Willow St | 2 Bike Racks | - | No | $1,000 |
| Bike Parking | - | Brentwood Dr | 250 ft N of Riverwood Dr | 2 Bike Racks | - | No | $1,000 |
| Class II Bike Lane | Cross St | Aspen St | Moody Meadow Rd | SRTS | 0.21 | | $14,600 |
| Class II Bike Lane | First St | Moody Meadow Rd | Richardson Way | Class II Bike Lane, SRTS | 0.24 | | $16,800 |
| Class II Bike Lane | Chester Airport Rd | Main St | First Ave | Would require road widening | 0.90 | | $63,200 |
| Class II Bike Lane | Cedar St | Main St | First Ave | | 0.31 | | $22,000 |
| Class II Bike Lane | 3rd St | First Ave | Shared Use Path | | 0.21 | | $14,500 |
| Class II Bike Lane | Main St | Melissa Ave | Chester Airport Rd | | 1.77 | | $123,900 |
| Class II Bike Lane | Aspen St | Main St | First Ave | | 0.25 | | $17,600 |
| Class II Bike Lane | Feather River Dr | Main St | Wagon Rd | Widen Bike Lane and stencil bike lane markings in the existing lanes. | 0.54 | | $37,800 |
| Class III Bike Route | Lassen St | Feather River Dr | Feather River Dr | SRTS | 0.44 | | $6,600 |
| Class III Bike Route | Marie Rd | Lorraine Dr | Marie Rd west end | Class III Bike Route | 0.11 | | $1,600 |
| Class III Bike Route | Lorraine Dr | First Ave | Sherman Rd | | 0.27 | | $4,000 |
| Class III Bike Route | Sherman Rd | Watson Rd | Lorraine Dr | | 0.40 | | $6,000 |
| Class III Bike | Watson Rd | Main St | Purdy Rd | Class III Bike Route | 0.35 | | $5,200 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Route | | | | | | | |
| Crosswalk with Beacon or Signal | - | Feather River Dr | Main St | | - | Yes | $50,000 |
| Crosswalk with Beacon or Signal | - | Main St | Willow Way | SRTS | - | Yes | $50,000 |
| Crosswalk with Beacon or Signal | - | Main St | Riverwood Dr | Actuated pedestrian crossing; SRTS | - | Yes | $50,000 |
| Crosswalk with Beacon or Signal | - | Main St | Meadowbrook Loop | Actuated pedestrian crossing; SRTS | - | Yes | $50,000 |
| Crosswalk with Beacon or Signal | - | Hwy 36 | Irwin Way | Crosswalk with Beacon or Signal | - | Yes | $50,000 |
| Sidewalk | Main St | Riverwood Dr | W Willow St | SRTS; Caltrans | 0.51 | E | $485,700 |
| Sidewalk | Main St | Myrtle St | E Willow St | SRTS; Caltrans | 0.16 | W | $154,200 |
| Sidewalk | Aspen St | Main St | First Ave | SRTS | 0.23 | N | $220,700 |
| Sidewalk | Aspen St | Cross St | First Ave | SRTS | 0.14 | S | $128,700 |
| Sidewalk | Aspen St | Main St | Cross St | SRTS | 0.04 | S | $42,300 |
| Spot: School Circulation | - | Aspen St | 260ft East of Main St | Install gate. To be unlocked for AM and PM school bus access, locked during day to prevent cut-through traffic on school property; SRTS | - | No | $4,000 |
| Spot: School Circulation | - | Fir St | 250ft East of Martin Way | Install gate. To be unlocked for AM and PM school bus access, locked during day to prevent cut-through traffic on school property; SRTS | - | No | $4,000 |
| Study: School Circulation | - | Aspen St | Cross St | Future study for bus loading/drop-off, parent loading/drop-off, and faculty parking; SRTS | - | Yes | $50,000 |
| Study: Trailhead Staging Area | - | Main St | Barn Paths | | - | Yes | $50,000 |
| Study: Trailhead Staging Area | - | Hwy 36 | Barn Paths | | - | Yes | $50,000 |
| Trail | - | Watson Rd | Richardson Way | Class I Shared Use Path | 0.47 | | $257,300 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Trail | - | Meadow Rd | Goodwin St | Class I Shared Use Path; SRTS; Bridge crossing needed at the creek | 0.16 | | $87,500 |
| Trail | - | Hwy 36 | Shared Use Path | Class I Shared Use Path; Olsen Property Trails; Barn Paths | 0.45 | | $247,500 |
| Trail | - | 3rd St | Shared Use Path | Class I Shared Use Path | 0.21 | | $112,900 |
| Trail | - | Hwy 36/Main St | W end of Hwy 36 Causeway | Class I Shared Use Path; Connect from Almanor RR to Hwy 36 north of Aldon Dr; SRTS | 1.69 | | $931,300 |

*Table F-2: Project Recommendations for Graeagle*

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Bike Parking | - | Hwy 89 | 300ft South of Iroquois Trl | 2 Bike Racks | - | No | $1,000 |
| Bike Parking | - | Hwy 89 | 350ft North of Iroquois Trl | 2 Bike Racks | - | No | $1,000 |
| Bike Parking | - | Hwy 89 | 330ft South of Wasco Trl | 2 Bike Racks | - | No | $1,000 |
| Bike Parking | - | Hwy 89 | Hwy 70 | 2 Bike Lockers | - | Yes | $3,000 |
| Bridge | Hwy 89 | 130 ft SE of Graeagle Creek | 130 ft NW of Graeagle Creek | Bike/ped bridge on SR 89 over Graeagle Creek | 0.08 | | $3,008,500 |
| Class II Bike Lane | Mohawk Hwy Rd | Hwy 70 | Graeagle Johnsonville Rd | | 0.59 | | $41,600 |
| Class II Bike Lane | Graeagle Johnsonville Rd | Hwy 89 | Poplar Velley Rd | | 1.72 | | $120,600 |
| Class III Bike Route | Maricopa Trail | Blairsden-Graeagle Rd | Indian Peak Vineyards | | 0.30 | | $4,500 |
| Class III Bike Route | Blairsden-Graeagle Rd | Feather River | Hwy 89 | | 0.45 | | $6,700 |
| Class III Bike Route | Little Bear Rd | Hwy 89 | Mohawk Hwy Rd | | 0.67 | | $10,100 |
| Class III Bike Route | Bonita St | Hwy 89 | Blairsden Graeagle Rd | | 0.97 | | $14,600 |
| Crosswalk with Beacon or Signal | - | Hwy 89 | Yonkalla Trl | | - | Yes | $50,000 |
| Crosswalk with Beacon or Signal | - | Hwy 89 | 80ft South of Iroquois Trl | | - | No | $50,000 |
| Crosswalk | - | Hwy 89 | 520ft South of Wasco Trl | | - | No | $600 |
| Spot: Signage & Lighting | - | Hwy 89 | Hwy 70 | Bus Stop Signage | - | Yes | $600 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Study: Traffic Calming | - | Hwy 89 | Hwy 70 | Study roundabout to manage vehicle speeds, facilitate turning movements, and increase pedestrian safety crossing SR 70 to access transit and parking area | - | Yes | $1,000,000 |
| Study: Trailhead Staging Area | - | Hwy 89 | Maidu Trail | | - | Yes | $50,000 |
| Study: Trailhead Staging Area | - | 600ft SE of Gold Lake Forest Hwy | Hwy 89 | Mills Peak Trailhead for the Mills Creek multipurpose trail | - | No | $50,000 |
| Traffic Calming | Hwy 89 | Hwy 70 | Tolowa Trail | Add sidewalks or widen shoulders, add bike facilities; consider reducing speed limit to 25 mph; Caltrans | 2.04 | | $2,081,500 |
| Trail | Gray Eagle Creek/Feather River | Hwy 89 | Upper Main/River Rd | Dirt Path; Would require bridge over Feather River | 1.65 | | $330,800 |
| Trail | - | Navajo Trail | Goldridge Dr | Gravel Path | 0.34 | | $137,600 |
| Trail | Maricopa Trail | Indian Peak Vineyards | Hwy 89 | Class I Shared Use Path connects Maricopa Trail (Rd) to Hwy 89 | 0.10 | | $55,500 |

*Table F-3: Project Recommendations for Greenville*

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Bike Parking | - | Main St | Pine St | 2 Bike Racks | - | Yes | $1,000 |
| Bike Parking | - | Ann St | Bidwell St | 4 Bike Racks | - | No | $2,000 |
| Bike Parking | - | Main St | 95 ft N of Pine St | 2 Bike Racks | - | No | $1,000 |
| Class II Bike Lane | Main St | Round Valley Rd | 600 ft NE of Blackoak Dr | SRTS | 1.28 | | $89,800 |
| Class II Bike Lane | Setzer Rd | Main St | Higbie Ave | SRTS | 0.62 | | $43,500 |
| Class II Bike Lane | Kinder Ave | Hudson Ave | Setzer Rd | SRTS | 0.35 | | $24,700 |
| Class II Bike Lane | Greenville Wolf Creek Rd | Hwy 89 | Higbie Ave | | 1.87 | | $131,000 |
| Class III Bike Boulevard | Forgay Ave | Setzer Rd | 2nd St | Bicycle Boulevard: Consider traffic calming | 0.13 | | $6,300 |
| Class III Bike Route | Hideaway Rd | Round Valley Rd | Crescent St | Bikes May Use Full Lane Signage | 0.98 | | $14,700 |
| Class III Bike Route | Williams Valley Rd | N Valley Rd | Powerline Rd | | 1.66 | | $24,900 |
| Parking & Paving | Main St | Mill St | 150ft N of Pine St | Convert angled parking to back-in angled parking | 0.15 | | $5,000 |
| Sidewalk | - | Crescent St | Hideaway Rd | Provide connection from community center playground to Wolf Creek; SRTS | 0.12 | | $114,400 |
| Sidewalk | Hot Springs Rd | Greenville Park Rd | Hwy 89 | | 0.36 | | $346,100 |
| Bicyclist Ahead Actuated Beacon | - | Hwy 89 | Stampfli Ln | | - | Yes | $30,000 |
| Study: Trailhead Staging Area | - | Round Valley Rd | Long Valley Rd | | - | Yes | $50,000 |
| Trail | Wolf Creek Trail | Hwy 89 | Wolf Creek Trail Crossing | Wolf Creek Class I Trail Corridor | 1.68 | | $921,800 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Trail | Wolf Creek Trail Crossing | Hwy 89 | Greenville Wolf Creek Rd | Wolf Creek Class I Trail Corridor | 0.38 | | $206,500 |
| Trail | - | Main St | Hot Springs Rd | Class I Shared Use Path; SRTS | 0.45 | | $246,300 |

*Table F-4: Project Recommendations for La Porte*

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Class II Bike Lane | Main St | Aristocracy Dr | La Porte Pines Rd | | 0.45 | | $31,300 |
| Crosswalk | - | Main St | Mooreville Rd | | - | Yes | $700 |
| Crosswalk | - | Main St | School St | | - | Yes | $800 |
| Crosswalk | - | Main St | Pike Rd | | - | Yes | $1,000 |
| Sidewalk | Main St | Pike Rd | Mooreville Rd | | 0.28 | S | $266,900 |
| Sidewalk | Mooreville Rd | Main St | Springwood Way | | 0.24 | E | $232,000 |
| Sidewalk | Main St | Mooreville Rd | La Porte Pines Rd | | 0.13 | N | $125,700 |
| Trail | Little Grass Valley Rd | Lake View Dr | Aristocracy Dr | Gravel Path; Future Study | 4.97 | | $1,986,900 |

*Table F-5: Project Recommendations for Portola*

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Bike Parking | - | 1st Ave | 1,100 ft E of Gulling St | 4 Bike Racks | - | No | $2,000 |
| Bike Parking | - | Gulling St | 150 ft N of 4th Ave | 2 Bike Racks | - | No | $1,000 |
| Bike Parking | - | Sierra Ave | 60 ft E of Ridge St | 2 Bike Racks | - | No | $1,000 |
| Bridge | S Gulling St | W Riverside Ave | Taylor Ave | Widen bridge to accommodate bike lanes and a sidewalk on the E side; SRTS | 0.16 | | $6,511,600 |
| Class II Bike Lane | Joy Way | West St | E Magnolia Ave | Would require removal of on-street parking; SRTS | 0.47 | | $33,000 |
| Class II Bike Lane | Lake Davis Rd | De Persia Dr | 300 ft S of Portola Park Rd | SRTS | 0.16 | | $11,200 |
| Class III Bike Route | Commercial St | S Gulling St | California St | SRTS | 0.19 | | $2,800 |
| Class III Bike Route | California St | Commercial St | Portola Junior/Senior High School | SRTS | 0.34 | | $5,100 |
| Class III Bike Route | 3rd Ave | California St | Main St | | 0.13 | | $2,000 |
| Crosswalk with Beacon or Signal | - | W Sierra Ave | S Beckwith St | | - | Yes | $50,000 |
| Yellow High-visibility Crosswalk | - | Sixth Ave | 90ft West of California St | SRTS | - | No | $3,300 |
| Yellow High-visibility Crosswalk | - | Sixth Ave | California St | SRTS | - | Yes | $2,500 |
| Crosswalk | - | Hwy 70 | 2nd St | Crosswalk: Caltrans Jurisdiction | - | Yes | $1,200 |
| Crosswalk | - | Commercial St | S Gulling St | | - | Yes | $1,000 |
| Sidewalk | Joy Way | West St | E Magnolia Ave | SRTS | 0.47 | N | $450,900 |
| Sidewalk | Joy Way | West St | E Magnolia Ave | SRTS | 0.46 | S | $441,000 |
| Sidewalk | California St | Commercial St | Third Ave | SRTS | 0.16 | E | $154,900 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Sidewalk | Second Ave | Pacific St | California St | SRTS | 0.02 | N | $18,700 |
| Sidewalk | Nevada St | 300ft North of Third Ave | Third Ave | SRTS | 0.06 | E | $55,100 |
| Sidewalk | Nevada St | First Ave | 60ft South of First Ave | SRTS | 0.01 | E | $8,900 |
| Sidewalk | First Ave | California St | Nevada St | SRTS | 0.04 | N | $37,300 |
| Sidewalk | First Ave | California St | Nevada St | SRTS | 0.03 | S | $28,300 |
| Sidewalk | First Ave | Nevada St | Utah St | SRTS | 0.05 | S | $48,700 |
| Sidewalk | First Ave | Utah St | S Gulling St | SRTS | 0.04 | N | $42,400 |
| Sidewalk | S Gulling St | First Ave | Third Ave | SRTS | 0.01 | E | $13,700 |
| Sidewalk | Fourth Ave | Nevada St | S Gulling St | SRTS | 0.13 | N | $128,100 |
| Sidewalk | Fourth Ave | Nevada St | Utah St | SRTS | 0.05 | S | $49,000 |
| Sidewalk | California St | Fifth Ave | Sixth Ave | SRTS | 0.01 | E | $12,900 |
| Sidewalk | Sixth Ave | California St | Nevada St | SRTS | 0.03 | N | $24,900 |
| Sidewalk | Nevada St | Fourth Ave | Sixth Ave | SRTS | 0.05 | W | $46,000 |
| Signage & Lighting | - | S Beckwith St | E Sierra Ave | Pedestrian Scaled Lighting | 0.38 | | $5,000 |
| Study: Traffic Calming | - | California St | Commercial St | Traffic circle at challenging intersection | - | Yes | $200,000 |
| Study: Trailhead Staging Area | - | Hwy 70 | 850ft West of Green St | Create staging area for Feather River Trail | - | No | $50,000 |
| Study: Trailhead Staging Area | - | Lake Davis Rd | De Persia Dr | Create staging area for Lake Davis Trails | - | Yes | $50,000 |
| Study: Trailhead Staging Area | - | S Gulling St | 900ft South of Fourth Ave | Create staging area for Mohawk Rim Trail | - | No | $50,000 |
| Traffic Calming | West St | W Joy Way | W Sierra Ave | Narrow vehicle lanes; Beacon at Hwy 70 crossing; consider buffer to bike lanes; SRTS | 0.54 | | $88,000 |
| Traffic Calming | Hwy 70 | 200ft West of Green St | Meadow Wy | Narrow vehicle lanes; High-visibility crosswalks; Consider bike lanes; Caltrans | 1.06 | | $119,800 |
| Trail | Old County Rd | Escondido Way | Plumas Ave | Dirt Path on unpaved Old County Road | 1.05 | | $210,400 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Trail | Hwy 70 | S Dellerker Rd | S Beckwith St | Class I Shared Use Path; Extend Riverwalk west to Delleker Rd | 1.76 | | $966,000 |
| Trail | - | Joy Wy | Old County Rd | Dirt Path | 0.76 | | $151,200 |

*Table F-6: Project Recommendations for Quincy/East Quincy*

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Bike Parking | - | Harrison Ave | Main St | 2 Bike Racks | - | Yes | $1,000 |
| Bike Parking | - | Bradley St | Main St | 2 Bike Racks | - | Yes | $1,000 |
| Bike Parking | - | Main St | 160ft West of Bradley St | 4 Bike Racks | - | No | $2,000 |
| Bike Parking | - | Main St | Crescent St | 2 Bike Racks | - | Yes | $1,000 |
| Class II Advisory Shoulder | Chandler Rd | Hwy 70 | Hwy 70 | Class II Advisory Shoulder | 6.02 | | $421,400 |
| Class II Bike Lane | Lee Rd | Quincy Junction Rd | Main St | Widen shoulder; SRTS | 2.05 | | $143,600 |
| Class II Bike Lane | Bell Ln | Lee Rd | Quincy Junction Rd | Bikes May Use Full Lane Signage | 0.94 | | $65,600 |
| Class II Bike Lane | Bucks Lake Rd | Court St | Bellamy Ln | SRTS | 0.77 | | $53,800 |
| Class II Bike Lane | Lawrence St | Crescent St | Main St | Caltrans | 0.53 | | $37,000 |
| Class II Bike Lane | Meadow Wy | Valley View Dr | Bucks Lake Rd | | 0.10 | | $7,200 |
| Class II Bike Lane | Bellamy Ln | Valley View Dr | Bucks Lake Rd | | 0.10 | | $6,700 |
| Class II Bike Lane | Hwy 70 | Beskeen Ln | Main St | SRTS; Caltrans | 0.77 | | $54,100 |
| Class II Bike Lane | 1st St | Hwy 70 | Crawford St | | 0.38 | | $26,500 |
| Class II Bike Lane | Mill Creek Rd | Lee Rd | Center St | SRTS | 0.46 | | $32,400 |
| Class III Bike Boulevard | Jackson St | Main St | Main St | Bicycle boulevard: Consider traffic calming treatments; SRTS | 1.11 | | $55,600 |
| Class III Bike Route | Carol Ln W | Bell Ln | End of Carol Ln W | | 0.59 | | $8,800 |
| Class III Bike Route | Carol Ln E | End of Carol Ln E | Chandler Rd | | 0.61 | | $9,100 |
| Class III Bike Route | W Plumas Ave | N Grizzly Wy | N Beckwith St | | 0.73 | | $10,900 |
| Class III Bike Route | E Magnolia Ave, N Beckwith St | E Riverside Ave | Joy Wy | | 0.53 | | $8,000 |
| Class III Bike Route | West St | E Sierra Ave | W Riverside Ave | | 0.07 | | $1,000 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Parking & Paving | Jackson St | Court St | Harrison St | Convert angled parking to back-in angled parking | 0.09 | | $5,000 |
| High-visibility Crosswalk | - | First St | Center St | All legs | - | Yes | $13,300 |
| High-visibility Crosswalk | - | Mill Creek Rd | Center St | | - | Yes | $2,500 |
| High-visibility Crosswalk | - | First St | Pine St | All legs | - | Yes | $10,500 |
| High-visibility Crosswalk | - | E Main St | Alta Ave | Upgrade existing markings to high visibility; consider RRFB | - | Yes | $8,800 |
| Yellow High-visibility Crosswalk | - | E Main St | N Mill Creek Rd | All legs; SRTS | - | Yes | $19,300 |
| Crosswalk with Beacon or Signal | - | E Main St | Preppard Flat Rd | | - | Yes | $50,000 |
| Yellow High-visibility Crosswalk | - | Jackson St | S Lindan Ave | SRTS | - | Yes | $2,800 |
| Yellow High-visibility Crosswalk | - | Alder St | E High St | SRTS | - | Yes | $2,000 |
| High-visibility Crosswalk | - | Main St | Court St | | - | Yes | $3,500 |
| Crosswalk with Beacon or Signal | - | Crescent St | Valley View Dr | | - | Yes | $50,000 |
| Crosswalk | - | E Main St | 1st St | | - | Yes | $1,000 |
| Crosswalk | - | Redberg Ave | Main St | | - | Yes | $1,000 |
| Sidewalk | Pine St | First St | Reese St | | 0.28 | N | $267,900 |
| Sidewalk | First St | E Main St | Crawford St | | 0.38 | E | $358,200 |
| Sidewalk | Center St | Mill Creek Rd | Fifth St | | 0.56 | N | $531,600 |
| Sidewalk | Mill Creek Rd | Center St | E Main St | | 0.26 | W | $250,800 |
| Sidewalk | Harrison Ave | Jackson St | E High St | | 0.03 | E | $27,600 |
| Sidewalk | E High St | Harrison Ave | East St | | 0.21 | N | $202,700 |
| Sidewalk | Jackson St | S Lindan Ave | Roche Ave | SRTS | 0.11 | S | $108,500 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Sidewalk | Quincy Junction Rd | E Main St | - | Clarify walking path along school frontage. Reconsider parking to be accessed from drop-off loop | 0.05 | W | $45,100 |
| Sidewalk | Quincy Junction Rd | Bike Path | 1000ft north of Bike Path | | 0.17 | W | $164,400 |
| Sidewalk | Main St | Reese St | Clough St | SRTS | 0.11 | | $106,300 |
| Sidewalk | Hwy 70 | Fairgrounds Rd | Claremont Dr | | 1.05 | | $996,500 |
| Signage & Lighting | - | Rutherford Ave | Hwy 70 | Pedestrian Scaled Lighting (Wildlife sensitive) | 0.68 | | $5,000 |
| Signage & Lighting | - | Crescent St | Beskeen Ln | Pedestrian Scaled Lighting (Wildlife sensitive) | 0.49 | | $5,000 |
| Signage & Lighting | Hwy 70 | Spanish Creek Rd | Valley View Dr | Pedestrian Scaled Lighting; Along the bike path on Hwy 70; Caltrans | 0.52 | | $5,000 |
| Crosswalk with Beacon or Signal | - | First St | E Main St | | - | Yes | $50,000 |
| Study: Traffic Calming | - | Bell Ln | Forest Knoll Ln | Sight Distance | - | Yes | $11,200 |
| Study: Trailhead Staging Area | - | Hwy 89 | Barlow Rd | Create staging area | - | No | $50,000 |
| Traffic Calming | E Main St | Clough St | Plumas Fairgrounds Rd | Add speed humps; Caltrans | 1.20 | | $27,200 |
| Traffic Calming | Bell Ln | Lee Rd | Quincy Junction Rd | Reduce turning radius at Lee Rd; narrow vehicle lanes; High-visibility crosswalks | 0.93 | | $129,400 |
| Traffic Calming | Main St | Lawrence St | Lawrence St | Provide curb extensions full width of parking aisle at all marked crosswalks; Upgrade existing markings to high visibility; Consider 2-way direction; Caltrans | 0.57 | | $566,200 |
| Traffic Calming | Lawrence St | Crescent St | Main St | High-visibility crosswalks; stripe parking spaces; Consider 2-way direction; Caltrans | 0.53 | | $45,100 |
| Traffic Calming | Bucks Lake Rd/Main St | Meadow Way | Crescent Dr | High-visibility crosswalks; reduce lane widths; consider class II | 0.63 | | $68,400 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Trail | - | Beskeen Ln | Quincy Junction Rd | Class I Shared Use Path; Connect existing Gansner Path to school area | 0.97 | | $535,300 |
| Trail | E Main St | Plumas Fairgrounds Rd | Quincy Junction Rd | Formalize unpaved trail; may require easement or property owner cooperation; SRTS; Caltrans | 1.24 | | $681,400 |
| Trail | Valley View Dr | Gasner Creek Ct | Crescent St | Class I Shared Use Path | 0.16 | | $90,600 |
| Trail | - | End of Carol Ln E | End of Carol Ln W | Dirt Path | 0.83 | | $165,900 |
| Trail | - | Beskeen Ln | Chandler Rd | Dirt Path | 1.81 | | $362,400 |
| Trail | Hwy 70 | Golden Eagle Ave | Crescent St | Class I Shared Use Path | 0.41 | | $224,100 |

*Table F-7: Project Recommendations for Plumas County*

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Bridge | Hwy 89 | Iroquois Trail | Maidu Trail | Bike & Pedestrian Bridge | 0.02 | | $786,300 |
| Class II Bike Lane | First Ave | Moody Meadow Rd | Chester Airport Rd | | 0.55 | | $38,700 |
| Class II Bike Lane | Hwy 36 | Chester Airport Rd | County Line | Caltrans | 6.97 | | $487,800 |
| Class II Bike Lane | Hwy 89 | Hwy 36 | Hwy 70 | SRTS; Caltrans | 33.40 | | $2,338,100 |
| Class II Bike Lane | Hwy 70 | County Boundary | 300 ft north of Blackhawk Rd | Caltrans | 39.11 | | $2,737,700 |
| Class II Bike Lane | Quincy Junction Rd | Main St | Chandler Rd | Widen shoulder | 2.60 | | $182,300 |
| Class II Bike Lane | Hwy89/70 | Blairsden Park & Ride | E Chandler Rd | Caltrans | 18.38 | | $1,286,700 |
| Class II Bike Lane | Hwy 70 | West St | County Boundary | Caltrans | 19.99 | | $1,399,200 |
| Class II Bike Lane | Hwy 89 | Hwy 70 | County Line | Caltrans | 8.14 | | $569,700 |
| Class II Bike Lane | Hwy 70 | Mitchell Ln | Claireville Rd | | 1.14 | | $79,900 |
| Class II Bike Lane | Hwy 70 | Chandler Rd | Golden Eagle Ave | Caltrans | 2.66 | | $186,500 |
| Class II Bike Lane | Hwy 70 | West St | Hwy 89 | Caltrans | 9.16 | | $641,400 |
| Class II Bike Lane | Hwy 70/89 | Chandler Rd | Court St | Caltrans | 4.76 | | $333,500 |
| Class II Bike Lane | Hwy 147 | A-13 | County Line | Caltrans | 2.48 | | $173,700 |
| Class II Bike Lane | Hwy 49 | Hwy 70 | County Line | Caltrans | 7.42 | | $519,500 |
| Class II Bike Lane | Hwy 284 | Hwy 70 | Frenchman Lake | Caltrans | 8.29 | | $580,600 |
| Class II Bike Lane | Hwy 36 | Melissa Ave | County Boundary | Caltrans | 4.48 | | $313,600 |
| Class II Bike Lane | A-13 | Hwy 36 | Hwy 147 | | 3.85 | | $269,400 |
| Class II Bike Lane | Clifford Dr | A-13 | W Burnt Cedar Rd | | 2.57 | | $179,600 |
| Class II Bike Lane | Hwy 36 | A-13 | Melissa Ave | | 4.76 | | $333,000 |
| Class II Bike Lane | Big Cove Rd | Clifford Dr | Peninsula Dr | | 0.87 | | $60,600 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Class III Bike Route | Chester Warner Valley Rd | Old Red Bluff Rd | Wagon Rd | Bikes May Use Full Lane Signage | 5.63 | | $84,500 |
| Class III Bike Route | First Ave | Chester Airport Rd | 1 mile south of Chester Airport Rd | | 1.01 | | $15,200 |
| Class III Bike Route | N Valley Rd/Stampfli Ln | Hwy 89 | 600 ft E of Blackoak Dr | Widen shoulder | 10.43 | | $156,500 |
| Class III Bike Route | Grizzly Rd | Lake Davis Rd | Hwy 70 | Bikes May Use Full Lane Signage | 5.70 | | $85,600 |
| Class III Bike Route | Portola-Mclears Rd | 700ft North of Beckwourth Peak Rd | Hwy 89 | Bikes May Use Full Lane Signage | 7.16 | | $107,300 |
| Class III Bike Route | Bucks Lake Rd | Bellamy Ln | Bucks Lake | Bikes May Use Full Lane Signage | 15.25 | | $228,700 |
| Class III Bike Route | Chester Juniper Lake Rd | Feather River Dr | - | Bikes May Use Full Lane Signage | 3.77 | | $56,600 |
| Class III Bike Route | Gold Lake Hwy | Hwy 89 | Plumas County Line | Bikes May Use Full Lane Signage; Road surface on Gold Lake Hwy is too rough for road bikes - dangerous. | 7.58 | | $113,700 |
| Class III Bike Route | Lake Davis Rd | De Persia Dr | Grizzly Rd | Widen shoulder | 6.57 | | $98,600 |
| Class III Bike Route | Oakland Camp Rd | Chandler Rd | Oakland Camp | Widen shoulder | 1.66 | | $25,000 |
| Class III Bike Route | Mount Hough Rd | Quincy Junction Rd | Railroad | Bikes May Use Full Lane Signage | 0.20 | | $2,900 |
| Class III Bike Route | Upper Main St | River Rd | Railroad St | Provide connection of Mohawk Rim Trail in Clio | 0.21 | | $3,200 |
| Class III Bike Route | Little Grass Valley Rd | Lake View Dr | N Edge of Dam | Bikes May Use Full Lane Signage | 2.30 | | $34,500 |
| Class III Bike Route | Genesse Rd/N Valley Rd | Narm Rd | Beckwourth Taylorsville Rd | Bikes May Use Full Lane Signage | 7.50 | | $112,600 |
| Class III Bike Route | Indian Creek Rd | Genesee Rd | Antelope Lake | | 15.01 | | $225,200 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Class III Bike Route | Round Valley Rd | S Main St | Round Valley Reservoir | | 2.12 | | $31,800 |
| Class III Bike Route | N Valley Rd | Stampfli Ln | Narm Rd | | 2.33 | | $35,000 |
| Class III Bike Route | Diamond Mtn Rd | N Valley Rd | Narm Rd | | 5.26 | | $78,900 |
| Class III Bike Route | Narm Rd | N Valley Rd | Lights Creek Ln | | 6.28 | | $94,300 |
| Class III Bike Route | Arlington Rd | Genesee Rd | Hwy 89 | | 5.35 | | $80,200 |
| Sidewalk | Main St | Carol Ave | Glenwood Dr | Caltrans | 0.50 | E | $477,000 |
| Sidewalk | Main St | Wildwood Ln | Carol Ave | Caltrans | 0.81 | W | $766,800 |
| Sidewalk | Hwy 36 | Chester Airport Rd | Stover Mountain Rd | Provide pedestrian access across Superditch | 0.07 | W | $66,500 |
| Study: Trailhead Staging Area | - | Gold Lake Forest Hwy | County Boundary | Create staging area for Frazier Ridge and Mills Peak Trail | - | No | $50,000 |
| Study: Trailhead Staging Area | - | Hwy 70 | Mohawk Vista Dr | Create staging area for Penman and Grizzly Trails | - | Yes | $50,000 |
| Study: Trailhead Staging Area | - | Hwy 70 | Willow Creek Rd | Create staging area for Claireville Trail and West Branch Trail | - | Yes | $50,000 |
| Study: Trailhead Staging Area | - | Lake Davis Rd | Beckwourth Taylorsville Rd | Create staging area for Lake Davis Trails and Crocker Ridge Trail | - | Yes | $50,000 |
| Study: Trailhead Staging Area | - | North Chandler Rd | Liberty Ln | | - | No | $50,000 |
| Study: Trailhead Staging Area | - | Oakland Camp Rd | 0.88 miles North of Chandler Rd | | - | No | $50,000 |
| Study: Trailhead Staging Area | - | Catfish Beach Rd | Access to Shared-Use Path | | - | No | $50,000 |
| Study: Trailhead Staging Area | - | Shared-Use Path | A-13 | | - | Yes | $50,000 |
| Study: Trailhead Staging Area | - | Rock Creek | Hwy 36 | | - | No | $50,000 |
| Study: Trailhead Staging Area | - | Hwy 147 | Shared-Use Path | | - | Yes | $50,000 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Trail | - | Hwy 89 | First Ave | Create Class I path at end of Frist Avenue. May be Lassen National Forest - they are supportive of a bicycle connection | 1.08 | | $594,000 |
| Trail | Parallel to Hwy 89 - East Side | Hwy 36 | Humboldt Rd | Class I Shared Use Path; formal conservation easement exists; Caltrans | 4.30 | | $2,364,700 |
| Trail | - | W end of Hwy 36 Causeway | Lake Almanor Rest Area | Class I path on inactive Collins Pine RR ROW; Caltrans; Hwy 36/Almanor RR | 2.99 | | $1,646,500 |
| Trail | Rocky Point Rd | Hwy 70 | Hwy 70 | Gravel Path | 2.32 | | $930,000 |
| Trail | South side of Hwy 70 | Rocky Point Rd | County Road 124A | Class I Shared Use Path; Connect existing Riverwalk to Rocky Point Rd | 0.14 | | $78,100 |
| Trail | Quincy Laporte Rd | Hwy 70 | Windle Ln | Gravel Path | 1.99 | | $797,800 |
| Trail | E Main St | Redberg Ave | Reese St | Class I Shared Use Path; Caltrans | 0.68 | | $373,200 |
| Trail | Crescent St | Orion Way | Lawrence St | Class I Shared Use Path; Connect end of existing path by Little League Field to existing path near Valley View Dr | 0.13 | | $68,800 |
| Trail | Stover Mountain Trails | - | - | Dirt Path | 11.39 | | $2,277,500 |
| Trail | Pacific Crest Trail | N Stover | Chester Park | Dirt Path; Pacific Crest Trail to Chester Park Connection | 3.57 | | $713,200 |
| Trail | Almanor Rail Trail B | Lake Almanor Rest Area | Peninsula Communities/ Clear Creek | Class I Shared Use Path | 8.57 | | $4,711,700 |
| Trail | Hwy 147 Eastshore Rail Trail | Hwy 147 BNSF Crossing Near County Line | Hwy 89 at Canyon dam | Class I Shared Use Path; BNSF R/W or easterly PG&E conservation easements | 10.22 | | $5,623,100 |
| Trail | Off-street Path adjacent to Railroad | Hwy 89 north | Hwy 89 south | Class I Shared Use Path; Fury Rd "Get Around" Path | 5.59 | | $3,074,500 |

| Project | Location | Cross Street A | Cross Street B | Notes | Miles | Street Side/ Intersection | Cost Estimate |
|---|---|---|---|---|---|---|---|
| Trail | Adjacent to Feather River | Railroad | River Road | Gravel Path | 2.30 | | $919,400 |
| Trail | - | Spruce St | Mill Ave | Gravel Path; Clio-Portola Path | 8.97 | | $3,587,200 |
| Trail | Pacific Crest Trail | N Stover | West of N Stover | Dirt Path; Pacific Crest Trail to Chester Park Connection | 1.42 | | $284,300 |
| Trail | Prattville Butt Reservoir Rd | Hwy 89 | Butt Valley Reservoir | Dirt Path; exact alignment TBD | 3.14 | | $627,200 |
| Trail | Beckworth Rim Trail | Bidwell Bar | Reno | Dirt Path; exact alignment TBD | 120.96 | | $24,191,500 |

# APPENDIX G. FUNDING SOURCES

This appendix presents potential funding sources that Plumas County and local jurisdictions may seek to implement the recommendations in this Plan. It is broken down by Federal, State, Regional, and Local sources.

## Federal Sources

### TIGER Discretionary Grants

The Transportation Investment Generating Economic Recovery, or TIGER Discretionary Grant program, provides a unique opportunity for the US DOT to invest in road, rail, transit and port projects that promise to achieve national objectives. Since 2009, Congress has dedicated nearly $4.6 billion for seven rounds of TIGER to fund projects that have a significant impact on the Nation, a region or a metropolitan area. TIGER can provide capital funding directly to any public entity, including municipalities, counties, port authorities, tribal governments, MPOs, or others in contrast to traditional Federal programs which provide funding to very specific groups of applicants (mostly State DOTs and transit agencies). At least 20 percent of the funds provided for TIGER Discretionary Grants (or $100 million) must be directed to projects located in rural areas. The minimum grant application request for rural projects is $1 million. https://www.transportation.gov/tiger

### Highway Safety Improvement Program (HSIP)

The Highway Safety Improvement Program (HSIP) provides $2.4 billion nationally for projects that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. Pedestrian safety improvements, traffic calming projects, and crossing treatments for active transportation users in school zones are examples of eligible projects. All HSIP projects must be consistent with the state's Strategic Highway Safety Plan. The 2015 California SHSP is located here: http://www.dot.ca.gov/trafficops/shsp/

### 405 National Priority Safety Program

Approximately $14 million annually (5 percent of the $280 million allocated to the program overall) will be awarded to States to decrease bike and pedestrian crashes with motor vehicles. States where bike and pedestrian fatalities exceed 15percent of their overall traffic fatalities will be eligible for grants that can be used for:

- Training law enforcement officials on bike/pedestrian related traffic laws.
- Enforcement campaigns related to bike/pedestrian safety
- Education and awareness programs related to relevant bike/pedestrian traffic laws

## State Sources

### Active Transportation Program (ATP)

In 2013, Governor Brown signed legislation creating the Active Transportation Program (ATP). This program is a consolidation of the Federal Transportation Alternatives Program (TAP), California's Bicycle Transportation Account (BTA), and Federal and California Safe Routes to School (SRTS) programs and is still funded with federal and state funds.
The ATP program is administered by Caltrans Division of Local Assistance, Office of Active Transportation and Special Programs. Program funding is segregated into three components and is distributed as follows:

- 50 percent to the state for statewide competitive program
- 10 percent to small urban and rural regions with populations of 200,000 or less for the small urban and rural area competitive program, and
- 40 percent to Metropolitan Planning Organizations (MPO) in urban areas with populations greater than 200,000 for the large urbanized area competitive program.

The ATP program goals include:

- Increase the proportion of trips accomplished by biking and walking,
- Increase safety and mobility for non-motorized users,
- Advance the active transportation efforts of regional agencies to achieve greenhouse gas reduction goals,
- Enhance public health,
- Ensure that disadvantaged communities fully share in the benefits of the program, and
- Provide a broad spectrum of projects to benefit many types of active transportation users.

The California Transportation Commission ATP Guidelines are available here:
http://www.catc.ca.gov/meetings/agenda/2014Agenda/2014_03/03_4.12.pdf
Eligible bicycle and Safe Routes to School projects include:

- Infrastructure Projects: Capital improvements that will further program goals. This category typically includes planning, design, and construction.
- Non-Infrastructure Projects: Education, encouragement, enforcement, and planning activities that further program goals. The focus of this category is on pilot and start-up projects that can demonstrate funding for ongoing efforts.
- Infrastructure projects with non-infrastructure components.

The minimum request for non-SRTS projects is $250,000 unless the project is within a disadvantaged community, which has no minimum. There is no minimum for SRTS projects.

*More information:*
http://www.dot.ca.gov/hq/LocalPrograms/atp/

### Office of Traffic Safety (OTS) Grants

Office of Traffic Safety Grants are supported by Federal funding under the National Highway Safety Act and SAFETEA-LU. In California, the grants are administered by the Office of Traffic Safety.
Grants are used to establish new traffic safety programs, expand ongoing programs or address deficiencies in current programs. Eligible grantees are governmental agencies, state colleges, state universities, local city and county government agencies, school districts, fire departments, and public

emergency services providers. Grant funding cannot replace existing program expenditures, nor can traffic safety funds be used for program maintenance, research, rehabilitation, or construction. Grants are awarded on a competitive basis, and priority is given to agencies with the greatest need. Evaluation criteria to assess need include potential traffic safety impact, collision statistics and rankings, seriousness of problems, and performance on previous OTS grants. The California application deadline is January of each year. There is no maximum cap to the amount requested, but all items in the proposal must be justified to meet the objectives of the proposal.

*More information:* http://www.ots.ca.gov/

### State Transportation Improvement Program

The State Transportation Improvement Program (STIP) is a biennial five-year plan adopted by the Commission for future allocations of certain state transportation funds for state highway improvements, intercity rail, and regional highway and transit improvements. It is funded with revenues from the Transportation Investment Fund and other funding sources. Bicycle and pedestrian projects may be programmed in the STIP so long as they are eligible for State Highway Account or Federal funds.

## Regional and Local Sources

### AB 2766 DMV Funds

The Northern Sierra Air Quality Management District serves Nevada, Sierra, and Plumas Counties. The AB 2766 program is funded from vehicle license fees and is designed to reduce air pollution. Only projects that reduce emissions from motor vehicles or reduce vehicle miles traveled from automobiles, trucks, or buses are eligible. This is a technical program that requires significant data collection and reporting. Relevant projects that have been funded in the past include:

- Public education
- Bicycle infrastructure such as bike lanes and bike racks
- VMT reduction programs
- CNG infrastructure
- Public transit marketing
- Bus stop shelters
- Mass transit subsidies

*More information:*
http://myairdistrict.com/index.php/grants-incentives/ab-2766-dmv-funds/

### Developer Impact Fees

As a condition for development approval, municipalities can require developers to provide certain infrastructure improvements, which can include bikeway projects. These projects have commonly provided Class II facilities for portions of on-street, previously-planned routes. They can also be used to provide bicycle parking or shower and locker facilities. The type of facility that should be required to be built by developers should reflect the greatest need for the particular project and its local area. Legal challenges to these

types of fees have resulted in the requirement to illustrate a clear nexus between the particular project and the mandated improvement and cost.

## Roadway Construction, Repair and Upgrade

Future road widening and construction projects are one means of providing improved pedestrian and bicycle facilities. To ensure that roadway construction projects provide these facilities where needed, it is important that the review process includes input pertaining to consistency with the proposed system. In addition, California's 2008 Complete Streets Act and Caltrans Deputy Directive 64 require that the needs of all roadway users be considered during "all phases of state highway projects, from planning to construction to maintenance and repair."

*More information*:
http://www.dot.ca.gov/hq/tpp/offices/ocp/complete_streets.html

## Utility Projects

By monitoring the capital improvement plans of local utility companies, it may be possible to coordinate upcoming utility projects with the installation of bicycle and pedestrian infrastructure within the same area or corridor. Often times, the utility companies will mobilize the same type of forces required to construct bikeways and sidewalks, resulting in the potential for a significant cost savings. These types of joint projects require a great deal of coordination, a careful delineation of scope items and some type of agreement or memorandum of understanding, which may need to be approved by multiple governing bodies.

## Cable Installation Projects

Cable television and telephone companies sometimes need new cable routes within public right-of-way. Recently, this has most commonly occurred during expansion of fiber optic networks. Since these projects require a significant amount of advance planning and disruption of curb lanes, it may be possible to request reimbursement for affected bicycle facilities to mitigate construction impacts. In cases where cable routes cross undeveloped areas, it may be possible to provide for new bikeway facilities following completion of the cable trenching, such as sharing the use of maintenance roads.

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# Appendix H. ATP Compliance Table

| Subject | Requirement | Section(s) |
|---|---|---|
| Bicycle Trips | The estimated number of existing bicycle trips in the plan area and the estimated increase in the number of bicycle trips resulting from implementation of the Plan. | Chapter 4 Benefit Impact Analysis section |
| Safety | The number and location of collisions, serious injuries, and fatalities suffered by bicycle riders in the Plan area, both in absolute numbers and as a percentage of all collisions and injuries, and a goal for collision, serious injury, and fatality reduction after implementation of the Plan. | Chapter 4 Collision Analysis section |
| Land Use | A map and description of existing and proposed land use and settlement patterns which must include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings, major employment centers, and other major destinations. | Chapter 1 Land Use section |
| Bikeways | A map and description of existing and potential bicycle transportation facilities. | Chapter 1 Transportation Network section |
| Bicycle Parking | A map and description of existing and potential end-of-trip bicycle parking facilities. | Chapter 5 Bicycle Parking section |
| Policies | A description of existing and proposed policies related to bicycle parking in public locations, private parking garages and parking lots, and in new commercial and residential developments. | Chapter 5 Bicycle Parking section |
| Multi-Modal Connections | A map and description of existing and proposed bicycle transportation and parking facilities for connections with and use of other transportation modes. These shall include, but not be limited to, parking facilities at transit stops, rail and transit terminals, ferry docks and landings, park and ride lots, and provisions for transporting bicycle riders and bicycles on transit or rail vehicles or ferry vessels. | Chapter 5 Bicycle Parking section |
| Amenities | A map and description of existing and proposed facilities for changing and storing clothes and equipment. These shall include, but not be limited to, locker, restroom, and shower facilities near bicycle parking facilities. | Chapter 5 Bicycle Parking section |
| Wayfinding | A description of proposed signage providing wayfinding along the bicycle transportation network to designated destinations. | Chapter 5 Bicycle Wayfinding section |
| Maintenance | A description of the policies and procedures for maintaining existing and proposed bicycle facilities, including, but not limited to, the maintenance of smooth pavement, freedom from encroaching vegetation, maintenance of traffic control devices including striping and other pavement markings, and lighting. | Chapter 6 Maintenance section |

| Subject | Requirement | Section(s) |
|---|---|---|
| Programs | A description of bicycle safety and education programs conducted in the area included within the Plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the law impacting bicycle rider safety, and the resulting effect on collisions involving bicycle riders. | Chapter 5 Program Recommendations section |
| Public Involvement | A description of the extent of community involvement in development of the Plan, including disadvantaged and underserved communities. | Appendix B Community Outreach |
| Regional Coordination | A description of how the active transportation plan has been coordinated with neighboring jurisdictions, including school districts within the Plan area, and is consistent with other local or regional transportation, air quality, or energy conservation plans, including, but not limited to, general plans and a Sustainable Community Strategy in a Regional Transportation Plan. | Appendix A Plan and Policy Review |
| Prioritization | A description of the projects and programs proposed in the Plan and a listing of their priorities for implementation, including the methodology for project prioritization and a proposed timeline for implementation. | Chapter 6 Implementation and Appendix F Project Recommendations |
| Funding | A description of past expenditures for bicycle facilities and programs, and future financial needs for projects and programs that improve safety and convenience for bicycle riders in the Plan area. Include anticipated revenue sources and potential grant funding for bicycle uses. | Appendix G Funding Sources |
| Implementation | A description of steps necessary to implement the Plan and the reporting process that will be used to keep the adopting agency and community informed of the progress being made in implementing the Plan. | Chapter 6 Implementation |
| Plan Adoption | A resolution showing adoption of the Plan by the Council of Governments. | Appendix I (forthcoming) |

# Appendix I. Resolution of Plan Adoption

# Appendix I

## RESOLUTION NO. 18-01

## A RESOLUTION OF THE PLUMAS COUNTY TRANSPORTATION COMMISSION ADOPTING THE PLUMAS COUNTY ACTIVE TRANSPORTATION PROGRAM 2018 PEDESTRIAN/BICYCLE PLAN

**WHEREAS,** the Plumas County Department of Public Works, in its capacity as staff to the Plumas County Transportation Commission, was awarded a Sustainable Communities Grant in September 2015 for the preparation of a Countywide Non-Motorized Transportation Plan, known as the 2018 Plumas County Pedestrian/Bicycle Plan; and

**WHEREAS,** the 2018 Pedestrian/Bicycle Plan is the culmination of multiple rounds of community meetings conducted throughout the County and the City of Portola in which extensive public and stakeholder input was received; and

**WHEREAS,** Development of the 2018 Pedestrian/Bicycle Plan was undertaken with extensive coordination and partnership with the California Department of Transportation (Caltrans) and the California Highway Patrol, and

**WHEREAS,** through this community input, the goals of the 2018 Pedestrian/Bicycle Plan were drafted to guide the development and implementation of projects to improve the county's walking and bicycling environment into the future; and

**WHEREAS,** the 2018 Pedestrian/Bicycle Plan, provides a foundation for recommendations and implementation strategies through the Plan's Goals, Objectives and Strategies; and

**WHEREAS,** The 2018 Pedestrian/Bicycle Plan Goals, Objectives and Strategies are internally consistent with the goals, objectives and policies of the Plumas County Regional Transportation Plan, and

**WHEREAS,** The 2018 Pedestrian/Bicycle Plan maintains the County's eligibility for local, state and federal funding of bicycle and pedestrian improvements; and

**WHEREAS,** The 2018 Pedestrian/Bicycle Plan is a living document that will be reviewed and updated every five years or as needed, and

**NOW, THEREFORE, BE IT RESOLVED** that the Plumas County Transportation Commission hereby adopts the Plumas County Active Transportation Program – 2018 Pedestrian/Bicycle Plan

**PASSED AND ADOPTED** by the Plumas County Transportation Commission for Plumas County, State of California, at a regular meeting of said Commission on January 22, 2018 by the following vote:

AYES: Commissioner: Powers, Oels, Simpson, Scarlett

NOES: Commissioner:

ABSENT: Commissioner:

Chair, Plumas County Transportation Commission

ATTEST: