

Solano Countywide Bicycle Plan



ROUTE

BIKE

October 2004



Acknowledgements



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Bicycle Transportation Account Requirements

Approved	Requirement	Section/Page(s)	Notes/Comments
	1. The estimated number of existing bicycle commuters in the plan area and the estimated increase in the number of bicycle commuters resulting from implementation of the plan.	Section 2.0 Page 64	
	2. A map and description of existing and proposed land use and settlement patterns which shall include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings, and major employment centers.	Sections 1.1, Pages 13-20, Fig 1.3 page 21; 2.2 pages 54-58	
	3. A map and description of existing and proposed bikeways.	Section 1.4 Pages 26 – 32, Fig 1.3 pg 21; Section 3.2 Pages 71-116, Fig 3.1 pg 79	
	4. A map and description of existing and proposed end-of-trip bicycle parking facilities. These shall include, but not be limited to, parking at schools, shopping centers, public buildings, and major employment centers.	Section 1.5 Pages 24 - 28, Fig 1.4 pg 28	
	5. A map and description of existing and proposed bicycle transport and parking facilities for connections with and use of other transportation modes. These shall include, but not be limited to, parking facilities at transit stops, rail and transit terminals, ferry docks and landings, park and ride lots, and provisions for transporting bicyclists and bicycles on transit or rail vehicles or ferry vessels.	Section 1.6 Pages 29-33, Fig 1.5 Pg 33	

BICYCLE TRANSPORTATION ACCOUNT REQUIREMENTS

Approved	Requirement	Section/Page(s)	Notes/Comments
6.	A map and description of existing and proposed facilities for changing and storing clothes and equipment. These shall include, but not be limited to, locker, restroom, and shower facilities near bicycle parking facilities.	Section 1.5 Pages 24-27, Fig 1.4 pg 28	
7.	A description of bicycle safety and education programs conducted in the area included within the plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the Vehicle Code pertaining to bicycle operation, and the resulting effect on accidents involving bicyclists.	Sections 1.7 & 1.8 Pages 33-52	
8.	A description of the extent of citizen and community involvement in development of the plan, including, but not limited to, letters of support.	Sections 2.6 & 2.7 Pages 66 - 68	
9.	A description of how the bicycle transportation plan has been coordinated and is consistent with other local or regional transportation, air quality, or energy conservation plans, including, but not limited to, programs that provide incentives for bicycle commuting.	Section 1.2 Pages 2-11	
10.	A description of the projects proposed in the plan and a listing of their priorities for implementation.	Sections 3.3, Pages 74 - 115	
11.	A description of past expenditures for bicycle facilities and future financial needs for projects that improve safety and convenience for bicycle commuters in the plan area.	Section 4.3 Page 143-151	

INTRODUCTION

The main purpose of this Countywide Bicycle Plan is to encourage the development of a unified bicycle system throughout Solano County. The Plan focuses on a bikeway network that will provide connections between all origins and destinations in Solano County and in surrounding counties. Additionally, it contains policies that are designed to support and encourage bicycle transportation; design standards for use in implementation efforts; and promotional strategies. This Plan strives to identify regional bikeway facilities that are consistent with the local facilities planned in each of the STA's member agency's jurisdiction, and regional facilities in neighboring counties.

This 2004 Update of the Countywide Bicycle Plan is a component of the Solano Comprehensive Transportation Plan (CTP), which has a long-range overall planning horizon to the year 2030. Projects shown on the Proposed System map (page 72) will be given priority for various state and federal funding sources programmed through the Solano Transportation Authority (STA). It is hoped that each member jurisdiction of the STA will incorporate the Plan's recommendations into their local planning policies and road standards and will seek various funding sources as suggested to implement the projects at the local level. It is expected that through individual and combined efforts; many of the proposed projects contained within, or major portions of them, will be implemented over time.

History of the Solano Countywide Bicycle Plan

The first Solano Countywide Bicycle Plan was originally adopted in 1995 and has been used successfully to develop regional bikeway segments and secure regional, state, and federal funding. The 1999 South County Bicycle Plan Update, which incorporated the 1988 Vallejo Trails Master Plan and 1999 City of Benicia General Plan Update, focused on bicycle issues in southern Solano County. This 2004 Countywide Bicycle Plan replaces the 1995 Countywide Bicycle Plan and the 1997 and 2001 Countywide Bicycle Plan Updates. It is expanded to incorporate the many changes that have occurred since the 2001 Update, the South County Bicycle Plan, and the 1998 Solano Travel Safety Plan.

Caltrans DD-64

Caltrans adopted a policy directive related to non-motorized travel. The Caltrans Deputy Directive 64 (DD-64) reads:

The Department fully considers the needs of non-motorized travelers (including pedestrians, bicyclists and persons with disabilities) in all programming, planning, maintenance, construction, operations and project development activities and products. This includes incorporation of the best available standards in all the Department's practices. The Department adopts the best practice concepts in the US DOT Policy Statement on Integrating Bicycling and Walking into Transportation Infrastructure.



The Bicycle Advisory Committee meets regularly over the year to assist in the bicycle planning process in Solano County.

WHAT ARE THE FOUR ISSUES THAT SOLANO COUNTY MUST ADDRESS TO BECOME A BICYCLE FRIENDLY COMMUNITY?

Safety, access, quality of life, and effective implementation are imperative elements for Solano County's success as a bicycle-friendly county.

Safety is the number one concern of citizens, whether they are avid or casual recreational cyclists or bicycle commuters. A consistent bicycle network with either bike lanes or wider curb lanes and signing is generally lacking in the county. In some instances design decisions may have been made to increase vehicular traffic and/or parking capacity and speeds at the expense of bicyclists and pedestrians.

Access for bicyclists to shopping, work, recreation, school, and other destinations is hampered in some instances by the long distances between major destinations. In others, the barriers posed by the numerous highway corridors in the county (such as SR 12, SR 37, I-80, I-505, I-780, & I-680) present bicyclists with problems, as facilities are fragmented by numerous and difficult interchange crossings.

This Plan urges the STA and its member jurisdictions to take measurable steps toward the goal of improving every citizen's **quality of life**, improving public health, creating a more sustainable environment, reducing traffic congestion, vehicle exhaust emissions, noise, and energy consumption. The importance of developing a bicycle system that is attractive and inviting is a key element in preserving Solano County as a place where people want to live, work, and visit. This is increasingly important as Solano County builds housing, businesses, and roads in previously undeveloped areas. The attractiveness of the environment not only invites bicyclists to explore Solano County's beautiful rural scenery, hills, and waterways, but more importantly, a beautiful environment helps to improve everyone's positive feelings about the quality of life in Solano County.

Education, enforcement, engineering, and funding are the basic components of an **effective implementation** program for this Bicycle Plan. Education must be targeted towards the bicyclist as well as to the motorist regarding the rights and responsibilities of the bicyclist and automobile driver. Comprehensive enforcement of existing traffic and parking laws, coupled with the implementation of sound design and engineering principles for bike corridors is also

critical. This plan also encourages systematic review by STA member agency staff and the BAC of all new development projects, including public works efforts to assure compliance with planning and building codes and the principles of this Bicycle Plan. Finally, this plan proposes an aggressive strategy for obtaining grants and competing for other funding sources in order to realize the physical improvements identified as the highest priorities.

NEW ERA OF RESPECT

A key factor in bicycle and pedestrian-friendly communities throughout the country and world is the mutual respect between motorists and people on bicycle or foot. While Solano County prides itself on having smaller sized livable communities, many public comments that were received noted the lack of respect between motorists and bicyclists. It was noted in one public forum how few people stop their cars at crosswalks to allow people—even children—to cross. Many bicyclists told stories of aggression towards them from motorists. Conversely, it is not uncommon to see bicyclists running stop signs or riding two or three abreast on narrow roads, frustrating activities for motorists.



This Plan calls for a new era of mutual respect between all people using public right-of-ways. It calls on bicyclists and pedestrians to police themselves and spread the word on the importance of obeying rules-of-the-road. For example, in communities such as Davis bicyclists are widely accepted as having a right to use roadways, while at the same time bicyclists adhere to established rules of the road as well. The Plan identifies several strategies to educate the general public on the rights of bicyclists, and on the importance of sharing the road and deferring to bicyclists and pedestrians when needed. The Plan emphasizes the link between this level of respect and the overall quality of life in Solano County for everyone.

GOALS, OBJECTIVES, AND POLICIES

This section presents a series of recommended goals, objectives, and policies that will help guide future development of the regional bikeway system, and serve as a resource for local jurisdictions in forming their own policies and standards. These policies have been developed over the course of several plan updates to reflect the unique needs of Solano County.

Objective 1.0: Maximize the increased use of bicycles and the development of a comprehensive regional bikeway system as a viable alternative to the automobile.

Policies:

“If we are to meet the goals of doubling the current levels of bicycling and walking in the United States while decreasing by 10% the number of crash-related injuries and deaths, coordinated and committed effort must be put forth at every level of government.”

-National Bicycling and Walking Study, Federal Highway Administration
1994.

- 1.1 Develop a Countywide Bikeway Plan, which identifies existing and future needs, and provides specific recommendations for facilities and programs to be phased in over the next 25 years.
- 1.2 Update the Plan every three to five years, or as necessary to maintain eligibility for state and federal funds.
- 1.3 Ensure that the Plan is consistent with all existing regional, state, and federal bicycle documents, and is consistent with current adopted local bikeway master plans.
- 1.4 Design the Plan as a resource and coordinating body for local jurisdictions, and utilize existing and planned local bikeway facilities to the extent possible.

Objective 2.0: Maximize the amount of state and federal funding for bikeway improvements that can be received by Solano County.

Policies:

- 2.1 Identify current regional, state, and federal funding programs, along with specific funding requirements and deadlines.
- 2.2 Encourage multi-jurisdictional funding applications of the countywide bikeway system.
- 2.3 Develop a prioritized list of countywide improvements along with detailed cost estimates, and identify appropriate funding sources for each proposal.
- 2.4 Encourage the formation of reliable local, regional, and state funding sources, which can be used to leverage federal funds.
- 2.5 Encourage the local jurisdictions to include bikeway improvements in their Capital Improvement Plans.

Objective 3.0: Build upon the existing bikeway facilities and programs in Solano County.

Policies:

- 3.1 Identify existing and proposed bike paths, lanes, and routes, and design the regional system to maximize use to the extent feasible.

- 3.2 Encourage the use of existing natural and manmade corridors such as creeks, railroad rights of way, and corridors for future bike path alignments.
- 3.3 Identify existing bicycle education programs, and target future expansion as need warrants.
- 3.4 Conduct before and after bicycle counts at specific locations and times to measure the relative effectiveness of various investments. Submit all data to the STA for review and storage.
- 3.5 Strive for the inclusion of bicycle facilities in the development of all new road, and roadway improvement projects.
- 3.6 Ensure that new roadways, transportation projects, and developments improve bicycle travel and system continuity.

Objective 4.0: Develop a countywide bikeway system that meets the needs of commuter and recreation bicyclists, helps reduce vehicle trips, and links residential neighborhoods with destinations countywide.

“Objective 4.0: Develop a countywide bikeway system that meets the needs of commuter and recreation bicyclists, helps reduce vehicle trips, and links residential neighborhoods with destinations countywide.”

Policies:

- 4.1 Develop a commuter bikeway system that provides direct routes between residential neighborhoods and regional employment areas, schools, and universities.
- 4.2 Develop a recreational bikeway system that uses lower volume streets, off-street bike paths, and serves historic and natural destinations countywide.
- 4.3 Develop a countywide bikeway system which is connected to proposed local and regional bikeway systems, and which is a maximum of two (2) miles from any residential neighborhood in Solano County.
- 4.4 Develop a bikeway network that balances the need for directness with concerns for safety and user convenience. Where needed, develop a dual system that serves both the experienced and inexperienced bicyclist.
- 4.5 Strive to develop Class II (bike lanes) and Class I (bike paths) over Class III (bike routes) wherever feasible.
- 4.6 Develop a network of off-road mountain bicycling facilities that offer a variety of experiences for the bicyclist while minimizing conflicts with hikers and equestrian and environmental impacts.

Objective 5.0: Maximize multi-modal connections to the Bikeway System.



Multi-modal connections, such as bikes on buses have the ability to extend the commute range of bicyclists.

Policies:

- 5.1 Ensure that the countywide bikeway system serves all multi-modal stations and terminals in Solano County.
- 5.2 Work with local and regional transit agencies to install bike lockers at terminals, bike racks on at least 50 percent of all buses, and bike racks and/or designated storage areas on Capitol Corridor trains and ferries serving Solano County.

Objective 6.0: Improve bicycle safety conditions in Solano County.

Policies:

- 6.1 Monitor bicycle-related accident levels annually, and target a 10 percent reduction on a per capita basis over the next twenty 25 years.
- 6.2 Develop a comprehensive bicycle education program that is taught to all school children in Solano County.
- 6.3 Develop a system for reporting and responding to maintenance problems on the existing bikeway system.
- 6.4 Incorporate bicycle safety curriculum into existing motorist education and training.
- 6.5 Include lighting and emergency call boxes along Class I bike paths carrying high numbers of commuters as they are eligible for a variety of regional, state, and federal funding sources.
- 6.6 Identify bicycle routes located in agricultural spraying zones, and warn bicyclists through signing about the potential hazard and the typical spraying periods.
- 6.7 Incorporate provisions for safe bicycle travel and/or detours in traffic control plans and through construction zones.



A sample construction detour sign taken in another jurisdiction advises bicyclists to use alternate routes due to construction activities.

Objective 7.0: Develop detailed and ranked improvements in the Countywide Bicycle Plan.

Policies:

- 7.1 Identify the top bikeway segments proposed to be completed in the short term (2005-2010), mid term (2010 – 2020), and

long term (2020 – 2030), based on a variety of objective and subjective criteria, including number of activity centers served, closure of critical gaps, immediate safety hazards, existing bicycle use, support from the public and local jurisdictions, and availability of funding.

- 7.2 Develop detailed implementation information on each recommended segment, including length, classification, adjacent traffic volumes and speeds, activity centers served, cost, and overall feasibility.
- 7.3 Develop education and maintenance programs that may be adopted by local jurisdictions.

Objective 8.0: Encourage public participation and continuation of the Bicycle Advisory Committee.

Policies:

- 8.1 Continue regular meetings of the Bicycle Advisory Committee. Effective committees are made up of a balance of citizens (preferably bicyclists) and department staff from planning, parks and recreation, public works, and others. BAC members should help member agencies develop local bikeway master plans and submit them for approval to local City Councils. Once approved, the BAC should be involved in monitoring implementation, funding, and other matters.
- 8.2 Identify a Bicycle Coordinator in each jurisdiction who is a staff member whose responsibility is to (a) provide support to the BAC, (b) act as a liaison to the City, (c) complete funding applications, and (d) provide inter-departmental coordination.
- 8.3 Public involvement in the planning process should be maximized through workshops and other means.

Objective 9.0: Develop a coordinated marketing strategy to encourage bicycling in Solano County.

Policies:

- 9.1 Develop a series of promotional/marketing incentives to encourage employees to use bicycles to reach work. Quantify the estimated future benefits of bicycling in terms of air quality, congestion, and health.
- 9.2 Encourage and expand the Solano Napa Commuter Information (SNCI) bicycle incentives program.

- 9.3 Periodically update the BikeLinks map for public distribution to reflect new bicycle facilities and information.
- 9.4 Sponsor annual bicycle events such as Bike to Work Week, the annual Solano Bicycle Classic, and adult safety courses in conjunction with other congestion management efforts.

EXPECTED BENEFITS OF THE BICYCLE PLAN

Save lives. Reduce the accident and fatality rate for bicyclists through design standards and guidelines, education, and enforcement.

Provide needed facilities and services. Meet the demand and increased use of bicycles as a means of travel around the county. With a goal of doubling bicycling by 2015, the bicycle commute share would increase from 1,187 adult commuters (2000 U.S. census)—about one percent mode share—to 2,375 adult commuters. Factoring in the potential for children bicycling to school, bicycle-to-transit trips, and other utilitarian trips, Solano County has the potential to increase the bicycle mode share to close to four percent by 2030, far above the national average.

Improve the quality of life in Solano County. Design and build people-friendly streets, paths, trails, and activity centers available to everyone, and support sustainable community development. Reduce traffic congestion, vehicle exhaust emissions, noise, and energy consumption by encouraging healthier and more active forms of travel. Encourage visitors to stop and enjoy Solano County by bicycle.

Maximize funding sources for implementation. Equip the STA and its members to successfully compete for state and federal funding, by meeting the requirements of the California Bicycle Transportation Act, the Transportation Equity Act for the 21st Century (TEA-21), and future state and federal funding sources.

PROGRESS SINCE THE 2001 BICYCLE PLAN

Since the 2001 Plan Update was adopted, much progress has been made toward achieving the goals it set forth. The achievements include:

- Solano Bikeway – Phase I (Vallejo): Phase I of the Solano Bikeway project was awarded approximately \$2,350,000 in Transportation Enhancement Activities (TEA), Transportation Fund for Clean Air (TFCA), Environmental Enhancement and Mitigation (EE&M) funds, and local TDA Article 3 funds to construct a Class I bike path adjacent to I-80 from Columbus Parkway to Hiddenbrooke Parkway in Vallejo. This first phase of the project was fully completed and opened to the public in the fall of 2001.
- Dixon to Davis Bike Route (County): The County of Solano completed the Dixon to Davis Bike Route in October 2003, a vital 6-mile link in the north County that connects the communities of Dixon and Davis. The newly opened bikeway has exceeded use expectations and proven to be widely used by both commuter and recreation riders.
- Central County Bikeway (Suisun City): Suisun City was awarded over \$1.4 million in grants from more than 10 different sources to construct the Central County Bikeway along Highway 12 from the Suisun City Multi-Modal (Amtrak) Station to Peterson Road and Travis Air Force Base. The project has been constructed from Marina to Peterson and opened to the public in July 2003.
- Southside Bikeway (Vacaville): the City of Vacaville continued to expand its popular bikeway system, linked to the Alamo Creek Pathway system and part of the countywide primary bikeway system. Vacaville continued its implementation of the Alamo Creek and Southside Bikeways.
- The Green Valley Class I Bike Path (County): The County completed a new Class I path in 2001 along Green Valley Road from Rockville Road to the Fairfield City Limit, linking to existing Fairfield facilities.
- 2003 Solano Bikeway Extension Feasibility Study (Fairfield): The City of Fairfield recently completed the Solano Bikeway Extension Feasibility Study. The extension study was performed to identify an alignment for the Phase 2 extension



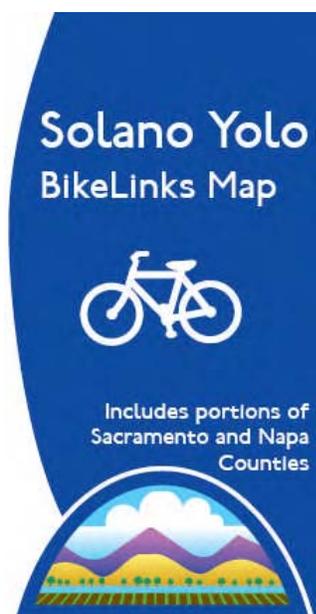
The Solano Bikeway, which opened in the fall of 2001, parallels I-80 in Vallejo from Columbus Parkway to Hiddenbrooke Parkway.



Ribbon cutting ceremonies at the Dixon to Davis Bike Route were in October 2003.



Ribbon cutting ceremonies at the Central County Bikeway were held in July 2003.



Provided by:

Solano Transportation Authority
Solano Napa Commuter Information
Solano Bicycle Advisory Committee
Yolo-Solano Air Quality Management District

Solano-Yolo BikeLinks Map helps to promote commuter and recreational cycling in the region.

of the Solano Bikeway from its current terminus at McGary Road just south of Hiddenbrooke Parkway/American Canyon Road, north to the Solano Community College in Fairfield. Implementation of the Solano Bikeway Extension is critical to close a major gap in the current bikeway system between Fairfield and Vallejo.

- BikeLinks Maps (STA): The Solano Transportation Authority produced a fourth version of the popular BikeLinks map. The latest edition of this useful guide to bicycling conditions in the region is available on-line on the STA's website, www.solanolinks.com/.
- Bicycle Advisory Committee (STA): The BAC continued to meet and make bicycle funding recommendations and decisions on bicycle project planning and issues of countywide significance.
- Carquinez Bridge Bikeway (Caltrans): The Carquinez Bridge Bikeway, completed and opened in the spring of 2004, is a component of the Carquinez Bridge Replacement Project. The new suspension bridge, designed to meet seismic safety, replaces the existing 1927 steel truss bridge and provides pedestrian and bicycle access across the straight.
- State Route 37 Improvement Project (Vallejo): Caltrans is currently constructing improvements on a 2.5 mile portion of State Route 37 in Vallejo from the Napa River Bridge on the west end to beyond Walnut Street/Mini Drive on the east end. The project includes a new Class I bikeway which will be located on the north side of the improvements. The project will become an alignment of the Bay Trail connecting to trails in the White Slough area, and will serve local neighborhoods and businesses in the area.
- Pleasants Valley Road Bridge Replacement Program (County): The County constructed a new bridge on Pleasants Valley Road at Pleasants Creek to replace a narrow bridge that was destroyed in a storm. The new bridge has four-foot shoulders – suitable for Class II bike lanes – to accommodate bicycle travel. This is the seventh bridge that the County re-constructed on Pleasants Valley Road in the past decade in an effort to eliminate some of the constrictions along the road.

LOCAL ADOPTION PROCEDURE

It is important to note that each city and the County can adopt this Plan and meet state and federal requirements for grant funding sources to develop the projects contained within. However, each jurisdiction has the option to develop and approve its own bicycle plan, or to utilize some portion of this Plan to do so. To the extent feasible, this Plan has incorporated existing local plans and priorities as part of its recommendations to eliminate that need. Local projects not specifically included in this Plan can be adopted and funded by each community as well.

Caltrans has not developed a standard policy about how County Bike Plans can be used by local jurisdictions to meet Bicycle Transportation Account (BTA) requirements. However, the Caltrans Bicycle Facilities Unit (BFU) has been fairly consistent in their approach to this matter. There are basically 3 options for a local agency (including a county, town, city) to qualify for BTA funding. First, the agency can complete their own local plan. Second and third, they could (a) use the County Plan provided to each agency on CD to create a local Bicycle Master Plan or (b) to adopt the County Plan with specific caveats and additional information to make it relevant to that community. Caltrans supports this position as it relates to using County Plans for cities and towns.

The steps to provide the additional level of detail often required for a local agency over and above what is possible to provide in a County Plan are outlined below.

1. **Land use map.** Include the most recent copy of the local agency's land use map from its General Plan in the Plan.
2. **Existing and proposed bicycle transport and parking facilities in connection with other modes.** The County Plan typically provides a countywide summary of both of these items. The local agency may wish to supplement this with a paragraph describing the general extent of bicycle parking in each community, and the presence of any multi-modal terminals (but excluding bus stops except where they are transfer points).
3. **Existing and proposed facilities for changing clothes.** This is impossible to define at the local level in a County Plan, although most County Plans identify recommendations for future changing facilities and showers. According to the BFU, this requirement may be met by identifying the location of any schools, parks, or other public locations

where bicyclists may be able to change their clothes and possibly shower. Caltrans did not intend it to include private showering or changing facilities. The local agencies may wish to write a paragraph describing existing parks, schools, or other public facilities that have changing or shower facilities.

4. **Past expenditures.** Provide a simple estimate of the past annual amounts spent on bicycle facilities in the local agency's community, including TDA, regional, State, and Federal grants.

MAJOR RECOMMENDATIONS OF THE COUNTYWIDE BICYCLE PLAN UPDATE

The Countywide Bicycle Plan recommends the completion of a comprehensive bikeway network and support facilities, along with new educational and promotional programs to improve conditions for bicyclists in Solano County. The primary countywide system calls for the implementation of approximately 140 miles of bikeways connecting all of the member agencies at an estimated cost of approximately \$54 million over the 25-year life of the plan. The key primary segments identified for implementation in the short-term (next five years) include:

12. The Solano Bikeway Extension – connecting Vallejo and Fairfield.
13. State Park Road Overcrossing – connecting cyclists across I-780 in Benicia to the Benicia State Recreation Area.
14. Jepson Parkway Bikeway Phase I – the first phase of this planned cross-county route from SR 12 in Suisun City north to Bella Vista Drive.
15. Central County Bikeway – a critical gap closure in the Central County Bikeway project connecting the existing route from its terminus at Marina Boulevard to the Amtrak Station in Suisun City

1.0 EXISTING CONDITIONS

This section addresses the following components of the Solano Countywide Bicycle Plan:

- Identification of Existing Bikeway Plans, Policies, and Standards;
- Definition of Bikeway Classifications;
- Evaluation of Existing Bikeways;
- Identification of Existing and Proposed Support Facilities;
- Identification of Existing and Proposed Multi-modal Connections; and
- Evaluation of Bicycling Safety.



Bike lanes on Mare Island Way in Vallejo lead to the Baylink Ferry.

The information presented in this chapter for each of these components is the result of the data collection efforts of the Solano Transportation Authority and its consultant. As part of these efforts, field surveys were conducted to identify and evaluate bikeway facilities in Solano County. The information collected had been used to assist in the development of the project updates recommended in this Plan.

1.1 STUDY AREA

Solano County is located in the northeastern edge of the San Francisco Bay Area (see Figure 1.1). Most of the eastern portion of the county is flat and used for a variety of agricultural uses. This part of the county also includes portions of the Sacramento River Delta and Suisun Bay. Much of the northern county near Dixon and east of Interstate 80 (I-80) is also relatively flat agricultural land. On the other side of I-80, however, the coastal mountain range separating Solano County from Napa County rises up to elevations near 3,000 feet at the county line. In the southwest part of the county, sharp topographic contrasts occur as the rolling foothills of the coastal mountain range taper to the tidal flats of San Pablo Bay and Southampton Bay. From a bicyclist’s perspective, each part of Solano County offers some unique riding opportunities. At the same time, it poses serious challenges to riders because of topography, climate, and limited facilities.

BTA Requirement B

Map and description of existing and proposed land use and settlement patterns

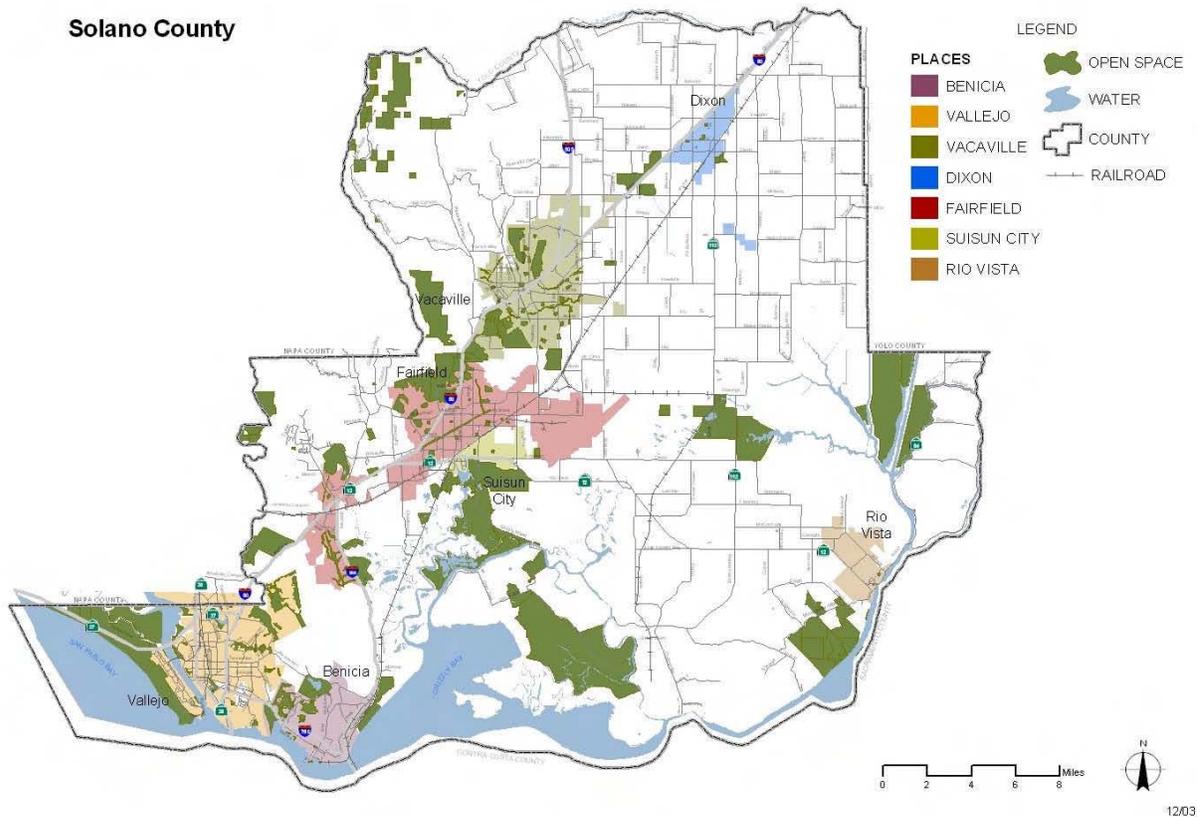


FIGURE 1.1: STUDY AREA

BTA Requirement I

Description of how the bicycle transportation plan has been coordinated and is consistent with other local or regional transportation, air quality, or energy conservation plans, including but not limited to, programs that provide incentives for bicycle commuting.

1.2 RELATIONSHIP TO EXISTING POLICIES, PLANS, AND STANDARDS

This Plan updates the following Solano County bikeway planning efforts:

- Solano Countywide Bicycle Plan Update, 2001;
- South County Bicycle Plan Update, 1999;
- Solano Countywide Bicycle Plan Update, 1997;
- Solano Countywide Bicycle Plan, 1995;
- Solano Countywide Bikeway Plan, 1982, and
- Solano County Transportation Plan, 1979.

ROLE OF THE BICYCLE PLAN AND CALTRANS COMPLIANCE

The Solano Countywide Bicycle Plan is primarily a coordinating and resource document that has been developed to guide the creation of a primary bikeway network and associated system enhancements, programs, and safety improvements in Solano County. When adopted, this plan will help the STA and its member agencies prioritize bicycle improvements for implementation and gain access to the California Bicycle Transportation Account and other state and federal funding programs for bicycle transportation projects for which Caltrans plays an oversight and review role.



According to the 1994 California Bicycle Transportation Act, all cities and counties should have an adopted Bicycle Transportation Plan that contains:

- a. The estimated number of existing bicycle commuters in the plan area and the estimated increase in the number of bicycle commuters resulting from implementation of the plan.
- b. A map and description of existing and proposed land use and settlement patterns which shall include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings, and major employment centers.
- c. A map and description of existing and proposed bikeways.
- d. A map and description of existing and proposed end-of-trip bicycle parking facilities. These shall include, but not be limited to, parking at schools, shopping centers, public buildings, and major employment centers.
- e. A map and description of existing and proposed bicycle transport and parking facilities for connections with and use of other transportation modes. These shall include, but not be limited to, parking facilities at transit stops, rail and transit terminals, ferry docks and landings, park and ride lots, and provisions for transporting bicyclists and bicycles on transit or rail vehicles or ferry vessels.
- f. A map and description of existing and proposed facilities for changing and storing clothes and equipment. These shall include, but not be limited to, locker, restroom, and shower facilities near bicycle parking facilities.



A description of bicycle safety and education programs conducted in the area included within the plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the

area to enforce provisions of the Vehicle Code pertaining to bicycle operation, and the resulting effect on accidents involving bicyclists.

- g. A description of the extent of citizen and community involvement in development of the plan, including, but not limited to, letters of support.
- h. A description of how the bicycle transportation plan has been coordinated and is consistent with other local or regional transportation, air quality, or energy conservation plans, including, but not limited to, programs that provide incentives for bicycle commuting.
- i. A description of the projects proposed in the plan and a listing of their priorities for implementation.
- j. A description of past expenditures for bicycle facilities and future financial needs for projects that improve safety and convenience for bicycle commuters in the plan area.

In addition to these required elements, Caltrans' *Highway Design Manual* contains specific design guidelines that must be adhered to in California. "Chapter 1000: Bikeway Planning and Design" of the Manual sets the basic design parameters for the development of on-street and off-street bicycle facilities.

LOCAL POLICIES

As part of this update, new goals, objectives, and policies have been developed (please see page 3) that build on the previous sets. In addition, the updated set has been tied to specific implementation programs and funding sources in order to provide a means by which bikeway facilities can be planned and constructed. These policies provide a general sense of direction towards implementing a bikeway system for Solano County and its cities.

In general, Table 1.1 on the following page shows that most of the communities in Solano County are addressing bicycle planning through various planning documents with a few of the cities, such as Benicia, Dixon, and Vallejo, having completed bicycle or trail master plans. Table 1.1 makes the distinction between bicycle and trail master plans because state and federal funding programs include specific requirements for the components of bikeway plans that are not always addressed in planning documents such as a recreation master plan. Local agencies that have developed an independent bikeway plan are considered to be demonstrating a greater level of commitment towards bicycle use as an integral component of their transportation system. However, all of the member agencies are represented with projects in this Plan, and each agency has also been encouraged to submit candidate projects for Transportation for

Livable Communities (ILC) improvements through the Solano Comprehensive Transportation Plan, and other non-motorized projects through various regional planning documents. In addition, each member agency is represented in the countywide bicycle planning process through their placement of a member on the BAC. **It is the intent of the BAC and this Plan to support local agency efforts to improve bicycling conditions at the local level.**

Table 1.1 - EXISTING BICYCLE PLANNING EFFORTS IN SOLANO COUNTY

Type of Plan/ Components	Solano County	Benicia	Dixon	Fairfield	Rio Vista	Suisun City	Vacaville	Vallejo
Bicycle or Trails Master Plan								
Policies	Yes	Yes	Yes	Yes	No	No	No	Yes
Programs	Yes	Yes	Yes	Yes	No	No	No	Yes
Funding	No	Yes	Yes	Yes	No	No	No	Yes
General Plan/Transportation Plan/Open Space or Parks Master Plan								
Policies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Programs	No	Yes	No	Yes	No	No	Yes	No
Funding	No	Yes	No	No	No	No	Yes	No

FEDERAL AND STATE POLICIES

US DOT Accommodating Bicycle and Pedestrian Travel

“Accommodating Bicycle and Pedestrian Travel: A Recommended Approach” is a policy statement that was adopted by the U.S. Department of Transportation (USDOT) in response to TEA-21. USDOT encourages public agencies, professional organizations, advocacy groups, and any other groups involved in transportation issues to adopt this policy to further promote bicycling and walking as viable components of the transportation system. The four directives issued in this policy statement address measures to improve bicycle and pedestrian access, convenience, and safety in transportation projects. The policy statement notes that:

The challenge for transportation planners, highway engineers and bicycle and pedestrian user groups, therefore, is to balance their competing interest in a limited amount of right-of-way, and

to develop a transportation infrastructure that provides access for all, a real choice of modes, and safety in equal measure for each mode of travel.

Caltrans DD-64

Caltrans recently adopted a policy directive related to non-motorized travel. The Caltrans Deputy Directive 64 (DD-64) reads:

The Department fully considers the needs of non-motorized travelers (including pedestrians, bicyclists and persons with disabilities) in all programming, planning, maintenance, construction, operations and project development activities and products. This includes incorporation of the best available standards in all the Department's practices. The Department adopts the best practice concepts in the US DOT Policy Statement on Integrating Bicycling and Walking into Transportation Infrastructure.

It is not clear what the effect of these policy directives will be on the planning, design, and funding of new transportation facilities. These policies reflect the growing concern shown by public agencies to accommodate the needs of pedestrians and bicyclists in the design and operation of the transportation system.

Assembly Concurrent Resolution No. 211 (ACR 211)

California's cities and counties have even more reason to pay attention to the two aforementioned policies. ACR 211 (Nation) "Integrating walking and biking into transportation infrastructure" became effective in August 2002. ACR 211 encourages all cities and counties to implement the policies of DD-64 and the USDOT design guidance document when building local transportation infrastructure. Specifically, ACR 211 asks local governments to "fully consider the needs of non-motorized travelers (including pedestrians, bicyclists and person with disabilities) in all programming, planning, maintenance, construction, operations, and project development activities and projects." The resolution also states that bicycling and walking contribute to cleaner air, encourage physical activity, provide for alternative transportation, help to safeguard California's coast from offshore oil drilling, and enhance California's energy independence and national security by reducing our reliance upon imported oil.

LOCAL AND REGIONAL PLANS

In the process of updating this Plan, local and regional transportation plans and projects were reviewed for consistency with relevant information folded into this planning effort.

MTC Regional Bicycle Plan (2001)

The Metropolitan Transportation Commission's Regional Bicycle Plan was adopted as part of MTC's 2001 Regional Transportation Plan. A large component of the Regional Bicycle Plan was to create a regional bikeway system for the nine-county San Francisco Bay Area. The system focuses on bicycle transportation with an emphasis on access to work, education, recreational opportunities and the region's transit network. The plan identifies gaps in the system and projects to help reduce the travel barriers. Another component of the plan provides local jurisdictions with a toolbox of approaches for bicycle counts, safety analysis, funding strategies, and policies. It is intended to be a resource document for Bay Area town, city, and county planners and advocates. This plan is regional in focus and is, therefore, oriented around policies and programs and defers to local decision making about specific routes and facilities.



2001 MTC Regional Bicycle Plan for the San Francisco Bay Area

Solano Travel Safety Plan (1998)

The 1998 Solano Travel Safety Plan contains valuable information about high accident locations which are relevant to bicycle travel in Solano County. The Travel Safety Plan, which will be updated in the 2004 Comprehensive Transportation Plan (CTP), will also include a series of recommendations for engineering, education, and enforcement solutions to safety problems. For example, it will recommend a countywide Pedestrian and Bicycle Safety Program, focused on outreach through schools, because “the accident data indicates that pedestrians and bicyclists were considered to be at fault in an unusually high proportion of the accidents that were evaluated”. It will also recommend safety projects, including the “Railroad Station Bikeway” and “General Plan Bike Route Projects” in Benicia and enforcement programs targeted at reducing bicycle and pedestrian accidents in Fairfield and Vallejo.

Solano Countywide Pedestrian Plan (2004)

The Solano Countywide Pedestrian Plan was developed in the winter of 2003 and spring of 2004. The Plan represents the first countywide effort to document and inventory existing conditions and pedestrian facilities in Solano County. The project will provide recommendations for pedestrian connections in and between the STA's member agencies. Projects will incorporate existing multi-use facilities, planned Bay and Ridge Trail segments, and will review

urban pedestrian standards for the recommended pedestrian facilities that will integrate with the non-motorized transportation projects planned in the Countywide Bicycle Plan and the Comprehensive Transportation Plan.

Solano Transportation and Land Use Tool Kit (2003)

The STA's 2003 Transportation and Land Use Toolkit was developed to provide techniques and resources to help Solano and Yolo County communities identify, plan, and implement their own land use, transportation, and urban design projects. The tool kit emphasizes projects that directly or indirectly encourage the use of alternative modes of transportation including bicycling, walking, ridesharing, and transit.

The I-80/I-680/SR 12 Interchange and North Connector Projects (2004)

The demand on Solano County's transportation system has increased dramatically in recent years due to increased growth locally and regionally. This is especially true in the vicinity of the I-80/I-680/SR 12 Interchange where numerous local routes and major regional routes come to a confluence. In response to the existing and projected transportation problems, the Solano Transportation Authority, in conjunction with Caltrans, the City of Fairfield, and Solano County, have identified a number of regional and local transportation improvements in the interchange area. Key goals of these improvement projects are to separate local and regional traffic in order to reduce congestion, identify and implement interim projects to provide near-term relief, and to plan long-term fixes to meet future demands.



Aerial overview of the I-80 / I-680 / Westbound SR 12 interchange site.

The I-80/I-680/SR 12 Interchange Project will provide the preliminary design and environmentally clear improvements to the interchange area. Enhancements are planned to improve local circulation, reduce congestion and increase future corridor capacity by upgrading the freeways, interchanges, and local roadway network within this vicinity. The STA and the BAC are working with Caltrans and the various responsible and implementing agencies to ensure continuous non-motorized access is provided through the project study area.

The North Connector Project will design and environmentally clear improvements to local circulation in the project area by creating a four-mile, two- to four-lane, east/west arterial connection in the City of Fairfield and Solano County between Abernathy Road and the SR 12 West/Red Top Road intersection. The project will construct a new road between Abernathy Road and Suisun Valley

Road, which will connect to Business Center Drive and extend Business Center Drive to the west as a two-lane road connecting with SR 12 West/Red Top Road intersection.

Solano Bikeway Extension Feasibility Study (2003)

In 2002, the City of Fairfield in partnership with the STA prepared a feasibility study to identify preferred alignment options for the extension of the Solano Bikeway from its current terminus at McGary Road, northeast of Vallejo, extending it eastward to the Solano Community College in the City of Fairfield. The project included an assessment of the developing I-80/I-680/SR 12 Interchange Project by providing bicycle route recommendations for the interchange area. Additionally, the project provided an analysis of the landslide activity in the hills between Vallejo and Fairfield which closed McGary Road in 1998 to through traffic and bicyclists. Design and engineering recommendations were developed to address the slide's impact on McGary Road in order to facilitate continuation of the Solano Bikeway and through bicycle travel.

Bay Trail Plan (1989)

The Bay Trail Plan proposes the development of a regional hiking and bicycling trail around the perimeter of San Francisco and San Pablo Bays. Approximately one-half of the trail already exists, either as hiking-only paths, hiking and bicycling paths, or as on-street bicycle lanes or routes. The Bay Trail designated a "spine" for a continuous through-route around the Bay and "spurs" for shorter routes to Bay resources. The goals of the Plan include providing connections to existing park and recreation facilities, creating links to existing and proposed transportation facilities, and preserving the ecological integrity of the Bays and their wetlands. The Plan calls for spine and spur alignments along Solano County's shoreline through Benicia and Vallejo as well as Bay-to-Ridge Trail connections adjacent to SR 12 along Jameson Canyon Road, I-80 along McGary Road, I-680 along Goodyear Road on to Ramsey Road, and then to Cordelia Road into Suisun City.



Bay Area Ridge Trail

The Bay Area Ridge Trail is a 400-mile multiple-use trail connecting parks and preserved open spaces along the ridgelines surrounding California's San Francisco Bay. More than half of the trail is complete, open to the public, and in use. The gaps in the Bay Area Ridge Trail are those areas through which the Bay Area Ridge Trail Council has so far been unable to arrange for a route. It is the mission of the Trail Council to "close the gaps" by coordinating with and assisting public agencies and private landowners who can and will willingly provide a route for the Ridge Trail. The following



parks in Solano County contain designated Ridge Trail routes: Rockville Hills Community Park, Green Valley Road, Blue Rock Springs Park, Rose Drive, Benicia, and the Benicia State Recreation Area. Existing segments of the trail which are used by off-road bicyclists extend from Benicia to Lake Herman, and on towards Hiddenbrooke. McGary Road and Green Valley Roads are proposed alignments of the Bay Area Ridge Trail. The Council has provided money to the Solano Land Trust for the purpose of constructing additional trails in Lynch Canyon and for developing an education program over the next three years.

Sonoma County Bikeways Plan (1996)

This Bikeway Plan shows one bicycle route connecting into Solano County, a proposed Class I bike path leading from Skaggs Island Road through the former U.S. Military Reservation and connecting to SR 37 at the Solano border. The 2.49-mile long pathway, identified as the Second Napa Slough Path, is a high county priority and part of the San Francisco Bay Trail. The Plan does not provide cost or feasibility data.

County of Yolo Bikeway Plan (1999)

The Yolo County Bikeway Plan is a comprehensive plan that includes goals, policies, actions, and financial strategies to provide for the development of an integrated system of bikeway facilities that will provide for the safe and convenient travel of bicyclists throughout the county and between Yolo and Solano Counties.

Napa Countywide Bicycle Plan (2003)

This plan provided four direct connections into the South County area of Solano County, specifically on Highway 29 (Class III bike route), American Canyon Road (recommended Class II bike lanes), and on Highway 12 (Jameson Canyon Road), and Wooden Valley to Suisun Valley. The Jameson Canyon project is identified as a Class I bike path on either the existing water easement or the Union Pacific Railroad right-of-way. The Plan also identifies the small Napa portion of the I-80 Regional Bikeway Connector (Solano Bikeway) as a priority project.

Contra Costa Countywide Bicycle & Pedestrian Plan (2003)

The Contra Costa Bicycle and Pedestrian Plan is a comprehensive plan that includes goals, policies, objectives, actions, design standards, and financial strategies to provide for the development of the Contra Costa bicycle and pedestrian system. The Plan identifies two bikeway connections leading to Solano County; the I-680

Benicia Martinez Bridge Crossing and the I-80 Carquinez Bridge between Vallejo and Crocket.

Cross State Bike Route Study - Tahoe to Bay Area (2004)

Sponsored by the Placer County Transportation Planning Agency and funded by a 2003 Caltrans Partnership Planning Grant, the Cross State Bike Route Study is being developed to examine the feasibility of creating a cross state bike route that will connect the Tahoe Basin with the Bay Area via the Sacramento Region. The plan, which is currently in draft form, identifies primary and alternate alignments through Solano County. The route roughly follows the I-80 and I-680 corridors as it makes its way to the Bay Trail in southern Solano County.

North Bay Corridor Study (1998)

The 1998 North Bay Corridor Study was directed by MTC to identify alignments for the Association of Bay Area Governments' Bay Trail in the North Bay. The project looked at potential trail alignments in Solano, Napa, Sonoma, and Marin Counties. The study reviewed the inter-relationships among transportation, habitat, public access, and trail enhancement for the northern reaches of San Pablo Bay. The plan identified the following recommendations relevant to Solano County:

- Designate the SR 37 corridor between Sears Point and White Slough as a spine trail with several spurs on or adjacent to Cullinan Ranch in southwestern Solano County.
- Designate a spine trail from the SR 37 corridor along an existing abandoned road levee to Mare Island and then over the Mare Island Causeway to the existing Bay Trail the City of Vallejo.

BikeLinks Map

The STA and Solano Napa Commuter Information (SNCI) have developed a bicycle map for public use known as the BikeLinks map. This map, which includes portions of Yolo and Napa Counties, has been developed with input from the County BAC in cooperative effort with the Yolo Solano Air Quality Management District and the Napa County Transportation Planning Agency. Since 1997, the BikeLinks map has been updated five times, including the Solano Bicycle Classic Commemorative Edition, with over 70,000 maps distributed free of charge to the public. The map can be found on-line at www.solanolinks.com.

DESIGN STANDARDS

The most commonly used bikeway design standards in California are contained in *Caltrans Highway Design Manual*, “Chapter 1000: Bikeway Planning and Design” (referred to as Chapter 1000). The Caltrans bikeway standards are largely based on standards developed by the American Association of State Highway and Transportation Officials (AASHTO) in the *Manual of Uniform Traffic Control Devices*, Federal Highway Administration. It contains standards for bikeway signing and stenciling. It is important to note, however, that bikeway design and planning standards are continually changing and expanding. For example, there is pressure from the bicycling public to allow bike lanes that are narrower than Caltrans standards to be installed on existing streets. This would allow marginal corridors or narrow streets to accommodate bike lanes. However, local jurisdictions must be protected from liability concerns so most agencies adopt general Caltrans guidelines as a minimum. Bicycle facility design guidelines are defined below:

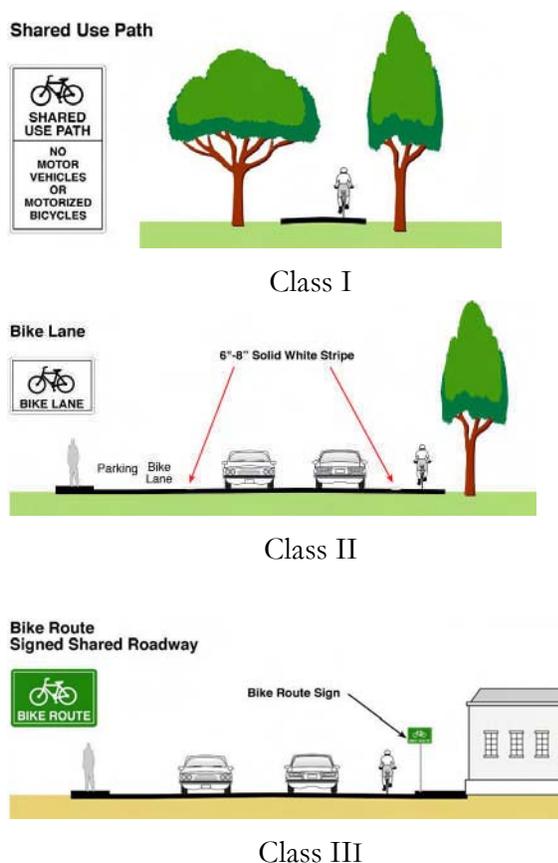


Figure 1.2: Caltrans Bikeway Classifications

BIKEWAY DESIGN

By law, bicycles are allowed on all roadways in California. (The State can prohibit bicyclists from freeways if a suitable alternate route exists.) However, some roadways are better suited for bicycling than others. Caltrans has developed three “classes” of facilities with design recommendations to designate preferred bikeways.

Class I: Typically called a “bike path,” a Class I bikeway provides bicycle travel on a paved right-of-way completely separated from nearby streets or highways. They are intended to provide opportunities not available streets and roads, including recreation or high-speed bicycle commuting. The recommended width of a shared use path is dependent upon anticipated usage:

- 8’ (2.4 m) is the minimum width, most applicable to unpaved and/or rural facilities
- 8’ (2.4 m) may be used for short neighborhood connector paths (generally less than one mile in length) due to low anticipated volumes of use
- 10’ (3.0 m) is the recommended width for a two-way bicycle path
- 12’ (3.6 m) is the preferred width if more than 300 users per peak hour are anticipated, and/or if there is heavy mixed bicycle and pedestrian use
- A minimum 2’ (0.6 m) wide graded area must be provided adjacent to the path to provide clearance from trees, poles, walls, guardrails, etc. A yellow centerline stripe is recommended to separate travel in opposite directions.

Class II: Often referred to as a “bike lane,” a Class II bikeway provides a striped and stenciled lane for one-way bicycle travel on a street or highway. Bike lanes delineate separate rights-of-way for bicycles and vehicles to provide more predictable movement for both. The width of the bike lanes vary according to parking and street conditions:

- 5’ (1.5 m) minimum when parking stalls are marked
- 11’ (3.3 m) minimum for a shared bike/parking lane where parking is permitted but not marked on streets without

curbs; or 12’ (3.6 m) for a shared lane adjacent to a curb face

- 4’ (1.2 m) minimum if no gutter exists, measured from edge of pavement
- 5’ (1.5 m) minimum with normal gutter, measured from curb face; or 3’ (0.9 m) measured from the gutter pan seam

Other important bike lane requirements involve signing, striping, and stenciling:

- A bike lane should be delineated from motor vehicle travel lanes with a solid 6” white line, per MUTCD. An 8” line width may be used for added distinction.
- Word and symbol pavement stencils should be used to identify bicycle lanes, as per Caltrans and MUTCD specifications.
- The R81 “Bike Lane” sign is required at the beginning of all bike lanes, at all major changes in direction, and at a maximum of 1 km intervals.

Class III: Usually referred to as “bike routes,” Class III bikeways are facilities shared with motor vehicles but which provide - through signage, design, and connection to other facilities - advantages to bicyclists not available on other streets or roadways.

Class III facilities can also be shared with pedestrians on a sidewalk although it is strongly discouraged. There are no recommended minimum widths for Class III facilities, but when encouraging bicyclists to travel along selected routes, traffic speed and volume, parking, traffic control devices, and surface quality should be acceptable for bicycle travel.

Bicycle boulevards are a type of Class III facility that have certain design features that give preference to bicyclists. Commonly used devices found on bicycle boulevards are traffic diverters that allow through access for bicyclists, two-way bicycle travel on one-way streets, and special signage.

Resources:

Caltrans *Highway Design Manual*, “Chapter 1000: Bikeway Planning and Design,” 2001.

Manual on Uniform Traffic Control Devices, “Part 9 – Traffic Controls for Bicycle Facilities,” 2000.

Guide for the Development of Bicycle Facilities, American Association of State Highway and Transportation Officials (AASHTO), 1999.

According to data provided by the Solano County Transportation Department, nearly all County maintained roads are two lanes and most have pavement widths that are less than 32 feet. This was verified by the field survey that identified a number of roadways that were 20 to 26 feet wide. Given the pavement width constraints, it is understandable that unincorporated Solano County has very few

roadways with sufficient width to accommodate bike lanes in the existing roadway, which is discussed in greater detail in Section 3.0.

1.3 EVALUATION OF EXISTING BIKEWAYS

This chapter presents the results of the existing conditions evaluation. To complete this evaluation, published data were reviewed, fieldwork was conducted, and the STA and its consultants worked closely with the BAC.

Recognizing that most trip-generating locations are already connected through the County's roadway system, previous drafts of the Solano County Bicycle Plan have proposed an extensive on-street network of bicycle facilities to serve the region. The on-street routes are supported by an off-street network of bike paths which were selected to take advantage of strategic opportunities, provide commute and recreational routes, and supplement the on-street system. This network was reviewed with the BAC to incorporate changing conditions, needs, and new opportunities that have developed since the 2001 Solano Countywide Bicycle Plan.

1.4 EXISTING BIKEWAYS

BTA Requirement C

A map and description of existing and proposed bikeways.

Although most of the incorporated cities in Solano County have existing bike lanes and multi-use paths, historically, the unincorporated County has not provided bikeway connections between cities. Furthermore, a number of the roadways connecting the cities do not have sufficient pavement width to accommodate dedicated bike lanes. This is graphically shown on Figure 1.3, which displays the existing bikeway facilities inventory.

The on-street inventory conducted for this study identified approximately 470 miles (756 kilometers) of regional roadway that was either currently used for bikeway facilities or that could potentially be used for bikeway facilities. Of the 470 miles, about 78 miles (125 kilometers) were existing bike lanes, much of which was located in cities. In addition, about 37 miles (60 kilometers) of regionally significant off-street bike paths were identified during the field survey or through the data review process. The bikeway inventory by segment follows below.

Existing Bikeways

Table 1.2 - EXISTING BIKEWAYS

Jurisdiction	Street/Facility	From	To	Class	Length
Benicia	1 st Street	Military West	East H Street	II	0.3
Benicia	Columbus Parkway	Benicia Road	Rose Drive	II	0.2
Benicia	E. 2 nd Street	Rose Drive	Hillcrest Avenue	II	1.1
County	Fry Road	Leisure Town Road	Highway 113	II	6.0
County	Highway 12	Walters Road	Shiloh Road	II	6.1
County	Highway 37	Napa County Line	Vallejo city limit	II	6.8
County	Leisure Town Road	Alamo Drive	Vanden Road	II	1.6
County	Old Davis Road	Interstate 80	Tremont Road	II	2.5
County	Nelson Road Pathway	Vacaville city limit	Fairfield city limit	I	0.4
County	Rockville Road	Green Valley Road	Suisun Valley Road	II	2.7
County	Runge Road	Tremont Road	Vaughn Road	II	2.0
County	Sparling Lane	Tremont Road	Sievers Road	II	0.7
County	Tremont Road	Runge Road	Old David Road	II	0.5
County	Vanden Road	Alamo Drive	UP RR	II	1.6
County	Vaughn Road	UP RR	Runge Road	II	2.1

EXISTING CONDITIONS

Table 1.2 - EXISTING BIKEWAYS (Continued)

Jurisdiction	Street/Facility	From	To	Class	Length
Dixon	Evans Road	West H Street	West A Street	II	0.6
Dixon	N. 1 st Street	Interstate 80	West H Street	II	1.4
Dixon	Pitt School Road	Interstate 80	West A Street	I	1.0
Dixon	Vaughn Road	Lincoln Road	UP RR	II	1.3
Dixon	West A Street	Interstate 80	Pitt School Road	II	0.9
Dixon	West A Street	Pitt School Road	N. Lincoln Street	I	0.3
Dixon	West H Street	Evans Road	Pitt School Road	II	0.4
Dixon	West H Street	Pitt School Road	N. Almond Street	I	0.5
Fairfield	Air Base Parkway	Interstate 80	Peabody Road	II	4.4
Fairfield	Dover Avenue	Cement Hill Road	Tabor Avenue	II	1.0
Fairfield	Green Valley Road	Interstate 80	Cordelia Road	II	0.3
Fairfield	Lopes Road	Cordelia Road	Gold Hill Road	II	2.1
Fairfield	Neitzel Road	Green Valley Road	Suisun Valley Road	II	0.8
Fairfield	Oliver Road	Waterman Boulevard	Interstate 80	II	1.2
Fairfield	Linear Park	Caltrans I-80 Pathway	Tabor Avenue	I	2.2

Table 1.2 - EXISTING BIKEWAYS (Continued)

Jurisdiction	Street/Facility	From	To	Class	Length
Fairfield	Caltrans I-80 Pathway	Red Top Road	Green Valley Road	I	1.2
Fairfield	Linear Park	Suisun Valley Road	Texas Street	I	6.0
Fairfield	Red Top Road	Solano Bikeway	Lopes Road	II	0.9
Fairfield	Tabor Avenue	Dover Avenue	Walters Road	II	2.0
Fairfield	Utah Street	Pennsylvania Avenue	Union Avenue	II	0.5
Fairfield	Waterman Boulevard	Fairfield City Limit	Interstate 80	II	1.8
Fairfield/County	Green Valley Path	Rockville Road	Solano College	I	2.9
Suisun City	Highway 12	Marina Blvd.	Walters Road	I	2.7
Suisun City	Walters Road	SR 12	Bella Vista Dr.	II	0.8
Vacaville	Alamo Drive	Interstate 80	Leisure Town Road	II	3.8
Vacaville	Canal Path	Vaca Valley Parkway	Centennial Park	I	1.5
Vacaville	Nut Tree Road	E. Monte Vista Avenue	Elmira Road	II	1.5
Vacaville	Alamo Creek Path	Alamo Drive	Elmira Road	I	3.3
Vacaville	I-80 Frontage Path	Lagoon Valley Rd.	Vacaville city limit	I	0.7
Vacaville	Butcher Rd. Path	Alamo Creek	Lagoon Valley Road	I	2.0
Vacaville	Ulatis Creek Path	Gibson Canyon Road	Alamo Drive	I	1.4

EXISTING CONDITIONS

Table 1.2 - EXISTING BIKEWAYS (Continued)

Jurisdiction	Street/Facility	From	To	Class	Length
Vacaville	Alamo Creek Path	Stevenson Street	Alamo Creek	I	1.1
Vacaville	Peabody Road	Alamo Drive	Foxboro Parkway	II	0.8
Vacaville	Ulatis Drive	Allison Drive	Leisure Town Road	II	1.7
Vacaville	Vaca Valley Parkway	end	Leisure Town Road	II	3.3
Vallejo	Ascot Parkway	Redwood Parkway	Columbus Parkway	II	0.9
Vallejo	Azuar Drive	Acacia Avenue?	13 th Street	II	2.1
Vallejo	Bay Trail	Interstate 80	W. K Street	I	4.2
Vallejo	Bay Trail	Wilson Avenue	Curtola Parkway	I	1.9
Vallejo	Columbus Parkway	Admiral Callaghan Lane	Benicia Road	II	4.9
Vallejo	Curtola Parkway	Mare Island Way	Sonoma Boulevard	II	0.2
Vallejo	Fairgrounds Drive	Highway 37	Redwood Street	II	1.3
Vallejo	Hiddenbrooke Parkway	Napa County Line	Bennington Drive	II	0.7
Vallejo	Mare Island Way	Wichels Causeway	Curtola Parkway	II	1.1
Vallejo	Pathway	Admiral Callaghan Lane	Ascot Parkway	I	1.2
Vallejo	Redwood Parkway	Admiral Callaghan Lane	Ascot Parkway	II	1.2
Vallejo	Solano Bikeway	Napa County Line	Columbus Parkway	I	1.5

Table 1.2 - EXISTING BIKEWAYS (Continued)

Jurisdiction	Street/Facility	From	To	Class	Length
Vallejo	Tennessee Street	Mare Island Way	Interstate 80	III	1.9
Vallejo	Wilson Avenue	Highway 37	Wichels Causeway	II	1.1
Total					118

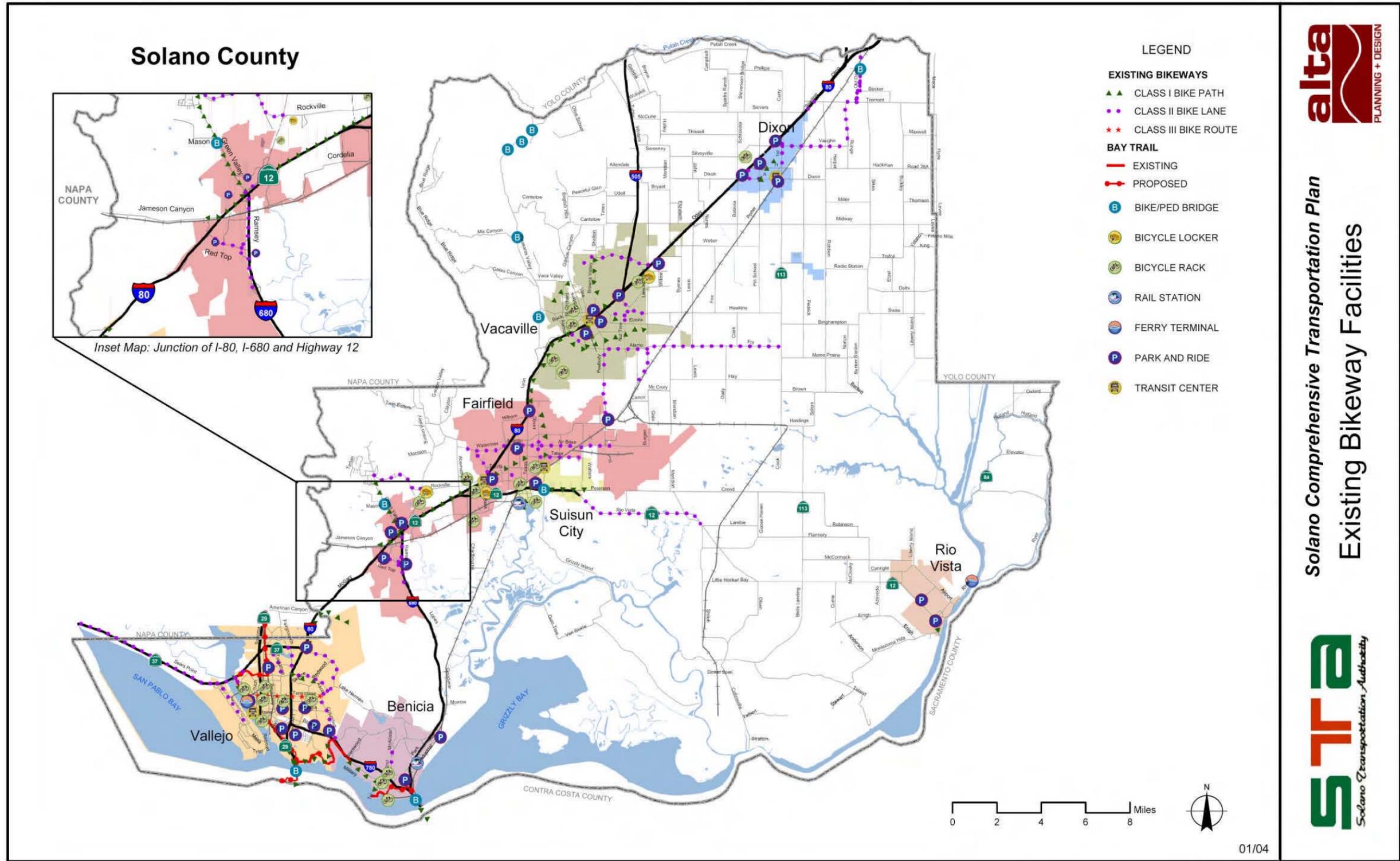
Existing Constraints

Figure 1.3 illustrates the existing bikeway network, which contains a number of roads with narrow travel lanes that could not accommodate Class II bike lanes without widening. On routes that carry heavy volumes, the lack of a dedicated bike lane creates problems for drivers and bicyclists alike. Drivers can experience delay as a result of waiting for an opportunity to pass a slower moving bicyclist. Bicyclists, on the other hand, can be distracted from their riding and/or run off the road by passing cars especially in locations where narrow pavement cross sections leave limited space for motor vehicles to pass bicyclists. Major routes where insufficient pavement width and high traffic volumes can be associated are briefly described on the following pages:

- Pleasants Valley Road/Putah Creek Road** - The scenic quality along these roadways along with the fact that these roads provide connections to the cities of Winters, Davis, and Lake Berryessa has made Pleasants Valley Road and Putah Creek Road popular bikeways. As a result, they have been identified on maps such as the *North San Francisco Bay/Sacramento Bicycle Touring Map* produced by Krebs Cycle Products. Unfortunately, the pavement width for these two roadways is limited to about 22 feet in most sections. Further, there are about eight narrow bridges and box culverts on these two roadways between Laguna Creek and Winters Road. Most of these bridges have paved widths less than 24 feet. Seven other bridges on this route have been widened to accommodate Class II bike lanes as part of an ongoing effort to improve this route both for bicycles and motor vehicles.

EXISTING CONDITIONS

Figure 1.3 Existing Bikeway Facilities



- **State Routes 12, 29, 37, and 113** - These state routes are major roadways providing interregional connections to neighboring counties. Except for a few locations, these facilities are open to bicyclists. Unfortunately, these roadways carry high volumes at high speeds and in many cases they do not have sufficient shoulder width for a dedicated bike lane.
- **Miscellaneous Bridges** - Solano County has 116 County-maintained bridges. Along roadways such as Pleasants Valley Road and Suisun Valley Road, some bridges are less than 20 feet wide. These locations are hazardous to bicyclists and drivers because they do not provide sufficient width for two automobiles and a bicycle to pass.
- **Agricultural Spraying** - Solano County has a number of agricultural land uses including orchards, vegetable crops, and grain crops where agricultural spraying is used to control insects and weeds. The spraying can deter bicyclists from these areas because of the perceived hazard of chemicals drifting across roads used as bikeways.

“...trails offer several transportation benefits to pedestrians and bicycle users. They provide linkage, alternatives to automobiles, integration with mass transit systems, and increased transportation safety. These benefits can be realized in terms of economics, convenience, environmental health, safety, personal health, and general well-being.”

-FHWA National Bicycling and Walking Study, January 1992.

The summary of constraints does not list a number of locations that would require major widening to accommodate a dedicated bike lane. These roadways were excluded because the average daily traffic (ADT) volumes are low enough that bicycles and automobiles can share the roadway. As a result, there is an opportunity on many of the County roadways to develop Class III bike routes.

Existing Opportunities

For on-street facilities, if traffic volumes are low (less than 2,000 ADT), as they are on many county roads, the lack of Class II standards is not a major concern because the lack of opposing traffic presents more opportunities for vehicles to pass slower moving bicyclists. For these facilities, Class III designations may be more appropriate until traffic volumes increase. In addition to lower volume County roadways, there are numerous natural and man-made corridors in the County that could potentially serve as locations for off-street bicycle paths (Class I facilities), these include:

- **Railroad Rights-of-Way** - Former Southern Pacific and California Northern right-of-way in Solano County has the potential to be developed as bike paths. This concept has already been implemented in cities like Fairfield with its linear park located along the old Southern Pacific right-of-way and Vacaville with its Southside Bikeway.

- **Utility Corridors** - Power transmission lines offer another opportunity for the location of bike paths. Vacaville is using a corridor in the northwest part of the city for a Class I bike path, which will be extended in the future.
- **Waterways** - Irrigation canals and creeks run through much of Solano County. These waterways can offer potential locations for bike paths along their periphery. For example, Vacaville developed the Alamo Creek Bikeway and is working on the Ulatis Creek Bikeway.
- **Short Paths & Trails** – In many locations, a short pathway or trail will work to provide connectivity between existing facilities or around obstacles.

These opportunities and constraints give the reader a general sense of the key issues considered when developing a countywide bikeway plan. In some cases, this Plan addresses existing constraints and in other cases it identifies existing opportunities that can be used as advantages.

1.5 IDENTIFICATION OF SUPPORT FACILITIES

Support facilities and programs are an important part of the planned Solano County bikeway system. User surveys indicated that the lack of bicycle facilities was an important reason why some people did not ride bicycles to work. Bikeway support facilities can include a variety of services or physical infrastructure designed to accommodate or promote the use of bicycles. Figure 1.4 shows existing bikeway support facilities in Solano County, including:

- Multi-modal transit hubs;
- Locations of bicycle shops;
- Bicycle racks;
- Bicycle lockers;
- Facilities for changing & storing clothes, and
- Rest stops.

Bicycle shops are important for bicyclists making trips between urban areas in the event they suffer an equipment failure and need repair parts or service. These types of shops are located in Benicia, Dixon, Fairfield, Vacaville, and Vallejo.

BTA Requirement F

A map and description of existing and proposed facilities for changing and storing clothes and equipment. These shall include, but not be limited to, locker, restroom, and shower facilities near bicycle parking facilities.

Shower Facilities

Access to shower facilities by bicycle commuters may help encourage people to leave their vehicles, particularly in the summer months. The most straightforward means of providing shower facilities is to require their implementation as part of a transportation systems management (TSM) or transportation demand management (TDM) program that applies to major employers. Currently, no formal shower/changing locations are known to exist in the county. However, it is likely that many commuters utilize local gyms and/or improvise at their place of employment. No new shower facilities are proposed as a part of this plan.

Bicycle Parking

Bicycle parking, storage, and changing facilities must not be overlooked when planning a bikeway system. Safe and effective end-of-trip facilities such as sheltered parking or bicycle lockers are an integral component of bicycle use. They provide convenience and security for cyclists when they arrive at destinations. National bicycle surveys consistently find that inadequate end-of-trip facilities and the fear of theft (bicycles are one of the top stolen items in all communities) are major deterrents to bicycle commuting. Effective bicycle parking requires properly designed racks, lockers, and shelters, which are sited appropriately for ease of use and convenience.

In California, bicycle parking facilities are classified as follows:

Class I Bicycle Parking – is considered long-term; it accommodates those who are expected to park more than two hours. Class I parking provides security and weather protection. Class I bicycle parking typically includes covered areas that offer a bicycle locker or lid, storage rooms, or a secure area like a “bike corral” that may be accessed only by bicyclists.

Class II Bicycle Parking – accommodates bicyclists who are expected to park for short stops, such as bicycle racks. The most effective rack designs are relatively low-cost devices that support the bicycle upright by its frame in two places, allow bicyclists to securely lock their frames and wheels, are secured to the ground, and are located in highly visible areas as close to building entrances as possible to provide convenience. Some rack designs are unsuitable for use; these include rack designs that do not support a bicycle frame and as a result can cause damage to a bicycle. Ideally, a portion of Class II rack installments should be covered for protection from weather. Class II racks are typically located at

BTA Requirement D

A map and description of existing and proposed end-of-trip bicycle parking facilities. These shall include, but not be limited to, parking at schools, shopping centers, public buildings, and major employment centers.



Covered Class I and Class II bicycle parking are available at this Sacramento area park and ride lot.

schools, commercial locations, and activity centers such as parks, libraries, retail locations, and civic centers.

Many locations throughout Solano County offer secure bicycle parking in the form of bicycle racks and bicycle lockers (please see Figure 1.4). For this study, bicycle racks and lockers were identified at major destinations such as the Solano Mall, Solano Community College, Suisun City Amtrak Station, Sports Complex, downtown areas, and park and ride lots. In general, bike racks are located in most cities and at most major shopping areas, schools, and parks. Available data indicated that bike lockers existed at the following Caltrans operated park and ride lots and other locations in Solano County:



Bike lockers at the Curtola Park and Ride lot in Vallejo

- Fairfield, I-80/Magellan Road - 16 lockers;
- Solano Community College - 20 lockers;
- Vacaville Regional Transit Center - 8 lockers;
- Curtola I-80 Park and Ride – 12 lockers;
- Vacaville City Hall – 12 lockers;
- Vallejo Ferry Terminal – 20 lockers; and
- Vallejo Library – 8 lockers.

In many of the cities, the installation of secure bicycle parking is encouraged as part of local transportation system management plans to support the use of bicycles as an alternative to automobile use.

RECOMMENDED PROGRAM - COUNTYWIDE BICYCLE PARKING IMPLEMENTATION PROJECT

Key Participants in Program

Key participants in the program include the STA, its member agencies, local business, schools and school districts, and developers.

Basic Components of Program

The program consists of three basic components:

- Acquiring and installing bicycle parking in public places such as city halls, libraries, parks, schools, etc.;
- Encouraging local businesses to provide bicycle parking for their customers and employees; and



Covered bike parking such as this example from Davis, CA, provide shelter from inclement weather.

- Altering zoning regulations to ensure bicycle parking is provided in new developments.

Bicycle Parking Placement - Type and Location

Visibility – bicycle racks and lockers should be located in a highly visible location near building entrances so cyclists can spot them immediately. Bicyclists and motorists alike appreciate the convenience of a parking space located right in front of a destination. A visible location also discourages the theft and vandalism of bicycles. Preferably, racks will be located as close or closer than the nearest automobile parking spaces to the building entrance.

Security – properly designed bicycle racks and lockers that are well anchored to the ground are the first measure to help avoid vandalism and theft. In some cases, added measures, which may include lighting and/or surveillance, are essential for the security of bicycles and their users.

Weather Protection – is especially important. A portion of all bicycle parking should be protected from the rain and the sun. Various methods can be employed including the use of building awnings and overhangs, newly constructed covers, weatherproof bicycle lockers or lids, or indoor storage areas.

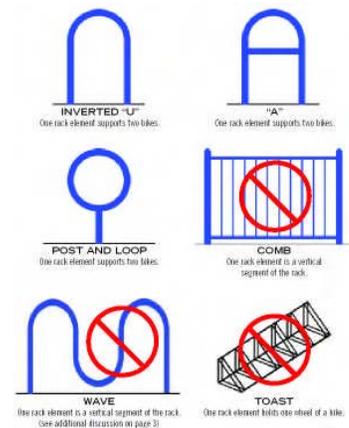
Clearance – adequate clearance is an essential component of rack placement. Clearance is required between racks to allow for the parking of multiple bicycles and around racks to give bicyclists room to maneuver and too prevent conflicts with others. Racks should be placed in a position where they do not block access to and from building entrances, stairways, or fire hydrants.

Cost of Implementation

The cost of implementation for bike racks and lockers is generally low. Rack installations run about \$250 per rack, which accommodates two bikes, and about \$1,000 per locker, which accommodates two bikes. The cost of providing shelters for covered parking increases the cost.

Implementation Strategies

There are a variety of strategies to implement bicycle parking. First, bicycle parking can be funded through competitive sources such as Air District Grants, the Bicycle Transportation Account, TEA-21, and TDA sources. Second, cooperative efforts can be formed. For example, in some locations, redevelopment funds have been used to purchase the infrastructure and the public works department



Sample rack style “do’s and don’ts” as identified by the Association of Pedestrian and Bicycle Professionals.

completes the installation. Operating under an annual budget of \$5,000 has allowed for the installation of racks and lockers in a given jurisdiction in a matter of just a few years.

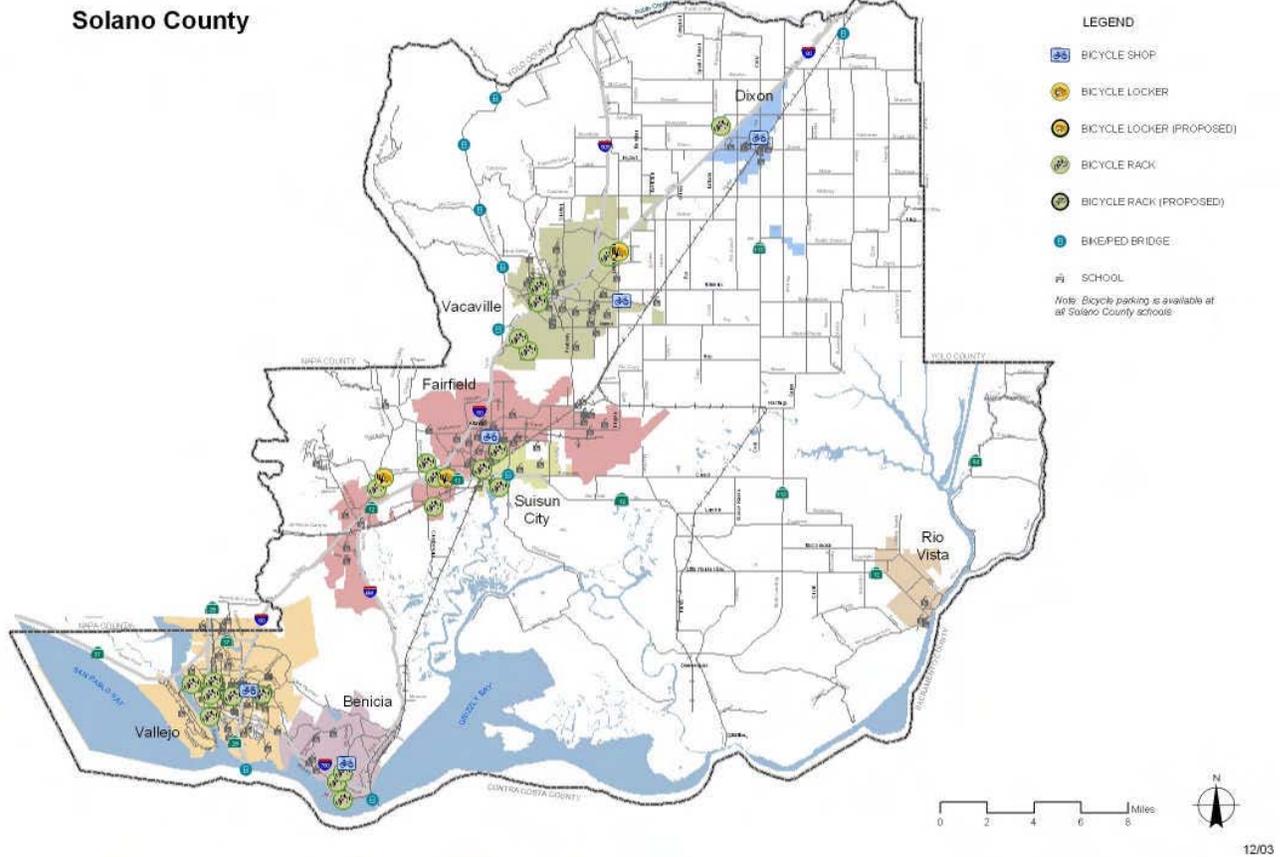


Figure 1.4 Existing & Planned Bicycle Support Facilities

1.6 MULTI-MODAL CONNECTIONS

Well-integrated multi-modal connections are vital for bicycles, as transit has the potential to extend trip ranges to all points of the county and beyond. This is especially important in Solano County when you consider some of the existing barriers to continuous bicycle travel such as access across the Sacramento River and gaps in the current bikeway system between urban areas. Both of these deterrents may force some people to use other modes such as the automobile to transport their bicycles to selected riding locations.

Figure 1.5 shows the existing multi-modal connection facilities in Solano County, which include:

- Transportation centers;
- Park and ride lots;
- Ferries that allow bicycles;
- Train stations;
- Bicycle shuttles; and
- Bus transfer stops.

There are currently 14 existing park and ride lots in Solano County, nine of which have bicycle parking facilities. These facilities allow park and ride lot users to transfer between bicycles and other forms of travel such as carpools, vanpools, or buses while their bicycles are secured. Table 1.2 on the following page contains a list of existing and proposed park and ride facilities.

Three ferries that allow bicycles on board operate in Solano County, although two are used for short distances across sloughs in the Sacramento River Delta and the other for the relatively long trip between Vallejo and San Francisco. The Ryer Island Ferry, which transports passengers across Cache Slough north of Rio Vista, provides access for bicyclists to Ryer Island, which has become a popular recreational route for bicyclists. This is also true for the Howard Landing Ferry that allows Ryer Island visitors to cross Steamboat Slough into Sacramento County. The Vallejo Baylink Ferry, experiences a high demand given the population of the Vallejo area and the fact that the ferry's destination is San Francisco, a popular commute and recreational destination for bicyclists.

BTA Requirement E

A map and description of existing and proposed bicycle transport and parking facilities for connections with and use of other transportation modes. These shall include, but not be limited to, parking facilities at transit stops, rail and transit terminals, ferry docks and landings, park and ride lots, and provisions for transporting bicyclists and bicycles on transit or rail vehicles or ferry vessels.



Transit Access in Vallejo.



Transit riders in Benicia.

EXISTING CONDITIONS

Table 1.3 - EXISTING AND PLANNED PARK-AND-RIDE FACILITIES

	City	Location	Transit	Spaces		Bikes	Lighting
				Existing	Planned		
1	Benicia	East Second St. & East "S" St. at I-780	Benicia Bridge Bike Shuttle	15	15	No	Yes
2	Cordelia	Green Valley Rd. at I-80 & I-680		65	65	No	Yes
3	Dixon	Market Lane & I-80 near Pitt School Rd.	F/S	89	89	Yes	Yes
4	Dixon	B St at Jackson Capitol Corridor Station	F/S	114	225	Yes	Yes
5	Fairfield	Magellan. near West Texas at Beck St.	F/S VAL	400	600	Yes	Yes
6	Fairfield	K-Mart on North Texas near Air Base Highway (Unofficial site)	F/S	48	48	Yes	No
7	Suisun City	Main St. at Route 12	CC, F/S, VAL	80	160	Yes	Yes
8	Vacaville	Cliffside at I-80		128	128	No	Yes
9	Vacaville	Davis St. at I-80	F/S VAL	250	250	Yes	Yes
10	Vallejo	Benicia Rd. at I-80		13	13	No	No
11	Vallejo	Lemon St. at Curtola Pkwy & I-80 (NW)	BEN VAL	379	379	Yes	Yes
12	Vallejo	Lemon St. at Curtola near I-80 (SW)	VAL	64	64	Yes	Yes
13	Vallejo	Magazine St. and Lincoln Rd. at I-80	VAL	21	21	No	Yes
14	Vallejo	<i>Intermodal Center at Mare Island Way & Georgia Street</i>	<i>VAL BEN</i>	<i>650</i>	<i>1400</i>	<i>Yes</i>	<i>Yes</i>

City	Location	Transit	Spaces		Bikes	Lighting
			Existing	Planned		
Planned Park and Ride Lots						
15	Benicia	<i>Intermodal Rail Station at Lake Herman Rd. & I-680</i>	BEN CC	0	2700	Yes Yes
16	Fairfield	<i>Intermodal Rail Station at Peabody Rd. & Vanden Rd.</i>	F/S	0	600	Yes Yes
17	Fairfield	<i>Red Top Road & I-80</i>		0	200	
18	Vacaville	<i>Bella Vista & I-80</i>		0	200	
19	Vacaville	<i>Leisure Town Rd. & I-80</i>		0	50	
20	Rio Vista	<i>Church Street & SR 12</i>		0	50	
Total Spaces				2247	7188	

TRANSIT ABBREVIATIONS

BEN = Benicia Transit VAL = Vallejo Transit
 F/S = Fairfield/Suisun Transit
 CC = Capitol Corridor Planned stations are italicized

The access problem posed by bridges that has historically been a barrier to cycling in the county is improving with the integration of bicycle facilities in the design of replacement spans across the Carquinez Straight. Table 1.3 shows the weekday schedule for the Benicia-Martinez Bridge shuttle services operated by Caltrans which transports bikes across the bridge and will continue to do so until construction of the new span is complete.

Table 1.4 - WEEKDAY BICYCLE SHUTTLE SERVICE SCHEDULES

Service	Peak Headway	Off-Peak Headway	Operating Times
Benicia/Martinez Bicycle Shuttle	30 Minutes	190 Minutes	6:00 a.m. to 6:30 p.m..

For shuttle info please call (510) 286-0589

Table 1.5 - SOLANOLINKS BIKE-ON-BUS RULES

Provider	Rules
Benicia Transit	Some buses have external bike racks. If there's not a rack and space is available on board, bikes allowed inside.
Fairfield/Suisun Transit	Routes 30 and 40 (Solano BART Express) have racks. Additional bikes can be brought on board if space is available.
Vacaville City Coach, Vallejo Transit, Napa Valley Transit, Napa VINE, and Bay Link	All buses equipped with bike racks. Additional bikes can be brought on board if space is available. Bay Link busses do not currently have bike racks.
Yolobus	All large buses, including Route 220, have bike racks. No bikes allowed inside the bus.
BayLink Ferry	Bicycles are allowed on board the ferry vessels, unless conditions or passenger loads preclude the safe transport of bicycles on Baylink. [The BAC has noted the need for improved bicycle storage conditions on BayLink Ferries. The existing storage options place bicycles on deck where they are subject sea spray and other elements.]

SolanoLinks routes are inter-city bus services operated by Solano transit operators. SolanoLinks transit routes connect to BART and Baylink Ferry services. Most Solano County bike routes have bike racks or allow you to take bikes onboard if there's room (please see Table 1.4).

The proposed bikeway system provides direct connections through its primary network to multi-modal stations planned in Dixon, Vacaville/Fairfield, and Benicia. All three of these proposed stations would be served by a combination of Class I and II facilities as currently planned. It is the intent of this plan to ensure bicycle access to all future stations.

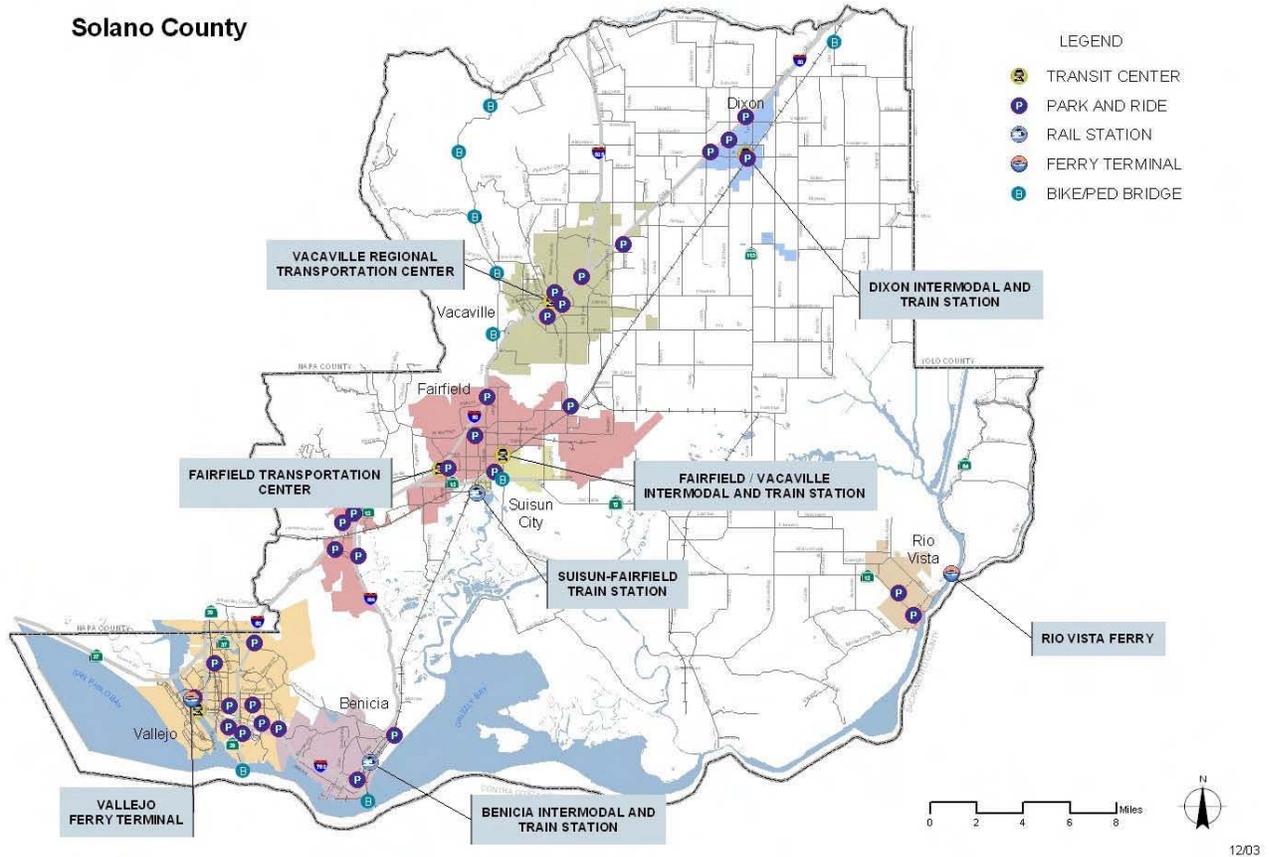


Figure 1.5: Existing & Planned Multi-Modal Connections

1.7 EVALUATION OF BICYCLE SAFETY

Safety is a major concern of both existing and potential bicyclists. For those who ride, it is typically an on-going concern or even a distraction. For those who don't ride, it is one of the most compelling reasons not to ride. In discussing bicycle safety, it is important to separate out perceived dangers versus actual safety hazards.

Bicycle Accident Analysis

Bicycle riding on-street is commonly perceived as unsafe because of the exposure of a lightweight, two-wheeled vehicle to heavier and faster moving automobiles, trucks and buses. Actual accident statistics, however, show that bicyclists face only a marginally higher degree of sustaining an injury than a motorist based on numbers of

users and miles traveled¹. Death rates are essentially the same with bicyclists as with motorists. Bicycle-vehicle accidents are much less likely to happen than bicycle-bicycle, bicycle-pedestrian, or accidents caused by physical conditions. And, the majority of reported bicycle accidents show the bicyclist to be at fault; generally, this involves younger bicyclists riding on the wrong side of the road or being hit broadside by a vehicle at an intersection or driveway. Collision data collected for the calendar years 2000, 2001, and 2002 in Solano County tend to support this observation. It is important to note that these accident figures reflect reported accidents only; they do not include unreported accidents and undercounted non-automobile-related accidents. Other studies have shown that the most common bicycle accident is a bicycle-bicycle or bicycle-pedestrian accident. These conflicts tend to be less severe and therefore under-reported. Bicycle accidents in Solano County are shown in Table 1.5.



Junior Racers at the First Annual Solano Bicycle Classic, March 1999

Table 1.6 - BICYCLE COLLISIONS IN SOLANO COUNTY, 2000-2002

Year	Injuries	Property Damage Only	Fatality	Total
2000	115	20	1	136
2001	118	17	1	136
2002	88	19	0	107

Source: California Highway Patrol.

1.8 BICYCLE SAFETY AND EDUCATION PROGRAMS

According to available data, Solano County does not have a regular schedule of bicycle safety events or instruction. Park and recreation departments in the incorporated cities, bicycle clubs, local police departments, and various child related service groups, however, have put on bicycle rodeos and similar events to raise awareness for bicycle safety. Coordinated bicycle safety events can have a positive affect on bicycle ridership because they address and appease safety concerns of potential riders and teach good riding habits. Without

¹ Source: Bicycle Federation of America.

these programs, a forum does not exist to address safety concerns that are real or perceived.

Educational Programs

Solano County’s Unified School Districts, Police Departments, and the Departments of Public Works have a long history of trying to improve safety conditions for bicyclists. Despite these efforts, the lack of education for bicyclists, especially younger students, is a leading cause of accidents. For example, the most common type of reported bicycle accident in California involves a younger person (between eight and 16 years of age) riding on the wrong side of the road in the evening hours. Studies of accident locations around California consistently show the greatest concentration of accidents is directly adjacent to elementary, middle, and high schools.

Motorist education on the rights of bicyclists is virtually non-existent. Many motorists mistakenly believe, for example, that bicyclists do not have a right to ride in travel lanes and that they should be riding on sidewalks. Many motorists do not understand the concept of “sharing the road” with bicyclists, or why a bicyclist may need to ride in a travel lane if there is no shoulder.

Recommended Program: Expand Education Programs

Past educational programs in Solano County schools, such as the off-road training and fitted helmets given by Trips for Kids in 1998, should be expanded and supported by a secure, regular funding source. A Joint City/School District Safety Committee should be formed consisting of appointed parents, teachers, administrators, police, and public works staff whose task it is to identify problems and solutions, ensure implementation, and submit recommendations to the School Board or City Council.

Recommended Program: Develop New Educational Program Materials and Curriculum.

Education materials should be expanded to promote the benefits of bicycling, the need for education and safety improvements, the most recent educational tools available in the country (including the use of low-cost safety videos), and directives to parents on the proper school drop-off procedure for their children. Educational pamphlets for children should be made more readable. Incentive programs to reward good behavior should be developed. Educational programs, and especially on-bike training, should be expanded to more grades and for more hours per year. Education curriculum should, at a minimum, cover the following lessons:

BTA Requirement G

A description of bicycle safety and education programs conducted in the area included within the plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the Vehicle Code pertaining to bicycle operation, and the resulting effect on accidents involving

- On-bike training
- Night riding (clothes, lights)
- How to adjust and maintain a bicycle
- Riding defensively
- Riding on sidewalks
- Rules of the road
- Importance of wearing helmets
- How to negotiate intersections
- Use of hand signals

A standard safety handbook format should be developed incorporating the best elements of those currently in use, and made available to each school on disk so they may be customized as needed. Each school should develop a circulation map of the campus and immediate environs to include in the handbooks, clearly showing the preferred circulation and parking patterns and explaining in text the reason behind the recommendations. This circulation map should also be a permanent feature in all school newsletters. Bicycle helmet subsidy programs are available in California, and should be used to provide low-cost approved helmets for all school children that ride bicycles.

Recommended Program: Develop an Adult Education Program.

Establish an adult bicycle education program through the Parks and Recreation Department or other City departments that (a) teaches adults how to ride defensively, (b) how to ride on a variety of city streets, and (c) encourages adults to feel more confident to ride to work or for recreation. Work with local bicycling groups who could provide the training expertise, and possibly lead organized bicycle-training sessions, tours and rides.



Recommendation: Educate Motorists

Educate motorists about the rights and characteristics of bicyclists through a variety of means including: (a) making bicycle safety a part of traffic school curriculum, (b) producing a brochure on bicycle safety and laws for public distribution, (c) enforcing existing traffic laws for both motorists and bicycles, (d) sending an official letter to the Department of Motor Vehicles recommending the inclusion of bicycle laws in the drivers license exam, and (e) install signs that read “Share the Road” with a bicycle symbol at least every 2,500 feet along all routes of the proposed primary system where bike lanes are not feasible, travel lanes are under 14 feet wide, and ADTs exceed 20,000.

School Commute Routes

Identifying and improving routes for children to walk or bicycle to school is one of the most cost effective means of reducing AM traffic congestion and addressing existing safety problems. Most effective school commute programs are joint efforts of the school district and City, with parent organizations adding an important element.

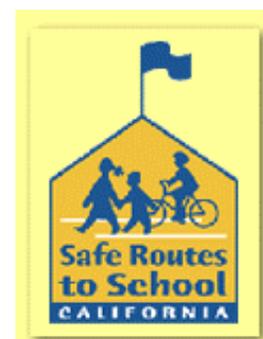
A toolbox of measures that can be implemented by the school district and cities or the County to address safety problems should be developed. This may include maps of preferred school commute routes, warning signs, enhanced education, additional crossing guards, signal treatments (longer cycles, pedestrian activated buttons, etc.), enhanced visibility at key locations (lighting, landscaping abatement), crosswalks, bike lanes, and other measures. The following process is recommended for developing a Safe Routes to School Program in Solano County for school commuters:

School Safety Improvements

The Bicycle Plan Update reviewed existing school commute needs and yielded the following recommendations for “Safe Routes to School” programs and school zone improvements that can be implemented countywide. These recommendations are low cost solutions that can be implemented in the short term. They are designed to improve safety for student commuters and motorists through education efforts and the use of high visibility school zone markings. It is important to note that the recommendations below are intended to meet the needs of student commuters in Solano County, whether they commute to school by bike or on foot.

Safe Routes to School

Safe Routes to School programs are growing in popularity nationwide. The National Highway Traffic Safety Administration recently completed a pilot program in cooperation with the Marin County Bicycle Coalition to develop a national model for Safe Routes to Schools programs. The program was designed to decrease traffic and pollution and increase the health of children and the community at large. The program promoted walking and bicycling to school through educational efforts and incentives that stressed safety and fun for the participants. The program also addressed the safety concerns of parents by encouraging greater enforcement of traffic laws, educating the public, and exploring ways to create safer streets. Additional information on this national pilot program can be found at <http://www.saferoutestoschools.org/>.



The purpose of the proposed Safe Routes to School program is to identify and improve school commute routes, to increase the number of students who bicycle and/or walk to school in Solano County, to lessen traffic congestion, and to improve health. Identifying and improving routes for children to walk and bicycle to school is one of the most cost effective means of reducing AM traffic congestion.

The basic components of the program include:

- **Encouragement** – school commute events and frequent commuter contests are used to encourage participation.
- **Education** – students are taught safety skills.
- **Engineering** – infrastructure improvements are constructed to improve the safety of school commute routes.
- **Enforcement** – various techniques are employed to ensure traffic laws are obeyed.

Implementation Strategies

There is a need in each school district to establish an organization concerned with student commuting. Through such an organization, the school district can be responsibly involved in safety issues and the processing of requests for traffic controls as well as for safety programs and the coordination of activities within and between the community and public agencies.

School commute projects are usually developed in a traditional planning process that includes (a) school administrators and teachers, (b) local PTA's and other groups, (c) neighborhood groups and the public, (d) police departments, and (e) local public agencies staff such as planning, engineering, and public works departments. Employing a formal process that includes local agency staff, transportation engineers and professionals, and police departments helps to ensure route integrity and reduce liability. The following steps are recommended to develop safe routes projects:

1. Form a School Commute Task Force composed of representatives from the school district, city staff and law enforcement agencies, the local neighborhood, parent-teachers organization or other similar group, and the school itself.
2. Set objectives and a reasonable schedule for this Task Force to accomplish its goals.

3. Determine the preferred basic school commute routes to the school based on (a) parent and student input, (b) a survey of parent and student commute patterns, (c) city staff and law enforcement input, and (d) observations of actual commuting patterns.
4. Identify school commute goals. For example, does the school wish to encourage more students to walk or bicycle to school? While there is a perception of safety being a concern, statistics show that walking and bicycling are just as safe as driving. Yet many parents insist on driving their children even a few blocks to school, thus contributing to the traffic congestion.
5. Study the parking lot and drop off areas of the school. Is there a pattern where students are walking between cars or through parking lots or drop off areas to reach the school? Are there management efforts to get parents to follow any specific drop-off protocol?
6. Identify if there are adequate sidewalks and bike lanes on the streets directly serving the school. Are there Class I facilities that lead directly to the school? Are there school access points which encourage students to cross mid-block or at other less desirable locations? Are there gaps in the walking or biking routes?
7. Identify the first major street crossings on the main school commute routes. Many accidents occur at these intersections. Are there crossing guards?
8. Identify locations where students are crossing major or minor streets at mid-block or unprotected locations, (i.e., no stop signs or signals). Because children are sometimes hard to see and have difficulty in gauging vehicle speed, these locations can be the focus of improvements.
9. Identify locations where students forced to cross intersections that have very wide turning radii, where vehicles can accelerate and merge while turning. These are problematic because driver's attention is focused to their left at merging traffic rather than in front at crosswalks where students may be present.
10. Evaluate intersection designs. Do all intersections have properly designed crosswalks? The crosswalks should be located so that students can wait safely on the sidewalk prior to seeing if they can cross. Is there adequate visibility and lighting given the speed of traffic? Are there adequate warning signs in advance of the crosswalk?

STEPS TO START A RIDING TRAIN / WALKING SCHOOL BUS:

- Form a working group
- Invite parents, students, the school principal, teachers and local businesses to explore options – routes, coordinators, resources, and sponsors.
- Recruit train / bus “drivers.” Ask neighbors and families of students to take a turn as a volunteer in the mornings or afternoons.
- Organize the train / bus drivers.
- Work out a regular schedule among the drivers; determine who can walk or ride with the students and when. Create back-up plans with substitute drivers.
- Designate school routes
- Many parents already know how best to get around their neighborhood on foot, but in some instances routes may need to be mapped out. Work with the police department and the school to determine the safest routes.
- Promote the activity.
- Once the drivers and routes are set, let everyone in the neighborhood know about the project. More walking school buses/trains will create safer, healthier children and communities.

11. Evaluate actual traffic speeds along school commute routes. What are the 85th percentile speeds of traffic on the major school commute corridors? Are they significantly above or below the posted speed limits? When was the last speed survey conducted? What is the level of police enforcement, and does it occur only at the beginning of the school year? It is possible to lower speed limits near schools. In other locations, it may be necessary to make physical changes, such as narrowing travel lanes, to slow traffic.
12. A more detailed evaluation methodology which rates improvements and corridors according to objective criteria, has been developed and is available for use by local schools. However, it may require the services of specialists who understand traffic safety and engineering.
13. Once the improvements have been identified, a preliminary design or plan must be completed which describes the project and its cost. For example, a crosswalk improvement would need to be designed so that it can be reviewed and approved by the appropriate agency. Again, a professional may be engaged for this effort.
14. With a plan and cost estimate, the project still needs a sponsor. Typically this would be the jurisdiction, which is best connected to available funding sources and familiar with the State and Federal procedures necessary to obtain funding. The project sponsor will need an official authorization and confirmation that (a) the right-of-way is publicly owned, (b) staff have reviewed and approved the project, and (c) no negative impacts have been identified. With this in hand, the project sponsor can seek funding, which usually requires a 10% or greater matching amount. Caltrans has a Safe Routes to School grant program specifically for construction projects at or near schools.
15. Programs that may be implemented include a “Walking School Bus Program,” which involves parents taking turns walking (or bicycling) with groups of children to school. A good opportunity to kick-off a Safe Routes to School program is during International Walk to School Day in early October. Good resources and start-up material can be found at www.cawalktoschool.com. Organized Bike and Walk to School Days should be held monthly or weekly to keep the momentum going and encourage more children and their parents to walk or bike to school. Prizes or drawings for prizes offered to participants have been used in some schools as an incentive.

16. Curriculum programs implemented in the schools can teach children the basics regarding pedestrian and bicycle safety on the roads. Education materials should be expanded to promote the benefits of bicycling and walking, the need for education and safety improvements, the most recent educational tools available in the country (including the use of low-cost safety videos), and directives to parents on the proper school drop-off procedure for their children. Incentive programs to reward good behavior should be developed. Educational programs, and especially on-bike training, should be expanded to more grades and for more hours per year.

A standard safety handbook format should be developed incorporating the best elements of those currently in use, and made available to each school in a digital format so they may be customized as needed. Each school should develop a circulation map of the campus and immediate environs to include in the handbooks, clearly showing the preferred circulation and parking patterns and explaining in text the reason behind the recommendations. This circulation map should also be a permanent feature in all school newsletters. A variety of bicycle helmet subsidy programs are available in California, and should be used to provide low-cost approved helmets for all school children that ride bicycles.

School Zone Improvements

Traffic control measures in school zones can be a sensitive subject. In some cases, parents, schools, and school-based organizations have ideas for improvements which conflict with or exceed sound engineering practices. The best solution to ensure the safety of students and all roadway users is to adhere to accepted engineering practices that are proven effective. Traffic engineering analysis reveals that unnecessary control measures tend to lessen the respect for those controls that are needed. It is important to stress the point that effective traffic control can best be obtained through the uniform application of realistic policies, practices and guidelines developed through properly conducted engineering studies.

This study recommends that the decision to use a particular device at a particular location shall be made on the basis of an engineering and traffic survey. Of equal importance is the maintenance of traffic control devices. Devices should be properly maintained to ensure legibility, visibility, and functionality. Furthermore, if a device is found to be ineffective, it should be removed. Finally, devices which are used on a part-time basis, such as warning flashers, should be in operation only during the time periods when they are required.

To provide safe access for children on their approaches to schools, school sites should have designated pedestrian access points. Roadway geometry should minimize travel speeds to 15-20 mph. Slowing or calming vehicle traffic may be accomplished with raised crossings, traffic diverters, roundabouts, on-street parking and other land use and engineering designs. School sites should have pedestrian access points which do not require students to cross in front of drop off and pick up traffic. The approaches to all schools should have curb and gutter sections, except in unusual circumstances. Streetscaping should assure maximum sight distance on all access, crossings, and intersections. School zone designations for speed limits should be an element of a comprehensive “circulation” plan that also includes crossing guard programs and identification of “safe routes” for bicycling and walking to school.

2.0 ANALYSIS OF DEMAND

This chapter provides the analytical background and underpinning for the Countywide Bicycle Plan. It reviews the relationship between bicycle use, demographics, and land use in Solano County. It also identifies major activity centers and public facilities where bicyclists may be destined, along with the needs of recreational and commuter bicyclists. The purpose of reviewing the needs of recreational and commuter bicyclists is twofold: it is instrumental when planning a system that must serve both user groups and it is useful when attempting to quantify future usage and benefits to justify expenditures of resources.

2.1 The Benefits Of Bicycling

A key goal of the Bicycle Plan is to maximize the number of bicycle commuters in order to help achieve large transportation goals such as minimizing traffic congestion and air pollution. In order to set the framework for these benefits, national statistics and policies are used as a basis for determining the benefits to the County. According to the 2000 U.S. Census, less than one percent of all employed County residents commute primarily by bicycle (0.5%). This does not include those who ride less than 50 percent of the time. Thus, the bicycle commute rate in the Solano County is about average compared to the rate of California and the United States as a whole.

- Currently, nearly 3 million adults (about 1 in 60) commute by bicycle. This number could rise to 35 million if adequate facilities were provided (according to a 1991 Lou Harris Poll).
- The latent “need” for bicycle and pedestrian facilities—versus actual bicyclists and pedestrians—is difficult to quantify; we must rely on evaluation of comparable communities to determine potential usage.
- Currently, the average household in the U.S. generates about 10 vehicle trips per day. Work trips account for less than 30 percent of these trips on average.

The distances between residences and workplaces combined with the types of employment, climate, and available bicycle facilities all influence these commute shares. As Solano County grows and

additional local employment opportunities become available and better inter-city bicycle connections are provided, this mode share can be expected to increase.

2.2 Land Use And Demand

The concept of “demand” for bicycle facilities is difficult to comprehend. Unlike automobile use, where historical trip generation studies for different types of land uses permits an estimate of future “demand” for travel, no such methodology exists for bicycles.

Consider this: do people who already ride bicycles in Solano County have any “demand” for additional facilities? Is it possible to measure the “demand” for recreational facilities any more than, say, the demand for a park or library? While the concept is soft, the need to quantify and understand the need for various types of bicycle facilities is critical. Without it, there can be no good long range planning and no good argument to invest public dollars in improvements.

One of the first steps in evaluating demand is to review population and land use in the County. Solano County has a 2003 population of about 410,000 and is growing at approximately 2.2% per year according to 1999 State Department of Finance estimates and the Association of Bay Area Governments “Population Projections 2003”. Existing land use in the county can be summarized as having the following significant features:

- Major agricultural resources, particularly in the north and east
- Large open space areas including wetlands and hills
- Major transportation corridors (I-80, I-680, I-505, I-780, SR 12, SR 29, SR 37, SR 113, and UP railroad)
- Three mid-sized cities over 90,000 (Vallejo, Fairfield, Vacaville)
- Four smaller cities under 30,000 (Benicia, Dixon, Rio Vista, Suisun City)
- A major air base (Travis AFB)
- Several large industrial and warehousing areas
- A relatively low concentration of employment

This last issue results in a net out-migration of daily commuters towards the Bay Area and Sacramento area. Solano County is also one of the fastest growing counties in northern California (see Table 2.1), although growth has slowed somewhat in the last few years. Much of the growth has been in the form of residential subdivisions and, to a lesser extent, office parks, shopping centers, and light industrial uses.

Table 2.1
Population and Demographics

	2000 Population*	2030 Population Estimate	% Increase	Employed Persons Est. 2030	Median Age*
Solano County	394,542	577,300	+46%	305,500	33.9
Benicia +	26,928	31,200	+16%	18,950	38.9
Dixon +	16,180	34,300	+111%	17,020	31.5
Fairfield +	96,5450	144,700	+49%	78,530	31.1
Rio Vista +	4,715	18,500	+292%	8,080	40.7
Suisun City +	26,640	36,100	+35%	17,870	31.7
Vacaville +	89,304	126,800	+41%	68,220	33.9
Vallejo +	119,917	169,000	+40%	87,650	34.9
Unincorporated Areas Outside City Spheres of Influence	14,313	16,700	+16%	9,180	

Source: Association of Bay Area Governments Projections 2003: A Smart Growth Forecast

* 2000 US Census

+ City Sphere of Influence

Future growth and changes in land use are important to bikeway planning for two reasons. First, new developments will require new and upgraded roadways—which will provide bike lanes as part of the standards recommended in this report. Much of the cost of the proposed system, therefore, will be borne as part of the cost of developing new roadways. There are numerous areas in Solano County where major future development will occur, some of these include North Village, Lagoon Valley, south of Alamo, east of Vanden, and the industrial zones in the Vacaville area; Columbus

Parkway and Mare Island in Vallejo; Peabody and the Cement Hill area in Fairfield; Cordelia and the lower Green Valley; and the Lake Herman area of Benicia. As shown in Table 2.1, Rio Vista is poised for explosive growth in the next 25 years, while overall the County will experience above-average growth rates.

Second, changes in land use (and particularly employment areas) impact average commute distance, which in turn affects the attractiveness of bicycling as a commute mode. Currently, the average one-way commute time in Solano County (28.2 minutes) is about 10 percent higher than the Bay Area as a whole due to the imbalance between residential and employment land uses in the County. From a bicycling perspective, any policy that encourages higher land use densities and an increase in local employment is a very positive step as explained below.

Demographics are linked to bicycling in several ways. Of all demographic features, average age is most directly linked to potential bicycle riding. A survey conducted by the Bureau of Transportation Statistics and the National Traffic Safety Administration in 2002 found a steep decline in bicycle ridership as people age. Of the respondents aged 16-24, nearly 40% rode bicycles, in the 45-54 age group, only 26% rode bicycles. Only 9% of those surveyed over the age of 65 rode bicycles. It may be argued that older people do not ride as often because of concerns about safety, and this is a valid consideration.

Solano County's average age (34 years) is slightly lower than the national norm of 35.3 years. Using a formula developed by the U.S. DOT and the Trail & Bikeway Center, potential mode split for commuting purposes in Solano County by the year 2010 is four percent—compared to an existing mode split of about one percent. This represents a significant reduction in VMT (vehicle miles traveled), congestion, roadway construction, and air pollutants, and is an important argument supporting increased investment in bicycle facilities in the future.

2.3 MAJOR ACTIVITY CENTERS AND PUBLIC FACILITIES

The proposed regional bikeway network will connect the neighborhoods where people live to the places they work, shop, recreate, or go to school. It will also provide loop routes for those who have no specific destination but ride for exercise or enjoyment. Loop routes are important as they provide for safe recreational riding by limiting turning movements thereby avoiding conflicts with automobiles and other traffic. Figure 2.1 shows the major regional

activity centers in Solano County such as downtowns, regional shopping centers, and commercial districts. The major activity centers and public destinations in Solano County (shown in Figure 2.1) include:

- Downtowns in Vallejo, Benicia, Fairfield, Suisun City, Vacaville, Dixon, Rio Vista
- Travis Air Force Base
- Benicia Industrial Complex
- Mare Island in Vallejo
- California Medical Facility at Vacaville
- Major shopping destinations
- Solano Community College (Fairfield, Vacaville, planned in Vallejo)
- North Vacaville/I-505 Industrial Parks
- Anheiser-Busch and Cordelia industrial park
- Marine World / Solano County Fairgrounds
- Vaca Valley Hospital
- Vallejo Ferry Terminal
- Multi-modal locations such as park and ride lots and bus transfer stops and Amtrak stations
- Chapman College in Fairfield
- Vallejo Ferry Terminal
- U.C. Davis located just north of the Solano County line, nationally known for its bicycle usage

These activity centers will be used as planning criteria for selecting new regional bikeways.

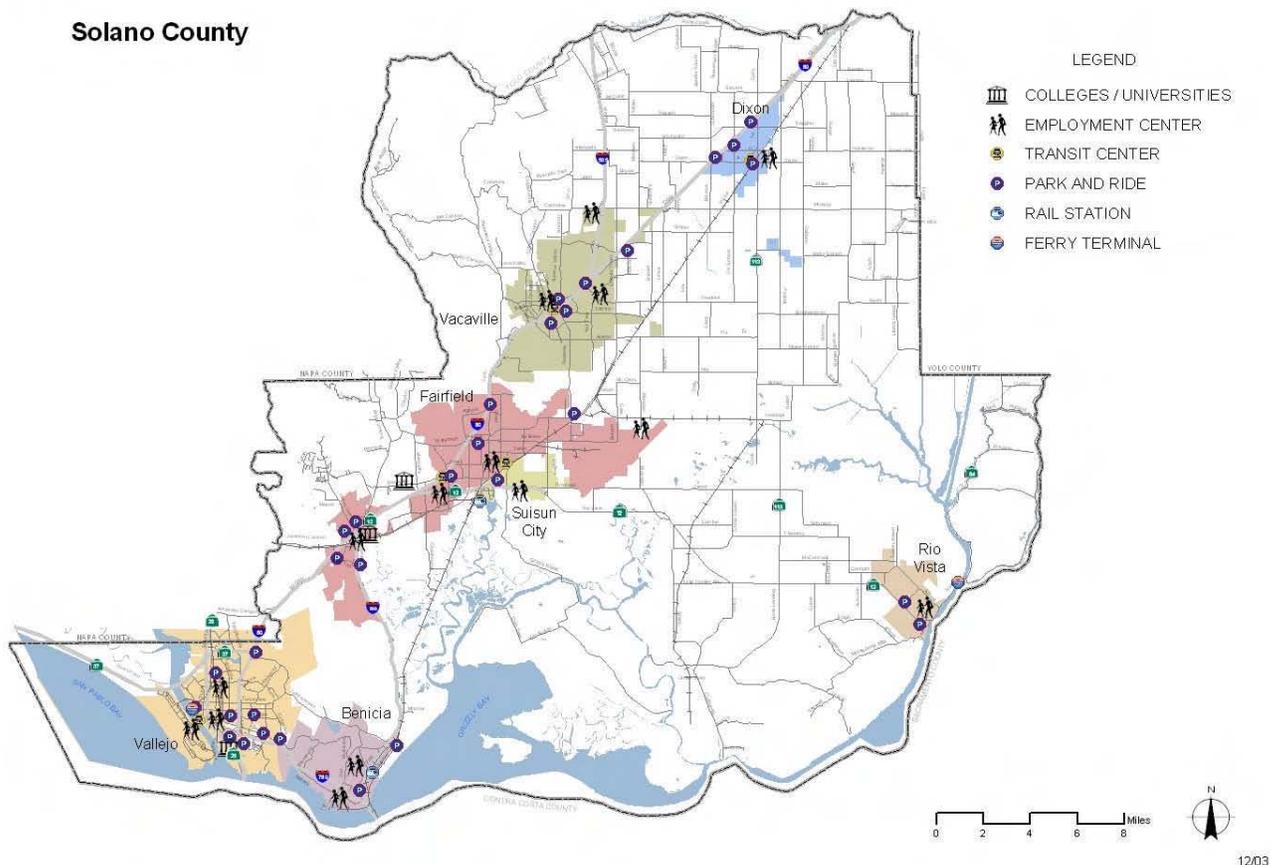


Figure 2.1 Commuter and Student Destinations

2.4 COMMUTER AND RECREATIONAL NEEDS

Key general observations about bicycling needs in the county include:

- **Bicyclists are typically separated between experienced and casual riders.** The U.S. Department of Transportation identifies thresholds of traffic volumes, speeds, and curb lanes where less experienced bicyclists begin to feel uncomfortable. For example, on an arterial with traffic moving between 30 and 40 miles per hour, less experienced bicyclists require bike lanes while more experienced bicyclists are still willing to ride in the few feet of pavement between vehicles and the street’s curb, if there is at least a 14- or 15-foot wide curb lane.
- **Casual riders include those who feel less comfortable negotiating traffic.** Others such as children and the elderly may have difficulty gauging traffic, responding to changing

conditions, or moving rapidly enough to clear intersections. Other bicyclists, experienced or not, may be willing to sacrifice time by avoiding heavily traveled arterials and using quieter side streets. In some cases, casual riders may perceive side streets (or sidewalks) as being safer alternatives than major through routes, when in fact they may be less safe. Other attributes of the casual bicyclist include cycling shorter distances than the experienced rider and unfamiliarity with many of the rules of the road.

The casual bicyclist will benefit from route markers, bike lanes, wider curb lanes, and educational programs. Casual bicyclists may also benefit from marked routes that lead to parks, museums, historic districts, and other visitor destinations.

- **Experienced bicyclists include those who have the skills and confidence to ride within or near the travel lanes.** Experienced bicyclists typically prefer the most direct, through route between origin and destination and have the ability to negotiate streets in the same manner as motor vehicles, merging across traffic to make left turns, and avoiding bike lanes and shoulders that contain gravel and glass. The experienced bicyclist will benefit from wider curb lanes and loop detectors at signals. The experienced bicyclist who is primarily interested in exercise will benefit from loop routes that lead back to the point of origin.
- **Who rides bicycles?** While the majority of Americans (and Solano County residents) own bicycles, most of these people are recreational riders who ride relatively infrequently. School children between the ages of about 7 and 12 make up a large percentage of the bicycle riders today, often riding to school, parks, or other local destinations on a daily basis weather permitting. The serious adult road bicyclist who may compete in races, “centuries” (100 mile tours), and/or ride for exercise makes up a growing and important segment of bikeway users, along with serious off-road mountain bicyclists who enjoy riding on trails and dirt roads. The single biggest adult group of bicyclists is the intermittent recreational rider who generally prefers to ride on pathways or quiet side streets.

RECREATIONAL NEEDS

The needs of recreational bicyclists must be understood prior to developing a system or set of improvements. While it is not possible to serve every neighborhood and every need, a good plan

will integrate recreational needs to the extent possible. The following points summarize recreational needs:

Recreational bicycling typically falls into two categories: exercise and recreation, and touring.

- Recreational users range from healthy adults mountain biking to children to senior citizens. Each group has their own abilities, interests, and needs.
- Directness of route is typically less important than routes with less traffic conflicts, visual interest, shade, protection from wind, moderate gradients, or other features.
- People exercising or touring often (though not always) prefer a loop route rather than having to backtrack.
- Mountain bikers, a fast growing segment of recreational users, prefer off-road trails. The development of long distance trails between cities would go a long way to satisfy their off-street needs. It would also serve to reduce the impacts of bicycles at popular parks such as Rockville Hills and Lagoon Valley.
- Self-contained touring, an emerging form of eco-tourism is popular on the Pacific Coast Bike Route and is increasing statewide. Touring activities can be expected to increase with the completion of the Cross State Bike Route which will pass through Solano County, connecting the Lake Tahoe area to the San Francisco Bay. Campsites and rest stops are important amenities for touring cyclists.

Solano County offers several excellent recreational bicycle routes for different types of bicycle riders. These include bike paths for the less experienced rider such as the Linear Park in Fairfield and the River Park in Vallejo, and scenic back roads for longer distance riders such as Pleasants Valley Road and Putah Creek Road.

Some of the most obvious deficiencies are the lack of public awareness of bicycling opportunities and poor connectivity to regional recreation destinations and facilities such as parks and rest stops. Many roads outside developed areas lack shoulders or sufficient width for bicyclists, inhibiting some of the less adventuresome riders. Finally, there is demonstrated demand for additional bike paths where families, children, and others can ride closer to home without having to worry about traffic.

Two known issues on multi-use trails are, roadway/pathway interfaces and conflicts between bicyclists, pedestrians, roller bladers, and others. As a multi-use trail begins to exceed 200 people per hour, those conflicts become more of a problem unless the trail has adequate width (at least 10 feet), unpaved shoulders for walkers, and adequate signing and enforcement. Regardless of the design and operation, many experienced riders choose not to use multi-use trails because of the unpredictability of other users. Accident studies have shown that most bicycle-related accidents involve other bicyclists or pedestrians rather than automobiles. As such, multi-use trails should be designed to separate users as much as possible and the system should not depend on multi-use trails for critical connections to serve all riders.

With a favorable climate and gentle topography, recreational riders abound in Solano County. Bicycle clubs provide both the serious and casual recreational rider the opportunity to ride socially—and be guided through the maze of secondary roads to scenic destinations.

Regional recreation destinations and routes are shown in Figure 2.2 and include:

- Western Railway Museum
- Historic Benicia
- Lake Solano Park
- Potrero Hills and Grizzly Island
- Rockville Hills Park
- Pleasants Valley Road
- Lagoon Valley Regional Park
- Benicia State Recreation Area
- Fairfield Linear Park
- Marine World/County Fairgrounds
- Bay Trail
- Putah Creek Road
- Suisun Valley Road
- Suisun City Downtown/Waterfront
- Solano Community College
- Montezuma Hills
- Sacramento Delta Scenic Bike Route
- Mare Island
- Bay Area Ridge Trail
- Vallejo River Park

These destinations will be used as part of the evaluation criteria for selecting regional bikeway routes. Recreational bicyclist needs will be met by planning, designing, and implementing a series of bike routes that increase accessibility to Solano County’s recreational assets (parks, libraries, historic areas, shopping areas) as well as loop

routes that lead outside towns and cities away from traffic and congestion.

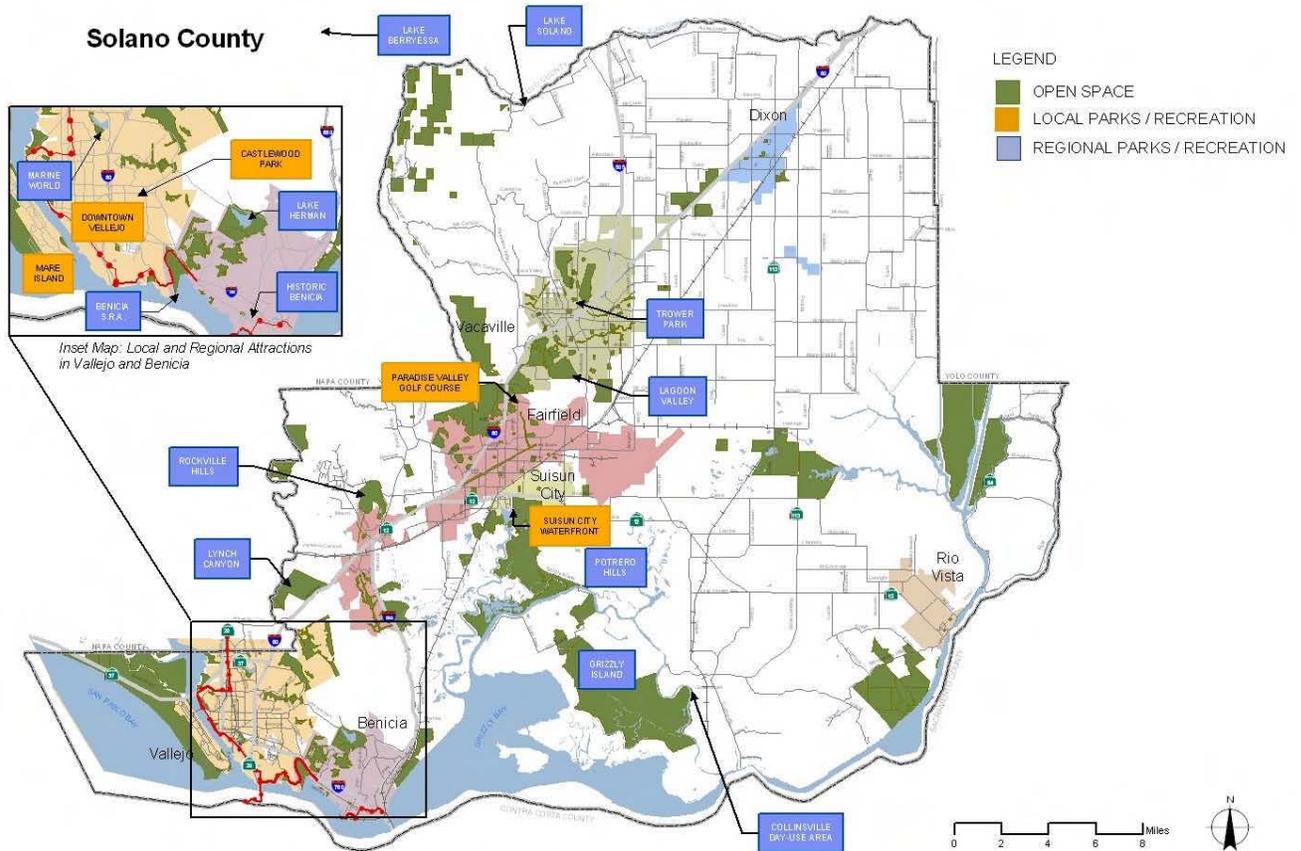


Figure 2.2: Recreation Destinations

COMMUTER NEEDS

Commuter bicyclists range from employees who ride occasionally to work to a child who rides to school. Millions of dollars have been spent attempting to increase the number of people who ride to work or school, with moderate success. Bicycling require shorter commutes, which runs counter to our land use and transportation policies which encourage people to live further and further from where they work. Access to transit helps extend the commute range of cyclists, but transit systems also face an increasingly dispersed live-work pattern that is difficult to serve. Despite these facts, Solano County has a great potential to increase the number of people who ride to work or school.

Bicycle commuters in the City of Davis have reduced peak hour traffic volumes by over 15 percent—to the point that many downtown streets that would normally be four lanes of traffic (with no bike lanes) have only two traffic lanes and ample room for bicyclists. While Davis may be an anomaly, national surveys have shown that about 20 percent of the adult population would use a bicycle to ride to work at least occasionally if there were a properly designed bikeway system.

Key commuter needs are summarized below.

- Commuter trips range from several blocks to one or more miles.
- Commuters typically seek the most direct and fastest route available, with regular adult commuters often preferring to ride on arterials rather than side streets.
- Commute periods typically coincide with peak traffic volumes and congestion, increasing the exposure to potential conflicts with vehicles.
- Places to safely store bicycles are of paramount importance to all bicycle commuters.
- Major commuter concerns include changes in weather (rain), riding in darkness, personal safety and security.
- Rather than be directed to side streets, most commuting cyclists would prefer to be given bike lanes or wider curb lanes on direct routes.
- Unprotected intersections in general are the primary concerns of all bicycle commuters.
- Many younger students use sidewalks for riding to schools or parks, which is acceptable in areas where pedestrian volumes are low and driveway visibility is high. Where on-street parking and/or landscaping obscures visibility, sidewalk riders may be exposed to a higher incidence of accidents. Older students who consistently ride at speeds over 10 mph should be directed to riding on-street wherever possible.
- Students riding the wrong-way on-street are common and typically account for many recorded accidents, pointing to the need for education

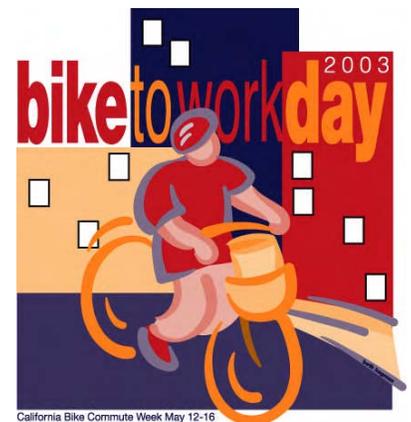


Table 2.2
Commute to Work statistics, 2000 Census

Mode of Transportation	State of CA	Solano Co.	Benicia	Dixon	Rio Vista	Suisun City	Vacaville	Vallejo
	%	%	%	%	%	%	%	%
Car, truck, van - drive alone	71.8	73.3	77.6	79.6	70.8	74.5	78.8	66.6
Car, truck, van - carpooled	14.5	17.7	11.7	12.2	14.3	18.2	14.5	22.9
Public transportation	5.1	2.7	4.2	0.7	1.1	2.6	0.7	5.0
Walked	2.9	1.6	1.0	1.7	6.9	1.0	1.8	1.2
Bicycle	0.8	0.5	0.5	1.4	0.6	0.3	0.4	0.4
Other means	1.0	1.2	0.8	1.0	0.0	1.2	1.4	0.9
Worked at home	3.8	3.1	4.2	3.4	6.4	2.4	2.4	2.9

BTA Requirement A

The estimated number of existing bicycle commuters in the plan area and the estimated Increase in the number of bicycle commuters resulting from the implementation of the plan.

Commuters and students follow similar paths, which is typically the most direct possible route from origin to destination. For grammar school students, this may consist of residential or collector streets, with few crossings of major arterials. For junior high and high school students, riders may have to cross up to five or six arterials to reach school. For college students and adult commuters, rides are most often under five miles but may be as long as 10 or 15 miles.

Unfortunately, commuters and students need to travel during periods of peak traffic activity, and to destinations that may have high levels of congestion and traffic volumes/speeds. For example, one of the most dangerous parts of a young student’s commute is the drop off zone in front of their school where dozens of vehicles jockey for position.

Once they have arrived at their destinations, bicycle commuters often find no (or poor) bicycle racks, and no showers or lockers. Rather than providing an incentive for bicyclists, most schools and employers inadvertently discourage bicyclists while continuing to subsidize parking for the automobile.

Commuting bicyclists have very obvious and straightforward needs. They require bike lanes or wider curb lanes along all arterials and collectors, loop detectors at signalized intersections, new signals where school children need to cross busy arterials, adequate maintenance of the pavement, and adequate bicycle storage and showers at their destinations.

Most commute bicycle trips are under five miles (eight kilometers) and therefore not regional trips, except for those commuters linking to another mode such as an Amtrak Station, transit stop, or park and ride lot. Allowing bicycles on other modes such as rail or bus, or providing bicycle lockers at multi-modal stations will help extend the range of the bicycle commuter. Other bicycle commuters will depend on a well-devised local bikeway network produced by a city in its bikeway master plan.

2.5 SPECIALIZED FACILITIES

Specialized facilities include off-road bicycling areas in Solano County. The majority of bicycles being sold today can be classified as dual function bikes, that is, they are designed for mountain biking and for short trips on roadways. In some areas, mountain bikes outnumber hikers on trails and the demand for multi-use trails is growing.

Mountain bikers enjoy varied trails that lead through a variety of topography and landscapes. Contrary to popular belief, bicycles and equestrians can co-exist given that bicyclists ride with a certain level of restraint and control. The biggest problems facing mountain bikers have been conflicts with hikers—especially on single-track trails—and some claims of environmental damage.

Some of the existing regional off-road bicycling areas in Solano County include:

- Rockville Hills Park
- Lower Lagoon Valley Park/Pena Adobe
- River Park (Vallejo)

The most successful approach will be to identify off-road bicycling areas and ensure that they serve the needs of the bicyclists and protect the rights of other trail users.

2.6 PLANNING PROCESS

Although the bicycle planning process involves the use of standards and criteria, it also relies heavily on the input of local citizens from the planning area. The Solano County Bicycle Advisory Committee (BAC), comprised of citizens from throughout the County, has been involved through each process, in addition to regular monthly or bi-monthly meetings. For the 2001 Solano Countywide Bicycle Plan, the South County Plan and this 2004 Update, local citizens were involved throughout the planning process in a number of different forums. A public meeting to obtain input on this plan was held October 2003. The following discussion describes the planning processes used to develop the proposed system and the involvement of local citizens.

BTA Requirement H

A description of the extent of citizen and community involvement in the development of the plan, including, but not limited to, letters of support.

Public workshops were held for the Comprehensive Transportation Plan Update in each of the STA's member agencies. The main purpose of these meetings was to solicit public comment on the Countywide transportation system and to identify bicycle related concerns of the general public. The last public workshop, which was held in conjunction with the October 2003 meeting of the BAC, provided the public and the BAC members an opportunity to make changes to the proposed system. This meeting generated a number of comments and changes, which have been incorporated throughout the Plan. Many of the comments, though, were related to implementation and funding. These issues will be addressed in the next chapter. Field data was collected for the feasibility analyses presented in the next section.

2.7 NEEDS AND ATTITUDE SURVEY

In 1994 and again in 2003, a needs and attitude survey was conducted to identify (a) the existing bicycle riding patterns in Solano County, (b) reasons why people don't ride or ride more often, and (c) what types of improvements would encourage people to ride more often. The survey methodology consisted of interviewing a cross section of people at public locations throughout the county, and distributing surveys through bike shops and bicycle clubs. While a statistically significant sample would cost several times the budget of this entire study, this survey provides information that—when used with other sources such as the U.S. Census—helps identify existing and potential bicycle ridership.

The results of the survey are presented below.

1. How many bicycles are in your household?

Answer	2003		1994		Change %
	#	%	#	%	
0	0	0%	22	18%	-18%
1	3	10%	26	22%	-12%
2	9	29%	18	15%	+14%
3+	19	61%	53	46%	+15%

2. What type of bicyclist are you? (You may answer more than once)

Answer	2003		1994		Change %
	#	%	#	%	
Casual recreation rider	19	61%	77	63%	-2%
Mountain biker	14	45%	21	17%	+28%
Occasional commuter	9	29%	8	7%	+22%
Regular commuter	9	29%	2	2%	+27%
Club bicyclist	3	10%	3	2%	+8%
Racing/touring rider	11	35%	12	10%	+25%

3. Factors for not riding or not riding more often?

Answer	2003		1994		Change %
	#	%	#	%	
Too strenuous	1	3%	8	5%	-2%
No time	8	26%	53	35%	-9%
Inconvenient	7	23%	7	5%	+18%
Distance	8	26%	15	10%	+16%
Weather	8	26%	11	7%	+19%
Safety	10	32%	20	13%	+19%
Not interested	0	0%	15	10%	-10%
Clothing constraints	1	3%	4	3%	0%
Other	6	19%	18	12%	+7%

4. What improvements would convince you to ride or ride more often? (You may answer more than once)

Answer	2003		1994		Change %
	#	%	#	%	
Comprehensive bike lane network	27	87%	73	37%	+50%
Secure, covered bike parking	10	32%	24	12%	+20%
Showers/lockers at work	1	3%	15	8%	-5%
Half-hour off work day	0	0%	23	12%	-12%
Guaranteed rides home	2	6%	14	7%	-1%
\$10/week incentive	4	13%	19	10%	+3%
Bike racks on buses	8	26%	25	13%	+13%
Other	4	13%	6	3%	+10%

5. How long is your current one-way commute?

Answer	2003		1994		Change %
	#	%	#	%	
No commute	3	10%	25	21%	-11%
0-5 miles	12	39%	29	26%	+13%
6-10 miles	3	10%	12	10%	0%
Over 10 miles	13	42%	52	44%	-2%

6. Are you aware of the Solano BikeLinks Map?

Answer	2003		1994		Change %
	#	%	#	%	
Yes	20	64.0%		%	%
No	10	32%		%	%

Is it useful?

Answer	2003		1994		Change %
	#	%	#	%	
Yes	18	58.0%		%	%
No	3	9%		%	%

Survey results from questionnaires left in bicycle shops and distributed through the Bicycle Advisory Committee showed:

- The vast majority of households have bicycles (100% of respondents)
- Most bicyclists describe themselves as casual recreational riders (61%)

- A significant portion (29% of respondents) commute by bicycle at least occasionally
- Most obstacles to increased bicycle riding are personal (not interested, too strenuous, etc.)
- Safety was the highest single response for not riding (32%)
- Physical improvements such as bike lanes ranked highest among incentives to increase bicycle riding (87%)

The results of this survey compare very closely to other communities in California, where a similar surveys have been conducted. As the statistical variance on this questionnaire is quite high, it should be used with caution and in conjunction with other sources.

2.8 TRIP REDUCTION POTENTIAL/AIR QUALITY BENEFITS

Based on the results of the survey and other sources on current ridership, it is possible to project future bicycle ridership in Solano County along with the trip reduction and air quality benefits. While these projections are only ambitious estimates, they are important to building an argument for investing in bicycle facilities and programs over time. The projection on bicycle usage and benefits forecast changes in modal choice—not travel behavior—based on a combination of empirical and theoretical data. Research conducted around the U.S. by the U.S. Department of Transportation shows a definitive link between bicycle use and age and the miles of bicycle facilities provided. It is possible to derive a causal relationship from this information.

Table 2.3 on the following page quantifies the estimated reduction in vehicle miles traveled (VMT) in Solano County, and the estimated reduction in air pollutants based on the best available local and national data. The proposed bikeway system in Solano County could increase the bicycle mode share of trips from less than one percent in 2000 (U.S. Census) to nearly five percent by 2030. This will result in an estimated decrease of 272,216 vehicle miles, 9.5 tons of ROG, and 6.5 tons of Nox per day.

Table 2.3

Demographics, Bicycle Commuters, and Air Quality

Category	Total	Source/Calculation
Population	394,542	2000 US Census
# of Employed Persons	174,571	2000 US Census
# Bicycle-to-Work Commuters	803	2000 US Census
Bicycle-to-Work Mode Share	0.46%	calculated from above
Population: Ages 5-14 years (K-8)	59,088	2000 US Census
# of College Students	10,116	2000 US Census
# of Daily Bike-Transit Users	6,000	2000 CTP
		assumes 5% of school students commute by bicycle - from national studies and estimates
Total # of Bicycle Commuters	9,757	
Utilitarian Bicyclists	11,837	174% of work and bike-transit users
		work commuters (including bike-transit users) x 8 miles + school students x 1 mile (round trip)
# Miles Ridden by Bicycle Commuters per Weekday	152,076	
		estimated using the Federal goal of doubling # of bicycle commuters nationwide by 2030
# of Future Daily Bicycle Commuters	19,515	
Future # Miles Ridden by Bicycle Commuters per Weekday	424,292	
Reduced Vehicle Miles per Weekday	272,216	
Reduced PM10 (lbs/weekday)	5,008.78	(.0184 tons per reduced mile)
Reduced NOX (lbs/weekday)	13,578.15	(.04988 tons per reduced mile)
Reduced ROG (lbs/weekday)	19,762.91	(.0726 tons per reduced mile)
		180 days for students, and 256 days for employed persons
Reduced Vehicle Miles per Year	5,1966,163	
Reduced PM10 (lbs/year)	956,177.40	(.0184 tons per reduced mile)
Reduced NOX (lbs/year)	2,592,072.21	(.04988 tons per reduced mile)
Reduced ROG (lbs/year)	3,772,743.44	(.0726 tons per reduced mile)

PM10 - Particulate Matter
 NOX - Nitrogen Oxides
 ROG - Reactive Organic Gasses

3.0 PROPOSED SYSTEM

The specific purpose of this chapter is to describe the proposed bikeway system for Solano County. As part of this description, there is a discussion of the process used to develop the proposed system. This section is followed by a chapter on implementation, including information about costs, financing, and other issues.

This chapter addresses the following components of the Solano Countywide Bicycle Plan:

- Bikeway Facility Planning Criteria;
- Planning Process;
- Proposed System; and
- Planned Route Descriptions.

The information presented in this chapter for each of these components is the result of the planning efforts of the Solano Bicycle Advisory Committee, the Solano Countywide Bicycle Plan Technical Advisory Committee, interested members of the public, and the Solano Transportation Authority. As part of these efforts, meetings and public workshops were held to solicit comments and opinions regarding the proposed bikeway system.

3.1 BIKEWAY FACILITY PLANNING CRITERIA

The introduction and chapter one (Existing Conditions) of this document specifically described the policies, programs, and standards that apply to the development of the proposed bikeway system. The selected planning criteria listed below incorporate this information.

Coverage

The system should provide balanced access from all portions of Solano County's population centers for both commuting (primary) and recreation (secondary) routes.

Connectivity

The system should provide bikeway connections to major activity centers throughout the county and to routes that provide access to major activity centers in neighboring counties. Activity centers

include schools, regional parks, shopping centers (malls), employment centers, government centers, transit centers, and other recreational opportunities. Some segments of the primary or secondary system do not directly serve regional activity centers, but rather provide important system linkages within the county or to adjacent counties.

System Designations

The proposed bikeway system is made up of two designations, which include primary routes and secondary routes. The difference between the two designations is to identify the definitive purpose of each route. **Primary** routes are designated high-priority projects that will serve as viable transportation routes linking all of the cities in Solano County. **Secondary** routes are connector and/or recreational routes which have been designated as longer term priorities. Each population center in Solano County should be connected by the primary routes in as direct a fashion as possible. The population centers should also have a number of secondary loops that are designed to provide for recreational riders and that avoid significant conflicts with vehicular traffic. These loops should also connect to primary routes that provide access to regional activity centers.

On-Street Designations

Class II bike lanes should be provided where there is sufficient width as the preferred on-street bikeway facility especially when traffic volumes reach 5,000 vehicles per day or traffic speeds are high. Class III bike routes should be used for lower volume roadways and where existing constraints prohibit the construction of Class II bike lanes due to cost or other considerations.

Off-Street Bikeways

Where feasible, Class I bikeways (multi-use paths) should be implemented. These bikeways provide a measure of safety for beginner and intermediate cyclists, and greater recreational benefit than bikeways located on streets. They can also become linear parks, adding to the “livability” of Solano County neighborhoods. It must be understood that the cost associated with this type of bikeway will be reflective of the higher degree of benefits.

Shoulders

In addition to the aforementioned classifications, shoulders provide room for bicyclists in rural areas where separate bicycle lanes are often not feasible. Cyclists will use the striped shoulders where they are suitable.

Local Input

Consider local information in the bicycle planning process. This should include input from bicycle club members, bike shop owners, current riders, bicycle route maps sold in local bike shops, and the general public.

These criteria were applied during the planning process for the proposed bikeway system in Solano County. The following section describes in greater detail the specific steps that were taken during the development of the proposed system.

3.2 PROPOSED SYSTEM

As stated above in the planning criteria, a bikeway system should contain primary and secondary routes as part of the system designations. These designations signify the specific uses for the routes and are important for maximizing riding opportunities for a variety of users. Figure 3.1 displays the Solano County Proposed Bikeway System. The proposed system includes a total of 148 miles (238 kilometers) of bikeway facilities including about 117 existing miles (188 kilometers). The system not only connects each city in Solano County but it provides regional connections to five other counties including Contra Costa County, Napa County, Sacramento County, Sonoma County, and Yolo County. Planning the system concentrated on consistency with local and regional bikeway plans to ensure that bikeway facilities were consistent through each city and with regional facilities such as the Bay Trail and Ridge Trail.

BTA Requirement C

A map and description of existing and proposed bikeways.

After identifying the primary and secondary routes for the proposed system, the next step in the planning process was to identify the classification of each route according to standards defined in “Chapter 1000: Bikeway Planning and Design” of the *Highway Design Manual* (California Department of Transportation, Revised 2/01/2001) and then to determine the appropriate phasing for each route.

BIKEWAY CLASSIFICATIONS

The Caltrans standards include the following three classifications, which are shown graphically in Chapter 1, page 20:

- Class I Bikeway (Bike Path) Separated Right-of-Way
- Class II Bikeway (Bike Lane) Striped On-Street

- Class III Bikeway (Bike Route) Signed Only On-Street

Non-Caltrans designations include:

Multi-Use Path

Similar to a Class I bike path but designed primarily as a recreation (versus transportation) facility and for multiple users (bicyclists in addition to such as pedestrians, runners, and rollerbladers).

Sidewalk Paths

Located along roadways with minimal driveways and designed to be used by a light flow of pedestrians and slow-moving bicyclists such as school children. Note: the sidewalk path is recommended on the Mare Island Causeway because of the railroad tracks and the steel grate bridge decking.

Unimproved/Mountain Bike Trails

Unimproved/Mountain Bike Trails, which often link communities and residential areas, have the ability to provide transportation links to bicyclists riding bicycles with suitable tires.

The specific identification of the bikeway classifications for the Solano County bikeway system was based on the following criteria:

- City bikeway classifications for overlapping routes;
- Planning criteria described in Chapter 1; and
- Information from the existing conditions analysis, which identified roadway conditions and the relative cost of improving potential routes.

These classifications are subject to changes resulting from the review of this chapter by interested persons, groups, and agencies.

3.3 BIKEWAY PHASING

For implementation purposes, the Bikeway System was divided into two phases. Phase 1 identifies those bikeways considered the highest priority. Phase 2 includes the remainder of the bikeways in the ultimate system. Corrections and changes have been made to projects where appropriate.

Evaluation criteria were used to rank each bikeway segment to determine if it should be included in Phase 1 or Phase 2. The scoring of individual segments was based on scale of 1-3, with a “1” representing the lowest score and a “3” representing the highest score. These criteria included:

Access

Access to major regional activity centers such as parks, employment centers, and schools is considered an important criterion for evaluating a bikeway segment. Those segments that directly or indirectly serve a regional activity center are more likely to attract a high number of users.

Population

The population base served by each bikeway segment is an indicator of the potential benefit of the improvement, i.e., the higher the population served the greater the benefit. For example, the Fairfield-Suisun City-Vacaville segments of the primary system would serve a combined population (2000 U.S. Census) of about 222,450 meaning that any improvements on these segments will serve the greatest share of County population. Segments in the Vallejo-Benicia area are also located in a densely populated area with a combined population (2000 U.S. Census) of about 146,950.

Connectivity

Connectivity is defined as providing an important linkage within the system, regardless of the activity centers or population served. Connectivity can be in the form of a linkage to an adjoining county or in terms of system continuity. Starting with the objective that the system should function as a unit that is built incrementally over time, rather than a series of disconnected pieces, one works outward from the “center” of the system attempting to provide the greatest benefit to potential users. For the Solano County bikeway system, the connections between Fairfield and Vacaville, with Davis in Yolo County, and between Benicia and Vallejo provide the most important linkages for bicyclists, followed by other segments directed at connecting the other urbanized areas. This plan recognizes the importance of taking advantage of opportunities to improve a bikeway even if it does not connect to other built segments at that time.

Public Support

For these criteria, minutes of the BAC meetings and the public workshops were reviewed along with survey responses to identify those routes that were repeatedly recommended for inclusion in

the plan. This criterion is typically used to reflect interests and needs that may not be reflected in quantifying activity centers or population. It should be noted that all segments that were repeatedly discussed in the public meetings received a score of three for this category.

A detailed segment-by-segment breakdown of the system is presented in Chapter 4. This information is helpful for determining the ranking and phasing for each bikeway segment. Generally, Phase 1 segments ranked the highest although some segments were included in Phase 1 based on overwhelming public and BAC support for these segments.

The Phase 1 system includes the entire primary system. The Phase II system includes important connector routes, recreational routes, and several new bikeway projects. The proposed phasing does not limit or restrict the actual implementation of proposed routes. Instead, it provides a guide to direct the cities' and the County's implementation efforts for acquiring competitive funding. The specific implementation of any given route, with all other things considered equal, should be based on the following criteria:

1. An opportunity, such as a road widening, repaving, or new development makes implementation favorable.
2. An imminent loss of an opportunity, such as the sale of a railroad right-of-way, makes implementation necessary.
3. Resolution of a major obstacle, such as access to irrigation ditch right-of-way, makes implementation necessary.
4. The segment is not disconnected or otherwise poorly accessible from the rest of the system.
5. Funding opportunities aid the implementation of a project.

3.4 PROPOSED BIKEWAY PROJECTS

The proposed system contains over 148 miles (238 kilometers) of primary and secondary bikeway facilities. Within the scope of this study, route descriptions were developed for the Phase 1 facilities

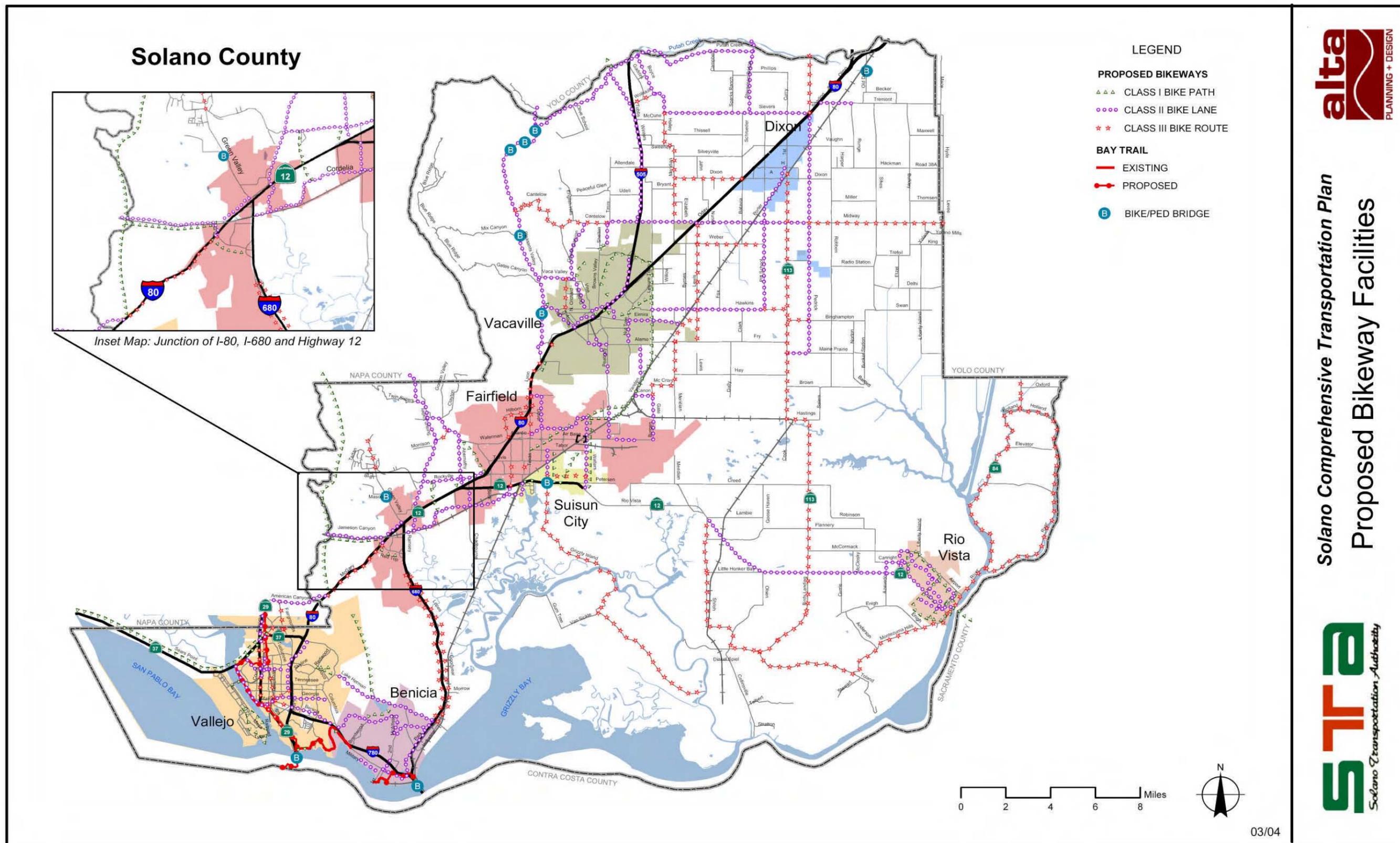
to be used later in developing specific project descriptions that will aid Solano County in the pursuit of competitive funding. The general descriptions below describe both the primary and secondary routes contained in the ultimate system.

PHASE 1: PRIMARY ROUTES

As shown in Figure 3.1, the primary routes provide direct connections between the cities in Solano County. In some instances the primary routes also connect neighboring jurisdictions such as Contra Costa, Napa, Sacramento, Sonoma, and Yolo Counties. The purpose of the primary routes is to serve bicyclists with as direct a connection as possible between major activity centers in each city. The entire primary route system meets this objective through a combination of on-street and off-street bikeway facilities, which are described below. **These projects are ordered from north to south Solano County. They are not in a priority order; all are considered important. The priority listing is identified in Table 4.1 on page 125.**

PROPOSED SYSTEM

Figure 3.1 Proposed Bikeway Facilities



alta
PLANNING + DESIGN

Solano Comprehensive Transportation Plan
Proposed Bikeway Facilities

STA
Solano Transportation Authority

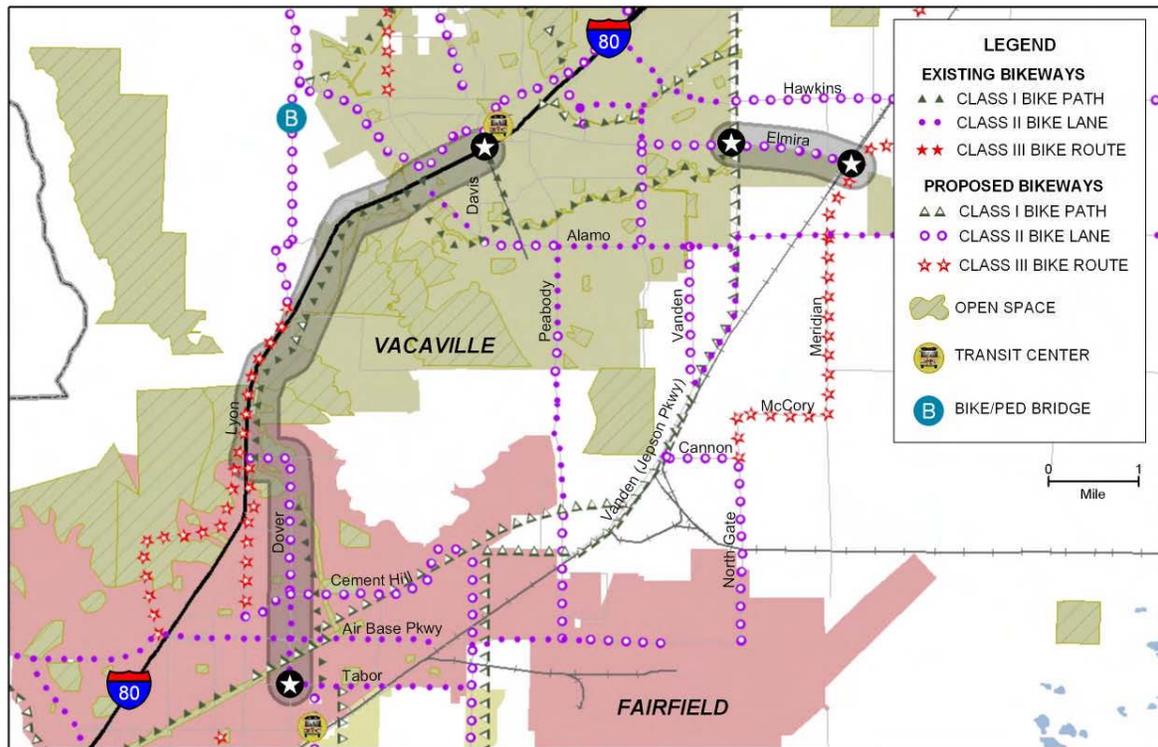
Project #1:	DIXON TO VACAVILLE BIKE ROUTE				
Responsibility:	Solano County, City of Dixon, City of Vacaville				
Class: II	Length: 11.9 miles	Approximate Cost: \$894,034			
Required Actions/Studies	CEQA clearance, design, potential easements or property acquisition				
Route Segments	From	To	Class	Length	Cost
Adams Street	SR 113	Porter Road	II	0.9	\$65,909
Porter Road	Adams Street	Pitt School Road	II	1.4	\$103,409
Pitt School Road	Porter Road	Hawkins Road	II	4.6	\$342,614
Hawkins Road	Pitt School Road	Leisure Town Road	II	5.1	\$382,102
				11.9	\$894,034

The Dixon to Vacaville bike route has been identified as a primary regional route which will connect the communities of Dixon and Vacaville. The proposed route utilizes the County roadway system to connect the two cities. As a result of the public process for this 2004 update, the route has been revised to follow a new alignment in Dixon. Starting in Dixon, the route would begin at the intersection of Adams Street and State Route 113, heading south on Adams to Porter Road and then south on Porter Road to Pitt School. Here, the route would turn south along Pitt School Road to Hawkins Road, then west along Hawkins Road to Leisure Town Road and the City of Vacaville.



Project #2:	VACAVILLE TO FAIRFIELD (NORTH ROUTE)				
Responsibility:	City of Vacaville, Solano County, City of Fairfield				
Class: I, & II	Length: 5.6 miles	Approximate Cost: \$1.4 MILLION			
Required Actions/Studies	CEQA clearance, trail and crossing design, easements, and right-of-way acquisition				
Route Segments	From	To	Class	Length	Cost
Elmira Road Pathway	Meridian Road	Alamo Creek	I	1.2	\$420,000
Sacramento Northern Segment	Alamo Creek	Davis Street	I	0.2	\$80,000
Merchant Street	Davis Street	Alamo Dr. Interchange	I	0.8	\$270,000
Nelson Road	Pena Adobe	Paradise Valley	I	1.6	\$550,000
Dover Road	Paradise Valley	Fairfield Linear Park	II	1.8	\$80,000
				5.6	\$1,400,000

Two primary connectors are proposed between the communities of Vacaville and Fairfield, a northern and a southern route. The proposed northern route would begin on Elmira Road near the Vacaville City limits extending west into Vacaville to Alamo Creek, where it would follow the creek through a residential neighborhood as a Class I path. The path would diverge at the old Sacramento Northern ROW, head north under I-80 to downtown Vacaville (Merchant St.). The route would then follow Merchant Street to the Alamo Drive interchange where the alignment would cross back over I-80. The route would continue to parallel I-80 on the south side using Butcher Drive to connect to a Class I path that accesses Lagoon Valley Regional Park. The Class I path is planned to extend along I-80 and eventually connect to on-street bike lanes near Paradise Valley Golf Course in Fairfield. Once in Fairfield, the route would follow Paradise Valley Road to Dover Road where the alignment would turn south for about two miles before intersecting the Fairfield Linear Park.



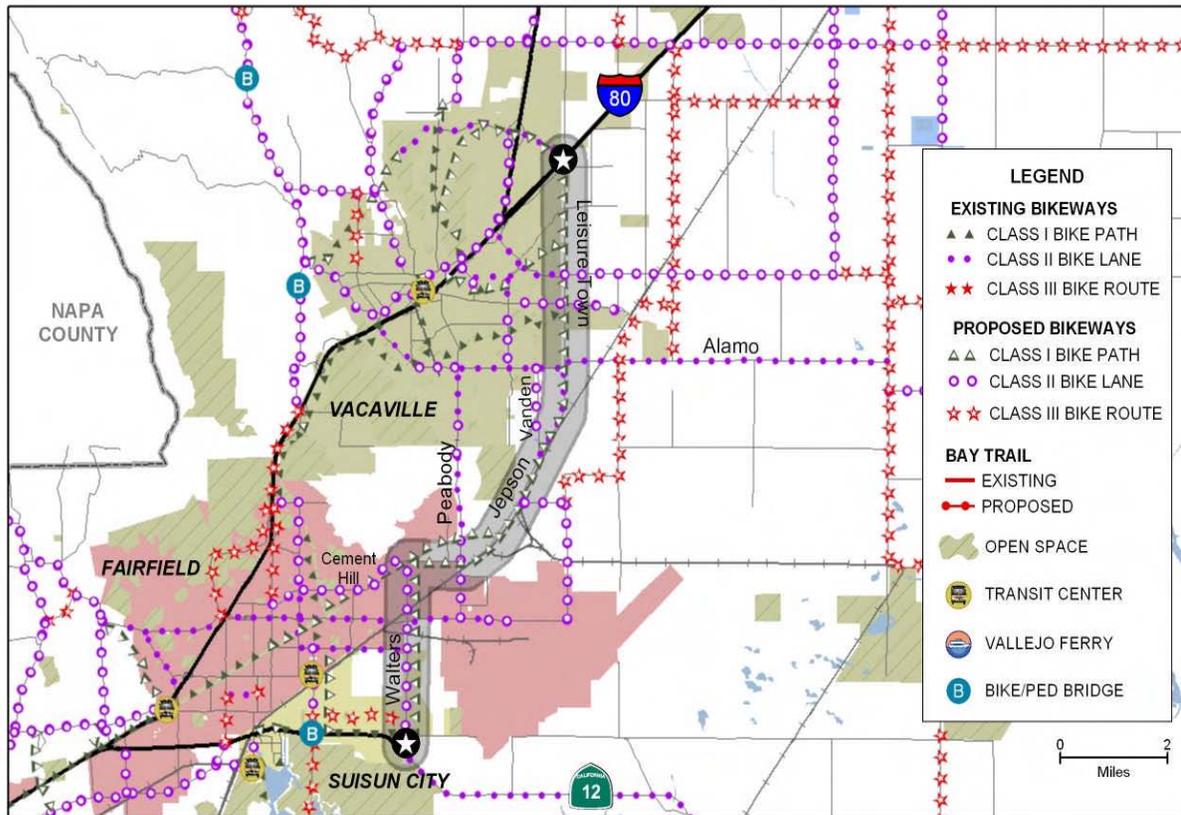
Project #3:	JEPSON PARKWAY - VACAVILLE TO SUISUN CITY (SOUTH ROUTE)				
Responsibility:	City of Vacaville, City of Fairfield, Solano County, Suisun City				
Class: I, & II	Length: 12.8 miles Approximate Cost: \$3.9 MILLION				
Required Actions/Studies	CEQA/NEPA clearance, trail and crossing design, easements, right-of-way, and property acquisition				
Route Segments	From	To	Class	Length	Cost
Leisure Town Road	I-80	Ulatis Creek Parkway	I	1.5	\$510,000
Leisure Town Road	Ulatis Creek	Alamo Drive	I	2.0	\$700,000
Leisure Town Road	Alamo Drive	Vanden Road	I	1.6	\$560,000
Vanden Road	Leisure Town Road	Peabody Road	I	3.4	\$1,190,000
Cement Hill Road	Peabody Road	Walters Road	I	0.9	\$320,000
Walters Road	Cement Hill Road	Airbase Parkway	I	1.1	\$390,000
Walters Road	Airbase Parkway	E. Tabor Avenue	II	0.5	\$20,000
Walters Road	E. Tabor Avenue	SR 12	I	1.8	\$630,000
				12.8	\$4,320,000

The second Vacaville to Fairfield route is a southern route as proposed in the *Jepson Parkway Concept Plan* approved by the STA in April 2000. This project would provide a 10-foot wide bike path along most of the entire 12-mile length of the planned Jepson Parkway. A short segment south of Cement Hill Road on Walters between Air Base Parkway and East Tabor Avenue in Fairfield will possibly be Class II bike lanes due to sensitive vegetation limiting the available space. In addition to the off-street path, the Parkway will have eight-foot shoulders where experienced cyclists may travel.

The multi-use path is supported by four “activity” nodes or staging areas that can serve as rest stops and recreational starting points. Each staging area would feature bicycle parking, rest rooms, special landscaping, parking for autos, picnic areas, and other amenities. Three of the staging areas are located to provide a connection between Jepson Parkway and other planned or existing bikeways, while the fourth offers a connection to the Proposed Fairfield/Vacaville multi-modal stations.

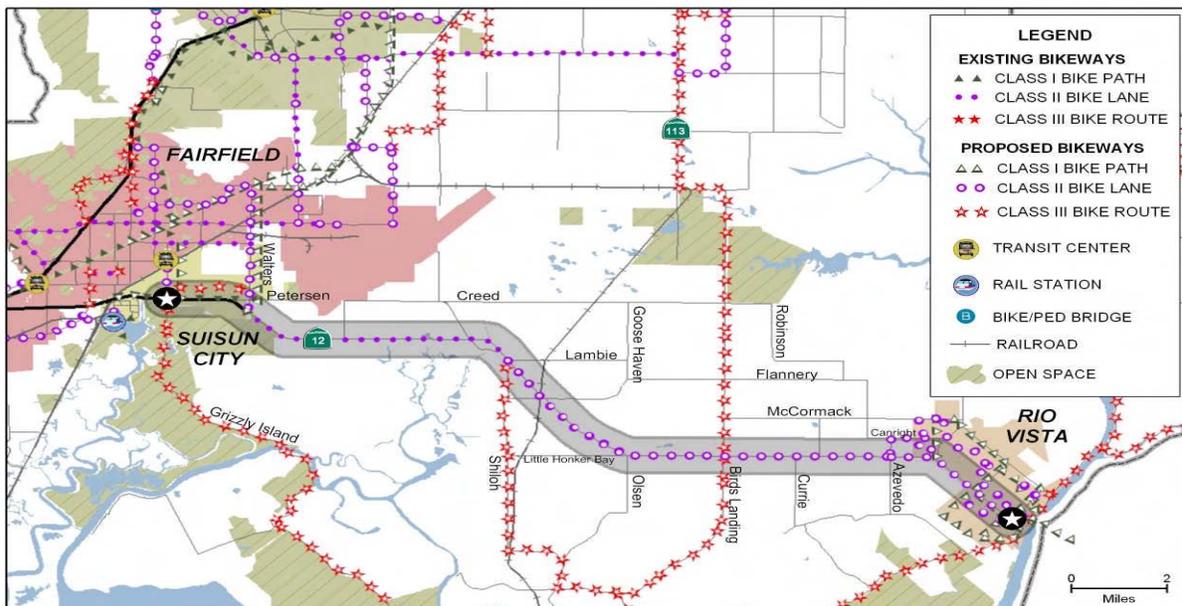
From Vacaville heading south, the path is on the west side of the Parkway and links to the planned Ulatis Creek Bikeway. It continues along Leisure Town Road to Vanden Road. The path stays on the west side of the Vanden Road from Leisure Town Road to Peabody Road. At that point, Vanden Road turns into Cement Hill Road, and the path moves to the south side at the signalized Peabody Road intersection. Through Fairfield, the path continues along Cement Hill Road from Peabody to Walters Road. It connects to the proposed Fairfield Linear Park extension. South of Air Base Parkway is the area with bike lanes instead of a pathway. Finally, through Suisun City, the Parkway continues along Walters Road and connects to Petersen Road to the recently completed Class I path along Highway 12 (Central County Bikeway).

Status: A combination of Class II bike lanes and Class I bike path is partially built on Walters Road from Air Base Parkway to Highway 12.



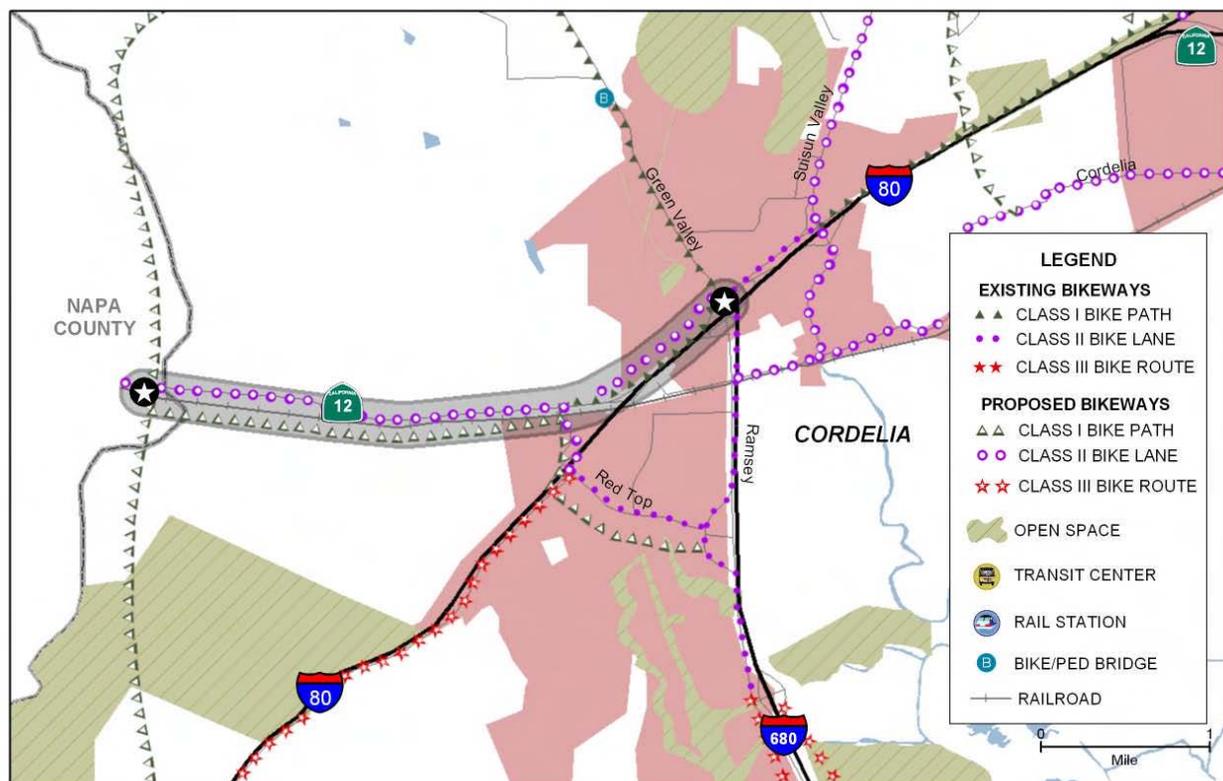
Project #4:	CENTRAL COUNTY BIKEWAY - SUISUN CITY TO RIO VISTA				
Responsibility:	Suisun City, Solano County, City of Rio Vista				
Class: I & II	Length: 23.6 miles Approximate Cost: \$3.5 MILLION				
Required Actions/Studies	CEQA clearance, right-of-way acquisition, encroachment permits				
Route Segments	From	To	Class	Length	Cost
Multi-use path north side of SR 12	Marina Blvd	Amtrak Station	I	0.6	\$284,091
Shoulder improvements on SR 12	Rio Vista	Petersen Road	II	20.0	\$1,500,000
Multi-use path	Azevedo	Rio Vista Bridge	I	3.2	\$1,594,697
				23.6	\$3,378,788

The Central County Bikeway connects Solano County’s communities located on the State Route 12 corridor. The City of Suisun City recently completed a two-mile segment of Class I path from Walters Road to Marina Boulevard through central Suisun City. Two remaining gaps in the corridor are comprised as a part of this project. The first segment will continue the existing east-west route through Suisun City, connecting at its existing terminus at Marina Boulevard and leading to the Amtrak Station on Main Street via a Class I path on the north side of Highway 12. From the path’s eastern terminus at Walters Roads, the bikeway would utilize Highway 12 east to Rio Vista. Current shoulder width on SR 12 is six to eight feet from Scandia Road to about Lambie Road. Substantial widening would have to occur past this point in order to accommodate Class II bike lanes, thus the project would provide shoulders along the route. Although these shoulders would not be signed or striped as Class II bike lanes, they will be useable by cyclists. From Azvedo Road in Rio Vista, east to the Rio Vista Bridge/Sacramento County Line, a Class I bikeway is proposed.



Project #5:	I-80 / 680 / SR 12 INTERCHANGE PROJECT - CORDELIA TO NAPA COUNTY				
Responsibility:	Solano County				
Class: I or III Required	Length: 3 miles	Approx. Cost: \$ 225,000 LOW - 1 MILLION HIGH			
Actions/Studies	CEQA clearance, encroachment permits and/or right-of-way and property acquisitions, trail and crossing design				
Route Segments	From	To	Class	Length	Cost
Alternative A: Class I path	Red Top Road	Napa County Line	I	3.0	\$1,050,000
Alternative B: Class II Route	Red Top Road	Napa County Line	III	3.0	\$225,000
				A	\$225,000
				B	\$1,050,000

The Cordelia to Napa project is a primary route that will provide access for bicycles in and around the I-80/I-680/SR 12 interchange and will enhance a western route from Solano to Napa County. Beginning at Green Valley Road, the project follows an existing Class I along I-80 to westbound SR 12. From the SR 12/Red Top Rd intersection, it would either continue as new shoulders along SR 12 into Napa County or continue as a Class I path along the California Northern Railway and/or utility right-of-way into Napa County.



THE "SOLANO BIKEWAY" - FAIRFIELD TO VALLEJO						
Responsibility:		City of Fairfield, Solano County, City of Vallejo				
Class: I, II, & III Required Actions/Studies		Length: 14.1 miles Approximate Cost: \$ 4.3 MILLION				
CEQA clearance, right-of-way acquisition, encroachment permits, trail crossing and design work						
Route Segments	From	To	Class	Length	Cost	
Linear Park Extension	North Texas St	Cement Hill	I	1.9	\$926,136	
Red Top Road	Linear Park	McGary Road	II	1	\$800,000	
McGary Road	Red Top Road	American Canyon Rd.	II or III	3.4	\$2,000,000	
Columbus Parkway	I-80	Georgia Street	II	4.2	\$314,205	
Long-term alternate	Admiral Callaghan Lane	Columbus Parkway	Turner Parkway	II	0.9	\$67,500
	Fairgrounds Drive	Turner Parkway	Redwood Street	II	0.6	\$45,000
	Mariposa Street	Redwood Blvd.	Solano Avenue	II	1.1	\$82,500
	Solano Avenue	Mariposa Street	Sonoma Boulevard	II	1	\$75,000
					14.1	\$4,310,341

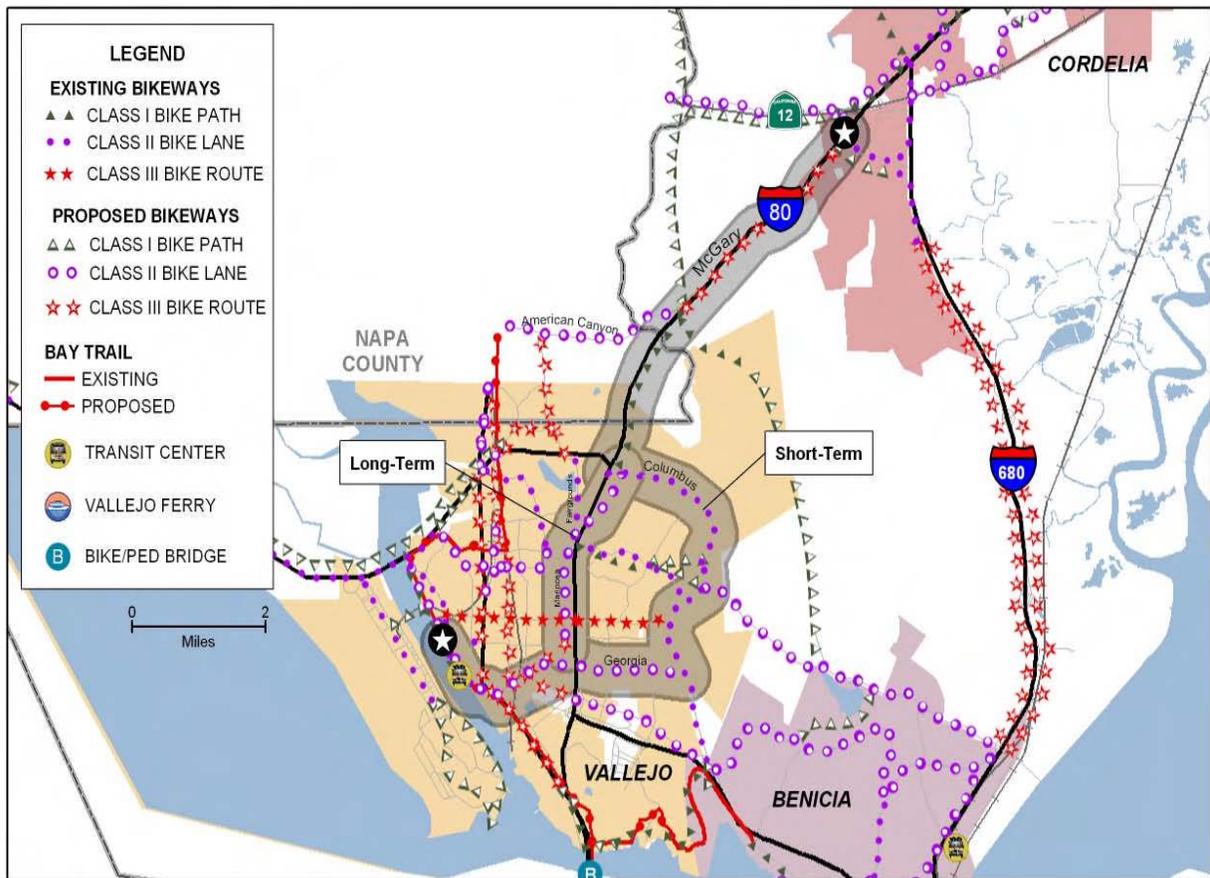
The Solano Bikeway is the primary connection between the Fairfield and Vallejo. Major advances have been made in the development of this primary route since the completion of the 2001 Solano County Bicycle Plan, including the completion of a two-mile Class I bikeway from McGary Road in Fairfield to Admiral Callaghan Lane in Vallejo, and the 2003 Solano Bikeway Extension Feasibility Study.

Starting near the Class I path intersection near Green Valley Road and SR 12 in Fairfield, this route would continue south on Red Top Road until intersecting with McGary Road, which parallels I-80 to the Napa County line and the American Canyon Road Interchange. At this point, the project utilizes the recently completed Class I facility (Solano Bikeway) which travels parallel to I-80, and connects between McGary Road and Columbus Parkway in Vallejo. Primary and alternative alignments are recommended from this point south towards the Vallejo Ferry Terminal. The primary route would utilize Columbus Parkway to Georgia Street, and Georgia Street to the Vallejo waterfront, or riders can continue south on Columbus Parkway towards Benicia and ultimately Contra Costa County.

The long-term alternate is proposed for the time when future development in northern Vallejo creates the opportunity for roadway upgrades. This route would utilize Admiral Callaghan Lane from the Solano Bikeway, south to where it would turn onto Turner Parkway and cross I-80 at a future overpass. The route would then follow Fairgrounds Drive south to Redwood Street westbound and then Redwood Street southbound onto Mariposa Street. The route continues

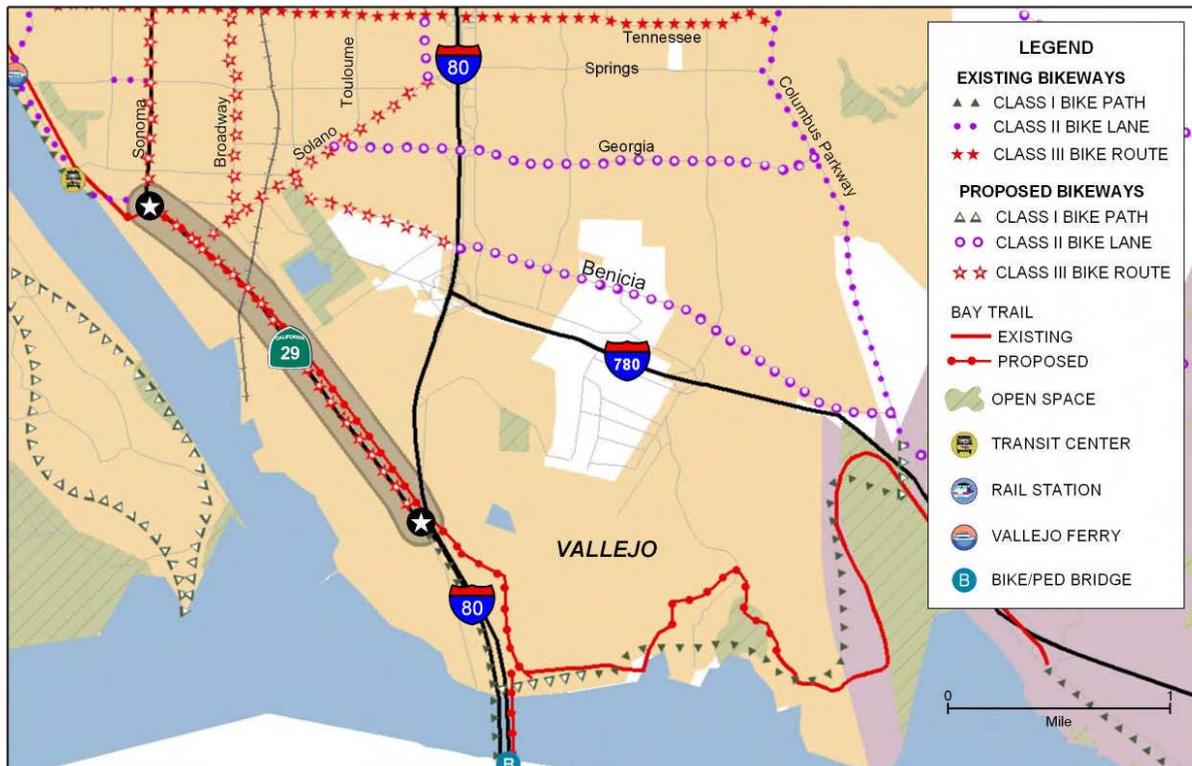
southbound on Mariposa Street to Solano Avenue, and then continues on Solano Avenue to the Vallejo waterfront and ferry terminal, or south towards Benicia or Contra Costa County.

Note: McGary Road is now closed to through traffic due to a landslide. It needs to be re-opened between Red Top Road and American Canyon Road to connect the Solano Bikeway to adjoining bicycle facilities and to provide access to existing uses along the roadway. Improvements required for re-opening will involve stabilization of the roadbed and surface repairs where pavement has been lifted or otherwise effected. Funding for the roadwork could come from SHOPP, FEMA, or other disaster relief moneys. Projected bicycle contributions to the repair work are estimated at \$500,000 and could be used to leverage additional grant funds.



Project #7:	VALLEJO TO CARQUINEZ BRIDGE				
Responsibility:	Solano County, City of Vallejo				
Class: II	Length: 2.3 miles	Approximate Cost: \$ 171,307			
Required Actions/Studies	CEQA clearance, encroachment permits and/or right-of-way and property acquisitions, trail and crossing design				
Route Segments	From	To	Class	Length	Cost
SR 29	Curtola Parkway	Maritime Academy Dr.	II	2.3	\$171,307
				2.3	\$171,307

The major north-south route through Vallejo is proposed to follow SR 29 from the Napa County line to the Carquinez Bridge. This alignment is consistent with bikeway plans for the City of Vallejo and for the Bay Trail being developed by the Association of Bay Area Governments (ABAG). This is a major improvement that has substantial support from the BAC and from members of the general public that spoke at the public workshops for the 2001 Plan. Since this is a heavily used arterial, alternative alignments include Mariposa Street, Tuolumne, and/or a west-side connection via Dan Foley Park, SR 37, and the waterfront (Wilson/Mare Island Way). A new bike connection has been built across the Carquinez Straits as part of the new span and is expected to open in the spring of 2004.



Project #8:	VALLEJO TO SONOMA COUNTY (SR 37 AND WESTERN LINKAGES)				
Responsibility:	City of Vallejo, Solano County, Bay Trail (ABAG), Sonoma County				
Class: I & II Required Actions/Studies	Length: 4.0 miles	Approximate Cost: \$ 3,293,409			
	CEQA/NEPA clearance, right-of-way acquisition, encroachment permits, trail crossing and design work				
Route Segments	From	To	Class	Length	Cost
SR 37 Class I multi-use trail	SR29/Mini Dr.	Sonoma County Line	I	2.1	\$3,203,409
Valle Vista	Redwood Blvd.	Sacramento Street	II	1.0	\$50,000
Sacramento Street	Valle Vista	SR 37	II	0.9	\$40,000
				4.0	\$3,293,409

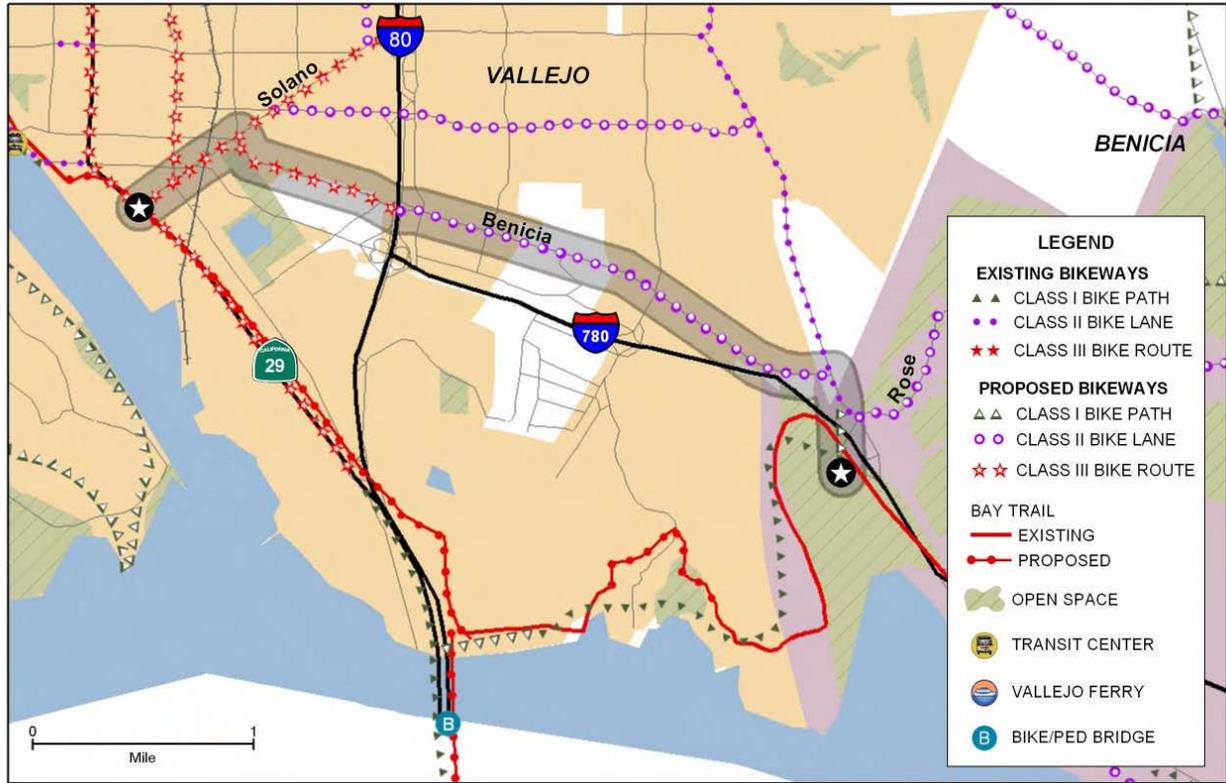
The 1999 South County Bicycle Plan and the 1998 North Bay Corridor Study call for a series of improvements along SR 37 to provide connections from Solano County westward into Sonoma and Marin Counties. Proposed improvements include a new grade-separated freeway extension connecting to the Napa River Bridge and a new bikeway facility from Wilson Avenue extending along the north side of the new SR 37 freeway section, crossing back over the freeway at a new overcrossing, and then continuing eastward on the south side of the freeway. It also includes a recommendation for improving Valle Vista, a residential street, for its entire length roughly parallel to Redwood Parkway all the way to Sacramento Street, where it would use the new White Slough pathway to connect to the SR 37 corridor. Southbound bicyclists could use Tuolumne or other streets. A new traffic signal would be required at the Valle Vista/Redwood Parkway intersection to provide bicyclists an opportunity to cross this busy street. The BAC included a proposal for Class I pathway extending from White Slough westward into Sonoma County which was also identified in the 1998 North Bay Corridor Study and would serve as a primary alignment for the Bay Trail.



Project #9:	VALLEJO TO BENICIA				
Responsibility:	City of Vallejo, Solano County, City of Benicia				
Class: I, II, & III	Length: 2.5 miles	Approximate Cost: \$ 933,892			
Required Actions/Studies	CEQA clearance, intersection design, encroachment permits and/or right-of-way and property acquisitions, bridge design				
Route Segments	From	To	Class	Length	Cost
Mare Island Way	Vallejo Ferry Terminal	Curtola Parkway	II	0.4	\$29,830
Curtola Parkway	Mare Island Way	Sonoma Boulevard	II	0.2	\$17,045
Sonoma Boulevard	Curtola Parkway	Solano Avenue	II	0.3	\$22,017
Solano Avenue	Benicia Road	Sonoma Boulevard	III	0.5	\$10,000
Benicia Road	Solano Avenue	Rose Drive	II	1.0	\$75,000
I-780 Overcrossing	Benicia State Recreation Area	Rose Drive	I	0.1	\$780,000
				2.5	\$933,892

The primary route between Vallejo and Benicia would begin at the Ferry Terminal in Vallejo. From the Ferry Terminal, the routes heads south on Mare Island Way to its intersection at Curtola Parkway. The route then follows Curtola Parkway to Sonoma Boulevard (SR 29). At the intersection of SR-29 and Solano Avenue., the route continues on Solano Avenue to Benicia Road. Benicia Road leads to Columbus Parkway, which leads to Rose Drive, which crosses I-780 near the entrance to the Benicia State Recreation Area. A Class I path parallels the south side of I-780 through the recreation area before connecting to an on-street bike lane at West “K” Street just south of the Military West Interchange with I-780.

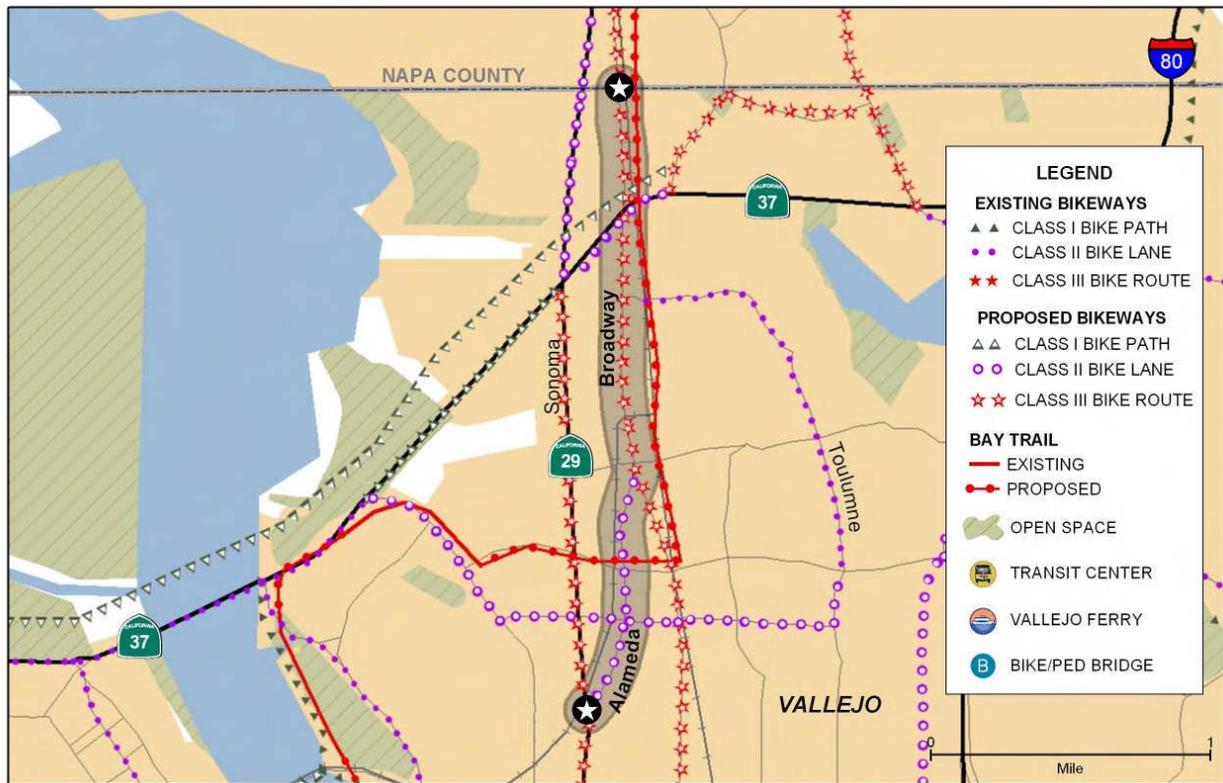
The 1999 South County Plan identified as a top project an enhanced crossing of I-780 at the entrance to the Benicia State Recreation Area. This project consists of a new Class I bike path along the western side of the I-780 on-ramp crossing from the Columbus Parkway/Rose Drive intersection into the Benicia State Recreation Area. The City of Benicia Public Works Department is currently working on pathway and bridge designs. The City of Benicia has prepared applications for \$500,000 in total funding for design and construction of this project. The BAC approved \$85,000 of TDA Article 3 funds as a local match to leverage other state or federal funds that need to be obtained to complete the project.



PROPOSED SYSTEM

Project #10:	VALLEJO TO NAPA				
Responsibility:	City of Vallejo, Solano County, Caltrans				
Class: II Required	Length: 4.6 miles	Approximate Cost: \$ 341,477			
Actions/Studies	CEQA, Caltrans encroachment permits				
Route Segments	From	To	Class	Length	Cost
Alameda Street	Solano Avenue	Broadway	II	0.8	\$59,659
Broadway	Alameda Street	Napa County Line	II	3.8	\$281,818
				4.6	\$341,477

The proposed alignment for this primary route was revised by the BAC for this update. The revised route would follow Alameda Street and Broadway from Solano Avenue northbound into Napa County. This revised alignment was identified due to the changing and uncertain schedule for improvements on State Route 29, the former proposed project.



Project #11:		BENICIA TO MARTINEZ			
Responsibility:	City of Benicia, Solano County				
Class: III	Length: 2.3 miles	Approximate Cost: \$ 170,000			
Required Actions/Studies	Design work for staging areas, intersection design				
Route Segments	From	To	Class	Length	Cost
Military East	Park Road	1st Street	II	1	\$75,000
First Street	Military West	West I Street	II	0.3	\$20,000
West I Street	First Street	West 9th Street	II	1	\$75,000
				2.3	\$170,000

This proposed segment of the primary system utilizes a network of on-street routes to provide connections to the Benicia Martinez Bridge and the proposed Benicia Intermodal Station. On-street bike lanes and bike routes provide a relatively direct route through Benicia along West “K” Street, West 9th Street, West “I” Street, West “H” Street, and 1st Street. Class II bike lanes are proposed to continue from 1st Street along Military East to Park Road. East of Park Road, the primary route will provide a connection to a planned multi-modal station located near the interchange of I-680 and I-780.

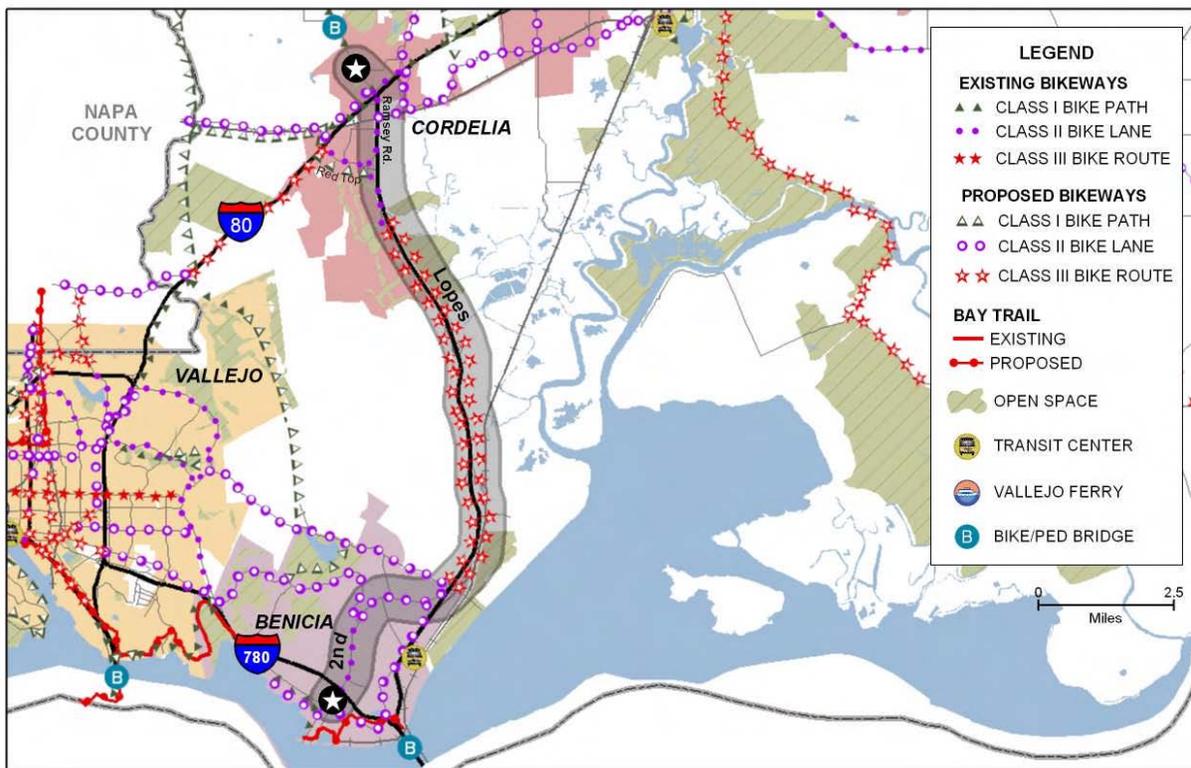
The 1999 South County Plan identified enhanced connections to the Bridge and future multi-modal station as a top priority. The new Benicia-Martinez Bridge will include a Class I bike path on the south side of the structure. The bikeway connection to Benicia will occur near the Oak Road/Park Road intersection. Bicyclists headed into Benicia or further towards Vallejo along the Bay Trail will be forced to use Park Road, which the City of Benicia proposes to widen between Oak Road and Grant Street. In addition, improvements to the access routes on the Bay Trail alignment from Benicia Point (including First, East Second, East 5th, Military East, Grant) and routes to potential staging areas (Camel Barn Museum and/or Clock Tower) are included in this project. Planned improvements include new signing and pavement repair.



PROPOSED SYSTEM

Project #12:	BENICIA TO CORDELIA				
Responsibility:	City of Benicia, Solano County				
Class: II & III Required Actions/Studies	Length: 13.1 miles Approximate Cost: \$ 443,500				
Route Segments	From	To	Class	Length	Cost
2nd Street	Military East	Lopes Road	II	3.3	\$247,500
Lopes Road	2nd Street	Mangels Blvd.	III	9.8	\$196,000
				13.1	\$443,500

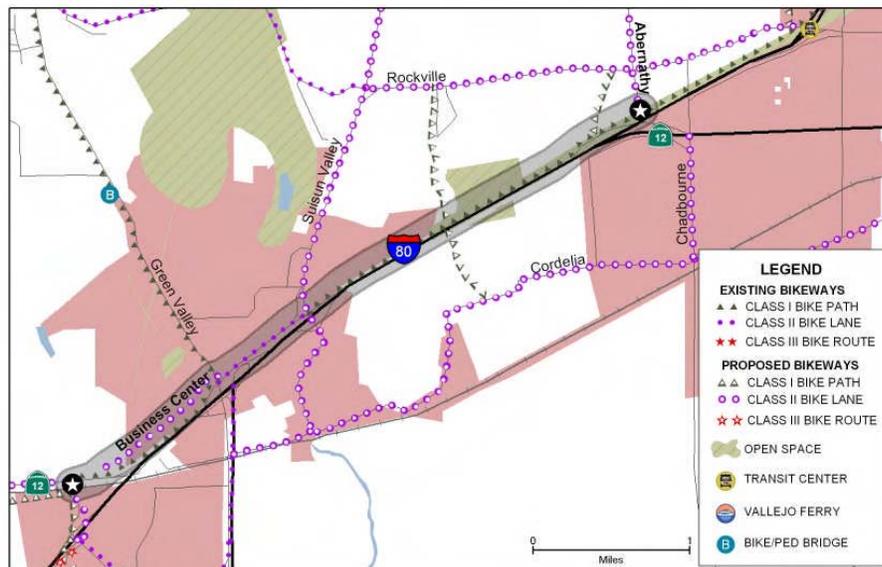
This primary route proposes Class II bike lanes beginning on East 2nd Street in Benicia at Military East and continuing to Lopes Road where the route transitions to a Class III bike route on Lopes Road to Mangels Road in Cordelia. The entire route was not designated as Class II at this time because traffic volumes are light on Lopes Road north of Lake Herman Road. If traffic volumes increase dramatically, this route should be considered for conversion to Class II.



Project #13:	NORTH CONNECTOR				
Responsibility:	City of Fairfield, Solano County				
Class: II	Length: 1 mile	Approximate Cost: \$ 75,000 (BICYCLE FACILITY ONLY)			
Required Actions/Studies	CEQA clearance, right-of-way acquisition, design work				
Route Segments	From	To	Class	Length	Cost
Business Center Drive	State Route 12 (West)	Abernathy Road	II	1	\$75,000
				1	\$75,000

The demand on Solano County’s transportation system has risen dramatically in recent years due to increased growth locally and regionally. This is especially true in the vicinity of the I-80/I-680/SR 12 Interchange where numerous local routes and major regional routes come to a confluence. In response to the existing and projected transportation problems, the Solano Transportation Authority, in conjunction with Caltrans, the City of Fairfield, and Solano County, have identified a number of regional and local transportation improvements in the interchange area. Key goals of these improvement projects are to separate local and regional traffic in order to reduce congestion, identify and implement interim projects to provide near-term relief, and to plan long-term fixes to meet future demands.

The North Connector Project will design and environmentally clear improvements to local circulation in the project area by creating a four-mile, two- to four-lane, east/west arterial connection in the City of Fairfield and Solano County between Abernathy Road and the SR 12 West/Red Top Road intersection. The project will construct a new road between Abernathy Road and Suisun Valley Road, which will connect to Business Center Drive, and extend Business Center Drive to the west as a two-lane road connecting with the SR 12 West/Red Top Road intersection.



PHASE 2: SECONDARY ROUTES

Secondary routes are considered as connectors for the primary system, and/or are intended to provide users with recreational loops that can be used for exercise and general riding pleasure.

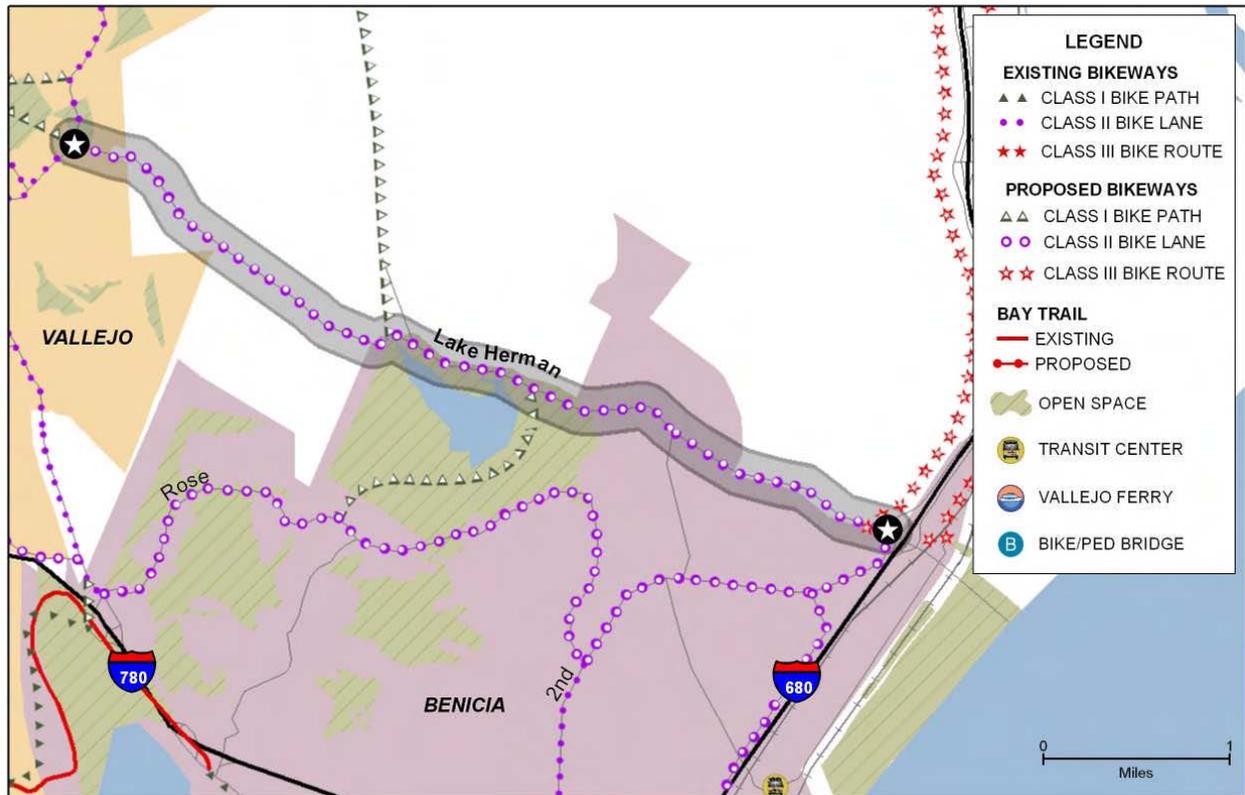
Project #14: PLEASANTS VALLEY ROUTE						
Responsibility:	Solano County					
Class: II	Length: 14 miles	Approximate Cost: \$ 14,000,000				
Required Actions/Studies	Community meetings/consent, CEQA clearance					
Route Segments	From	To	Class	Length	Cost	
Pleasants Valley Road	Cherry Glen Road	Yolo County Line	II	13	13,000,000	
Cherry Glen Rd.	Nelson Road	Pleasants Valley Road	II	1.1	\$1,100,000	
				14.1	\$14,100,000	

The scenic quality along this roadway as well as the fact that this road leads to the City of Winters and Lake Berryessa has made Pleasants Valley Road a popular bikeway. Class II bicycle lanes were included in seven reconstructed Pleasants Valley Road Bridges. In other locations the pavement width for this roadway is limited to about 22 feet. In some cases it may be effective to provide a two- or three-foot shoulder (less than the four feet required for a bike lane) as a means of enhancing safety and identifying the improvement as a bike route.



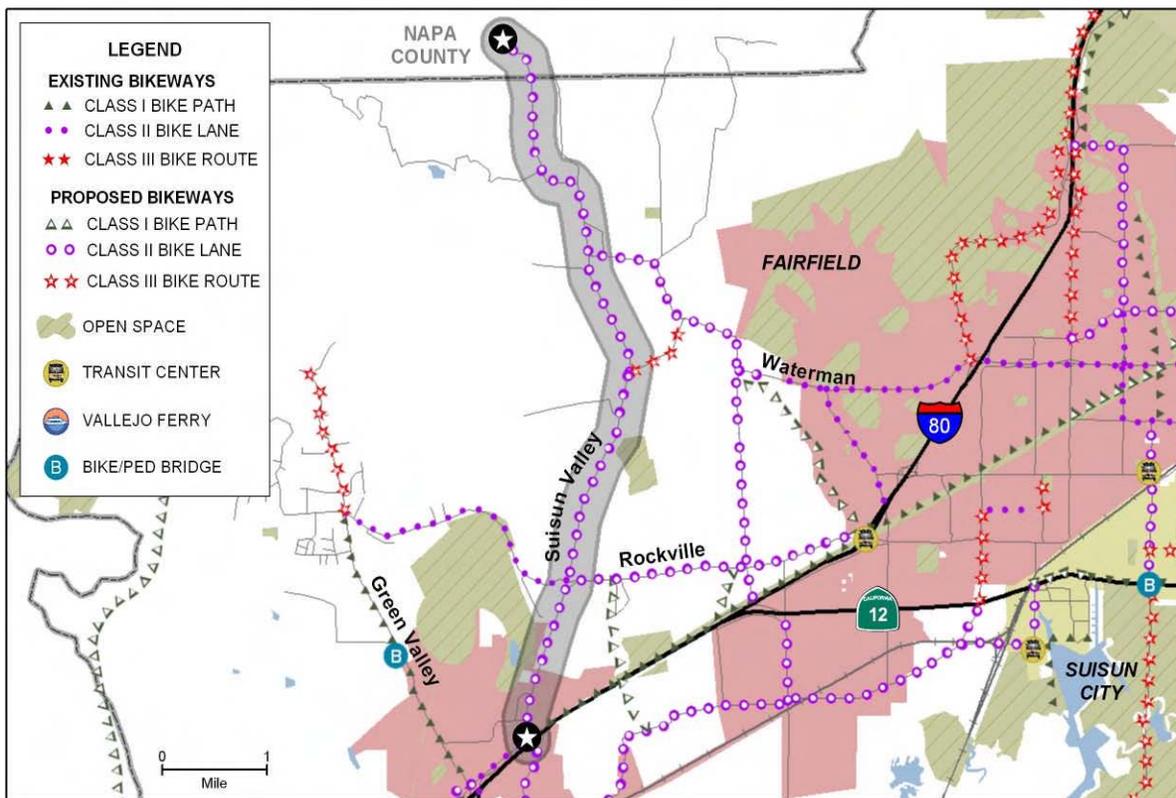
Project #15:	LAKE HERMAN ROAD				
Responsibility:	City of Vallejo, City of Benicia, Solano County				
Class: II	Length: 5 miles	Approximate Cost: \$ 375,000			
Required Actions/Studies	CEQA clearance, possible easements and/or right-of-way acquisition				
Route Segments	From	To	Class	Length	Cost
Lake Herman Road	Lopes Road	Columbus Parkway	II	5	\$375,000
				5	\$375,000

Lake Herman Road provides a relatively direct connection between eastern Vallejo and Benicia. The route offers commuters and recreationalists a pleasurable ride through rolling hills. This project has been upgraded from a recommended Class III route in the 2001 Update, to Class II bike lanes to address safety concerns for bicyclists due to the roadway geometry, the increasing volume of traffic the roadway carries, and the growing demand for bicycle facilities in the region.



Project #16:	SUISUN VALLEY ROAD				
Responsibility:	Solano County				
Class: II	Length: 8 miles	Approximate Cost: \$ 8,000,000			
Required Actions/Studies	CEQA clearance, easements and/or right-of-way acquisition, bridge replacements				
Route Segments	From	To	Class	Length	Cost
Suisun Valley Road	Mangels Blvd.	Napa County Line	II	8	\$8,000,000
				8	\$8,000,000

Suisun Valley Road is an important transportation and recreation route, providing connections to the community of Cordelia, Solano Community College, and the existing and planned routes in the I-80/I-680/SR 12 Interchange area. In addition, the roadway is identified as a segment of the Cross State Bike Route which is currently under study, and provides a scenic connection between Solano and Napa Counties. The route would include Class II bike lanes extending from the County Line to Mangels Road where it will connect to the primary system.



Project #17: ABERNATHY / MANKAS CORNER ROUTE

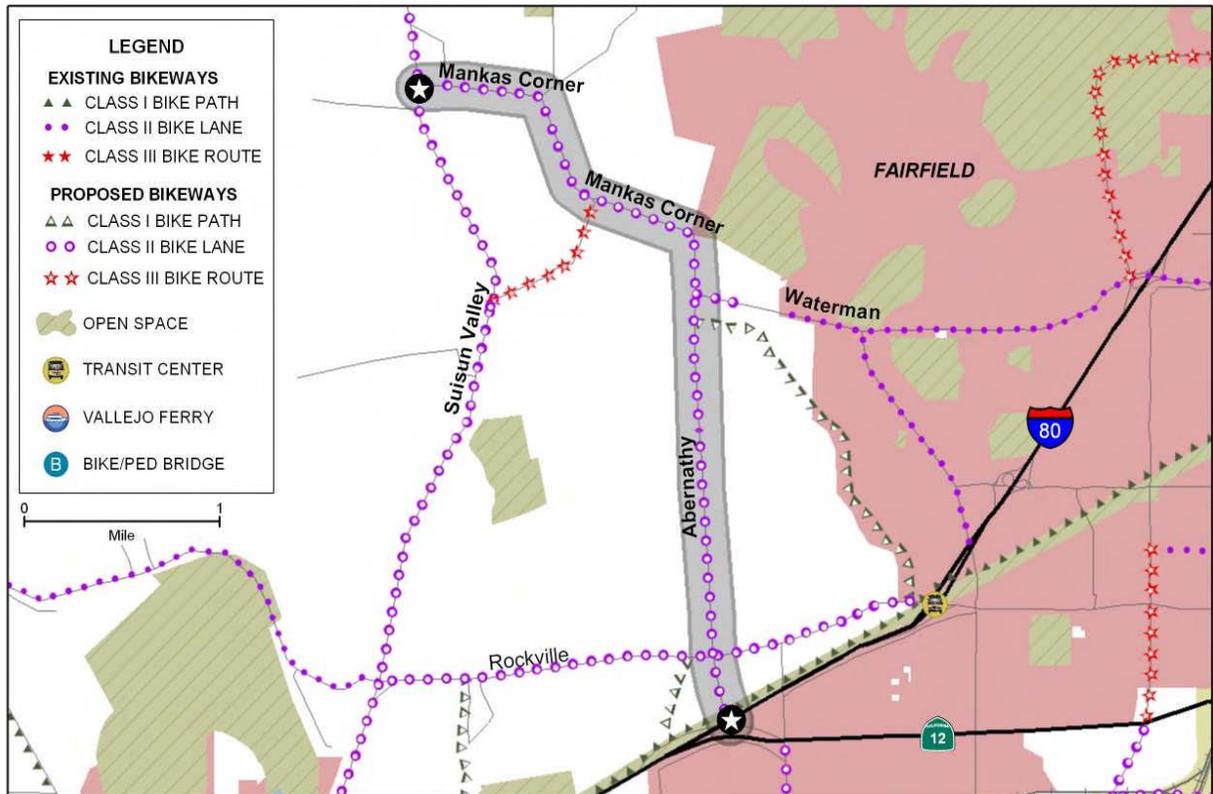
Responsibility: Solano County, Fairfield, Suisun City

Class: I & II **Length: 4.2 miles** **Approximate Cost: \$ 3,700,000**

Required Actions/Studies CEQA clearance, possible easements and/or right-of-way acquisition

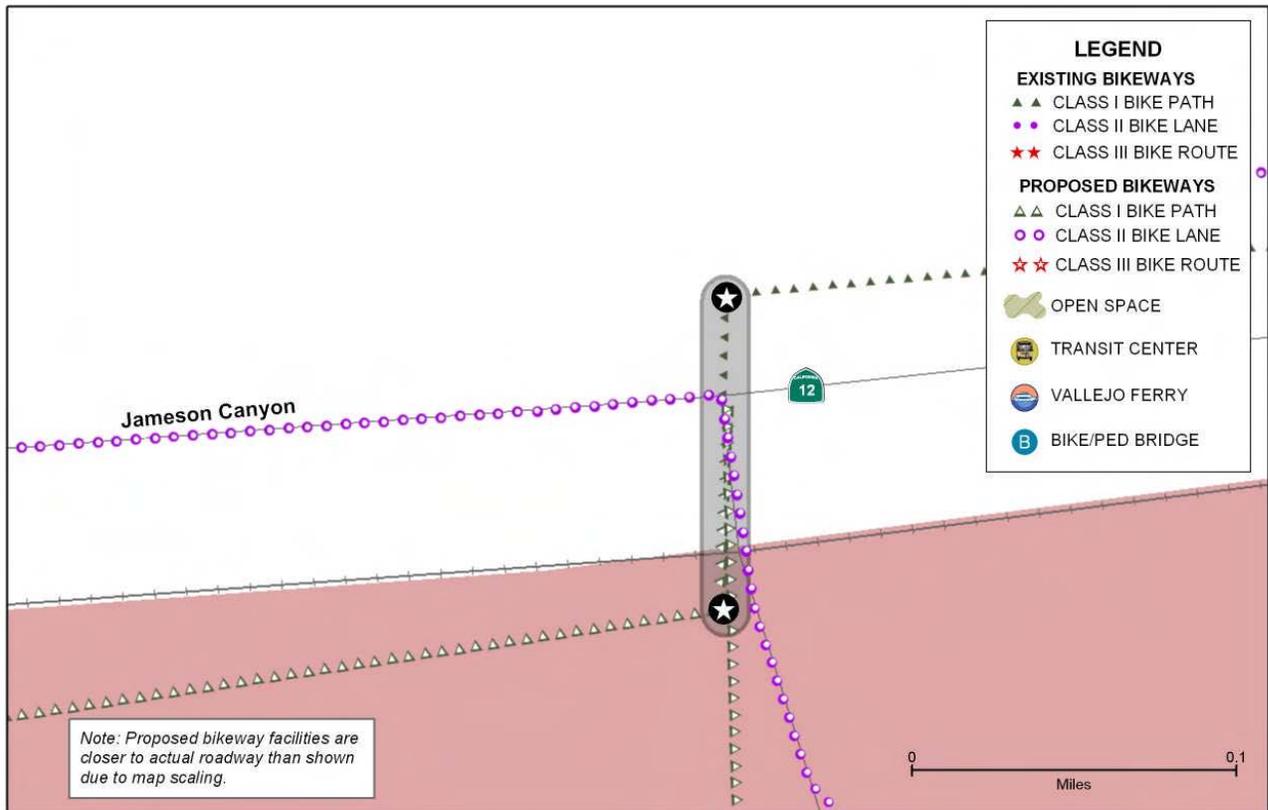
Route Segments	From	To	Class	Length	Cost
Mankas Corner Road	Suisun Valley Road	Abernathy Road	II	1.9	\$1,900,000
Abernathy Road	Mankas Corner Road	Rockville Road	II	2.1	\$1,700,000
Abernathy Road	Rockville Road	Linear Park	I	0.2	\$100,000
				4.2	\$3,700,000

This route provides a direct connection to Suisun Valley Road from the Fairfield and Suisun City area. The route would include Class II bike lanes extending from Suisun Valley Road along Mankas Corner Road and Abernathy Road with a short Class I connector between Abernathy Road and the Fairfield Linear Park.



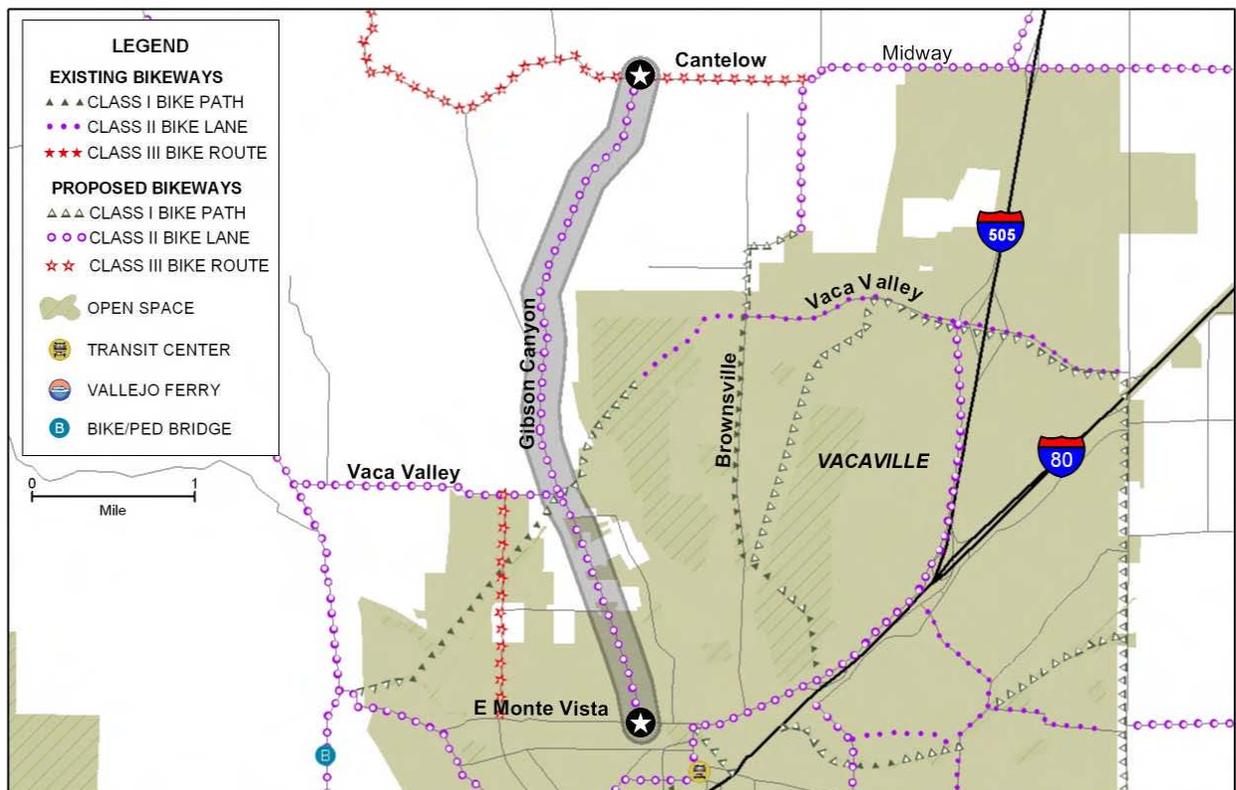
Project #18:	STATE ROUTE 12 OVERCROSSING				
Responsibility:	Solano County				
Class: I Required	Length: 0.1 Miles	Approximate Cost: \$ 1,500,000			
Actions/Studies	CEQA clearance, intersection design, bridge design, and trail crossing design				
Route Segments	From	To	Class	Length	Cost
Bike/Ped Overcrossing	Red Top Road	North Connector	I	0.1	\$1,500,000
				0.1	\$1,500,000

This project calls for the construction of a bicycle and pedestrian facility as part of proposed interchange improvements at the intersection of SR 12 and Red Top Road. The construction of a new dedicated bicycle and pedestrian overcrossing will provide a safe overcrossing that will serve commuters traveling through this portion of the Central County on multiple bikeways including the Solano Bikeway, the Ridge Trail, SR 12, Green Valley Road, and Suisun Valley Road.



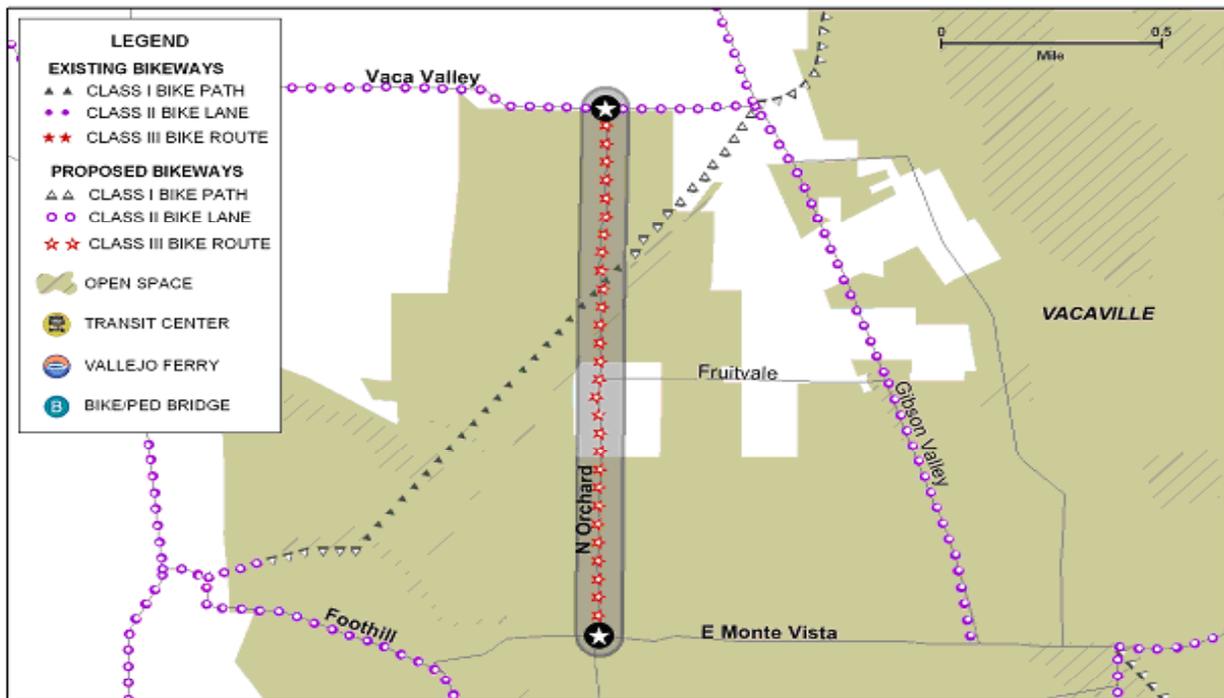
Project #19:	GIBSON CANYON ROAD					
Responsibility:	Solano County, City of Vacaville					
Class: II Required	Length: 4.5 miles	Approximate Cost: \$ 3,113,000				
Actions/Studies	CEQA clearance, possible easements and/or right-of-way acquisition					
Route Segments	From	To	Class	Length	Cost	
Gibson Canyon Road	E. Monte Vista Avenue	Cantelow Road	II	4.5	\$3,112,500	
				4.5	\$3,112,500	

Gibson Canyon Road is a new project in the 2004 Solano Countywide Bicycle Plan Update. The proposed route will serve as a connector to the primary system, providing access for residences in northwestern Vacaville.



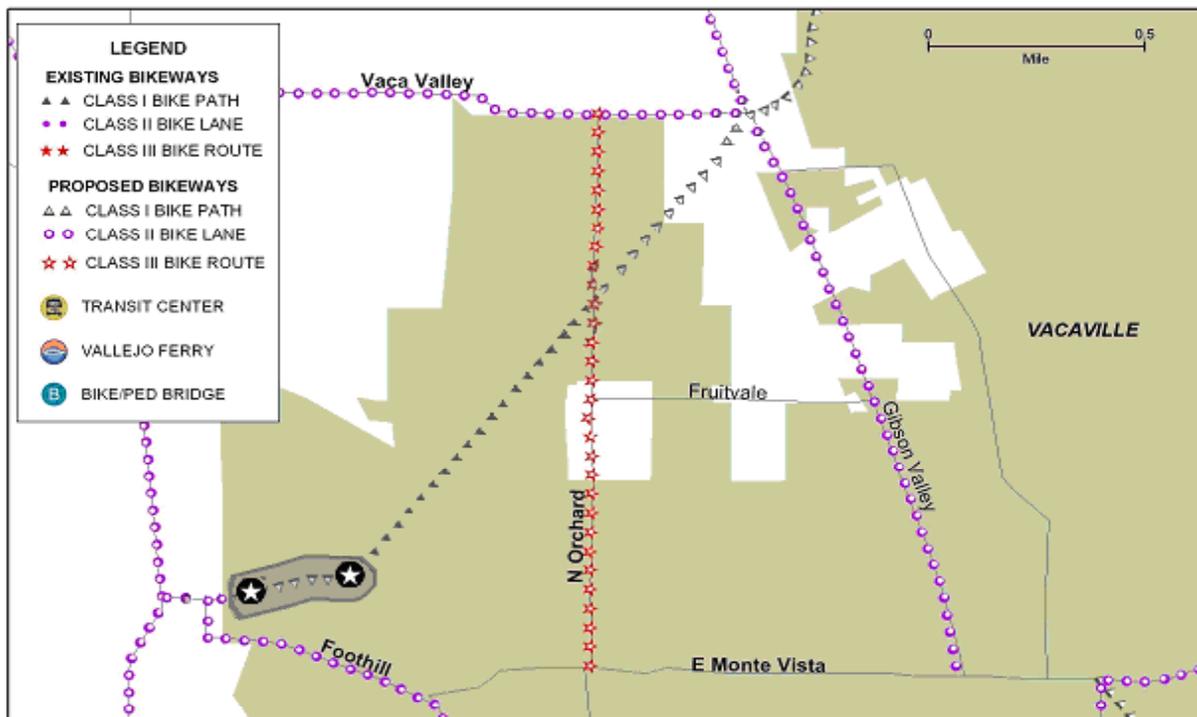
Project #20:	NORTH ORCHARD AVENUE					
Responsibility:	City of Vacaville					
Class: III Required	Length: 1.4 miles	Approximate Cost: \$ 30,000				
Actions/Studies	CEQA clearance, possible easements and/or right-of-way acquisition					
Route Segments	From	To	Class	Length	Cost	
North Orchard Avenue	E. Monte Vista Avenue	Vaca Valley Road	III	1.4	\$27,576	
				1.4	\$27,576	

North Orchard Avenue is a new project in the 2004 Solano Countywide Bicycle Plan Update. The proposed route will serve as a connector to the primary system at Vacavalley Parkway and will provide access to the PG&E Easement Bike Route for residences in northwestern Vacaville.



Project #21:	PG&E EASEMENT BIKE PATH (LINWOOD ST GAP CLOSURE)				
Responsibility:	City of Vacaville				
Class: I	Length: 1400 Linear Feet (.20 mile)	Approximate Cost: \$350,000			
Required Actions/Studies	CEQA clearance, possible easements and/or right-of-way acquisition				
Route Segments	From	To	Class	Length	Cost
PG&E Easement	Shady Glen Court	Cheyenne Drive	I	.20 mile	\$390,000
				.20 mile	\$390,000

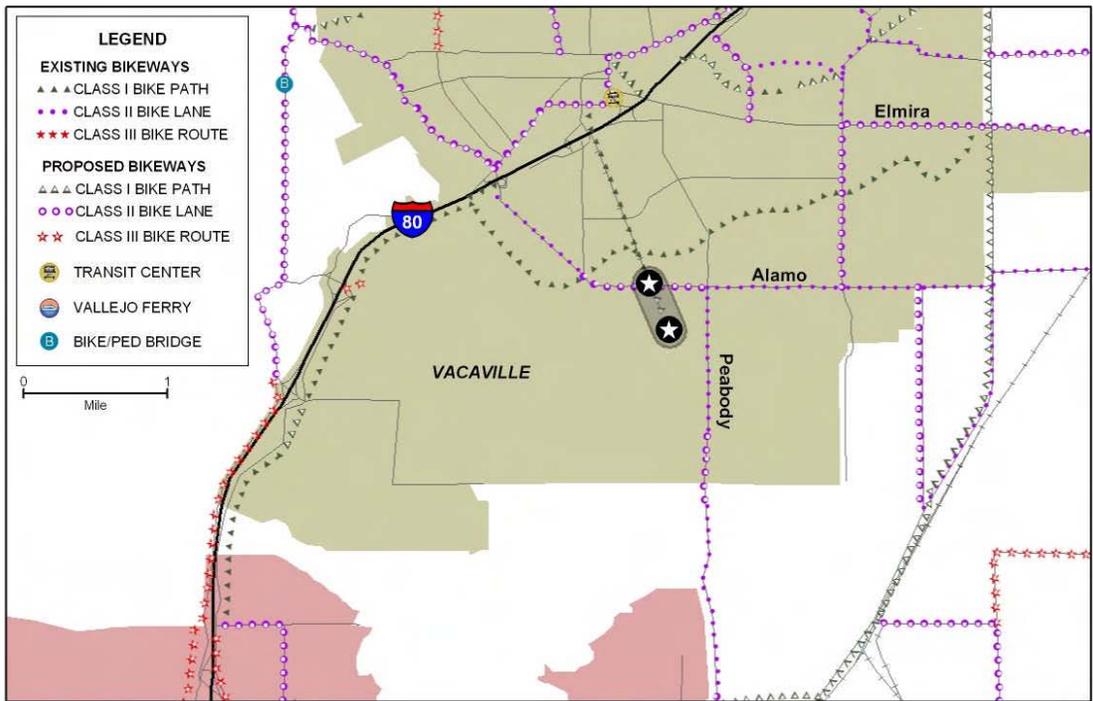
PG&E Easement Bike Path Project connects from Linwood Street to North Orchard Avenue with a Bridge over Alamo Creek to link Cheyenne Drive to Shady Glen Court. The PG&E Easement Bike Route serves as a connector to the primary system to Gibson Canyon and Foothill Drive, providing bicycle access for residences in northwestern Vacaville.



PROPOSED SYSTEM

Project #22:	SOUTHSIDE BIKEWAY				
Responsibility:	City of Vacaville				
Class: I	Length: 850 liner feet (.16 mile)	Approximate Cost: \$ 110,000			
Required Actions/Studies	CEQA clearance, possible easements and/or right-of-way acquisition				
Route Segments	From	To	Class	Length	Cost
Southside Bikeway	Alamo Drive	California Drive	I	.16 mile	\$110,000
				.16 mile	\$110,000

The Southside Bike Way Extension is a new project in the 2004 Solano Countywide Bicycle Plan Update. The project extends the current Class I bikeway from Alamo Drive to California Drive. Once completed the Southside Bikeway network will connect residents from the south end of Vacaville to within proximity of Downtown Vacaville. The proposed route will serve as a connector to the primary system.



Project #23: ULATIS CREEK BIKE PATH

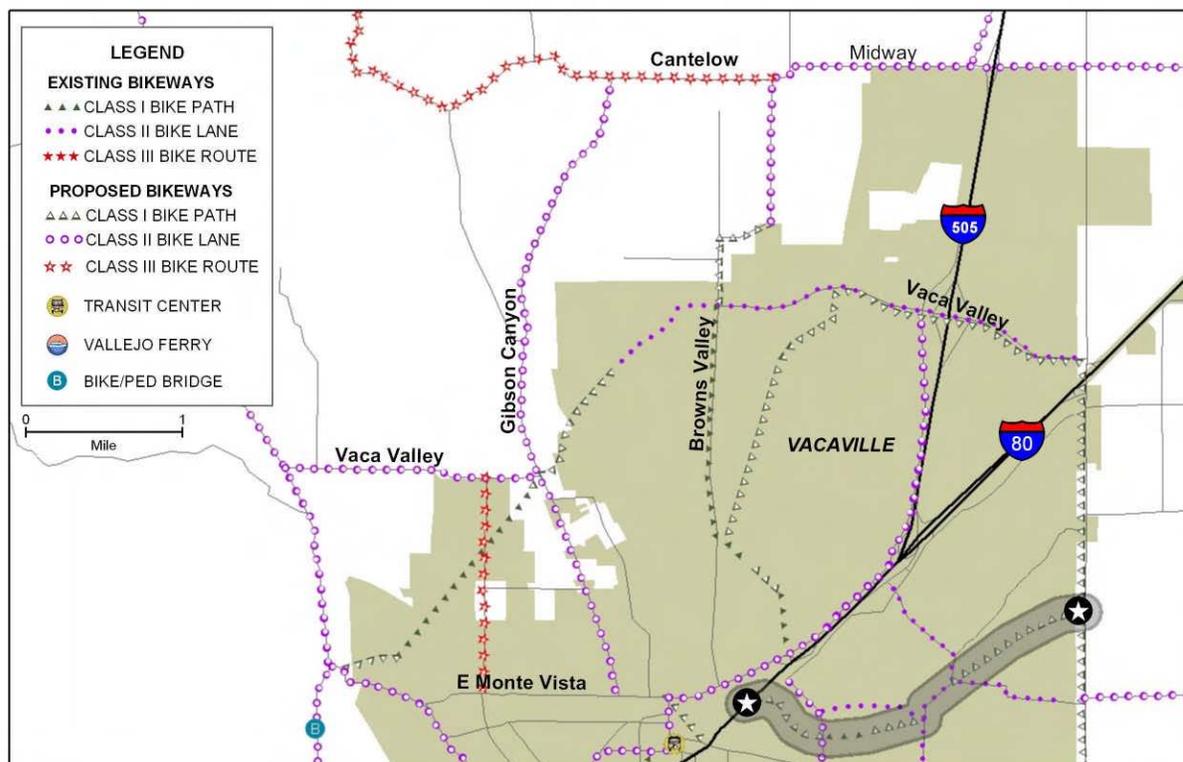
Responsibility: City of Vacaville

Class: I Length: 3,460 Linear ft (.65mile) Approximate Cost: \$700,000

Required Actions/Studies CEQA clearance, possible easements and/or right-of-way acquisition

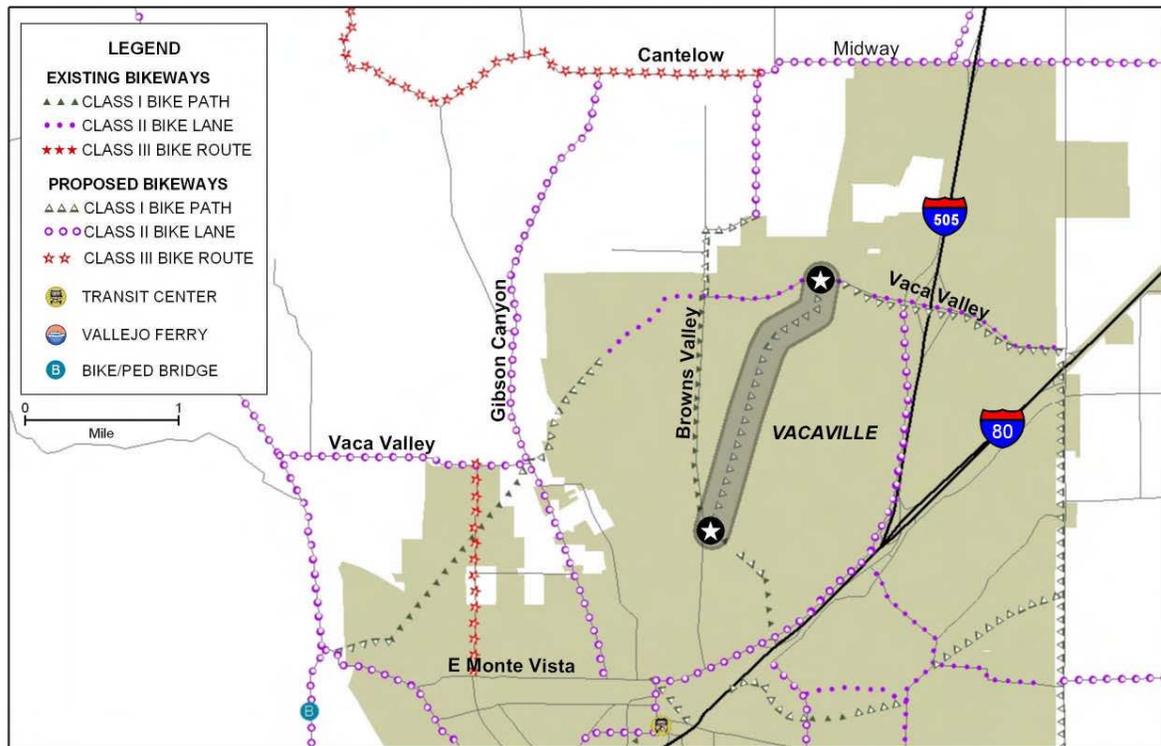
Route Segments	From	To	Class	Length	Cost
Ulatis Creek Bike Path	Allison Drive	Ulatis Drive	I	.65 mile	\$700,000
				.65 Mile	\$700,000

The Ulatis Creek Bike Path is a connector route to the Jepson Parkway regional bicycle network. This Class I Bike Route connects residents to the Ulatis Cultural Center and Library. The route follows along the Ulatis Creek and crosses over the Putah Creek Canal. The project is segmented into four separate project phases of which two are partially funded (Segments A & B, between Allison Drive and Putah Creek Canal).



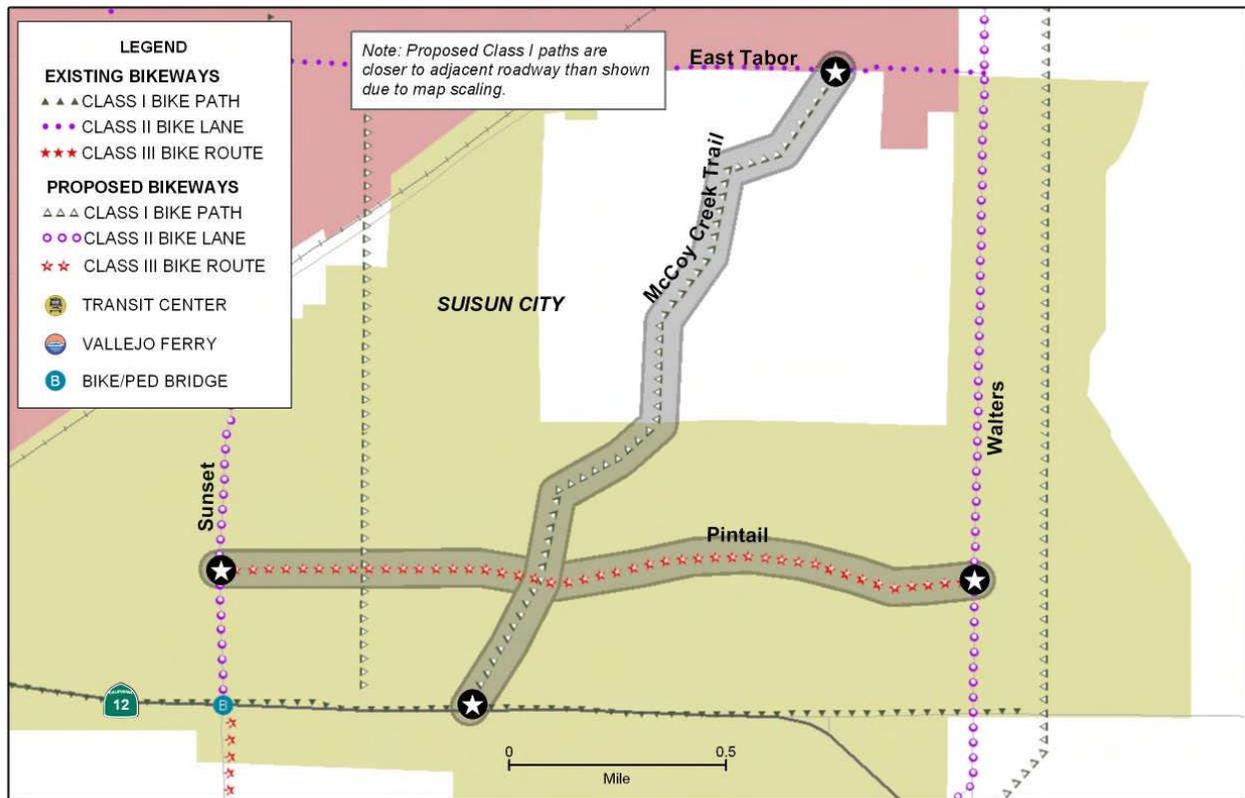
Project #24:	CENTENNIAL BIKEWAY					
Responsibility:	City of Vacaville					
Class: I Required	Length: 6,720 linear feet (1.3 mile)	Approximate Cost: \$ 300,000				
Actions/Studies	CEQA clearance, possible easements and/or right-of-way acquisition					
Route Segments	From	To	Class	Length	Cost	
Centennial Bikeway	Vaca Valley Parkway	Browns Valley Parkway	I	1.3 mile	\$300,000	
				1.3 Mile	\$300,000	

The Centennial Bikeway is a new bicycle route added to the bicycle plan update. The proposed Class I route connects Vaca Valley Parkway to Browns Valley Parkway with access points planned intermittently for residents of Browns Valley.



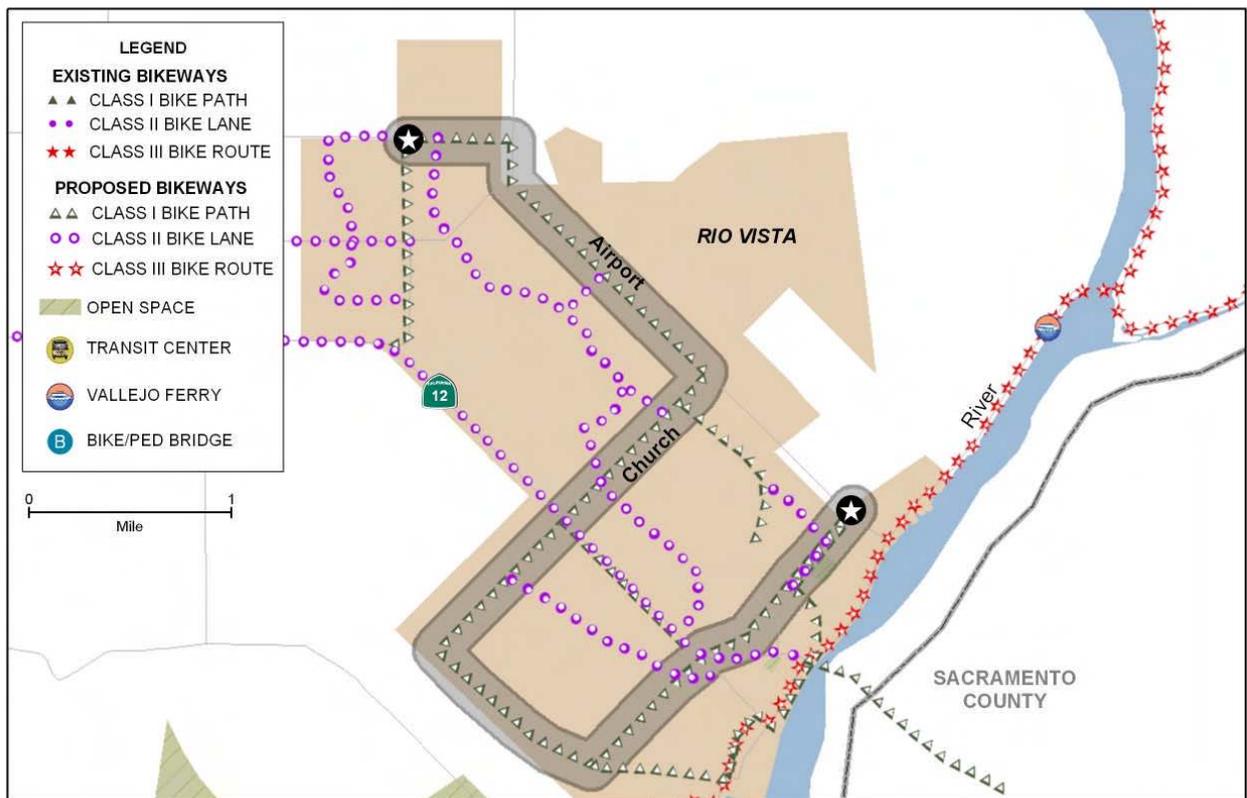
Project #25:	PINTAIL DRIVE / MC COY CREEK TRAIL				
Responsibility:	Suisun City				
Class: III	Length: 3.6 miles	Approximate Cost: \$ 40,000			
Required Actions/Studies	CEQA clearance, possible easements and/or right-of-way acquisition				
Route Segments	From	To	Class	Length	Cost
Pintail Drive	Sunset Avenue	Walters Road	III	1.8	\$36,667
Mc Coy Creek	SR 12	East Tabor	I	1.8	\$704,000
				3.6	\$740,667

Pintail Drive and the Mc Coy Creek Trail are new projects in the 2004 Solano Countywide Bicycle Plan Update. The proposed routes will serve as connectors in the primary system and will provide access to transit, services, and employment centers for residents in northern Suisun City and southern Fairfield.



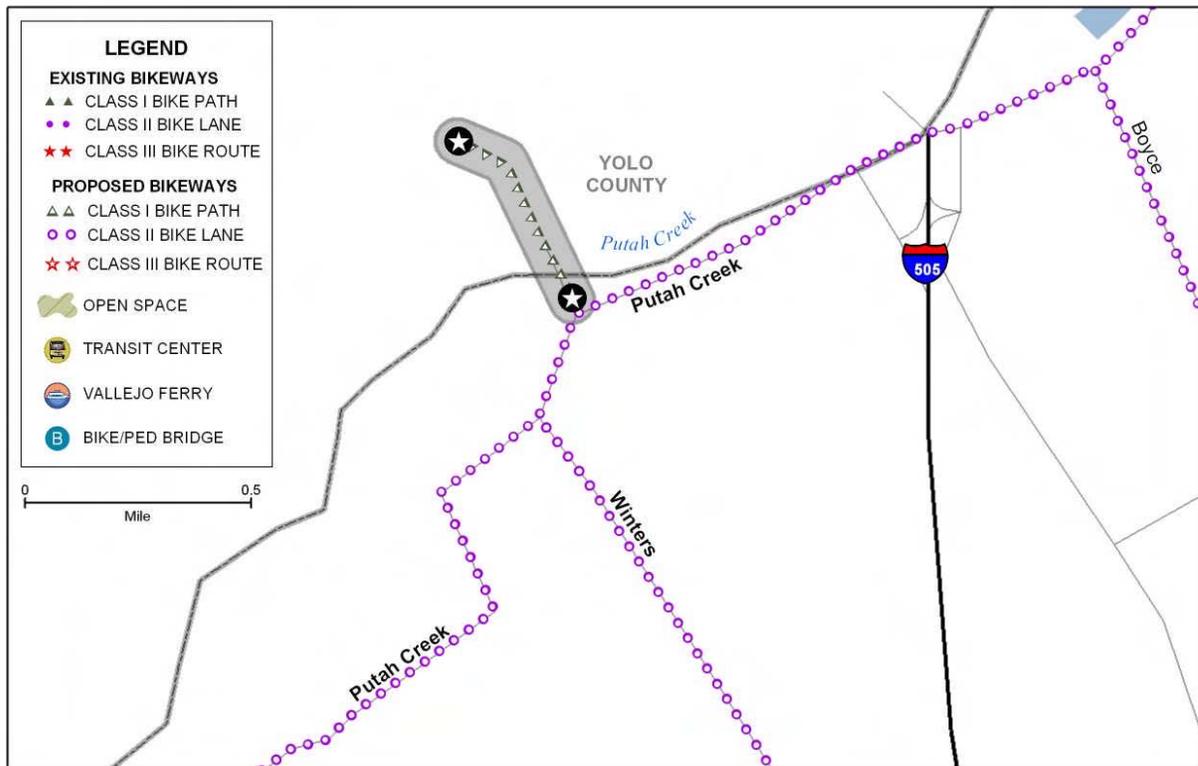
Project #26:	RIO VISTA LOOP					
Responsibility:	City of Rio Vista					
Class: I	Length: 6.6 miles	Approximate Cost: \$3,300,000				
Required Actions/Studies	CEQA clearance, possible easements and/or right-of-way acquisition, and dedi					
Route Segments	From	To	Class	Length	Cost	
Air Port Road	N. City Limit	Church	I	2.1	\$1,050,000	
Church	Airport Rd	S. City Limit	I	1.8	\$900,000	
	St. Francis	Airport Rd	I	2.7	\$1,350,000	
				6.6	\$3,300,000	

The various segments of Class I bikeway that make up the Rio Vista Loop represent a new project in the 2004 Solano Countywide Bicycle Plan Update. The proposed route will serve as a connector to the primary system and will provide access and recreational opportunities for residents in Rio Vista.



Project #27:	PUTAH CREEK BRIDGE				
Responsibility:	County of Solano				
Class: I	Length: 0.1 miles	Approximate Cost: \$800,000			
Required Actions/Studies	CEQA clearance, possible easements and/or right-of-way acquisition, and dedications, trail crossing and design				
Route Segments	From	To	Class	Length	Cost
Class I Bike Bridge utilizing abandoned RR Bridge spanning Putah Creek	Solano County	Yolo County	I	0.1	\$ 800,000
				0.1	\$ 800,000

The conversion of the abandoned Southern Pacific railroad bridge that spans Putah Creek near the intersection of Winters Road and Putah Creek Road has been an informal project for decades. This is a new project in the 2004 Solano Countywide Bicycle Plan Update. The proposed route will serve as a connector in the secondary system and will provide access and recreational opportunities for cyclists between Solano and Yolo Counties.



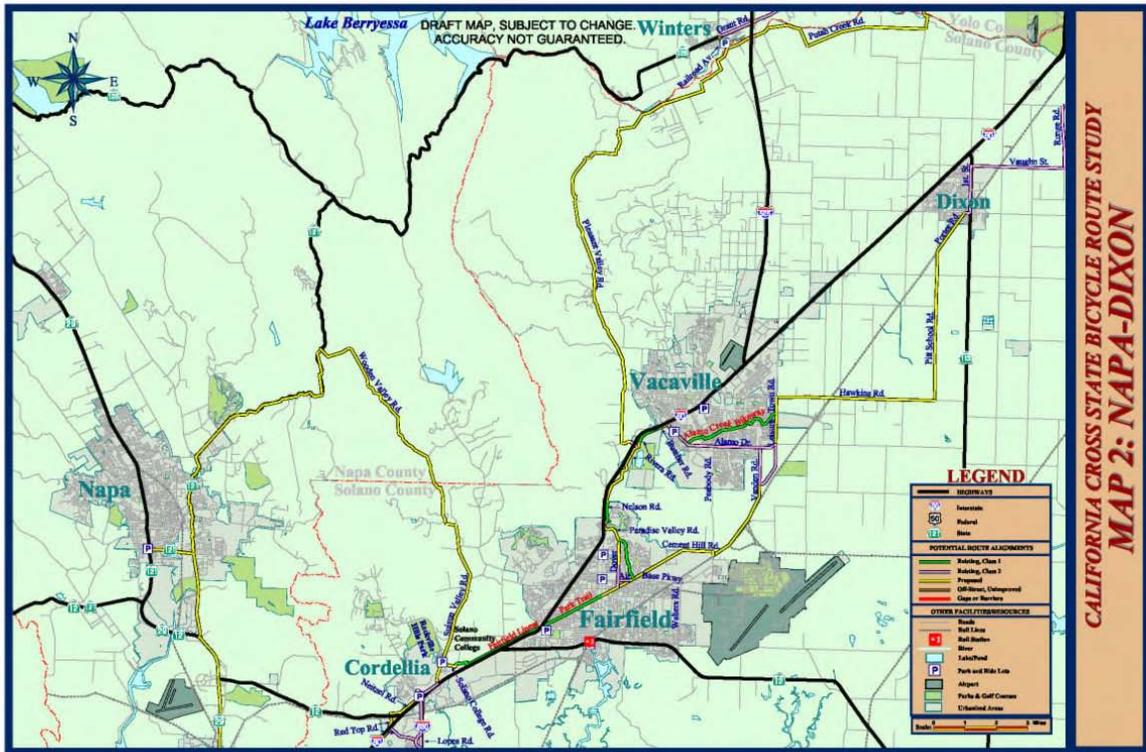
PROPOSED SYSTEM

Project #28:	CROSS STATE BIKE ROUTE (TAHOE TO BAY AREA)		
Responsibility:	Varies		
Class: I, II, & III Required	Length: NA	Approximate Cost: NA	
Actions/Studies	CEQA clearance, possible easements and/or right-of-way acquisition, and dedications, trail crossing and design		

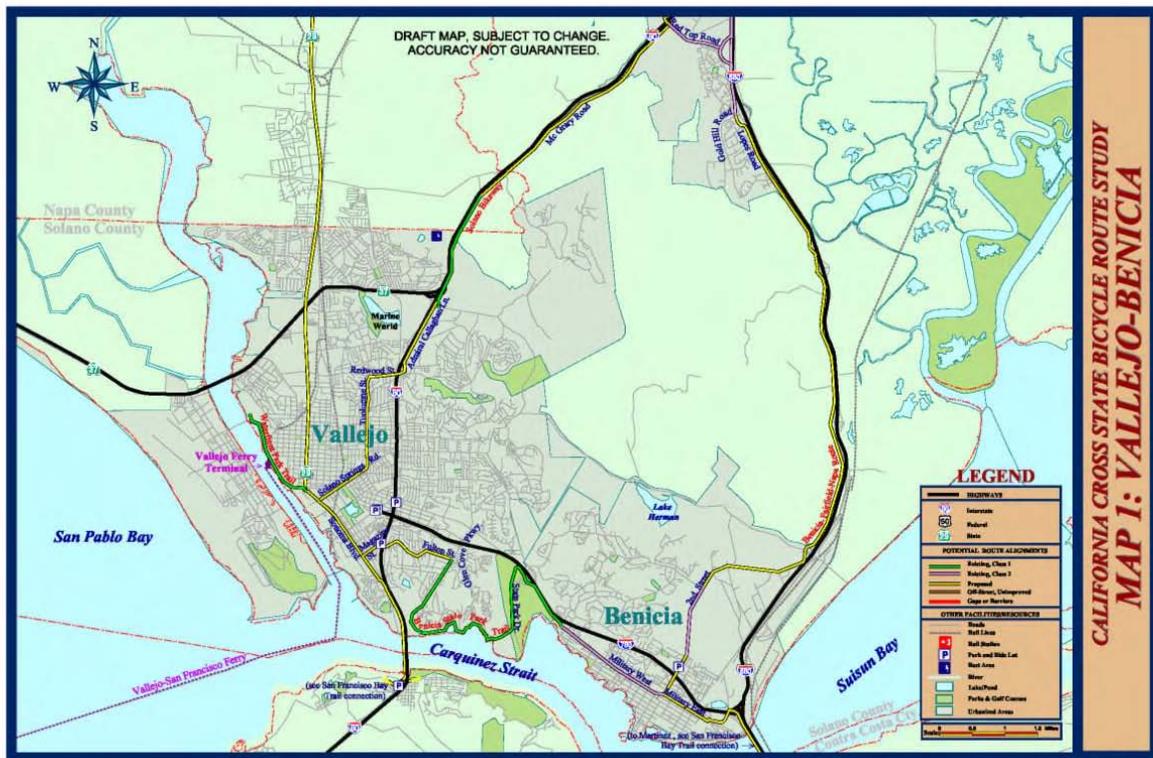
The Cross State Bike Route Study is a multi-agency project sponsored by the Placer County Transportation Planning Agency and funded by a 2003 Caltrans Partnership Planning Grant; the Cross State Bike Route Study is being developed to examine the feasibility of creating a cross state bike route that will connect the Tahoe Basin with the Bay Area. The BAC worked with representatives of the Cross State Bike Route Committee to identify a preferred alignment for the route through Solano County. The plan, which is currently in draft form as of this writing, identifies primary and alternate alignments for the “State Bike Route” through Solano County. The route roughly follows the I-80 and I-680 corridors as it makes its way to the Bay Trail in southern Solano County, a segment by segment breakdown of the route follows. It is important to note that the alignment selected for the Cross State Bike Route through Solano County follows the primary bikeway system proposed in this plan. No new routes are proposed for the project. It is anticipated that the pursuit of competitive funding for the projects that make up the route, and their implementation may be aided by their designation as both state and regional routes.

Route Segments	From	To	Class	Jurisdiction	Existing/Proposed
Primary Route					
Old Davis Road	Yolo County	Tremont Road	II	County	Existing
Tremont Road	Old Davis Road	Runge Road	II	County	Existing
Runge Road	Tremont Road	Vaughn Street	II	County	Existing
Vaughn Street	Runge Road	First Street	II	County	Existing
First Street	Vaughn Street	Adams Street	II	Dixon	Proposed
Adams Street	SR 113	Porter Road	II	Dixon	Proposed
Porter Road	Adams Street	Pitt School Road	II	Dixon	Proposed
Pitt School Road	Porter Road	Hawkins Road	II	County	Proposed
Hawkins Road	Pitt School Road	Leisure Town Rd.	II	County	Proposed
Leisure Town Rd	Hawkins Road	Vanden Road	I	Vacaville	Proposed
Vanden Road	Leisure Town Rd.	Peabody Road	I	Vacaville	Proposed
Cement Hill Rd.	Peabody Road	Walters Road	I	Fairfield	Proposed
Walters Road	Cement Hill Road	Fairfield Linear Park	I	Fairfield	Proposed
Fairfield Linear Park	Cement Hill Road	Solano College Rd.	II	Fairfield	Existing
Solano College Rd.	Fairfield Linear Park	Suisun Valley Rd.	II	Fairfield	Proposed
Suisun Valley Rd.	Solano College Rd.	Neitzel Road	II	Fairfield	Proposed
Neitzel Road	Suisun Valley Rd.	North Connector	II	Fairfield	Proposed
North Connector	Neitzel Road	Red Top Road	II	Fairfield	Proposed
Red Top Road	North Connector	Mc Gary Road	II	Fairfield	Proposed
Mc Gary Road	Red Top Road	Solano Bikeway	III	Fairfield	Proposed

<i>Route Segments</i>	<i>From</i>	<i>To</i>	<i>Class</i>	<i>Jurisdiction</i>	<i>Existing/Proposed</i>
Solano Bikeway	Mc Gary Road	Columbus Parkway	I	Vallejo	Existing
Columbus Parkway	Solano Bikeway	Admiral Callaghan	II	Vallejo	Proposed
Georgia Street	Columbus Parkway	SR 29 (Vallejo Waterfront)	II	Vallejo	Proposed
SR 29	Solano Avenue	Carquinez Bridge	II	Vallejo	Proposed
Secondary Routes					
North Vacaville Route					
Alamo Creek Bikeway	Leisure Town Road	Alamo Drive	I	Vacaville	Existing
Alamo Drive	Leisure Town Road	Butcher Road	II	Vacaville	Existing
Butcher Road	Alamo Drive	Rivera Road	II	Vacaville	Proposed
Rivera Road	Butcher Road	Nelson Road	II	Vacaville	Existing
Nelson Road	Rivera Road	Paradise Valley Rd.	II	Fairfield	Existing
Paradise Valley Rd.	Nelson Road	Linear Park	II	Fairfield	Proposed
Dover Road	Paradise Valley Rd.	Linear Park	II	Fairfield	Proposed
Western Route (Napa)					
Suisun Valley Rd.	Solano College Rd.	Wooden Valley Rd.	II	Fairfield	Proposed
Wooden Valley Rd.	Suisun Valley Rd.	SR 121	II	County	Proposed
SR 121	Wooden Valley Rd.	SR 29	II	County	Proposed
SR 29	SR 121	Carquinez Bridge	II	Vallejo	Proposed
Eastern Route (Benicia)					
Lopes Road	Neitzel Road	2 nd Street	II	County	Proposed
2 nd Street	Lopes Road	Military East	II	Benicia	Proposed
Military East	2 nd Street	Benicia Martinez Bridge	II	Benicia	Proposed
Military West	2 nd Street	Bay Trail (BSRA)	II	Benicia	Existing
Bay Trail (Benicia State Recreation Area)	Military West	Fulton Street	I	Benicia	Existing



CALIFORNIA CROSS STATE BICYCLE ROUTE STUDY
MAP 2: NAPA-DIXON



CALIFORNIA CROSS STATE BICYCLE ROUTE STUDY
MAP 1: VALLEJO-BENICIA

4.0 COST ANALYSIS AND IMPLEMENTATION

This section provides information on the proposed Countywide Bikeway System design recommendations, costs, funding, ancillary programs, and implementation strategies. This section is designed to be used as an on-going resource for the County and cities, helping to develop a consistent set of implementation tools and strategies to ensure consistency and compatibility in the primary system and too help leverage outside funding. These are recommendations, none of the implementation strategies described herein are mandatory. It is imperative that the public works departments be given flexibility in the actual development of the bicycle system within their right-of-ways.

4.1 IMPLEMENTATION STRATEGIES

National design standards for bikeways exist through AASHTO (American Association of Highway and Transportation Officials) and are very similar to those shown in Caltrans “Chapter 1000” of the *Highway Design Manual*. Many states, including California, have built upon these standards and developed quite extensive criteria. It is important to note that Caltrans standards provide a good framework for future implementation, but may not always be feasible in the County’s rural areas, and/or built environments in the cities. Minimum design standards for the development of Class I, II, & III bikeway facilities as defined by Caltrans are located on pages 24 and 25.

RECOMMENDED PERFORMANCE STANDARDS

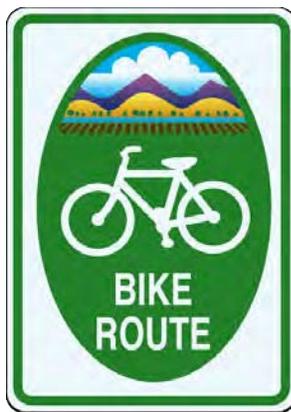
Recommended performance standards generally consist of specific requirements that may be used to implement the proposed regional bikeway system. These requirements or guidelines may be adopted by local jurisdictions in tandem with policies and objectives.

Design Recommendations

Recommendation: All bicycle facilities should conform to Caltrans *Highway Design Manual* “Chapter 1000,” and the Manual on Uniform

Traffic Control Devices for Streets and Highways published by the Federal Highway Administration, unless granted a design exception or superseded by city or county guidelines (on non-state facilities).. Where Caltrans standards are not met, the facility should not be referred to as a “Class I, II, or III” facility. Some types of non-Caltrans facilities, such as Bike Boulevards, will be based on successful applications elsewhere

Recommendation: All existing roadways identified as bikeways on the Regional Bikeway Plan should be improved to provide a bike lane in each direction. If bike lanes are not feasible, then a 14-foot (4m) wide curb lane should be provided at a minimum.



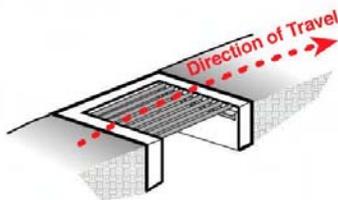
Recommendation: All routes in the regional system should be signed with the custom Solano County Bike Route sign to enhance the routes identity.

Recommendation: Sidewalks should not be designated as part of the regional bikeway system.

Recommendation: Bicycle sensitive loop or camera detectors should be installed at all signalized intersections on the regional bikeway system. Minimum green cycle lengths should be 15 seconds to ensure bicyclists have adequate time to travel safely through intersections.

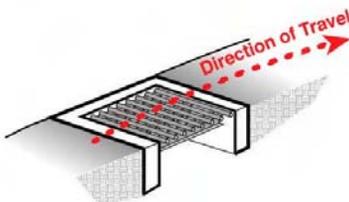
Existing:

Grate is parallel to direction of travel. Bicycle wheels can drop between the grates and become trapped.



Solution:

Rotate grate so it is perpendicular to the direction of travel.



Recommendation: Bicycle Boulevards – the bicycle boulevard concept designates a street directly parallel to a major commercial corridor as a route which is designed to promote bicycle movement and discourage through vehicle movement. This may be achieved through partial street closures and lack of coordinated signals. In addition, wider curb lanes, frequent signing as a ‘Bicycle Boulevard’, and stenciling, help to increase the motorists awareness of the facility.

Support Facility Guidelines

Recommendation: All public facilities such as libraries, government centers, parks, schools, and transit centers should provide bike racks, preferably in a covered location (see Table 6). The amount of parking should be determined by reviewing usage on an annual basis.

Bicycle lockers or bike racks in a secure interior location should be provided at all places of employment, public or private, at the rate of

one space per 30 full time employees. Any development or redevelopment over 50,000 square feet of Gross Leasable Area (GLA) or 150 employees should be required to provide one shower and locker facility per 100 employees.

Bike and hike rest stop facilities should be provided for local and visiting cyclists. At a minimum, facilities should provide restrooms and running water. Additional amenities could include campsites, benches, and picnic tables.

Programs and Operations

Recommendation: Bicycle education courses should be taught to all third and fourth grade children, with advanced programs for middle school children on an annual basis, using a standardized education program.

Recommendation: A roadway maintenance program that includes routine and an as needed mechanism for bicycle facilities should be maintained by each jurisdiction as part of their normal roadway maintenance program.

Recommendation: A Transportation Authority staff person should be assigned the role of Bikeway Coordinator, and be responsible for disseminating information, identifying and applying for funding, and assisting with multi-jurisdiction applications. Additionally, each jurisdiction should identify a similar staff person whose responsibility also includes coordination between departments; especially in the design review of new projects to ensure that bikeway design guidelines are being met for all local projects.

Fluorescent Yellow-Green Warning Signs

The “fluorescent” yellow-green (FYG) designation is the name of a color the FHWA approved as an option for warning signs about schools, pedestrians, and bicycles in an amendment to the *Manual on Uniform Traffic Control Devices* in June 1998. Fluorescent yellow-green has been an optional color for use in ‘bicycle warning’ signs in California since 1998. Although FYG was initially slow to gain popularity, the color is seeing increased use statewide.

The use of fluorescent yellow-green was extensively studied by the FHWA for six years before being approved for use. According to a 1992 FHWA study at five pedestrian and bicycle crossings in the Washington, D.C., area, the number of vehicles that slowed and

stopped for pedestrians and bicyclists in response to fluorescent yellow-green warning signs increased, and the number of conflicts of vehicles with pedestrians and bicyclists decreased. Another FHWA study in 24 jurisdictions indicated that the color enabled motorists to detect the signs with greater frequency and to recognize the signs from greater distances – especially in low light and foggy/rainy weather – than they were able to detect and recognize standard yellow warning signs. The higher rate of visibility is due to the fluorescent colorants contained in the signs which absorb high energy (short wavelength) light and re-emit lower energy (longer wavelength) light. Although the study found that many of the jurisdictions did not find significant changes in vehicle speeds in response to the fluorescent yellow-green signs, motorists commented that the signs heightened their awareness of activity in the roadway environment.

CLASS I BIKE PATHS

The Caltrans Highway Design Manual, Chapter 1000, provides specific design criteria for the implementation of Class I bike paths (see Figure 4.1). In many cases, existing bike paths or multi-use trails will not meet this criteria-often because it was developed by a non-transportation department such as Parks & Recreation. As most federal and state funding is geared towards transportation facilities, we recommend that, wherever possible, Caltrans standards be met.

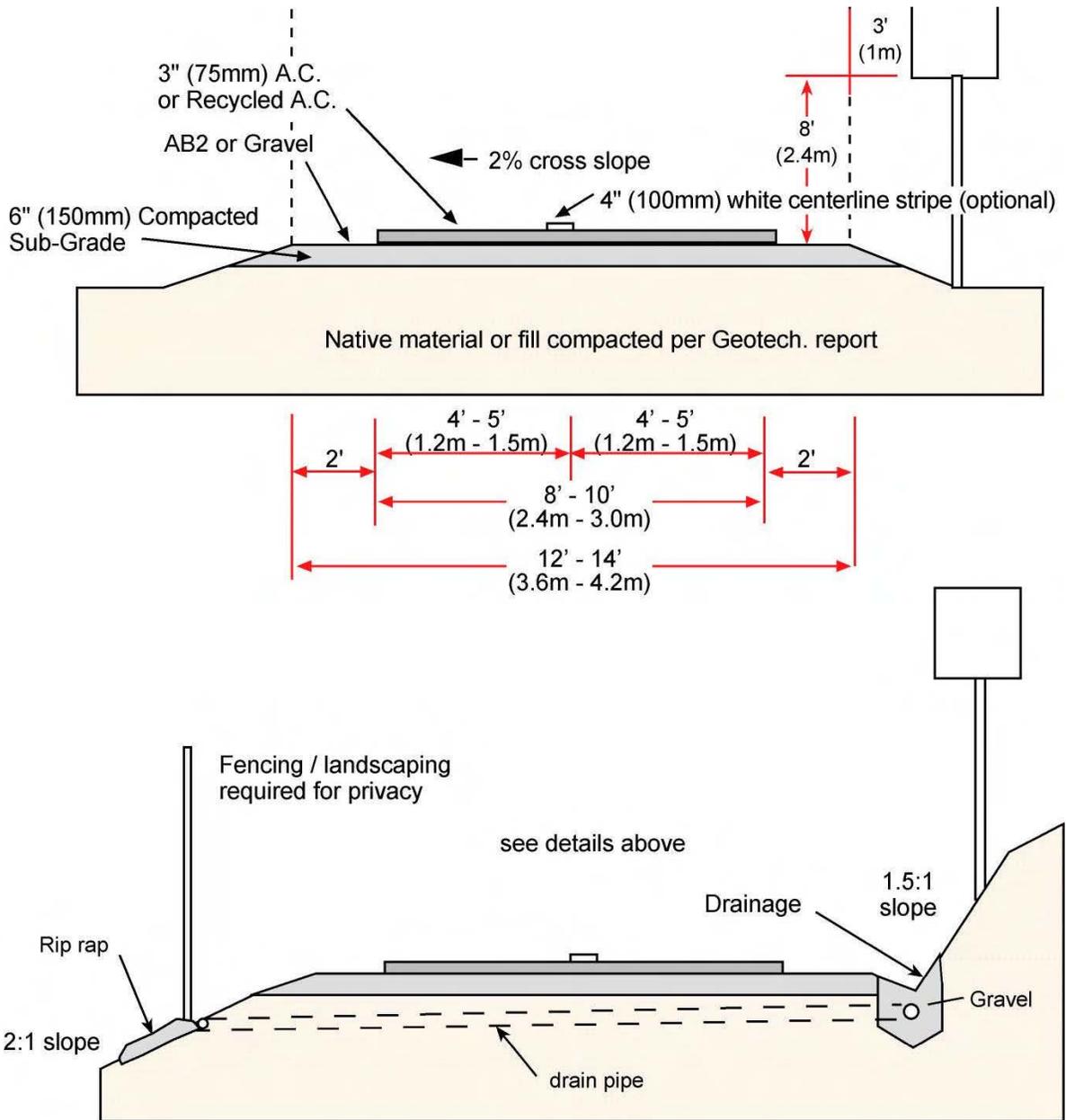
Recommendation: All bike paths should be designed to meet minimum Caltrans standards, unless the facility serves a predominately recreation (versus transportation) function.

Prototypical cross sections of bike paths to be constructed are shown in Figure 4.1, with recommended dimensions provided. For example, recommended widths for bike paths are 12 feet (3.5m) but may be reduced to 8 feet in constrained areas. Figure 16 shows the recommended Class I Bike Path crossing configuration. It is recommended that on roadways with ADT over 20,000 and bike paths with over 500 daily users, an activated signal be placed for bicyclists and pedestrians to use. Wherever feasible, an under-crossing or over-crossing should be constructed on sections that meet these criteria. Both facilities must meet ADA requirements of 4.8% maximum slope, and 8 feet of vertical clearance. If equestrians and/or heavy equipment (including fire trucks) are expected to use the facility, the vertical clearance should be 12 feet minimum.

Recommendation: Other Bike Path Design Features

- 5.a The Solano ‘Bike Route’ sign should be placed at all major trail entrances and intersections of the primary system.
(Construction details are available through the STA)
- 5.b Landscaping should be low maintenance and low water types. Use or preservation of native materials, especially along riparian habitats, is recommended.
- 5.c Barriers (gates) should provide for disabled access (5 feet minimum between bollards).
- 5.d Provide striping and signing for speed limits, stop, and slow warnings (per MUTCD)
- 5.e Construct path to accommodate maintenance vehicles (note: path sweepers may require more than 8 feet of vertical clearance. An evaluation should be performed on proposed undercrossings between the cost of providing additional headroom and the impact on sweeping operations).
- 5.f Direct pedestrians to unpaved path when opportunity exists
- 5.g Provide adequate fencing (min. 54”) to protect privacy of neighbors where warranted
- 5.h Provide at least 2’ of unpaved shoulder for pedestrians where feasible
- 5.i Provide trailhead facilities (portable restroom, parking, and drinking fountain) at appropriate locations
- 5.j Minimum 5 foot separation between bike path and adjacent roadway unless a barrier is provided
- 5.k 2% cross slope should be provided for drainage
- 5.l All curve radii, super elevations, stopping sight distances, and lateral clearances on horizontal curves should conform to Caltrans Chapter 1000 specifications as shown in Figs. 1003.1C-1003.1F.
- 5.m Barriers to prevent unwanted vehicle entry onto bike path should be constructed where the need exists: all barriers should be removable by emergency vehicles.

- 5.n Handicap access should be permitted through barriers (min. 5' clearance)



Sources: Caltrans Highway Design Manual, Manual on Uniform Traffic Control Devices

FIGURE 4.1: MULTI-USE PATH CROSS SECTION

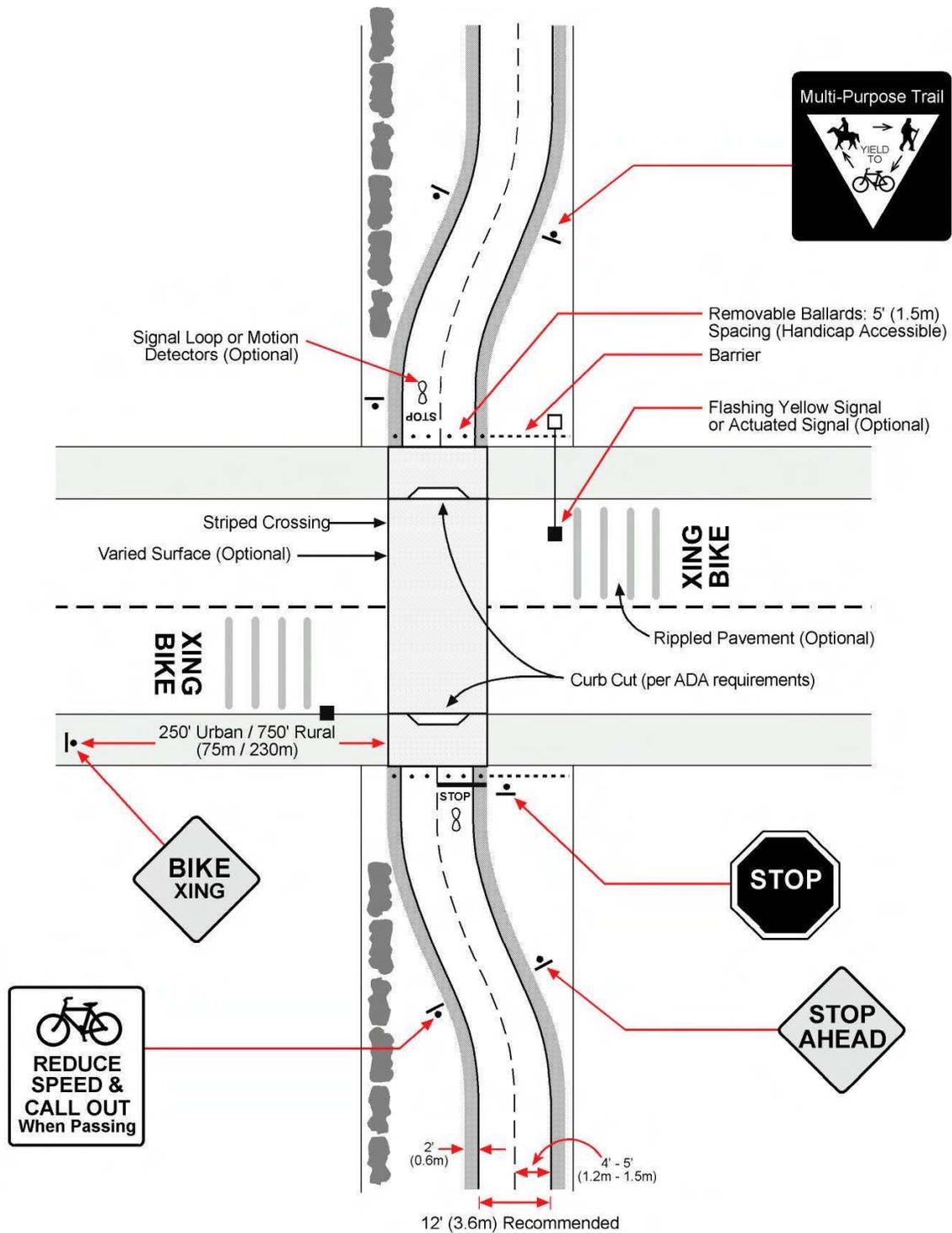


FIGURE 4.2: MULTI-USE TRAIL CROSSING PROTOTYPE

Recommendation: It is recommended that bike paths in Solano County be subject to an environmental review process to determine the need for a full EIR.

Recommendation: Bicycle Paths (Class I) should take advantage of linear opportunities such as creeks, railroad rights-of-way, and other locations identified in the System Plan where property ownership and functional compatibility permits. Preferred and minimum standards are listed below.

Preferred: Dedicated easement or public control of land, 60 foot right of way preferred for shared use 12 foot bike path with 2-2' foot paths (shoulders). Grade separated under or overcrossings of major arterials.

Minimum: Dedicated easement 12-foot right-of-way, 8-foot bike path, restricted speeds. Grade crossings with protection devices.

CLASS II BIKE LANES

Bike lane standards are well defined by Caltrans, and are the preferred on-street system for the Regional Plan. For example, Caltrans has specific standards for Class II lanes such as striping (solid six inch white stripe), and signing (at the beginning of each bike lane, at the far side of each arterial crossing, and at change in directions). Wherever existing bike lanes in Solano County do not meet Caltrans design standards, they should be programmed by the responsible department for re-design or, if impractical, not identified as an official Class II bike lane.

Recommendation: Bicycle Lanes (Class II) should be provided on all streets identified in the System Plan unless (a) the cost of expanding the right of way is prohibitive, (b) local residents and businesses do not want to lose on-street parking, (c) the Public Works department concludes it cannot reduce travel lane widths or eliminate travel lanes or two-way left turn lanes without negatively impacting safety or capacity, or (d) the street is a residential street with low traffic volumes. In most of these cases, a Class III bike route would be a suitable replacement.

Although the Plan recognizes that Class II bike lane standards generally assumes a 32 foot roadway width (minimum), widening projects which do not fully achieve this standard may be acceptable in some cases, if they will noticeably improve bicycle safety. Actual implementation of projects is ultimately dependent on cost factors and other local considerations of the responsible member jurisdiction.

Recommendation: Bike lanes should conform to Caltrans standards on all existing and proposed roadways (see Bike Lane Spec. Sheet and Figure 4.3). Sub-standard bike lanes should be designated as Class III bike routes, unless they are programmed to be upgraded to meet Caltrans Class II standards. Other design standards:

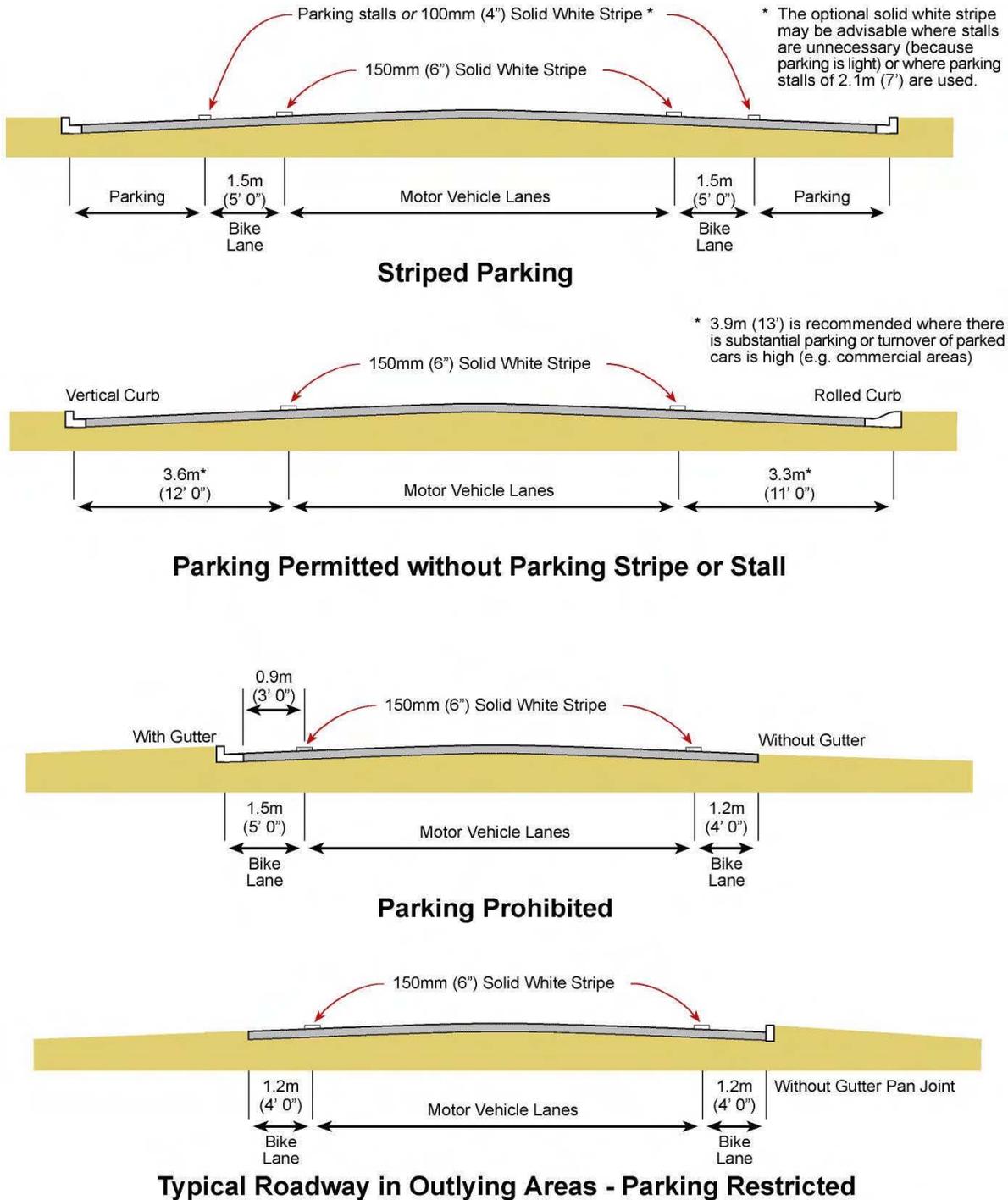
16. Minimum travel lane width next to a bike lane should be 12 feet on collector and arterial streets

17. Bike lanes should be located on the right hand side of one-way streets

Recommendation: Bike lane configuration through an intersection is shown in Figure 4.4. The ability to install all of these improvements is dependent on the available right of way and need, but should be applicable on all new intersections along the Primary System in Solano County. Where possible, 4' pockets should be provided at intersections between the right turn only lane and the through lane. Signal loop detectors should be provided at major signalized intersections unless pre-timed signal coordination is in effect.

CLASS III BIKE ROUTES

Caltrans provides a description of Class III bike routes, which is characterized by signing and a route shared with “either motor vehicles or with pedestrians on sidewalks.” The decision to sign bicycle route should be based on the advisability of encouraging bicycle travel in the corridor, based on factors such as traffic volumes and speeds, curb lane width, and parking. Bike Route signing can be effective to direct cyclists away from construction zones or specific areas.



Source: Caltrans' Highway Design Manual, Figure 1003.2A

Figure 4.3: Typical Class II Bike Lane Cross Section

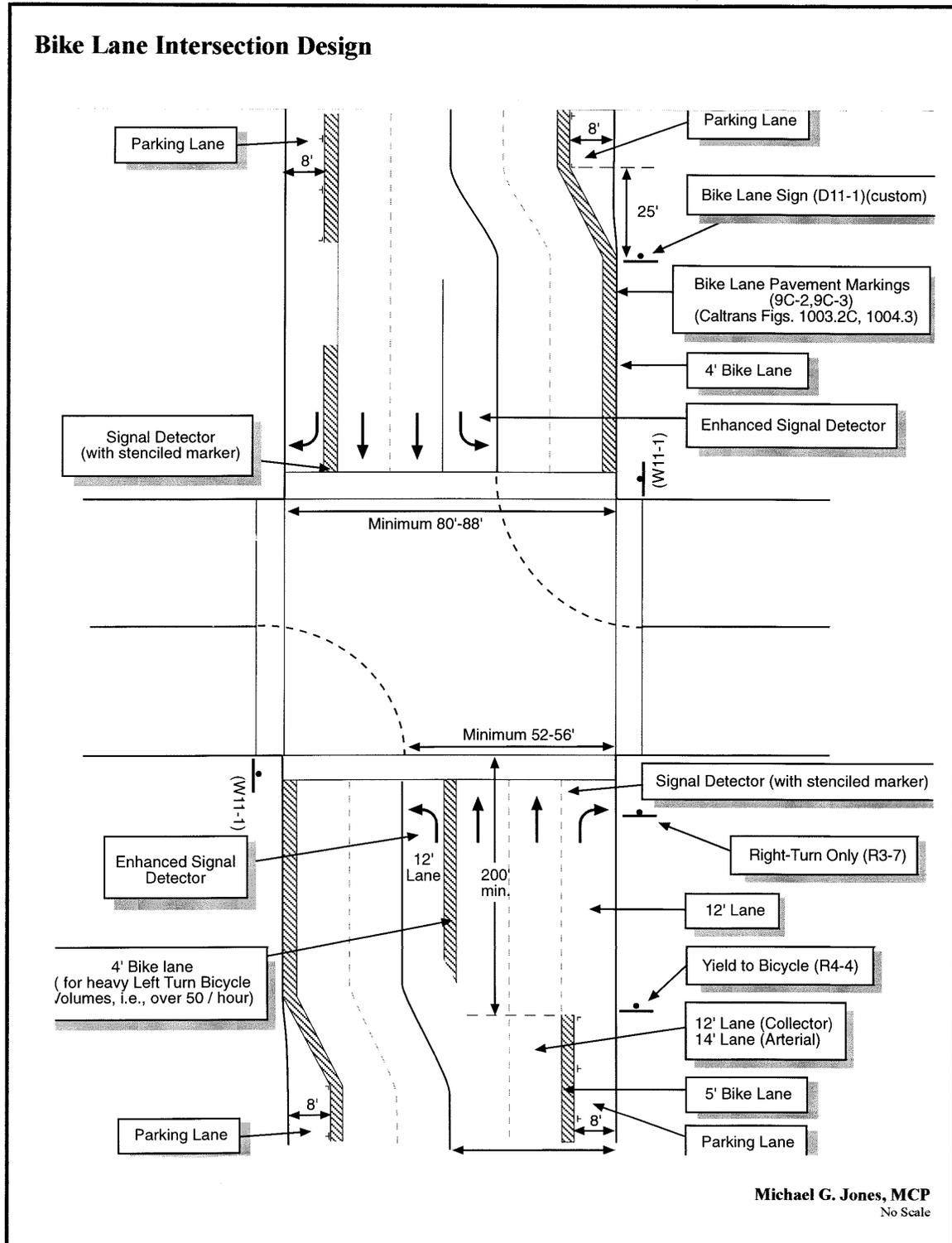


Figure 4.4: Bike Lane Intersection Design

Bike routes should provide a higher level of service than other streets and roadways to bicyclists, as defined by:

- a. Traffic control priority at intersections
- b. Removal of parking in areas of restricted width
- c. Surface imperfections or irregularities have been corrected
- d. Maintenance is at a higher standard than comparable streets

Recommendation: *Bicycle Routes (Class III) should be provided if any of the requirements described under Bicycle Lanes are not met. Bicycle routes, while not having striped lanes, should provide the following items when feasible:*

- 1. *Bicycle sensitive loop or camera detectors at signalized intersections*
- 2. *Curb travel lanes at least 14 feet wide (excluding parking), or 21 feet including parking*
- 3. *Warning signs to motorists*
- 4. *Directional signs to bicyclists*
- 5. *Adequate pavement conditions and maintenance*

OTHER BICYCLE FACILITIES

Other bicycle facilities include bicycle boulevards, sidewalks, and streets with “traffic calming” techniques applied. Most of these are not specifically addressed by Caltrans in Chapter 1000, but fall under a variety of other local and state guidelines and standards.

Bicycle Boulevards

This type of facility has been developed in the city of Palo Alto, and consists of a street where priority movement has been given to the bicycle. Bike boulevards are typically located adjacent to a major commercial street with heavy traffic volumes and congested width, thereby helping to separate bicycles and cars while still providing access to major destinations. Specific design treatments include (a) lower allowable vehicle speeds (25 mph or less), (b) lack of coordinated signals, (c) multiple STOP sign controlled intersections, (d) wide curb lanes (at least 14 feet), and (e) signs that advise motorists of the presence of bicyclists (“Bike Boulevard”).

Sidewalks

The use of sidewalks as bicycle facilities is not encouraged by Caltrans, even as a Class III (Bike Route) facility. However, there are exceptions to this rule. First, the California Vehicle Code states: “Local authorities may adopt rules and regulations by ordinance or resolution regarding the (...) operation of bicycles (...) on the public sidewalks” (CA VC 21100, Subdir H).

Caltrans adds in Chapter 1000: In residential areas, sidewalk riding by young children too inexperienced to ride in the street is common. With lower bicycle speeds and lower auto speeds, potential conflicts are somewhat lessened, but still exist. Nevertheless, this type of sidewalk bicycle use is accepted. But it is inappropriate to sign these facilities as bikeways except where there are no on-road options. Bicyclists should not be encouraged (through signing) to ride facilities that are not designed to accommodate bicycle travel.

Recommendation: *It is recommended that local jurisdictions adopt a local ordinance that addresses bicycle riding on sidewalks. The recommended parameters for such an ordinance are: (a) bicycle speeds not to exceed five mph, (b) where designated by specific signing, and/or (c) to access bicycle racks or other storage facilities.*

Traffic Calming Techniques

Where existing traffic volumes and restricted street widths make bicycling hazardous, certain traffic calming techniques may be employed to improve the route’s suitability for bicyclists. For example, the City of Portland, Oregon, has timed the signals on downtown streets at low speeds (under 15 mph) so that bicyclists can ride with the flow of traffic. Most calming techniques consist of slowing traffic down using speed limits, narrowing travel lanes, introducing new pavement surfaces or rumble strips, and/or “necking” streets down at each intersection.

Other traffic calming techniques involve blocking off existing routes or otherwise limiting vehicle access to certain areas. For example, the City of Berkeley has a well-known system of street barriers that effectively limit vehicle access through the city’s grid system. While effectively making streets more enjoyable for pedestrians and bicyclists, this technique may result in much higher traffic volumes on adjacent streets and should be studied from a traffic management plan.

4.2 CAPITAL, OPERATING, AND MAINTENANCE COSTS

Costs to implement the proposed regional bikeway system are presented in Table 7. Assumptions behind each cost item are presented in this chapter, and generally include the following general categories.

- Move Traffic/Parking Lanes: restripe existing traffic and parking lanes in order to provide bike lanes.
- Move Utility Poles: relocate utility poles in some areas as part of a street widening effort to provide bike lanes.
- Fill Drainage Ditches: install storm drain system along road as part of street widening effort, which includes bike lanes. Generally this item and moving utility poles are accomplished for traffic reasons rather than the need for bike lanes.
- Add Pavement: indicates the need for new or expanded shoulders, usually where there are no existing gutters or curbs.
- Cut/Retaining Walls: indicates the need for retaining walls to hold back cut and fill areas as part of street widening efforts, which include the provision of bike lanes.
- Land Acquisition: indicates the probable need for acquiring private property as part of a street-widening project or new bike path alignment.
- Lighting/Fencing: indicates the need for lighting and/or fencing along a proposed bike path alignment.

This section provides information on projected development and on-going costs of the bikeway system, funding sources, liability, and monitoring, maintenance, and security.

All costs used in this section are based on average costs used by Caltrans and other costs experienced on similar systems in northern California. More refined cost estimates should be developed in the design development process, especially for engineered portions of the project.

Implementation costs can be broken down between land acquisition (or lease) and construction costs. Land acquisition may be through outright purchase, easement, long-term lease, property exchange, or other means. Routes that probably will require right of way acquisition contain cost estimates based on local property

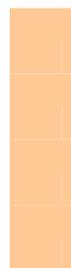
values. More specific information must be developed as the actual parcels are identified and negotiations with the owners are conducted. A total of \$2.4 million is identified as required to acquire right of way for future Class I bike paths in Phase I along the various waterway, railroad, and highway corridors. The actual amount will depend on localized property values and overall economic conditions at the time of purchase.

Construction costs may be limited to striping and signing for a Class II or III bikeway, or include bridges, underpasses, pathways, landscaping, drainage, grading, demolition, lighting, fencing and other expensive features associated with a Class I route. The cost differential between bike lanes and routes versus bike paths can be substantial. Case in point: one highway overcrossing can cost \$1.5 million, the equivalent cost to build 1,500 miles of bike route.

Based on these figures, the total estimated cost to implement the 147 miles of bikeways planned in the short-, mid-, and long-term phases of the Solano Countywide Bicycle Plan is approximately \$55 million, the majority of which is related to Class I bike paths. A breakdown of cost per segment is shown on the following page in Table 4.1.

**Table 4.1
SOLANO COUNTYWIDE BIKEWAY SYSTEM**

 Revised Projects
 New Projects

SEGMENT	FROM	TO	CLASS	LENGTH (MILES)	COST	PHASE 1 YEAR 2010	PHASE 2 YEAR 2020	PHASE 3 YEAR 2030	SF Bay Area Regional Bike Plan	Cross State Bike Route
Dixon to Vacaville Bike Route										
1.	 Adams Street	SR 113	Porter Road Pitt School	II	0.9	\$65,909	X		✓	✓
	 Porter Road Pitt School	Adams Street	Road Hawkins	II	1.4	\$103,409	X		✓	✓
	 Road Hawkins	Porter Road Pitt School	Road Leisure Town	II	4.6	\$342,614	X		✓	✓
	 Road	Road	Road	II	5.1	\$382,102	X		✓	✓
					11.9	\$894,034	X		✓	
Vacaville to Fairfield (North Route)										
2.	Elmira Road Pathway Sacramento Northern Segment Merchant Street Nelson Road	Meridian Road	Alamo Creek	I	1.2	\$420,000		X	✓	✓
		Alamo Creek	Davis Street Alamo Dr.	I	0.2	\$80,000		X	✓	
		Davis Street	Interchange Paradise	I	0.8	\$270,000		X	✓	
		Pena Adobe	Valley	I	1.6	\$550,000		X	✓	

**Table 4.1
SOLANO COUNTYWIDE BIKEWAY SYSTEM**

 Revised Projects
New Projects

SEGMENT	FROM	TO	CLASS	LENGTH (MILES)	COST	PHASE 1 YEAR 2010	PHASE 2 YEAR 2020	PHASE 3 YEAR 2030	SF Bay Area Regional Bike Plan	Cross State Bike Route		
	Dover Road	Paradise Valley		Fairfield Linear Park	II	1.8	\$80,000		X		✓	
						5.6	\$1,400,000		X		✓	
3.	Jepson Parkway/Vacaville to Suisun City (South Route)											
	Leisure Town Road	I-80		Ulatis Creek Parkway	I	1.5	\$510,000	X			✓	✓
	Leisure Town Road	Ulatis Creek		Alamo Drive	I	2.0	\$700,000	X			✓	✓
	Leisure Town Road	Alamo Drive		Vanden Road	I	1.6	\$560,000	X			✓	✓
	Vanden Road	Leisure Town Road		Peabody Road	I	3.4	\$1,190,000	X			✓	✓
	Cement Hill Road	Peabody Road		Walters Road	I	0.9	\$320,000	X			✓	✓
	Walters Road	Cement Hill Road		Airbase Parkway	I	1.1	\$390,000	X			✓	✓
	Walters Road	Airbase Parkway		E. Tabor Avenue	II	0.5	\$20,000	X			✓	
	Walters Road	E. Tabor Avenue		SR 12	I	1.8	\$630,000	X			✓	
						12.8	\$4,320,000	X			✓	
4.	Central County Bikeway (Suisun City to Rio Vista)											

**Table 4.1
SOLANO COUNTYWIDE BIKEWAY SYSTEM**

 Revised Projects
 New Projects

SEGMENT	FROM	TO	CLASS	LENGTH (MILES)	COST	PHASE 1 YEAR 2010	PHASE 2 YEAR 2020	PHASE 3 YEAR 2030	SF Bay Area Regional Bike Plan	Cross State Bike Route	
	Multi-use path north side of SR 12	Marina Road	Amtrak Station	I	0.6	\$284,091	X		✓		
		Shoulder improvements on SR 12	Sacramento County	Petersen Road	II	20.0	\$1,500,000	X		✓	
			Azevedo Road	Rio Vista Bridge/Co. Line	I	3.2	\$1,594,697	X		✓	
						23.6	\$3,378,788	X		✓	
5.	Cordelia to Napa County (I-80/680/SR 12 Interchange Access)										
	Alternative A: Class I Path	Red Top Road	Napa County Line	I	3.0	\$1,050,000	X		✓		
	Alternative B: Class II Lane	Red Top Road	Napa County Line	II	3.0	\$225,000	X		✓		
					3.0	\$225,000 to \$1.275 mil	X		✓		
6.	Fairfield to Vallejo (Solano Bikeway)										

**Table 4.1
SOLANO COUNTYWIDE BIKEWAY SYSTEM**

 Revised Projects
 New Projects

SEGMENT	FROM	TO	CLASS	LENGTH (MILES)	COST	PHASE 1 YEAR 2010	PHASE 2 YEAR 2020	PHASE 3 YEAR 2030	SF Bay Area Regional Bike Plan	Cross State Bike Route	
7. Vallejo to Carquinez Bridge		Linear Park Extension	North Texas Street	Cement Hill Road	I	1.9	\$926,136	X	✓		
		Red Top Road	Linear Park	McGary Road	II	1.0	\$800,000	X	✓	✓	
		McGary Road	Red Top Road	American Canyon Rd.	II or III	3.4	\$2,000,000	X	✓	✓	
		Columbus Parkway	I-80	Georgia Street	II	4.2	\$314,205	X	✓	✓	
			Admiral Callaghan Lane	Columbus Parkway	Turner Parkway	II	0.9	\$67,500	X	✓	
			Fairgrounds Drive	Turner Parkway	Redwood Boulevard	II	0.6	\$45,000	X	✓	
			Mariposa Street	Redwood Blvd.	Solano Avenue	II	1.1	\$82,500	X	✓	
			Solano Avenue	Mariposa Street	Sonoma Boulevard	II	1.0	\$75,000	X	✓	
							14.1	\$4,310,341	X	✓	
		SR 29 (Sonoma Boulevard)	Curtola Parkway	Maritime Academy Dr.	II	2.3	\$171,307	X	✓		

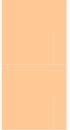
**Table 4.1
SOLANO COUNTYWIDE BIKEWAY SYSTEM**

 Revised Projects
 New Projects

SEGMENT	FROM	TO	CLASS	LENGTH (MILES)	COST	PHASE 1 YEAR 2010	PHASE 2 YEAR 2020	PHASE 3 YEAR 2030	SF Bay Area Regional Bike Plan	Cross State Bike Route
Vallejo to Sonoma County (SR 37 and Western Linkages)										
8.	 37 Class I Pathway Improvements	Mini Drive	Sonoma County Line	I	2.1	\$3,203,409		X		✓
		Redwood Blvd.	Sacramento Street	II	1.0	\$50,000		X		✓
		Valle Vista Street	SR 37	II	0.9	\$40,000		X		✓
					4.0	\$3,293,409		X		✓
Vallejo to Benicia										
9.		Mare Island Way	Vallejo Ferry Terminal Parkway	Curtola	II	0.4	\$29,830	X		✓
		Curtola Parkway	Mare Island Way	Sonoma Boulevard	II	0.2	\$17,045	X		✓
		Sonoma Boulevard	Curtola Parkway	Solano Avenue	II	0.3	\$22,017	X		✓
		Solano Avenue	Benicia Road Solano	Sonoma Boulevard	III	0.5	\$10,000	X		✓
		Benicia Road	Avenue	Rose Drive	II	1.0	\$75,000	X		✓

**Table 4.1
SOLANO COUNTYWIDE BIKEWAY SYSTEM**

 Revised Projects
 New Projects

SEGMENT	FROM	TO	CLASS	LENGTH (MILES)	COST	PHASE 1 YEAR 2010	PHASE 2 YEAR 2020	PHASE 3 YEAR 2030	SF Bay Area Regional Bike Plan	Cross State Bike Route
	I-780 Overcrossing	Benicia State Rec. Area	Rose Drive	I	0.1	\$780,000	X		✓	
					2.5	\$933,892	X		✓	
10. Vallejo to Napa										
	 Alameda Street	Solano Avenue	Broadway	II	0.8	\$59,659		X	✓	
	 Broadway	Alameda Street	Napa County Line	II	3.8	\$281,818		X	✓	
					4.6	\$341,477		X	✓	
11. Benicia to Martinez										
	Military East	Park Road	1st Street	II	1.0	\$75,000	X		✓	
	First Street	Military West	West I Street	II	0.3	\$20,000	X		✓	
	West I Street	First Street	West 9th Street	II	1.0	\$75,000	X		✓	
					2.3	\$170,000	X		✓	
12. Benicia to Cordelia										
	2nd Street	Military East	Lopes Road	II	3.3	\$247,500		X	✓	
	Lopes Road	2nd Street	Mangels Blvd.	III	9.8	\$196,000		X	✓	
					13.1	\$443,500		X	✓	
13. North										

**Table 4.1
SOLANO COUNTYWIDE BIKEWAY SYSTEM**

 Revised Projects
 New Projects

SEGMENT	FROM	TO	CLASS	LENGTH (MILES)	COST	PHASE 1 YEAR 2010	PHASE 2 YEAR 2020	PHASE 3 YEAR 2030	SF Bay Area Regional Bike Plan	Cross State Bike Route
Connector										
	Business Center Drive	State Route 12 (West)	Abernathy Road	II	1.0	\$75,000	X		✓	
Pleasants Valley										
14. Route	Pleasants Valley Road	Cherry Glen	Yolo County Line	II	13.0	\$13,000,000		X		
	Cherry Glen Road	Nelson Road	Pleasants Valley Road	II	1.1	\$1,100,000		X		
					14.1	\$14,100,000		X		
Lake Herman										
15. Road	Lake Herman Road	Lopes Road	Columbus Parkway	II	5.0	\$375,000		X		
Suisun Valley										
16. Road	Suisun Valley Road	Mangels Blvd.	Napa County Line	II	8.0	\$8,000,000		X		
Abernathy/Mankas Corner										
17. Route	Mankas	Suisun Valley	Abernathy	II	1.9	\$1,900,000		X		

**Table 4.1
SOLANO COUNTYWIDE BIKEWAY SYSTEM**

 Revised Projects
 New Projects

SEGMENT	FROM	TO	CLASS	LENGTH (MILES)	COST	PHASE 1 YEAR 2010	PHASE 2 YEAR 2020	PHASE 3 YEAR 2030	SF Bay Area Regional Bike Plan	Cross State Bike Route
	Corner Road	Road	Road							
	Abernathy Road	Mankas Corner Road	Rockville Road	II	2.1	\$1,700,000		X		
	Abernathy Road	Rockville Road	Linear Park	I	0.2	\$100,000		X		
					4.2	\$3,700,000		X		
18.	State Route 12 Overcrossing									
	Bike/Ped Overcrossing	Red Top Road	North Connector	I	0.1	\$1,500,000		X		
19.	Gibson Canyon Road (Dobbins)									
	Gibson Canyon Road	E. Monte Vista Avenue	Cantelow Road	II	4.5	\$3,112,500			X	
20.	North Orchard Avenue									
	North Orchard Avenue	E. Monte Vista Avenue	Vaca Valley Road	III	1.4	\$27,576			X	

**Table 4.1
SOLANO COUNTYWIDE BIKEWAY SYSTEM**

 Revised Projects
 New Projects

SEGMENT	FROM	TO	CLASS	LENGTH (MILES)	COST	PHASE 1 YEAR 2010	PHASE 2 YEAR 2020	PHASE 3 YEAR 2030	SF Bay Area Regional Bike Plan	Cross State Bike Route
PG&E Easement Bike Path (Linwood St Gap Closure)										
21.	PG&E Easement	Shady Glen Ct.	Cheyenne Drive	I	.20	\$390,000	X			
Southside Bikeway Extension										
22.	Southside Bikeway	Alamo Drive	California Drive	I	.16	\$110,000	X			
Ulatis Creek Bike Path										
23.	Ulatis Creek	Allison Drive	Ulatis Drive	I	.65	\$700,000		X		
Centennial Bikeway										
24.	Centennial Bikeway	Vaca Valley Parkway	Browns Valley Parkway	I	1.3	\$300,000		X		

**Table 4.1
SOLANO COUNTYWIDE BIKEWAY SYSTEM**

 Revised Projects
 New Projects

SEGMENT	FROM	TO	CLASS	LENGTH (MILES)	COST	PHASE 1 YEAR 2010	PHASE 2 YEAR 2020	PHASE 3 YEAR 2030	SF Bay Area Regional Bike Plan	Cross State Bike Route
25. Pintail Drive										
	Pintail Drive McCoy Creek	Sunset Avenue SR 12	Walters Road East Tabor	III I	1.8 1.8	\$36,667 \$704,000	X	X		
				3.6	\$740,667					
26. Rio Vista Loop										
	Air Port Road Church	N. City Limit Airport St. Francis	Church Southern City Limit Airport	I I I	2.1 1.8 2.7	\$1,050,000 \$900,000 \$1,350,000		X X X		
				6.6	\$3,300,000			X		
27. Putah Creek Bridge										
	Class I Bike Bridge spanning Putah Creek	Solano County	Yolo County	I	0.1	\$800,000		X		
TOTAL				151.01	\$57,937,491					

4.3 FUNDING

Solano County has historically invested approximately \$1,500,000 annually in bicycle facilities. This money is derived from a variety of sources including TEA-21 programs, competitive source funding programs, sales tax revenue, etc.

There are a variety of potential funding sources including local, state, regional, and federal funding programs that can be used to construct the proposed bicycle improvements. Most federal, state, and regional programs are competitive and involve the completion of extensive applications with clear documentation of the project need, costs, and benefits. Several funding sources available for bicycle projects are described in this section.

BTA Requirement K

A description of past expenditures for bicycle facilities and future financial needs for projects that improve safety and convenience for bicycle commuters in the plan area.

FEDERAL

TEA-21

Federal funding through the TEA-21 (Transportation Equity Act for the 21st Century) program has provided much of the funding for bicycle and pedestrian projects. TEA-21 currently contains three major programs, STP (Surface Transportation Program), TEA (Transportation Enhancement Activities), and CMAQ (Congestion Mitigation and Air Quality Improvement) along with other programs such as the National Recreational Trails Program, Section 402 (Safety) funds, Scenic Byways funds, and Federal Lands Highway funds.

TEA-21 funding is administered through the state (Caltrans or Resources Agency) and regional governments. Most, but not all, of the funding programs are transportation versus recreational oriented, with an emphasis on (a) reducing auto trips and (b) providing an intermodal connection. Funding criteria often includes completion and adoption of a bicycle and/or pedestrian master plan, quantification of the costs and benefits of the system (such as saved vehicle trips and reduced air pollution), proof of public involvement and support, CEQA compliance, and commitment of some local resources. In most cases, TEA-21 provides matching grants of 80 to 90 percent, but prefers to leverage other moneys at a lower rate.

TEA-21 was to expire on September 30, 2003, but was recently extended until February 29, 2004. The successor legislation which is tentatively know as SAFETEA (Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2003), will be a future source of funds. This new legislation may come with additional categories of funding and guidelines.

STATE

Bicycle Transportation Account

The state Bicycle Transportation Account (BTA) is an annual statewide discretionary program that is available through the Caltrans Bicycle Facilities Unit for funding bicycle projects. Available as grants to local jurisdictions, the emphasis is on projects that benefit bicycling for commuting purposes. Funding that is available on a statewide basis amounts to \$7.2 million annually.

Safe Routes to School (SB 10)

The Safe Routes to School program is a State program using federal transportation funds. This program is meant to improve school commute routes through construction of bicycle and pedestrian safety and traffic calming projects. A local match of 10% is required for this competitive program, which will allocate \$18 million annually. Since it is a *construction* program, planning grants are not available through this program. Programs or activities related to education, enforcement, or encouragement may be eligible for reimbursement if they are related to the construction improvement.

Regional Transportation Improvement Program (RTIP)

These funds are a portion of the State Transportation Improvement Program. STA, acting as the Regional Transportation Planning Agency in the area, is responsible for allocating Solano County's share of the funding.

REGIONAL

TDA Article III (SB 821)

Transportation Development Act (TDA) Article III funds are awarded annually to local jurisdictions for bicycle and pedestrian projects in California. These funds originate from the state gasoline tax and are distributed according to population to local agencies. The BAC plays an active role in project selection and the distribution of TDA funds in Solano County.

The Yolo/Solano Air Quality Management District Air Quality Improvement Grants

The Yolo/Solano Air Quality Management District is a major potential source of local matching funds for state and federal sources of funding for bicycle and pedestrian projects. The grants are generally in the \$20,000 to \$50,000 range and are highly competitive based on a cost-benefit formula developed by the District. Funding priorities also change annually with the District, between bicycle and other projects such as transit.

Bay Area Air Quality Management District Transportation Funds for Clean Air Program (TFCA)

Sponsored by the Bay Area Air Quality Management District, this fund appropriates \$12 million annually and can be used to fund bikeway and pedestrian improvements. This fund requires documentation of air quality benefits.

Bay Trail Development Fund

Bay Trail Development Funds are available through the Association of Bay Area Governments based on legislative approval of the Program. These funds are typically available every few years on a competitive basis. A total of \$7.5 million was earmarked in the 2000 State budget and will be available over a five-year period. Funding amounts usually range in the \$200,000 range.

LOCAL FUNDING

Direct Local Jurisdiction Funding

Local jurisdictions can fund bicycle and pedestrian projects using a variety of sources. A general fund is often earmarked for non-motorized transportation projects.

Future road widening and construction projects are one means of providing bike lanes and sidewalks. To ensure that roadway construction projects provide these facilities where needed, appropriate, and feasible, it is important that an effective review process is in place so that new roads meet the standards and guidelines presented in this Plan.

Impact fees

Another potential local source of funding is developer impact fees, typically tied to trip generation rates and traffic impacts produced by a proposed project. A developer may reduce the number of trips (and hence impacts and cost) by paying for on- and off-site pedestrian and bikeway improvements, which will encourage residents to walk and bicycle rather than drive. In-lieu parking fees may be used to help construct new or improved bicycle parking. Establishing a clear nexus or connection between the impact fee and the project's impacts is critical in avoiding a potential lawsuit.

Special Taxing Districts

Special taxing districts, such as redevelopment districts, can be good instruments to finance new infrastructure – including shared use trails and sidewalks - within specified areas. New facilities are funded by assessments placed on those that are directly benefited by

the improvements rather than the general public. In a “tax increment financing (TIF) district, taxes are collected on property value increases above the base year assessed property value. This money can then be utilized for capital improvements within the district. TIF’s are especially beneficial in downtown redevelopment districts.

**Table 4.2
Summary of California Bicycle and Pedestrian Funding Programs**

Funding Programs	Modes (Bicycle, pedestrian-walkways, trails)	Trip Types (Commute/Transportation, Recreational)	Project Types (Construction, Non-construction, both)	Required Matching Funds	Deadlines	Available Annual Funding	Contact & Website Information
FEDERAL FUNDING							
Transportation Enhancement Activities (TEA)	Both	Transportation	Construction	11.5%	Varies by MPO/RTPA	\$60 million over the 6-year legislative period	www.dot.ca.gov/hq/TransEnhAct
Regional Surface Transportation Program (RSTP)	Both	Transportation	Both	20% for bike and ped. Projects	Varies by MPO/RTPA	Approximately \$320 million statewide	www.dot.ca.gov/hq/transprog/cmaqrstp.htm
Congestion Mitigation & Air Quality Improvement Program (CMAQ)	Both	Transportation	Both	11.5%	Varies by MPO/RTPA	Approximately \$400 million statewide to achieve national ambient air quality standards	www.dot.ca.gov/hq/transprog/reports/Official_CMAQ_Web_Page.htm
National Highway System (NHS)	Both	Transportation	Both	20%	Varies by MPO/RTPA	Approximately \$500 million annually	http://www.fhwa.dot.gov/tea21/factsheets/nhs.htm
Federal Lands Highway Funds	Both	Transportation	Construction	None	July	Approximately \$165 million annually	
Bridge Repair and Replacement	Bicycle	Transportation	Construction	20%	On going	Approximately \$160 million annually	www.dot.ca.gov/hq/LocalPrograms/hbrr99/hbrr99a.htm

**Table 4.2
Summary of California Bicycle and Pedestrian Funding Programs**

Funding Programs	Modes (Bicycle, pedestrian-walkways, trails)	Trip Types (Commute/Transportation, Recreational)	Project Types (Construction, Non-construction, both)	Required Matching Funds	Deadlines	Available Annual Funding	Contact & Website Information
Railroad/Highway At-Grade Crossing Program	Both	Both	Construction	up to 10%	March 1 annually	Approximately \$10 million annually	www.dot.ca.gov/hq/LocalPrograms/sect130/sect130.htm
National Recreation Trails Fund	Both	Both	Both	20%	October	Approximately \$3million statewide, competitive	www.parks.ca.gov/grants/index.htm
Highway Safety Program	Both	Transportation	Non-construction	11.5	On going	Approximately \$165 million	www.ots.ca.gov
Transportation and Community and System Preservation Pilot Program	Both	Transportation	Both	N/A		Approximately \$25 million annually	http://www.fhwa.dot.gov/tcsp/index.html
STATE FUNDING							
State Transportation Improvement Program (STIP)	Both	Transportation	Construction	none	December 15, odd number years	Varies	www.dot.ca.gov/hq/transprog/stip/stipguid/2000guid.pdf
Bicycle Transportation Account	Bicycle	Transportation	Construction	10%	Dec. 1 annually	\$7.2 million	www.dot.ca.gov/hq/LocalPrograms/
Safe Routes to Schools	Both	Transportation	Construction	10%	Cycle varies, Feb-04 cycle 5	\$20 million, each project not to exceed \$500,000	www.dot.ca.gov/hq/LocalPrograms/
Environmental Enhancement and Mitigation program	Both	Transportation	Construction	20%	November	\$10 million, each project not to exceed \$250,000	www.dot.ca.gov/hq/LandArch/cem/cemframe.htm

**Table 4.2
Summary of California Bicycle and Pedestrian Funding Programs**

Funding Programs	Modes (Bicycle, pedestrian-walkways, trails)	Trip Types (Commute/Transportation, Recreational)	Project Types (Construction, Non-construction, both)	Required Matching Funds	Deadlines	Available Annual Funding	Contact & Website Information
Petroleum Violation Escrow Account (PVEA)	Both	Transportation	Construction	None	Requires legislative approval, June 30, annually	Varies	Caltrans Federal Resources Office, Budgets Program (916) 654-7287
Habitat conservation Fund Grant Program	Both	Both	Construction	50%	October	\$500,000 available through statewide competition	http://parks.ca.gov/grants/hcf/hcf.htm
Land and Water conservation Fund	Both	Both	Construction (Including land acquisition)	50%	May	Each project not to exceed \$200,000	www.parks.ca.gov/grants/lwcf/lwcf.htm
Mello-Roos Community Facilities Districts California	Both	Both	Both		N/A		
Conservation Corps Community Based Transportation Planning Demonstration Grant Program	Both	Both	Construction	None	On going		www.ccc.ca.gov
Highway-Railroad Grade Separation Program	Both	Both	Non-construction	20%	Pending re-authorization	Approximately \$3 million, each project not to exceed \$300,000	http://www.dot.ca.gov/hq/tpp/grants.htm
Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection	Both	Both	Construction	20%	April 1 annually	\$15 million, each project not to exceed \$5 million	Caltrans Railroad Agreements Branch (916) 227-5203
	Both	Both	Both	N/A	October	\$1.7 million available through statewide	www.parks.ca.gov

**Table 4.2
Summary of California Bicycle and Pedestrian Funding Programs**

Funding Programs	Modes (Bicycle, pedestrian-walkways, trails)	Trip Types (Commute/Transportation, Recreational)	Project Types (Construction, Non-construction, both)	Required Matching Funds	Deadlines	Available Annual Funding	Contact & Website Information
Bond Act of 2000 (Prop. 12)						competition	
Office of Traffic Safety Grants	Both	Transportation	Both	N/A	October	N/A	www.ots.ca.gov
INNOVATIVE FINANCING							
Grant Anticipation Revenue Vehicle Bonds (GARVEE)	Both	Transportation	Both	11.5%	On going	Total debt not to exceed 30% of federal funds received annually	http://www.dot.ca.gov/hq/innovfinance/garveebond.htm
State Highway Account Loan Program (Short Term Loans)	Both	Transportation	Both	11.5%	On going	Total outstanding loans can not exceed \$500 million statewide	http://www.dot.ca.gov/hq/innovfinance/sha.htm
Transportation Finance Bank (TBF)	Both	Transportation	Both	11.5%	On going	\$3 million statewide	http://www.dot.ca.gov/hq/innovfinance/T_F.htm
REGIONAL FUNDING							
Local Air District Projects Funded by Vehicle Registration Fees	Both	Both	Both	Varies by jurisdiction	Varies by jurisdiction	Varies by jurisdiction	Contact your local air district
Transportation Development Act (TDA) Article 3	Both	Both	Both	None	Varies by jurisdiction	2% of the Local Transportation Fund	Local MPO/RTPA

**Table 4.2
Summary of California Bicycle and Pedestrian Funding Programs**

Funding Programs	Modes (Bicycle, pedestrian-walkways, trails)	Trip Types (Commute/Transportation, Recreational)	Project Types (Construction, Non-construction, both)	Required Matching Funds	Deadlines	Available Annual Funding	Contact & Website Information
Local Sales Tax for Transportation	Both	Both	Both	None	Varies by jurisdiction	Varies by jurisdiction	Local MPO/RTPA
PRIVATE FUNDING							
Developer Impact Fees	Both	Both	Both	N/A	N/A	N/A	Local Jurisdiction
Bikes Belong Coalition	Bicycle	Both	Both	N/A	On going	Each project not to exceed \$10,000	www.bikesbelong.org
American Greenways Kodak Awards	Both	Both	Both	N/A	Early June	Each project not to exceed \$2,500	http://www.conservationfund.org/
Powerbar's Direct Impact on Rivers and Trails (DIRT)	Both	Both	Both	N/A	Early June	Project awards between \$1,000 - \$5,000	http://www.powerbar.com/
Recreational Equipment, Inc. (REI)	Both	Both	Both	N/A	On going	Each project not to exceed \$2,500	www.rei.com

4.4 MAINTENANCE COSTS

The annual maintenance cost for the primary system is projected to be approximately \$400,000 when it is fully implemented. All maintenance costs are associated with the bike paths, as the bike lanes and routes will be maintained as part of the regular roadway maintenance.

Class I bike path maintenance includes cleaning, resurfacing and re-striping the asphalt path, repairs to bridges and other structures, cleaning drainage system, trash removal, and landscaping (see checklist below). While this maintenance effort may not be major, compared to roadway or park maintenance it does have the potential to develop heavy expenses. For example, bikeways along waterways may experience damage from flooding and the use of tractors to clear waterways, requiring extensive rebuilding.

For purposes of estimating maintenance expenses for Class I bike paths, \$8,500 per mile per year is used based on information received from other bike path facilities in northern California. This cost covers all expenses, including labor, supplies, and amortized equipment costs, for weekly trash removal, monthly sweeping (with a mechanized sweeper), and biannual resurfacing/repair patrols. Underbrush and weeds should be cut once in the late spring and again in mid-summer.

Many of these maintenance items are dependent on the type and amount of landscaping and supporting infrastructure that is developed along the trail. It is recommended that a consistent maintenance procedure be developed to ensure, at a minimum, that the facility is safe for trail users. There should be a mechanism to identify, record, and respond to maintenance problems, and to keep written records of such actions.

Maintenance access on Class I bikeways should be achievable using standard City pick-up trucks on the bikeway itself. Sections with narrow widths or other clearance restrictions should be clearly marked. The path should be designed to accommodate emergency vehicles as well.

Maintenance costs for Class II bike lanes are not provided because it is assumed that sweeping and minor repairs will be provided as part of routine roadway maintenance. Additional costs should be

minimal because, in most locations, the roadway surface area to be maintained will be the same with or without bike lanes.

Table 4.3 - Bikeway Maintenance Check List and Schedule

Item	Frequency
Sign replacement / repair	1 – 3 years
Pavement marking replacement	1 – 3 years
Tree, shrub & grass trimming / fertilizing	5 months – 1 year
Pavement sealing / potholes	5 – 15 years
Clean drainage system	1 year
Pavement sweeping	Weekly – monthly / as needed
Shoulder and grass mowing	Weekly / as needed
Trash disposal	Weekly / as needed
Lighting replacement / repair	1 year
Graffiti removal	Weekly – monthly / as needed
Maintain furniture	1 year
Fountain / restroom cleaning / repair	Weekly – monthly / as needed
Pruning	1 – 4 years
Bridge / tunnel inspection	1 year
Remove fallen trees	As needed
Weed control	Monthly / as needed
Maintain emergency telephones, CCTV	1 year
Maintain irrigation lines	1 year
Irrigate / water plants	Weekly – monthly / as needed

Security

Enforcement on the Solano County Class I system will be provided by the local police departments. Existing vehicle statutes relating to bicycle operation will be enforced on Class II and III bikeways through the Police Department's normal operations. No additional manpower or equipment is anticipated for Class II and III segments.

Class I bike paths require special enforcement because in many cases they are not visible or accessible from streets, and they often directly abut private residences. One key aspect of enforcement is the hours of operation for Class I bikeways. It may be preferable to close some bike paths at night so that enforcement levels may be lowered.

Bike path under-crossings require special attention because they can be perceived as unsafe areas by some bicyclists, particularly after dark. It is recommended that any under-crossing over 50 feet in length be lighted, that all approaches to the under-crossing provide the bicyclist with a clear view all the way through the under-crossing, and that under-crossings be designed to eliminate blind spots or areas where people may sit off the bike path.

It is anticipated that the local city Police Department will have to be provided with special vehicles (such as trail bikes) for patrolling the bike paths. It is estimated that one (1) hour of additional police manpower is required for each 5 miles of bike path. Using this formula, the Class I bike paths proposed will eventually require 20 man-hours per day from the local Police Department. At this juncture, the Police Department may wish to recruit a bikeway specialist whose sole responsibility is patrolling the bikeway system.

4.5 MARKETING STRATEGY

This section addresses actions a local jurisdiction can take to increase awareness and use of the existing bikeway system. Increased commuter bicycling is often one of the goals of a local Trip Reduction Ordinance (TRO) and Transportation Demand Management (TDM) organization, aside from the department charged with implementing the proposed bikeway system itself. One of the first steps is to identify and contact those local organizations or departments which have mutual interests in promoting bicycling, whether it be a TDM group or health organization such as the American Lung Association. Not only will this coordination help in

gathering resources and support, but also assist or help in identifying innovative techniques that have proved successful.

Some common marketing techniques are described below.

BIKEWAY IDENTITY

A logo for the proposed bikeway system has been developed and could be placed relatively inexpensively on existing and new segments to raise the visibility of the effort. This identity should be used on all bikeway signs, brochures, maps, and other materials. The logo will help define the bikeway routes as a cohesive system rather than a series of disconnected routes. Directional, informational, and warning signs should conform to Caltrans Chapter 1000 and the Manual of Uniform Traffic Control Devices unless superseded by City guidelines.

MAPS AND BROCHURES

Solano County has produced and distributed over 30,000 bikeway maps. Its excellent BikeLinks maps are available on-line. The maps should continue to be distributed to all local bike shops, libraries, schools, and major employers.

Brochures on bikeway improvements and requirements are also effective education and marketing strategies. The City of Portland produces brochures on bicycle parking requirements for local employers and bicyclists alike. Other specialty brochures might cover steps neighborhoods and elementary schools can take to improve bicycling conditions, or types of incentive programs employers can offer to encourage employees to bicycle.

LICENSING

Requiring bicycles at schools to be licensed helps reduce theft by providing an identification number for the Police. It can also serve as a regular forum for providing education to young riders.

Recommendation: Consider establishing a bicycle-licensing program for school children.

CROSSING PROTECTION

These improvements should be targeted for all major intersections on the proposed bikeway network, and at locations where school children cross a busy street to gain access to their school.

Recommendation: *Install new pedestrian signals at locations where school children must cross arterials to access the school grounds. These signals may be activated by loop detectors or operate only in the morning and afternoon. In conjunction with these improvements or as an alternative, crosswalks should be enhanced by having a crossing guard present before and after school hours, reconstructing crosswalk with different paving material (such as brick), adding rippled warning pavement 100 feet from crosswalk, installing adequate overhead light standards, and providing warning signs and flashing yellow lights. Locations and types of signals and other improvements should be accomplished by the Public Works department in conjunction with their respective school districts.*

Recommendation: *Install detectors at all signalized intersections along the bikeway system as intersections are upgraded. Detectors should be located within the striped bike lane either along the curb or between the right-turn lane and through lane. Detectors should be installed so as to be triggered by bicycles: a stenciled emblem should identify location of trigger point. Where possible, pockets should be provided at intersections between the right turn only lane and the through lane. Signal detectors should be provided at major signalized intersections unless pre-timed signal coordination is in effect.*

SURFACE CONDITION

Estimated annual maintenance costs for bike lanes and bike paths are included in Task 4.2. These costs cover a level of maintenance to ensure that existing and future bikeways are safe for bicyclists to use.

Recommendation: *Adopt specific guidelines for all grates, railroad crossings, and other potential hazards to bicyclists that meet Caltrans, AASHTO, or other relevant guidelines. Bikeway surfaces should be void of all grates and drains (maximum groove one-half inch wide) where a bicycle wheel may slip or become lodged. Maximum vertical step will be three-quarters inch high. All railroad crossings will be at 90 degrees.*

Recommendation: *Initiate a bikeway improvement and maintenance log in the local Department of Public Works where all observed and recorded hazardous conditions are listed, and scheduled for replacement or repair. This includes all grates and railroad crossings that do not meet specific criteria. Each bikeway should be swept on an as needed basis. Obstructions and potholes should be repaired as soon as feasible after being reported. Set up a phone number for people to call and report bicycle facilities that need repair/attention.*

Recommendation: *Establish a volunteer maintenance program where the city organizes regular work parties and provides support. Bike paths may be “adopted” by corporations or clubs and maintained by them in exchange for a public acknowledgment.*

MULTI-USE TRAIL SAFETY

Conflicts between bicyclists and pedestrians, rollerskaters, and others is a major problem on some popular trail systems. The following recommendations are made to address this problem, along with other aspects of user safety.

Recommendation: *Local agencies should consider adopting policies in which, signs should be posted at all entrances of the trail to (a) prohibit motorized vehicles of any type, (b) posting bicycle speed limit (typically 15 mph unless otherwise posted), (c) requiring bicyclists to call out when passing slower bicyclists or pedestrians, and pass on left, (d) requiring non-bicyclists to use right-hand side of path and not obstruct bicyclists, (e) walk pets on unpaved shoulder (if available), and (f) prohibit bicyclists from riding more than two abreast. (unless otherwise posted)*

Recommendation: *Provide enforcement of rules by assigning police staff on horse, bicycle, or motorcycle. Use of volunteers for safety patrols may be useful in supplementing police service.*

Recommendation: *Develop and market a bicycle/pedestrian safety education kit to be available for businesses, employers, and schools. Establish and regularly update a resource guide, videos, maps, book, etc.*

SUPPORT FACILITIES AND PROGRAMS

Support facilities and programs are designed to supplement the proposed bikeway system, and to encourage more people to ride bicycles to work. The best method of encouraging people to ride bicycles rather than driving is to make visible improvements to the bikeway system. The proposed system of bicycle paths, lanes, and routes will have a dramatic impact on the landscape in Solano County. Increasing numbers of bicyclists will provide an added impact as the viability of bicycles as transportation becomes more widely accepted.

The following improvements and programs are recommended to aid in this process.

Recommendation: *The County and cities should expand their Bike to Work Day and Bike to Work Week; include additional activities and community members. Incorporate sponsors and a community recognition program.*

Recommendation: *Conduct a “Reclaim our Street” campaign. This would focus on driving behavior and traffic safety issues, and target motorists (e.g. information at parking garages, Public Service Announcements).*

ENVIRONMENTAL ASSESSMENT PROCESS

As part of this Countywide Bicycle Plan, several types of bikeway facilities have been recommended which may require a full EIR prior to implementation. The environmental assessment process consists of conducting an Initial Study on individual projects prepared by the lead agency (typically planning departments), identifying impacts of significance, and submitting the results as part of an application package for funding. If the project is funded and the Initial Study concluded there were no significant impacts (or they could be eliminated by changes to the project), there would be no further environmental work needed and a negative declaration (or mitigated negative declaration) filed.

Conversely, if findings of significant impacts were discovered, the local jurisdiction would have to initiate a formal Environmental Impact Report (EIR). Generally, EIR's are required whenever a proposed pathway is adjacent to or crosses a natural waterway or

wetland, or when a pathway traverses a residential neighborhood where there is controversy surrounding the project and concerns about crime and safety. If endangered species were found to exist along any of the proposed bike paths, a formal environmental impact report would be required with a strong possibility of a negative finding. A review of the Natural Diversity Study Database would be a first step to find this out.

Proper design and planning of the creek system would mitigate all but the most serious environmental concerns. Bike path negative impacts come from (a) construction, (b) people wandering off of the path into sensitive areas, (c) major cut and fill sections, (d) erosion, (e) safety, privacy, and security concerns, (e) effects of noise and lighting, (f) fire dangers, (g) flooding dangers, and (h) bridge abutments.

Some of these negative impacts can be addressed by low impact construction techniques, fencing, landscaping, location of path in channel and on banks, enforcement, maintenance, and lightweight breakaway bridge structures.

5.0 PUBLIC COMMENTS

Various opportunities for public and technical comments were provided throughout the entire planning process for development of this Plan. These included various meetings of the Solano Bicycle Advisory Committee, the STA Technical Advisory Committee, the STA Alternative Modes Subcommittee and the STA Board. A special Public Hearing was also held on October 2, 2003 at the STA offices. In addition, written comments were received until January 2004.

STA staff and the consultant incorporated most of the comments submitted during the public process. A few of the proposals were considered but not included in this Draft Plan because: 1.) There was no official support submitted from the local jurisdiction; 2.) The costs or impacts were considered too significant to implement and other projects were considered higher priority for potential ridership or funding; or 3.) The proposed route was too short of a segment to be shown on a countywide bicycle plan of this scale and nature and would be more appropriate for a city or local bicycle plan.

Attached is a list of the public comments

PUBLIC COMMENTS

Name	Date	Comment	Response	Addressed in Section
Paul Wiese Solano County	11-10-03	Page 8 – Add a new paragraph: “Bridge on Pleasants Valley Road (County): The County constructed a new bridge on Pleasants Valley Road at Pleasants Creek, to replace a narrow bridge that was destroyed in a storm. The new bridge has four foot shoulders suitable for a Class II bicycle lane. This is the seventh bridge that the County has constructed on Pleasants Valley Road in the past decade in an effort to eliminate some of the constrictions along the road.”	Edit incorporated	Introduction Page 10
		Page 13 (middle paragraph) – A sentence refers to progress as of 2000. This should be updated.	Paragraph removed	
		Page 24 (first paragraph) - Change "10 narrow bridges" to "8 narrow bridges and box culverts". Change "Five other bridges" to "Seven other bridges", and remove the word "recently" from the same sentence.	Edit incorporated	Page 31
		Page 25 (Existing Opportunities) - Cordelia Road should be removed from this list. Its ADT is over 4,000 and the plan proposes it for Class II facilities. Also, perhaps Lake Herman Road should also be removed from the list, since even though the ADT is less than 2,000, the plan is proposing it for Class II status.	Language removed	
		Page 69 – For planning purposes, use a cost of \$8 million.	Edit incorporated	Page 79
		Page 71 (third paragraph) – The path stays on the west side of Vanden Road from Leisure Town Road to Peabody Road. At that point, Vanden Road turns into Cement Hill Road, and the path moves to the south side at the signalized Peabody Road intersection.	Edit incorporated	Page 82
		Page 72 (third paragraph) – A sentence refers to progress as of 2000. This should be updated.	Edit incorporated	Page 83

Name	Date	Comment	Response	Addressed in Section
		Page 84 – Delete all references to “recreation”.	Edit incorporated	Page 95
		Page 85 – Change “six” to “seven reconstructed Pleasants Valley Road bridges”.	Edit incorporated	Page 95
		Page 90 – For planning purposes, use a cost of \$3 million.	Edit incorporated	Page 100
		Page 119 (last paragraph) – The text for preferred recommendation 8 is difficult to read.	Edit incorporated	Page 113
Map Comments				
		Delete the reference to Goodyear in the Benicia to Cordelia path. I suggest the path be only on Lopes Road.	The BAC maintained both routes	
		Show a bike bridge on the Green Valley Road bike path just south of Mason Road.		
		Peabody Road should be shown as an existing Class II path from Vacaville to Vanden Road.	Edit incorporated	
		Vanden Road from Leisure Town Road to Alamo Drive should be shown as a proposed, not an existing, Class II path.	Edit incorporated	
		If Gibson Canyon Road is to be Class II, the section of Cantelow Road from Gibson Canyon Road to Timm Road should be shown as proposed Class II.	Edit incorporated	
		On Pleasants Valley Road, the second bridge from the north should be moved close to the first bridge. A third bridge should be added near these two. The bridge south of Vaca Valley Road should be deleted. The bridge at the south end should be moved just south of Foothill Road (the first connection leading to Vacaville).	Edit incorporated	
		A note should be added to the plan as follows: “Note: The existing bikeways shown generally conform to the width standards for the class of bikeway represented. However, they may not always be signed or striped as bicycle facilities, and may not meet all standards for a path of the given class.”	Edit incorporated	

PUBLIC COMMENTS

Name	Date	Comment	Response	Addressed in Section
Glen Grant – BAC	11-19-03	Policies-		
		Add 1.5 Develop a transportation network with safe routes for bikes from anywhere to anywhere within Solano County so that bikes can be a realistic transportation alternative.	Objective 4.0 addresses this concern.	Goals, Objectives, and Policies page 4
		Add 1.6 Include provisions for bicycles with all new roads and road improvement projects.	Policy added as #3.5 under Objective 3.0	Goals, Objectives, and Policies page 4
		Add 1.7 Ensure that no road improvement, development, or other project impacting a bikeway worsens bicycle transportation. Where bikeways exist, they are to be maintained.	Policy added as # 3.6 under Objective 3.0	Goals, Objectives, and Policies page 4
		Add 1.8 Require that provisions be made for bicycle passage through all construction zones.	Policy added as # 6.7 under Objective 6.0	Goals, Objectives, and Policies page 6
		Policy 4.2 should be under Objective 1.0	Policy 4.2 was moved to Objective 9.0 and is now Policy 9.1	Goals, Objectives, and Policies page 7
		Delete Policy 4.5	Policy deleted	
		Add Policy 9.2 Encourage programs that provide financial incentives for bicycle transportation, such as tax incentives or employer subsidies to bicycle commuters.	Policy added using different language	Goals, Objectives, and Policies page 7
		Relocate paragraph on page 14 that describes the Benicia-Martinez Bridge	Paragraph relocated	
		Improve North Connector project description on page 15	Project description revised with current data	Relationship to existing Policies, Plans, & Standards Page 17

Name	Date	Comment	Response	Addressed in Section
		Please expand the information on Policy ACR 211	Description expanded	Relationship to existing Policies, Plans, & Standards, Page 15
		The last paragraph of section 1.2.3 on page 21 should be edited as follows “ ... the existing roadway ...”	Edit incorporated	Page 21
		Modify the first paragraph of Section 1.3.1 as follows “ ...surrounding counties and to identify policies that will support and encourage bicycle transportation.”	Edit incorporated	Methodology, page 22
		The first paragraph of section 1.3.2 states that there are no County bikeways connecting cities.	This was historically true until recent progress such as the Dixon to Davis Bike Route.	
		The last paragraph on page 23 misses the primary problem with motorists and bikes on Class III routes. The worst problem is when motorists do pass when there is insufficient space, such as when another car is approaching, forcing the bicyclist off the road.	Language revised	Existing Constraints page, 27
		Add Vanden Road and the roads in Suisun Valley to the list of roads on page 24 that insufficient width for the volume of bike and car traffic on them.	Section removed	
		The I-80/680/12 Interchange Project does not belong in the list of Existing Opportunities on page 25.	Removed	Page 29
		Take Lake Herman Road off the Existing Opportunities list on page 25.	Removed	Page 29
		On pages 27/28, discuss the available types of bike racks and which types are preferred.	New Bicycle Parking Information added	Page 35

Name	Date	Comment	Response	Addressed in Section
		On page 29, I would add that distance is the major barrier to bike transportation and the main reason multi-modal connections are needed.	Language revised	Page 32
		Add train stations to the list on page 30.	List amended	Page 33
		Change the sentence about the Ryer Island Ferry on page 30 to read as follows: "The Ryer Island Ferry, which transports passengers across Cache Slough north of Rio Vista, provides access for bicyclists to Ryer Island.	Language revised	Page 33
		There is no longer a ferry from Vallejo to Angel Island. Change the last sentence in paragraph 2 on page 30 to reflect this.	Language revised.	Page 33
		In chapter 2, I did not like the grouping of utilitarian and recreational bicycle trips together.	Census data only recognizes commute trips. Language revised	Chapter 2
		The list at the end of page 38 of future major developments is not comprehensive.	Language revised to include additional large-scale planned developments	Page 40
		Change last sentence of the first bullet under section 2.3 on page 41 to read as follows: "For example, on an arterial . . . while more experienced bicyclists usually prefer are still willing to ride in the few feet of pavement between vehicles and the street's curb, if there is at least a 14 or 15 foot wide curb lane.	Language revised	Page 58
		See the paragraph at the top of page 43. I disagree that serious adult road bicyclists are a small group. There are many bike clubs in the region with lots of members. When the clubs in the region put on century rides, they attract hundreds or thousands of riders.	Language revised	Page 59

Name	Date	Comment	Response	Addressed in Section
		<p>As noted before, I object to the grouping of shoppers with recreational riders as you have done in section 2.3.1. A person riding to the store or library, like a commuter, wants the shortest route possible. A person riding for recreation wants a pretty, low traffic route. The needs are different.</p>	<p>Language revised</p>	<p>Section 2.4 Pages 58-65</p>
		<p>On page 44, middle paragraph, note there are safety concerns with bike paths whenever the bike path crosses a road. Motorists are looking for crossing cars, but they are not looking for crossing bikes. Pedestrians can easily come to a stop at a road crossing but it is very inefficient and slow for a bicyclist to come to a stop at each road crossing. Bike paths need to be designed so that the bikes are obvious to motorists before they enter the roadway. Do not design the bike path so that it looks like a sidewalk. Make it obvious to motorists that it is a bike path. The new bike path along Hwy 12 is a good example of what not to do. It looks like a sidewalk. Motorists are very surprised when a bike comes along the path and crosses a road. A bicyclist is going to get hit by a car turning right off of Hwy 12 one of these days. This concern should be addressed at length in the Implementation section of the plan.</p>	<p>Comment noted. Trail / roadway conflicts identified</p>	<p>Page 61 & Section 4.1 Implementation</p>
		<p>Page 58, Design Standard 1.1, second paragraph should read as follows: “All existing roadways identified as bikeways on the Regional Bikeway Plan should be improved to provide a bike lane in each direction. If bike lanes are not feasible, then a 14-foot wide curb lane should be provided at a minimum.</p>	<p>Edit incorporated</p>	<p>Design recommendations Page 110</p>
		<p>Page 58, Design Standard 1.5, should read: “Loop detectors to detect bikes should be installed on the regional bikeway system at all arterial/arterial or arterial/collector signalized intersections. Minimum . . . “</p>	<p>Edit incorporated</p>	<p>Design recommendations Page 110</p>

PUBLIC COMMENTS

Name	Date	Comment	Response	Addressed in Section
		Add a comment about design standards for bike paths that addresses my note 28 above.	Comment noted	4.1 Implementati on strategies Page 109
		Under 3.3 on page 59, change the last sentence to read: “Each jurisdiction . . . review of new projects to ensure that bikeway design guidelines are being met for all projects, whether they are primarily bikeway projects or not.”	Comment noted	Page 111
		On page 60, I again object to grouping Secondary with recreational users. The shopping and school trips are more like work trips than like recreational trips.	Language revised	Page 73
		Page 60, Grade Separated Bikeways. Change the first two sentences to read: Where feasible In selected locations, Class I bikeways on grade separated rights-of-way should be implemented. These bikeways provide a higher degree of safety and recreational benefit than bikeways located on streets.” Bike paths are not necessarily safer and we do not want them everywhere, just where this plan calls for them.	Language revised	Page 72
		page 65, item 1 in the middle of the page – Add “or new development” after repaving.	Edit incorporated	Page 76

Name	Date	Comment	Response	Addressed in Section
		<p>The following comments relate to the Proposed Bikeway Facilities Map:</p> <ul style="list-style-type: none"> <li data-bbox="550 474 1049 667">• The map does not appear to reflect the recommendations of the recently completed Solano bikeway plan in terms of what it recommended for bikeways in the I-680/80/12 area. The routes recommended in that plan should be shown on this map. <li data-bbox="550 684 1049 1010">• Peabody Road has existing class II bike lanes. The one exception is the stretch in the City of Fairfield from the future bike path north of the Jefferson Parkway to the north City limits. Fairfield has taken out the class II bike lane in that one stretch so the plan should call for a Class II bike lane to be put back in that stretch, but show the rest of Peabody as having existing class II bike lanes. <li data-bbox="550 1026 1040 1161">• A portion of the Alamo creek bike path south of Alamo has been completed. Show a short stretch of about 500' as proposed just east of Butcher Road. <li data-bbox="550 1178 1024 1245">• The base map still shows railroad tracks that no longer exist. 	<p>Edits incorporated</p>	
		<p>Page 98 and 99. I suggest we say something about working with the local bicycle clubs to have them sponsor and/or teach adult and child education on safe bicycling.</p>	<p>Comment noted</p>	<p>Section 1.8 Bicycle Safety and Education Programs Page 44</p>
		<p>page 109. It is not clear who performs all these actions. Define what entity (City, county, STA) is to perform each action.</p>	<p>Comment noted</p>	
		<p>Page 115. See my earlier comments about design standards for Class I bike paths.</p>	<p>Comment noted</p>	

PUBLIC COMMENTS

Name	Date	Comment	Response	Addressed in Section
		Page 119. I do not understand Recommendations 7 and 8. We do not necessarily want bike paths along every creek and railroad. There are some stretches of creek or railroad where a bike path makes sense and other stretches where it does not. I suggest these recommendations be deleted.	Language removed	
		Page 120. Add a recommendation that a bike lane be provided on all streets with traffic too high for a class III bike route designation. In other words, put bike lanes on all arterials. This fits with my policy that we need to provide safe routes for bikes from anywhere to anywhere, not just to selected destinations.	Comment noted	
		page 125, Recommendation 12. Add the word "bike" in front of the word detectors.	Edit incorporated	Page 121
Jim Antone (YSAQMD)	11-03	The table of contents does not match the page numbers in the document.	The TOC has been updated	
		Change Cross State Bike Route Plan to Cross State Bike Route Study page 15.	Edit incorporated	Page 23
		Under Traffic and Air Quality Benefits (Section 2.0.1 on page 36) is there later mode choice information available from the 2000 Census? Also consider removal of "Air Quality" under Traffic and Air Quality Benefit since there is no mention of air quality benefit here.	Language revised. 2000 US Census is the best available data	
		Change SP Railroad to UP Railroad under third bullet on page 37.	Edit incorporated	Page 54
		Under Section 2.5 Planning Process on page 51, Change 2000 Update to 2003 Update and December 2000 to the appropriate month, 2003.	Edit incorporated	Section 2.6 Page 66
		Phase 1: Secondary /Recreational Routes on page 84 should be changed to Phase 2. This should also be changed in the table of contents.	Edit incorporated	Page 95

Name	Date	Comment	Response	Addressed in Section
		<p>Under the current phasing, it is clear that Phase 1 projects have a higher priority over Phase 2 projects. However, it is unclear in the plan what the priority is for each project within the phases. Should the projects be categorized as high, medium and low priority within the phases?</p>	<p>Comment noted. The BAC left implementation to the local jurisdiction</p>	
		<p>The key codes representing the existing and proposed bikeways on the map in Figure 9 are not compatible with black and white copies of the document since the codes all look alike. Also, Figure 9 should be labeled as Figure 9.</p>	<p>Comment noted. Maps have been revised to be readable in black and white</p>	
		<p>Project level maps, as provided in the previous Solano Bikeway Plan, are recommended for each project segment description from page 69 through 93.</p>	<p>Edit incorporated</p>	
Rob Powell	11-25-03	<p>Add Rio Vista BAC member to acknowledgments</p> <p>Page 2, under Quality of Life, add public health benefits</p> <p>Page 7, add 9.2 casual public bike rides in all parts of the county</p> <p>Page 9, include SR 37/29 interchange, new section of Bay Trail from Wilson Avenue to Broadway is under construction, also links Sacramento, Sonoma, Mini, and White Slough Trail</p> <p>Page 12, is 3,000' elevation correct?</p> <p>Page 12, 1.0.3 include the North Bay Corridor Study and the Cross State Bike Route Study</p> <p>Page 13, add. . . "or hiking", mountain biking and equestrian . . .</p>	<p>Edit incorporated</p> <p>Edit incorporated</p> <p>Contained in Policy 4.2</p> <p>Edit incorporated</p> <p>Yes</p> <p>Edit incorporated</p> <p>Edit incorporated</p>	<p>Acknowledgments page</p> <p>Page 2</p> <p>Page 10</p> <p>Page 23</p> <p>Page 21</p>

PUBLIC COMMENTS

Name	Date	Comment	Response	Addressed in Section
		Page 14, Bay Trail Plan also call for improvement of Bay Trail to Ridge Trail connections adjacent to SR 12 along Jameson Canyon, I-80, Mc Gary Road, I-680, Goodyear – Ramsey – Cordelia roads to Suisun City, Lake Herman Park and Hidden Brook	Edit incorporated	Page 21
		Page 16, The I-80 / I-680/ SR 12 interchange project – add “provide contiguous non-motorized routes through this area.”	Edit incorporated	Page 20
		Page 17, if Caltrans DD-64 is to be believed, they should not have signed the Sears Point Bridge as “Freeway” and prohibited bicycles and pedestrians from its use.	Comment noted	
		Page 58, add 1.5 loop or ‘camera’ detectors, and add 1.6 bicycle boulevard designation on important Class III routes	Edit incorporated	Page 110
		Page 59, 3.1 add “advanced information to middle school students.”	Edit incorporated	Page 111
		Page 62, include bullet for “unimproved trails may serve transportation need of mountain bikers.”	Edit incorporated	Page 74
		Page 70, why a cost of 1.4 million for a route that is in place and usable as is? Needs only proper signage and a new short trail connection from Paradise Valley and a trail to the end of Nelson Rd. to access Lyon Road and north side of I-80.	Comment noted	
		Page 73, change east from Cordelia to east from Green Valley Road.	Edit incorporated	Page 84
		Page 73, revise route description.	Edit incorporated	Page 84
		Page 74, Strike Cordelia, state Green Valley Road.	Edit incorporated	Page 85
		Page 74, note important interim route on Mariposa and Redwood: and Columbus Parkway and Georgia.	Edit incorporated	Page 85

Name	Date	Comment	Response	Addressed in Section
		Page 86, add “safety concerns with increased traffic, has a double blind hill and curve location at south end of lake.”	Language revised	Page 96
		Page 87, is also an important transportation route to Solano Community College and Napa County.	Edit incorporated	Page 97
		Page 89, a stop light would suffice at a fraction of the cost.	Comment noted	
		Page 95, All ferries I know allow bicycles, but need better protection from the elements.	Edit incorporated	Page 39
		Page 97, SCC offers a course in Mountain Biking.	Comment noted	
		Page 98, add “attendance boundaries” after environs. Also adult school and P.E. class.	Comment noted	
		Page 99, spell out BTP Update	Edit incorporated	Page 47
		Page 138, contents of section 4.6 and 3.7.3 should be together	Edit incorporated	Section 1.8 Page 44
		Page 143, for our information, what has not been considered?		
Robert Guerrero STA	1-20-04	The footer info for the table of contents differ from the rest of the text	Edit incorporated	Table of Contents
		Pg 3 Policy 1.0 should be 1.1	Edit incorporated	Page 4
		Pg 7 Policy 9.2, correct it to SNCI, should read Solano Napa Commuter Information (SNCI)	Edit incorporated	Page 8
		Pg 9, fourth bullet, "The Carquinez Bridge Bikeway , to be completed and opened in the spring of 2004, is'...	Edit incorporated	Page 10
		Pg 17, reference Fairfield's Solano Bikeway Extension Feasibility Study in the I-80/I-680/SR 12 and North Connector section	Edit incorporated	Page 20
		Pg 19, Cross State Bike paragraph last sentence, "The route follows the I-80 and I680 corridors as it makes'	Edit incorporated	Page 23

PUBLIC COMMENTS

Name	Date	Comment	Response	Addressed in Section
		Pg 31, Picture is showing up of bike lockers.	Comment noted	Page 36
		Pg 79 bike route from Admiral Callaghan to Solano Ave isn't showing	Map revised	
Ed Huestis, City of Vacaville	May 2004	Incorporate the Ulatis Creek, PG&E Easement, Southside Bikeway, and Centennial Bikeway in the Bicycle Plan Update	Routes were incorporated; Maps revised	
	August 2004	Pg 103, PG&E Easement Bike Path length is 1400 ft from Shady Glen Court	Correction made	
		Pg 104, Southside Bikeway is estimated at \$110,000	Correction made	
		Pg 105 Ulatis Creek Bike Path project length is 3,460 ft (.65 mile) for segments A to D	Correction made	
		Pg 106 Centennial Bikeway destination to Browns Valley 'Parkway' not Road	Correction made	
