

Non-motorized Transportation Master Plan

Element Description and Implementation Plan

Commute Facilities Element

Sidewalk Facilities Element

Safe Route to Schools Facilities Element

Element Description Only

Rural Recreational Trail Facilities Element



ADOPTED

As amended by the Board of Supervisors on August 8, 2000

Nevada County
Department of Transportation and Sanitation
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1. Executive Summary

1.1. Overview

The Master Plan is broken down into the following elements and types of projects:

Element A: Commute Facilities

Commute Facilities are Multi-user Trails, Bicycle Lanes and Bicycle Routes that, due to being located within or near to Community Areas, are anticipated to have a high percentage of point to point alternative transportation (in lieu of motor vehicle) use.

Element B: Sidewalk Facilities

Sidewalk Facilities are Community Area pedestrian facilities that are appropriate to the more urbanized areas of the County. This study contains proposed projects to provide continuity in the existing system and indicates properties that meet General Plan screening criteria for encouraging inclusion of pedestrian facilities in development project design.

Element C: Safe Route to School Facilities

Safe Route to School Projects are projects that may qualify for funding under Assembly Bill 1475 or may be eligible for funding from other sources. These projects are a special category and are shown on a separate map. These potential projects are located along county maintained road facilities and extend approximately ½ mile in each direction from schools.

Element D: Rural Recreational Trail Facilities

Rural Recreational Trails are rural multi-user facilities for predominantly recreational use and are proposed to be located within Rural (Non-Community Area) Trail Corridors depicted on the Master Plan Map.

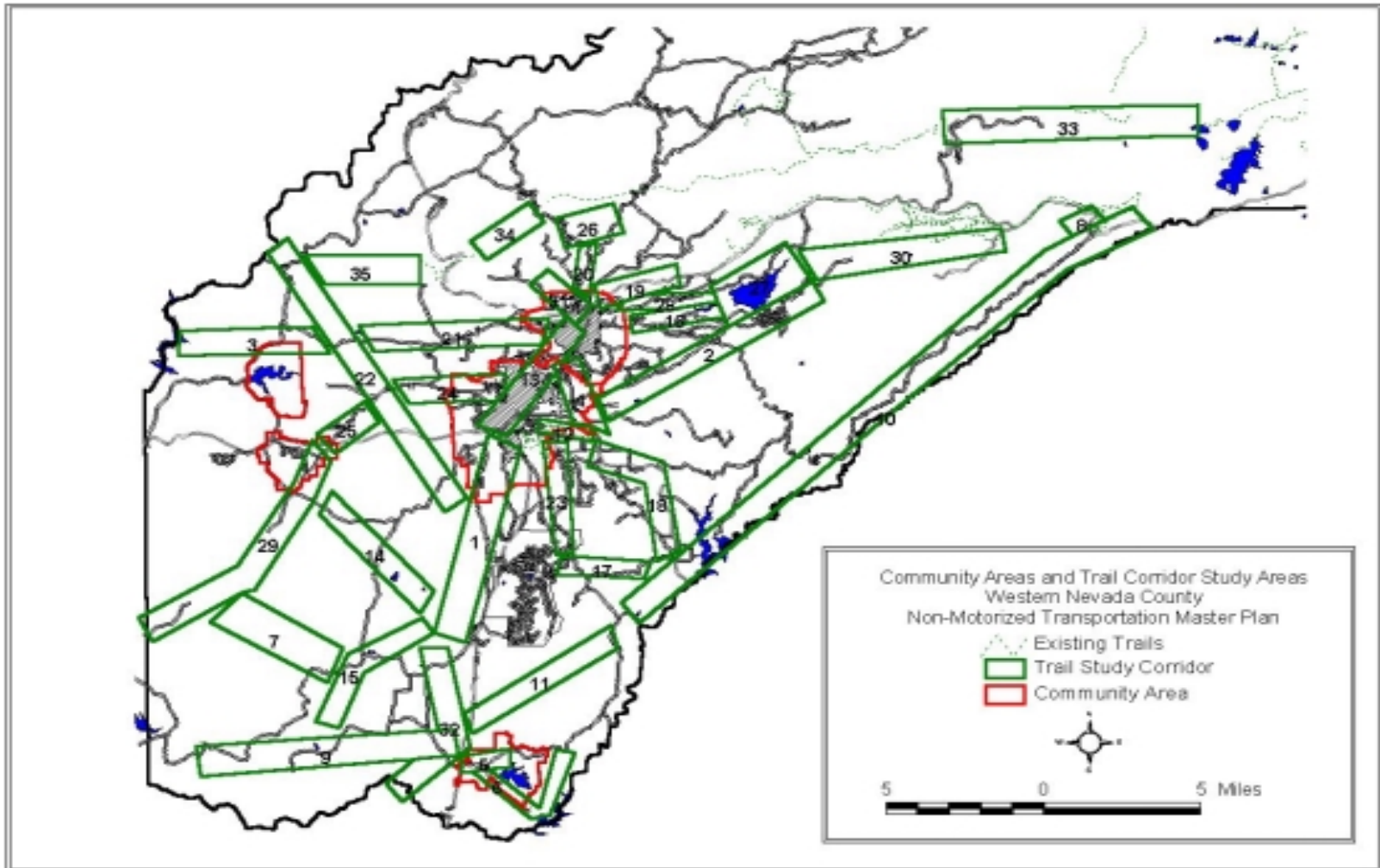
Implementation of Elements A, B, and C

Elements A, B, and C are appropriate for the Nevada County Department of Transportation and Sanitation to be the lead agency for project planning, obtaining project funding, and for project delivery (construction). This document contains specific projects, conceptual cost estimates, and potential funding sources to implement Elements A, B, and C.

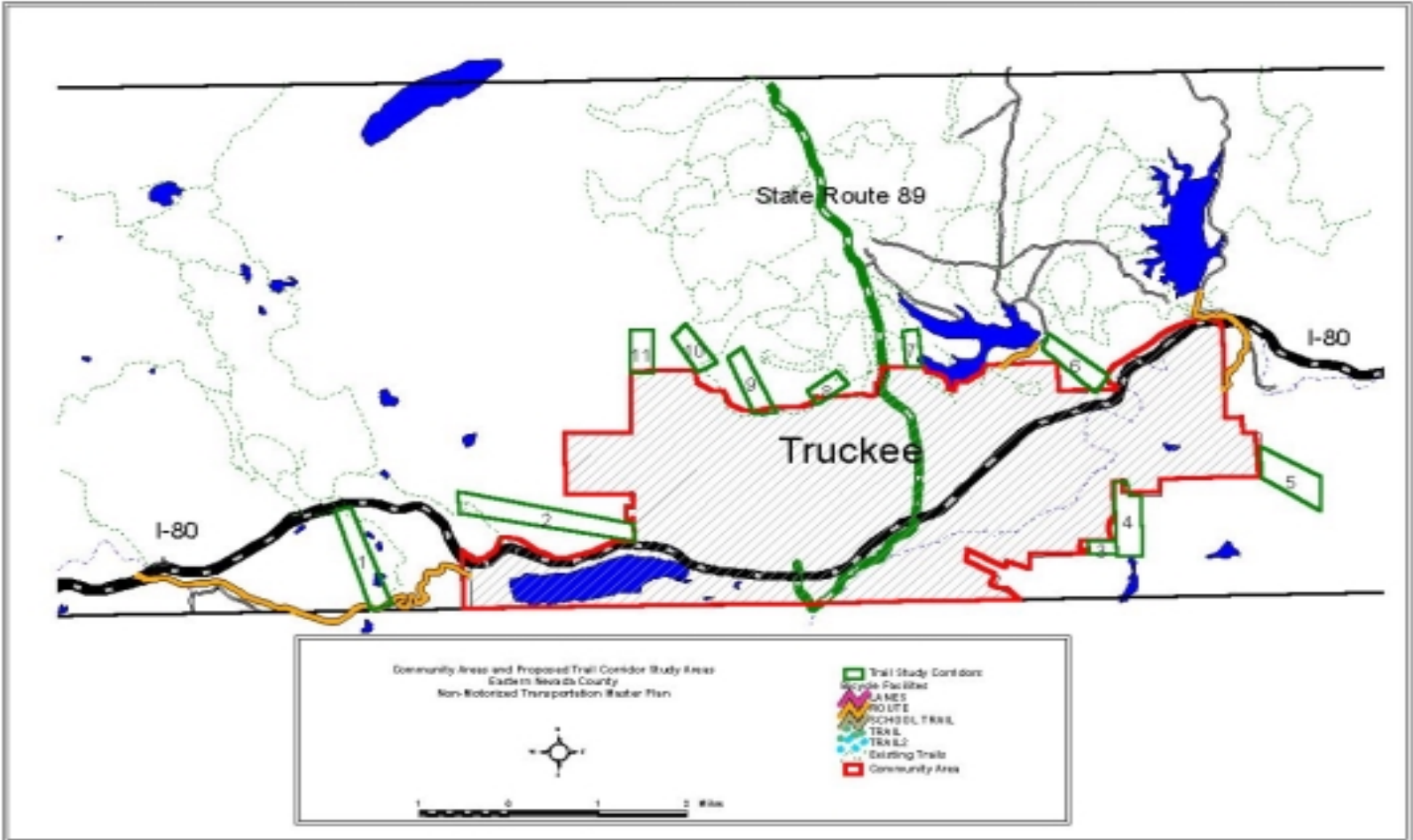
Implementation of Element D, Rural Recreational Trails.

Rural Recreational Trail Corridors are included on the Non-Motorized Transportation Master Plan Map included in this document. Rural Recreational Trails are only discussed in general in this document. Specific trail locations within the corridors, cost estimates and lead agency designation for plan implementation are not included in this document. An implementation plan, the **Rural Recreational Trail Implementation Plan**, will be located in a separate document and will be the subject of additional analysis and review.

A map to illustrate the Community Area and Trail Corridor Concept is found on the following page. A listing of trail corridor names keyed to the corridor numbers on the map is found immediately following the map.



1.1.1. Community Areas and Trail Corridors Map – Western Nevada County



1.1.2. Community Areas and Trail Corridors Map – Eastern Nevada County

1.1.3. List of Trail Corridors

The following list of proposed Trail Corridors are proposed by this plan. Inherent in this plan is a shift from “Widen the Roads” conventional approach to a “Separate Space” approach. Most rural routes within the Rural Recreational Corridors will be proposed to be constructed to a “rural hiking-single track” standard (similar to an USDA Forest Service typical trail) for predominantly biking, hiking and equestrian recreational use. The routes designated within the Commute Facilities Element may be constructed to different standards as dictated by type of use, intensity of use, or by construction funding mandated design criteria.

Table 1A

PROPOSED TRAIL CORRIDORS Western Nevada County

*Note*¹: Indicates that Specific Improvements have been identified in the Commute Facilities (Element A) portion of this document.

- | | |
|---|---|
| 1. Auburn-Northstar Corridor | 19. Nevada City - Pioneer Trail Connection |
| 2. Banner Mountain Corridor | 20. Nevada City - Yuba Connection |
| 3. Bitney-John Born Corridor | 21. Newtown-Bitney Corridor |
| 4. <i>Brunswick-Narrow Gauge Corridor</i> ¹ | 22. Ponderosa Corridor |
| 5. <i>Combie Corridor</i> ¹ | 23. Rattlesnake Road Corridor ¹ |
| 6. Combie-Retherford Corridor | 24. <i>Rough and Ready Corridor-East</i> ¹ |
| 7. Dry Creek Corridor | 25. <i>Rough and Ready Corridor-West</i> ¹ |
| 8. Emigrant - Pioneer Connection | 26. Round Mountain Area |
| 9. Emigrant - East of Camp Far West | 27. Scott’s Flat Area |
| 10. Emigrant - Lowell Hill Corridor | 28. Snow Mountain Corridor |
| 11. Emigrant - Trail Easement | 29. Spenceville Corridor |
| 12. <i>Empire Mine-Brunswick Corridor</i> ¹ | 30. Upper Pioneer Trail |
| 13. <i>Grass Valley-Nevada City Connection</i> ¹ | 31. Wet Hill Area |
| 14. Indian Springs-Retrac Corridor | 32. Wolf Creek Corridor |
| 15. Little Wolf-Retrac Corridor | 33. Yuba River Trail-Northeast |
| 16. Lower Scott’s-Pasquale Corridor | 34. Yuba River Extension-East |
| 17. Mount Olive-Dog Bar Corridor | 35. Yuba River Extension-West |
| 18. Narrow Gauge Corridor | |

Table 1B

PROPOSED TRAIL CORRIDORS

Eastern Nevada County

1. Donner Lake Rim Corridor 1
2. Donner Lake Rim Corridor 2
3. Airport Corridor
4. Martis Creek Corridor
5. Cambridge Estates Corridor ¹
6. Prosser Creek Corridor
7. Prosser Reservoir Corridor
8. Commemorative Emigrant Corridor
9. Carpenter Valley Corridor 1
10. Carpenter Valley Corridor 2
11. Carpenter Valley Corridor 3

1.2. The Elements

1.2.1. Element A: Commute Facilities

Within Community Areas and where designated corridors fall within or near to community areas, the **Commute Facilities** portion of this document has identified specific routes proposed to be incorporated into the Nevada County Department of Transportation and Sanitation's Transportation Capital Improvement Program (TCIP). These routes are near population and employment centers and are in areas predominantly already developed. These facilities can be anticipated to have a large percentage of use for alternative transportation purposes (i.e., for commuter transportation to or from work, shopping and schools). The corridors that are in this category are Corridors 4, 5, 12, 13, 24 and 25.

These facilities, although the emphasis is placed on bicycles, are typically multipurpose facilities used by everyone. These facilities include trails, paths, lanes, and routes.

1.2.2. Element B: Pedestrian Facilities

The previous practice has been to consider each development project individually at the tentative map or site plan approval stage of development to determine if pedestrian improvements are appropriate. This has been partially successful. This Plan contains a map of projects necessary to provide system continuity. This Plan also contains a map of those areas indicated by the General Plan as desirable for pedestrian facilities due to potential residential density of greater than one dwelling unit per acre, or that are proposed to be developed commercially or industrially. The developers of some areas within City Spheres of Influence and that are proposed for city annexation should consult the appropriate jurisdiction for consistency of planned improvements with city circulation plans and design specifications.

1.2.3. Element C: Safe Route to School Projects

Assembly Bill 1475 was signed into law by the Governor in October of 1999. It provides for a program to enhance the safety of routes that receive significant school related bicycle and pedestrian use. A map is contained within this plan which indicates school routes to be considered for safety enhancement. Some routes will become segments of a larger network.

1.2.4. Element D: Rural Recreational Trails

The concept of a network of Rural Recreational Trails within designated planning corridors originally coalesced in the work done by the Multipurpose Trail Subcommittee of the Nevada

County General Plan in the early 1990's. The concept continued through the General Plan Process and is embodied in the text of the Plan. Original corridor and preliminary route research work was done by the General Plan Subcommittee. Their work, however, did not survive through the process to be finalized and adopted as an exhibit to the General Plan. This element of the Non-motorized Transportation Master Plan will provide a program to complete the work that was deferred during the General Plan adoption process.

Nevada County has a relatively large network of informal trails with historic use. As larger parcels of land have been subdivided and developed, many of these informal trails have been obliterated or closed off. As a result, residents have had to travel further away from their homes to find trails open for their use. Wherever feasible these existing informal routes should be proactively pursued to become part of the system, if they provide the most appropriate route and the benefits of their use are significant. Their use shall be consistent with legal constraints and right-of-way shall be obtained where necessary. Acquiring rights-of-way is a particularly sensitive issue in Nevada County.

Historically, the approach to designating non-motorized facilities within the unincorporated area of Nevada County has been to propose to "*widen the roads*" to allow the major roads of Nevada County to also serve as bicycle-pedestrian routes. This method is simple, easy and expedient. It is not, however, reflective of how the roads are actually used, nor is it conducive to a safe or enjoyable experience for anyone, motorists included. Most non-vehicular transportation / recreation use in Nevada County takes place away from the major motorized routes in a safer, more tranquil environment. This is the type of experience that the recreational trail user is seeking. Most rural county roads are beyond a reasonable distance from activity and population centers to attract significant alternative (to motor vehicle) transportation use. Most rural "*widen the road*" improvements proposed by previous plans were not realistic in that cost would greatly exceed the benefit and future funding, usually tied to relative need and reducing motor vehicle use, would be nonexistent.

This plan proposes a two step process to planning and implementing a Rural Recreational Trail System. The first step is the designation of "Rural Recreational Corridors" for planning purposes. The second step is a specific trail location and implementation study to be accomplished after the planning corridors are adopted. The first step is included in this document by the inclusion of the Rural Corridors on the Non-motorized Transportation Master Plan Map. These corridors will compliment the existing trail system on public lands, which have been taken into consideration for the proposed comprehensive trail network.

1.3. Background

This Plan is intended to provide compliance with the 1995 Nevada County General Plan Update and satisfy the requirements for a Bicycle Master Plan and a Pedestrian Master Plan. Upon completion of the Rural Recreational Trail Implementation Plan this plan will also satisfy the requirements of a Rural Recreational Trail Plan. This plan is also intended to update the 1989 Nevada County Bicycle Master Plan for the unincorporated area of Nevada County consistent with the Goals, Objectives, and Policies of the 1995 Nevada County General Plan Update.

This plan is also intended to comply with the requirements of the California Bicycle Transportation Act, California Streets and Highways Code Section 890-894.2. California Streets and Highways Code Section 891.2 was adopted in 1994 and specifies the elements required of a Bicycle Master Plan when the improvements are used for certain types of purposes and are intended to be eligible for certain types of funding. A summary of the California Bicycle Transportation Act is included in the Commute Facilities element of the plan. A draft Countywide Bicycle Master Plan was prepared for the Nevada County Transportation Commission (NCTC) by Fehr & Peers Associates, Inc. in June of 1996. The Fehr & Peers Associates authored plan was intended to comply with the California Bicycle Transportation Act, but was not adopted by the NCTC due to the need to further refine the proposed future network. This plan uses some of the information compiled by Fehr & Peers Associates, but is crafted to be consistent with the goals, objectives and policies of the Nevada County General Plan and Nevada County's specific constraints and conditions.

2. Non-Motorized Transportation Master Plan

2.1. Introduction

Historically, the approach to designating non-motorized facilities within the unincorporated area of Nevada County has been to designate the major roads of Nevada County to also serve as bicycle-pedestrian routes. In other words, take a map of the major motorized vehicle routes and with a felt tip pen, indicate where and how the motorists, bicyclists, pedestrians, and equestrians will have to use the same road right-of-way at the same time. This method is simple, easy and expedient. It is not, however, reflective of how the roads are actually used, nor is it conducive to a safe or enjoyable experience for anyone, motorists included. Most non-vehicle transportation / recreation use in Nevada County takes place away from the major motorized routes in a safer, more tranquil environment. Only when forced by the lack of options, are high volume, high speed, vehicle rights-of-way used. The previous approach also did not take into account the long rural commute distances and Nevada County's topography. The plans did not reflect routes that would actually be used. The plans did not reflect that most non-motorized use of rural facilities not in relative close proximity to community areas is for recreational purposes.

This Non-Motorized Transportation Master Plan is based upon facilities being constructed appropriate to the use and location. In areas in close proximity to employment, commercial and population centers, the improvements proposed in the **Commuter Facilities Element** are consistent with use for alternative (to motor vehicle use) transportation as well as for recreational use. In more rural areas, the **Rural Recreational Trail Facilities Element** defines rural corridors for adoption of trails for rural recreational multi-user use. **The Pedestrian Facility Element** enhances pedestrian safety where mixed use of bicycle facilities is not desirable. The **Safe Route to School Facility Element** supplements the other plans and provides spot improvements near schools where they would not be provided otherwise.

Facilities within community areas are necessarily constructed to higher standards than rural, low usage facilities. The Americans with Disabilities Act dictates some design factors as well as the need to provide all-weather commute-route surfaces. Multi-use surfaced separated trails and paths can provide a rural-type of substitution for sidewalks in transition areas between rural hiking-single track trails and full urban-type curb gutter and sidewalk areas with bike lanes.

Rural Multi-user Trail Facilities can be constructed to a hiking-single track-equestrian standard that would not be feasible at higher levels of use and for non-discretionary (commuter) trip purposes.

The multi-user trail concept of this plan lends itself well to use of planned facilities for equestrian use. In rural areas minimal conflicts can be anticipated if accepted trail courtesy is observed. All trails are to be signed to indicate and reinforce the concept that *hikers* are expected to yield to *equestrians* and that *bicyclists* are expected to yield to both *hikers* and *equestrians*. In more urbanized areas, with a high volume of use, equestrians may be directed to use more rural facilities where the quality of experience and type of facilities are more appropriate to equine use.

2.2. Element A: Commute Facilities

The text of the Nevada County General Plan states:

“... One focus of the General Plan is to develop land use patterns which are better suited to accommodate bicycle travel as an alternative to the automobile. With higher density land uses where trip productions and attractions are closer together, non-auto facilities would be an integral part of the transportation system.”

A transportation system can be planned and constructed cost effectively within new growth focused in community regions and to a lesser extent rural “hubs,” that have a significant non-automobile component. Nevada County’s topography and long travel distances related to rural development patterns make it unrealistic to propose a system that makes non-motorized transportation an attractive travel mode choice between all potential trip origin and destination locations in the County. It is, however, both practical and possible to plan a system as envisioned in the County’s General Plan Goals, Objectives, and Policies that makes non-motorized transportation an integral part of a larger multi-modal integrated network of options.

Conventional Bicycle Class I, Class II, and Class III facilities; paths, lanes, and routes, respectively; are appropriate for some portions of the network. “Alternative Commuter-Mode Choice” projects, for example, have a different level of serviceability criteria from projects that are primarily recreational in nature and discretionary in use. The standards to which some types of facilities are constructed are in large part determined by the source of project funding. Some conventional bicycle facilities do have a multipurpose pedestrian/bicycle trail function. Conventional Bicycle Separated hard surfaced paths can provide an all-weather, but rural, substitute for sidewalks and bicycle lanes.

The majority of Nevada County rural roads have evolved from historic wagon roads and farm to market routes. The standards to which they are currently constructed are not consistent with the comprehensive road design criteria that currently exist. One factor in today’s recommended standards is increased lane and shoulder width for increased safety for traffic and for use of the right way for casual pedestrian and bicycle use. Today’s standards indicate that for most rural roads a four-foot shoulder is desirable. Nevada County has adopted Safety Element in its Traffic Impact Mitigation Fee Program to improve the future safety of major roads due to increased vehicular traffic. Increased safety for non-motorized traffic is a side benefit of that program. This is a 20 year supplemental proportionate share program to mitigate the impacts of new development upon the County’s major roads. Without such a program, individual development projects would need to mitigate their potential major road impacts individually instead of collectively as part of a comprehensive system. Upon

improvement pursuant to the program, some major roads will be designated as bike routes if threshold anticipated volume criteria for bicycle-pedestrian-equestrian route designation will be met. A list of the road segments that are proposed for lane and shoulder widening pursuant to the safety element of the *Nevada County Traffic Impact Mitigation Program* is found in Appendix A, starting on page 38, of that program's fee study (Adopted by Board of Supervisors Resolution 97-141, on April 15, 1997).

2.2.1. Facility Planning Criteria

The 1996 Fehr and Peers and Associates Draft Bicycle Study contained a list of suggested bikeway planning criteria. These criteria have been modified to apply to the proposed system and to take Nevada County's topography, preexisting road system, and long travel distances into account. They are described below.

Local Input

Consider local information in the system planning process, including input from club and association members; current riders, hikers and joggers; and the general public.

Use

Facilities contained in the proposed system should reflect use levels that are commensurate with the level of investment required for construction and maintenance.

Safety

The system should provide the highest level of safety possible while eliminating major safety concerns such as narrow roadways.

Connectivity

The system should provide connections where feasible to major activity centers, and multi-modal transfer locations. Activity centers include residential neighborhoods, schools, regional parks, shopping centers, employment centers, government centers, transit centers, and other recreational opportunities. Major gaps and barriers, including narrow bridges and roadways, should be targeted as high priority items.

On-Street Designations

Class II bike lanes should be provided as the preferred on-street bikeway facility especially when traffic volumes reach 5,000 vehicles per day. Class III bike routes

should be used for lower volume roadways and where existing constraints prohibit the construction of Class II bike lanes due to cost or other considerations.

Grade-Separated Trails and Paths

Where feasible, trails and paths on grade separated rights-of-way should be implemented. These facilities provide a higher degree of safety and recreational benefit than facilities located on streets. They can also become linear parks, adding to the range of amenities for local communities.

The proposed Commute Facilities System includes a total of about 45.7 miles of facilities. Each route is classified according to standards defined in “Chapter 1000: Bikeway Planning and Design” contained in the Highway Design Manual, Fifth Edition, California Department of Transportation, July 1, 1995 or by locally adopted multipurpose trail standards. The table below shows the number of proposed miles for each classification.

Table 2	
New Commute Facilities	
<u>Bikeway / Trail Classification</u>	<u>Miles</u>
Class I Bike Path	0.9
Class II Bike Lane	17.1
Class III Bike Route	Varies (Established by erecting signs)
Type I Trails	2.9
Type II Trails	21.9
Total	42.8 miles

Some segments of new Commute Facilities can also be classified as Safe Route to School Facilities. Those segments are shown in the Safe Route to School Facility totals.

In some cases, preexisting land use patterns, physical constraints, or fiscal constraints preclude options other than shared on road use with vehicles. Multipurpose trails can be planned most easily in undeveloped areas in conjunction with open space and greenway planning. It is more difficult to plan multipurpose trails retroactively. Conventional on road non-motorized route criteria call for minimum construction standards that enhance the safety of combined vehicle-bicycle use in the traveled way.

2.2.2. California Bicycle Transportation Act Summary

Some state bicycle project funding requires that a bicycle transportation plan be adopted pursuant to criteria specified in California Streets and Highways Code Section 891.2. This plan has been written to comply with the provisions of the Streets and Highways Code and appropriate design criteria as specified by the program for the types of facilities anticipated to be funded from those sources. Those plan elements required by California Bicycle Transportation Act and not contained within this section of the plan are to be found within a supplement within the appendix and within the maps also found within the appendix. A synopsis of elements of a California Bicycle Transportation Act compliant plan is as follows:

A city or county may prepare a bicycle transportation plan which shall include, but not be limited to, the following elements:

- 1. The estimated number of existing bicycle commuters in the plan area and the estimated increase in the number of bicycle commuters resulting from implementation of the plan.*
- 2. A map and description of existing and proposed land use and settlement patterns which shall include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings, and major employment centers.*
- 3. A map and description of existing and proposed bikeways.*
- 4. A map and description of existing and proposed end-of-trip bicycle parking facilities. These shall include, but not be limited to, parking at schools, shopping centers, public buildings, and major employment centers.*
- 5. A map and description of existing and proposed bicycle transport 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 bicyclists and bicycles on transit or rail vehicles or ferry vessels.*

6. *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.*
7. *A description of bicycle safety and education programs conducted in the area are included within the plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the Vehicle Code pertaining to bicycle operation, and the resulting effect on accidents involving bicyclists.*
8. *A description of the extent of citizen and community involvement in development of the plan including, but not limited to, letters of support.*
9. *A description of how the bicycle transportation plan has been coordinated and is consistent with other local or regional transportation, air quality, or energy conservation plans including, but not limited to, programs that provide incentives for bicycle commuting.*
10. *A description of the projects proposed in the plan and a listing of their priorities for implementation.*
11. *A description of past expenditures for bicycle facilities and future financial needs for projects that improve safety and convenience for bicycle commuters in the plan area.*

2.2.3. Existing Conditions

Since the development of the 1989 Nevada County Bicycle Master Plan (NCBMP), four bikeway projects have been advanced to the design and construction phase. Class II bike lanes were constructed on East Main Street between Hughes Road and Brunswick Road, on Ridge Road from Alta Street to Nevada City Highway and on Nevada City Highway from Gold Flat Road to Gates Place. A Class I Bicycle Path has recently been constructed along Penn Valley Drive. These facilities total approximately 5.76 miles in length.

Although the 1989 NCBMP proposed substantial bikeway facilities throughout the County, funding has been limited over the past 10 years. Available bikeway funding through programs such as the State's Local Transportation Fund (LTF) has been dedicated to other non-motorized improvements such as needed pedestrian facilities. As a result, bikeway projects have not been constructed. Additionally, low potential volume of use facilities, such as rural bike routes would have a negligible chance of obtaining funding for the foreseeable future until unmet true higher volume alternative commuter choice facilities have been funded.

Existing bikeway facilities are shown on an exhibit in the Appendix.

2.2.4. Commute Facility Conceptual Cost Estimates

Table 7 contains a unit cost summary for bikeway facilities in Nevada County. These cost estimates are based on actual costs experienced in Nevada County and various other California communities. However, they should be used only to develop conceptual construction cost estimates. More detailed estimates should be developed after preliminary engineering.

Table 3	
CONCEPTUAL UNIT COST ESTIMATES FOR COMMUTE FACILITY CONSTRUCTION	
Facility	Estimated Cost Per Mile ¹
Class I Bike Path	\$250,000
Class II Bike Lane	\$250,000
Class III Bike Routes	See Note 2
Multipurpose Trails (Note 3)	
Type I	\$250,000
Type II	\$150,000
Notes:	
1. Costs can greatly exceed these conceptual cost estimates depending upon specific project physical constraints and right-of-way acquisition costs. These estimates are based upon favorable topographical conditions and minimal right-of-way acquisition costs.	
2. Although no new Class III bike routes are specifically designated by this plan, some new routes will be necessary, especially as short or long term connections between constructed alternative transportation facilities. Many of the roadways designated for these routes will need to be widened to provide a minimum recommended traffic lane width and a minimum shoulder width of about four feet. These anticipated lane and shoulder width improvements are proposed to be funded through the safety element of the Traffic Impact Mitigation Program (Resolution 97-141, April, 1997).	
3. Also includes Safe Route to School Projects, which are considered a type of Multipurpose Trail	

Individual project cost estimates, by type of project, are found below. A map of the project locations is found in the appendix.

**Table 4
Commute Projects
Nevada County Non-motorized Transportation Master Plan**

Corridor	Road/Trail Name	Segment	Lanes or Trail Type	Miles	Cost/Mile (x \$1,000)	Total (X \$1,000)
	Alta Sierra Drive	Dog Bar road to Little Valley Road	Lanes	2.5	\$250	635
	Alta Street	Ridge Road to GV City Limits	Lanes	0.6	250	150
	Banner Lava Cap Rd	Old Tunnel to Idaho Maryland	Type 2	3.3	150	495
4	Brunswick Road	Town Talk to Hwy 174	Type 1	2.9	250	725
5	Combie Road	Hwy 49 to Lakeshore Drive	Class I	0.9	250	225
	Dog Bar Road	La Barr Meadows Rd to Alta Sierra Drive	Lanes	1.8	250	450
	East Bennett	GV City limits to Brunswick	Type 2	2.1	150	315
	East Empire Street	GV City limits to Hwy 174	Type 2	0.8	150	120
13	Glenwood/Sierra College Trail	Sierra College to Nevada City Hwy	Type 2	0.6	150	90
	Hell's Half Acre Trail	Ridge to West Main Street	Type 2	0.3	150	45
2	Idaho Maryland Road	Brunswick to Banner Lava Cap	Type 2	3.0	150	450
	La Barr Meadows	GV City limits to Dog Bar	Lanes	1.7	250	425
	Loma Rica Drive	Brunswick to Charles Drive	Type 2	1.1	150	165
	Loma Rica Ranch Meadow Trail	Brunswick to Idaho Maryland	Type 2	0.3	150	45
	Lower Colfax Road	Rattlesnake to sunshine Valley Road	Type 2	4.3	150	645
	Lower Colfax Road	Sunshine Valley to Mt. Olive Road	Type 2	1.9	150	285
	Lyman Gilmore School Trail	Squirrel Creek to Scotia Pines	Type 2	0.3	150	45
5	Magnolia Road	Kingston Lane to E. Hacienda Dr.	Type 2		Note 1	
	McCourtney Road	GV City limits to Grange	Lanes	1.7	250	425
	Penn Valley Drive	W. of Western Gateway Park	Lanes	0.5	250	125
25	Penn Valley Drive	Spenceville Road to Hwy 20	Lanes	0.6	250	150
	Pleasant Valley Drive	Hwy 20 to LWW Drive	Lanes	1.4	250	350
23	Rattlesnake Road	Hwy 174 to Lower Colfax Road	Type 2	0.3	150	45
	Red Dog Road	Boulder St. to Quaker Hill X Road	Type 2	2.2	150	330
24	Ridge Road	R&R Hwy to Alta Street	Lanes	0.7	250	175
24, 25	Rough and Ready Hwy	Hwy 20 to W. Main Street	Lanes	5.6	250	1,400
29	Spenceville Road	Devonshire Circle to Penn Valley Dr	Type 2		Note 1	
	Squirrel Creek Road	W. Main Street to Adam Avenue	Type 2		Note 1	
12	Empire Mine to E. Bennett	Hwy 174 to E. Bennett	Type 2	0.7	150	105
	Hwy 174	Rattlesnake to Brunswick Drive	Type 2	0.7	150	105
	Hwy 174 (Union Hill School)	Silver Way to Rattlesnake Road	Type 2		Note 1	
	West Main Street	GV City Limits to W Hill Drive	Type 2		Note 1	
		Total		42.8		\$10,862

Note 1: See Safe Route to School Projects (totaled separately)

2.3. Element B: Pedestrian Facilities

2.3.1. Existing Conditions

Not all facilities can be multiple-use. Some exclusively pedestrian sidewalk facilities are appropriate in the more urbanized areas of the county. Normally, pedestrian facilities are accompanied by parallel bicycle facilities, typically bicycle lanes, to further reduce potential conflicts. Pedestrians can legally use bicycle lanes, however, where separate pedestrian facilities are not provided.

The previous practice for sidewalk planning has been to consider each development project individually at the tentative map or site plan approval stage of development to determine if pedestrian improvements are appropriate. This has been partially successful. A map contained within the appendix to this plan contains the following:

1. An inventory of the existing pedestrian sidewalk facilities within the Glenbrook Basin portion of unincorporated Nevada County.
2. A map of the sidewalk segments appropriate to be constructed in the future as frontage improvements by the developers of the adjacent property.
3. A map of “missing links” within the system that escaped prior improvement with the initial development of the fronting properties.

2.3.2. Pedestrian Facility Conceptual Cost Estimates

These “missing links” are appropriate to be improved pursuant to this plan as appropriate funding becomes available. The proposed projects and conceptual costs are found in the following table:

**Table 5
Pedestrian (Sidewalk) Facilities
Nevada County Alternative Transportation Masterplan**

Street	Side of Street	Segment	Length (ft.)	Cost/l.f. ¹	Cost
Brunswick Road	North	175 feet south to 1,000 feet south of Old Tunnel Road	800	\$35	\$28,000
Joerschke Drive	West	Nevada City Highway to 300 feet south.	300	\$35	\$10,500
Joerschke Drive	West	Maltman Drive to 300 feet southwest	300	\$35	\$10,500
Joerschke Drive	East	Nevada City Highway to 300 feet south.	300	\$35	\$10,500
Old Tunnel Road	West	Banner Lava Cap Road to 1,650 ft south	1,650	\$42	\$69,300
Maltman Drive	North	Various segments	475	\$35	\$16,625
Maltman Drive	South	Joerschke Drive to Brunswick Road	1,300	\$35	\$45,500
Nevada City Highway	North	Manor Drive to Glenbrook Drive	1,400	\$42	\$58,800
Nevada City Highway	South	East of Grass Valley City Limits	375	\$42	\$15,750
Nevada City Highway	South	East of Joerschke Drive	300	\$35	\$10,500
Nevada City Highway	South	West of Joerschke Drive	100	\$42	\$4,200
Nevada City Highway	East	Lyon's Restaurant to Skewes Lane	500	\$42	\$21,000
Nevada City Highway	West and North	Glenwood Drive to Nevada City Limits	2,500	\$42	\$105,000
Sutton Drive	West	APN 3540057	300	\$35	\$10,500
Total			10,600		\$416,675

note¹: Cost estimates based upon \$35.00 per linear foot for sidewalk construction and \$42.00 per linear foot for curb, gutter, and sidewalk construction.

General Plan Policy 4.32

Policy 4.32 of the Nevada County General Plan states:

For all discretionary permits within Community Regions, as defined in Policy 1.1 and as shown on the General Plan Land Use Maps, sidewalks are encouraged as frontage improvements for all non-residential projects and for all residential projects with an overall density greater than one dwelling unit per gross acre, or pedestrian use shall be included within the roadway prism.

A map is contained within the appendix that shows all parcels within the community areas that meets the above criteria.

Developers of parcels that are within the spheres of influence of Grass Valley or Nevada City should also make themselves aware of trail and sidewalk plans of the adopted General Plans of those Cities.

2.4. Element C: Safe Route to School Facilities

Assembly Bill 1475 was signed into law by the Governor in October of 1999. It provides for a program to enhance the safety of routes that receive significant school related bicycle and pedestrian use. A map is contained within this plan which indicates school routes suggested for safety enhancement. Some routes will become segments of a larger network.

Existing law requires that certain Federal transportation funds received by the State be spent on specified transportation programs authorized under Federal law. The funds are required to be made available for use in equal amounts on State highways and on local roads. This bill requires the Department of Transportation, in consultation with the Department of the California Highway Patrol, to establish and administer a "Safe Routes to School" construction program pursuant to authority granted under specified federal law and to use Federal transportation funds for construction of bicycle and pedestrian safety and traffic calming projects. The bill requires the department to make grants available to local governmental agencies under the program based on the results of a statewide competition that requires submission of proposals for funding and rate those proposals on specified factors. The bill will require the specified federal transportation funds to be made available so that not less than \$1,000,000 be used for construction grants and the remaining funds for use in approximate equal amounts on State highways, local roads, and the program that the bill will create. The bill will require the department to undertake a specified study and to report to the Legislature on or before December 31, 2001.

The provisions of the bill will remain in effect only until January 1, 2002, and as of that date will be repealed unless a later enacted statute date deletes or extends that date.

2.4.1. Safe Route to School Legislation

The bill establishes the following criteria for rating proposed projects based on statewide criteria:

1. Demonstrated needs of the applicant.
2. Potential of the proposal for reducing child injuries and fatalities.
3. Potential of the proposal for encouraging increased walking and bicycling among students.
4. Identification of safety hazards.
5. Identification of current and potential walking and bicycling routes to school.
6. Consultation and support for projects by school-based associations, local traffic engineers, local elected officials, law enforcement agencies, and school officials.

2.4.2. Safe Route to School Projects and Conceptual Cost Estimates

Table 6 Safe Route to School Projects					
Map Reference	Road/Corridor Name	Facility Concept	Length (miles)(see note)	Cost Per Mile(x \$1,000)	Estimate (x \$1,000)
1	Alta Sierra School	Type II Trail	1.0	\$150	\$150
2	Clear Creek School	Type II Trail	1.0	\$150	\$150
3	Cottage Hill School	Type II Trail	.3	\$150	\$45
4	Grizzly Hill School	Type II Trail	1.0	\$150	\$150
5	Lyman-Gilmore	Type II Trail	1.0	\$150	\$150
6	Malakoff School	Type II Trail	1.0	\$150	\$150
7	Ophir Hill School	Type II Trail	1.0	\$150	\$150
8	Oak Tree School	Type II Trail	1.0	\$150	\$150
9	Pleasant Ridge School	Type II Trail	1.0	\$150	\$150
10	Pleasant Valley School	Type II Trail	1.0	\$150	\$150
11	Ready Springs School	Type II Trail	.6	\$150	\$90
12	Union Hill School	Type II Trail	1.0	\$150	\$150
13	Washington School	Type II Trail	1.0	\$150	\$150
14	Williams Ranch School	Type II Trail	1.0	\$150	\$150
		Totals	12.9 miles		\$1,935
Note: Within 1/2 mile radius of school on same side of road as school where practical.					

3. Summary of Conceptual System Costs and Potential Funding Sources for Elements A, B and C

3.1. Conceptual System Costs

Using the cost information in the Commute Facility Element, Pedestrian Facility Element, and Safe Route to School Element conceptual construction costs were developed for the proposed system. A summary of these costs is presented in the following table by type of facility.

Table 7		
COST OF PROPOSED SYSTEM BY TYPE		
Commute, Safe School Route, and Pedestrian Facilities	Miles	Cost
Class I Bike Path	.9	\$225,000.00
Class II Bike Lane	17.1	\$4,275,000.00
Multipurpose Trail		
Type I	2.9	\$725,000.00
Type II	21.9	\$3,285,000.00
Safe School Route	12.9	\$1,935,000.00
Pedestrian Facilities	2.0	\$417,000.00
Totals	60.6 miles	\$10,862,000.00

3.2. Potential Funding Sources

Implementation of the proposed system will require funding from local, State, and Federal sources and coordination with other agencies. In some cases, portions of the proposed system will be completed as part of future development and road widening and construction projects. For those portions that will rely on other funding mechanisms, the following discussion provides descriptions of the more effective potential funding sources.

3.2.1. Federal Sources

Federal funding through the ISTEA (Intermodal Surface Transportation Efficiency Act) program could provide the bulk of non-local funding. For Nevada County, applicable ISTEA programs include the following:

- Surface Transportation Program (STP)

- National Recreational Trails Fund

- Section 402 (Safety) Funds

- Scenic Byways Funds

- Transportation Enhancement Activities (TEA) Funds

- Public Lands Highway Funds

ISTEA funding is administered through the State and regional governments, in this case the Nevada County Transportation Commission. Most of the funding programs are transportation versus recreation oriented with an emphasis on (a) reducing auto trips and (b) providing an Inter-modal connection. Funding criteria includes completion and adoption of a bicycle master plan, quantification of the costs and benefits of the system (including reduced vehicle trips and reduced air pollution), proof of public involvement and support, CEQA compliance, and commitment of local resources. In most cases, ISTEA provides matching grants of 80 to 90 percent.

Other Federal funding sources include the following:

- Land and Water Conservation Fund Program (administered locally by the California Department of Parks and Recreation, Local Assistance Section)
- Recreation and Public Purposes Act (Bureau of Land Management)
- Schools and Roads Grants to States (United States Forest Service)

3.2.2. State Sources

The following State sources provide funding that is applicable to bikeway facilities. Such facilities also benefit and are used by other non-motorized uses groups.

Bicycle Lane Account The State Bicycle Lane Account (BLA) is an annual program that is available for funding bicycle projects. Available as grants to local jurisdictions, the emphasis is on projects that benefit bicycling for commuting purposes. The Bicycle Lane Account (BLA) provides State funding for projects that improve safety and convenience for bicycle commuters. Streets and Highways Code Section 893 describes the types of projects eligible for BLA funds. The Bicycle Facilities Unit (BFU) in the Office of Local Programs administers the (BLA) Program in cooperation with the Office of Local Assistance in each Caltrans district. Cities and counties are eligible to apply for BLA funds and may apply on behalf of an agency that is not a city or county but proposes construction of a bicycle project.

To be eligible for BLA funds, a local agency must have a current (as defined in the schedule for each annual application cycle) Bicycle Transportation Plan that addresses the elements described in Section 891.2 of the Streets and Highways Code and complies with the following:

1. The local agency's governing board must adopt the plan and certify that it complies with Streets and Highways Code Section 891.2 and the regional transportation plan, and
2. The appropriate transportation planning agency specified in Section 29532 of the Government Code must review the plan and certify that it complies with Streets and Highways Code Section 891.2 and the regional transportation plan, and
3. The Caltrans Bicycle Facilities Unit (BFU) must review and approve the plan.

Section 893.6 specifies that no agency may receive more than 25 percent of the total funds transferred into the BLA in a single fiscal year. Section 891.4(b) requires local agencies to fund at least ten percent of the total project cost. Applications should be submitted only for projects where the right-of-way will be clear prior to award of contract and where cooperative agreements with other groups such as railroads, utility districts, flood control districts, coastal commissions, etc., will be completed prior to award of contract. Applications must include a description of the project and an estimate of project costs including preliminary and construction engineering, right-of-way, and construction. The estimate should include only those items for which the local agency intends to claim reimbursement. For example, if the local agency does not want to be reimbursed for preliminary engineering and/or right-of-way, these items should be shown as zero costs. A detailed estimate is not necessary, but the BFU needs enough information to ensure that the proposed project is consistent with the program guidelines. Under state law, BLA projects must conform to the minimum design standards for bikeways in Chapter 1000 of the Highway Design Manual.

Local Transportation Fund (LTF) Under Article 3 of the Transportation Development Act (TDA), up to two percent of the LTF allocation to cities and counties can be used for bicycle and pedestrian projects. Revenues to the LTF program are derived from 1/4¢ of the statewide sales tax. These funds are distributed through the Nevada County Transportation Commission (NCTC) to local jurisdictions based on a rotating schedule.

AB 2766 Motor vehicle registration surcharge fees are available for bicycle and pedestrian projects that can improve air quality. The Northern Sierra Air Quality Management District allocates about \$100,000 annually from this program.

Environmental Enhancement and Mitigation Program (EEM) - Bicycle projects can qualify for EEM funds if they meet the program's requirements. Any non-profit organization can sponsor projects, which are submitted to the State Resources Agency for evaluation in June/July of each year.

Flexible Congestion Relief Program (FCR) Bicycle projects are eligible to compete for FCR funds. Projects must provide congestion relief and they must be included in an approved Regional Transportation Improvement Program. Local agencies must submit projects for FCR funding to NCTC.

Petroleum Violation Escrow Account (PVEA)- PVEA projects must save energy and provide restitution to the public. The annual program funding level varies and allocations to local agencies are made through special legislation. Following legislation appropriating funds, the California Energy Commission and the U.S. Department of Energy review the funding applications to confirm energy savings and public restitution calculations. The City of Vallejo in Solano County, CA used PVEA funds for placing bike racks on local buses.

3.2.3. Local Sources

A variety of local sources are available for funding bikeway and pedestrian improvements, however, their use is often dependent on political support:

New Construction - Future road widening and construction projects are one means of providing on street and separated path bikeways. To ensure that roadway construction projects provide these facilities where needed, roadway design standards need to include minimum cross-sections that have sufficient pavement for on-street bikeways and the review process for new development should include input pertaining to consistency with the proposed system. Future development in Nevada County will contribute to the implementation of new bikeway facilities if discretionary development projects are conditioned and roadway project designs are specifically required to include bikeway and trail facilities. This can also included publicly constructed projects, which are often modified to minimize controversial bicycle- and pedestrian- friendly lane widening and shoulder improvements.

Traffic Impact Mitigation Fees - Another potential local source of funding is developer impact fees, which are typically tied to trip generation rates and traffic impacts produced by the proposed development. Road right-of-way amenities that are bicycle and pedestrian friendly can be constructed incidental to other road improvements done to accommodate increased vehicle traffic. Additionally, a developer may reduce the number of trips (and hence impacts and cost) by paying for on- and off-site bikeway improvements which will encourage residents to bicycle rather than drive.

Assessment Districts - Different types of assessment districts can be used to fund the construction and maintenance of bikeway facilities. Examples include Mello-Roos Community Facility Districts, Infrastructure Financing Districts (SB 308), Open Space Districts, or Lighting and Landscape Districts. These types of districts have specific requirements relating to their establishment and use of funds.

Other Sources - Local sales taxes, developer or public agency land dedications, private donations, and fund-raising events are other local options to generate funding for bikeway projects. Creation of these potential sources usually requires substantial local support.

4. Implementation of Elements A, B and C

Connections between Land Uses

New residential development proposals should identify and provide, consistent with General Plan policies, pedestrian and bicycle facilities between the site and nearby areas of community activity, such as shopping centers, schools, parks, and transit stops. Development plans should identify existing and proposed bus routes, pullouts or other transit facilities located nearby. Applicants for residential development along existing or proposed transit routes should consult with the transit agency on necessary transit improvements and assist in providing pedestrian and bicycle connections to these improvements. Pedestrian and bicycle connections should be provided between new residential areas and centers of employment. Sidewalks and bikeways should be provided along the frontage of residential development on arterial and collector streets within community areas.

The site design of major buildings in commercial and residential development and centers of employment should facilitate pedestrian and bicycle use. Secure and convenient bicycle storage and parking should be provided at major multi-family residential, commercial and office structures.

Available funding for projects which serve a regional need but are not fundable from local sources should be actively sought and implemented.

System Phasing

The specific implementation of any given route, with all other things considered equal, should be based on the following criteria:

- Where an opportunity, such as a road widening or repaving, makes implementation favorable;
- Where an eminent loss of an opportunity makes implementation necessary;
- Where resolution of a major obstacle makes implementation necessary; and
- Where the segment is not disconnected or otherwise poorly accessible from the rest of the system.

In many situations, the most needed improvements to the system may not be implemented first. In these cases, external factors such as new road construction create opportunities to provide new facilities without consideration for need. Therefore, the proposed system does not include a definitive ranking of the specific routes, but it does include the following list of high priority routes:

High Priority Projects

(in alphabetical order)

Banner Lava Cap Trail

Brunswick Trail

Combie Road Trail

Helling Library Pedestrian Path

Joerschke Drive Sidewalk (east side)

Maltman Drive Sidewalk (north side)

Nevada City Highway Sidewalks (all)

5. Appendices

5.1. Nevada County General Plan Policies

The following are Nevada County General Plan Policies relevant to elements of this plan:

5.1.1. Chapter 4- Circulation

Policy 4.7

Consistent with legal and funding constraints, the following types of road improvement projects shall be emphasized in the County's Capital Improvement Program:

... (d) Projects needed to improve the use of other modes of transportation, including but not limited to, public transportation facilities (transit facilities and stops), park and ride facilities, bikeways, non-motorized trails and pedestrian facilities.

Policy 4.27

Nevada County shall cooperate with the Nevada County Transportation Commission to prepare and implement a Pedestrian Master Plan that provides for a comprehensive system of sidewalks, pathways and trails within established community boundaries that are designed to encourage pedestrian use. Emphasis will be placed on connecting residential areas to commercial and industrial areas; development of direct, efficient, safe and aesthetically pleasing routes; and practical mechanisms for utilizing existing public and quasi-public rights-of-way for pedestrian use.

The Plan shall be implemented through (but not limited to) the development review process to ensure that:

- Routes are analyzed and designed in relation to a project's neighboring uses and development pattern;
- Convenient and pre-existing access is retained and improved, if feasible; and
- New development adjacent to or including any designated pedestrian trail shall be coordinated with provision of such trail under Policy 4.33.

Policy 4.28

Nevada County shall cooperate with the Nevada County Transportation Commission to update and implement the Nevada County (*countywide*) Bicycle Master Plan. The updated Master Plan shall include practical mechanisms for utilizing existing public and quasi-public fees, and be implemented through (but not limited to) the development review process to ensure that:

1. Routes are analyzed and designed in relation to a project's neighboring uses and development pattern;
2. Convenient and pre-existing access is retained and enhanced; and
3. New development adjacent to or including any designated bicycle trail shall be coordinated with provision of such trail under Policy 4.33.

Policy 4.32

For all discretionary permits within *Community Regions*, as defined in Policy 1.1 and as shown on the General Plan Land Use Maps, sidewalks are encouraged as frontage improvements for all non-residential projects and for all residential projects with an overall density greater than one dwelling unit per gross acre, or pedestrian use shall be included within the roadway prism.

Policy 4.33

The County shall impose comprehensive development fees in amounts sufficient to offset the costs identified as the appropriate share of the bicycle and pedestrian improvements under the Bicycle and Pedestrian Master Plans and Non-Motorist Multi-Purpose Transit Master Plan pursuant to the adoption of the General Plan which are necessary to serve future development.

The comprehensive development fee structure shall ensure that future growth fully mitigates its direct and cumulative impacts on the County. The County shall pursue additional, non-development-based funding to make up for the past incurred deficiencies and ensure that such fees are not levied until the funding to make up these past deficiencies is assured.

Policy 4.34

County road improvement projects shall incorporate improvements consistent with the Nevada County Pedestrian and Bicycle Master Plans. Impact fees shall be adopted to offset costs of constructing these facilities.

Policy 4.35

Additional sources of funding to enhance the development of bicycle facilities shall be actively sought. Funding for facilities, which enhance recreational bicycle use, shall be sought from appropriate sources.

Policy 4.36

Bridges and other public road facilities that are designated as components of or connections for non-vehicular trails and pathways, as shown on the Bicycle, Pedestrian or Non-Motorized Trail Master Plans, shall be designed and constructed to ensure the safety and security of all users.

5.1.2. Chapter 5 - Recreation

Policy 5.11

Cooperate with other public and private entities providing recreation activities to coordinate activities in the County and eliminate duplication of recreational services. The County shall encourage those agencies providing recreational programs and activities to continue those programs and activities.

Policy 5.12

The joint use of facilities (such as public schools and public and private open spaces) and the joint location of school-park sites shall be encouraged to efficiently use all areas offering recreation potential.

Policy 5.13

Encourage cooperation among local, Stated and Federal agencies to maximize the use of public land and facilities for public use and recreation.

Objective 5.6

Implement a comprehensive, and where possible, integrated county-wide trail system.

Policy 5.14

Provide a county incentive program which encourages retention of private open space by including such incentives as, but not limited to, tax incentives, insurance programs, and public ownership of open space easements.

Policy 5.15

The County shall provide for the inclusion of bikeways, walkways, and non-motorized trails in appropriate locations within parks. Where feasible, park sites shall be integrated with the County Bicycle Master Plan and with the Non-Motorized Multi-Purpose Trails Master Plan.

Policy 5.16

The County shall continue to implement the County Bicycle Master Plan for its recreational value, as well as to provide for non-motorized access to park and recreation facilities.

Policy 5.17

The County shall implement the Non-Motorized Multi-Purpose Trails Master Plan to provide multipurpose recreational opportunities throughout extensive areas of the County, and to improve access to other recreational opportunities for residents in both *Community Regions* and *Rural Regions*.

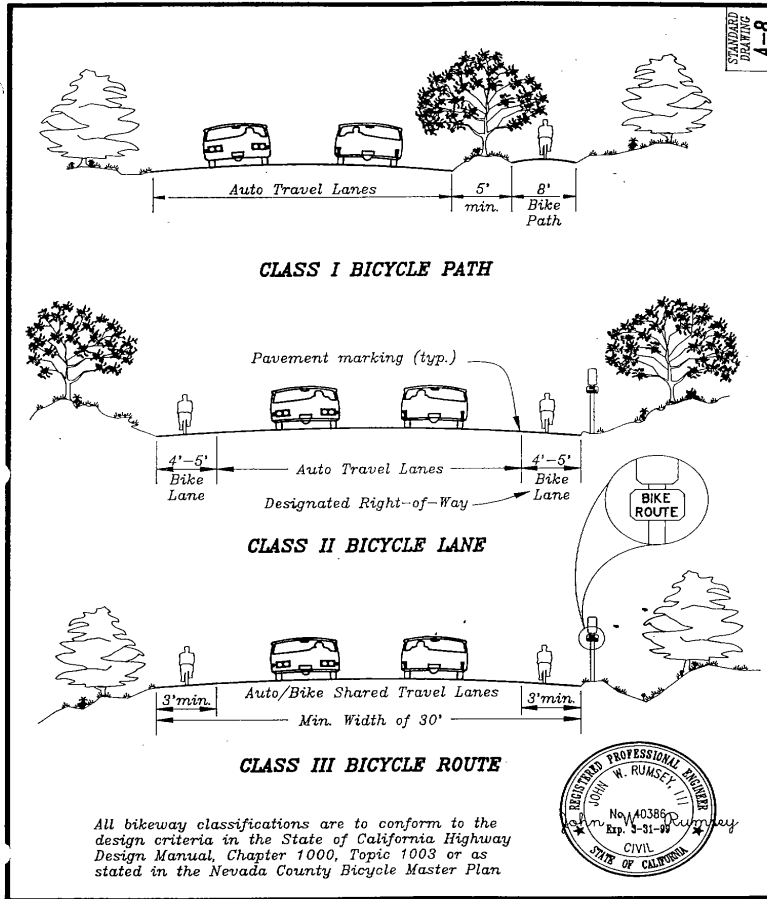
5.1.3. Chapter 6: Open Space

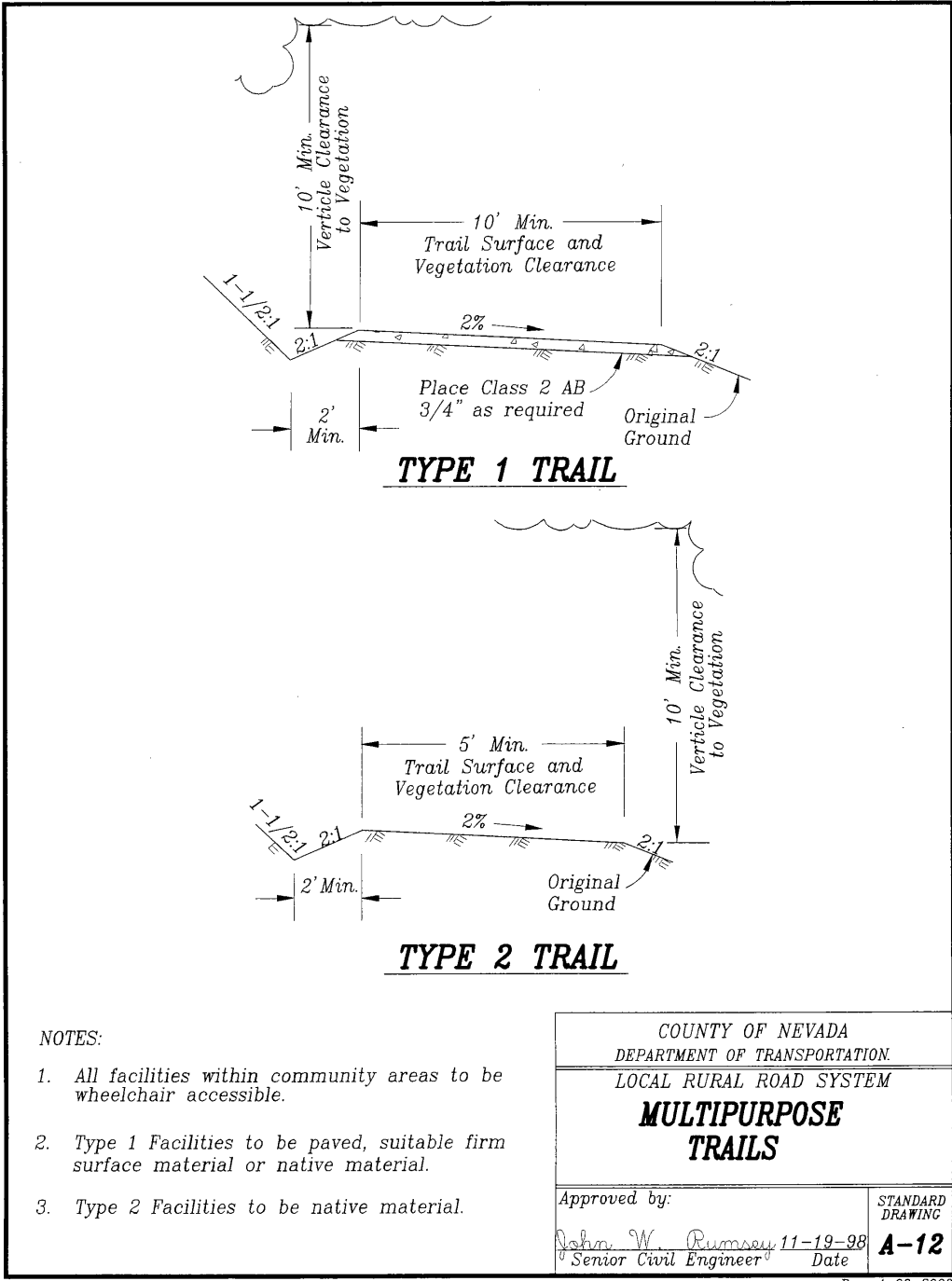
Policy 6.6

Provide for, where feasible, continued access to open space and public resources by ensuring that all discretionary projects are consistent with development of the Nevada County Non-Motorized Trails Master Plan.

5.2. Typical Facility Design Standards Facility Design Standards

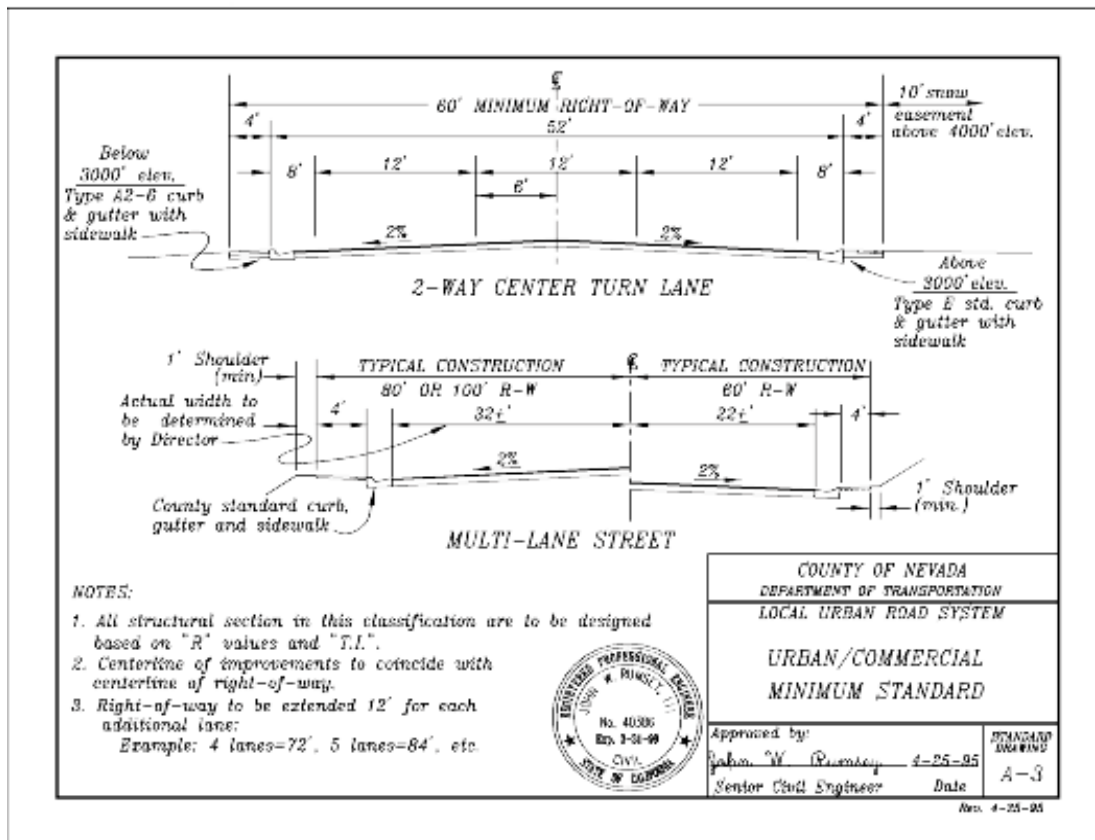
5.2.1. Typical Class I, II, III Bicycle Facility

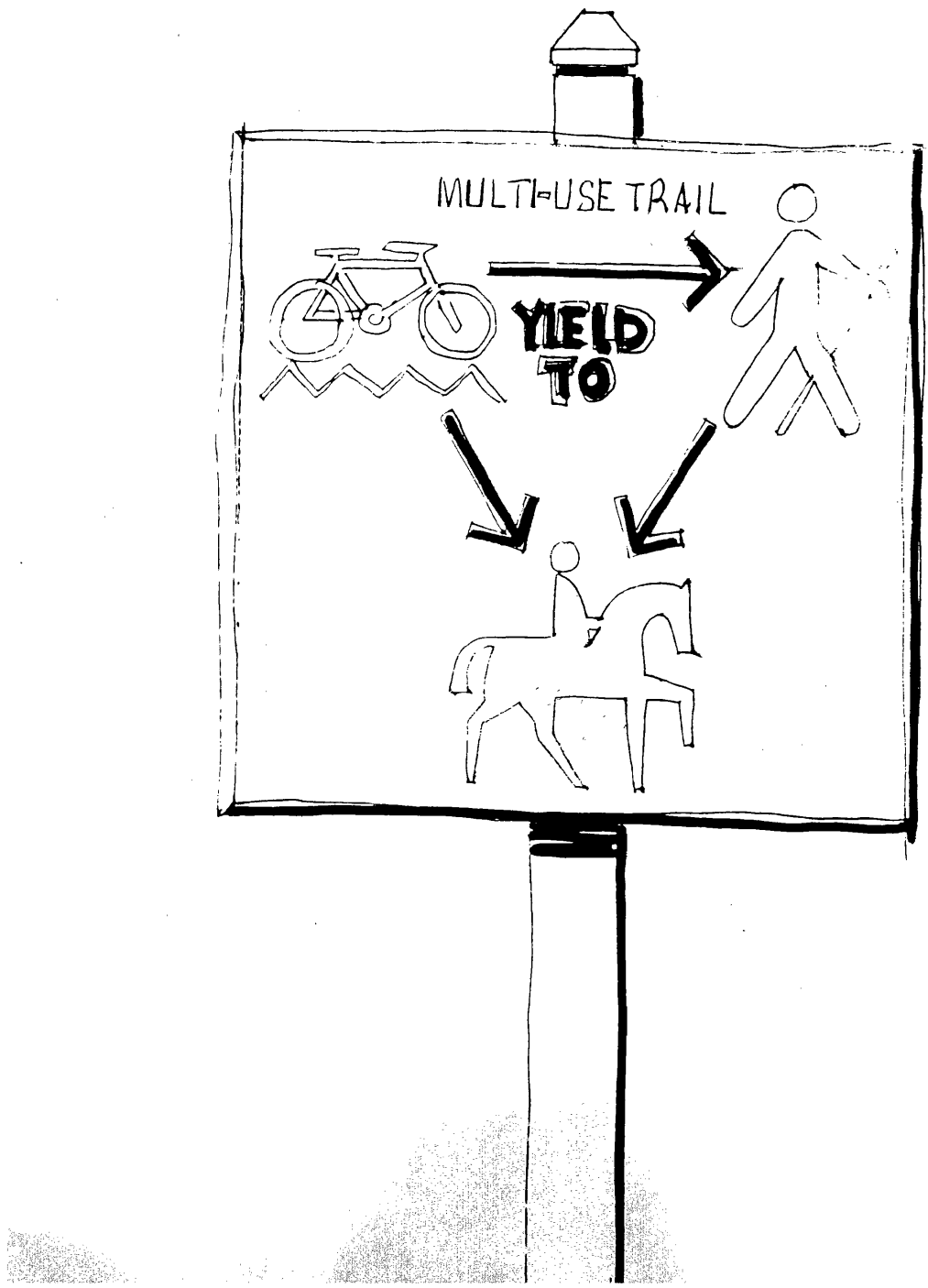




5.2.2. Multipurpose Trail Typical Standard

5.2.3. Urban / Commercial Typical Minimum Standard





5.2.4. Multiple User Trail Sign

5.3. Supplement For Compliance with California Bicycle Transportation Act of 1994¹

5.3.1. Regional Considerations

Regional Connections

Nevada County is bordered by Placer County, Yuba County, and Sierra County. Highways 20, 49, 89, and 174 all provide regional roadway connections to these counties and their urban areas. Currently, Highways 49 and 89 are the only existing regional roadways with sufficient shoulders to accommodate bicycle travel between major destinations in Nevada and Placer Counties. Bicycle travel in Placer County on Highway 89 is also facilitated by a Class I bike path known as the Truckee River Bike Trail that parallels Highway 89 along the Truckee River from Tahoe City to the Midway Bridge near Squaw Valley. This bike path is heavily used by residents and visitors to the Tahoe area and could be extended to Truckee to facilitate interregional bicycle travel.

5.3.2. Multi-modal Connections

Multi-modal connections in Nevada County are especially important due to barriers for continuous bicycle travel such as topography, lack of existing continuous bikeway facilities, or impractical trip lengths. Existing public transit service in Nevada County provides fixed-route and demand responsive service for both residents and visitors.

Western County

- Gold Country Stage (fixed-route service)
- Main Street Express - Historic Trolley Service (fixed-route service between the downtown areas of Grass Valley and Nevada City)
- Placer County Transit (fixed-route service from Placer County to Lake of the Pines)

¹ Portions of this report were originally contained within a draft report prepared for the Nevada County Transportation Commission entitled "Nevada County Bicycle Plan Update", June 1996, Fehr & Peers Associates, Inc.

Eastern County

- Tahoe Area Rapid Transit (fixed-route service in the Tahoe/Truckee area operated by Placer County)
- Truckee Trolley (fixed-route service)
- Northstar Shuttle (demand responsive)
- High Sierra Senior Citizens (demand responsive)

The combination of these services offers a high degree of accessibility and mobility to Nevada County residents and visitors. Bicyclists often rely on transit service to transfer them to destinations safely when barriers to continuous travel are present. Currently, bike racks are available on the Gold Country Stage, Main Street Express, Tahoe Area Rapid Transit, and Truckee Trolley services. Although bikes are allowed on most other transit services, bike racks provide the highest degree of convenience for bicyclists and transit riders.

Another important component of ensuring that bicyclists can take advantage of transit services is the availability of transfer stations with secure bicycle parking. Major multi-modal transfer locations in Nevada County include the following (see Figure 3):

1. Truckee Multi-Modal Transfer Center (transit services include AMTRAK, Greyhound, Tahoe Area Rapid Transit, Truckee Trolley, Northstar Shuttle, and other private bus services)
2. Grass Valley Transfer Station (transit services include Gold Country Stage and the Main Street Express)
3. Nevada City Transfer Station (transit services include Gold Country Stage and the Main Street Express)
4. Gold Country Stage Terminal Station at the Nevada County Health, Education, and Welfare (HEW) Building.

Other potential multi-modal transfer points typically include park-and-ride lots. Nevada County has five Caltrans operated park-and-ride lots as shown in Figure 3. Specific park-and-ride lot locations and the number of bike lockers available are listed below.

Table 8
MULTI-MODAL TRANSFER LOCATIONS

Park-and-Ride Locations	Number of Bike Lockers
Highway 49 at Highway 174	8
Highway 49 at Lime Kiln Road	0
Highway 49 at Streeter Road	4
Highway 20 at Pleasant Valley Road	0
Highway 20 at Penn Valley Road	0

In the eastern area of the County, Caltrans does not operate any park-and-ride lots. Nevertheless, approximately 14 percent of eastern Nevada County residents car-pool or van-pool to work according to the 1990 Census Journey to Work statistics. Therefore, eastern Nevada County ride sharing participants may be using more informal parking areas such as those provided at local shopping centers. These informal sites need to be identified and bicycle parking provided.

5.3.3. Support Facilities

Bikeway support facilities include physical infrastructure designed to accommodate or promote the use of bicycles. Examples include bicycle racks, bicycle lockers, restrooms, and shower facilities. A windshield survey of major shopping centers, schools, parks, and employment centers found bike racks located in some locations, but no evidence of other support facilities such as bicycle lockers, restrooms, or shower facilities dedicated for bicyclists. Support facilities are important, because potential riders can be discouraged from

riding if they think that their bicycle may be stolen or vandalized or if sufficient facilities are not provided to make bicycling convenient.

In many cities and counties, the installation of secure bicycle parking is required as part of local transportation system management plans or the zoning code to encourage the use of bicycles as an alternative to automobile use. For example, Yuba City requires the provision of bicycle racks as part of their zoning code while similar requirements apply in the City of Roseville as part of their transportation systems management program. Based on available information, similar standards are not required in Nevada County jurisdictions.

5.3.4. Safety Programs

Safety is a major concern of both existing and potential bicyclists. For those who ride, safety is typically an on-going concern and sometimes a distraction. Potential riders often consider safety one of the most compelling reasons not to ride. These reasons make safety education for both children and adults an important component of this plan. Existing bicycle safety programs in Nevada County were reviewed as part of this update effort. The results are summarized below: Educational Programs

Programs to teach existing and potential bicyclists about the fundamentals of bicycle riding are important to establishing good riding habits. Currently, elementary school children in Nevada County are given some bicycle-riding safety education by law enforcement officials. The following step is recommended to build upon this effort.

- Continue and expand the current bicycle education program for school children. The existing programs are currently offered on an as needed basis by a number of law enforcement agencies without any interagency cooperation. A coordinated proactive effort between the California Highway Patrol and local law enforcement agencies would be more efficient and productive.

Table 9

BICYCLE SAFETY EDUCATION PROGRAM SUMMARY	
Agency (Program Name)	Program Functions
<p>CHP Grass Valley Bicycle Safety Program</p>	<p>The program organizes safety courses that include roadway and bicycle safety. The safety courses and seminars are mainly offered at grade schools (K-6) in Grass Valley and surrounding areas. The courses are usually offered on a need basis i.e., when schools request safety courses and seminars.</p>
<p>CHP – Truckee (No program name)</p>	<p>The program organizes safety courses that include roadway and bicycle safety. The program also organizes bicycle rodeos. The safety courses and rodeos are mainly offered at schools (K-12) in the Truckee and North Lake Tahoe areas. They are usually offered on an as needed basis when schools request safety courses and seminars.</p>
<p>Nevada County Sheriff's Department (Cadet Program)</p>	<p>The program organizes safety courses that include roadway and bicycle safety. Occasionally, the program also organizes public workshops at shopping malls. The safety courses and rodeos are mainly offered at elementary schools on an as needed basis when schools request safety courses and seminars.</p>

5.3.5. Analysis of Demand

The objective of analyzing bicycle travel demand is to identify existing bicycle ridership levels and travel patterns, along with projected future use and possible methods for stimulating additional ridership. This section identifies the location of existing major activity centers likely to attract bicycle trips, and provides information about population and employment trends and their influence on bicycle travel demand. In addition, this section contains the results of a needs and attitude survey conducted for the 1989 Nevada County Bicycle Master plan (NCBMP).

5.3.6. Existing Major Activity Centers

One purpose of a bikeway master plan is to provide improved linkages from residential areas to employment, commercial, educational, and recreational centers. These linkages support bicycle travel demand for both commuter and recreational trip purposes. Major activity centers in Nevada County were mapped as part of the 1989 NCBMP and include regional commercial areas, large residential developments, employment and educational centers, schools, and parks (see next page)). Most of these centers are located within the urban areas around Grass Valley, Nevada City, and Truckee with the exception of larger residential developments such as Lake of the Pines, Lake Wildwood, and Alta Sierra. Based on a review of the proposed bikeway system contained in this plan, these centers would be well served by planned bikeways.

5.3.7. Population and Employment Trends

The following discussion contains estimates of existing, and forecasts of future, population and employment levels to determine trends and how they affect demand for bikeway facilities in Nevada County.

Existing Population and Employment

In 1995, Nevada County had an estimated population of 85,900 persons and an estimate total employment level of 38,430 persons according to the Sierra Planning Organization/Sierra Economic Development District. Table 2 shows the breakdown of these population and employment estimates for both incorporated and unincorporated areas of the County.

TABLE 10		
1990 NEVADA COUNTY POPULATION AND EMPLOYMENT ESTIMATES		
City/Jurisdiction	1995 Population	1995 Employment
Nevada County	85,900	38,430
Grass Valley	9,250	6,240
Nevada City	2,820	
Truckee	11,300	3,600
Unincorporated Areas	62,500	28,600
Source: Sierra Planning Organization/Sierra Economic Development District, 1996.		

As shown in Table 1, most of County's population and employment is located in unincorporated areas. A review of development patterns in the County revealed that much of the unincorporated development is located adjacent to urban centers such as Grass Valley, Nevada City, and Truckee or independent development such as Lake Wildwood, Alta Sierra, and Lake of the Pines Subdivisions.

Future Population and Employment

Nevada County is expected to experience at least moderate levels of growth over the next 20 to 25 years. By 2015, the population is expected to reach about 162,000, which represents about an 89 percent increase above 1995 levels (Nevada County Planning Department, 1995).

Although formal forecasts of employment are not available for 2015, the Sierra Planning Organization/Sierra Economic Development District expects similar levels of growth.

Future growth and changes in population and employment are important to bikeway planning for two reasons. First, new developments will require new and upgraded roadways which would provide on-street bikeways as part of the standards recommended for this plan. Some of the cost of the proposed system, therefore, could be borne as part of the cost of developing new or widening existing roadways.

Almost all communities in Nevada County are projected to experience at least moderate growth over the next 20 to 25 years, which implies that there will be additional demand placed on the area's roadway system. The resulting need for enhanced capacity of the roadway system may also present opportunities for the expansion of the regional bikeway system. Unfortunately increased traffic will also degrade the on-road facility bicycle safety. This is a further impetus to create and preserve off-road routes.

Second, changes in land use patterns impact average commute distance, which in turn affects the attractiveness of bicycling as a commute mode. From a bicycling perspective, policies such as the Central Themes behind the Nevada County General Plan that encourage a balance between residential and employment activities, higher land use densities, and an increase in local employment is a favorable step. Further, focusing new development within or near Community Regions will improve the County's ability to provide these areas with bikeway facilities.

5.3.8. Bicycle Ridership Levels

Bicycle ridership levels are not easily measured or projected for an entire County without extensive data collection efforts. Existing and available data currently includes the 1990 Census, while projections regarding future travel demand are limited to just vehicle trips for Nevada County. With this limited amount of information, the following discussion describes both existing and future bicycle ridership levels and their relationship to the availability of a comprehensive bikeway system.

Existing Bicycle Ridership Levels

According to a recent Lou Harris Public Opinion Poll, nearly 3 million adults, or about one in 60, already commute by bike nationwide. This number could rise to 35 million if more bicycle friendly transportation systems existed (USDOT, 1994). The concept of "demand" for bicycle facilities is difficult to measure. Unlike automobile use, where historical trip

generation studies for different types of land uses allows an estimate of future "demand" for travel, no such methodology exists for bicycles.

A common term used in describing demand for bicycle facilities is "mode split." Mode split refers to the form of transportation a person chooses to take, be that walking, bicycling, using public transit, or driving. Mode split is often used in evaluating commuter alternatives such as bicycling, where the objective is to increase the "split" or percentage of people selecting an alternative means of transportation. From the 1990 Census, mode split information is available for the journey-to-work. This information is presented in Table 3 for Nevada County.

Table 11	
1990 CENSUS JOURNEY-TO-WORK MODE SPLIT	
Mode (Home-based work trips):	Nevada County
Drive Alone	77.4 %
Carpool	11.5 %
Public Transportation	0.4 %
Bicycle	0.2 %
Walk	3.0 %
Other	7.5 %

As shown in Table 2, less than one percent of home-based work trips for Nevada County residents are made by bicycle. However, the Census data does not include trips from home-to-school in the journey-to-work data set. This is important omission because home-to-school trips occurring during the same morning peak hours as typical commuter trips.

Since many children ride bicycles to school, the actual number of bicycle trips during the morning peak hour associated with commuters is expected to be slightly higher. Nevertheless, with less than one mile of existing bikeways in Nevada County, residents may be discouraged from riding due to perceptions of safety or the lack of a complete bikeway system.

Future Bicycle Ridership Levels

Future bicycle ridership levels will depend on a number of factors such as demographics, the availability of bikeway facilities, and the location, density and type of future land development. According to the projections from the Nevada County Travel Demand Model, total daily vehicle-trips for Nevada County will increase about 54 percent from 362,390 to 556,520 between 1994 and 2010.

Without a comprehensive bikeway system in place and assuming the existing mode split does not change and would be applicable to daily conditions, bicycle trips would increase by a similar percentage to about 1,100 trips per day in 2010. According to *The National Bicycling and Walking Study: Transportation Choices for a Changing America*, a much larger increase, upwards of two percent of all daily trips, could occur if the proposed system of bikeways described in the next section is implemented (Federal Highway Administration, 1994). With this type of increase total daily bicycle trips would exceed 11,000.

5.3.9. Needs and Attitude Survey Report

As part of the original 1989 NCBMP study, surveys were distributed to bicycle shops in Grass Valley, Nevada City, and Truckee. This survey was designed to gain information from cyclists about bicycle use and bicycle needs in Nevada County. Important findings from this survey are summarized below:

1. The most common type of bicycling activity in Nevada County is casual recreational riding followed by trips to work and shopping.
2. The greatest factor for not riding more often was due to concerns about road hazards and unsafe motorists.
3. The most preferred type of new route was Class I bike paths followed by Class II bike lanes and Class III bike routes.

Many of the bikeway routes in the unincorporated portion of Nevada County provide regional connections and do not necessarily serve existing urbanized areas where the potential for bicycle travel demand would be the highest. Nevada County officials are concerned about the cost of implementing routes outside the urban areas given the limited potential for bicycle travel. Since many of the regional routes proposed in both the 1989 and 1996 plans use state

highways such as Highway 20 and 49, the County should rely to some degree on Caltrans in constructing and maintaining these routes. The design standards for state maintained highways include minimum shoulder widths that are sufficient to accommodate bicycles. Therefore, the County should work with Caltrans to ensure that the state highway system is properly upgraded and maintained while focusing the investment of local funding for bikeway facilities on County facilities.

5.3.10. Regional and Multi-modal Connections

Multi-modal connections allow bicyclists to transfer to other modes such as buses. Including these components in the discussion about the proposed system is important for the development of a bikeway system that provides a high degree of both accessibility and mobility.

Regional Connections

In the development of the proposed bikeway routes, an effort was made to assess the potential connectivity of Nevada County bikeways and trails with existing or planned bikeways in the surrounding area.

Multi-Modal Connections

The single most obvious multi-modal connection for bicycle use is adequate vehicle parking at trailheads. Parking can also be provided at potential vehicle to bicycle transition points along commute routes.

The proposed bikeway system includes routes that overlap with existing transit routes and stations. To facilitate use of these routes by bicyclists, all transit buses and major transit stations should be equipped with bike racks. Existing transit stations or stops that are accessible by the proposed bikeway system are listed below.

Existing Transit Stations or Stops

National Hotel Transfer Center	Glenbrook Shopping Center
Church Street Transfer Center	Pine Creek Shopping Center
Sierra College	Fowler Shopping Center
Eric Rood Administration Center	Gold Country Shopping Center
HEW Building	Penn Valley Shopping Center
SPD Shopping Center	Wildwood Commercial Center
Grass Valley Shopping Center	Truckee Multi-Modal Center
North San Juan Community Center	Camptonville
Colfax	Auburn

5.3.11. Support Facilities and Programs

Support facilities and educational programs are an important part of the proposed bikeway system. User surveys indicated that the lack of bicycle facilities was an important reason why some people did not ride bicycles more often. The review of bicycle safety in the study area showed that educational programs could benefit children (and adults) in learning basic bicycle safety. This section, therefore, contains recommendations for developing bicycle parking, shower and locker facilities, improved intersection crossing protection, and establishing educational programs.

Bicycle Parking, Shower, and Locker Facilities

Support facilities such as bicycle parking, shower and locker facilities can encourage bicycling by reducing the threat of theft and making riding more convenient. Properly designed bike racks should be available at major bicycle destinations in Nevada County. For the most part, these facilities should be required for new developments that are likely to experience a demand for bicycle parking such as commercial areas, parks, libraries, schools, and major employers. In some cases, though, existing activity centers should add bicycle parking facilities. The type of parking facility (bike rack or bicycle locker) should be selected based on (a) cost, (b) ease of use, and (c) ability to prevent theft.

Access to shower and locker facilities may help encourage people to commute by bicycle, particularly in the summer months. Many jobs require employees to wear specific uniforms or formal attire such as suits and ties. By having shower and locker facilities, employees have the option to shower and dress at work. This is an important consideration for bicycle commuters since they cannot control their travel environment and are much more dependent on support facilities located at the workplace.

The following action is recommended for increasing the number of locations with bicycle parking, shower, and locker facilities:

- Create incentives that would increase the installation of bicycle parking, shower, and locker facilities in major new commercial / industrial projects. This could be incorporated into a transportation systems management program or traffic impact mitigation program.

Crossing Protection

These improvements should be targeted for major intersections on the proposed bikeway network, and at locations where school children cross a busy street to gain access to their school. The following step is recommended to build upon this effort:

- Use signing, striping, crossing guards, flashing beacons, and pedestrian actuated signals at street crossings with high levels of pedestrian and bicycle demand when warranted by engineering standards.

5.3.12. Air Quality Benefits

The percentage of bicycle ridership travel in Nevada County is expected to increase due to implementation of the bikeway-multipurpose trail master plan. Year 2010 forecasts of daily bicycle trips estimate that the mode share for bicycle trips will range from two to four percent. Each bicycle trip represents a potential reduction in air pollutant emissions, especially if it replaces a vehicle trip.

For the purposes of this study, potential air quality benefits were measured using emission reduction calculations developed by the South Coast Air Quality Management District as part of the California Environmental Quality Act Air Quality Handbook. In general, the calculations consider the number of bicycle trips, the average length of a bicycle trip, and emission factors.

The general form of the emissions equation is as follows:

$$\text{Emissions} = (\text{No. of trips} \times \text{Trip Length} [\sim 2.5 \text{ miles}] \times \text{Emission Factor}) + (\text{No. of trips} \times \text{Percent Cold Starts} \times \text{Cold Start Emission Factor})$$

Emissions savings were calculated for the following pollutants:

- Carbon Monoxide (CO);
- Oxides of Nitrogen (NO_x);
- Volatile Organic Compounds (VOC); and
- Fine Particulate Matter (PM₁₀).

Using the equation above, each bicycle trip in Nevada County that replaces a single occupant vehicle trip would result in the following emission savings.

$$\text{CO} = .2226 \text{ lbs.}$$

$$\text{NO}^x = .0090 \text{ lbs.}$$

$$\text{VOC} = .0182 \text{ lbs.}$$

$$\text{PM}_{10} = .0006 \text{ lbs.}$$

According to the Northern Sierra Air Quality Management District, these estimates may be high for Nevada County; however, more specific emission rates were not available. Therefore, if the mode share for bicycle trips in Nevada County reaches two percent in 2010 and each bicycle trip replaces a single occupant vehicle trip, then the following emission savings would result.

CO = 2,477 lbs./day (452 tons/year)

NO^x = 100 lbs./day (18 tons/year)

VOC = 203 lbs./day (37 tons/year)

PM10 = 7 lbs./day (1.2 tons/year)

Assuming a mode split of two percent is reached, it would represent a substantial reduction in Vehicle Miles Traveled (VMT), as well as a reduction in air pollutants, which combined form an important argument supporting increased future investment in bicycle facilities. The difference in daily bicycle trips with and without the BMP represents about 27,830 miles of travel assuming an average trip length of 2.5 miles. Many of these trips would be replacing automobile trips, which could save about 1,000 gallons of gasoline per day.

5.4. Maps

5.4.1. Map of Community Areas and Trail Corridor Study Areas - Western

5.4.2. Map of Community Areas and Trail Corridor Study Areas - Eastern

5.4.3. Existing Trails and Non-motorized Transportation Facilities

5.4.4. Proposed Commute Facility Improvements

5.4.5. Proposed Pedestrian Facility Improvements

5.4.6. General Plan Policy 4.32 Pedestrian Facility Parcels

5.4.7. Proposed Safe Route to School Project Areas