5.0 PROPOSED NETWORK AND IMPROVEMENTS

This chapter presents the proposed bicycle network and improvements for Nevada County. The recommended system and improvements consists of bicycle facilities: including the bikeway system, parking and support facilities and bicycle programs as related to safety, education, and community and employer outreach. It is recommended that all the jurisdictions of Nevada County, including Nevada County, Grass Valley, Nevada City and Truckee, adopt the infrastructure and program plan recommended in this section to ensure effective and consistent implementation countywide.

5.1 Introduction

The recommended bicycle circulation strategy consists of a comprehensive network of utilitarian and recreational bikeways connecting residential areas of Nevada County with schools, parks, community centers, downtowns, and other destinations. It focuses around a countywide system of bicycle routes with local bike lanes, pathways and routes in each community area. The proposed bikeway network is shown in **Figures 5-3 through 5-6**. Proposed bikeway segments are described in **Table 5-1**.

This system as well as the project prioritization were selected by:

- input from staff from the Nevada County Transportation Commission, Nevada County, and its local communities and partner agencies,
- the public (through surveys and two public workshops),
- and the consultant team based on their local knowledge and cycling experience, the orientation of funding programs, and the planning criteria outlined below.

5.1.1 Nevada County Network Vision and Strategy

Nevada County has a growing reputation as a desirable, livable community. One of the aspects that makes a community livable are places where people feel comfortable bicycling, whether they be school children or senior citizens. The long term vision of this Plan is to make Nevada County a livable rural community, a place where there is a balance between the automobile and alternative modes, where bikeways are connected to provide a consistent experience within communities and from town to town.

5.1.2 Creating a Network

A bikeway 'network' is a network of bicycle facilities that, for a variety of reasons including safety and convenience, provide a superior level of service for bicyclists. It is important to state that, by law, bicyclists are allowed on all streets and roads (except where specifically prohibited) regardless of

whether they are a part of the bikeway system. **The bikeway network is a tool that allows the County and it cities to focus and prioritize implementation efforts where they will provide the greatest community benefit.**

There is an established methodology for selecting a bikeway system for any community. As a Countywide Plan, one of the major goals of the Plan is to build on local bicycle projects already approved or proposed by communities. Thus, local plans provide the basis for some of the bikeway system. Another important criteria is input from the local bicycling community and local staff familiar with the best routes and existing constraints and opportunities. Input was received through a public survey, two public workshops, from staff and via an extensive field survey and analysis process.

In addition, the consultant team considered some of the following criteria in selecting projects:

1. Existing Bicycling Patterns based on reports from surveys and users
2. Traffic volumes and travel speeds on streets
3. Amount of side friction (driveways, side streets)
4. Curb-to-curb width, available right of way and shoulder conditions
5. Number of destinations served, including schools, parks and employment centers
6. Topography and gradients
7. Integration into the regional system
8. Presence of reasonable alternatives for bicyclists
9. Directness and connectivity to destinations
10. Safety concerns

The Nevada County bikeway system was developed focusing on connecting communities and destinations within communities, addressing routes used by bicyclists, and focusing on specific opportunities and constraints.

Finally, it is important to remember that the bikeway system and the project priorities serve as guidelines to those responsible for implementation. The system and segments themselves may change over time as a result of changing bicycling patterns and implementation constraints and opportunities.

5.1.3 Environmental Protection

Bicycling is one of the most environmentally sound forms of travel possible, and directly helps reduce problems associated with motor vehicle use such as air, noise, and water pollution, over-development, and ground covering by asphalt. At the same time, some of the more ambitious pathway proposals in this Plan may have environmental impacts of their own. Some of these may be direct, such as impacts to local biological or geological resources, and others may be indirect, such as impacts of unleashed dogs in habitat areas. All of the projects in this Plan will require additional

feasibility analysis, which will include environmental analysis as needed once the project is deemed feasible and a preliminary design developed. Once completed, the bicycle and pedestrian improvements and programs in this Plan will help to make Nevada County one of the most environmentally sound communities in the country.

5.2 Proposed Bikeway Network

The goal of constructing bikeways is to provide safer, more direct routes for cyclists traveling in Nevada County. Recommended segments are divided into Caltrans Class I, II and III facilities. **Figure 5-1** illustrates these facility types. Further information on bikeway types and design guidelines can be found in **Appendix A**. The fully built-out Nevada Bikeway Network would consist of approximately 21 miles of Class I Pathways, 37 miles of Class II Bicycle Lanes and 153 miles of Class III Bicycle Routes. Prioritization and implementation strategies are found in Chapter 6.

5.2.1 Class I Pathways

Several segments of new Class I pathway are proposed in this plan. The locations for these pathway segments were determined by a number of factors, including:

- Presence in another previous plan
- Request by the public, steering committee members or staff
- Need to make a connection through an area with limited or no on-street opportunity to install bikeways but opportunity to build a parallel pathway
- High bicycle or school use, recreational activity or economic and/or housing development
- Evaluation of existing open space right-of-way or easements and criteria such as length, width, status and topographical features of those areas.

Litton Pathway Extension

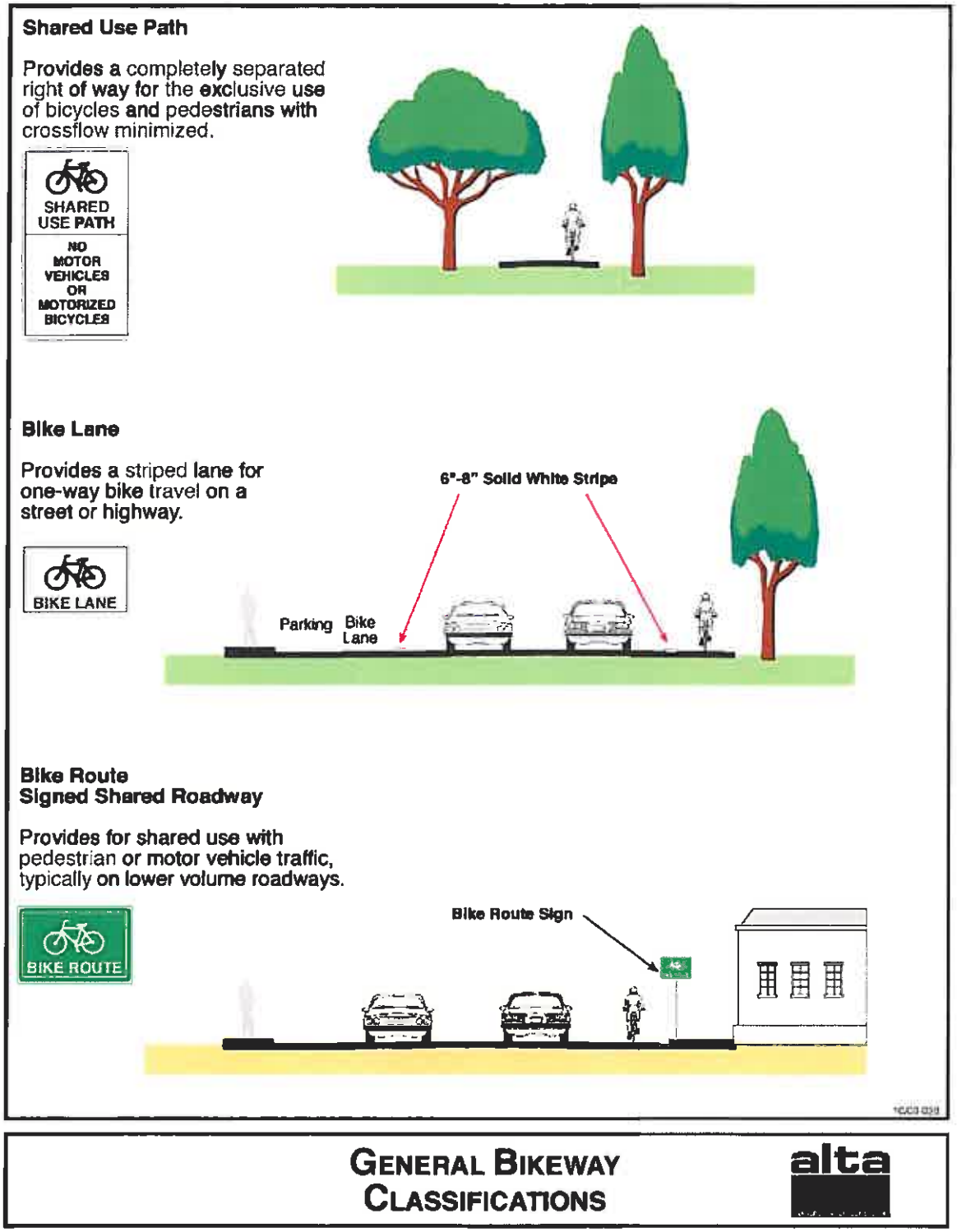
This pathway extends the existing paved Litton Pathway in Grass Valley from its current western terminus at Sierra College Drive, through and around the campus in a loop with a spur connecting to existing bicycle lanes on Ridge Road. This alignment would pave an existing unpaved pathway along public property and provides school access as well as an important recreational resource for the surrounding neighborhood.

Penn Valley Pathway Extension

This project would extend the existing sidepath along Penn Valley Drive from its current endpoint at Horton Drive to the intersection with Highway 20. This extension would improve access to school and park facilities as well as the businesses located along Penn Valley Drive. The pathway would connect to proposed bicycle lanes on Pleasant Valley Drive and would provide direct access to the Caltrans park-and-ride lot at Highway 20 and Penn Valley Drive. Implementation of this pathway may be aided by a proposed segment through Western Gateway Park parallel to the

roadway and possible use of an existing trail dedication from Penn Valley Oaks Subdivision along Penn Valley Drive.

Figure 5-1: General Bikeway Classifications



Brunswick Road Sidepath

This Grass Valley area project is proposed to be constructed as a part of planned development in the area. It would connect to planned recreational trails that allow access to Empire Mine State Park, as well as providing an alternative to on-street facilities in an area of developing residential use. The pathway would connect to proposed bicycle lanes further north on Brunswick and is the most logical connection between Brunswick and planned bicycle lanes and routes on Idaho-Maryland Road.

Wolf Creek Parkway

A preferred alignment for this complex pathway project was adopted by the Grass Valley City Council in 2005 as a part of the *Wolf Creek Parkway Master Plan*. This preferred alignment creates a nearly continuous off-street pathway along Wolf Creek through downtown Grass Valley, parallel to Highway 49/20 for approximately two-thirds of the length of the project. The alignment connects Sutton Way to Freeman Lane, traversing a series of linear and pocket parks. The cost estimate provided for this pathway is taken directly from the project feasibility study completed prior to this countywide plan and includes specific improvements such as cantilevered pathway segments and grade separations.

Empire Mine State Park Pathway

Safe access to open space and park lands has been identified by the public as an important element in this Plan. This pathway is proposed to provide safe access to and through Empire Mine State Park. It would serve as an alternate to designating East Empire as a Class III Bicycle Lane which has on-street safety issues related to the topography, poor sightlines and narrow pavement widths of the roadway. This pathway would have to be implemented in partnership with California State Parks whose land it traverses. In addition, the cost estimates provided in this plan are conceptual, based on a pathway alignment roughly parallel to the roadway. Project development working with park may result in a different final alignment, which could increase estimated costs.

Old Tunnel Road Pathway

This pathway makes an important connection between Grass Valley and Nevada City on the east side of Highway 49/20 in an area where all north-south routes are circuitous or on busy streets. The pathway connects Granholm Lane on the north with Sutton Way on the south, passing under Banner Lava Cap Road via an existing underpass. The alignment for this pathway is primarily on Caltrans and Grass Valley right of way. Because the pathway will follow the route of Old Tunnel Road, there may be significant cost savings possible due to the reuse of rehabilitated sections of the former roadway and the lack of need for extensive grading and site preparation in some areas. These savings would be determined during future project development meetings.

Tahoe-Pyramid Bikeway

The Tahoe-Pyramid Bikeway is a planned continuous bikeway following the Truckee River from its source at Lake Tahoe to its desert terminus, Pyramid Lake. The route will descend over 2000 feet in 116 miles, using a combination of existing dirt and paved roads, plus some sections of new trail and

bridges. The section of this project described in this plan lies within Nevada County, east of Truckee to the Nevada/California state border. The alignment roughly parallels Interstate 80, with one segment proposed through the Town of Truckee along the Truckee River between the historic downtown area and the community of Glenshire. This segment is proposed to be paved asphalt with an unpaved soft surface shoulder element. Because construction of a continuous paved pathway built to Caltrans standards is unlikely along the entirety of the Tahoe-Pyramid Bikeway alignment – indeed such a surface may not be possible or even desirable for many segments – a cost estimate is not provided for this facility. An accurate cost estimate for an alignment of this length will require further study to develop an accurate assessment of opportunities and constraints.

Yuba Gap Pathways

In workshops and through the survey, the public identified a need for a safe connection between the eastern and western parts of the county without forcing cyclists to ride on Interstate 80 which is perceived as dangerous. This alternate connection can be made by connecting Highway 20 and Donner Pass Road through a series of on-street bike routes and off-street pathways along publicly owned land and utility easements. These two segments connect Highway 20 to Eagle Lake Road and then Eagle Lake Road, via old Highway 40 to Hampshire Rocks road and on to Donner Pass. Cost estimates are not provided for this project due to the unlikelihood of construction of a continuous paved pathway built to Caltrans standards through areas with significant grade and geological obstacles. These pathways will require further study to develop an accurate assessment of true project costs and are recommended as future recreational pathway or trail projects for the County's Nonmotorized Transportation Master Plan trails process. Reduced construction costs are likely if segments of the bikeway are built with a soft surface or to a narrower recreational trail standard through this process.

Segment details for all pathways are provided in Table 5-1. Cost estimates, implementation strategies, phasing and prioritization for these pathways are provided in Chapter 6.

Future Pathway Opportunities

In addition to the pathways proposed above, a number of other alignments were requested through the public involvement process in public workshops or the survey. These alignments were not integrated into the current plan due to lack of information about the status of existing right-of-way or easements or because the implementation process is sufficiently complex to require more background research before a conceptual alignment can be proposed. This plan recommends the following areas be studied as a part of a subsequent planning process, perhaps folded into the County's current nonmotorized trails planning effort.

- Nevada County Irrigation District (NID) Ditch Pathway: This pathway would connect neighborhoods on the east side of Nevada City to Cedar Ridge and the Brunswick Basin shopping center. The pathway alignment takes advantage of an existing NID ditch to achieve a relatively straight and flat alignment. However, many NID canals are merely prescriptive easements so it cannot be assumed that these facilities are public. A conceptual alignment would require more research to determine if there are recreation easements in place for the specific canal.

- Litton Pathway south extension: This pathway would connect to the existing Litton Pathway trailhead at Hughes Avenue and continue the pathway west and south through public lands and along easements on private property to connect with existing pathways in Condon Park. Because of private property issues, many in residential areas, the status of easements along this alignment requires further research before any conceptual alignment can be proposed.
- Wolf Creek Parkway spur pathways: Two potential spur pathway alignments were proposed to connect to the proposed Wolf Creek Parkway.
    - Sutton Drive Sidepath: This pathway would continue the Wolf Creek project north, parallel to Sutton Drive. Due to limited right-of-way this pathway is deemed infeasible and is planned to be pursued as an on-street bicycle lane project. Further study may be needed to assess complex property issues along this roadway if a Class I pathway is to be pursued here.
    - Centennial Drive Spur Path: This pathway would connect the proposed Wolf Creek project southward to Bennett Road. This area is current an undeveloped de facto bicycle connection. This plan recommends that the connection be formalized as either a Class I Pathway or Class II Bicycle Lane when the roadway is paved as a part of planned future development. Further study of the feasibility of a particular facility type should be conducted at that time in partnership with the developer.

5.2.2 Class II Bicycle Lanes

Many of the roads in Nevada County which would provide for a direct connection to destinations have insufficient width to accommodate Class II bike lanes. The majority of these are narrow rural roads or State Highways striped at minimum lane widths with no paved shoulders and little room to widen or repave shoulder. In many cases this is due to topography, limited public right-of-way or existing drainage alongside the road. In addition, bicycle lanes have striping, stenciling and signing requirements that, when installed in rural areas, may not be consistent with the local character of the roadway and surrounding environment. Bicycle lanes are typically used in areas where traffic volumes require channelization of motorized and non-motorized users in order to achieve safe operations. For this reason bicycle lanes are recommended primarily in the developed or developing commercial, residential and downtown areas of the county. Table 5-1 describes these segments. Cost estimates, implementation strategies, phasing and prioritization for these bicycle lanes are provided in Chapter 6.

5.2.3 Class III Bicycle Routes "Shared Roadway Bicycle Markings"

These are import routes located in busy downtown and developed areas which lack the available street width to install bicycle lanes without removing on-street parking. They would be signed with Caltrans standard bicycle route signs and, where on-street parallel parking is present, the "Shared Roadway Bicycle Marking" (or "sharrows" as they are colloquially know) stencil recently adopted for use in California would be applied. The purpose of the "sharrows" in these areas is to alert motorists to the presence of cyclists on the roadway and to guide cyclists to ride outside the door zone on streets too narrow to provide designated operating space for bicycles.

A summary of Class III routes is provided in Table 5-1. Cost estimates, implementation strategies, phasing, prioritization and segment details for Class III "Shared Roadway Bicycle Markings" routes are found in Chapter 6.

Design guidance for the Shared Roadway Bicycle Marking stencil is found in Appendix A.

5.2.4 Class III Bicycle Routes - Rural Roads Bicycle Improvement Project

Many residents and staff have cited a variety of concerns on rural roads throughout the County, which are packaged into one effective countywide project here. These routes are the primary inter-community routes for cycling that, although they have limited opportunity for widening and additional paving, require some increased level of accommodation. The goal of the Rural Roads Bicycle Improvement Project would be to identify and construct spot improvements along rural roads that typically are located outside developed areas and have no (or limited) curbs, gutters, or sidewalks. This project would provide a mechanism to address specific concerns at locations along Nevada County's rural roads, which could be addressed through a combination of any of the following treatments:

- Bike Route wayfinding signs (minimum treatment)
- Advisory and warning signs, including, where appropriate, "Share the Road" signs
- Shoulder widening or new shoulders, especially on the uphill side of the road
- Travel lane re-striping where excess width available
- New or improved turnouts and passing areas
- Enhanced roadway surface maintenance
- Speed limit reduction if supported by speed study

All segments would be signed with Caltrans standard bicycle route signs. Wider shoulders would be prioritized according to a variety of factors with use and safety as key considerations. Locations such as blind corners or where sight distances are compromised would be priority locations for turnouts. Long segments of narrow roadway/narrow lanes and uphill segments would be prioritized for installation of periodic shoulder paving, widening or passing areas. In addition, because these projects do not provide for consistent additional roadway width, Share the Road signs are recommended at key locations such as the uphill side of long climbs or before any blind corner or location where sight distance is compromised.

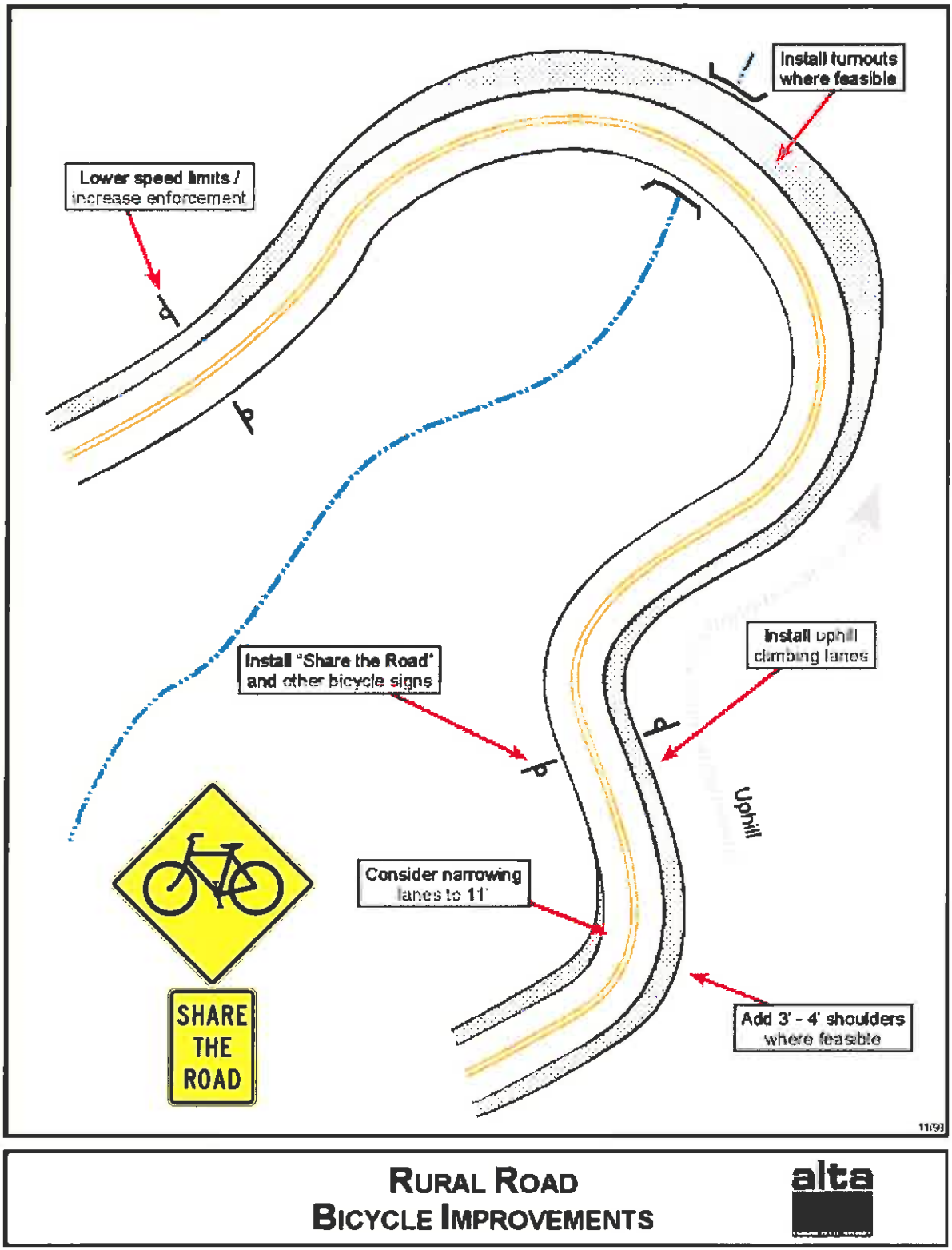
Figure 5-2 illustrates potential rural roads bicycle improvements. Chapter 6 provides cost estimates, implementation strategies, phasing, prioritization and segment details Rural Road Bicycle Improvements projects. A summary of Class III routes is provided in Table 5-1.

5.2.5 Class III Bicycle Routes "Signage Only"

These routes are also important, popular routes for cycling that have limited or no opportunity for widening and additional paving and are located outside busy developed areas. They would be signed with Caltrans standard bicycle route signs. In addition, because these projects do not provide for any additional roadway width, Share the Road signs are recommended at key locations such as the uphill side of long climbs or before any blind corner or location where sight distance is compromised.

This project consists of all remaining Class III Routes not included as Shared Roadway Bicycle Markings or Rural Road Improvement Projects. A summary of Class III routes is provided in Table 5-1.

Figure 5-2: Rural Road Improvements and Share the Road Signage



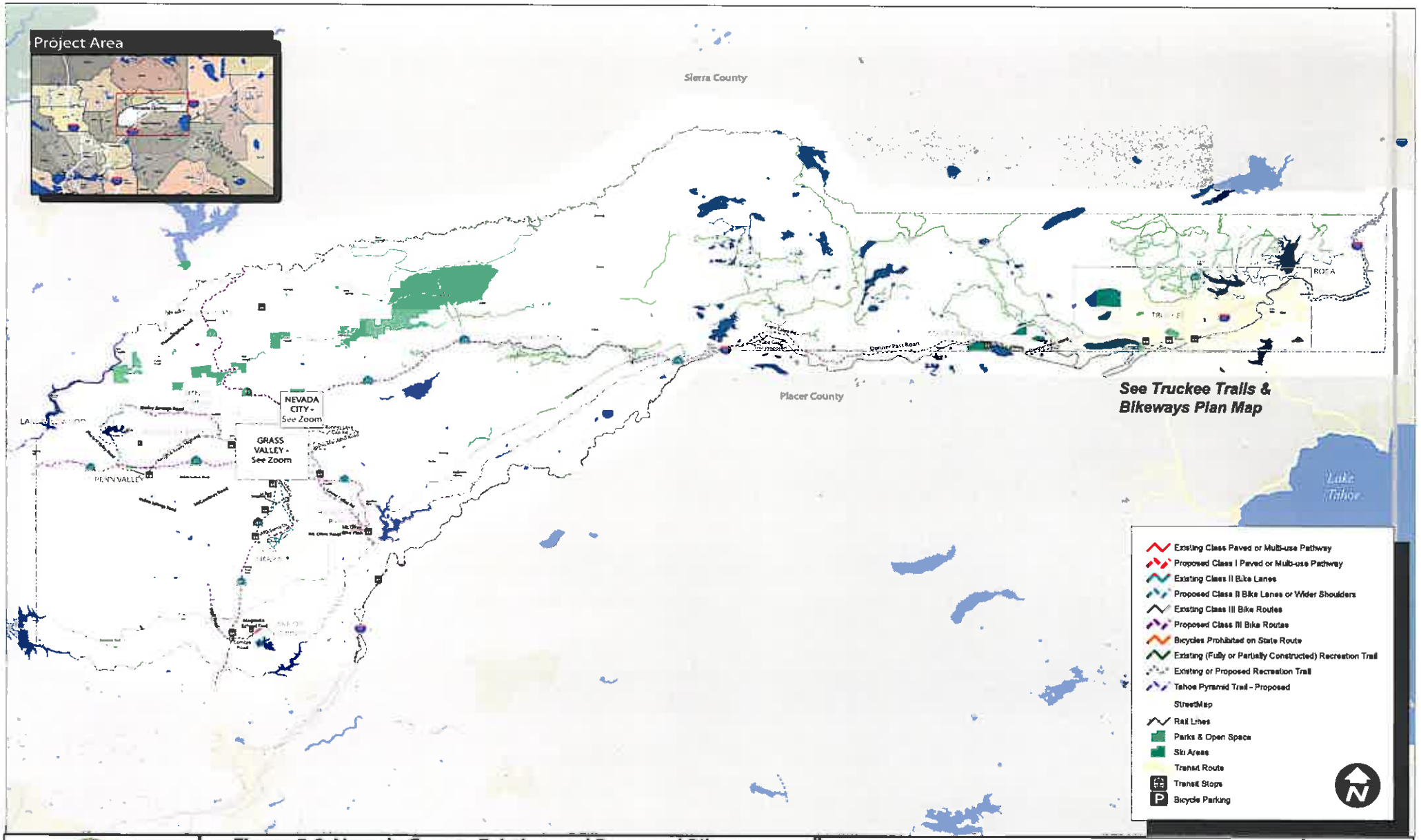


Figure 5-3: Nevada County Existing and Proposed Bikeways

Nevada County California Bikeway Plan

Map Prepared by: June 2007 by Alta Planning + Design
Data Provided by: Nevada County, CA; CALTRANS; & ESRI Proj: NAD 83 - CA State Plane II

alta PLANNING + DESIGN

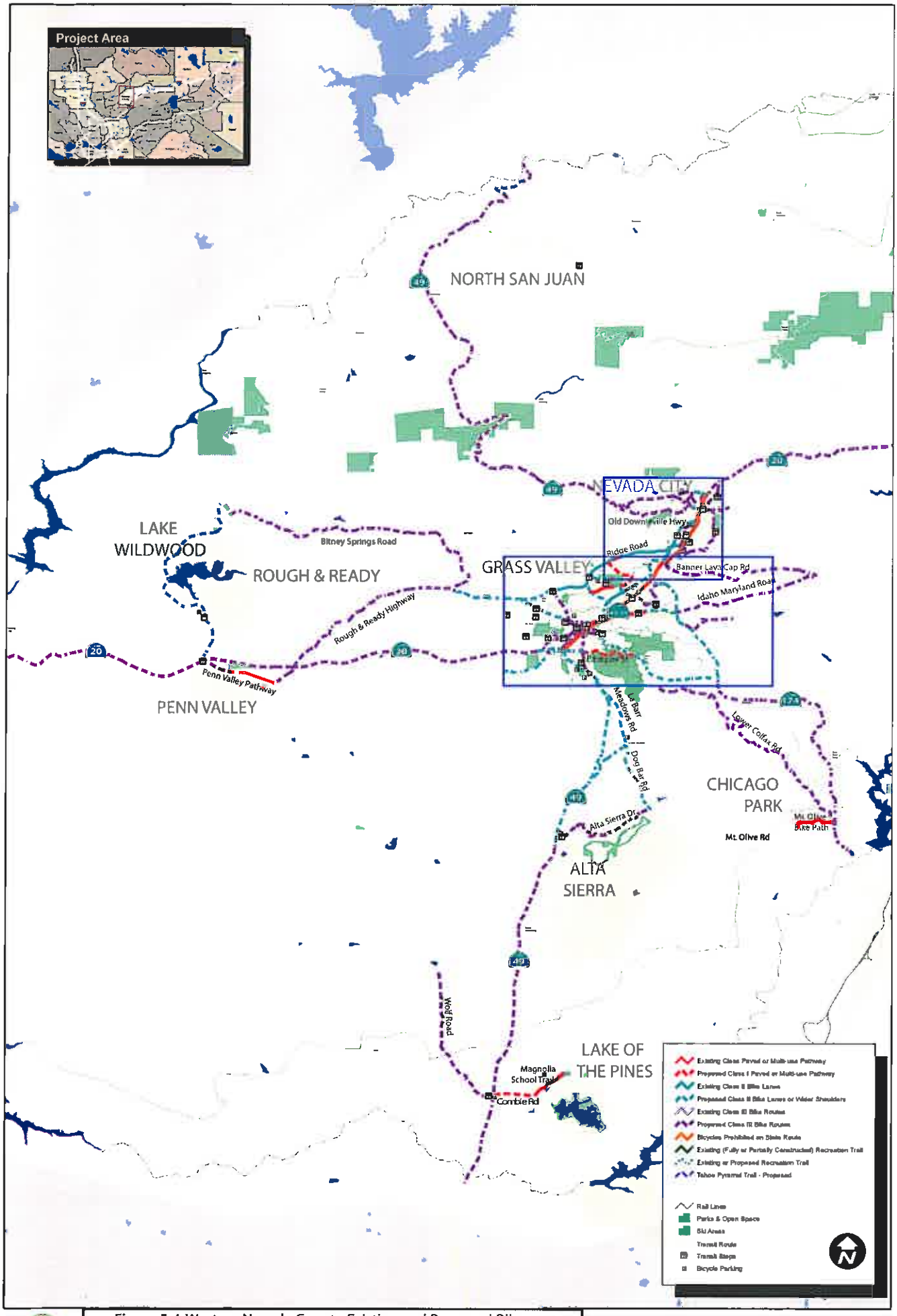


Figure 5-4: Western Nevada County Existing and Proposed Bikeways

Nevada County California Bikeways Plan

Map Prepared: June, 2007 by Alta Planning + Design Data Provided by Nevada County, CA, Caltrans, & ESRI
Proj: NAD83 - CA State Plane II

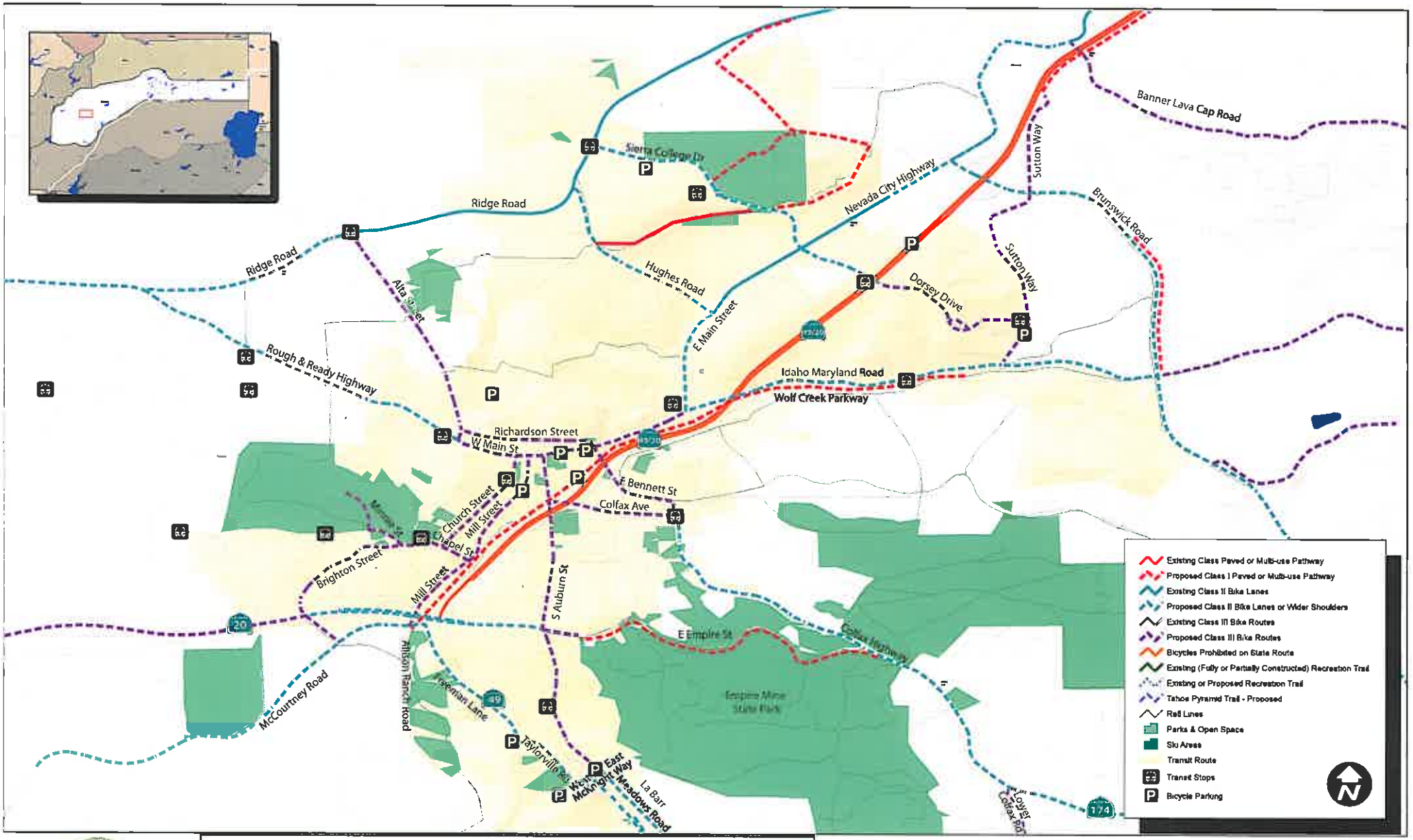


Figure 5-5: Grass Valley Existing and Proposed Bikeways Map

Nevada County California Bikeways Plan

Map Prepared June, 2007 by Alta Planning + Design Data Provided by: Nevada County, CA, Caltrans, & ESRI
Proj NAD83 - CA State Plane II

0 0.375 0.75 1.5 Miles

alta PLANNING + DESIGN

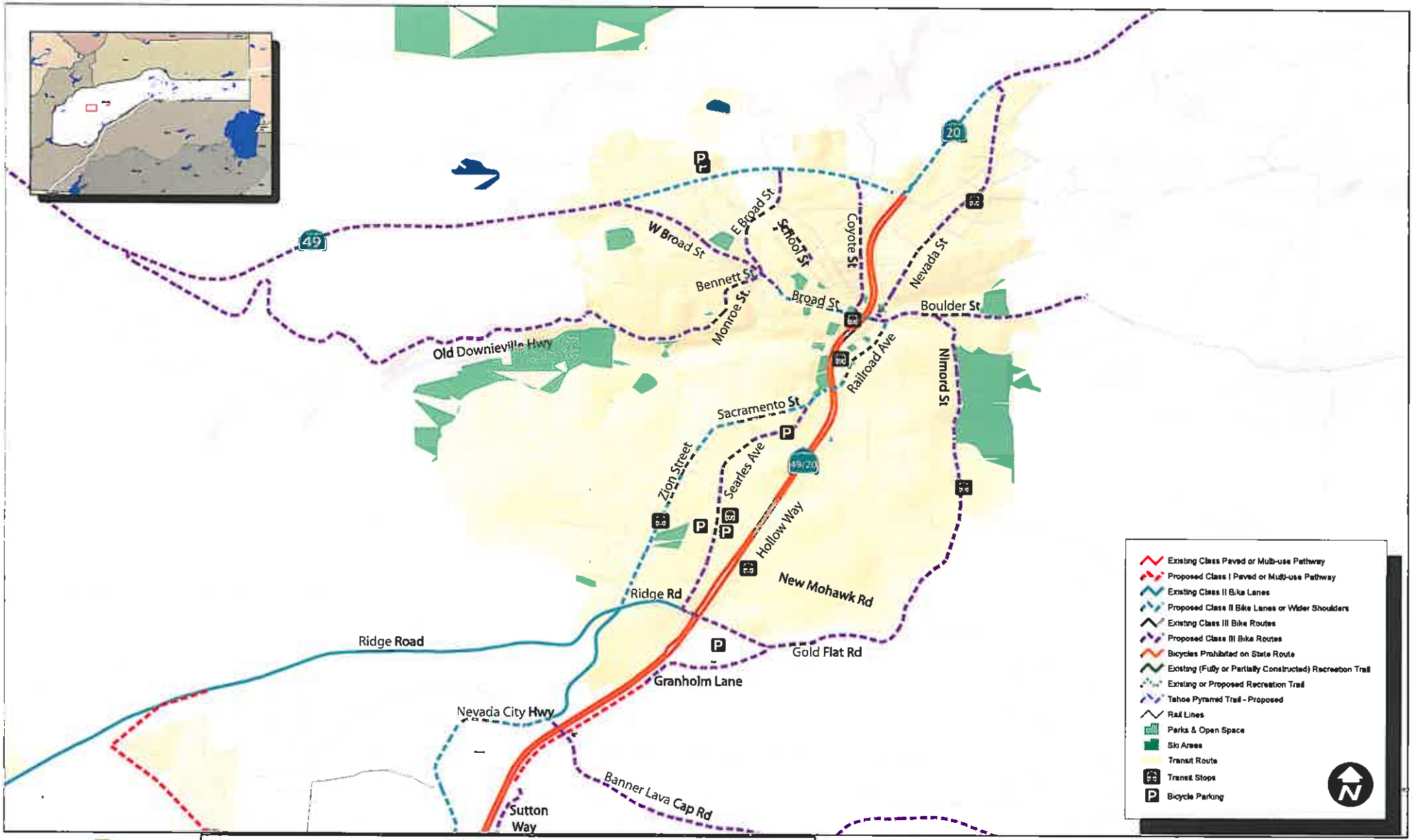


Figure 5-6: Nevada City Existing and Proposed Bikeways Map

Nevada County California Bikeways Plan

Map Prepared: June, 2007 by Alta Planning + Design Data Provided by: Nevada County, CA, Caltrans, & ESRI
Proj: NAD83 - CA State Plane II

Table 5-1: Summary of Proposed Bikeways Segments

Segment Name	From	To	Bikeway Class	Community	Length (Miles)
Tahoe Pyramid Pathway	Boca Reservoir	Nevada State Line	I	East Nevada County	10.2
Brunswick Road Sidepath	Idaho-Maryland Road	Town Talk Road	I	Grass Valley	0.6
East Empire Pathway	Kate Hayes Street	Colfax Highway	I	Grass Valley	1.1
Litton Pathway Extension	Sierra College Drive	Ridge Road	I	Grass Valley	1.7
Wolf Creek Parkway	Freeman Lane	Sutton Way	I	Grass Valley	2.3
Old Tunnel Road Pathway	Granholm Lane	Sutton Way	I	Grass Valley/Nevada City	0.5
Combie Road Pathway	Highway 49	West Hacienda	I	Lake of the Pines	0.9
Penn Valley Pathway	Horton Street	Highway 20	I	Penn Valley	0.8
Yuba Gap Pathway East	Eagle Lake Road	Hampshire Rocks Road	I	Yuba Gap	0.9
Yuba Gap Pathway West	Highway 20	Eagle Lake Road	I	Yuba Gap	2.1
Total Proposed Class I					**21.08**
Brunswick Road	Nevada City Highway	Highway 174	II	Grass Valley	3.3
Colfax Highway/Highway 174	Colfax Ave	Brunswick Road	II	Grass Valley	3.0
Dorsey Drive	Highway 49/20	Nevada City Highway	II	Grass Valley	0.3
East Main Street	Idaho-Maryland Road	Hughes Road	II	Grass Valley	1.0
East Mcknight Way	La Barr Meadows Road	Highway 49	II	Grass Valley	0.1
Freeman Lane	Taylorville Road	McCourtney Road	II	Grass Valley	0.6
Highway 49	East Mcknight	Alta Sierra	II	Grass Valley	5.1
Hughes Road	Ridge Road	East Main Street	II	Grass Valley	0.7
Idaho-Maryland Road	Brunswick Road	East Main Street	II	Grass Valley	1.5
LaBarr Meadows Road*	South Auburn	Highway 49	II	Grass Valley	3.4
McCourtney Road	Paddock Lane	Mill Street	II	Grass Valley	1.4
Ridge Road	Alta Street	Rough & Ready Highway	II	Grass Valley	0.7
Rough & Ready Highway	Alta Street	Bitney Springs Road	II	Grass Valley	2.5
Sierra College Drive	Ridge Road	East Main Street	II	Grass Valley	0.9
Taylorville Road	West McKnight Way	Freeman Lane	II	Grass Valley	0.3
West Empire Street	Brighton Street	Auburn Street	II	Grass Valley	0.4

Segment Name	From	To	Bikeway Class	Community	Length (Miles)
West Main Street	Alta Street	Rough & Ready Highway	II	Grass Valley	0.4
West Mcknight Way	Highway 49	Taylorville Road	II	Grass Valley	0.1
Pleasant Valley Road	Penn Valley Drive	Bitney Springs Road	II	Lake Wildwood	5.5
Broad Street	Bennett Street	Highway 49/20	II	Nevada City	0.3
Highway 20	Highway 49	Nevada City Limits	II	Nevada City	0.9
Nevada City Highway	Manor Dr	Banner Lava Cap Road	II	Nevada City	1.0
Ridge Road	Zion Street	Lower Grass Valley Road	II	Nevada City	0.2
Sacramento Street	Zion Street	Boulder Street	II	Nevada City	0.6
Zion Street	Ridge Road	Sacramento Street	II	Nevada City	0.6
Dog Bar Road*	Alta Sierra Drive	La Barr Meadows Road	II	Nevada County	1.6
Highway 20	Brighton Street	South Auburn Street	II	Nevada County	0.8
Total Proposed Class II					**36.99**
Brighton Street	Chapel Street	McCourtney Road	III - Shar	Grass Valley	0.7
Butler Street	Minnie Street	Brighton Street	III - Shar	Grass Valley	0.1
Chapel Street	Brighton Street	Mill Street	III - Shar	Grass Valley	0.2
Colfax Ave	Highway 49/20	Colfax Highway	III - Shar	Grass Valley	0.4
East Empire Street	South Auburn	Kate Hayes Street	III - Shar	Grass Valley	0.1
East Main Street	NorthAuburn Street	Idaho-Maryland Road	III - Shar	Grass Valley	0.5
Mill Street	Highway 20	West Main Street	III - Shar	Grass Valley	0.3
North Auburn	West Main Street	Highway 49/20	III - Shar	Grass Valley	0.2
Richardson Street/Washington Street	Alta Street	East Main Street	III - Shar	Grass Valley	0.4
South Auburn	Highway 49/20	La Barr Meadows Road	III - Shar	Grass Valley	0.8
South Church Street	West Main Street	Chapel Street	III - Shar	Grass Valley	0.5
West Main Street	North Auburn Road	Alta Street	III - Shar	Grass Valley	0.3
East Broad Street	Highway 49	Bennett Street	III - Shar	Nevada City	0.5
School Street	North Pine	Bennett Street	III - Shar	Nevada City	0.2
Union Street	Coyote Street	Broad Street	III - Shar	Nevada City	0.1

Segment Name	From	To	Bikeway Class	Community	Length (Miles)
Total Proposed Class III Shared Roadway Bicycle Markings					**5.25**
Alta Street	Ridge Road	West Main Street	III - RRImp	Grass Valley	0.9
Boulder Street	Highway 49/20	Red Dog Road	III - RRImp	Nevada City	0.6
Gold Flat Road	Highway 49/20	Nimrod Street	III - RRImp	Nevada City	1.1
Nimrod Street	Boulder Street	Gold Flat Road	III - RRImp	Nevada City	0.5
West Broad Street	Highway 49	Bennett Street	III - RRImp	Nevada City	0.5
Alta Sierra	Highway 49	Dog Bar Road	III - RRImp	Nevada County	2.8
Banner Lava Cap Road**	Nevada City Highway	Idaho-Maryland Road	III - RRImp	Nevada County	3.5
Bitney Springs Road	Pleasant Valley Road	Rough & Ready Highway	III - RRImp	Nevada County	6.9
Idaho-Maryland Road**	Brunswick Road	Banner Lava Cap Road	III - RRImp	Nevada County	3.1
Loma Rica Drive	Brunswick Road	Charles Street	III - RRImp	Nevada County	1.1
Rough & Ready Highway	Bitney Springs Road	Highway 20	III - RRImp	Nevada County	4.2
Penn Valley Drive	Highway 20	Penn Valley Pathway	III - RRImp	Penn Valley	0.6
Lower Colfax Road	Highway 174	Mt Olive Road	III - RRImp	Nevada County	6.5
Old Downieville Highway	Monroe Street	Highway 49	III - RRImp	Nevada City	1.8
Total Proposed Class III Rural Roads Improvements* **					**34.14**
Minne Street	Brighton Street	Condon Park	III - Signs	Grass Valley	0.2
Sutton Way	Old Tunnel Road Pathway	Dorsey Drive	III - Signs	Grass Valley	0.4
Dorsey Drive	Highway 49	Sutton Way	III - Signs	Grass Valley	0.6
Coyote Street	Highway 49	Union Street	III - Signs	Nevada City	0.4
Granholm Road	Old Tunnel Road Pathway	Gold Flat Road	III - Signs	Nevada City	0.4
Lower Grass Valley Road/Searles Avenue	Ridge Road	Sacramento Street	III - Signs	Nevada City	0.9
Monroe Street/Bennett Street	Old Downieville Highway	Broad Street	III - Signs	Nevada City	0.3
Nevada Street	Boulder Street	Highway 20	III - Signs	Nevada City	0.9
Donner Pass Road	Hampshire Rocks Road	Truckee City Limits	III - Signs	Nevada County	12.6
Duggans Road/Wolf Road	Lime Kiln Road	Highway 49	III - Signs	Nevada County	3.8
Highway 174	Brunswick Road	Placer County Line	III - Signs	Nevada County	6.7
Highway 20	Nevada City city limits	Yuba Gap	III - Signs	Nevada County	24.8

Segment Name	From	To	Bikeway Class	Community	Length (Miles)
Highway 20	Brighton Street	West Nevada County Line	III - Signs	Nevada County	16.4
Highway 49 To County Line	Alta Sierra Drive	Placer/Nevada County Line	III - Signs	Nevada County	9.5
Highway 49 To County Line	West Broad Street	Sierra/Nevada County Line	III - Signs	Nevada County	16.4
Eagle Lake Road	Yuba Gap Pathway West	Yuba Gap Pathway East	III - Signs	Yuba Gap	8.1
Hampshire Rocks Road	Eagle Lake Road	Donner Pass Road	III - Signs	Yuba Gap	10.9
Total Proposed Class III Signage Only* **					**113.07**
Grand Total Bikeways Improvements					**210.53**

* Roadway widening necessary to implement bicycle lane
** "Climbing lane" one-way bicycle lane on uphill side required for safe implementation of bike route
*** Nevada County Department of Public Works may require further roadway safety improvements to allow safe use of the roadway by bicycles before designation as a bicycle route

5.3 Proposed Additional Bicycle Improvement Projects

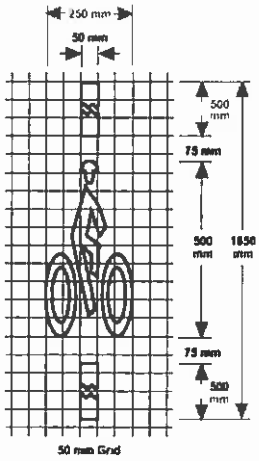
5.3.1 Bicycle Detection Project

Bicycle detection at signalized intersections can provide a substantial safety improvement for cyclists and motorists alike. Nevada County and the local jurisdictions use loop detectors at some signalized intersections to allow motorists to trigger a traffic light. The following recommendations are intended to expand the existing detection loop efforts to include bicycles along designated routes and at key intersections by providing needed improvements such as calibration of existing detectors, installation of new detectors and installation of stencils. In addition, these recommendations should be incorporated into new development requirements wherever signalized intersections are proposed.

General Recommendations

Regularly Calibrate Loop Detectors

While detector loops facilitate faster and more convenient motorist trips, if they aren't calibrated properly or stop functioning, they can frustrate cyclists waiting for signals to change, unaware that the loop is not detecting their bicycle. Recognizing that it is difficult to tune loop sensitivity to be sensitive enough for bicycles and not pick up vehicles in adjacent lanes, the County and local jurisdictions should ensure that all existing loops are tested annually and are calibrated and operable for bicycle users, where appropriate.



Caltrans Standard Plan 24C bicycle detection marking

Develop Policy of Installing Bicycle-Calibrated Loop Detectors at Signalized Intersections

The County and local jurisdictions should develop a policy of installing bicycle-calibrated loop detectors at intersections along designated bike routes as they are repaved. For new installation it is recommended that jurisdictions in Nevada County use Type D for lead loops in all regular travel lanes shared with bicycles. Within bike lanes installation of Bicycle Loop Detectors (BLDs) using narrow Type C loops is recommended. Types A (6' square) and E (unmodified circle) are not bike-sensitive in their center. More details regarding bicycle loop detectors can be found in Appendix A.

Apply Pavement Stenciling Above All Bicycle Loop Detectors

Since most cyclists, as well as motorists, do not know how loop detectors work, all detector loops expected to be used by cyclists should be marked by a pavement stencil that shows cyclists where to stop to activate the loop. Educational materials distributed by the County and local jurisdictions should describe how to activate bicycle loop detectors. Stencils should be repainted when needed.

Consider Alternative Detection Methods

Although most bicycles have metal rims, in-pavement loop detectors may have difficulty detecting bicycles constructed of non-metal components. With the increasing popularity of non-metal bicycles (i.e. carbon-fiber), Nevada may want to consider installing video image detection at signalized intersections that are heavily used by cyclists. Video image detection should sense bicycles in all approach lanes and also on the left side of right-turn channelization islands. Some video systems can estimate approach speed, and this capability could be used to extend the green time for slow objects assumed to be bicycles.

5.3.2 Bicycle Parking

The goal of a countywide bicycle parking project is to provide a cost-effective way to procure racks in bulk for distribution to the entire county and to provide bicycle rack specification and guidelines for installation that will ensure quality control for bicycle parking. This project would provide for improved bike parking based on destinations already identified in the plan and general recommendations for target levels of bike parking around commercial and developed land uses.

In commercial areas, racks should be distributed according to adjacent land use in cooperation with local business owners, business managers and property owners, as appropriate. Rack needs at other locations should be based on typical minimum parking levels as appropriate to that land use. For example, need for bicycle parking at parks or open space is determined by whether or not the park is primarily passive versus active i.e. do riders need to lock up their bicycles to engage in another activity such as hiking or are they riding there to simply enjoy open space, picnic, etc. with their bicycles nearby.

Appendix B provides same language for a bicycle parking ordinance that could be adopted by all Nevada County jurisdictions.

5.3.3 Wayfinding and Share the Road Signage

A wayfinding system is a "map on the street" that overlays the bike network. It requires additional signage along Class I pathways and Class II bicycle lanes. All Class III bike routes already have such signage. Wayfinding enhances a bikeway network by providing bicyclists directional assistance to facilities and significant local and regional destinations. All bikeway signage and striping on public roadways in Nevada County should conform to the signage identified in the 2006 California MUTCD, which provides specific information on the type and location of signing for bicycle facilities in California. All signs should convey the "Three Ds": Direction, Destination and Distance.

Example Bike Route Signs

In addition, the County and other jurisdictions should integrate installation of Share the Road signs into the wayfinding system as needed on rural "Class III" roads. A

Share the Road sign should be placed immediately adjacent to all "Welcome to Nevada County" signage on any bikeway to alert visitors that they should expect to see cyclists on the roadway. Other locations such as narrow and/or winding sections of road or corners with poor sightlines should also be prioritized for Share the Road sign placement.

5.3.4 Maintenance

As described in Chapter 3, routine maintenance of bikeway facilities is a critical and often overlooked element of bikeway planning and includes street sweeping of bicycle lanes and shoulders, repainting/replacing bicycle lane striping lines and replacing missing or damaged signage. Nevada County, in particular the Town of Truckee, has specific maintenance challenges posed by heavier snowfall which shortens the lifespan of pavement markings such as bicycle lanes and creates impassible pathways. This plan recommends the following maintenance-related actions to improve year-round bicycle conditions and encourage winter riding:

- Regular plowing of bicycle lanes as a part of routine snow removal
- Regular plowing of paved pathways as a part of routine snow removal
- Installation of bicycle lanes using thermoplastic materials designed to resist abrasion by sand, a wide range of pavement temperatures and friction by snowplows (see Appendix A for more details)
- Snow removal should not block sidewalks, crosswalks or bury bicycle parking located adjacent to the roadway

5.4 Proposed Enforcement, Education and Support Programs

The Nevada County Bicycle Plan provides both physical recommendations (such as bike lanes) and program recommendations. Some of the program recommendations, such as changes in zoning requirements for bicycle parking, have already been covered by policies recommended in Chapter 2. This section covers future efforts to educate bicyclists and motorists, and efforts to increase the use of bicycles as a form of transportation and recreation.

5.4.1 Safe Routes to Schools

Safe Routes to Schools (SR2S) is a program designed to reduce local congestion around schools by increasing the number of children walking and biking to school. A SR2S program can integrate health, fitness, traffic relief, environmental awareness and safety under one program. It is an opportunity for parents to work closely with their children's school, the community and the local government to create a healthy lifestyle for children and a safer and cleaner environment for all residents. A typical program has four components:

Encouragement - Events, contests and promotional materials are incentives that encourage children and parents to try walking and biking.

Education - Classroom lessons teach children the skills necessary to navigate through busy streets and persuade them to be active participants in the program. Safe Routes Instructors have developed curriculum which includes an on the bike instruction, walking instruction and lessons on health and the environment

Engineering - A Certified Traffic Engineer typically assists schools in developing a plan to provide a safer environment for children to walk and bike to school. This plan includes engineering improvements, enforcement enhancements and outreach to drivers.

Enforcement – Working with local law enforcement, the program increases police presence around the schools while developing public education efforts that increase drivers' awareness of the behaviors that endanger children.

Walking or biking to school gives children a taste of freedom and responsibility, allows them to enjoy the fresh air and the opportunity to get to know their neighborhood, while arriving at school alert, refreshed and ready to start their day. However, only 13% of America's children walk or bike to school (US Centers for Disease Control and Prevention). A successful Safe Routes to Schools program improves the health and safety of pupils and the surrounding neighborhood. Students increase their physical activity, potentially improving their alertness and behavior. California studies have shown that children who are physically active perform better academically (California Department of Education, December 2002)

Communities elsewhere in California have experienced reduced traffic congestion, reduced collision in and around schools, and decreased speed in residential neighborhoods. Children learn valuable traffic safety skills and responsibility and more people of all ages are able to walk and bike in the neighborhood as a result of improved access.

5.4.2 Adult Education

Many less-experienced adult bicyclists are unsure how to negotiate intersections and ride with traffic on streets and roads. Adult education classes sponsored by government agencies, major employers or volunteer groups can help address this need. An annual or semi-annual class could be offered free of charge to provide information on how to avoid collisions and citations, how to ride safely, improve visibility and the legal rights of cyclists. Instructors from elsewhere in the state or qualified local instructors or volunteers could teach this class to cyclists, tailored to local needs and issues. Future expansion ideas could include adding on-the-bike training.

5.4.3 Share the Road

Public agencies such as the National Highway Traffic Safety Administration have begun to address the lack of safety education targeting both bicyclists and motorists. Many cyclists are not aware of basic road etiquette when sharing the road with drivers. Many motorists mistakenly believe that bicyclists do not have a right to ride in travel lanes and that they should be riding on sidewalks. Many motorists also do not understand the concept of 'sharing the road' with bicyclists, or why a bicyclist may need to ride in a travel lane if there is no shoulder or it is full of gravel or potholes.

Nevada County's jurisdictions should consider developing a Share the Road outreach program to benefit both motorists and cyclists. The Share the Road program could be a partnership between local cycling groups and Nevada County Law Enforcement. Nevada County or NCTC, in partnership with local agencies, could seek annual funding to develop the following elements of the Share the Road Program, implemented in a phased approach:

Share the Road presentation: In development by NHTSA, this PowerPoint presentation is being developed as a part of a national toolkit for public outreach and includes information on the rights and responsibilities of cyclists and drivers and focuses on ways each group can behave courteously to avoid collisions. The presentation will be available from NHTSA for presentation to the public and as a training device, for example, for law enforcement or transit drivers. The presentation is designed to be used by volunteer presenters who are not experts in the field of bicycle safety.

Checkpoints: At checkpoints, uniformed police, highway patrol officers and volunteers from local cycling groups stop drivers and cyclists and provide them with share the road safety flyers. These checkpoints are usually targeted at areas with high cycling use or a high number of collisions or reports of close calls and perceived danger to cyclists.

5.4.4 Other Support Programs and Activities

Without community support, a bicycle/pedestrian plan lacks the key resources that are needed to ensure implementation over time. While the various Public Works Departments may be responsible for designing and constructing physical improvements, strategies for community involvement will be important to ensure broad-based support--which translates into political support--which can help secure financial resources. This may require involvement by the private sector in raising awareness of the benefits of bicycling. Such activities range from small incremental activities by non-profit groups, to efforts by the largest employers in the County. Specific programs are described below.

Earn-a-Bike Program

Sponsored by local cycling groups and bicycle shops in partnership with schools and other public agencies, this program could be modeled on the existing national 'Trips for Kids' program. The program's dual mission is to train young people (ages 12 to 18) how to repair bicycles as part of a summer jobs training effort or after-school program. Bicycles are an excellent medium to teach young people the fundamentals of mechanics, safety, and operation. Young people can use these skills to maintain their own bicycles, or to build on related interests. The program is should be staffed by volunteers from local cycling organizations and bicycle shops, who can help build an interest in bicycling as an alternative to driving. The seed money to begin this program often comes from a local private funding source. The proposal submitted to this source should clearly outline the project objectives, operating details, costs, effectiveness evaluation, and other details. The bicycles themselves could be derived from unclaimed stolen bicycles from the police or sheriff's departments, or from donated bicycles. The program would need to qualify as a Section 501c(3) non-profit organization to offer tax deductions.

Community Adoption

Programs to have local businesses and organizations 'adopt' a Class I pathway similar to the adoption of segments of the Interstate Highway system are emerging across the country. Small signs located along the pathway would identify supporters, acknowledging their contribution. Support would be in the form of an annual commitment to pay for the routine maintenance of the pathway, which in general costs about $8,500 per mile. Parks & Recreation or other groups may administer this program.

Bicycle Events

Events are an excellent way to encourage increased bicycling. Events would need to be sponsored by local businesses, and involve some promotion, insurance, and development of adequate circuits for all levels of riders. It is not unusual for these events to draw up to 1,000 riders, which could bring some additional revenue into the area. The County and other jurisdictions can assist in developing these events by acting as a co-sponsor, and expediting and possibly underwriting some of the expense of–for example–police time. These types of events should be encouraged in order to have races and tours that appeal to the less experienced cyclist. For example, in exchange for local governments underwriting part of the costs of a race, the event promoters could hold a bicycle repair and maintenance workshop for kids, short fun races for kids, and/or a tour of the route lead by experienced cyclists who could show less experienced riders how to safely negotiate County streets and County roads.

Examples of possible events in Nevada County and the local cities and towns include:

- Bicycling booth at the County Fair
- Large rides such as the Sierra Century, an organized event where riders travel a 100-mile course
- Group ride promotion by local bicycling clubs and advocacy groups
- Neighborhood or community volunteer days for pathway maintenance and cleanup

Employer Incentives

Incentives to encourage employees to try bicycling or walking to work include providing bicycle lockers and shower facilities, providing convenient and safe bicycle parking for employees and customers, and offering incentives to employees who commute by bicycle or walking by allowing for more flexible arrival and departure times. The County or other jurisdictions may offer incentives to employers to institute these improvements through air quality credits, lowered parking requirements, reduced traffic mitigation fees, or other means.

Bike-to-Work and Bike-to-School Days

The County or NCTC, in partnership with local jurisdictions and in conjunction with local cycling groups and with California Bike to Work Week (May 14-18 2007), could expand and enhance the

local bike-to-work day celebration. Bike-to-school days could be jointly sponsored with the School District, possibly in conjunction with bicycle education programs that are a part of Safe Routes to School.

6.0 IMPLEMENTATION

As described in Chapter 5, the recommended bicycle circulation strategy consists of a comprehensive network of utilitarian and recreational pathways as well as support facilities such as bicycle parking and other improvements. This section identifies costs for these proposed bicycle improvements, in addition to project prioritization, phasing and funding.

6.1 Introduction

The steps between the concepts identified in this Plan and final completion vary from project to project, but typically include:

1. Adoption of this Plan by the Nevada County Transportation Commission, Nevada County, City of Grass Valley, Nevada City and the Town of Truckee.
2. Completion of a project level Feasibility Study, which typically includes preliminary design, environmental analysis, alternatives analysis, related agency coordination, local staff, or by consultants. The final product should yield a preferred design alternative, environmental clearance, and an accurate cost estimate.
3. Approval of the preferred project by the local governing board, including acceptance of any environmental documentation. Local agency typically must commit to providing 10% of the project cost, and assume responsibility for the cost, operation, and liability for the project.
4. Funding applied for and obtained for the project. Typically, all environmental work must be completed, local approval obtained, and the right-of-way in public control.
5. Completion of final Plans, Specifications, and Estimates (P,S&E). Once completed, bids for construction services can be obtained.
6. Construction of the Project.

6.2 Proposed Bikeway Network Implementation

The following section provides cost estimates, prioritization and cost estimates for the bicycle paths, lanes and routes described in Chapter 5.

6.2.1 Class I Pathways

Several segments of new Class I pathway are proposed in this plan. **Table 6-1** provides a cost estimate breakdown for implementation of these projects. Costs assume include estimated values for materials, design, project administration and contingency, assuming a 10' wide paved asphalt pathway with 1' soft surface shoulders and pathway signage. Costs for some pathways may be substantially less if they are constructed to recreational standards and with volunteer assistance. It should be noted that of all the projects proposed in this plan, the pathways will require a higher level

of environmental scrutiny compared to bicycle lanes and routes which typically have limited to no environmental impact unless travel lanes are removed or substantial shoulder paving is required.

Table 6-1: Class I Pathway Cost Estimates

Segment Name	From	To	Bikeway Class	Community	Length (Miles)	Cost	Priority
Litton Pathway Extension	Sierra College Drive	Ridge Road	I	Grass Valley	1.7	$1,110,100	A
Old Tunnel Road Pathway	Granholm Lane	Sutton Way	I	Grass Valley/Nevada City	0.5	$314,300	A
Penn Valley Pathway	Horton Street	Highway 20	I	Penn Valley	0.8	$513,100	A
Brunswick Road Sidepath	Idaho-Maryland Road	Town Talk Road	I	Grass Valley	0.6	$371,300	B
Combie Road Pathway	Highway 49	West Hacienda	I	Lake of the Pines	0.9	$577,200	B
Wolf Creek Parkway	Freeman Lane	Sutton Way	I	Grass Valley	2.3	$18,000,000	C
East Empire Pathway	Kate Hayes Street	Colfax Highway	I	Grass Valley	1.1	$705,500	C
Total Proposed Class I					**7.85**		
Total Estimated Class I Cost						**$21,591,500**	

Because of the expense involved with construction of Class I pathways, prioritization, phasing and alternate funding strategies are critical to eventual implementation. A, B and C priorities identified in Table 6-1 are based on a number of factors including input from staff and the public and an analysis of potential number of users served, feasibility, availability of funding through various sources and connectivity needs based on existing conditions. In addition to the funding sources identified at the end of this chapter, this plan recommends the following phasing strategy.

Basis for Cost Estimates

Cost estimates provided in this chapter are calculated on a per-mile basis for pathways built to Caltrans Chapter 1000 specifications. Estimates include materials such as asphalt pavement, aggregate, signing and striping as well as labor for site preparation and excavation and grading. Contingency and design and administrative costs are also included.

Project Phasing

First Phase Pathways: Costs for all pathways that can be constructed as a part of planned development or upcoming roadway construction project should be folded into those larger projects. This strategy will save substantial materials and project administration costs. The first step in this phase is adoption of the policies in Chapter 2 requiring the construction of improvements from this plan as a condition of private development.

Second Phase Pathways: The remaining pathway projects should be funded as monies are available, with the County and other applicable agencies proactively seeking funding for these stand-alone projects.

6.2.2 Class II Bicycle Lanes

Class II bicycle lanes are proposed in and around several of the busy downtown and developed areas in Nevada County'. **Table 6-2** provides a cost estimate breakdown for implementation of these projects.

Although construction costs for Class II bike lanes are less than those for pathways, prioritization, phasing and alternate funding strategies are still important, though not as critical. A, B and C priorities identified in Table 6-2 are based on a number of factors including staff input, input from the public and an analysis of number of users served, feasibility, availability of funding through various sources and connectivity needs based on existing conditions. In the case of bicycle lanes, prioritization was based primarily on availability of existing paved right of way and anticipated usage. In addition to the funding sources identified at the end of this chapter, this plan recommends the following phasing strategy.

Basis for Cost Estimates

Cost estimates provided in this chapter are calculated on a per-mile basis for bicycle lanes built to Caltrans Chapter 1000 specifications. Estimates include materials such as signing and striping as well as labor for traffic management. Contingency and design and administrative costs are also included.

Project Phasing

First Phase Bicycle Lanes: Costs for all bicycle lanes that can be constructed as a part of planned development or upcoming roadway construction project should be folded into those larger projects. This strategy will save substantial materials and project administration costs. The first step in this phase is adoption of the policies in Chapter 2 requiring the construction of improvements from this plan as a condition of private development or as a part of routine roadway maintenance.

Second Phase Bicycle Lanes: The remaining bike lane projects should be funded as monies are available, with the County and other applicable agencies proactively seeking funding for these stand-alone projects.

Table 6-2: Class II Bicycle Lane Cost Estimates

Segment Name	From	To	Bikeway Class	Community	Length (Miles)	Cost	Priority
East Main Street	Idaho-Maryland Road	Hughes Road	II	Grass Valley	1.0	$17,400	A
Hughes Road	Ridge Road	East Main Street	II	Grass Valley	0.7	$12,300	A
Idaho-Maryland Road	Brunswick Road	East Main Street	II	Grass Valley	1.5	$26,900	A
Ridge Road	Alta Street	Rough & Ready Highway	II	Grass Valley	0.7	$12,600	A
Sierra College Drive	Ridge Road	East Main Street	II	Grass Valley	0.9	$15,700	A
West Main Street	Alta Street	Rough & Ready Highway	II	Grass Valley	0.4	$6,700	A
Broad Street	Bennett Street	Highway 49/20	II	Nevada City	0.3	$4,600	A
Nevada City Highway	Manor Dr	Banner Lava Cap Road	II	Nevada City	1.0	$17,600	A
Ridge Road	Zion Street	Lower Grass Valley Road	II	Nevada City	0.2	$2,800	A

Segment Name	From	To	Bikeway Class	Community	Length (Miles)	Cost	Priority
Sacramento Street	Zion Street	Boulder Street	II	Nevada City	0.6	$10,500	A
Zion Street	Ridge Road	Sacramento Street	II	Nevada City	0.6	$11,100	A
Brunswick Road	Nevada City Highway	Highway 174	II	Grass Valley	3.3	$58,000	B
Colfax Highway/Highway 174	Colfax Ave	Brunswick Road	II	Grass Valley	3.0	$51,800	B
McCourtney Road	Paddock Lane	Mill Street	II	Grass Valley	1.4	$25,000	B
West Empire Street	Brighton Street	Auburn Street	II	Grass Valley	0.4	$6,400	B
East McKnight Way	La Barr Meadows Road	Highway 49	II	Grass Valley	0.1	$1,100	B
West McKnight Way	Highway 49	Taylorville Road	II	Grass Valley	0.1	$1,100	B
Taylorville Road	West McKnight Way	Freeman Lane	II	Grass Valley	0.3	$4,700	B
Freeman Lane	Taylorville Road	McCourtney Road	II	Grass Valley	0.6	$10,900	B
Dorsey Drive	Highway 49/20	Nevada City Highway	II	Grass Valley	0.3	$4,900	B
Highway 49	East McKnight	Alta Sierra	II	Grass Valley	5.1	$90,100	C
Rough & Ready Highway	Alta Street	Bitney Springs Road	II	Grass Valley	2.5	$43,900	C
LaBarr Meadows Road*	South Auburn	Highway 49	II	Grass Valley	3.4	$407,300	C
Pleasant Valley Road	Penn Valley Drive	Bitney Springs Road	II	Lake Wildwood	5.5	$96,500	C
Highway 20	Highway 49	Nevada City Limits	II	Nevada City	0.9	$16,400	C
Highway 20	Brighton Street	South Auburn Street	II	Nevada County	0.8	$13,200	C
Dog Bar Road*	Alta Sierra Drive	La Barr Meadows Road	II	Nevada County	1.6	$190,900	C
Total Proposed Class II					**36.99**		
Total Estimates Class II Cost						$1,160,400	

* Increased cost due to roadway widening required for implementation of bicycle lane.

6.2.3 Class III Bicycle Routes

Cost estimates for Class III bicycle routes are divided into three project types, below. All project costs include estimated values for materials, design, project administration, traffic control and contingency, as appropriate.

Class III Bicycle Routes - Shared Roadway Bicycle Marking

Cost estimates for these projects include installation of bike route signs and Shared Roadway Bicycle Marking stencils on a per-mile cost estimate basis. **Table 6-3** details segments for Shared Roadway Markings. These segments were selected for additional stenciling because of factors such as anticipated use, public input, high traffic volumes, presence of on-street parking, lack of width to install bicycle lanes and density of trip generators and attractors in the surrounding area.

Table 6-3: Shared Roadway Bicycle Markings Cost Estimates

Segment Name	From	To	Bikeway Class	Community	Length (Miles)	Cost	Priority
East Main Street	North Auburn Street	Idaho-Maryland Road	III - Shar	Grass Valley	0.5	$2,100	A
Mill Street	Highway 20	West Main Street	III - Shar	Grass Valley	0.3	$1,400	A
North Auburn	West Main Street	Highway 49/20	III - Shar	Grass Valley	0.2	$1,000	A
West Main Street	North Auburn Road	Alta Street	III - Shar	Grass Valley	0.3	$1,300	A
East Broad Street	Highway 49	Bennett Street	III - Shar	Nevada City	0.5	$2,300	A
Union Street	Coyote Street	Broad Street	III - Shar	Nevada City	0.1	$200	A
Richardson Street/Washington Street	Alta Street	East Main Street	III - Shar	Grass Valley	0.4	$1,800	B
Colfax Ave	Highway 49/20	Colfax Highway	III - Shar	Grass Valley	0.4	$1,600	B
South Church Street	West Main Street	Chapel Street	III - Shar	Grass Valley	0.5	$2,200	B
Butler Street	Minnie Street	Brighton Street	III - Shar	Grass Valley	0.1	$400	B
School Street	North Pine	Bennett Street	III - Shar	Nevada City	0.2	$700	B
Brighton Street	Chapel Street	McCourtney Road	III - Shar	Grass Valley	0.7	$3,100	C
Chapel Street	Brighton Street	Mill Street	III - Shar	Grass Valley	0.2	$900	C
East Empire Street	South Auburn	Kate Hayes Street	III - Shar	Grass Valley	0.1	$400	C
South Auburn	Highway 49/20	La Barr Meadows Road	III - Shar	Grass Valley	0.8	$3,500	C
Total Proposed Class III Shared Roadway Bicycle Markings					**5.25**		
Total Cost Estimate Class III Shared Roadway Bicycle Markings						$22,900	

Class III Bicycle Routes - Rural Roads Improvement Projects

Cost estimates for these projects include the following potential improvements for each segment:

- Bike Route wayfinding signs (minimum treatment)
- Advisory and warning signs, including, where appropriate, "Share the Road" signs
- Shoulder, repair, widening or new shoulders equal to an average of 2' of additional paved width on each side of the road for approximately 50% of the total segment length, resulting in sometimes intermittent but functional bikeway shoulder areas
- Travel lane re-striping where excess width available
- New or improved turnouts

Needed improvements for selected segments were based on a "windshield" analysis of roadway conditions categorizing segments in the following way.

- Minor – Paving width is not adequate; right-of-way and adequate space and terrain is available to intermittently add 2' of additional shoulder width; also includes Bike Route and Share the Road signage; lane re-striping or one-way climbing bike lane as necessary.

- Major – Paving width is inadequate and adjacent existing drainage or grades require new culverts or grading in order to intermittently add 2' of additional shoulder width. In addition to Bike Route signs, spot improvements would include turnouts, paved shoulder passing areas and Share the Road and warning signage on dangerous segments with winding turns or limited sightlines; lane re-striping or one-way climbing bike lane as necessary.

Table 6-4 details segments for Rural Roads Bicycle Improvements. The roads are essentially the top priority segments selected from the remaining list of proposed Class III facilities. They were elevated from the remaining segments list based on criteria such as public input, right-of-way opportunities for widening, connectivity between communities and popularity as recreational routes. Its is assumed that the final cost for this project will likely be less than the amount stated here, due to lack of feasibility to install paved shoulders on the side of all the segments listed.

Basis for Cost Estimates - Class III Bicycle Routes "Rural Roads Improvement Projects"

The cost estimates provided in this chapter are based on the "Minor" and "Major" categories above, calculated on a per-mile basis with additional paved width as described. Estimates include materials such as asphalt pavement, aggregate, signing and striping per California MUTCD specifications as well as labor for site preparation, excavation, grading and traffic management. Contingency and design and administrative costs are also included.

Table 6-4: Rural Roads Bicycle Improvements Cost Estimates*

Segment Name	From	To	Bikeway Class	Community	Length (Mi)	Cost	Priority
Alta Street	Ridge Road	West Main Street	III - RRImp	Grass Valley	0.9	$92,900	A
Gold Flat Road	Highway 49/20	Nimrod Street	III - RRImp	Nevada City	1.1	$112,600	A
Nimrod Street	Boulder Street	Gold Flat Road	III - RRImp	Nevada City	0.5	$51,800	A
Boulder Street	Highway 49/20	Red Dog Road	III - RRImp	Nevada City	0.6	$62,600	A
West Broad Street	Highway 49	Bennett Street	III - RRImp	Nevada City	0.5	$46,100	A
Alta Sierra	Highway 49	Dog Bar Road	III - RRImp	Nevada County	2.8	$448,700	A
Loma Rica Drive	Brunswick Road	Charles Street	III - RRImp	Nevada County	1.1	$112,900	B
Old Downieville Highway	Monroe Street	Highway 49	III - RRImp	Nevada City	1.8	$184,900	B
Banner Lava Cap Road**	Nevada City Highway	Idaho-Maryland Road	III - RRImp	Nevada County	3.5	$558,000	C
Idaho-Maryland Road**	Brunswick Road	Banner Lava Cap Road	III - RRImp	Nevada County	3.1	$312,800	C
Rough & Ready Highway	Bitney Springs Road	Highway 20	III - RRImp	Nevada County	4.2	$429,400	C
Bitney Springs Road	Pleasant Valley Road	Rough & Ready Highway	III - RRImp	Nevada County	6.9	$1,105,300	C
Penn Valley Drive	Highway 20	Penn Valley Pathway	III - RRImp	Penn Valley	0.6	$61,300	C
Lower Colfax Road	Highway 174	Mt Olive Road	III - RRImp	Nevada County	6.5	$1,042,600	C
Total Proposed Class III Rural Roads Improvements					**34.14**		
Total Cost Estimate Class III Rural Roads Improvements						**$4,621,900**	

* Nevada County Department of Public Works may require further roadway safety improvements to allow safe use of the roadway by bicycles before designation as a bicycle route

** "Climbing lane" one-way bicycle lane on uphill side required for safe implementation of bike route

Class III Bicycle Routes "Signage Only"

This project consists of all remaining Class III Routes not included as Shared Roadway Bicycle Markings or Rural Road Improvements. Priorities given in **Table 6-5** are based primarily on estimated use, since there are assumed to be no other implementation challenges associated with signage installation.

Table 6-5: Class III "Signage Only" Routes Cost Estimates*

Segment Name	From	To	Bikeway Class	Community	Length (Miles)	Cost	Priority
Sutton Way	Old Tunnel Road Pathway	Dorsey Drive	III - Signs	Grass Valley	0.4	$700	A
Dorsey Drive	Highway 49	Sutton Way	III - Signs	Grass Valley	0.6	$1,100	A
Coyote Street	Highway 49	Union Street	III - Signs	Nevada City	0.4	$700	A
Lower Grass Valley Road/Searles Avenue	Ridge Road	Sacramento Street	III - Signs	Nevada City	0.9	$1,500	A
Monroe Street/Bennett Street	Old Downieville Highway	Broad Street	III - Signs	Nevada City	0.3	$600	A
Nevada Street	Boulder Street	Highway 20	III - Signs	Nevada City	0.9	$1,600	A
Granholm Road	Old Tunnel Road Pathway	Gold Flat Road	III - Signs	Nevada City	0.4	$600	A
Minne Street	Brighton Street	Condon Park	III - Signs	Grass Valley	0.2	$400	B
Highway 174	Brunswick Road	Placer County Line	III - Signs	Nevada County	6.7	$12,000	B
Highway 20	Brighton Street	West Nevada County Line	III - Signs	Nevada County	16.4	$29,400	B
Highway 49 To County Line	Alta Sierra Drive	Placer/Nevada County Line	III - Signs	Nevada County	9.5	$17,100	B
Highway 49 To County Line	West Broad Street	Sierra/Nevada County Line	III - Signs	Nevada County	16.4	$29,400	B
Donner Pass Road	Hampshire Rocks Road	Truckee City Limits	III - Signs	Nevada County	12.6	$22,600	C
Duggans Road/Wolf Road	Lime Kiln Road	Highway 49	III - Signs	Nevada County	3.8	$6,800	C
Highway 20	Nevada City city limits	Yuba Gap	III - Signs	Nevada County	24.8	$44,700	C
Eagle Lake Road	Yuba Gap Pathway West	Yuba Gap Pathway East	III - Signs	Yuba Gap	8.1	$14,600	C
Hampshire Rocks Road	Eagle Lake Road	Donner Pass Road	III - Signs	Yuba Gap	10.9	$19,600	C
Total Proposed Class III Signage Only					113.07		
Total Cost Estimate Class III Signage Only						$203,400	

* Nevada County Department of Public Works may require further roadway safety improvements to allow safe use of the roadway by bicycles before designation as a bicycle route

Basis for Cost Estimates - Class III Bicycle Routes "Signage Only"

The cost estimates provided later in this chapter were calculated per-mile based on the recommended number in the California MUTCD. Labor, contingency and design and administrative costs are also included.

Class III Bicycle Routes Recommended Project Phasing

First Phase: Implement Class III "Shared Roadway Bicycle Marking" and "Rural Roads Improvements" Bikeways as a Part of Scheduled Roadway Repaving or Reconstruction: Bikeways listed above that require repaving, lane striping and/or stenciling that are proposed on roads scheduled to be repaved in the next five years can be installed as a part of scheduled roadway maintenance. Cost estimates for those projects should be adjusted to reflect the costs of including the bicycle improvements in the project.

Second Phase: Implement Remaining Class III "Shared Roadway Bicycle Marking" and "Rural Roads Improvements" Bikeways: Bikeways listed above that require repaving, lane striping and/or stenciling that are proposed on roads not scheduled to be repaved in the next five years can be installed as a part of a stand-alone project. Depending on segment length and the results of the cost estimating process, those projects may be approached on a road-by-road basis or shorter segments could be bundled together as a rural roads bikeway improvement project.

Third Phase: Implement Class III "Signage Only" Bikeways: Because these bikeways require only signage for implementation, they have no relationship to the County's or Caltrans' planned Capital Improvements Projects schedule. These segments could be bundled into one or more stand-alone projects and possibly implemented as part of a countywide wayfinding project, described in the next section.

6.3 Additional Bicycle Improvement Projects Implementation

The remaining projects in this plan will require some further level of refinement before accurate cost estimates can be made. Based on available information at the time of writing, example costs are provided below.

6.3.1 Bicycle Detection Project

Existing conditions for bicycle detection in Nevada County were unknown as of this writing. The first step in implementation of this project would be an assessment of such conditions either through a field visit or review of available maintenance records.

Basis for Cost Estimates

Costs in **Table 6-6** assume that 50% of signalized intersection legs in the County have functional loop detectors that can be recalibrated to detect bicycles and that such improvements would be implemented as a stand-alone project. An assessment of existing conditions either through a field visit or review of available maintenance records would be required to develop specific cost estimates. Cost savings may be available if implemented as a part of a larger roadway improvement project.

Table 6-6: Bicycle Detection Estimated Costs*

Item	Approximate Cost Per Leg of Intersection
Calibrate existing loops	$300
Calibrate or re-zone existing video detection	$150
Install new detection loops	$3,000
Install new zoned video detection	$5,000
Install stencils	$100

* Costs based on US DOT information available as of April 2007.

Bicycle Detection Project Recommended Project Phasing

First Phase: Recalibrate Existing Loop or Video Detectors and Install Stencils as a Part of Routine Roadway and Signal Maintenance: Many of the intersections listed in this project may already have detection in the form of existing induction loops or video cameras. By taking advantage of this existing infrastructure and adding inexpensive bicycle stencils per Caltrans Chapter 1000 design guidelines in the detection zones, Nevada County jurisdictions can achieve a cost-effective near-term bicycle improvement.

Second Phase: Install New Loop or Video Detectors and Stencils as a Part of Roadway Maintenance or Other Repair Projects: Some bikeway intersections may not have existing detection, or detection on bike lane streets may exist in the motorized travel lane but not in the bike lane or outside edge of the curb lane. In these cases, additional detection devices may be required. Cost savings may be possible if these improvements are coordinated with routine repaving or with pavement excavation such as scheduled utility work.

Third Phase: Install Stencils and Either Recalibrate Existing Detectors or Install New Detectors as a Stand-alone Project: The final phase of this project consists of remaining locations which cannot be addressed in Phases I and II above.

6.3.2 Bicycle Parking

As of this writing, a detailed inventory of bicycle parking in Nevada County was not available so it is problematic to estimate costs for bicycle parking improvements. However, some basic per unit cost estimates can be provided for reference in developing a future bicycle parking improvement project.

To date, the best design resource for bicycle parking fixture selection and placement is the Association of Pedestrian and Bicycle Professionals *Bicycle Parking Guidelines*, available online here: http://www.bicyclinginfo.org/de/parkguide.cfm

Appendix B provides sample language for a bicycle parking ordinance that could be adopted by Nevada County and the local jurisdictions.

Basis for Cost Estimates

Costs for bicycle parking provided in this report developed using **Table 6-7** are based on anticipated minimum needs for bicycle parking. These estimates include racks only. Further assessment of

proposed bicycle parking sites would be necessary to determine the need for concrete pads, shelters or lockers.

Table 6-7: Estimated Bicycle Parking Estimated Unit Costs

Item	Unit	Estimated Cost*
Inverted "U" Bicycle Rack (capacity 2 bicycles)	EA	$200
Concrete Pad (6'X7' pad anchors two racks)	EA	$840
Shelter (protects 3 Inverted U racks)	SF	$2000
Bicycle Locker (capacity 2 bicycles)	SF	$1200

*includes installation

Project Phasing

Phase I: Install Bicycle Parking as a Part of Larger Project: Many of the locations described in this Plan may able to be installed as a part of streetscape, roadway or redevelopment projects.

Phase II: Install Bicycle Parking as a Stand-along Project: Remaining locations and additional locations identified by staff and the community can be installed as a stand-alone project using grant funding eligible for bicycle project expenditures.

6.3.3 Wayfinding and Share the Road Signage

Installation of signage along Class I, II and III facilities has been integrated into each of those facility types.

Wayfinding and Share the Road Signage Project Phasing

Wayfinding signage should be implemented simultaneously with development of Class I, II and III bicycle facilities. Project development for these facilities should identify nearby destinations and determine exact sign content and placement to direct riders to those destinations. "Share the Road" signs should be installed as needed with the development of all Class III facility types.

Basis for Cost Estimates

Concept-level cost estimates for wayfinding and Share the Road signage have been factored into the per-mile cost for all types of Class I, II and III bikeways. The exact number and design of signs to be installed would be determined during the design phase of each bikeway project.

6.4 Funding

There are a variety of potential funding sources including local, state, regional, and federal funding programs as well as private sector funding that can be used to construct the proposed bicycle improvements. Most of the federal, state, and regional programs are competitive and involve the completion of extensive applications with clear documentation of the project need, costs, and benefits. Local funding for bicycle projects typically comes from Transportation Development Act (TDA) funding, which is prorated to each County based on the return of gasoline taxes.

6.4.1 Federal Funds

The primary federal source of surface transportation funding—including bicycle facilities—is SAFETEA-LU, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. SAFETEA-LU is the fourth in a series of Federal transportation funding bills. The $286.5 billion SAFETEA-LU bill, passed in 2005, authorizes federal surface transportation programs for the five-year period between 2005 and 2009. SAFETEA-LU information can be found at: www.fhwa.dot.gov/safetealu/index.htm

Federal funding is administered through the California Department of Transportation (Caltrans) and the local transportation authority (TA) or metropolitan planning organization (MPO). Most, but not all, of the funding programs are transportation (versus recreation) oriented, with an emphasis on (a) reducing auto trips and (b) providing inter-modal connections. Funding criteria often requires quantification of the costs and benefits of the system (such as saved vehicle trips and reduced air pollution), proof of public involvement and support, California Environmental Quality Act (CEQA) compliance, and commitment of some local resources. In most cases, SAFETEA-LU provides matching grants of 80 to 90 percent – but prefers to leverage other funds at a lower rate.

Specific funding programs under SAFETEA-LU include:

Congestion Mitigation and Air Quality (CMAQ) — Funds projects that are likely to contribute to the attainment of national ambient air quality standards. Funds are available for projects and programs in areas that have been designated in non-attainment or maintenance for ozone, carbon monoxide or particulate matter.

Recreational Trails Program — $370 million nationally through 2009 for non-motorized trail projects.

Safe Routes to School Program — $612 million nationally through 2009.

Transportation, Community and System Preservation Program — $270 million nationally over five years (2006-2011) reserved for transit oriented development, traffic calming and other projects that improve the efficiency of the transportation system, reduce the impact on the environment, and provide efficient access to jobs, services and trade centers.

Federal Lands Highway Funds — Federal Lands Highway funds may be used to build bicycle facilities in conjunction with roads and parkways at the discretion of the department charged with administration of the funds. The projects must be transportation-related and tied to a plan adopted by the State and MPO. Approximately $1 billion dollars are available nationally for Federal Lands Highway Projects through 2009.

6.4.2 Statewide Funding Sources

The State of California uses both federal sources (such as the Recreational Trails Program) and its own budget to fund projects and programs. In some cases, such as Safe Routes to School, Office of Traffic Safety, and Environmental Justice grants, project sponsors apply directly to the State for funding. In others, sponsors apply to a regional agency.

Bicycle Transportation Account

http://www.dot.ca.gov/hq/LocalPrograms/bta/btaweb%20page.htm

The State Bicycle Transportation Account (BTA) is an annual statewide discretionary program that is available through the Caltrans Bicycle Facilities Unit for funding bicycle projects. Available as grants to local jurisdictions, the emphasis is on projects that benefit bicycling for commuting purposes. Due to the passage of AB1772 in the year 2000, the BTA had $7.2 million available between 2000 and 2005. Following the year 2005, the fund dropped to $5 million per year. In funding cycle 2007/2008, there are $5 million in statewide BTA funds available. The local match must be a minimum of 10% of the total project cost.

Recreational Trails Program (RTP)

www.fhwa.dot.gov/environment/rectrails/index.htm

http://www.parks.ca.gov/pages/1008/files/rtpguide.pdf

In California, RTP funds are administered by the California State Parks Department. Recreational Trails Program funds may be used for the following:

- Maintenance and restoration of existing trails;
- Purchase and lease of trail construction and maintenance equipment;
- Construction of new trails;
- Acquisition of easements or property for trails; and
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State's funds).

$3.3 million statewide was available in fiscal year 2006.

Land and Water Conservation Fund

www.parks.ca.gov/?page_id=21360

The Land and Water Conservation Fund is a federal program that provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. The Fund is administered by the California State Parks Department and has been reauthorized until 2015. Cities, counties and districts authorized to acquire, develop, operate and maintain park and recreation facilities are eligible to apply. Applicants must fund the entire project, and will be reimbursed for 50 percent of costs. Property acquired or developed under the program must be retained in perpetuity for public recreational use.

Safe Routes to School (SR2S)

www.dot.ca.gov/hq/LocalPrograms/saferoute2.htm

Recent SAFETEA-LU legislation, which requires each state's Department of Transportation to designate a SR2S Coordinator, also contains a SR2S program. This program is meant to improve the safety of walking and cycling to school and encourage students to walk and bicycle to school through identification of existing and new routes to school and construction of bicycle safety and traffic calming projects. Caltrans will be discontinuing California's SR2S program, in light of the new federal SR2S program. The last funding cycle for State-sponsored SR2S programs will be in 2007. After 2007, the SR2S program will be federally funded.

Environmental Justice: Context Sensitive Planning Grants

www.dot.ca.gov/hq/tpp/offices/opar/titleVIand%20EJ.htm

The Caltrans-administered Environmental Justice: Context Sensitive Planning Grants Program funds planning activities that assist low-income, minority, and Native American communities in becoming active participants in transportation planning and project development. Grants are available to transit districts, cities, counties, and tribal governments. This grant is funded by the State Highway Account at $1.5 million annually statewide. Grants are capped at $250,000.

Office of Traffic Safety (OTS) Grants

www.ots.ca.gov/grants/default.asp

The California Office of Traffic Safety distributes federal funding apportioned to California under the National Highway Safety Act and SAFETEA-LU. Grants are used to establish new traffic safety programs, expand ongoing programs to address deficiencies in current programs. Bicycle safety are included in the list of traffic safety priority areas. Eligible grantees include governmental agencies, state colleges and 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 these needs include potential traffic safety impact, collision statistics and rankings, seriousness of problems, and performance on previous OTS grants. OTS expects to have $56 million in funding available statewide for FY 2006/07.

California Center for Physical Activity Grant Program

www.caphysicalactivity.org/our_projects.html

The California Center for Physical Activity runs several programs related to walking and offers small grants to public health departments. Grants are in the amount of $4,999 dollars or less and are offered intermittently.

6.4.3 Regional Funding Sources

Regional bicycle grant programs come from a variety of sources, including SAFETEA-LU, the State budget, and sales taxes. Regional funds are administered by the Regional Transportation Planning Agency.

TDA Article 3

www.mtc.ca.gov/funding/STA-TDA/index.htm

Transportation Development Act (TDA) Article 3 funds are available for transit, bicycle and pedestrian projects in California. According to the Act, bicycle and pedestrian projects are allocated two percent of the revenue from a ¼ cent of the general state sales tax, which is dedicated to local transportation. These funds are collected by the State, returned to each county based on sales tax revenues, and typically apportioned to areas within the county based on population. Eligible bicycle projects include construction and engineering for capital projects; maintenance of bikeways; bicycle safety education programs; and development of comprehensive bicycle facilities plans. A city or county is allowed to apply for funding for bicycle plans not more than once every five years. These funds may be used to meet local match requirements for federal funding sources. The funds are used on an annual basis, but can be rolled over or applied to various projects according to TDA guidelines.

6.4.4 Non-Traditional Funding Sources

Integration into Larger Projects

http://www.dot.ca.gov/hq/tpp/offices/bike/guidelines_manuals_policies.htm

California State's "routine accommodation" policies require Caltrans to design, construct, operate, and maintain transportation facilities using best practices for bicyclists. Local jurisdictions can begin to expect that some portion of bicycle project costs, when they are built as part of larger transportation projects, will be covered in project construction budgets. This applies to Caltrans and other transportation facilities funded through Caltrans.

Community Development Block Grants

www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm

The CDBG program provides money for streetscape revitalization, which may be largely comprised of bicycle improvements. Federal Community Development Block Grant Grantees may use CDBG funds for activities that include (but are not limited to) acquiring real property; building public facilities and improvements, such as streets, sidewalks, and recreational facilities; and planning and administrative expenses, such as costs related to developing a consolidated Plan and managing CDBG funds. For example, in Oakland, CDBG funds have also been used to find crossing guards, called "Safe Walk to School Monitors." CDBG funds totaling $526 million were distributed statewide in 2004/05.

Requirements for New Development

With the increasing support for "routine accommodation" and "complete streets," requirements for new development, road widening, and new commercial development provide opportunities to construct facilities more efficiently. Specific policies for this are provided in Chapter 2.

Impact Fees

One potential local source of funding is developer impact fees, typically tied to trip generation rates and traffic impacts produced by a proposed project. Bridge and thoroughfare fees and transit impact fees from developers are strategies to provide necessary infrastructure and transit-related improvements.

Mello-Roos Community Facilities Act

http://mello-roos.com/pdf/mrpdf.pdf

The Mello-Roos Community Facilities Act was passed by the Legislature in 1982 in response to reduced funding opportunities brought about by the passage of Proposition 13. The Mello-Roos Act allows any county, city, special district, school district, or joint powers of authority to establish a Community Facility Districts (CFD) for the purpose of selling tax-exempt bonds to fund public improvements within that district. CFDs must be approved by a two-thirds margin of qualified voters in the district. Property owners within the district are responsible for paying back the bonds.