



Yuba County Bikeway Master Plan Update



Prepared for:
Yuba County
Public Works



Prepared By:
Fehr & Peers
2990 Lava Ridge Court
Suite 200
Roseville, CA 95661
916.773.1900



TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
Purpose	1
Development.....	1
Contents	1
CHAPTER 1. INTRODUCTION.....	2
Purpose	2
Public Participation	2
Background.....	3
Setting.....	4
Benefits.....	9
Bicycle Facilities	9
<i>Bikeways</i>	9
<i>Support Facilities</i>	11
Operation of Bicycles / Rules of the Road.....	12
CHAPTER 2. RELATIONSHIP TO OTHER PLANS.....	14
County Plans	14
Regional Plans.....	24
Statewide Initiatives and Legislation	24
CHAPTER 3. GOALS, POLICIES, AND ACTIONS.....	26
Goals, Policies, and Actions	26
CHAPTER 4. EXISTING CONDITIONS.....	28
Existing Bikeways	28
Regional Connections	31
Past Expenditures on Bicycle Facilities	31
Support Facilities	32
Multimodal Connections	32
Existing and Future Land Use Patterns.....	35
Bicycle Activity Centers	38
Existing and Forecast Bicycle Use	38
Bicycle Safety	40
CHAPTER 5. RECOMMENDED NETWORK.....	43
Proposed Bikeways	43
Prioritization	49
Support Facilities	49
<i>Bicycle Parking</i>	49
<i>Shower/Locker Facilities</i>	51
Multi-Modal Connections	52
CHAPTER 6. EDUCATION, ENCOUARGEMENT, AND ENFORCEMENT	53
Existing Programs.....	53
<i>Local Programs</i>	53
<i>Regional Programs</i>	53
Candidate Programs.....	54
<i>Bicycle Education Programs</i>	54
<i>Bicycle Encouragement Programs</i>	55
<i>Bicycle Enforcement Programs</i>	55

CHAPTER 7. IMPLEMENTATION	57
Cost Estimates.....	57
Design Standards for New Blkeways	58
<i>Class I Bike Paths or Trails.....</i>	<i>58</i>
<i>Class II Bike Lanes</i>	<i>59</i>
<i>Class III Bike Routes.....</i>	<i>61</i>
<i>Bicycle Detection</i>	<i>62</i>
Procedures for Implementation	63
<i>Class I Bike Paths or Trails.....</i>	<i>63</i>
<i>Class II Bike Lanes</i>	<i>64</i>
<i>Class III Bike Routes.....</i>	<i>64</i>
Eliminating Barriers to Bicycle Travel	64
Funding.....	66
<i>Federal and State Programs.....</i>	<i>66</i>
<i>Regional and Local Funding</i>	<i>67</i>

APPENDICES

Appendix A: Public Workshop #1 Exhibits September 14, 2011
Appendix B: Responses from Online Survey
Appendix C: Public Workshop #2 Exhibits February 9, 2012
Appendix D: Yuba County Ordinance Code Chapter 12.85.070 – Bike Parking
Appendix E: Prioritized Lists of Short-, Mid-, and Long-Term Projects
Appendix F: Priority Project Fact Sheets
Appendix G: Detailed Cost Estimates

LIST OF FIGURES

Figure 1: Study Area	7
Figure 2: Barriers/Opportunities	8
Figure 3: Existing Bicycle Facilities	30
Figure 4: Existing Bicycle Parking.....	33
Figure 5: Existing Transit Facilities	34
Figure 6: Yuba County General Plan Land Use	37
Figure 7: Bicycle/Auto Collision Locations	42
Figure 8: Proposed Bicycle Network	44
Figure 9: Proposed Bicycle Network with Locations of Existing Bicycle Facilities.....	45



EXECUTIVE SUMMARY

PURPOSE

Bicycling is an affordable, healthy, sustainable, socially equitable, and fun form of transportation. Many Yuba County residents and visitors already enjoy bicycling for transportation and recreational purposes. The previous bikeway plan for Yuba County was developed jointly with Sutter County, and released in December 1995 as the Yuba-Sutter Bikeway Master Plan. According to the California Streets and Highways Code, Sections 891.2 and 891.4, local agencies must complete a bicycle transportation plan to qualify for grant funds issued by the California Department of Transportation through the Bicycle Transportation Account (BTA), and that plan must be no more than five years old. The County is updating its Bikeway Master Plan to reflect current plans for growth, to be eligible for BTA funding, and to increase the accessibility of other types of grant funding.

DEVELOPMENT

The Bikeway Master Plan was funded through a 2010 SACOG Regional Bicycle and Pedestrian Funding Program grant and developed through Yuba County Public Works. Public participation was encouraged through two public workshops, held on September 14, 2011 and February 9, 2012, an online survey, and consultation with the Yuba County Trails Commission.

CONTENTS

The Bikeway Master Plan includes seven chapters:

1. Introduction – discusses the project and setting and provides key definitions
2. Relationship to Other Plans – summarizes the policy context for bicycle planning throughout Yuba County
3. Goals, Policies, and Actions – sets forth the vision for this plan
4. Existing Conditions – examines existing levels of bicycle activity and existing bicycling infrastructure
5. Recommended Network – shows the proposed network of bicycle facilities and provides guidance for support facilities
6. Education, Encouragement, and Enforcement – describes existing and proposed programs to improve bicycle facility usage and safety
7. Implementation – includes cost estimates for proposed projects and guidance for next steps



CHAPTER 1. INTRODUCTION

PURPOSE

Throughout Yuba County, the State of California, and the United States, the number of people bicycling for both utilitarian and recreational purposes continues to grow. To encourage the role of the bicycle as a viable mode of transportation, Yuba County strives to provide well-maintained facilities that promote public use. The Bikeway Master Plan (BMP) seeks to further promote bicycle travel as a practical mode of transportation within our community by laying out an updated vision of connected bikeways that links together our neighborhoods, places of employment, shopping centers, parks, and schools.

Bicycling is a low-cost, non-polluting, sustainable, healthy, and fun form of transportation ideal for many different types of trips and many different members of our community. The success of this BMP will depend upon the community; both to continue their involvement and interest long after the release of the document, and also to develop an awareness that both bicyclists and drivers of motor vehicles share the transportation system as equally legitimate users. The ultimate goal of the Bikeway Master Plan is to increase the number of people in Yuba County who bicycle to work, school, and errands, or for recreation.

PUBLIC PARTICIPATION

Public participation played an essential role in the development of this plan. The County solicited public input regarding existing bicycle conditions, potential bikeways, desired intersection treatments, and the types of support facilities or programs needed to improve bicycling in Yuba County. Public input was used to develop and prioritize the recommended network of bikeways and to develop complementary educational, encouragement, and enforcement programs. The planning process included the following public outreach elements:

- **Public Workshop #1:** the County hosted a public workshop on Wednesday, September 14, 2011, at the Yuba County Government Center. This workshop gathered feedback from Yuba County area residents, public entities, school districts, and local bicycle clubs on existing deficiencies or barriers to bicycle travel within the County, desired new bikeways, and preferred support facilities. Twenty-four attendees reviewed and marked up maps of the existing bicycle facilities network. They also identified preferred support facilities on multiple-choice boards and addressed concerns directly with the County and consultant team. Appendix A includes the exhibits from Public Workshop #1.
- **Online Survey:** all public workshop materials (i.e., posters, flyers, and business cards) included the web address of an online survey for those interested in participating, but unable to attend the workshop. Sixty-seven surveys were submitted, and respondents answered the following questions:
 - Why do you ride a bicycle?



- On average, how often do you ride a bicycle?
- How comfortable are you cycling with automobiles?
- If you have children, do they bicycle to school?
- What are the primary factors that prevent you from cycling more often in Yuba County?
- What do you like about bicycling in Yuba County?
- What can the County do to improve conditions for bicyclists?
- What other comments do you have for the plan?

All responses to the online survey are provided in Appendix B.

- **Public Workshop #2:** the County hosted a public workshop on Thursday, February 9, 2012 at the Yuba County Government Center. This workshop presented the findings of Public Workshop #1 and the online survey. It also presented the draft proposed network of bicycle facilities. Sixteen attendees reviewed and suggested edits to the draft proposed network of bicycle facilities. Appendix C includes the exhibits from Public Workshop #2.

BACKGROUND

According to the California Streets and Highways Code, Sections 891.2 and 891.4, local agencies must complete a bicycle transportation plan to qualify for grant funds issued by the California Department of Transportation through the Bicycle Transportation Account (BTA), and that plan must be no more than five years old. Conforming plans must also contain the minimum 11 key elements as shown in Table 1. The previous bikeway plan for Yuba County was developed jointly with Sutter County, and released in December 1995 as the Yuba-Sutter Bikeway Master Plan. Therefore, due to the age of the plan, it no longer qualified Yuba County for BTA funding. This updated BMP contains all 11 key elements, and will once again qualify Yuba County to receive BTA grant funds.

The BMP establishes goals, policies, implementation actions, and priorities for the development of bicycle facilities in Yuba County as envisioned by the General Plan. Key elements of the BMP include maps of existing and proposed bicycle facilities and their proximity to major activity centers. The implementation plan identifies project priorities, locations, improvement descriptions, facility types, and cost estimates. The implementation plan will guide development of the proposed bicycle improvements.

The Yuba County Public Works Department will review the BMP as necessary for needed updates and revisions. The review will reflect continuing changes in bicycling needs, safety, growth, regulatory requirements, and the overall level of service provided.

TABLE 1: CALIFORNIA BICYCLE TRANSPORTATION ACT (BTA) REQUIRED ELEMENTS

Required Bicycle Transportation Plan Elements per the California Bicycle Transportation Act (1994)	Location Addressed within the Bikeway Master Plan
A. Estimated number of existing and future bicycle commuters	Chapter 4, Page 38
B. Map and description of land use and settlement patterns	Chapter 5, Page 35 Figure 6, Page 37
C. Map and description of existing and proposed bikeways	Figure 3, Page 30 Figure 8, Page 44 Figure 9, Page 45
D. Map and description of bicycle parking facilities	Figure 4, Page 33
E. Map and description of multimodal connections	Figure 5, Page 34
F. Map and description of facilities for changing and storing clothes and equipment	Chapter 4, Page 32
G. Description of bicycle safety and education programs	Chapter 6, Page 53
H. Description of citizen and community participation	Chapter 1, Page 2
I. Description of consistency with transportation, air quality, and energy conservation plans	Chapter 2, Page 14
J. Description of proposed bicycle projects and implementation priority	Chapter 5, Page 43 Appendix E
K. Description of past expenditures and future financial needs for bicycle facilities	Chapter 4, Page 31 Chapter 7, Page 57

Source: Fehr & Peers, 2012

SETTING

One of the original 27 counties of California, Yuba County traces its history back to the California Gold Rush. Its location straddles both the flat valley floor, as well as the rugged Sierra Nevada Mountains (see Figure 1 for the location of the study area). The County seat, Marysville, strategically sits at the confluence of the Yuba and Feather Rivers, two former hotbeds of mining activity. Today, the Union Pacific Railroad (UPRR) runs parallel to the Feather River through Yuba County, as does State Route 70 (SR-70). State Route 65 (SR-65) splits off from State Route 70 just south of Marysville in the unincorporated community of Olivehurst. These two north-south highways serve as Yuba County's primary links to job centers in Sacramento and its northeastern suburbs.

The County's primary east-west artery, State Route 20 (SR-20), connects Yuba County to Sutter County via a bridge over the Feather River. State Route 20 stretches eastward from the Feather River through Yuba County, and crosses the Yuba River before continuing into Nevada County. Although the Yuba and Feather Rivers once brought prosperity to the County, they represent significant barriers to modern day transportation, including bicycling. In addition to the SR- 20 bridge over the Feather River, only one other bridge (5th Street in Marysville) connects Yuba County to its western neighbor. North-south navigation within the County is also impacted – only three bridges (not including railroad bridges) currently cross the Yuba River which bisects the County, including the SR-70 bridge shown above.



SR 70 over the Yuba River

Although the two rivers represent two of the most significant barriers to bicycling within Yuba, they are not the only barriers. The two north-south running state highways, SR-70 and SR-65, operate as freeways within the unincorporated areas of southern Yuba County. In this same area, two separate UPRR railroad lines traverse the County, running roughly parallel to the two north-south state highways. All of these barriers exist in close proximity to the portion of the County that has experienced the highest growth in population over the past several decades.



Bike parking at Ella Elementary School

Since the 1950's, most new development within the County has occurred south of the Yuba River on unincorporated land located between the County's two incorporated municipalities, Marysville and Wheatland. Today, about three-quarters of the County's population lives outside of these two cities. This new development in the southern portion of the County, in addition to the nearby established communities of Olivehurst, Linda, and West Linda, combines to create an area of relatively high density within the County that is conducive to bicycle travel. Survey responses indicate that approximately half of the children in this area bicycle to school (image of

well-utilized bicycle rack at Ella Elementary School in Olivehurst shown to the left). Additionally, the more established residential areas in the southern portion of the County have relatively high bicycle-dependent populations that frequently bicycle to nearby destinations.

Although several barriers to bicycle travel exist in close proximity to this development, many of these barriers may also help to create opportunities for the creation of future bikeway corridors. Communities throughout California and the United States have turned underutilized railroad right-of-way, freeway right-of-way, riverbanks, canals, and levees into bikeways. Figure 2 highlights the locations these barriers/opportunities within Yuba County, including the underutilized UPRR tracks

located in the southern portion of the County shown in the image below (looking north from Ella Avenue).

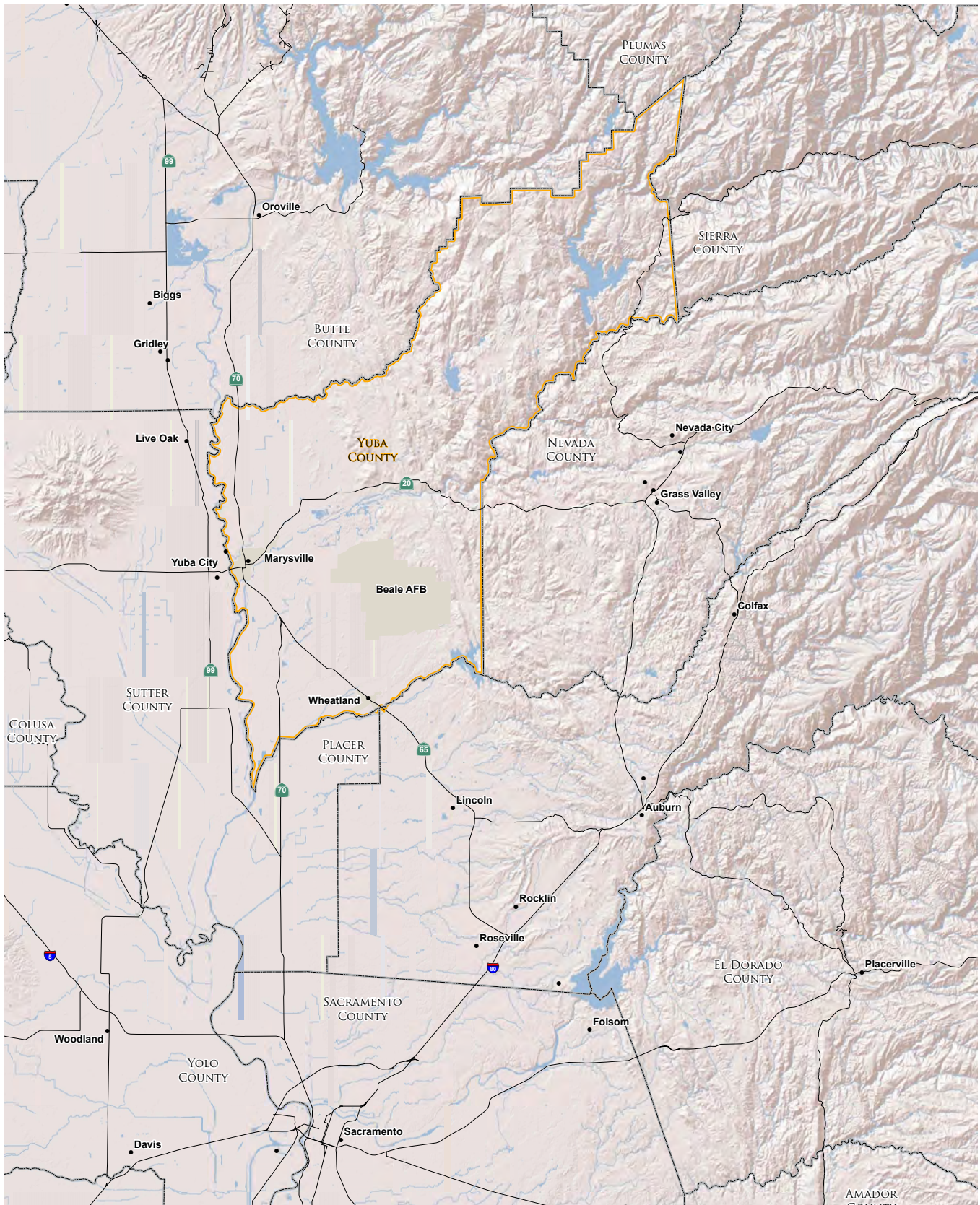
Similarly, although steep grades and hilly terrain at times present obstacles to bicycle travel, they too may also serve as opportunities. Outreach to Yuba County cyclists revealed that many recreational cyclists in the area value roadways within the foothills and mountains as prime locations for cycling. Rural roadways in the northeastern portion of the County provide for interesting, scenic riding on roadways with relatively low traffic volumes.



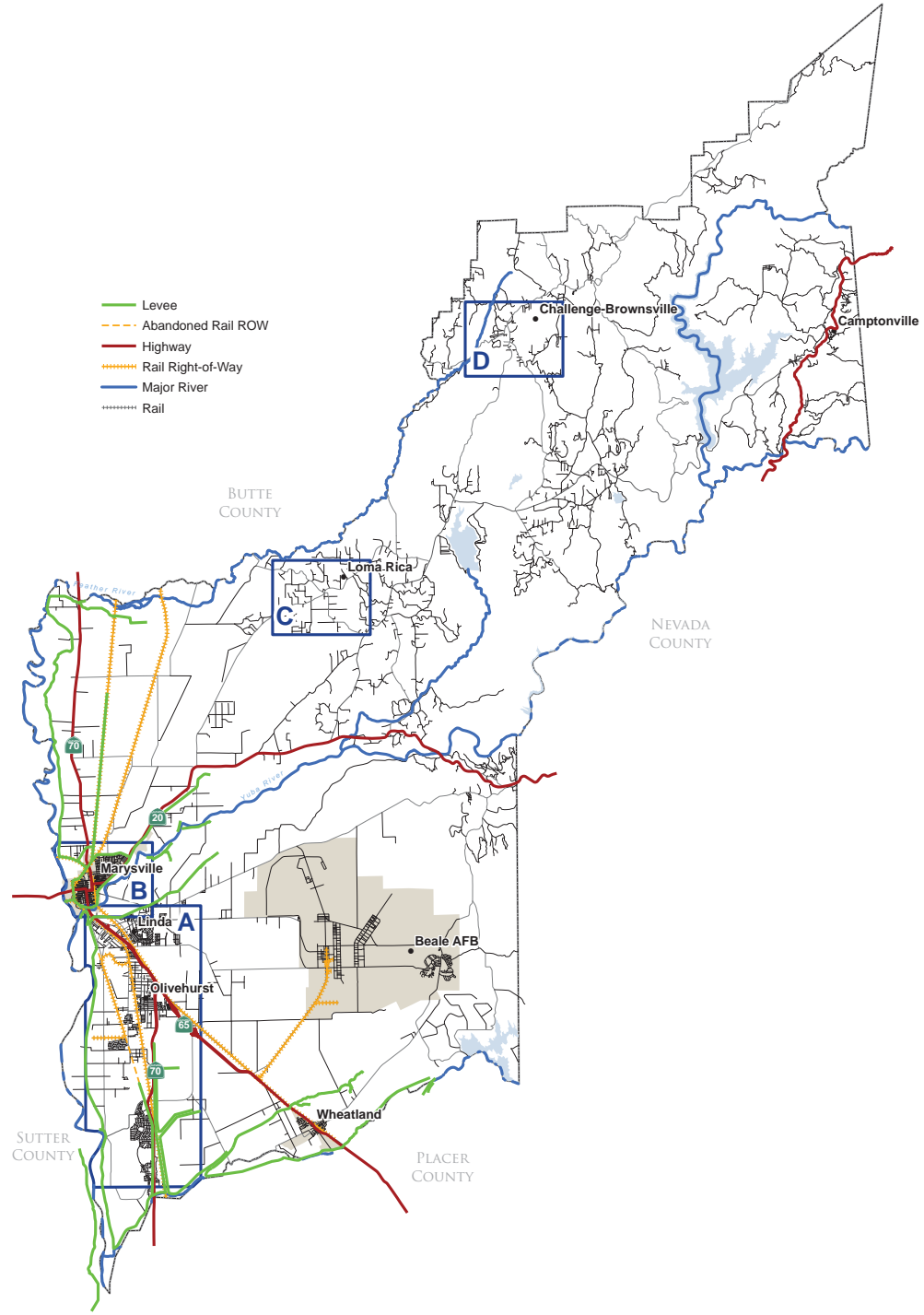
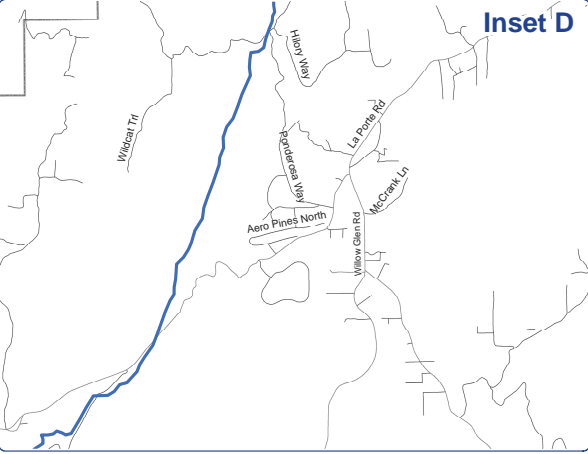
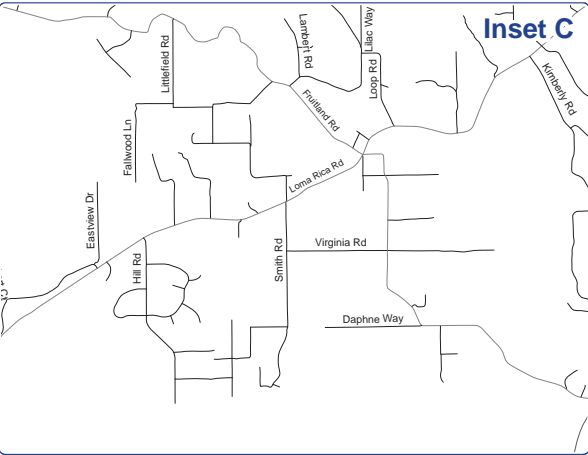
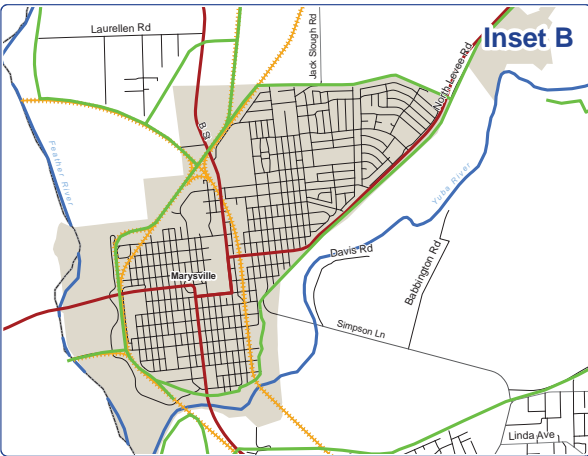
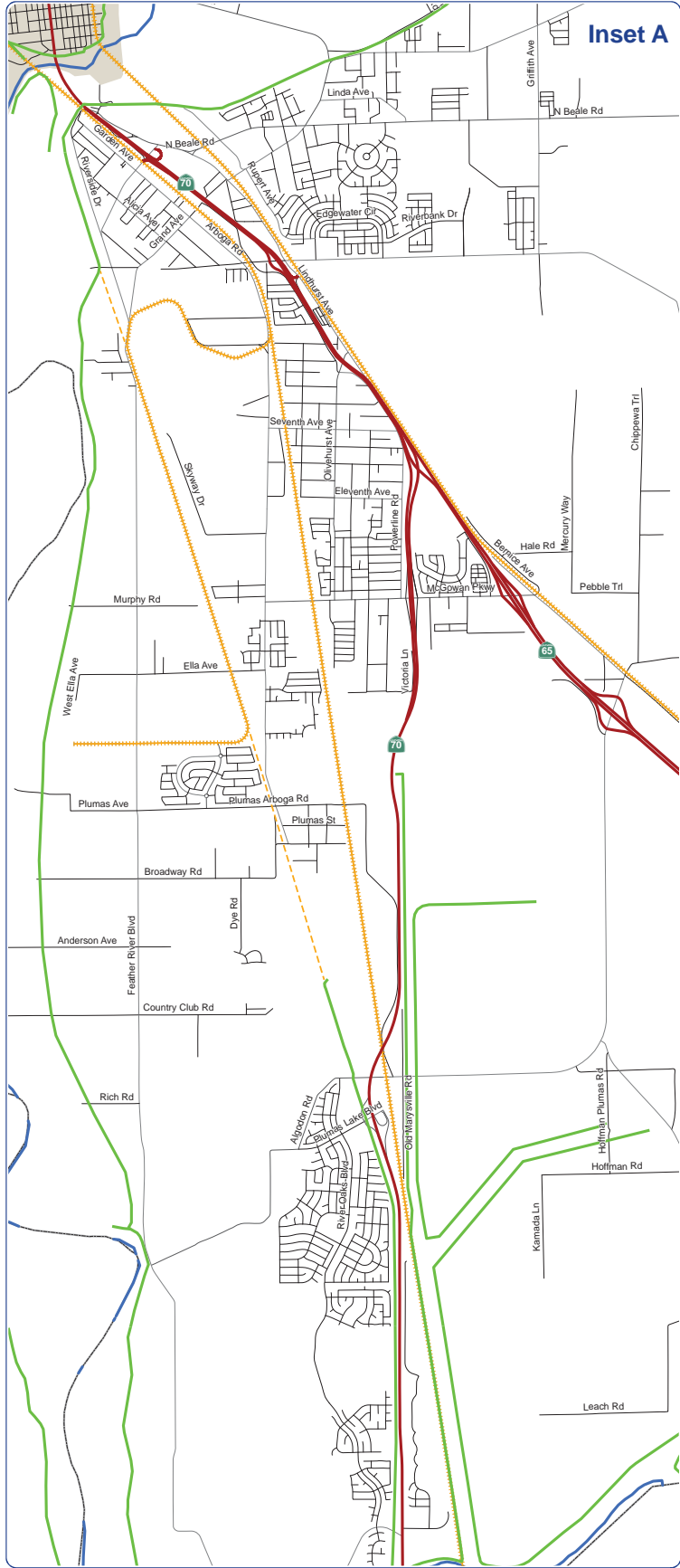
Underutilized UPRR tracks

Despite recent growth in the southern portion of the County, the vast majority of Yuba County's 644 square miles of land remains rural in nature. Many of the developed areas are surrounded by prime agricultural land, the largest single land use in the County. The largest employer in the County, Beale Air Force Base (AFB), also occupies a significant amount of land within the southern portion of the County – approximately 23,000 acres. The County's population grew from approximately 60,000 residents in 1999 to just over 72,000 residents in 2010 (California Department of Finance, 2010).

STUDY AREA
FIGURE 1



BARRIERS/OPPORTUNITIES
FIGURE 2



BENEFITS

Yuba County's climate and topography increase the attractiveness of bicycling. The level terrain of the valley floor, combined with its abundant sunshine, low levels of precipitation, and more populous nature help make bicycling a viable transportation option and recreational activity in the southern portion of the County year-round.

In contrast, the foothills and mountainous areas of the County may experience harsh winter weather, and have rolling terrain resulting in a more challenging environment for bicycling. However, the rolling terrain and scenic nature of these areas attract numerous recreational bicyclists, and bicycling within rural communities for errands and other short trips remains viable during much of the year.

Regardless of which part of the County residents live in, bicycling has several noteworthy benefits. These benefits include:

- Bicycling provides cardiovascular exercise for people of all ages, improving their health and well-being, and reducing health care costs.
- Replacing automobile trips with bicycle trips reduces air pollution and the consumption of non-renewable resources.
- The whole family can enjoy bicycling – from beginners to intermediate and advanced riders.
- Bicycles are inexpensive to maintain and operate, and when used in place of an automobile, they reduce transportation costs.
- Many insurance companies reduce automobile insurance rates for bicycle commuters, and some employers provide incentives to employees who bicycle to work.
- Bicycling is a viable alternative for many short trips, including trips to work or the store. When used in place of an automobile, bicycling reduces traffic.

BICYCLE FACILITIES

This plan classifies bicycle facilities into two types:

- Bikeways – facilities provided for bicycle travel
- Support facilities – facilities for use by bicyclists while en route or once they have reached their destination

Bikeways

Chapter 1000 of the Caltrans *Highway Design Manual* identifies three types of bikeways:

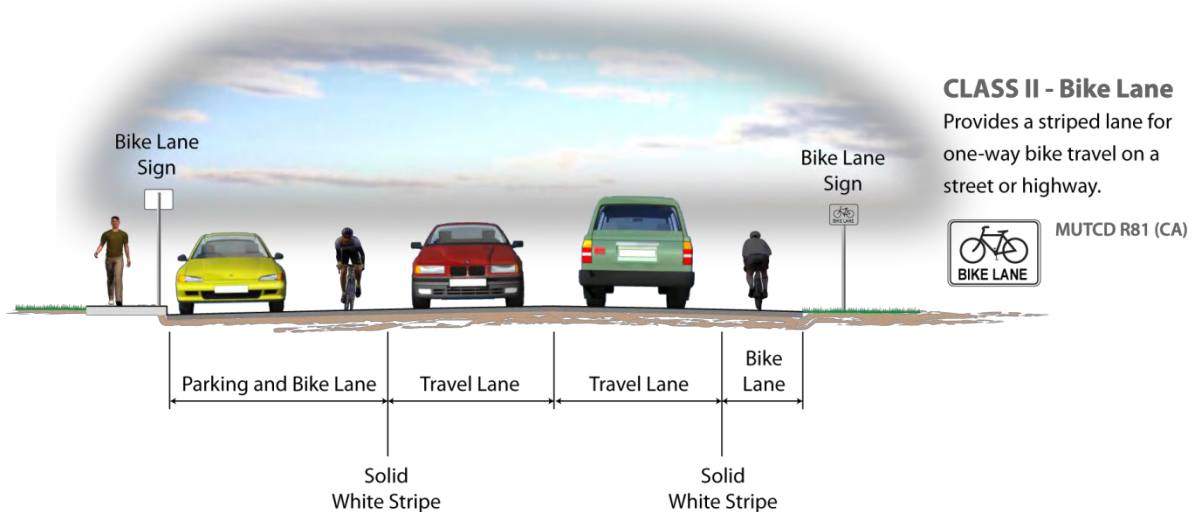
Bike Path (Class I Bikeway)

Off-street bike paths are facilities for use exclusively by bicycles and pedestrians, with minimal cross-flow by motor vehicles. They are often located in an exclusive right of way.



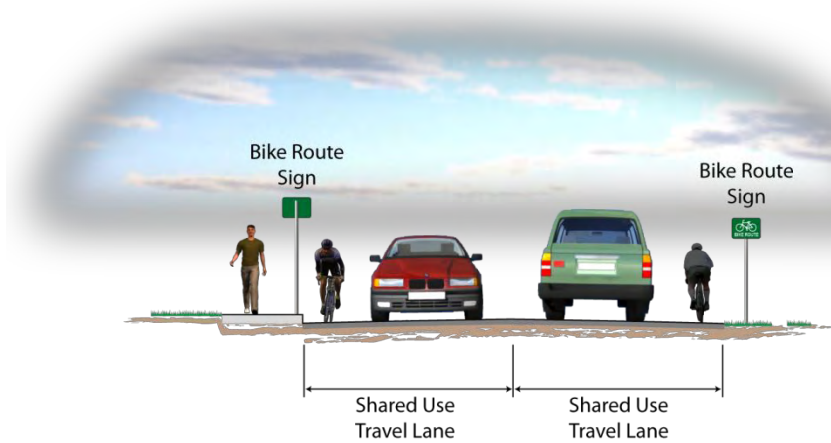
Bike Lane (Class II Bikeway)

Bike lanes are areas within paved streets that are identified with striping, stencils, and signs for preferential (semi-exclusive) bicycle use.



Bike Route (Class III Bikeway)

Class III bikeways are on-street routes intended to provide continuity to the bikeway system. Bike routes are designated by signs or permanent markings and are shared by motorists.



CLASS III - Bike Route

Provides a shared use with pedestrians or motor vehicle traffic, typically on lower volume roadways.



MUTCD D11-1

Chapter 4, Existing Conditions, discusses the locations of these types of bikeways in Yuba County.

Support Facilities

Support facilities include Class I bike path amenities, directional signage, bicycle parking, shower and changing space, and secure storage for bicycle gear.

Class I Bike Path Amenities

Amenities on Class I bike paths include lighting; location and directional signage; and resting locations including benches, water fountains, and restrooms.

Directional Signage

Directional signage can be used on all types of bikeways to direct bicyclists to other bikeways and major destinations, such as Yuba College. Best-practices for directional signage design specifies that signage convey direction, destination, and distance.



Short-Term Bicycle Parking

Short-term bicycle parking is typically provided via bike racks and is usually used when cyclists park their bikes for a couple of hours or less.

Long-Term Bicycle Parking

Long-term bicycle parking is typically provided at major employment sites, schools, and transportation terminals in the form of bike lockers, bike cages, or bike rooms. Because access is limited to users, these facilities provide higher security, allowing bicyclists to feel comfortable leaving bicycles for long periods of time. Building owners/managers often regulate long-term parking and issue keys to bike cages or bike rooms. Alternatively, electronic bicycle lockers offer a keyless option allowing a user to pay for secure parking time.

Shower and Locker Facilities

People are more likely to commute to work on bicycles if they have convenient access to showers and lockers; these facilities assist in encouraging regular commuting via bicycle. Shower and locker facilities are typically implemented as a component of new commercial building construction, and managed by the building owner/manager; they are rarely publicly owned and operated.



Short-term bike parking at Walgreens



Long-term bike parking at a Yuba-Sutter Transit park-and-ride

OPERATION OF BICYCLES / RULES OF THE ROAD

The California Vehicle Code (CVC) Division 11 contains the rules and regulations for operating a bicycle, commencing with Section 21200 through 21210. The CVC does not define bicycles as vehicles, but states that persons riding bicycles have the same rights and responsibilities as the drivers of vehicles. This means that bicycle riders must follow the basic traffic laws that all drivers follow, including but not limited to the following:

- *Ride on the right side of the roadway*
- *Obey traffic control devices (signs, signals)*

- *Yield to cross traffic*
- *Yield when changing lanes*
- *Yield to pedestrians in crosswalks*
- *Maintain speed positioning – the general principle is that the slowest traffic stays right. Bicycles are typically slower than auto traffic and are therefore usually found on the right side of the road (or within a bike lane, if provided). According to the CVC, bicycles may leave the right side of the road or a bike lane:*
 - *When overtaking and passing another bicycle or vehicle proceeding in the same direction.*
 - *When preparing for a left turn at an intersection or into a private road or driveway.*
 - *When reasonably necessary to avoid conditions (including, but not limited to, fixed or moving objects, vehicles, bicycles, pedestrians, animals, surface hazards, or substandard width lanes) that make it unsafe to continue along the right-hand curb or edge.*
 - *When approaching a place where a right turn is authorized.*

If in any circumstance a bicyclist feels that it is unsafe to be passed in the curb lane, they are allowed to “take the lane”; common causes include debris near the curb, trash cans, parked cars, or narrow lane widths.

- *Maintain intersection positioning – at intersections, bicyclists should travel in the right-most lane that leads to their destination. This means that if a bicycle is preparing to make a left turn, they may leave the right side of the road, even if a bike lane is provided, to enter the left turn pocket or the innermost through lane if the road has no left turn pocket.*



CHAPTER 2. RELATIONSHIP TO OTHER PLANS

This chapter summarizes planning documents pertinent to bicycling in Yuba County, and groups the documents into three categories:

- County Plans
- Regional Plans
- Statewide Initiatives and Legislation

COUNTY PLANS

Yuba County General Plan

The County recently updated its General Plan, and the 2030 Yuba County General Plan was adopted in June 2011. The updated General Plan includes revised goals, policies, and actions relevant to bicycle transportation. The Community Development Element (Chapter 5) discusses the importance of providing high-quality bicycle facilities, particularly near employment centers and mixed-use development areas. The Community Development Element stresses the link between goals and policies pertaining to land use and transportation, and includes several goals, policies, and actions relevant to bicycling:

- **Goal CD4. Commercial and Employment Centers** – Accessible, convenient, and successful community retail, service, and employment centers
 - **Policy CD4.2** – Employment and Commercial Centers shall be designed to provide convenient and safe pedestrian and bicycle access from surrounding developed and planned neighborhoods.
- **Goal CD6. Neighborhood Centers** – Provide higher-density housing, neighborhood services, and retail in pedestrian-friendly Neighborhood Centers
 - **Policy CD6.6** – Neighborhood Centers shall be located and designed to provide convenient and safe bicycle, pedestrian, and transit access to and from surrounding neighborhoods.
- **Goal CD7. Mixed Use Corridors** – Revitalize Yuba County's Mixed-Use Corridors to better serve existing Valley Neighborhoods
 - **Policy CD7.7** – The County will seek funding to add drainage, bicycle, pedestrian, and transit facilities along Mixed-Use Corridors.
- **Goal CD8. Pedestrian Orientation and Design** – Promote high-quality neighborhood design that ensures pedestrian comfort and convenience

- **Policy CD8.3** – New cul-de-sacs are allowed within the Valley Neighborhoods and residential portions of Employment Village areas where they would not create a barrier for pedestrian and bicycle access or circulation between homes and destinations.
 - **Policy CD8.11** – Multi-family housing developments should be well connected to the surrounding neighborhood. Parking areas should be sized and broken up to avoid creating barriers to pedestrian and bicycle circulation.
- **Goal CD14. Coordinated Public Services, Regional Services** – Provide coordinated public service and infrastructure planning
 - **Policy CD14.6** – The County will coordinate its land use planning with local school districts to ensure adequate educational facilities with safe and convenient pedestrian and bicycle access to and from surrounding neighborhoods.
- **Goal CD16. Level of Service: Roadway System** – Maintain a roadway system that provides adequate level of service, as funding allows, that is consistent with the County's planning, environmental, and economic policies
 - **Policy CD16.5** – Where a new development would exceed the County's Level of Service policies, applications shall first consider feasible revisions to the proposed development that would increase connectivity, enhance bicycle/pedestrian/transit access, provide additional travel demand management measures, and/or provide other revisions that would help to meet LOS standards by reducing vehicle miles traveled on roads exceeding the target LOS, prior to consideration of adding capacity to roadways and intersections.
- **Goal CD17. Travel Demand Management** – Reduce costs of transportation infrastructure, increase freedom of mode choice, maintain air quality, and improve the local quality of life by managing travel demand
 - **Policy CD17.1** – New developments shall be designed to facilitate safe and convenient travel by pedestrians, bicyclists, transit users, and drivers.
 - **Policy CD 17.3** – The County will coordinate with Yuba College to provide housing and commercial services within walking and bicycling distance of the Linda campus and plan for convenient and safe pedestrian, bicycle, and transit options for students attending Yuba College.
- **Action CD17.1 Travel Demand Management Ordinance** – The County will develop a Travel Demand Management ordinance that provides options for large employers in mitigating the traffic related impacts of proposed projects. Reducing travel demand could be used in-lieu of providing traffic impact fees, where demonstrated to reduce trips, particularly during peak demand periods. Options for reducing travel demand in this ordinance could

include, but are not limited to providing incentives for employers to commute via transit, bicycle, on foot, or by carpool, rather than the single-occupant vehicular commute. The County will periodically review the approaches provided under this ordinance to ensure their effectiveness and make revisions, as appropriate. The County may promote, as a part of this Ordinance, membership in the Yuba-Sutter Transportation Management Association.

Related goals include: Goal CD4, Goal CD16, Goal CD17, Goal CD19

- **Action CD 18.1 Regional Traffic Fee Program** – The County will coordinate with cities and surrounding counties to develop and implement a regional fee program to address non-County transportation facilities, including vehicular, bicycle, pedestrian, and public transit. The regional mitigation fee program should be designed to address cumulative regional transportation needs on a fair-share basis for new specific plans and new developments. This program should address state highway facilities, as appropriate, and account for outside funding sources for state highway facilities, including but not limited to: State Transportation Improvement Program and State Highway Operation and Protection Plan funding.

The traffic impact fees will be used to fund improvements that will be needed in the future as development occurs. If feasible, the County will use provisions of Streets and Highways Code sections 114 and 130 to bank fees for future highway projects.

Related goals include: Goal CD16, Goal CD18

- **Goal CD19. Freedom of Travel Mode Choice** – Roadway design, development patterns, and circulation systems that encourage walking, bicycling, and transit use
 - **Policy CD19.4** – The County will plan its investments and condition new developments to provide pedestrian, bicycle, and transit facilities designed to provide multi-modal connections within neighborhoods, within unincorporated communities, and between communities and cities in the County.
 - **Policy CD19.5** – New developments shall include the construction or pro-rata funding of transportation infrastructure that may include a connected and integrated system of bicycle and pedestrian facilities, consistent with County standards.
 - **Policy CD19.7** – The County's improvement standards and street classification system will be designed to accommodate the full range of locally available travel modes. Intersection dimensions and turning radii should be minimized in areas where high pedestrian and bicycle activity is expected.
 - **Policy CD19.9** – Secure bicycle parking shall be located at or near public buildings, business districts, parks, playgrounds, shopping centers, schools, transit terminals, bus stops, and other bicycle traffic generators.
 - **Policy CD19.11** – The County will support feasible opportunities to provide intra-county and inter-county passenger rail service for Yuba County residents and

businesses, including support for expansion of AMTRAK passenger service and transit, along with bicycle, and pedestrian-friendly development around rail and transit stations.

- **Policy CD19.12** – The County will encourage programs that facilitate County employees' use of pedestrian, bicycle, and transit facilities to reach the workplace.
- **Action CD19.1 Pedestrian and Bikeway Master Planning** – The County will collaborate with other agencies during buildout of the General Plan to maintain pedestrian/bicycle master plans designed to meet growth needs. The master plan updates should be designed to improve bicycle and pedestrian connections between each city in the County, cities in adjacent counties, and each unincorporated community.

Bicycle/pedestrian master planning efforts should be coordinated with local irrigation districts, special districts, and public agencies with easements and rights-of-way, the railroad, other property owners, and other agencies and interested parties to acquire and/or use existing easements and rights-of-way for development of off-street pedestrian and bicycle pathways. Master plans will focus on improving links between neighborhoods and important destinations, such as schools, shops, commercial services, public services, and recreational opportunities.

Related goals include: Goal CD16, Goal CD17, Goal CD19

- **Action CD19.2 Revise Development Code & Improvement Standards** – Following adoption of the 2030 General Plan, the County will revise its development code and improvement standards, where necessary, to encourage a high level of pedestrian, bicycle, and transit-friendliness in new development. In general, the County will consider revisions to its codes and standards to reduce road widths, reduce the amount of paved areas of roadways and parking lots, reduce pedestrian crossing distances, and reduce curb radii at intersections, in consideration of pedestrian and bicycle comfort and safety, while also considering turning template needed for service and emergency vehicles. The County will consider revisions to its codes and standards that require wider sidewalks in areas with higher pedestrian and bicycle activity would be anticipated.

Related goals include: Goal CD8, Goal CD19, Goal CD21

- **Goal CD20. Connectivity** – Multiple connections to promote circulation and emergency access throughout valley and foothill communities
 - **Policy CD20.6** – The maximum allowable length of a cul-de-sac within the Valley Growth Boundary is 400 feet unless an exception is approved by the Community Development Director, in consultation with local emergency service providers. Where cul-de-sacs are allowed, they should incorporate bicycle/pedestrian through access, where feasible.



- **Goal CD21. Parking and Loading** Efficient and well designed parking that considers the convenience of Yuba County's drivers and the needs of pedestrians, bicyclists, and transit users
 - **Policy CD21.7** – The County will consider adopting parking maximums in areas where high pedestrian and bicycle activity is expected and in areas around transit stops.

In addition to these goals, policies, and actions, the General Plan includes a Bicycle and Pedestrian Circulation Diagram that depicts existing and planned bikeways within the County.

Yuba-Sutter Bikeway Master Plan (1995)

The 2012 Yuba County Bikeway Master Plan will supersede the Yuba-Sutter Bikeway Master Plan released in December 1995. Notable improvements include an updated inventory of existing bikeways, a revised map of proposed bikeways, and enhanced recommendations for support facilities and programs.

Yuba County Parks Master Plan

The Yuba County Parks Master Plan, adopted in February 2008, recognizes that park users often wish to travel by bicycle. The plan provides guidance on the selection of sites for future local parks, and states that "Access to larger sized sites should be provided via a collector or arterial street with sidewalks and bicycle lanes." The plan recommends bicycle storage as an amenity to provide at both local and regional parks, as well as at trailheads within the County. In regards to future regional trails, the Parks Master Plan states that the "trail location, connections and orientation should encourage users to walk or bicycle to the trail."

Yuba County Standard Plans

Yuba County Standard Plans do not define any standards applicable to the construction of Class I bike paths or Class II bike lanes.

Yuba County Code of Ordinances

The Yuba County Code of Ordinances includes several regulations that apply to bicyclists. It also includes building standards for new development.

- Chapter 2.50 regulates the disposal of unclaimed property, including bicycles.
 - Section 220 of Article 4 allows for bicycles less than \$500 in value which have been unclaimed for at least 90 days to be transferred "to the Probation Officer of the County, to the welfare department of the County or to any charitable or nonprofit organization...for use in any program or activity designed to prevent juvenile delinquency."

- Chapter 4.30 establishes a Trails Commission with the purpose of advising “the Planning Commission, and through them the Board of Supervisors, of the riding, hiking and bicycle trail needs of the County of Yuba.” Various sections within this chapter regulate how this commission functions and enumerates their duties.
- Chapter 8.79, Section 100 permits bicyclists “to wheel or push bicycles by hand on any grassy area, trail, or path reserved for pedestrian use” within Hammon Grove Park or Sycamore Ranch.
- Chapter 9.10 contains the Yuba County Traffic Ordinance. Section 500 of Article 8 prohibits vehicles from stopping or standing “in any designated bicycle lane for one-way bicycle travel identified by special signs, lane striping or other pavement markings, except for emergency purposes.”
- Chapter 9.35 prohibits vehicle travel on levees within the County. However, Section 030 provides an exception to bicycle travel “on established or proposed regional bicycle and walking paths as identified on the County Proposed Regional Park and Trail System Map.”
- Chapter 9.90 is Yuba County’s Trip Reduction Ordinance, and aims to reduce traffic congestion, motor vehicle trips, and vehicle miles travelled (VMT) within the County. As part of this ordinance, all new employers with 500 or more employees must develop a transportation plan that consists of various transportation control measures (TCMs).
 - Section 070 assigns trip reduction credits to a series of TCMs that may be used as part of transportation plans. Bicycle related TCMs include posting information on the location of bicycle routes and providing bicycle parking.
 - Section 090 requires that the employers regulated by the ordinance prepare annual reports on the effectiveness of TCMs that include the number of employees that use bicycles to travel to and from work.
- Chapter 11.15 regulates subdivisions within the County. Section 661 of Article 10 guides the dedication of parkland within subdivisions, and gives principal consideration to land which offers integration with bicycle trails.
- Chapter 12.82 lists provisions that apply to the East Linda Specific Plan. These provisions include regulations pertaining to the provision of bicycle parking within the business and professional, general commercial, and commercial center sub-zones.
- Chapter 12.85 regulates bicycle parking facilities.
 - Section 020 defines bicycle parking: “bicycle parking facilities shall include provisions for storage and locking of bicycles, either in lockers or secured racks, or equivalent installations in which the bicycle wheels and frame may be locked. Racks and lockers shall be anchored so that they cannot be easily removed.”



- Section 070 requires that “Bicycle parking shall be provided in connection with the erection, major alteration, expansion or establishment of new land use...” and proceeds to enumerate the various minimum bicycle parking requirements for the following land use types: multifamily residential, medical offices/facilities, educational facilities, places of public assembly, recreational facilities, commercial and industrial facilities, sports and entertainment facilities. Further, Section 070 provides detailed requirements pertaining to the placement, type, and design of bicycle parking facilities in the County.

Spring Valley Specific Plan

The Spring Valley Specific Plan, adopted in February 1992, covers an area of approximately 2,500 acres in the lower foothill region of Yuba County. The plan area spans across both sides of Spring Valley Road, and includes a variety of residential uses, a golf course, and a town center with neighborhood commercial land uses.

According to the plan, “Bicycle and pedestrian paths are considered to be a major element of the circulation system.” The plan includes bicycle facilities within greenbelts and linear parks surrounding residential neighborhoods. This path system also links to the three school sites included in the plan area. The plan also specifies a minimum width for paved off-street bicycle paths of five feet, and states that a planned park & ride facility shall accommodate bicycles.

East Linda Reinvestment Plan

The East Linda Reinvestment Plan (ELRP), adopted in February 2012, is intended to promote economic reinvestment, improve mobility and accessibility, provide multimodal transportation improvements, increase public safety and security, identify needed infrastructure, and enhance health and the environment in East Linda. Figure 5.1 of the ELRP shows the Circulation Concept Plan for East Linda, including proposed bike paths, bike lanes, and bicycle/pedestrian access points:

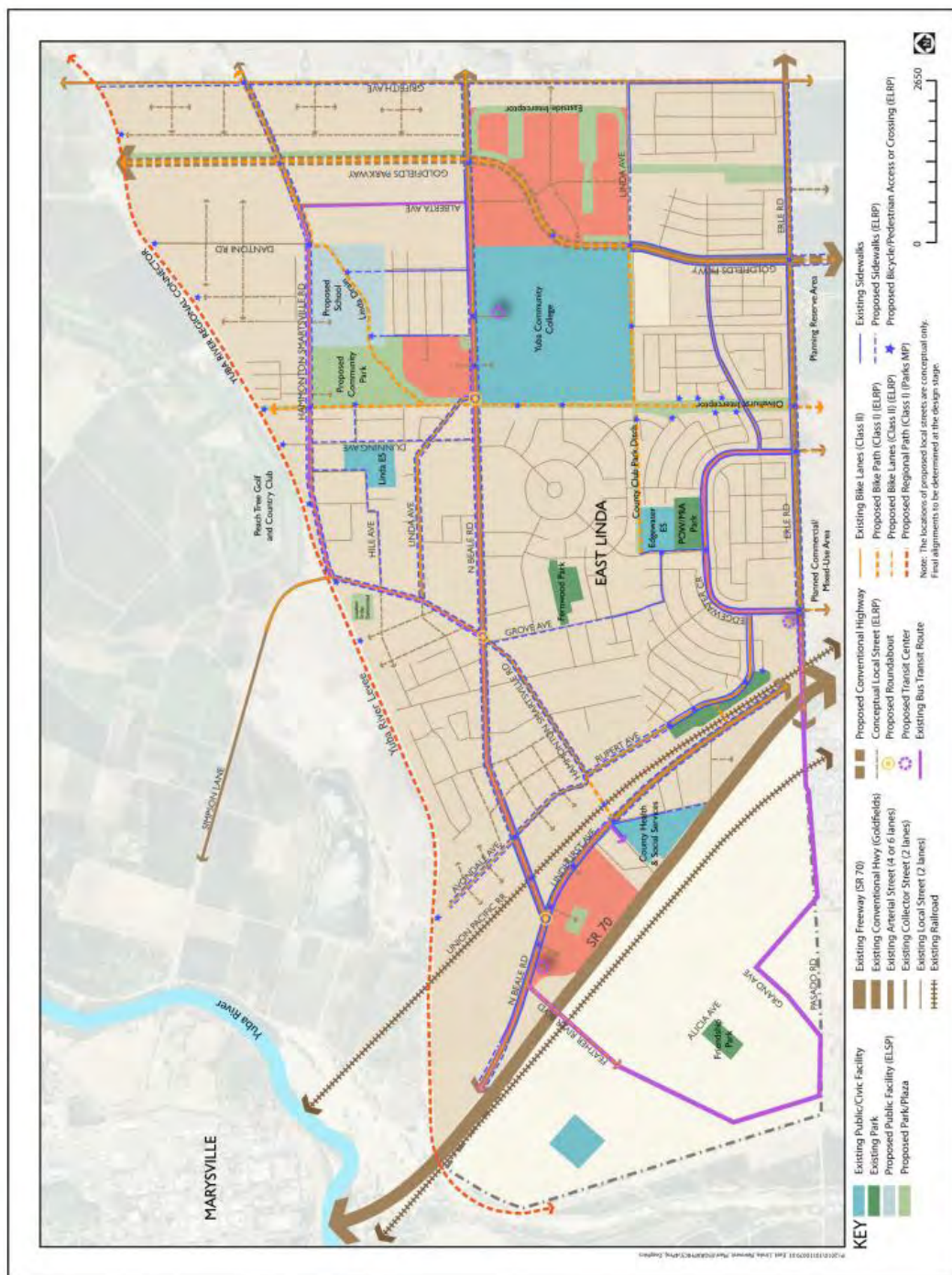


Figure 5.1, Circulation Concept Plan



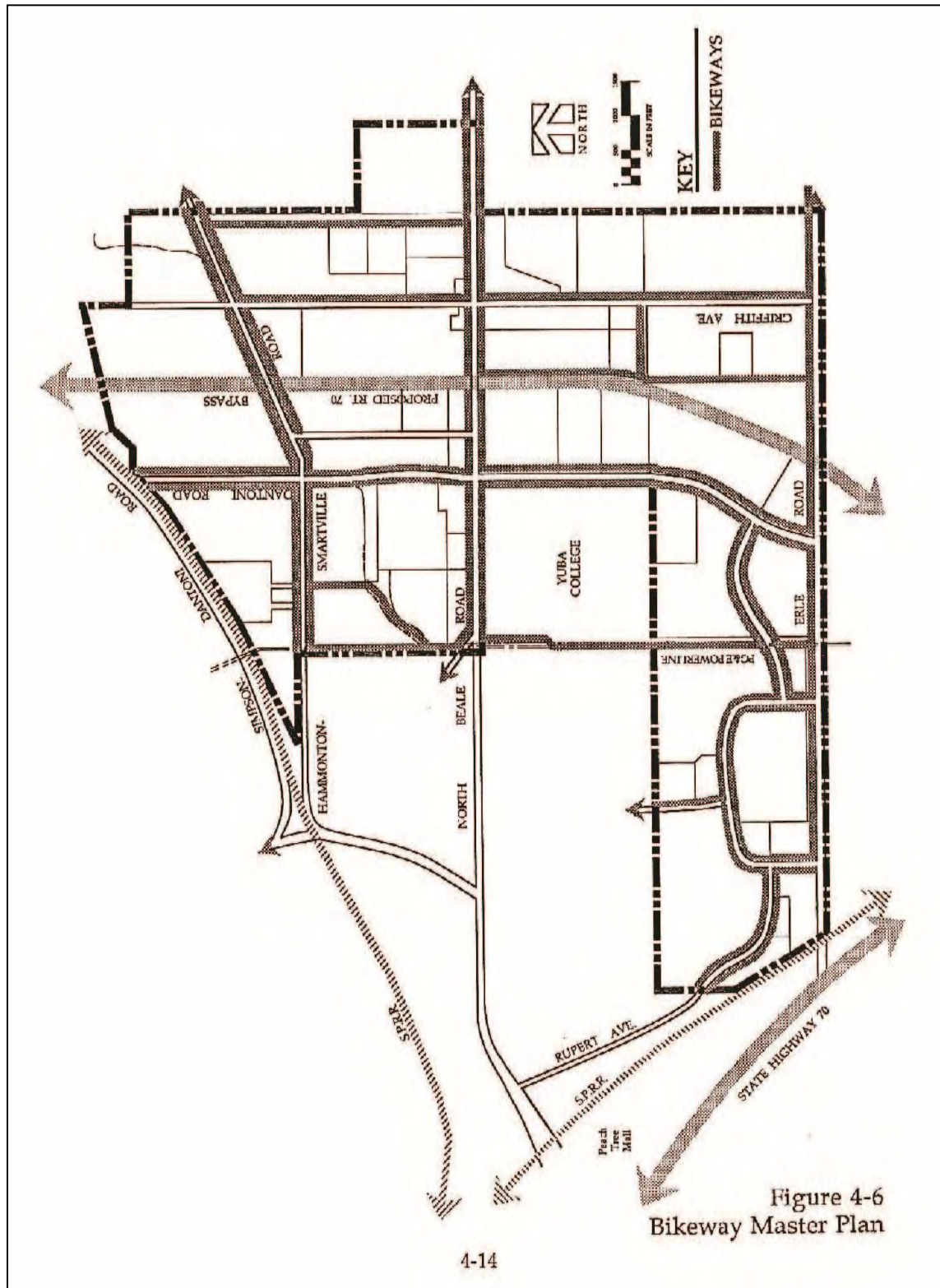
East Linda Specific Plan

The East Linda Specific Plan, adopted in May 1990, guides development within a 1,760 acre area east of the unincorporated community of Linda. At build-out, the Plan area will primarily consist of a wide variety of residential densities and dwelling types, but also includes schools, parks, and neighborhood-serving commercial land uses.

The Plan's circulation system "is designed to provide a range of transportation options for safe and efficient movement of people through East Linda," and incorporates pedestrian paths and bikeways. The East Linda Specific Plan Circulation Element identifies a bikeway system consisting of "three key elements organized in a connected hierarchy of pathways designed to take a resident from their front door to an inter-community network." The three key elements identified in the Plan are summarized below:

- Primary or "Backbone" Network – this component consists of Class I bike paths along major arterials in addition to Class I bike paths along Linda Creek and through the power line easement that bisects the Plan area.
- Secondary or Collector Path System – a system of five to eight feet wide Class II on-street bike lanes on both sides of collector streets.
- Tertiary Bikeway System – neighborhood streets are designed to restrict through vehicular traffic, resulting in low-volume streets that facilitate access between the interior neighborhoods and the secondary and primary bikeway systems. The Plan identifies all local streets within the neighborhoods as Class III on-street bikeways.

Figure 4-6 of the East Linda Specific Plan illustrates the planned bikeway system:



4-14



Plumas Lake Specific Plan

The Plumas Lake Specific Plan, adopted in August 1993, guides development within a 5,000 acre area in southern portion of the County. The plan area is located west of SR-70 between the existing community of Olivehurst and the Bear River, which forms the southern border of the County. The Plumas Lake Specific Plan includes the following circulation policies relevant to bicycling:

- A continuous bicycle trail shall be provided linking the planned regional trail at the Bear River levee to Country Club Drive
- A network of bicycle paths shall be developed within the Plan which link local nodes such as schools and parks to the main bicycle trail system.

The plan also encourages neighborhood designers to “provide linear greenbelts which can be used for bicycle or pedestrian paths within the neighborhood,” and states that “community parks should be linked to trails networks for bicycles or pedestrians wherever feasible.” Further, the plan states that the berm along the eastern side of the plan area, formerly the bed of the Sacramento Northern Railroad, “may serve as additional right-of-way for bicycle trails.” Land alongside flood control channels within the plan area is also identified for future bicycle paths.

REGIONAL PLANS

SACOG Metropolitan Transportation Plan (MTP) 2035

The BMP maintains consistency with regional programs that seek to reduce single-occupant motor vehicle travel. The SACOG Metropolitan Transportation Plan (MTP) 2035 recognizes the importance of bicycle travel as a component “of an effective transportation system, particularly for short trips.” The adopted MTP, as well as an update currently underway, envision an expanded bicycle network serving the entire Sacramento region, and a corresponding shift to a higher mode split for bicycle travel.

Other Bicycle Plans

The BMP is consistent with the following bicycle plans of neighboring jurisdictions:

- Butte County Bicycle Plan (2011)
- Nevada County Bicycle Master Plan (2007)
- Placer County Regional Bikeway Plan (2002)
- Yuba City Bicycle Master Plan (2011)

STATEWIDE INITIATIVES AND LEGISLATION

The BMP maintains consistency with statewide programs that will affect the implementation of future bicycle transportation facilities.



Assembly Bill 32 and Senate Bill 375

Senate Bill (SB) 375 is the implementation legislation for Assembly Bill (AB) 32. AB 32 requires the reduction of greenhouse gases (GHG) by 28 percent by the year 2020 and by 50 percent by the year 2050. Reducing automobile trips is one method of reducing GHG emissions. This may be achieved by promoting modes other than the automobile, such as walking, bicycling, or riding transit.

Assembly Bill 1358

Assembly Bill 1358 is the Complete Streets Act. It calls for the inclusion of all modes (pedestrian, bicycles, transit, and automobile) into the design of roadways.

Assembly Bill 1581

Assembly Bill 1581 provides direction that projects constructing new actuated traffic signals or modifying existing traffic signals include technology that has the ability to detect bicycles and motorcycles. It also calls for the timing of actuated traffic signals to account for bicycles.

Caltrans Traffic Operations Policy Directive 09-06

Traffic Operations Policy Directive 09-06 requires that bicycle and motorcycle detection be provided on all approaches to traffic-actuated signals in the State of California. Additionally, the directive requires that signal timings be modified to provide adequate clearance time for bicyclists. Assembly Bill 1581 is the enabling law for Policy Directive 09-06.

Caltrans Deputy Directive 64 (Revision 1) DD-64-R1

Deputy Directive 64-R1 (DD-64-R1) was issued to ensure that travelers of all ages and modes may move "safely and efficiently along and across a network of 'complete streets.'" The directive establishes responsibilities for Caltrans staff to safely accommodate bicyclists, pedestrians, and transit users.

CHAPTER 3. GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions build upon the goals and policies identified by the Yuba County General Plan (as discussed in Chapter 2). These goals, policies, and actions will assist the County in meeting its objective of establishing and maintaining a continuous, safe, and easily accessible system of bikeways throughout the County that will facilitate bicycling as both a viable transportation alternative as well as a recreational activity, and increase the number of people in Yuba County who bicycle to work, school, and errands, or for recreation.

GOALS, POLICIES, AND ACTIONS

- **Goal: A transportation system that is safe for bicycle use, with reduced numbers of bicycle-related collisions**
 - **Policy:** Encourage bicycling safety education opportunities for bicyclists of all ages as well as for motorists
 - **Policy:** Encourage enforcement activities that improve bicycle safety
- **Goal: A well-maintained bikeway system**
 - **Policy:** Perform regular maintenance of bicycle facilities, inclusive of pavement conditions, pavement quality, striping, stenciling, and signage
- **Goal: Promote the integration of bicycle infrastructure with other forms of transportation, including public transit**
 - **Policy:** Facilitate linkages between bicycle infrastructure and other modes of transportation, including transit services provided by Yuba-Sutter Transit
- **Action:** Continue to provide bike racks or space for bicycles on buses or other transit vehicles
- **Goal: Establish educational opportunities aimed at all levels of bicyclists, pedestrians, motorists, and law enforcement personnel that promote safe bicycling and safer driving behaviors among motorists**
 - **Policy:** Cooperate with other public agencies, such as the Sheriff's Department, fire department, and school districts to carry out educational programs
- **Goal: Maximize funding opportunities to expand the local bikeway system**
- **Action:** Pursue a variety funding sources for bicycle facilities, safety programs, education programs, and encouragement programs



- **Action:** Schedule bikeway expansion projects to occur with other roadway improvement projects such as maintenance or new roadway construction
- **Goal: Integrate the consideration of bicycle travel into planning activities, development review, and design**
 - **Policy:** Consider the needs of bicyclists when reviewing development proposals and when completing other transportation planning projects
 - **Policy:** Coordinate with appropriate agencies, including Caltrans, as appropriate through the bikeway planning and design process
- **Goal: Increase bicycle mode share to three percent by the year 2025**

CHAPTER 4. EXISTING CONDITIONS

EXISTING BIKEWAYS

Existing on-street bikeways were inventoried in August 2011 using a GPS enabled video camera to record bikeway features such as signage, striping, and stenciling. These features were reviewed to ensure that bikeways complied with applicable design criteria, and the facilities were broken down into the following three categories:

- Class II Bike Lane – meets all applicable design criteria
- Class II Bike Lane with Minor Deficiency – does not meet all applicable design criteria, but could meet Class II standards with relatively minor improvements (i.e., additional signage, striping, stencils, etc.)
- Class II Bike Lane with Major Deficiency – does not meet all applicable design criteria, and would require relatively high cost improvements to do so (i.e., roadway widening)

In addition to the inventory conducted of on-street facilities, three paved Class I bike paths currently exist in Yuba County, and were included in the inventory. One facility provides a connection between developed areas on either side of Marysville Road in the rural community of Dobbins, another connects Erle Road to River Bank Road and recent development to the north in the community of Linda, and the third parallels Rupert Avenue in Linda. According to the inventory, Yuba County has approximately 66 miles of existing bikeways, as shown in Table 2. This total includes Class II bike lanes with minor deficiencies, but does not include lanes with major deficiencies.



Class I bike path bridge in Dobbins

TABLE 2: LENGTH OF EXISTING BIKEWAYS BY BIKEWAY CLASSIFICATION

Bikeway Classification	Mileage
Class I Bike Paths	1.1
Class II Bike Lanes	28.9
Class II Bike Lanes with Minor Deficiencies ¹	35.7
Class III Bike Routes	0
Total	65.7

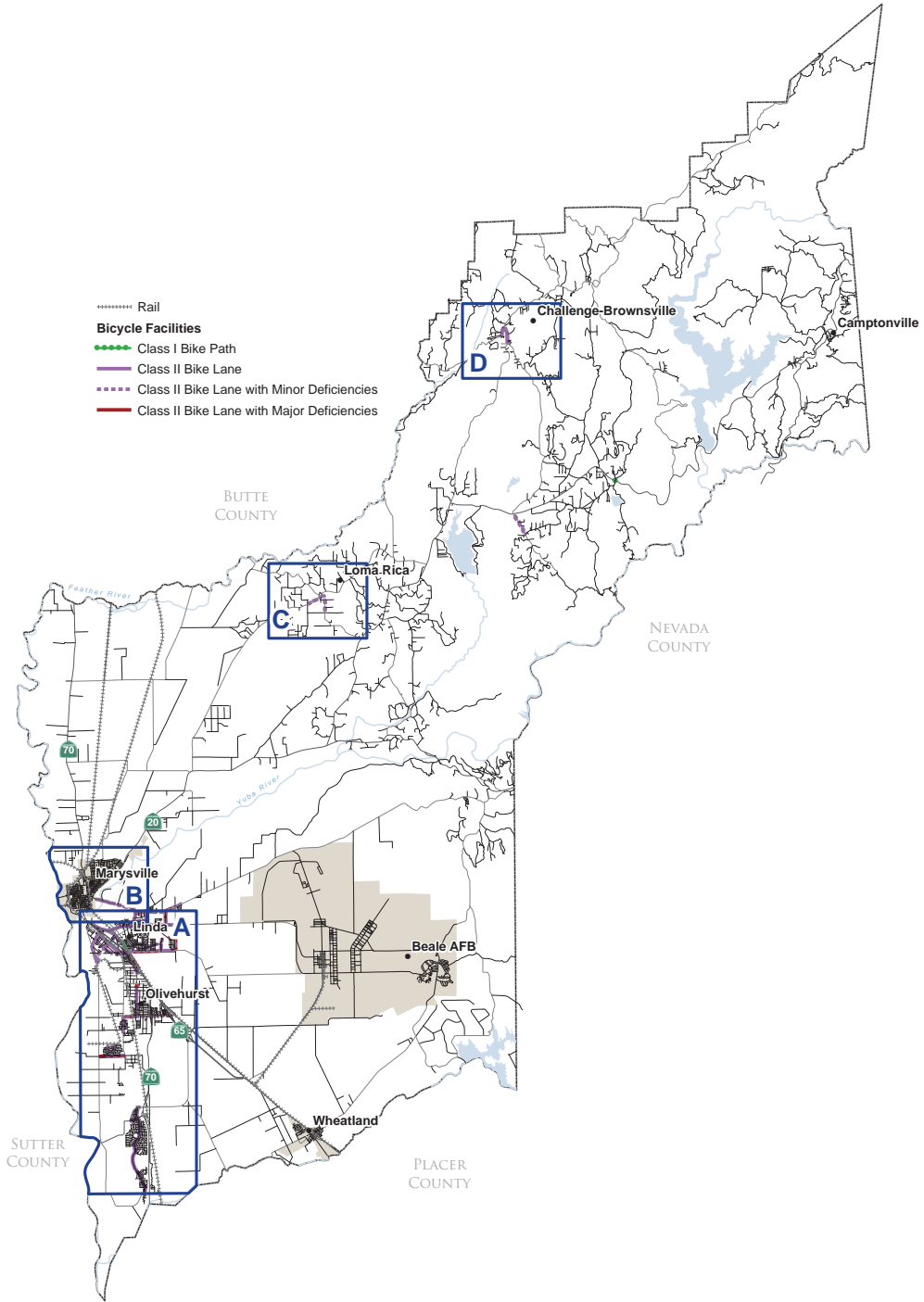
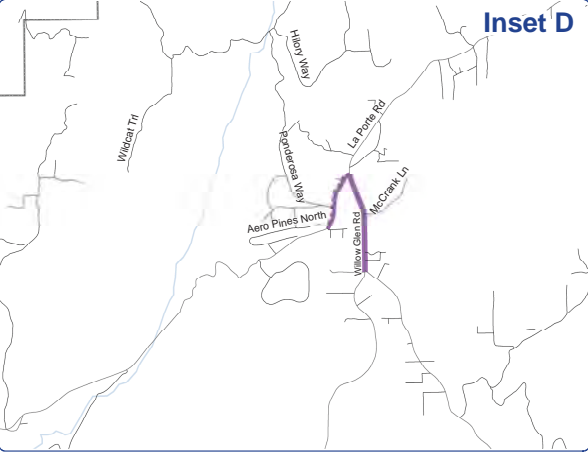
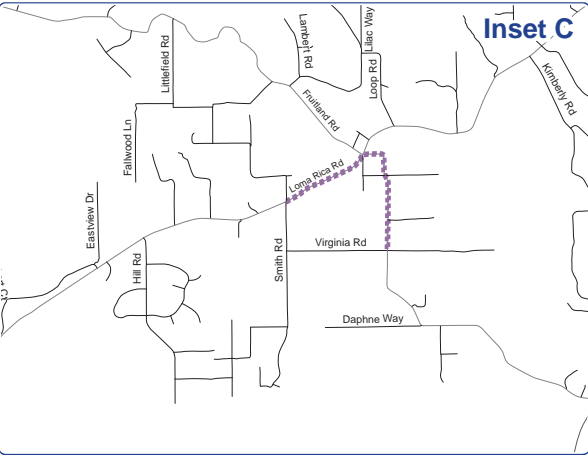
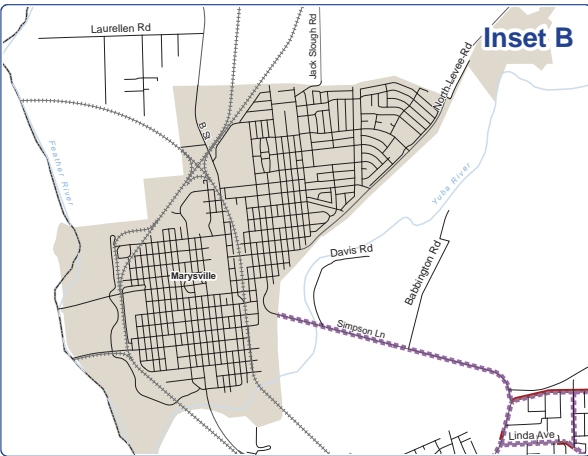
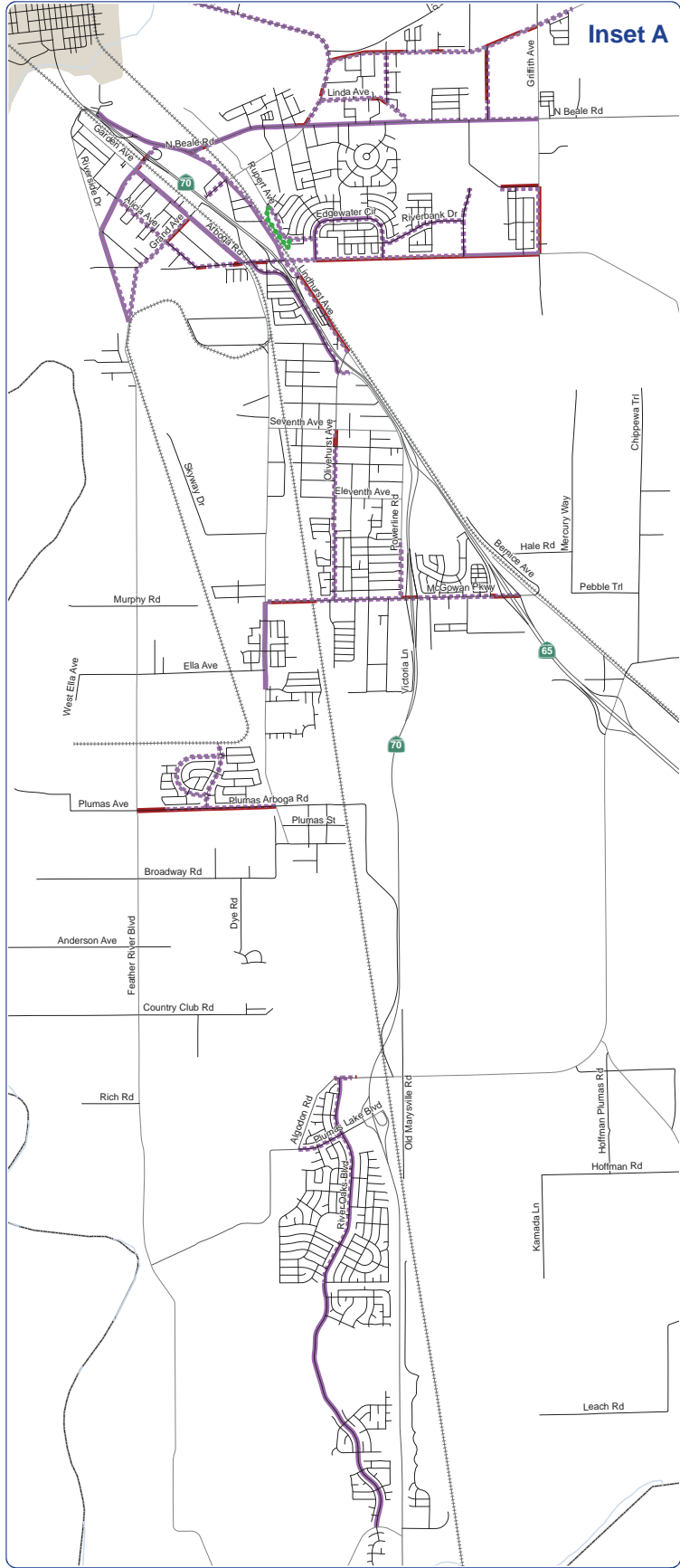
Note:

1. These facilities do not meet all applicable design criteria, but could meet Class II standards with relatively minor improvements (i.e., additional signage, striping, stencils, etc.).

Source: Fehr & Peers, 2012

Figure 3 shows the existing bikeways within Yuba County. Class II bike lanes exist on several of the County's collector and arterials streets, particularly within the communities of Olivehurst and Linda located in the southern portion of the County. Limited Class II bike lanes also exist in the northern foothill communities of Loma Rica and Brownsville.

EXISTING BICYCLE NETWORK
FIGURE 3



REGIONAL CONNECTIONS

Regional travel between Yuba County and surrounding jurisdictions is limited due to the location and terrain of the County, with the exception of a strong regional link to Yuba City located on the opposite side of the Feather River in Sutter County. Residents of Sutter and Yuba counties utilize the two bridges over the Feather River connecting Marysville to Yuba City to travel between the two jurisdictions. From Marysville, limited connections currently exist between bikeways within the City to bikeways in the unincorporated portions of the County. One notable exception is an existing bikeway on Simpson Lane that provides a connection across the Yuba River to Ramirez Street in the City of Marysville.

PAST EXPENDITURES ON BICYCLE FACILITIES

Based on the inventory of the existing bikeway network, an estimate of past expenditures is possible. Table 3 provides a summary of the past Countywide expenditures on bicycle facilities, in 2011 dollars. Chapter 7 presents an explanation of 2011 per mile costs for the three bikeway classes.

TABLE 3: PAST BICYCLE FACILITY EXPENDITURES			
Bikeway Classification	Mileage	2011 Per Mile Cost	Expenditure (in millions)
Class I Bike Paths	1.1	\$528,000	\$580,800
Class II Bike Lanes ¹	64.6	\$686,400	\$44.3 million
Class III Bike Routes	0	\$1,580	\$0
Total	65.7	N/A	\$44.9 million
Note: 1. Includes Class II lanes with minor deficiencies as previously described in this chapter. Source: Fehr & Peers, 2012			

As shown in Table 3, the past countywide expenditures on bicycle facilities total approximately \$44.9 million. Since a substantial portion of County's bike lanes were constructed as part of new development, the County's actual share of the total expenditure on bicycle facilities is less than \$44.9 million.

SUPPORT FACILITIES

Support facilities include bicycle parking, shower and changing space, and secure storage for bicycle gear. Short-term bicycle parking is provided at several locations in the southern portion of the County, including select commercial establishments and schools. Few long-term bicycle parking and shower/locker facilities currently exist. Exceptions include a limited number of bike lockers available at local commuter bus stops provided by Yuba-Sutter Transit (see image to right). Figure 4 displays the locations of existing bicycle parking facilities.



Long-term bike parking at a Yuba-Sutter Transit park-and-ride

The Yuba County Code of Ordinances, Title 12 (Zoning) was updated within the past five years to require that bicycle parking “be provided in connection with the erection, major alteration, expansion or establishment of new land use.” This ordinance contains minimum requirements for bicycle parking that vary by land use type, and relates the number of bicycle parking spaces to the required number of automobile parking spaces. The bicycle parking ordinance also provides guidance on the placement, type, and design of bicycle parking facilities, and states that larger employment centers with 50 or more employees “and projects with multiple buildings should utilize a combination of short (bicycle racks) and long-term (bike lockers) bicycle parking facilities.” Appendix D includes the full ordinance.

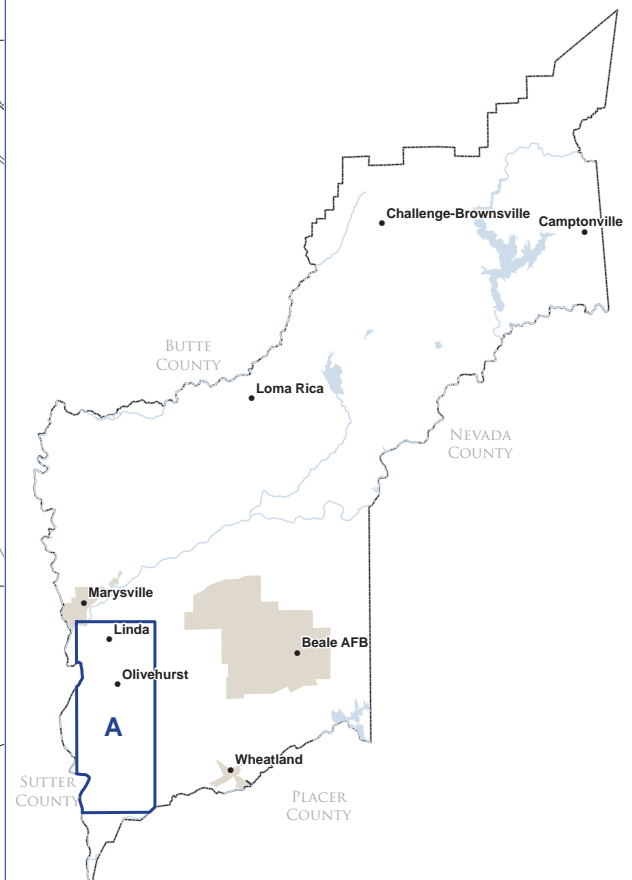
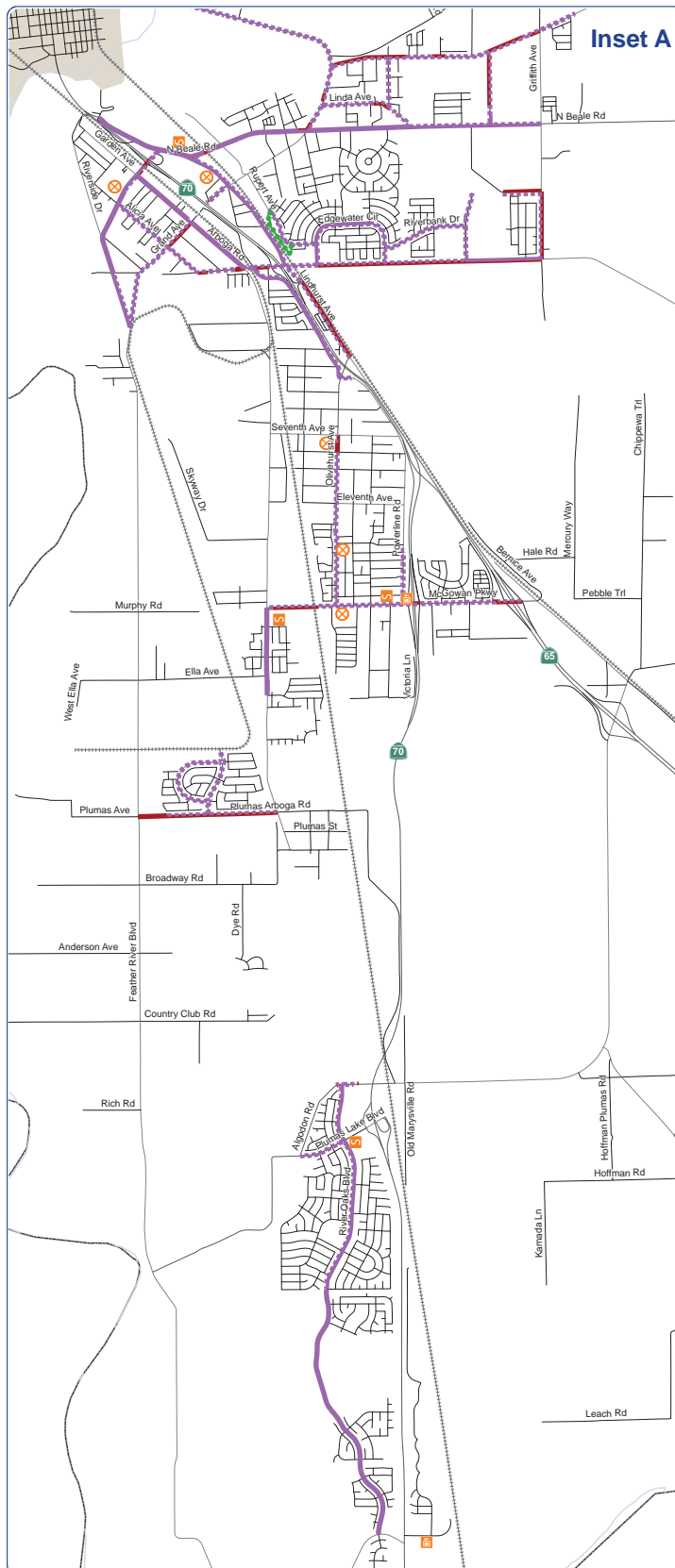
MULTIMODAL CONNECTIONS

Yuba-Sutter Transit serves as the primary transit provider within Yuba County, and offers both fixed-route and demand-responsive bus service. Four fixed local routes provide service within central Yuba County from 6:30 AM to 6:30 PM on weekdays and 8:30 AM to 5:30 PM on Saturdays on 30 to 60 minute headways. In addition to fixed local route service, rural routes provide service to the foothills communities of Brownsville, Oregon House, Willow Glen, and Loma Rica Tuesday through Thursday and to Wheatland on Tuesdays and Thursdays only. Commuter express service is provided to Sacramento on weekdays.

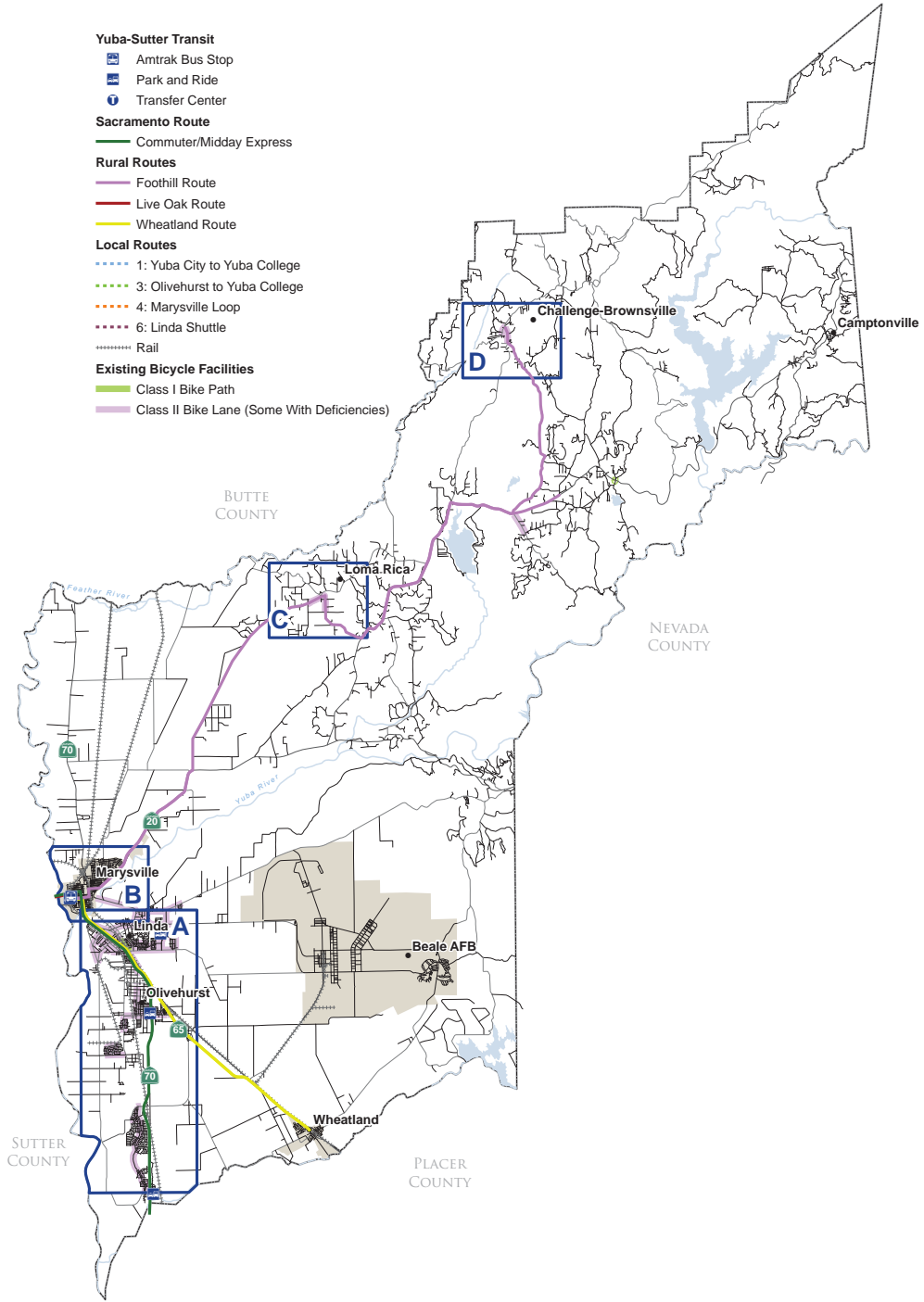
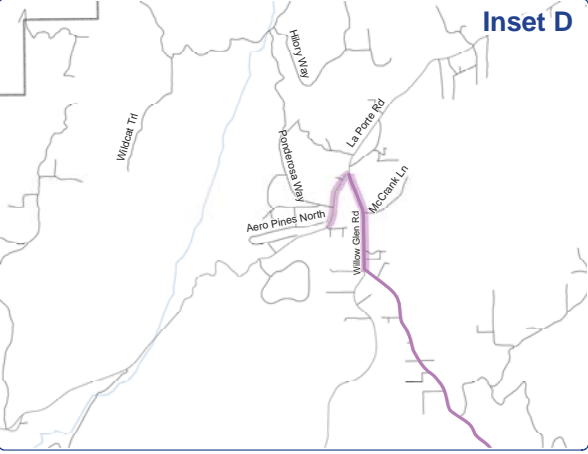
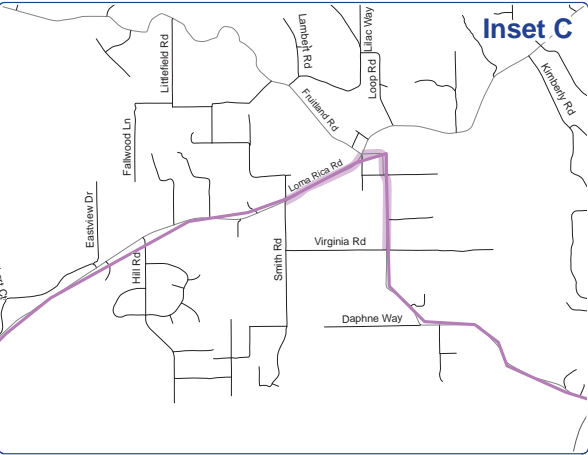
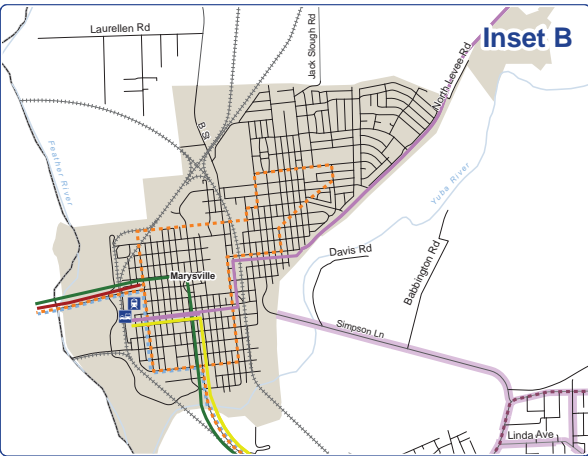
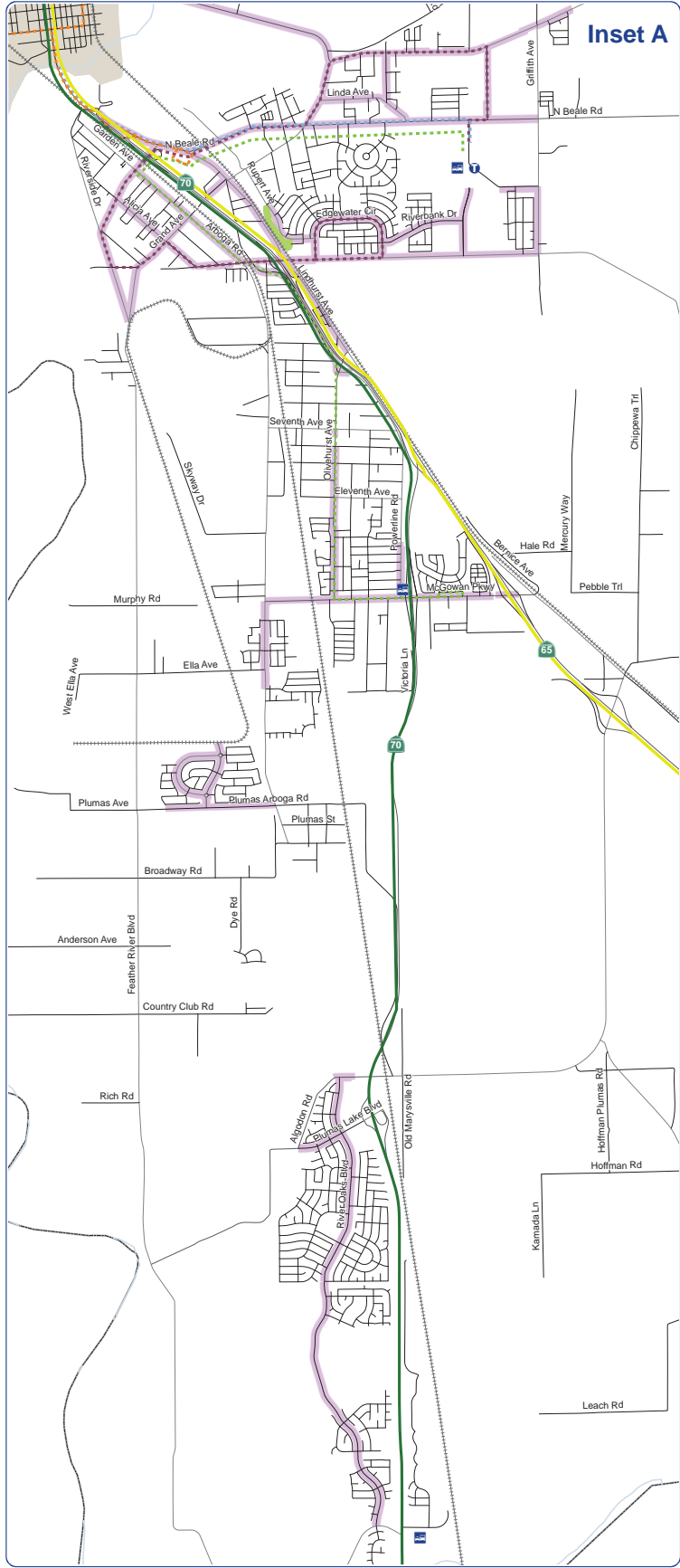
All Yuba-Sutter Transit buses are equipped with front-mounted bike racks that accommodate at least two bicycles, available on a first-come, first-served basis. Some buses, including those that provide service to the foothills, have racks that accommodate three bicycles. Bikes are not allowed inside the buses unless there are no open positions on the bike rack and it is the last bus of the day on a local fixed route. Otherwise, passengers must wait for the next bus with an available position on the bike rack. Bus stops do not typically feature bike racks. Yuba County’s two Yuba-Sutter Transit Park & Rides (the McGowan Park & Ride and the Plumas Lake Park & Ride), offer a limited number of bicycle storage lockers that are available for rent. Figure 5 displays existing Yuba-Sutter Transit routes and stop locations.

EXISTING BICYCLE PARKING

FIGURE 4



EXISTING TRANSIT FACILITIES
FIGURE 5



EXISTING AND FUTURE LAND USE PATTERNS

The Community Development Element of the Yuba County General Plan establishes land use designations and guidelines for land use density and intensity, in conjunction with goals and policies that reflect the County's intentions. The General Plan recognizes that Yuba County has three distinct physiographic areas that have developed, and will continue to develop differently from one another: the valley floor, foothills, and mountains. The General Plan describes the different types and distributions of land uses within these three areas as follows:

- The **valley floor** is the most developed part of the County and is home to most of its residents and businesses, although residential development and some business development is also scattered throughout the foothills. The County's cropland is also focused on fertile soils of the valley floor, while most grazing land is located in the foothills.
- The **foothills** have some developed rural communities, as well as agricultural, forestland, and natural open spaces.
- **Mountain areas** have a large amount of public land with open-space oriented uses, as well as some small, rural communities and a variety of agriculture and forestry.

The General Plan envisions additional development opportunities in both valley and foothill communities, including infill development in already developed portions of Olivehurst and Linda, as well as new development in designated community plan and specific plan areas (see Figure 6 for the General Plan land use diagram). The land use designations provided in the Community Development Element include separate "valley neighborhood" and "rural community" designations for future development. These designations allow for flexibility, and reflect the understanding that new development should be appropriate to its surrounding.

The vast majority of developed land within Yuba County, including development within the County's two municipalities as well as developed land in unincorporated areas, is located on the valley floor. Today, nearly three-quarters of the County's approximately 72,000 residents live in unincorporated areas, most of which are in the southern portion of the County. Much of the recent development in unincorporated areas of the County has occurred on former agricultural lands.

Vast swaths of active agricultural lands surround the developed areas of the valley floor. Apart from



The valley floor transitions to foothills and mountains in eastern Yuba County



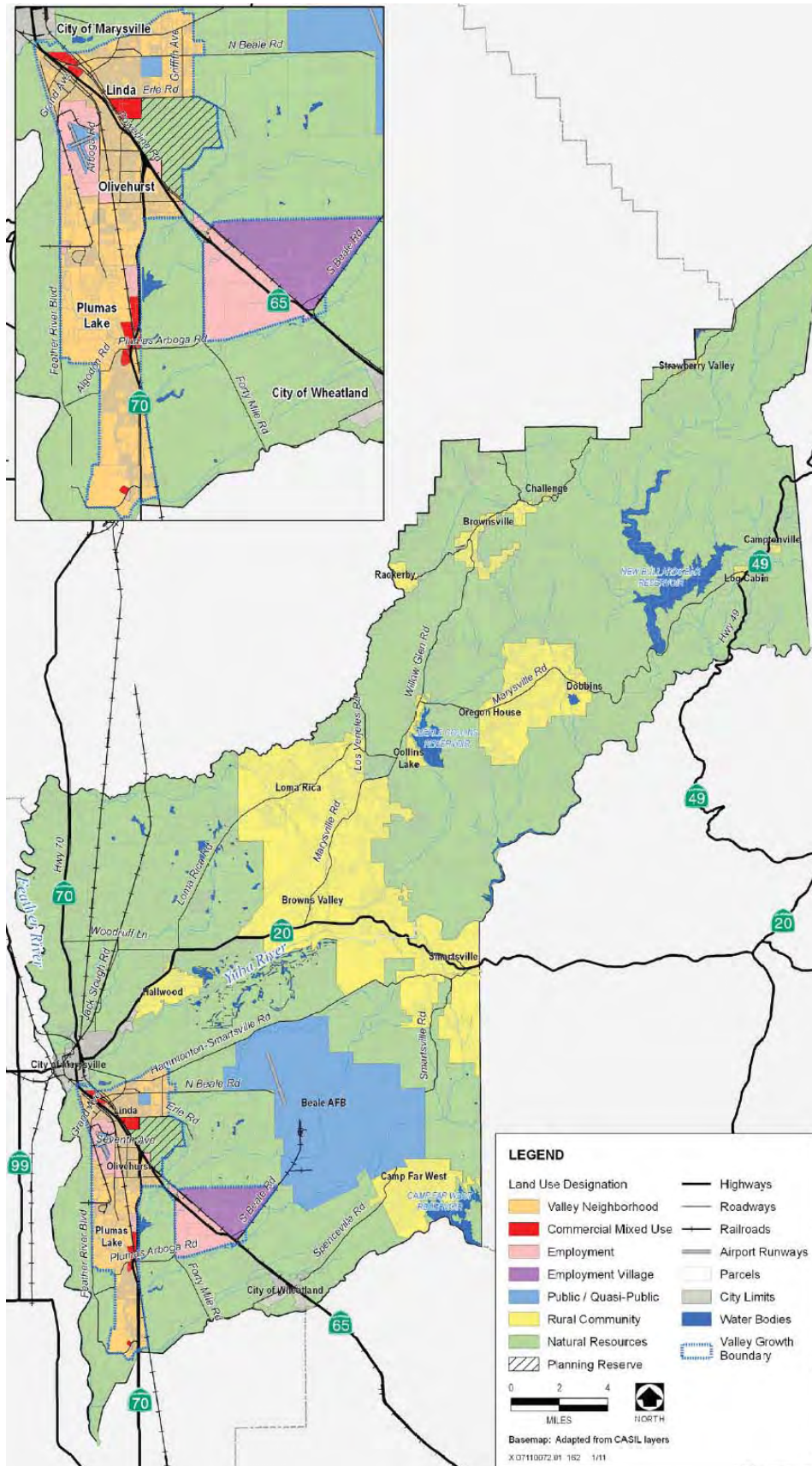
agriculture, the second largest land use type on the valley floor is Beale AFB, which occupies 23,000 acres, and serves as the County's largest employer. Yuba College is also located on the valley floor, in the unincorporated community of Linda.

The land surrounding Yuba College on the north, south, and east sides is included within the East Linda Specific Plan. According to the East Linda Specific Plan, the area is forecasted to have a population of approximately 15,580 residents at full build-out. The larger Plumas Lake Specific Plan is also located on the valley floor, south of the developed unincorporated community of Olivehurst. At full build-out, this area is forecasted to eventually house a population of nearly 30,000 residents.

Although most development within Yuba County has occurred on the valley floor, several smaller unincorporated communities exist throughout the foothills and mountainous areas of the County, including Loma Rica, Challenge, Brownsville, Browns Valley, Oregon House, Dobbins, Log Cabin, Camptonville, Smartsville, Rackerby, Collins Lake, Strawberry Valley, and Camp Far West. Some of these communities have experienced limited new development in recent years, and the General Plan Community Development Element allows for growth within designated rural community areas.

GENERAL PLAN LAND USE

FIGURE 6



BIKEWAY ACTIVITY CENTERS

Certain activity centers such as elementary, intermediate, and high schools, colleges, recreational areas, parks, and community centers (commercial, financial and general employment) require special emphasis because of their potential to attract bicycle travel. The Yuba County BMP attempts to provide at least one connection to each of these major bicycle activity centers.

Yuba County recognizes the importance of safe pedestrian and bicycle routes to school sites. The County will continue to work cooperatively with local school districts in developing and improving safe pedestrian and bicycle travel routes to schools.



Yuba College is a major activity center on North Beale Road

EXISTING AND FORECAST BIKEWAY USE

Table 4 displays the bicycle mode split for Yuba County derived from journey-to-work data collected as part of the 2000 U.S. Census. As shown in Table 4, approximately 0.4 percent of Yuba County residents use a bicycle as their primary means of transport for work trips. For commute trips of residents who work within Yuba County, the rate is approximately 0.6 percent. These figures do not account for occasional bicycle commuters, or include non-commute bicycle trips to locations such as schools or shopping centers. In most areas, the percentage of non-commute bicycle trips is greater than the percentage of bicycle commute trips as commute trips tend to be longer and less bikeable than shopping or school-related trips. Therefore, Yuba County's overall bicycle mode split is likely higher than the figures presented in Table 4.



Schools are common bicycle trip generators

TABLE 4: EXISTING HOME-WORK MODE SPLIT

Mode	Home-Work Mode Split	
	Intracounty ¹	Overall ²
Drive Alone	71.11%	73.34%
Carpool	15.19%	17.74%
Public Transportation	0.36%	0.64%
Bicycle	0.57%	0.41%
Walk	3.85%	2.35%
Other ³	8.91%	5.45%

Notes:

1. Intracounty home-work trips account for residents of Yuba County that work in Yuba County
2. Overall home-work trips account for all Yuba County residents regardless of where they work
3. Includes work at home, motorcycle, etc.

Source: 2000 Census Journey to Work

According to the California Department of Finance, the population of Yuba County as of 2010 was approximately 72,000. Data obtained from the California Employment Development Department indicates that approximately 23,100 Yuba County residents are currently employed. Therefore, just fewer than 100 Yuba County residents currently use a bicycle as their primary means of transportation to work. Yuba County's home-work bicycle mode split is about half the California statewide average bicycle mode split (0.8 percent).

Yuba County's goal is to achieve a bicycle mode share of three percent by the year 2025. This goal exceeds the state mode split goal of 2.8 percent. By 2030, Yuba County's population is anticipated to be 137,300 (91 percent increase). Table 5 shows the potential impact of a higher year 2030 bicycle mode split in the County with a population nearly double the size of the today.

TABLE 5: BENEFITS OF IMPROVED BICYCLE MODE SPLIT (YEAR 2030)

2030 Bicycle Mode Split	Bicycle Commuters	Annual Vehicle Trips Saved	VMT Saved	Lbs CO ₂ Saved
0.41% (Existing Mode Split)	181	57,803	462,422	425,392
2.8% (State Goal Mode Split)	1,234	394,751	3,158,006	2,905,119
3.0% (Yuba County Goal Mode Split)	1,324	423,680	3,389,440	3,117,946

Source: Fehr & Peers, 2012



BICYCLE SAFETY

The BMP development process included an evaluation of bicycle safety. In particular, existing bicycle collision data was reviewed to identify bicycle collision locations and the nature and type of collisions that have occurred within the County.

Yuba County provided collision data from the California Highway Patrol Statewide Integrated Traffic Records System (SWITRS). This data represents all reported bicycle/vehicle-related collisions occurring in Yuba County during the five year period from January 2006 through December 2010. The SWITRS data does not include collisions that occur on off-street paths. Table 6 summarizes the collision data by year and severity of collision. One fatality was recorded during the five year period. The vast majority of the collisions reported (88 percent) resulted in some form of injury.

Collisions involving bicycles, whether with a car, another bicycle, or a pedestrian, are generally underreported, especially less severe collisions that do not involve injuries. It is highly probable that additional bicycle accidents occurred within Yuba County during this five year period that are not included in the SWITRS data.

TABLE 6: YUBA COUNTY BICYCLE COLLISION SUMMARY (JANUARY 2006 – DECEMBER 2010)			
Year	Total Collisions	Injury Collisions	Fatality Collisions
2006	11	10	0
2007	11	9	0
2008	12	10	0
2009	6	6	1
2010	9	8	0
Total	49	43	1
Source: SWITRS Collision Data			

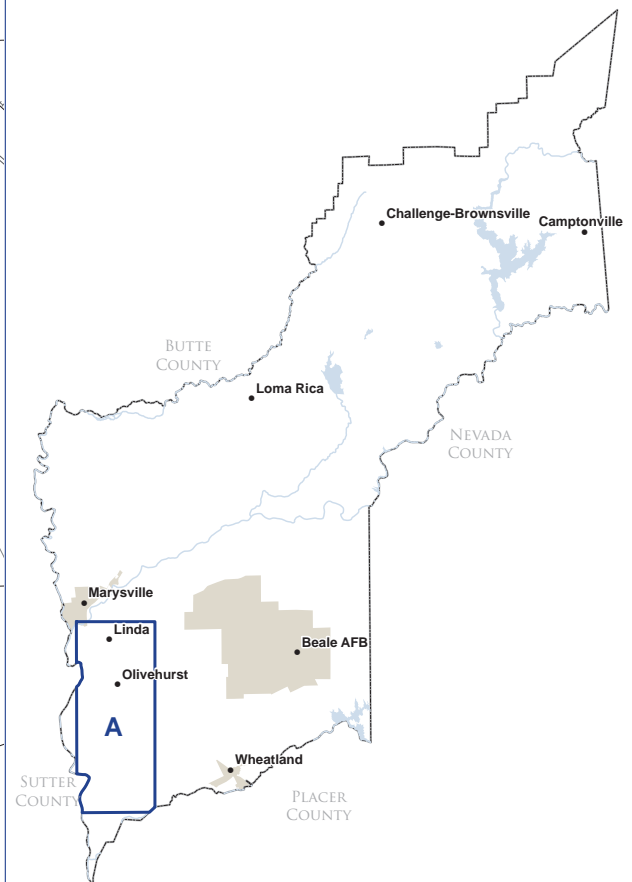
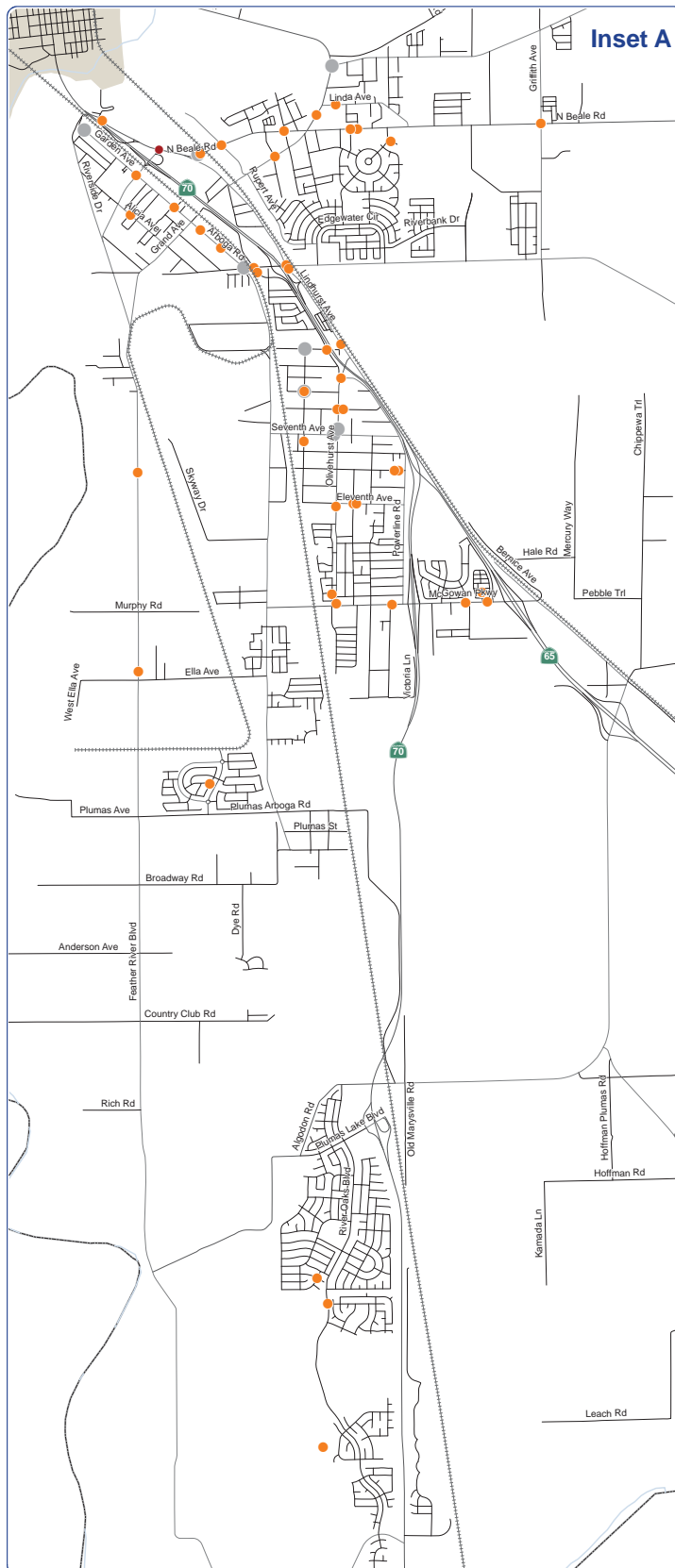
Table 7 summarizes the causes of each reported accident involving a bicycle during the five year period. A total of 49 reported accidents occurred between January 2006 and December 2010. Bicyclists riding on the wrong side of the road and right-of-way violations by automobiles represent the two most common primary collision factors in the data.

TABLE 7: YUBA COUNTY BICYCLE COLLISION SUMMARY PRIMARY COLLISION FACTORS (JANUARY 2006 – DECEMBER 2010)	
Primary Collision Factor	Number of Collisions
Wrong Side of Road (Bike)	12
Right of Way Violation (Auto)	11
Improper Turn	7
Ran Signal or Stop Sign	4
Other	15
Source: SWITRS Collision Data	

Figure 7 displays the locations of all reported bicycle collisions included in the above data. As shown in Figure 7, all reported collisions occurred within the more developed southern portion of the County. The collisions are clustered along a relatively small number of corridors, including Olivehurst Avenue, North Beale Road, Arboga Road, and McGowan Parkway.

BICYCLE/AUTO COLLISION LOCATIONS

FIGURE 7



CHAPTER 5. RECOMMENDED NETWORK

This chapter describes the proposed Yuba County bikeway network and the criteria used to develop and prioritize facilities. Public input received during two workshops, as well as via the online survey, greatly assisted with the development of the proposed network. This chapter highlights several of the proposed bicycle facilities, and discusses proposed bikeway support facilities intended to enhance utilization and enjoyment of existing and proposed bikeways in the County.

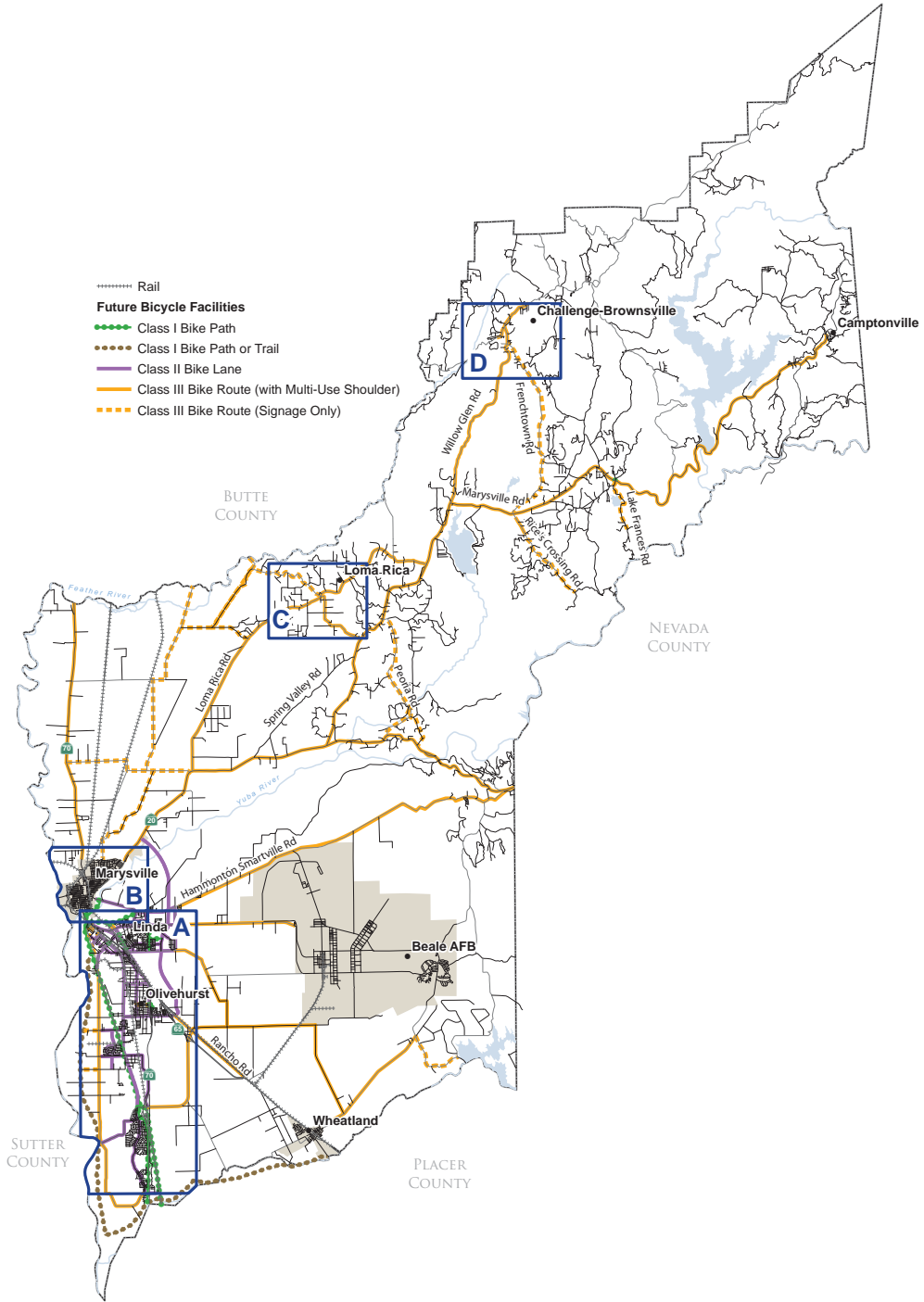
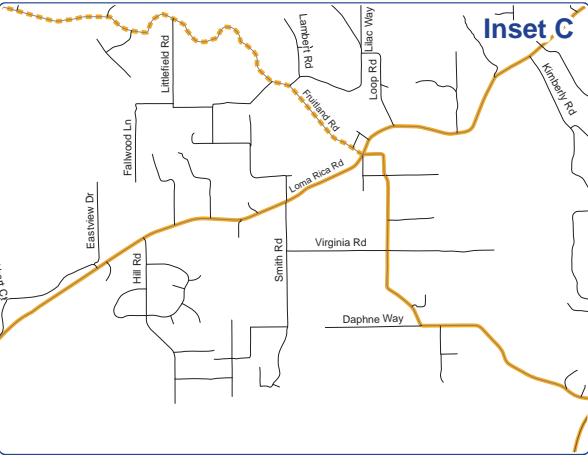
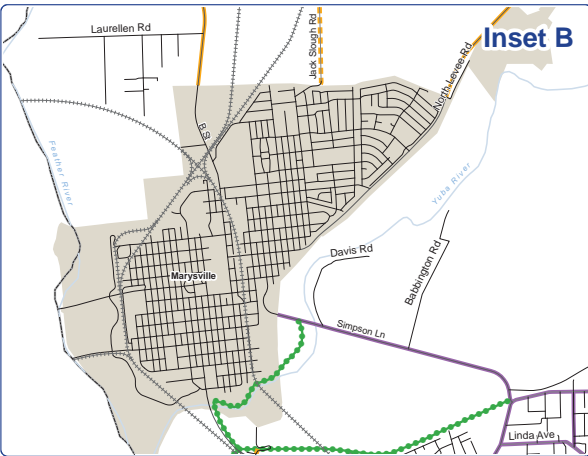
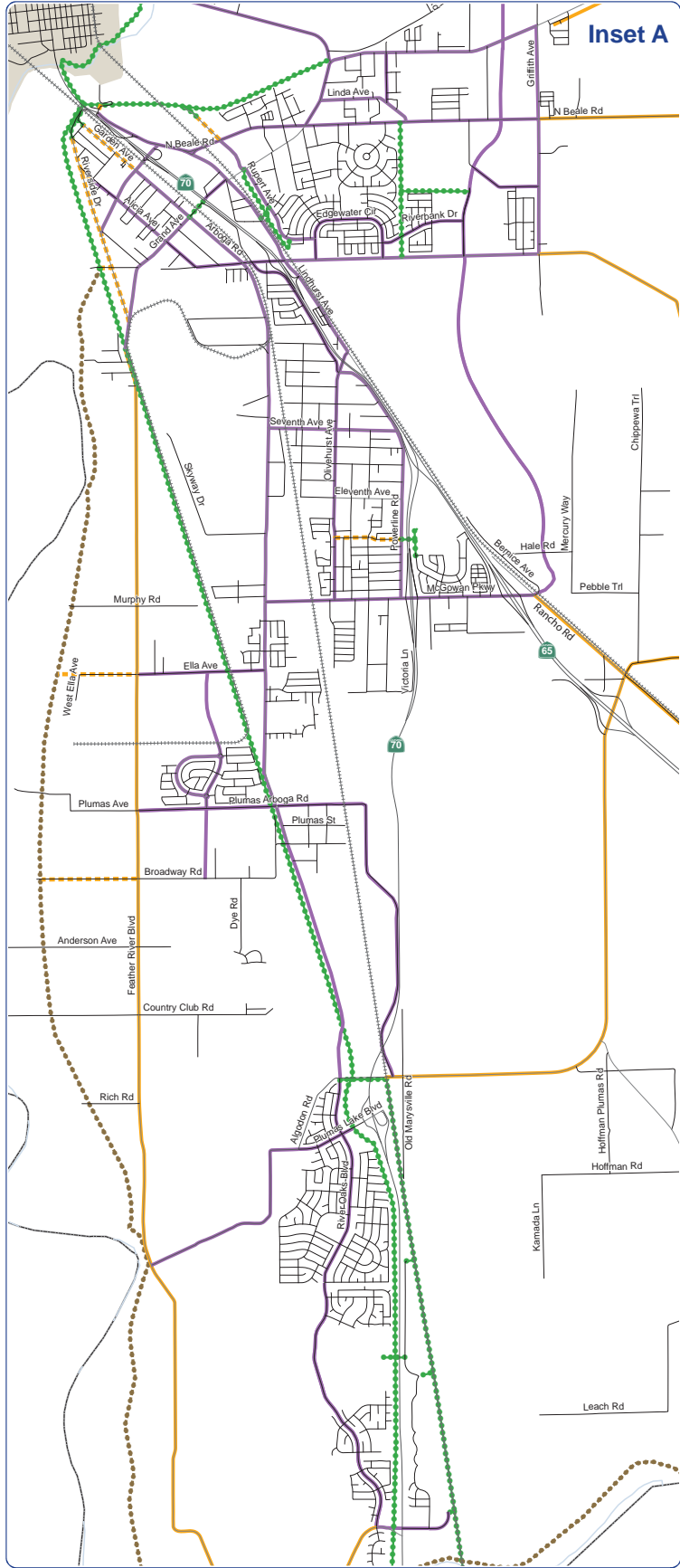
PROPOSED BIKEWAYS

The proposed bikeway network presented in Figure 8 is a continuous system of bicycle facilities connecting to numerous communities and destinations within the County. Figure 9 shows the location of proposed bicycle facilities in relationship to existing bicycle facilities. The design of the network aims to accommodate all levels of bicyclists, and increase both the amount of utilitarian as well as recreational bicycling in Yuba County. Table 8 summarizes the length of existing and proposed bicycle facilities by facility type. As shown, the proposed bicycle network expands upon existing Class I bike paths and Class II bike lanes in the County, and also envisions an extensive network of Class III bike routes.

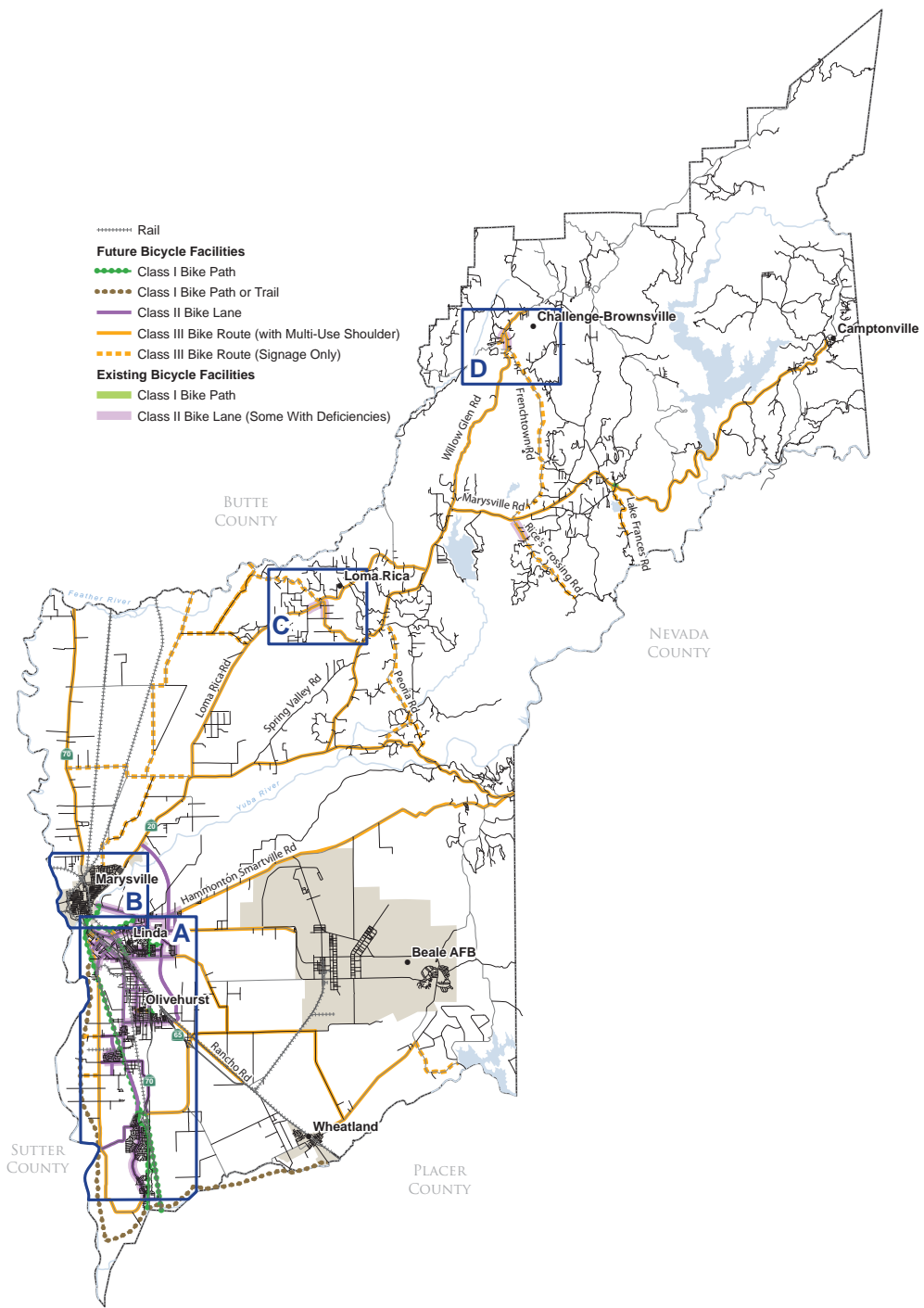
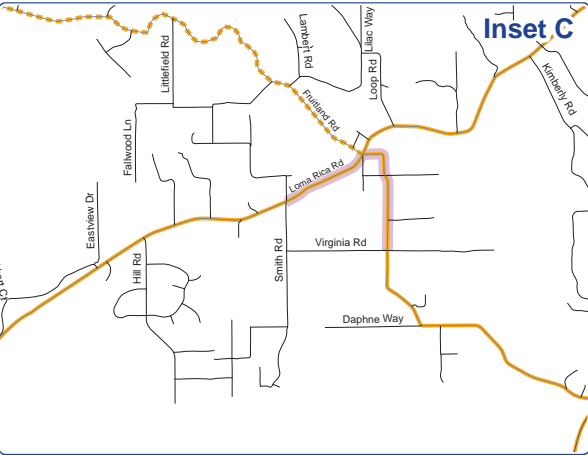
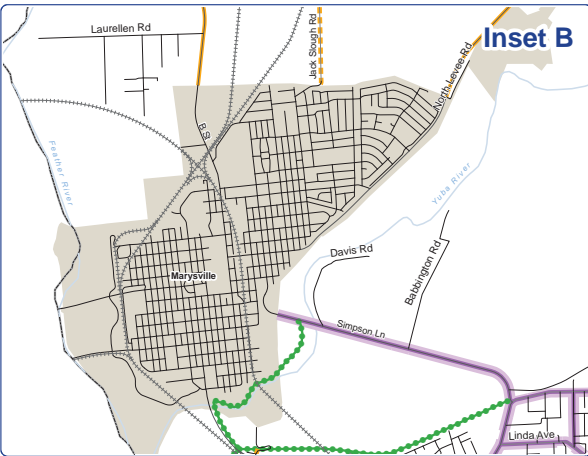
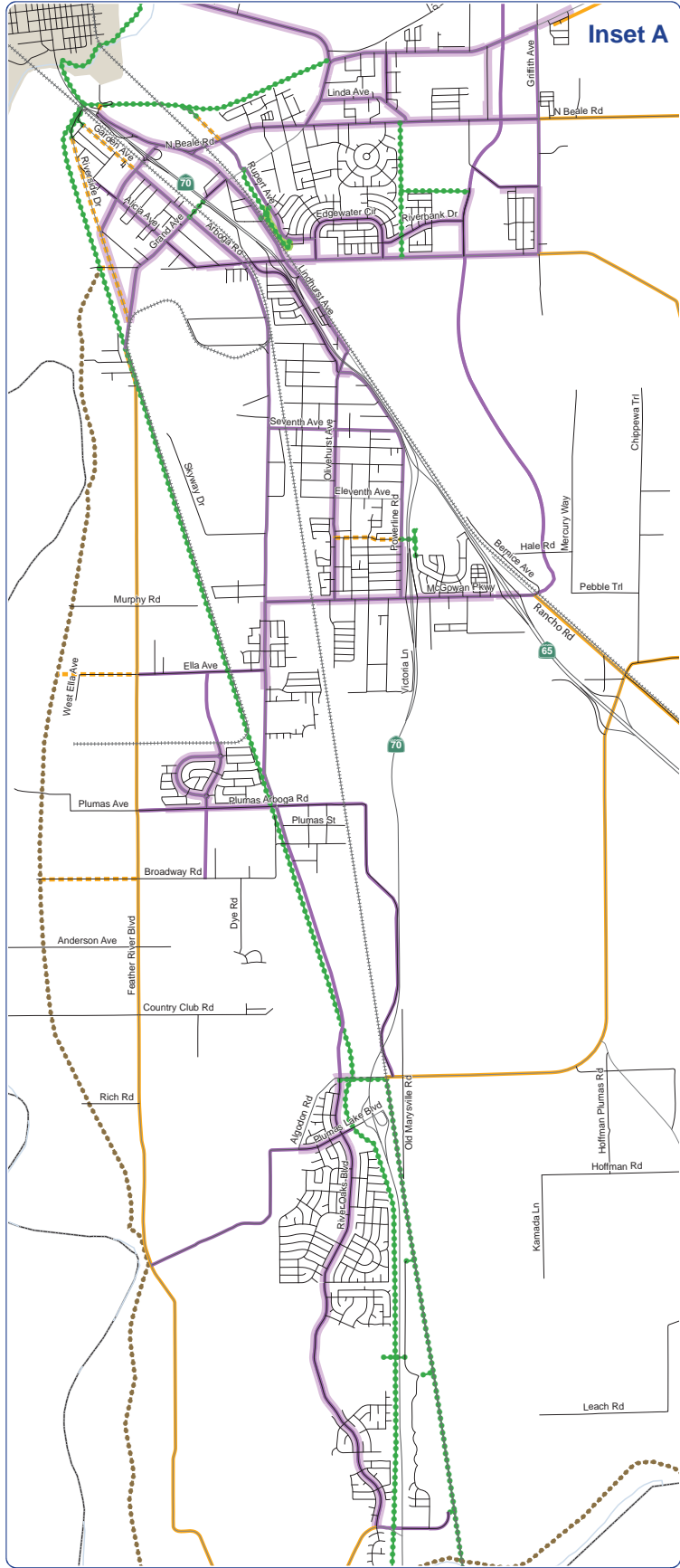
TABLE 8: LENGTH OF EXISTING AND PROPOSED BIKEWAYS BY BIKEWAY CLASSIFICATION			
Bikeway Classification	Existing Mileage ¹	Proposed Mileage	Total Mileage
Class I Bike Paths	1.1	42.2 ²	43.3
Class II Bike Lanes	28.9	27.5	56.4
Class III Bike Routes with Multi-Use Shoulder	2.7	139.8	142.5
Class III Bike Routes	0	49.3	49.3
Total	32.7	258.8	291.5
<p>Note:</p> <p>1. Some proposed bikeways' classification are different from the existing classification; therefore, these totals do not match those shown in Table 2</p> <p>2. Proposed Class I bike path mileage includes both the "bike path" and "bike path or trail" classifications</p> <p>Source: Fehr & Peers, 2012</p>			

As shown in Figure 8, the proposed Class III bike routes are located primarily in more rural settings with lower traffic volumes, while numerous additional Class I bike paths and Class II bike lanes are proposed for more developed areas and areas identified by the General Plan for future population growth. These more urban settings experience higher levels of both bicycle and vehicle trips, and are generally more conducive to utilitarian bicycle travel.

PROPOSED BICYCLE NETWORK
FIGURE 8



PROPOSED BICYCLE NETWORK WITH LOCATIONS OF EXISTING BICYCLE FACILITIES
FIGURE 9



Class I Bike Paths

The proposed network of bicycle facilities shown in Figure 8 includes approximately 42 miles of additional Class I bike paths that would form a connected system of high-quality bicycle facilities. These facilities would serve as the backbone of the Yuba County bikeway network, linking the majority of existing developed areas on the valley floor, as well as numerous areas identified for future growth. Highlights of this proposed system of Class I bike paths are discussed below:

- Linda Bike Path** – This Class I bike path would provide an exclusive bicycle/pedestrian connection between West Linda and Linda, and would help to mitigate the parallel barriers to bicycle travel presented by the UPRR tracks and SR-70. This 2.6 mile path would travel between the intersection of Riverside Drive / Poplar Avenue in West Linda and the intersection of Hammonton-Smartsville Road / Simpson Lane in Linda. The path would formalize an existing route used by bicyclists and pedestrians (see image to the left) traveling beneath the railroad tracks and the freeway, and would provide a connection to Shad Pad Park before continuing eastward along the existing levee.



The SR 70 and UPRR bridges over the Yuba River

Prior to reaching its eastern terminus, the pathway would cross beneath a second UPRR railroad line mitigating a third barrier to bicycle travel. This path would capitalize on previous investments by connecting to existing bicycle facilities on North Beale Road and Simpson Lane, and would link to a second proposed Class I bike path – an improved crossing of the Yuba River.

- Yuba River Crossing** – A strong desire for an improved bicycle crossing of the Yuba River was expressed by the public throughout the development of the proposed bikeway network. Several members of the public expressed a belief that the existing sidewalk on the east side of SR-70 bridge is not adequate and/or safe (see image to the right). Despite this fact, field observations indicate that the attached sidewalk located alongside this heavily travelled, high-speed roadway is well utilized by both bicyclists and pedestrians due to the fact that the SR-70 bridge over the Yuba River connects the two



The SR 70 bridge over the Yuba River

most densely populated areas of the County. Therefore, the proposed network includes an improved crossing of the Yuba River designed to mitigate the barrier presented by the river and to provide a safe, efficient connection between these two urbanized areas. Depending upon the timing and funding of this project, the crossing could be constructed as either a completely new facility for exclusive use by bicyclists and pedestrians, or as an attached facility constructed as part of future bridge improvements. It is envisioned that the crossing would connect with the existing bicycle facility located on top of the levee as well as the existing Plaza Park, both located within the City of Marysville.

- Sacramento Northern Bike Path** – This proposed Class I bike path would make use of abandoned and underutilized railroad right-of-way that once served the defunct Sacramento Northern Electric Railway. As with countless former railroad lines throughout the United States that have been converted to bicycle paths (including the Sacramento Northern bicycle path located in the City of Sacramento), this route is ideal for bicycling due to its relatively straight, clear, and level alignment which would result in an easy, smooth, and direct bicycle ride. These same attributes also result in much lower construction costs when compared to Class I bike paths located on entirely new alignments. Within the southern portion of Yuba County, the Sacramento Northern right-of-way travels through several existing developed areas as well as areas identified for



Portions of the abandoned Sacramento Northern Bike Path are already well-shaded



The proposed alignment is already well-graded

future growth. This proposed facility would provide a north-south artery for bicyclists and pedestrians connecting recently developed areas located north of the Bear River with more established communities further to the north. The right-of-way located on the southern end of this proposed alignment currently serves as a levee (see image above looking south from Feather River Boulevard). Further to the north, the right-of-way transitions to a grass covered berm or dirt path (see image to left looking north from Feather River Boulevard). Still further north,

railroad tracks remain in place on the segment of the right-of-way between Feather River Boulevard and just south of Ella Avenue, and are under the ownership of UPRR. However,

records indicate that no trains currently utilize these tracks, and have not utilized the route for several years. North of Feather River Boulevard, the bike path would ramp up onto the existing levee, and connect to the proposed Linda Bike Path. As proposed, it is envisioned that this path would be constructed in multiple phases, covering a total distance of 11.2 miles between the Bear River and West Linda.

In addition to the highlighted Class I bike paths above, the proposed network also includes bike paths or trails along the northern bank of the Bear River, along the eastern bank of the Feather River, along the western boundary of Yuba College, and along the UPRR tracks between Plumas Arboga Road and the Bear River. Additionally, the proposed network features three bicycle/pedestrian overcrossings of SR-70.

Class II Bike Lanes

The proposed Yuba County bicycle network includes several new, extended, or improved Class II bike lanes, designed to capitalize upon previous investments in on-street lanes, concentrated within developed areas in the southern portion of the County. Many of these bike lanes interface with one or more of the previously discussed Class I bike paths. The plan includes new and/or improved bicycle lanes within existing commercial areas, and connecting to several of the County's schools and parks. In total, over 56 miles of Class II bike lanes are included in the proposed bicycle network. Key facilities identified for new or improved Class II bike lanes include the following:

- **7th Avenue** – 0.9 miles between Arboga Road and Powerline Road
- **Arboga Road** – 5.4 miles between Broadway Road and Feather River Boulevard
- **Dunning Avenue** – 0.4 miles between Linda Avenue and Hammonton-Smartsville Road
- **Linda Avenue** – 0.7 miles between Hammonton-Smartsville Road and North Beale Road
- **McGowan Parkway** – 1.9 miles between Arboga Road and SR-65 Northbound Ramps
- **Olivehurst Avenue** – 1.8 miles between McGowan Parkway and Lindhurst Avenue
- **Powerline Road** – 1.9 miles between McGowan Parkway and Olivehurst Avenue

Class III Bike Routes

The proposed network also includes an expansive system of Class III bike routes primarily serving less populated areas of the County. These routes serve areas with lower demand for bicycle travel, or roadways with relatively low traffic volumes. Many of these routes travel through the foothills and mountainous areas of the County, and are ideal for recreational cycling. This plan differentiates between standard Class III bike routes identified by signage only, and enhanced Class III bike routes that include a paved multi-use shoulder in addition to signage (generally recommended on higher volume/higher speed roadways). See the Implementation Chapter for design standards for Class III bike routes and Class III bike routes with multi-use shoulder.



Approximately 192 miles of roadway in the County were identified for Class III bike routes. Key Class III bike routes identified as part of the proposed network include:

- **La Porte Road** – 1.7 miles between Pine Meadows Road and Nero Road
- **Loma Rica Road** – 14.2 miles between SR-20 and Marysville Road
- **Marysville Road** – 30.5 miles between SR-20 and SR-49
- **North Beale Road** – 4.6 miles between Griffith Avenue and the Beale AFB Main Gate
- **Plumas Arboga Road** – 1.6 miles between Algodon Road and Forty Mile Road
- **Spenceville Road** – 4.6 miles between Wheatland city limit and Camp Far West Road
- **Willow Glen Road** – 7.8 miles between Marysville Road and La Porte Road

PRIORITIZATION

Each proposed bikeway project was scored according to prioritization criteria. The prioritization criteria were based on input received at public workshops and through the online surveys. The criteria include:

- Directly accesses key destinations (schools, parks, commercial centers, transit stops, etc.)
- Closes a critical gap
- Serves both bicyclists and pedestrians
- Serves both utilitarian and recreational bicyclists
- Feasibility

Each prioritization criteria was given an equal weight of 20 percent; projects were ranked into three tiers of priority based on these criteria: short-, mid-, and long-term. Appendix E provides complete lists of short-, mid-, and long-term projects. Grant-ready fact sheets were prepared for high-priority projects; Appendix F includes the priority project fact sheets.

SUPPORT FACILITIES

The County should consider updating elements of the bicycle parking requirements within the Yuba County Ordinance Code and encourage shower/locker facilities with new development.

Bicycle Parking

The Yuba County Ordinance Code, Chapter 12.85.070, specifies requirements for bicycle parking for new and retrofitted development. These bicycle parking requirements are above average for similar suburban communities in the Sacramento Valley. Quantity requirements for bicycle parking vary by

land use type, which include: residential, medical offices/facilities, educational facilities, places of public assembly, recreational facilities, commercial and industrial facilities, and sports and entertainment facilities. Figure 6 shows the general locations of these land use types. The requirements also provide specifications for bicycle parking design and location. Appendix D includes the full ordinance.

As the County's bicycle mode share increases, the County should review the bicycle parking requirements to ensure that they appropriately accommodate bicycling within areas of varying urbanization. Areas in which to consider revision include:

- Quantity requirements. Increased levels of bicycling may warrant increases in the minimum quantity requirements for short-term bicycle parking. For example, the County should determine if it is justified to increase the minimum quantity requirements for short-term bicycle parking to a rate of no less than five percent of motorized vehicle parking capacity.
- Separate requirements for short-term and long-term bicycle parking. The existing ordinance suggests "a combination of short-term (bicycle racks) and long-term (bike lockers) bicycle parking facilities" for large employment centers. Future revisions should consider separate minimum requirements for short-term and long-term bicycle parking at each type of land use (residential, medical offices, educational facilities, etc.).
- Specifications for bike racks that are compatible with industry standards for locking devices. The existing ordinance specifies that "rack elements should be designed to support the bicycle upright by its frame and enable the frame and at least one of the bicycle wheels to be secured." U-locks are the current industry standard for security and bicycle rack design. Future revisions should consider specifying racks that meet these specifications (U-racks, bike hitches, etc.) and those that do not (for example, wave racks and racks that hold a bicycle by only one wheel).



Example of a U-lock



U-rack



Bike hitch



Wave rack

- Allowances for multiple types of long-term bicycle parking. The only type of long-term bicycle parking mentioned in the ordinance is bike lockers. However, bike lockers are only one type of long-term bicycle parking. Other types of long-term bicycle parking include:
 - Covered, lockable enclosures with permanently anchored racks for bicycles (bike cages)
 - Lockable bicycle rooms with permanently anchored racks

As a part of the development approval process, the County should continue to ensure that standards for bicycle parking are applied for all new development.

Shower/Locker Facilities

Showers and clothes lockers are important for bicycle commuters with a rigorous commute or whose job requires formal office attire. Academic studies show shower and locker facilities at places of employment can be a factor in encouraging commuting to work by bicycle. Employees who exercise on their lunch breaks can also benefit from these facilities.

The design of shower and locker facilities should accommodate both male and female employees and tenants. Small employment centers can provide a unisex restroom/shower room with a locking door. Larger employment centers that require more than one shower can add a separate shower and locker room to both the men's and women's restrooms. Maintenance of shower and locker facilities should be provided by the building management. Whenever possible, shower facilities should be located near bicycle parking facilities.

The Yuba County Ordinance Code, Chapter 9.90.070, specifies trip reduction credits for various transportation control measures (TCMs). Showers and lockers are offered as an optional TCM to achieve a required number of trip reduction credits:

"Two showers, one men's and one women's, shall be provided for employers of less than 200 persons. For employers of more than 200 persons, there shall be four showers with the number



increasing by two for every 500 employees. Ten lockers shall be provided for employers of less than 200 persons. For employers of more than 200 persons, there shall be 20 lockers, with the number increasing by ten for each 500 employees. Trip reduction credit: two points.”

The County should continue to encourage shower and locker facilities as an optional TCM. In general, land zoned to accommodate large employment centers that may pursue TCMs is located near the SR 70 / Plumas Lake interchange, near the SR 70 / Erle Road interchange, and on North Beale Road east SR 70. Additionally, the County could further incentivize the installation of shower and locker facilities by increasing their trip reduction credit to be greater than two points.

MULTI-MODAL CONNECTIONS

Currently, all Yuba-Sutter Transit buses are equipped with front-mounted bike racks that accommodate at least two bicycles. Some buses have racks that accommodate three bicycles. Bikes are not allowed inside the buses unless there are no open positions on the bike rack and it is the last bus of the day on a local fixed route.

Yuba-Sutter Transit should consider retrofitting all buses with front-mounted bike racks that can accommodate three bicycles. Additionally, if the bike rack is full, they should considering allowing bikes inside the bus by driver discretion to avoid requiring passengers to wait up to an hour for the next bus.



CHAPTER 6. EDUCATION, ENCOURAGEMENT, AND ENFORCEMENT

In addition to implementing bikeways, the best way to increase the number of bicycle riders is through programs aimed at education, encouragement, and enforcement.

EXISTING PROGRAMS

In many cases, Yuba County will benefit most from supporting existing local and regional programs for bicycle education, enforcement, and encouragement rather than to create new programs.

Local Programs

Bike Helmet Class

The Yuba County Department of Public Health hosts a Bike Helmet Class. This free class focuses on bicycling safety and how to properly fit and wear a bike helmet. Participants must be Yuba County residents. Helmets are free for kids under 18 years of age.

Bicycle Registration

Through the Yuba County Sheriff's Teams of Active Residents in Service (STARS), the County offers a bicycle registration to assist with the recovery of stolen or missing bicycles.

Regional Programs

511 – Sacramento Region Travel Information

The Sacramento Area Council of Governments, SACOG, promotes 511 – Sacramento Region Travel Information. 511 includes several resources for commuter bicycling in the Sacramento region:

- Sacramento Region Bicycle Friendly Business awards
- An online Bicycle Trip Planner that gives directions from origin to destination and allows users the option to select a route that is either most bike-friendly or most direct
- Bicycle Commute Guide
- Bike maps
- Other local, regional, and statewide resources

Smart Cycling

Smart Cycling provides bicycling education in the Sacramento region. Their courses include several one-hour clinics, funded by the Sacramento Transportation Management Association (TMA): Smart



Cycling, All-Weather Cycling, Basic Bicycle Maintenance, and Nutrition for Cyclists. Additionally, they teach Urban Cycling Skills, a three-part series of classes taught by League-Certified Instructors aimed at making bicyclists more confident and comfortable on streets. Participants who complete all three classes and an exam earn the Traffic Skills 101 certificate from the League of American Bicyclists. Several County departments, including the Sheriff's Office, Public Works, or Health and Human Services, can work with the Sacramento TMA to schedule a course.

May is Bike Month

Sponsored by several local agencies, May is Bike Month is a competition that challenges residents of the Sacramento region to set and achieve a mileage goal. This program motivates bicyclists of all ages and skill levels. Participants can compete on behalf of their employer, team or bike club, or school. Collectively, the goal of May is Bike Month is for the region to collectively ride over 1,000,000 miles in May.

CANDIDATE PROGRAMS

Bicycle and Pedestrian Advisory Committee

Several cities and counties in California have established a Bicycle and Pedestrian Advisory Committee (BPAC) to assist staff with the implementation of bicycle- and pedestrian-related projects and programs. BPAC members provide experience, advocacy, and advice to county departments to improve bicycle and pedestrian infrastructure. A BPAC is typically facilitated by city or county staff, meets once every one to two months, and is made up of residents appointed by an elected official.

Bicycle Education Programs

Adult Bicycling Education

In partnership with Smart Cycling and local bicycling organizations, the County could host Smart Cycling clinics or classes. The classes could be held in locations where they will be attended by target populations.

Safe Routes to School Program

Through the Federal Safe Routes to School (SRTS) Program, jurisdictions can apply for non-infrastructure projects that improve safety for bicycling or walking to school. Past examples of approved projects include bike and pedestrian safety education, the hiring of a full-time Safe Routes to School coordinator, creating a parent group to implement education programs, bike-to-school events, bike rodeos, and traffic safety assemblies.

Safety Equipment Giveaways

At public workshops, several residents indicated that some Yuba County bicyclists often ride without helmets or at night without lights or reflective clothing. At any bicycle education, enforcement, or encouragement events, the County could distribute lights, reflective vests, and helmets to interested

residents. Other cities and counties usually apply for local or state grants to fund safety equipment giveaways; sponsorship by local business may also be an option.

Bicycle Encouragement Programs

May is Bike Month Event

Given the success of the existing May is Bike Month competition, the County could work with SACOG and local advocates to host a combined event for bicycling education, enforcement, and encouragement. Candidate partners include the Yuba County Office of Education, the Yuba County Health and Human Services Department, the Yuba County Sheriff's Department, and Yuba-Sutter Transit.

Recreational Bicycling Event

Yuba County has beautiful roads for recreational bicycling. To encourage bicycling by residents, the County could work with local teams or bike clubs to host an event in Yuba County. The event could be a bicycle race, a century ride (100 miles, with less challenging rides also offered), or a Gran Fondo (challenging recreational ride). Recreational bicycling events should be coordinated with appropriate agencies (California Highway Patrol, Yuba County Public Works, etc.). Additionally, the public should receive sufficient advance notice of recreational bicycling events.

Bicycle Enforcement Programs

Moving Violations

Decreasing moving violations, committed by motorists and bicyclists alike, is critical to improving bicycle safety and encouraging all roadway users to share the road. Moving violations by motorists that affect bicyclists include: speeding, passing without sufficient distance, driving in the bike lane, right-turning in front of motorists, failing to signal, parking in a bike lane. Moving violations by bicyclists include: running stop signs or red lights, failing to signal, wrong-way riding, riding without lights at night, failure to wear a helmet (if under 18 years of age). Yuba County and the Yuba County Sheriff's Office can apply through grants through the California Office of Traffic Safety to establish a "target week" for these types of violations. In lieu of fines, the County could develop educational diversion programs for both motorists and bicyclists.



Vehicles parked in a bike lane next to the Yuba County Health & Human Services building



Radar Speed Signs

Radar speed signs feature a changeable message sign linked to a radar unit; the signs display a vehicle's actual speed as the vehicle approaches the sign. They can be mounted permanently to a pole or placed on a trailer (also known as a "speed trailer") and deployed on a temporary basis. Studies in the United States have shown that radar speed signs are an effective way of slowing traffic.

CHAPTER 7. IMPLEMENTATION

COST ESTIMATES

Unit cost estimates were developed on a linear foot basis for material costs and adjusted to account for mobilization, minor items, design fees, construction management, and contingencies. Material costs were derived from the *2011 Caltrans Cost Data Book* and similar projects in Caltrans District 3 from 2010 to 2012. Right-of-way acquisition is not included in the unit cost estimates. Table 9 shows the unit cost estimates for bicycle facilities.

TABLE 9: UNIT COST ESTIMATES	
Improvement Type	Unit Cost (per linear foot)
Class I Bike Paths	\$100
Class I Overcrossing	\$1,400
Class I Railroad Undercrossing	\$2,000
Class II Bike Lanes	\$130
Class III Bike Routes with Multi-Use Shoulder	\$110
Class III Bike Routes (Signage Only)	\$0.30
Source: Mark Thomas & Company, 2012	

Table 10 shows cost estimate totals for short-, mid-, and long-term projects by bikeway type.

TABLE 10: PROJECT COST ESTIMATES				
Bikeway Classification	Short-Term	Mid-Term	Long-Term	Total
Class I Bike Paths	\$5.6 million	\$14.2 million	\$11.0 million	\$30.8 million
Class II Bike Lanes	\$1.8 million	\$6.1 million	\$11.0 million	\$18.8 million
Class III Bike Routes with Multi-Use Shoulder	\$21.2 million	\$19.6 million	\$40.5 million	\$81.2 million
Class III Bike Routes	\$1,000	\$9,000	\$78,000	\$88,000
Total	\$28.5 million	\$39.9 million	\$62.6 million	\$131.0 million
Source: Fehr & Peers, 2011				

As shown in Table 10, the total capital cost for the proposed system of bicycle facilities is approximately \$131.0 million. Class III bike routes with multi-use shoulder represent the single most expensive facility type given their relatively high unit cost and the high proposed mileage. The cost of implementing the short-term projects, which represent approximately the top 30 percent of each

bikeway classification according to priority score, is approximately \$28.5 million. It is likely that the implementation of the short-term projects will take many years to complete.

Appendix G includes more information about cost estimates, including methodology and assumptions.

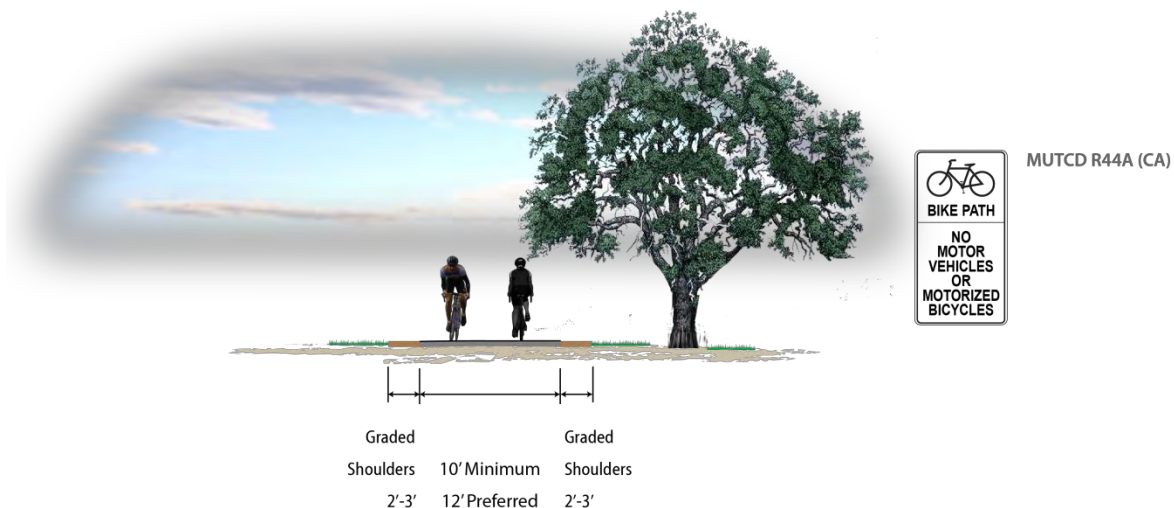
DESIGN STANDARDS FOR NEW BIKEWAYS

The Caltrans Highway Design Manual (HDM) Chapter 1000, Bikeway Planning and Design, establishes recommended criteria for planning and designing bikeways in California. The California Manual on Uniform Traffic Control Devices (MUTCD) Part 9, Traffic Control for Bicycle Facilities provides standards and specifications for traffic control devices on bicycle facilities.

The following design standards for different types of bikeways should apply to new bikeways in Yuba County. These design standards were developed based on nationwide best practices and are consistent with the HDM and MUTCD. In some cases, these standards reflect more stringent criteria than what is specified by the HDM and MUTCD.

Class I Bike Paths or Trails

Yuba County's required minimum width for a Class I bike path is 10 feet and preferably 12 feet on high bicycle volume paths. According to the HDM, the minimum paved width for a two-way bike path is eight feet. Eight feet should only be allowed where right-of-way constraints make 10 feet or 12 feet infeasible. The minimum horizontal clearance to obstructions adjacent to the pavement is two feet; three feet is preferred to maximize bicyclist comfort. The pavement material and structure of a bike path should reflect local conditions and appropriate design criteria. Appropriate landscaping should be chosen to have minimal effect on pavement quality; additionally, landscaping should maintain appropriate path visibility.

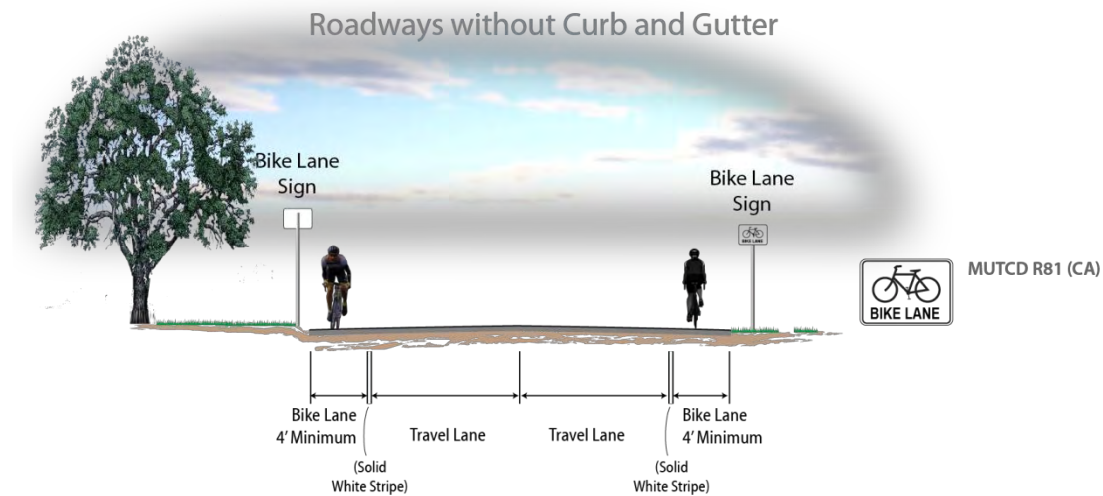


Class II Bike Lanes

Design standards for Class II bike lanes vary depending on whether the roadway has curb and gutter and on-street parking. Design standards are provided for each scenario; additionally, design standards are provided for bike lanes at intersections.

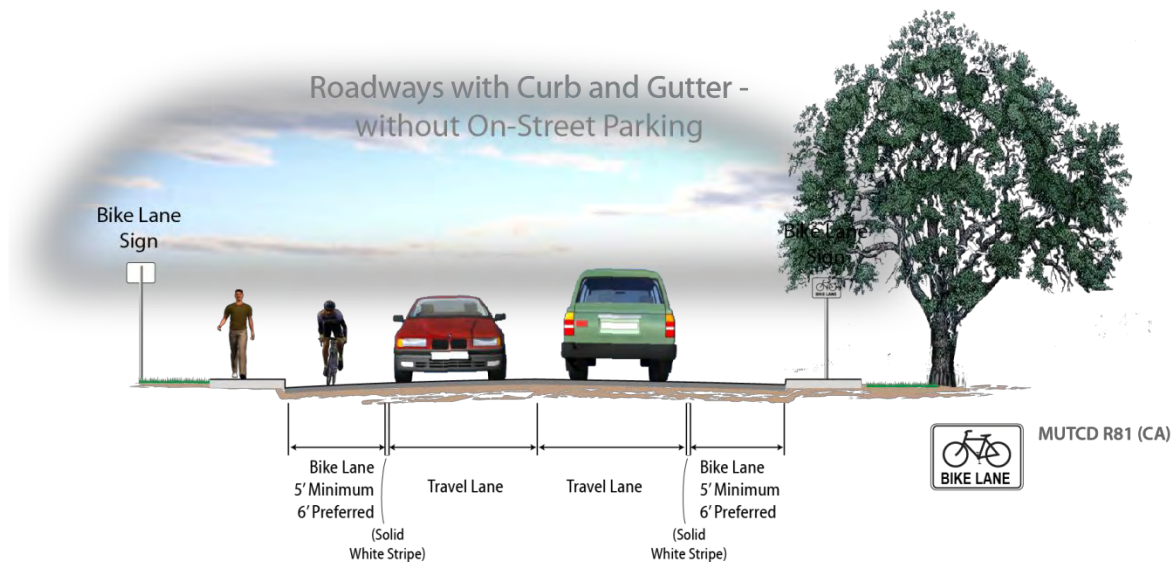
Roadways without Curb and Gutter

On roadways without curb and gutter, the MUTCD requires a minimum bike lane width of four feet.



Roadways with Curb and Gutter without On-Street Parking

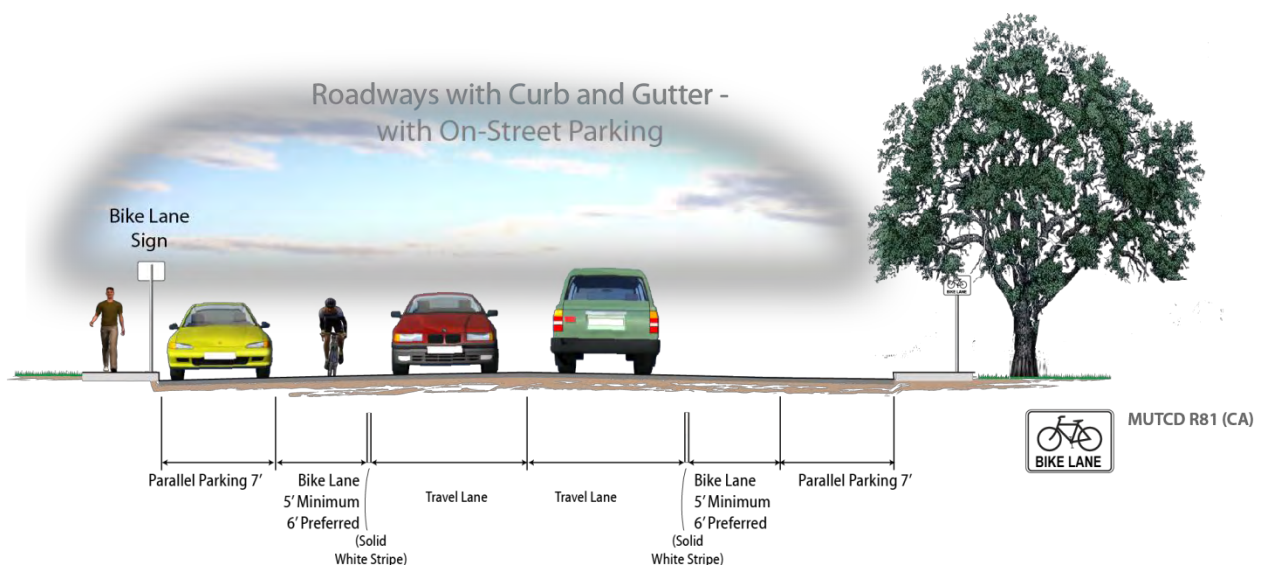
On roadways with curb and gutter without on-street parking, the MUTCD requires a minimum bike lane width of five feet. A minimum bike lane width of six feet is preferable for bicyclist comfort since most bicyclists avoid riding on the concrete gutter.



Roadways with Curb and Gutter with On-Street Parking

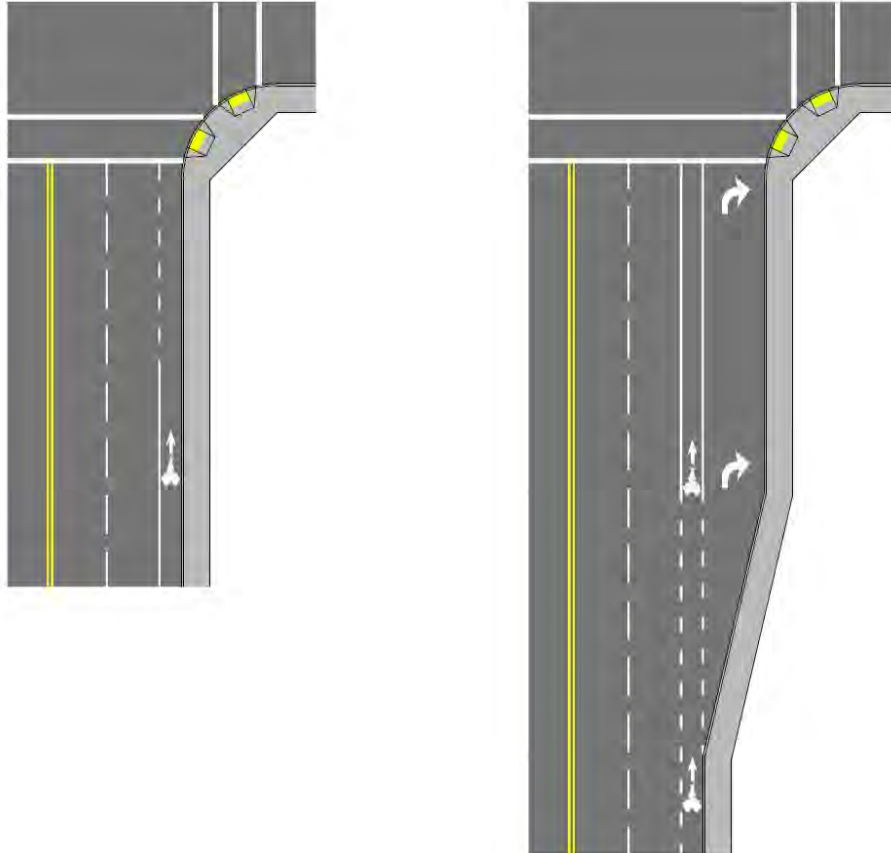
On roadways with curb and gutter, the MUTCD requires a minimum bike lane width of five feet (with or without on-street parking). A minimum bike lane width of six feet is preferable for bicyclist safety so that they can avoid riding in the cars' door zone. To accommodate a bike lane width of six feet, parallel parking stalls can be reduced to a width of seven feet.

As an alternative to conventional bike lanes, the County may pursue innovative designs for one-way protected cycle tracks that place the bike lane between the curb and the parking lane. This design uses the parking lane to provide a barrier between bicyclists and passing traffic.



Bike Lanes at Intersections

Bike lanes at intersections are primarily affected by the presence of right-turn lanes only for vehicles. Where no right-turn only lane is provided for vehicles, the bike lane should feature dotted lines as it approaches the intersection. According to the MUTCD, dotted lines are optional when a right-turn only lane is provided; however, dotted lines are preferred to emphasize the merge area for bicyclists and drivers. Bike lanes should not be discontinuous (dropped) through new intersections.

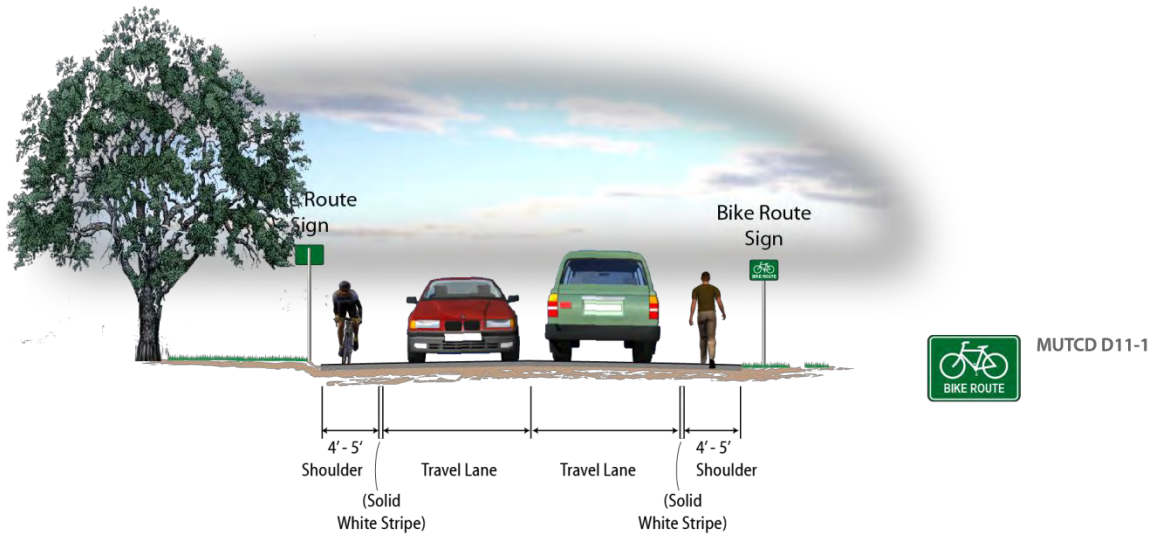


Class III Bike Routes

Design standards for Class III bike routes vary depending on whether or not they feature a multi-use shoulder.

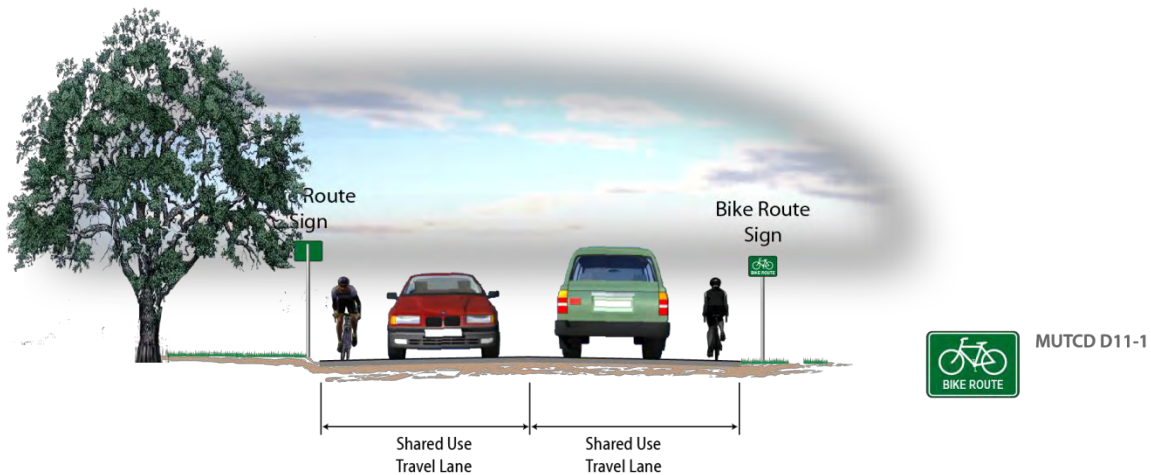
With Multi-Use Shoulder

Although no paved shoulder is required by the HDM or MUTCD for Class III bike routes, this plan proposes Class III Bike Routes with a multi-use shoulder, as funding allows. The desired paved width of the multi-use shoulder varies between four and six feet: a minimum of four feet where there is no vertical curb, and a minimum of five feet where there is vertical curb.



Signage Only

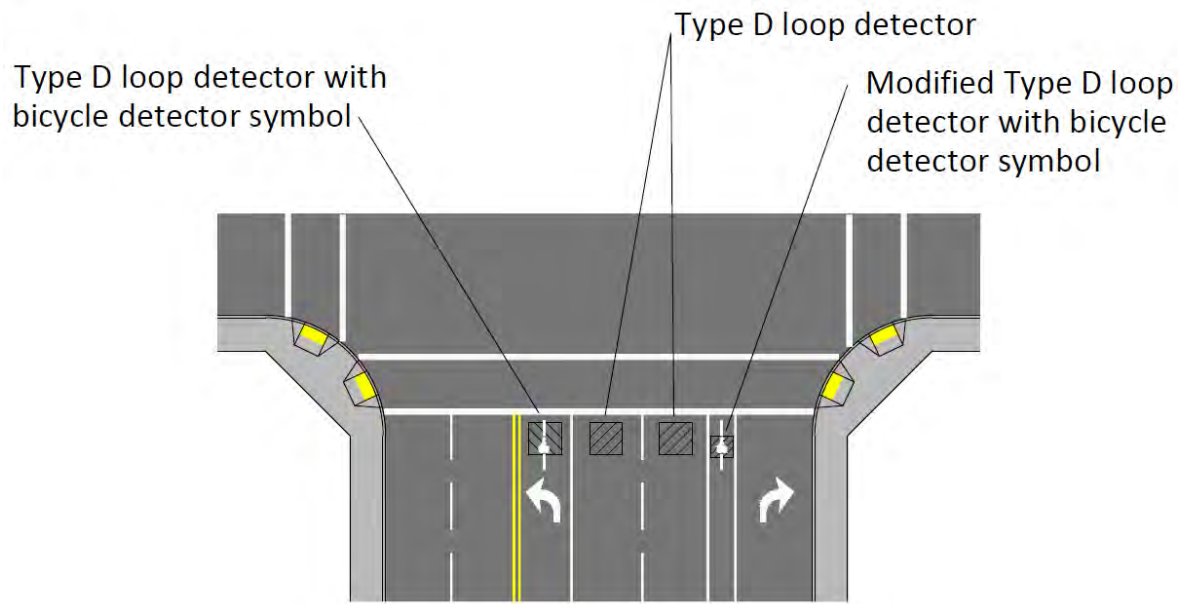
On Class III bike routes with signage only, the MUTCD specifies that Bike Route Guide signs (MUTCD D11-1) may be repeated at regular intervals so that bicyclists entering from side streets will have an opportunity to know that they are on a bicycle route.



Bicycle Detection

The California MUTCD, 2012 Edition requires the provision of bicycle and motorcycle detection on all new and modified approaches to traffic-actuated signals. Research has shown that Type D loop detectors are most capable of detecting bicyclists. Limit line detector loops should be Type D so that a bicyclist can be detected from any lane. Bike lanes at signalized intersections should include

modified Type D loop detectors with the bicycle detector pavement marking. Outside of the bicycle lane or if not provided with a bicycle lane, bicycle detector pavement markings should indicate where to position their bicycle to activate the signal.



PROCEDURES FOR IMPLEMENTATION

Class I Bike Paths or Trails

Each of the proposed Class I bike path or trail facilities will require a feasibility assessment for implementation. The feasibility assessment should identify or include:

- A preferred route
- Bike path or trail surface type (pavement versus aggregate)
- Proposed solutions to key roadway or waterway crossings
- Preliminary engineering and cost estimates
- Statements of stakeholder interest

Following a feasibility assessment, the County can fund project design and construction, add the cost to a schedule of development impact fees, or pursue grant funding.

Some Class I bike paths and trails proposed in this plan are located on existing utility, levee, and railroad rights-of-way. The County should take necessary preparations to quickly obtain or purchase these rights-of-way should they become available.



Class II Bike Lanes

Where Class II bike lanes are proposed, the County should require that roadways are modified to the desired standard for Class II bike lanes when various roadway projects are completed. Width for bike lanes can be acquired in two ways:

1. Add width to the existing roadway
2. Reduce the width of travel lanes on the existing roadway

Further feasibility assessment should determine the proposed implementation strategy for individual Class II bike lane projects.

Class III Bike Routes

For proposed Class III bike routes with a paved multi-use shoulder, the County can first sign these roadways as a Class III bike route with signage only and add “Share the Road” signage as appropriate. Similar to the strategy outline for Class II bike lane projects, the County should require that roadways are modified to the desired standard for a Class III bike route with paved multi-use shoulder when various roadway projects are completed. For key segments or gap closures, the County can either fund project design and construction or pursue grant funding.

Where space for a multi-use shoulder is not possible on both sides of a roadway, preference should be given to adding shoulder width on the uphill side (also known as a “climbing lane” or “climbing shoulder”) and on the inside of bends in the roadway. Shoulder width on the uphill side is beneficial to bicyclists because their speed is significantly lower when going uphill. Shoulder width on the inside of roadway bends is preferable because sight distance for vehicles is most limited through the inside of roadway bends.

The County can group the signage for all Class III bike routes into one project and apply for grant funding. This signage should include both the CAMUTCD D11-1 “Bike Route” signage, CAMUTCD W11-1 and W16-1 “Share the Road” signage, and guide signs for bicycle facilities.

ELIMINATING BARRIERS TO BICYCLE TRAVEL

Several barriers to bicycle travel exist in Yuba County, especially southern Yuba County where SR 70, SR 65, and the Union Pacific Railroad feature several crossing of local roadways. Specific barriers include:

- McGowan Parkway overcrossing of SR 70
- Olivehurst Avenue overcrossing of SR 70
- Erle Road undercrossing of Union Pacific Railroad
- Feather River Boulevard undercrossing of SR 70

- Feather River Boulevard undercrossing of Union Pacific Railroad
- North Beale Road undercrossing of Union Pacific Railroad
- SR 70 crossing of Yuba River



Olivehurst Avenue overcrossing of SR 70



Erle Road undercrossing of UPRR



Feather River Boulevard undercrossing of SR 70



Feather River Boulevard undercrossing of UPRR



North Beale Road undercrossing of UPRR



SR 70 crossing of Yuba River



For each of these barriers, the existing overcrossings or undercrossings are too narrow to fit bicycle lanes alongside vehicle lanes.

For short-term barrier resolution, the County should evaluate whether narrow vehicle lanes (less than 12 feet) can be implemented to accommodate bike lanes.

Research from the Transportation Research Board found no indication, except in limited cases, that the use of lanes narrower than 12 feet on urban or suburban arterials increases crash frequency. The results of the *Relationship of Lane Width to Safety on Urban and Suburban Arterials* (Potts, Harwood, and Richard [2007]) should be considered when evaluating lane widths of less than 12 feet on County roadways.

For long-term barrier resolution, the County should ensure that any reconstruction of overcrossings and undercrossings accommodates bike lanes.

FUNDING

Federal and State Programs

The majority of public funds for bicycle projects are derived through a core group of federal and state programs. Federal funds from the Surface Transportation Program (STP), Transportation Enhancements (TE), and Congestion Mitigation Air Quality (CMAQ) programs are allocated to SACOG and distributed regionally; distribution is allocated either competitively or proportionally according to jurisdiction population.

Limited amounts from the Local Transportation Fund (LTF), which is derived from a ¼ cent of the general sales tax collected statewide, can be used for bicycle facilities.

State and federal Safe Routes to School programs are potential funding sources for both bicycle and pedestrian planning and infrastructure projects that improve access to schools. Caltrans administers two Safe Routes to School programs: the state-legislated program (SR2S) and the federal program (SRTS). Each program has unique differences that affect project selection.

Bicycle facilities can be funded through the California Bicycle Transportation Account (BTA). Annually, \$7.2 million is available for projects through the BTA.

The California State Parks Recreational Trails Program provides funds annually for recreational trails and trails-related projects. Cities are eligible applicants for the approximately \$2.3 million available annually. The program requires an applicant match of 12 percent of the total project cost.

In 2010, the California Strategic Growth Council (SGC) awarded \$20 million through the Proposition 84 Sustainable Communities Planning Grant and Incentives Program. The SGC will award \$20 million more in grants in both 2011 and 2012 (totaling \$40 million). Eligible projects include plans that support greenhouse gas emission reduction and sustainable communities. Twenty percent of the grant funds are set aside for Economically Disadvantaged Communities (EDC).



Caltrans Transportation Planning Grants are available to jurisdictions and can be used for planning or feasibility studies. The maximum funding available per project is \$300,000.

The Highway Safety Improvement Program (HSIP) is a core federal-aid program that aims to reduce traffic fatalities and serious injuries on public roads. Caltrans administers the program in California and expects to receive \$100 million for the 2012/13 Federal Fiscal Year. HSIP funds can be used for projects such as bike lane projects on local roadways, improvements to Class I multi-use paths, or for traffic calming measures. Applications that identify a history of incidents and demonstrate their project's improvement to safety are most competitive for funding.

The Land and Water Conservation Program offer funds to states and through states to local governments for trails acquisition and development.

Regional and Local Funding

SACOG administers two competitive funding programs for bicycle and pedestrian infrastructure: the Bicycle and Pedestrian Funding Program and the Community Design Funding Program.

The Bicycle and Pedestrian Funding Program funds capital and non-capital bicycle and pedestrian projects throughout the SACOG region. In 2010, SACOG awarded \$8.6 million for several Bicycle and Pedestrian Funding Program Projects

The Community Design Funding Program provides financial assistance to member agencies for the implementation of development that is consistent with SACOG's Blueprint Principles. Eligible projects include improvements to public right-of-ways that promote smart growth. In the Program's fourth round, SACOG awarded over \$17.5 million for several complete streets projects.

Private/local funding for pedestrian projects comes primarily from development projects, either in the form of improvements constructed directly by developers or through development fee programs.

New policies at the federal level have resulted in a series of programs that promise to provide increased funding in the coming years for bicycle projects. The HUD-DOT-EPA Interagency Partnership for Sustainable Communities has generated a series of new grant programs to-date, including Urban Circulator grants, TIGER grants, and Sustainable Communities Planning grants. DOT Secretary Ray LaHood recently announced a new DOT policy initiative, indicating "well-connected walking and bicycling networks [are] an important component for livable communities."

Table 11 shows the applicability of these various funding sources to projects, planning efforts, and programs proposed in this plan.

TABLE 11: FUNDING SOURCE APPLICABILITY MATRIX

Funding Source	Bicycle Projects			Pedestrian Projects	Other Projects ¹	Planning and Programs
	Class I Bike Path	Class II Bike Lane	Class III Bike Route			
SACOG Bicycle & Pedestrian Funding Program	●	●	●	●	●	●
SACOG Community Design Funding Program	●	●	●	●	●	●
California Safe Routes to School (SR2S)	●	◐	◐	●	●	○
Federal Safe Routes to School (SRTS)	●	◐	◐	●	●	●
California Bicycle Transportation Account (BTA)	●	●	●	○	●	●
California State Parks Recreational Trails Program	●	○	○	○	○	○
Proposition 84 Sustainable Communities Planning Grant and Incentives Program	○	○	○	○	○	●
Caltrans Transportation Planning Grants	○	○	○	○	○	●
California Office of Traffic Safety (OTS) Grants	○	○	○	○	●	●
Highway Safety Improvement Program (HSIP) Grants	◐	●	◐	●	●	○
Land and Water Conservation Program	●	○	○	○	○	○
<p>Notes:</p> <p>¹ Includes non-pavement elements such as signal equipment, vehicle speed feedback signs, police equipment, or crossing guard equipment</p> <p>● Funding source is applicable</p> <p>◐ Funding source is potentially applicable</p> <p>○ Funding source is not applicable</p> <p>Source: Fehr & Peers, 2012</p>						