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EXECUTIVE SUMMARY

PURPOSE

Bicycling and walking are affordable, healthy, sustainable, socially equitable, and fun forms of transportation. Many Mariposa County residents and visitors already enjoy walking or bicycling for transportation and recreational purposes. The Mariposa County Local Transportation Commission previously prepared a Bicycle Facilities Plan in 2006; this plan was never adopted by the Board of Supervisors. According to the California Streets and Highways Code, Sections 890 through 894.2, local agencies must complete a bicycle transportation plan to qualify for grant funds issued by the California Department of Transportation through the Bicycle Transportation Account (BTA). Conforming plans must be no more than five years old. To become eligible for BTA funding, the County is developing its first official Bicycle and Pedestrian Transportation Plan (BPTP).

The BPTP establishes goals, policies, implementation actions, and priorities for the development of bicycle and pedestrian facilities in Mariposa County. The ultimate goal of the BPTP is to increase the number of persons in Mariposa County that bike and walk for both utilitarian and recreational purposes by developing and maintaining an interconnected system of bicycle and pedestrian facilities.

DEVELOPMENT

The BPTP was developed through the Mariposa County Local Transportation Commission. Public participation was encouraged through two public workshops, held on February 2, 2011 and April 13, 2011, and through an online survey.

CONTENTS

The Bicycle and Pedestrian Transportation Plan includes eight chapters:

1. Introduction – discusses the project and setting and provides key definitions
2. Goals – sets forth the vision and objectives for the plan
3. Relationship to Other Plans – summarizes the policy context for bicycle planning throughout Mariposa County
4. Existing Conditions for Bicycling – examines existing levels of bicycle activity and existing bicycling infrastructure
5. Proposed Bicycle Projects – shows the proposed network of bicycle facilities and provides guidance for support facilities
6. Existing Conditions for Pedestrians – examines existing levels of walking, existing pedestrian infrastructure, and an assessment of pedestrian collisions
7. Proposed Pedestrian Projects – shows the proposed network of sidewalks
8. Implementation – includes cost estimates for proposed projects and guidance for next steps
9. Education, Encouragement, and Enforcement – describes programs to improve bicycle facility usage and safety
1. INTRODUCTION

PURPOSE

The Mariposa County Bicycle and Pedestrian Transportation Plan (BPTP) is intended to guide and influence bicycle and pedestrian infrastructure, policies, programs, and development standards to make bicycling and walking in Mariposa County more safe, comfortable, convenient, and enjoyable for all users. The ultimate goal of this plan is to increase the number of persons who bicycle or walk in Mariposa County for both utilitarian and recreational purposes.

BACKGROUND

In 2006, the Mariposa County Public Works Department developed a draft Bicycle Facilities Plan. The Board of Supervisors never officially adopted the Bicycle Facilities Plan. The 2011 Bicycle and Pedestrian Transportation Plan supersedes this plan.

CALIFORNIA BICYCLE TRANSPORTATION ACT

The Bicycle Transportation Account (BTA) is the primary state funding source for bicycling improvements. Caltrans allocates approximately $7 million in BTA funds annually. According to the California Streets and Highways Code, Sections 890 through 894.2 (known as the Bicycle Transportation Act), local agencies must complete a bicycle master plan to qualify for grant funds issued through the BTA. Conforming bicycle master plans must contain the minimum 11 key elements shown in Table 1 and must be no more than five years old.

<table>
<thead>
<tr>
<th>TABLE 1: CALIFORNIA BICYCLE TRANSPORTATION ACT (BTA) REQUIRED ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Required Bicycle Transportation Plan Elements per</strong></td>
</tr>
<tr>
<td><strong>the California Bicycle Transportation Act (1994)</strong></td>
</tr>
<tr>
<td><strong>Location Addressed within the Bicycle and Pedestrian</strong></td>
</tr>
<tr>
<td><strong>Transportation Plan</strong></td>
</tr>
<tr>
<td>A. Estimated number of existing and future bicycle commuters</td>
</tr>
<tr>
<td>Chapter 1</td>
</tr>
<tr>
<td>B. Map and description of land use and settlement patterns</td>
</tr>
<tr>
<td>Chapter 4, Figures 3A-3C</td>
</tr>
<tr>
<td>C. Map and description of existing and proposed bikeways</td>
</tr>
<tr>
<td>Chapter 4, Figures 3A-3C; Chapter 5, Figures 4A-4D</td>
</tr>
<tr>
<td>D. Map and description of bicycle parking facilities</td>
</tr>
<tr>
<td>Chapter 4, Figures 3A-3C</td>
</tr>
<tr>
<td>E. Map and description of multimodal connections</td>
</tr>
<tr>
<td>Chapter 4, Figure 2</td>
</tr>
<tr>
<td>F. Map and description of facilities for changing and storing</td>
</tr>
<tr>
<td>clothes and equipment</td>
</tr>
<tr>
<td>Chapter 4, Figures 3A-3</td>
</tr>
<tr>
<td>G. Description of bicycle safety and education programs</td>
</tr>
<tr>
<td>Chapter 9</td>
</tr>
<tr>
<td>H. Description of citizen and community participation</td>
</tr>
<tr>
<td>Chapter 1</td>
</tr>
<tr>
<td>I. Description of consistency with transportation, air quality,</td>
</tr>
<tr>
<td>and energy conservation plans</td>
</tr>
<tr>
<td>Chapter 2</td>
</tr>
<tr>
<td>J. Description of proposed bicycle projects and implementation priority</td>
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<tr>
<td>Chapter 5; Appendix A</td>
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<tr>
<td>K. Description of past expenditures and future financial needs for bicycle facilities</td>
</tr>
<tr>
<td>Chapter 4; Chapter 8</td>
</tr>
</tbody>
</table>

Source: Fehr & Peers, 2011
The bicycle component of this Bicycle and Pedestrian Transportation Plan includes each of the 11 key elements required by the Bicycle Transportation Act. Table 1 shows the location within the Bicycle and Pedestrian Transportation Plan that addresses each element.

EXISTING LEVELS OF BICYCLING AND WALKING

While Mariposa County is generally rural, bicycling and walking are viable modes of transportation within the County's communities. Communities such as Mariposa, Coulterville, and El Portal each have areas with higher density development. In some cases, residences are located close to commercial areas. Table 2 shows the existing percentage of home-work trips made by bicycling and walking in Mariposa County according to the United States Census 2000.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Home-Work Mode Split</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intracounty¹</td>
</tr>
<tr>
<td>Bicycling</td>
<td>1.7%</td>
</tr>
<tr>
<td>Walking</td>
<td>13.6%</td>
</tr>
</tbody>
</table>

Notes:
¹ Intracounty home-work trips account for residents of Mariposa County that work in Mariposa County
² Overall home-work trips account for all Mariposa County residents regardless of where they work
Source: 2000 Census Journey to Work

As shown in Table 2, the intracounty home-work bicycling and walking mode split are 1.7% and 13.6%, respectively. As expected, the overall home-work bicycling and walking mode splits are lower than the intracounty mode split because people are less likely to bicycle and walk to work when their destination is far away.

Home-work trips account for only a fraction of bicycling and walking trips. Trips for other purposes, such as school and shopping, are also commonly completed on foot.

Outside of the community areas, travelers are less likely to choose bicycling or walking as a mode of transportation. Because of the distance between origins and destinations, lack of sidewalks, lack of bike lanes, and automobile-oriented lifestyles, these areas see reduced levels of bicycling and walking.

The intracounty home-work mode split is likely affected by the populated areas of Yosemite National Park that occur within Mariposa County.

BICYCLE FACILITIES

Bicycle facilities can be classified into two types:

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

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

**Bike Path (Class I Bikeway)**

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

![Class I - Multi-Use Path](image)

**Bike Lane (Class II Bikeway)**

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

![Class II - Bike Lane](image)
Bike Route (Class III Bikeway)

Class III bikeways are on-street routes intended to provide continuity to the bikeway system. Bike routes are designated by signs or permanent markings and are shared by motorists. Many bike routes provide shoulders that can be used by bicycles or pedestrians.

Support Facilities

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

Class I Bike Path Amenities

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

Directional Signage

Directional signage can be used on all types of bikeways to direct bicyclists to other bikeways and major destinations, such as Mariposa or Yosemite National Park.

Shower and Locker Facilities

People are more likely to commute to work on bicycles if they have convenient access to showers and lockers; they are an important factor in encouraging regular commuting via bicycle. These types of bicycle support facilities are usually implemented as a component of new commercial building construction and are managed by the building owner; they are rarely publicly owned and operated.
Short-Term Bicycle Parking

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

The best placement for bike racks is close to a building’s entrance where it is easy to find.

Long-Term Bicycle Parking

Major employment sites, schools, and transportation terminals typically provide long-term bicycle parking in the form of bike lockers, bike cages, or bike rooms. Because only users are allowed access, these facilities provide higher security so bicyclists feel comfortable leaving their bicycles for long periods. Electronic bicycle lockers offer a keyless alternative where a user pays for secure parking time.

Bike lockers at the YARTS park-and-ride in Mariposa

PEDESTRIAN FACILITIES

Common pedestrian facilities include sidewalks, marked crosswalks, and curb ramps. There are several different types of crosswalk enhancements that aim to improve safety for pedestrians.

Sidewalks

There are two types of sidewalks: adjacent and bifurcated.
Adjacent Sidewalks

Adjacent sidewalks are next to vehicle lanes.

Bifurcated Sidewalks

Bifurcated sidewalks are separated from vehicle lanes by a landscaped buffer.

Marked Crosswalks

Marked crosswalks feature striping and other enhancements to delineate a street crossing for pedestrians. There are two types of crosswalks: controlled and uncontrolled. Drivers are required to stop at a controlled crosswalk regardless of whether or not a pedestrian is present (such as at a stop sign). At uncontrolled crosswalks, drivers are legally required to yield to pedestrians but do not have to stop when a pedestrian is not present. Pedestrians should exhibit caution whenever crossing the street, regardless of if the crosswalk is unmarked, marked, controlled, or uncontrolled.

Marked crosswalks feature varying types of striping.
Curb Ramps

Curb ramps provide wheelchair access to sidewalks. The yellow truncated domes alert blind pedestrians as they approach a street crossing.

Providing two curb ramps per corner directs blind pedestrians straight through a crosswalk

RULES OF THE ROAD

For Bicyclists

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

- **Ride on the right side of the roadway**
- **Obey traffic control devices (signs, signals)**
- **Yield to cross traffic**
- **Yield when changing lanes**
- **Yield to pedestrians in crosswalks**
- **Maintain speed positioning** – the general principle is that the slowest traffic stays right. Bicycles are typically slower than auto traffic and are therefore usually found on the right side of the road (or within a bike lane, if provided). According to the CVC, bicycles may leave the right side of the road or a bike lane:
  - When overtaking and passing another bicycle or vehicle proceeding in the same direction.
  - When preparing for a left turn at an intersection or into a private road or driveway.
  - When reasonably necessary to avoid conditions (including, but not limited to, fixed or moving objects, vehicles, bicycles, pedestrians, animals, surface hazards, or substandard width lanes) that make it unsafe to continue along the right-hand curb or edge.
  - When approaching a place where a right turn is authorized.
If in any circumstance a bicyclist feels that it is unsafe to be passed in the curb lane, they are allowed to “take the lane”; common causes include debris near the curb, trash cans, parked cars, or narrow lane widths.

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

For Pedestrians

The California Vehicle Code (CVC) Division 11 contains the rights and duties of pedestrians in Sections 21949 through 21971. The following is a summary of major laws for pedestrians; additional laws exist that are not included in this section:

- The driver of a vehicle shall yield the right-of-way to a pedestrian crossing the roadway within any marked crosswalk or within any unmarked crosswalk at an intersection
- Whenever any vehicle has stopped at a marked crosswalk or at any unmarked crosswalk at an intersection to permit a pedestrian to cross the roadway the driver of any other vehicle approaching from the rear shall not overtake and pass the stopped vehicle
- No pedestrian may walk upon any roadway outside of a business or residence district otherwise than close to his or her left-hand edge of the roadway
- A pedestrian may walk close to his or her right-hand edge of the roadway if a crosswalk or other means of safely crossing the roadway is not available or if existing traffic or other conditions would compromise the safety of a pedestrian attempting to cross the road

PUBLIC PARTICIPATION

Public participation was an important element in the development of the Bicycle and Pedestrian Transportation Plan. The County solicited input regarding existing conditions and desired locations for improvement. The process relied on the “Advocacy Planning” approach. The goal of this approach is to develop a community-support vision for bicycle and pedestrian improvements in Mariposa County. The planning process included the following public outreach activities:

- Public Workshops – the County hosted two public workshops in Mariposa on February 2, 2011 and on April 13, 2011.
  - February 2, 2011: The purpose of this workshop was to gather feedback from Mariposa County stakeholders and residents on existing barriers to bicycle and pedestrian travel and desired improvements. Attendees marked desired improvements on maps and addressed concerns directly with staff from the County and the consultant team. Over 50 residents attended this workshop. Comment cards were available at the workshop.
  - April 13, 2011: The purpose of this workshop was to present the draft proposed networks of bikeway and pedestrian facilities. Comments were received and the draft networks were revised accordingly. Over 30 residents attended this workshop. Comment cares were available at the workshop.
Residents recommend roadways for bicycle facilities at the February 2, 2011 public workshop

Residents review the proposed bicycle facilities at the April 13, 2011 public workshop

- Online survey – residents who were unable or did not wish to attend the public workshop completed an online survey. Over 60 people completed the online survey. The survey asked the following questions:
  - What do you like about bicycling in Mariposa County?
  - What keeps you from bicycling in Mariposa County?
  - What can the County do to improve conditions for bicyclists?
  - What do you like about walking in Mariposa County?
  - What keeps you from walking in Mariposa County?
  - What can the County do to improve conditions for pedestrians?
  - What other comments do you have for the Plan?
  - To help us track geographic diversity of survey responses, please provide your home zip code.
2. RELATIONSHIP TO OTHER PLANS

This section summarizes the policy context for bicycle and pedestrian transportation in Mariposa County. The policies in the existing plans lay the groundwork for the Bicycle and Pedestrian Transportation Plan.

COUNTRYWIDE PLANS

The Bicycle and Pedestrian Transportation Plan is consistent with plans for transportation facilities in Mariposa County.

2006 Bicycle Facilities Plan

In 2006, the Mariposa County Public Works Department developed a draft Bicycle Facilities Plan. The Board of Supervisors never officially adopted the Bicycle Facilities Plan. The 2011 Bicycle and Pedestrian Transportation Plan supersedes this plan.

County of Mariposa General Plan

The County of Mariposa General Plan includes several goals and policies relevant to bicycling and walking:

- **Goal 9-1:** All development shall have safe and adequate access.
- **Goal 9-3:** Create a bicycle, pedestrian and equestrian system for recreational and transportation use.
  - Policy 9-3a: Adopt and implement the Bicycle, Pedestrian, and Equestrian Facilities Plan
- **Goal 13-3:** Increase public access to trails and off-road areas to provide greater opportunities for “in-County” visitor experience
  - Policy 13-3a: Work with other land management agencies to establish access routes and trailheads while protecting environmentally sensitive areas.
- **Goal 13-4:** Create visitor access to communities and points of interest.

Regional Transportation Plan

The Regional Transportation Plan (RTP) provides a long-range transportation vision for Mariposa County for the years 2008 through 2028. The non-motorized transportation section includes lists of short-range and long-range non-motorized projects in Table 8 and Table 9, respectively. Additionally, the RTP includes several goals and policies relevant to bicycling and walking:

- **Goal 1 Highways:** Develop an adequate, safe, and efficient regional roadway system to accommodate vehicular travel demand for a twenty-year time frame, while maintaining the rural character of Mariposa County.
  - Policy 1.2: Develop tourist transportation corridors and routes to provide high capacity and safety standards, for both vehicles and pedestrians.
• **Goal 4 Non-Motorized**: Develop an adequate, safe, and efficient regional system of bicycle, pedestrian, and equestrian facilities to accommodate and encourage non-motorized travel demand.
  
  o **Policy 4.1**: Develop and construct a regional bicycle, pedestrian, and equestrian system to complement existing transportation facilities.
    
    ▪ **Objective 4.1.1**: Update the Mariposa County Bicycle, Pedestrian, and Equestrian Facilities Plan on a periodic basis, as required.
    
    ▪ **Objective 4.1.2**: In Town Planning Areas, construct, improve, and maintain the pedestrian circulation system to provide safety and drainage control.

**Mariposa County Improvement Standards**

The Mariposa County Improvement Standards include design standards, standard drawings, and zoning requirements for bicycle and pedestrian facilities:

**Design Standards**

• **Section 11.5, Item B**: Shoulder Improvements, Curb Returns
  
  o (3) Curb returns shall have a twenty-five (25) foot minimum radius.
    
    ▪ (a) Handicap ramps are required at all intersections, and other locations, as required, for continuity with other pedestrian ways. Where existing conditions do not warrant pedestrian crossing, appropriate pavement and curb construction joints shall be provided to allow future ramp installation.
    
    ▪ (b) The handicap ramps shown in Standard Drawings are approved standard designs as set forth by the State Building Code (Title 24 of California Administrative Code) for handicap access onto sidewalks.
    
    ▪ (c) Grooving: Where the ramp is located in the center of a curb return, it shall be grooved in a herringbone pattern. Also, the level edge at the top of the ramp required a groove detail as shown. Grooving shall be done with a pre-made tool meeting the groove specification. Ramps not located in a curb return do not require grooving on the ramp itself. In such cases, the surface of the ramp shall have a transverse broomed surface texture, rougher than the surrounding sidewalk.

• **Section 11.5, Item C**: Shoulder Improvements, Sidewalks – see Design Standards
  
  o (1) Minimum unobstructed sidewalk width shall be four (4) feet as shown on drawing R-20. Sidewalks shall be a minimum of 4 feet in width. Some commercial sidewalks may be required to be a minimum of 6 feet in width, as shown on drawing R-18.
    
  o (2) No obstructions, such as power poles, signs, fire hydrants, or surface mounted transformer boxes shall be placed within the normal sidewalk width.

• **Section 11.6, Item A**: Bikeways
The developer shall adhere to the requirements in “Caltrans Planning and Design Criteria for Bikeways.” All bikeways shall be striped and/or signed as required by the engineer.

- **Section 11.7, Item A: Paths and Trails, Right-of-Ways**
  - (1) Minimum pedestrian path right-of-way shall be ten (10) feet wide.
  - (2) Minimum equestrian trail right-of-way shall be twenty (20) feet wide.
  - (3) Lesser right-of-way widths shall be allowed in limited instances where it can be shown that safety will not be impaired, and that maintenance can still be performed.
  - (4) Rights-of-way shall be located to allow reasonable construction of trails or paths.

- **Section 11.7, Item B: Paths and Trails, Construction**
  - (1) Trails shall be constructed in accordance with established trail construction guides and as approved by the Engineer.
  - (2) Grade of paths shall be maintained under five (5) percent where handicapped use is likely.

**Standard Drawings**

- **Standard Drawing R-18** shows the standards for sidewalks adjacent to and separated from the curb. In both cases, the drawing shows a minimum sidewalk width of four feet in residential areas and six feet in commercial areas.

- **Standard Drawing R-19** shows the standards for separated sidewalks or paths. The required width is four or six feet.

- **Standard Drawing R-20** shows the standards for handicap ramps, including the groove detail.

- **Standard Drawing R-23** shows the appropriate sign placement in relation to sidewalks separated from the curb and sidewalks adjacent to the curb.

**Zoning**

- **Section 17.88.030 – Minimum setback standards:** The setback standards for a CG-1 zone shall be as specified in the approved PLAN but in no case shall the requirements be less stringent than the following:
  - A. One hundred (100) feet from all property lines. This requirement shall be reduced to fifty (50) feet when the adjacent parcels are of the same zoning.
  - B. When adjacent to or traversed by a public road, setbacks from the roadway for all buildings requiring a building permit shall be the greater of:
    - 1. One hundred eighty (180) feet from the centerline of the dedicated public right of way; or
2. One hundred eighty (180) feet from the centerline of the currently maintained public right of way.

- C. Setbacks shall be fifty (50) feet between structures requiring building permits.
- D. Parking or development: There shall be no parking or development within the setback area except as follows:
  - 1. Wells and utilities;
  - 2. Parking within setback areas contiguous to public roads

- **Section 17.88.030 (B)** Circulation: Both vehicular and pedestrian traffic shall be incorporated into the PLAN so that safe and efficient circulation is obtained. Streets and driveway areas shall be kept to a minimum consistent with safe and efficient circulation.

- **Section 17.92.030 – Minimum setback standard:** The setback standards and parking or development within the setbacks for the CG-2 zone shall be as specified for the CG-1 zone listed in Section 17.88.030 of this Title. (Ord. 704 Sec.1, 1988).

**STATEWIDE INITIATIVES AND LEGISLATION**

The BTMP is consistent with statewide programs that will affect the implementation of bicycle transportation facilities.

**Assembly Bill 32 and Senate Bill 375**

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

**Assembly Bill 1358**

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

**Traffic Signal Legislation**

Mariposa County does not currently have any existing or planned traffic signals; however, the County should be familiar with this legislation.

**Assembly Bill 1581**

Assembly Bill 1581 provides direction that new actuated traffic signal construction and modifications to existing traffic signals include the ability to detect bicycles and motorcycles. It also calls for the timing of actuated traffic signals to account for bicycles.
Caltrans Traffic Operations Policy Directive 09-06

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

Caltrans Deputy Direction (DD) 64-R1

Deputy Directive 64-R1 was issued to ensure that travelers of all ages and modes can move “safely and efficiently along and across a network of ‘complete streets.’” The directive establishes responsibilities for Caltrans staff to safely accommodate bicyclists, pedestrians, and transit users.
3. GOALS

The following are the goals of this plan.

ALTERNATIVE TRANSPORTATION GOALS

Goal AT1: Provide a viable alternative to driving within and between the County’s communities

Goal AT2: Encourage a multimodal transportation system

Goal AT3: Develop a safe, accessible transportation system for all users

Goal AT4: Secure resources from all available sources to fund ongoing bicycle and pedestrian improvements, education, and encouragement

BICYCLE GOALS

Goal B1: Develop a continuous, interconnected system of bikeways providing reasonably direct, enjoyable, and safe routes within and between neighborhoods and communities throughout the County

Goal B2: Develop a bikeway system that reflects community interests and incorporates aesthetics and the rural characteristics of the area

Goal B3: Provide a comfortable environment for bicyclists by enhancing safety

Goal B4: Maintain and construct bicycle facilities in a manner that promotes safety, increases convenience, and minimizes lifetime costs

Goal B5: Improve accessibility to transit and other transportation modes

Goal B6: Provide necessary bicycle system support facilities

PEDESTRIAN GOALS

Goal P1: Provide a connected network of pedestrian routes in the County and its communities that are, as much as possible, accessible to a variety of users

Goal P2: Prioritize pedestrian projects that provide access to key destinations such as schools, parks, and senior centers

Goal P3: Incorporate the construction of pedestrian facilities with new developments

Goal P4: Review collision data annually and work to reduce the rate of pedestrian collisions
4. EXISTING CONDITIONS FOR BICYCLING

This summary of existing conditions describes the status of bicycle facilities in Mariposa County.

EXISTING BICYCLE FACILITIES

Mariposa County is mostly rural, but does have developed communities such as Mariposa, Coulterville, and El Portal. A Class I bike path exists on the west side of the town of Mariposa. The bike path runs parallel to SR 140, beginning at Stroming Road, near Jessie Street and terminating just south of Sixth Street. The total length of the existing bike path is approximately 0.2 miles. Figure 1 displays the BPTP study area and the existing Class I bike path.

Mariposa County does not have any existing Class II bike lanes or Class III bike routes; however, it is legal to bicycle on all public roads in Mariposa County. Many of the County’s rural roads are popular for bicycling, including:

- Bear Valley Road
- Ben Hur Road
- Buckeye Road
- Carleton Road
- Greeley Hill Road
- Guadalupe Fire Road
- Hornitos Road
- Indian Gulch Road
- Old Highway
- Silva Road
- Triangle Road
- Yaqui Gulch Road

State highways are also popular for bicycling, especially where no alternative roads exist (for example, State Route 140 between Mariposa, El Portal, and Yosemite National Park).

PAST EXPENDITURES ON BICYCLE FACILITIES

Based on the existing network, an estimate of past expenditures is possible. The existing Mariposa Creek Trail is approximately 0.2 miles long. Based on current cost estimates for Class I bike paths that range between $800,000 and $1,500,000 per mile of path, the present value of the Mariposa Creek Trail is $160,000 to $300,000. Other roadway investments, such as the widening of paved shoulders, surface repair, and roadway overlays have also benefited bicyclists.
Figure 1 - Study Area and Existing Bicycle Facilities

- Existing Class I Bike Path
- Mariposa Community
- Yosemite National Park
- County Boundary

Legend:
- Green line: Existing Class I Bike Path
- Light grey: Mariposa Community
- White: Yosemite National Park
- Dark grey: County Boundary
SUPPORT FACILITIES

Support facilities include bicycle parking, showers and changing space, and secure long-term storage for bicycle gear. In general, very little short-term bicycle parking is available in Mariposa County.

Places of employment in Mariposa County do not typically provide showers, changing space, or long-term storage for bicycle gear. However, certain places of employment such as fire departments and roadway maintenance facilities are likely to have showers and changing space that employees could use for bicycle commuting purposes. It is likely that many places of employment allow employees to store bicycles in their workspace. Bicycle lockers are available at the Yosemite Area Regional Transportation System (YARTS) park-and-ride facility on Joe Howard Street in Mariposa.

MULTIMODAL CONNECTIONS

The primary public transportation providers serving Mariposa County are Mariposa Public Transit and YARTS. Mariposa Public Transit provides dial-a-ride service throughout the County. YARTS provides fixed route service between Merced and Yosemite National Park with multiple stops in Mariposa County.

YARTS allows bicycles on buses, provided there is space to accommodate them. Figure 2 displays the existing transit routes and stop locations.

EXISTING AND FUTURE LAND USE PATTERNS

In general, the Mariposa landscape is mountainous with long, windy, rural roads between developments. Development is primarily rural residential with clusters of commercial and public facilities, such as schools, parks, and community centers.

Other land uses within the community that generate bicycle trips include employment centers, public facilities (parks, open space areas) and government facilities. Figures 3A-3C shows these existing facilities.

Future land use patterns in the County are expected to develop in a manner similar to the existing land use pattern. The General Plan land use diagram shows the majority of land classified as Agriculture/Working Landscape or Natural Resources. The maximum density of dwelling units for these designations is one dwelling unit per 40 acres of land.

Other designations include Residential, Planning Study Areas, Town Planning Areas, and isolated pockets of Rural Economic land use. The County’s General Plan discusses the importance of maintaining the rural and scenic character of the County and avoiding urban sprawl.
Figure 2 - Transit Routes and Station Locations

- YARTS Stop Location
- YARTS Highway 140 Route
- Mariposa Community
- Yosemite National Park

Map showing routes and station locations in the Mariposa County area.
Figure 3A - Existing Land Uses and Public Facilities
Mariposa
Figure 3B - Existing Land Uses and Public Facilities
Coulterville and El Portal

Coulterville

El Portal

YARTS Stop Location
Other Land Uses
School
YARTS Highway 140 Route
Park
Yosemite National Park

Mariposa County
Bicycle & Pedestrian Transportation Plan
Figure 3C - Existing Land Uses and Public Facilities

Other Areas

Bootjack

Cathey's Valley

Hornitos

Greeley Hill

Lake McClure

YARTS Stop Location
Other Land Uses
School
YARTS Highway 140 Route
Shopping Center
Park
BICYCLE ACTIVITY CENTERS

Certain activity centers such as elementary, intermediate, and high schools, recreational areas, parks, and community centers (commercial, financial, and general employment) require special emphasis because of their potential to generate bicycle travel.

Currently, Mariposa County has 13 schools: seven elementary schools (grades K-6 or K-8), one middle school, three high schools, and two alternative schools. Enrollment at these schools ranges from five to 650 students. About half of the schools serve fewer than 100 students. Two of the County’s largest schools, Mariposa County High School and Mariposa Elementary School, are located within the town of Mariposa.

Popular parks include:

- Mariposa Park
- Mariposa County Fairgrounds
- Coulterville Park
- Catheys Valley Park
- El Portal
- Town of Mariposa

School grounds often provide parks and playgrounds. Recreational areas are located throughout the County. Yosemite National Park generates bicycle travel from both recreational bicyclists and commuter bicyclists who live outside the park.

BICYCLE SAFETY

Preparers of the Bicycle and Pedestrian Transportation Plan reviewed bicycle collision data to identify the nature and type of collisions that have occurred.

The California Highway Patrol Statewide Integrated Traffic Records System (SWITRS) provided collision data. This data represents all reported bicycle/vehicle-related collisions occurring in Mariposa County during the five-year period from November 2005 through October 2010. Collisions that occur on off-street paths are not included in the SWITRS data. There were three reported bicycle-involved collisions in the five-year study period. Table 3 displays the year, severity, primary collision factor (PFC) and location of each collision.

<table>
<thead>
<tr>
<th>Year</th>
<th>Severity</th>
<th>Primary Collision Factor</th>
<th>Area/Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2007</td>
<td>Fatality</td>
<td>Town of Mariposa</td>
</tr>
<tr>
<td>2</td>
<td>2007</td>
<td>Injury</td>
<td>El Portal</td>
</tr>
<tr>
<td>3</td>
<td>2008</td>
<td>Injury</td>
<td>Town of Mariposa</td>
</tr>
</tbody>
</table>

Source: SWITRS Collision Data
Collisions that involve bicycles, whether they involve cars, other bicycles, or pedestrians, are generally underreported. Bicycles collisions may have occurred that were not included as part of the SWITRS data.

**PUBLIC INPUT**

At the February 2, 2011 public workshop, attendees marked desired improvements on maps and addressed concerns directly with staff from the County and the consultant team. They also participated in an exercise where they voted for their preferred types of bicycling infrastructure improvements. The most preferred infrastructure improvements were:

- **Bikeways**
  - Class I bike paths
  - Class II bike lanes
  - Class III bike routes
- **Short-term bike parking**
  - Inverted “U” rack
  - Swerve rack
- **Bike lockers**

Residents who were unable or did not wish to attend the public workshop completed an online survey. The following questions registered several commonly themed responses (shown in italics).

- **What do you like about bicycling in Mariposa County?**
  - The scenery
  - Exercise
  - Environmental benefits
- **What keeps you from bicycling in Mariposa County?**
  - Safety concerns due to traffic
  - Insufficient shoulder width for bicyclists
  - Not enough paths or trails
  - Quality of pavement is poor
- **What can the County do to improve conditions for bicyclists?**
  - Add roadway width for use by bicyclists
  - Add more paths and trails
  - Education for motorists and bicyclists
5. PROPOSED BICYCLE PROJECTS

This chapter describes the proposed bikeway network in Mariposa County and the criteria used to develop and prioritize facilities. The proposed bikeway network was established with input from the public at two public workshops. This chapter also discusses proposed bikeway support facilities.

PROPOSED BICYCLE PROJECTS

The proposed bikeway network was developed to increase utilitarian and recreational bicycling in Mariposa County by all levels of bicyclists. The proposed bikeway network includes Class I bike paths, Class II bike lanes, and Class III bike routes that connect to destinations likely to generate or attract bicycle travel. Table 4 shows the length of the proposed bikeway network by bikeway classification. Figures 4A-4D show the proposed Mariposa County bikeway network.

<table>
<thead>
<tr>
<th>Bikeway Classification</th>
<th>Existing Mileage</th>
<th>Proposed Mileage</th>
<th>Total Mileage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I Bike Paths</td>
<td>0.2</td>
<td>4.4</td>
<td>4.6</td>
</tr>
<tr>
<td>Class I Bike Paths or Trails</td>
<td>0</td>
<td>76.0</td>
<td>76.0</td>
</tr>
<tr>
<td>Class II Bike Lanes</td>
<td>0</td>
<td>11.0</td>
<td>11.0</td>
</tr>
<tr>
<td>Class III Bike Routes</td>
<td>0</td>
<td>229.0</td>
<td>229.0</td>
</tr>
<tr>
<td>Total</td>
<td>0.2</td>
<td>320.4</td>
<td>320.6</td>
</tr>
</tbody>
</table>

Source: Fehr & Peers, 2011

As shown in Table 4, the total mileage of the proposed bikeway network is 320.6 miles.

Class I Bike Paths

Class I bike path projects include:

- Mariposa Creek Trail – the existing segment of the Mariposa Creek Trail runs along the Mariposa Creek and is 0.2 miles in length between 8th Street and 6th Street. Plans are currently in place to extend the trail northwards to Joe Howard Street. The proposed segments of the trail would connect it to SR 49 to the north and to the Mariposa Fairgrounds to the south. The total length of the proposed Mariposa Creek Trail is 3.2 miles.

- Merced River Trail – would use portions of the abandoned Yosemite Valley Railroad grade along the Merced River to connect Merced County to Yosemite National Park. The proposed network considers the Merced River Trail in three segments: between Yosemite National Park and Bull Creek Road, between Bull Creek Road and SR 49, and between SR 49 and Merced County. The total length of the proposed Mariposa Creek Trail is 62.3 miles. As proposed, the Merced River Trail would either be a paved, Class I bike path or an aggregate, multi-use trail.
Figure 4A - Proposed Bicycle Facilities

Legend:
- **Green** Class I Bike Path
- **Red** Class I Bike Path or Trail
- **Purple** Class II Bike Lane
- **Orange** Class III with Multi-Use Shoulder
- **Golden Yellow** Class III Signage Only
- **Golden Yellow** Class III Signage Only Once Paved
- **White** Mariposa Community
- **Gray** Yosemite National Park

Map showing various bicycle facilities in a region with cities and highways labeled. The map includes symbols for different types of bicycle facilities, with specific locations labeled along the routes.
Figure 4B - Proposed Bicycle Facilities
Mariposa

- Class I Bike Path
- Class I Bike Path or Trail
- Class II Bike Lane
- Class III with Multi-Use Shoulder
- Class III Signage Only
- Other Land Uses
- School
- Shopping Center
- Park
- Mariposa Community
Figure 4C - Proposed Bicycle Facilities
Coulterville and El Portal

Coulterville

El Portal

Other Land Uses
School
Class I Bike Path or Trail
Class II Bike Lane
Class III with Multi-Use Shoulder
Class III Signage Only
Park
Mariposa Community
Yosemite National Park

MARIPOSA COUNTY
BICYCLE & PEDESTRIAN TRANSPORTATION PLAN
Figure 4D - Proposed Bicycle Facilities

Other Areas

Bootjack

Cathey's Valley

Actual alignment to be determined in feasibility study

Hornitos

Greeley Hill

Lake McClure

Other Land Uses
School
Class I Bike Path
Class I Bike Path or Trail
Class II Bike Lane
Class III with Multi-Use Shoulder
Class III Signage Only
Shopping Center
Park
• Catheys Valley Bike Path – would connect Catheys Valley Elementary School to Catheys Valley Park. The total length of the proposed Catheys Valley Bike Path is 1.4 miles.

• Indian Gulch - Merced Bike Trail – would connect Mariposa County to Merced. The total length of the proposed Indian Gulch - Merced Bike Trail is 13.7 miles. As proposed, the Indian Gulch - Merced Bike Trail would either be a paved, Class I bike path or an aggregate, multi-use trail.

Per the Caltrans Highway Design Manual (HDM), Chapter 1000 Bikeway Planning and Design, the minimum width for a Class I bike path is eight feet. However, the preferred width for Class I bike paths in Mariposa County is 10-12 feet. Where use by equestrians is expected, additional non-paved width should be provided on one side of the path.

Class II Bike Lanes

Class II bike lane projects include:

• SR 49 within the Coulterville, Mariposa, and Bootjack community areas
• SR 132 within the Coulterville community area
• SR 140 within the Mariposa community area

Per the California HDM, Chapter 1000 Bikeway Planning and Design, the minimum width for a Class II bike lane varies between four and five feet. In general, four feet is the minimum where there is no vertical curb, where a bike lane is between a through lane and a right-turn lane, or where a bike lane is between a through lane and a parallel parking lane; five feet is the minimum where there is vertical curb.

Additionally, the California HDM specifies that “bike lanes are not advisable on long, steep downgrades, where bicycle speeds greater than 30 miles per hour are expected”. There are several long grades on both SR 49 and SR 140 where bicycle speeds greater than 30 miles per hour would be expected; on these grades, a bike lane should only be implemented on the uphill side of the roadway.
**Class III Bike Routes**

The proposed bikeways network includes two types of Class III bike routes: a Class III bike route with a multi-use shoulder and a Class III bike route with signage only.

In general, Class III bike routes with a multi-use shoulder are proposed on State Highways that connect major destinations in Mariposa County and carry vehicles at high speeds; a multi-use shoulder would be beneficial for both bicyclists and pedestrians. The desired width of the multi-use shoulder varies between four and five feet: four feet where there is no vertical curb, five feet where there is vertical curb. Class III bike routes with signage only are proposed on low traffic volume rural County roadways that are used mostly by recreational bicyclists.
PRIORITIZATION

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

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

Each prioritization criteria was given an equal weight of 20 percent; projects were ranked into three tiers of priority based on these criteria: short-, mid-, and long-term. Appendix A provides complete lists of short-, mid-, and long-term projects. Appendix B provides a summary of the prioritization methodology.

SUPPORT FACILITIES

The County should adopt bicycle parking requirements within the Zoning Code to require bicycle parking and shower/locker facilities with new development.

Bicycle Parking

Bicycle parking requirements should, at minimum, include:

- Minimum required short-term and long-term bicycle parking spaces. Model ordinances are included in the 2010 California Green Building Standards Code and the Association of Pedestrian and Bicycle Professionals’ Bicycle Parking Guidelines; an example of an ordinance based on these two documents is:
  - **Short-term bicycle parking.** If the project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 50 feet of the visitors’ entrance, readily visible to passers-by, for five percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack.
  - **Long-term bicycle parking.** For buildings with over ten tenant-occupants, provide secure bicycle parking for five percent of motorized vehicle parking capacity, with a minimum of one space. Acceptable parking facilities shall be convenient from the street and may include:
    1. Covered, lockable enclosures with permanently anchored racks for bicycles
    2. Lockable bicycle rooms with permanently anchored racks; and
    3. Lockable, permanently anchored bicycle lockers

- Specifications for short-term bicycle parking:
  - Bicycle parking space size (eight feet long, three feet wide)
o Bike rack type (should be U-lock compatible)

o Bike racks should be securely anchored to the surface or structure with fixtures that cannot be removed using common tools

- Bicycle parking placement guidelines (safe, visible, and convenient location)

**Shower/Locker Facilities**

Showers and clothes lockers are important for bicycle commuters with a rigorous commute or whose job requires formal office attire. Academic studies show shower and locker facilities at places of employment can be a factor in encouraging commuting to work by bicycle. Employees who exercise on their lunch breaks can also benefit from these facilities. While simpler end-of-trip facilities may be more feasible, consideration should be given to requiring shower and locker facilities in all developments with 100 or more employees. Although few developments with 100 or more employees currently exist in Mariposa County, such a requirement proactively addresses this issue for future development.

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

Shower and locker facilities should be included as a requirement for new large employers as part of the County development code, similar to the zoning ordinance of Palo Alto, California. Palo Alto’s zoning code, as shown in Table 5, represents national best practices for the provision of showers at commercial buildings.

<table>
<thead>
<tr>
<th>Uses</th>
<th>Gross Floor Area of New Construction (ft²)</th>
<th>Showers Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical, Professional, and General Business Offices, Financial Services, Colleges and Universities, Business and Trade Schools, Research and Development, General Business Services, and Manufacturing</td>
<td>0-9,999</td>
<td>No requirement</td>
</tr>
<tr>
<td></td>
<td>10,000-19,999</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>20,000-49,999</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>50,000 and up</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: *Zoning Ordinance (Title 18)*, Palo Alto, California

Palo Alto’s standards are easily applied to new developments since these requirements are derived from building square footage.

**MULTIMODAL CONNECTIONS**

YARTS should continue to allow bicycles on buses. When possible per vehicle length regulations, YARTS should provide bike racks on their buses.
6. EXISTING CONDITIONS FOR PEDESTRIANS

This summary of existing conditions describes the status of pedestrian infrastructure in Mariposa County.

EXISTING PEDESTRIAN FACILITIES

During the kick-off meeting, Fehr & Peers worked with County staff to determine the County roadways likely to have pedestrian infrastructure. Following this meeting, Fehr & Peers performed an inventory of existing sidewalks, marked crosswalks, and curb ramps using Global Positioning System (GPS)-linked video. Based on this inventory, Figures 5A-5C show the locations of existing pedestrian infrastructure in Mariposa County. Marked crosswalks are provided both at intersections and at mid-block locations; however, many marked crosswalks need maintenance. Curb ramps are typically provided only on newer sidewalk segments. The inventory includes additional detail beyond that illustrate in the maps, including the style of crosswalk striping and the curb ramp design (i.e. whether the ramp is directional or diagonal and if it has truncated [detectable] domes).

PEDESTRIAN SAFETY

Preparers of the Bicycle and Pedestrian Transportation Plan reviewed pedestrian collision data to identify the nature and type of collisions that have occurred.

The California Highway Patrol Statewide Integrate Traffic Records System (SWITRS) provided the collision data. This data represents all reported pedestrian-vehicle collisions occurring in Mariposa County during the five-year period from November 2005 to October 2010. Table 6 summarizes the collision data by year and severity of collision. Two fatalities were reported during the five-year period. Most of the collisions (80 percent) resulted in some form of injury. Figures 6A and 6B show the locations of these pedestrian collisions.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Collisions</th>
<th>Non-Injury Collisions</th>
<th>Injury Collisions</th>
<th>Fatal Collisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>7</td>
<td>1</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>2007</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>2008</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2009</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>1</td>
<td>12</td>
<td>2</td>
</tr>
</tbody>
</table>

Minor collisions that involve pedestrians, whether with vehicles or bicycles, are generally underreported. Additionally, collisions that occur on off-street paths and trails are not included in the SWITRS data.

The SWITRS data was also analyzed for the Primary Collision Factors (PCFs). Table 7 shows the most common PCFs for pedestrian collisions in Mariposa County.
Figure 5A - Existing Pedestrian Infrastructure
Mariposa
Figure 6B - Pedestrian Collisions: November 2005 - October 2010
Mariposa

Bike Accident - Killed
Ped Accident - Non Injury
Ped Accident - Injury
Ped Accident - Killed
Mariposa Community
As shown in Table 7, the most common Primary Collision Factors (PCFs) were drivers making improper turns or operating at an unsafe speed.

Perhaps a more telling source of information in the SWITRS data than the PCFs is the Pedestrian Action variable, which describes what the pedestrian was doing immediately before the collision occurred. Table 8 shows the most common Pedestrian Actions for pedestrian collisions in Mariposa County.

As shown in Table 8, the most common pedestrian actions were Walking In Road, Including Shoulder; and Walking, Not in Road. These actions preceding a collision suggest that additional pedestrian infrastructure, especially when paired with education and enforcement efforts, may improve pedestrian safety in Mariposa County.
PUBLIC INPUT

At the February 2, 2011 public workshop, attendees marked desired improvements on maps and addressed concerns directly with staff from the County and the consultant team. They also participated in an exercise where they voted for their preferred types of pedestrian infrastructure improvements. The most preferred infrastructure improvements were:

- Sidewalks (both adjacent and bifurcated)
- Enhanced crosswalk striping
- Curb ramps
- Advanced stop bars

Workshop participants also completed an exercise where they answered the question “What are the issues for pedestrians in Mariposa County?” Of the six options available for selection, the following were the two most common:

- I would walk more if sidewalks were available and better connected
- I don’t feel safe walking

Residents who were unable or did not wish to attend the public workshop completed an online survey. The following questions registered several commonly themed responses (shown in italics).

- What do you like about walking in Mariposa County?
  - The scenery
  - Exercise
  - Convenience

- What keeps you from walking in Mariposa County?
  - Not enough paths or trails
  - Safety concerns due to traffic
  - Not enough sidewalks
  - Insufficient shoulder width for pedestrians
  - Difficult to cross the street

- What can the County do to improve conditions for pedestrians?
  - Add more paths and trails
  - Add more sidewalks
  - Add roadway width for use by pedestrians
  - Improve crosswalks
7. PROPOSED PEDESTRIAN PROJECTS

This chapter describes the proposed pedestrian projects in Mariposa County and the criteria used to develop and prioritize facilities. The proposed pedestrian projects were established with input from the public at two public workshops and engineering judgment.

PROPOSED PEDESTRIAN PROJECTS

Two project categories were selected for this plan: sidewalk completion projects and infrastructure enhancement projects.

The maps in Figures 7A-7C show the proposed sidewalk networks in Mariposa County communities. The maps illustrate existing sidewalks and recommended sidewalks to complete the network. The extent of the network was determined based on public input.

Only one non-sidewalk network project is proposed: crosswalk enhancements (such as bulbouts and pedestrian refuge islands) on SR 49 / SR 140 in Mariposa.

The proposed bikeway network includes 103.1 miles of Class III bike routes with a multi-use shoulder. In general, Class III bike routes with a multi-use shoulder are proposed on State Highways that connect major destinations in Mariposa County and carry vehicles at high speeds; a multi-use shoulder would be beneficial for both bicyclists and pedestrians.

PRIORITIZATION

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

- Directly accesses key destinations (schools, parks, commercial centers, transit stops, etc.)
- Closes a critical gap
- Serves an immediate safety need
- Improves access for the disabled
- Fundability

Each prioritization criteria was given an equal weight of 20 percent; projects were ranked into three tiers of priority based on these criteria: short-, mid-, and long-term. Appendix A provides complete lists of short-, mid-, and long-term projects. Appendix B provides a summary of the prioritization methodology.
Figure 7A - Proposed Pedestrian Infrastructure
Mariposa

Curb Ramp
- Other Land Uses
- School
- Marked Crosswalk
- Sidewalk Present
- Proposed Sidewalk
- Shopping Center
- Park
- Mariposa Community

Mariposa County Bicycle & Pedestrian Transportation Plan
Figure 7B - Proposed Pedestrian Infrastructure
Coulterville and El Portal

Coulterville

El Portal

- Curb Ramp
- Other Land Uses
- School
- Marked Crosswalk
- Sidewalk Present
- Proposed Sidewalk
- Park
- Mariposa Community
8. IMPLEMENTATION

COST ESTIMATES

Table 9 contains a unit cost summary for constructing the proposed bikeway and pedestrian facilities. These cost estimates are based on costs experienced in other California and western United States communities and recent cost estimates for projects that were awarded grant funding. These cost estimates should only be used to develop generalized construction cost estimates and project prioritization. In some cases, both a low-end and high-end cost estimate are provided; low-end cost estimates usually apply where little grading or demolition is necessary. More detailed estimates should be developed through feasibility analysis, preliminary engineering, and design.

<table>
<thead>
<tr>
<th>Facility / Item Type</th>
<th>Cost</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class I Bike Paths or Trails</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unpaved Bike Trail</td>
<td>$120,000</td>
<td>Per Mile</td>
</tr>
<tr>
<td>Class I Bike Path (Paved)</td>
<td>$800,000 - $1,500,000</td>
<td>Per Mile</td>
</tr>
<tr>
<td><strong>Class II Bike Lanes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class II Bike Lane (Add Stripe)</td>
<td>$4,900 - $8,800</td>
<td>Per Mile</td>
</tr>
<tr>
<td>Class II Bike Lane (Restripe Roadway)</td>
<td>$210,000</td>
<td>Per Mile</td>
</tr>
<tr>
<td>Class II Bike Lane (Widen Roadway)</td>
<td>$740,000 - $3,100,000</td>
<td>Per Mile</td>
</tr>
<tr>
<td><strong>Class III Bike Routes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class III Bike Route with Multi-Use Shoulder (Widen Roadway)</td>
<td>$370,000 - $1,550,000</td>
<td>Per Mile</td>
</tr>
<tr>
<td>Class III Bike Route with Signage Only</td>
<td>$340</td>
<td>Per Mile</td>
</tr>
<tr>
<td>Class III Bike Route Directional Signage</td>
<td>$1,120</td>
<td>Per Roadway</td>
</tr>
<tr>
<td><strong>Pedestrian Facilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sidewalks, Curb, and Gutter</td>
<td>$70</td>
<td>Per Linear Foot</td>
</tr>
<tr>
<td>Accessible Ramp</td>
<td>$3,700</td>
<td>Each</td>
</tr>
<tr>
<td>Pedestrian Refuge Island or Bulbouts (Pair)</td>
<td>$10,000</td>
<td>Each</td>
</tr>
</tbody>
</table>

Source: Fehr & Peers, 2011
Applying the generalized unit costs to the proposed bikeway and pedestrian networks, it is possible to estimate the total cost of the proposed bikeway and pedestrian network. Table 10 presents a summary of the total system costs by facility type.

### TABLE 10: CONCEPTUAL CONSTRUCTION COST ESTIMATE SUMMARY

<table>
<thead>
<tr>
<th>Improvement Type</th>
<th>Proposed Length</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bikeway Facilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class I Bike Paths</td>
<td>4.4 miles</td>
<td>$5.1 million - $9.5 million</td>
</tr>
<tr>
<td>Unpaved Trails</td>
<td>62.3 miles</td>
<td>$10.8 million</td>
</tr>
<tr>
<td>Class II Bike Lanes</td>
<td>11.0 miles</td>
<td>$8.9 million - $37.3 million</td>
</tr>
<tr>
<td>Class III Bike Routes with Multi-Use Shoulder</td>
<td>103.1 miles</td>
<td>$54.9 million - $230.1 million</td>
</tr>
<tr>
<td>Class III Bike Route with Signage Only</td>
<td>125.9 miles</td>
<td>$89,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td>$79.8 million - $287.8 million</td>
</tr>
<tr>
<td><strong>Pedestrian Facilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sidewalks</td>
<td>52,200 feet</td>
<td>$7.3 million</td>
</tr>
<tr>
<td>Other Improvements</td>
<td>--</td>
<td>$159,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td>$7.5 million</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>$87.3 million - $295.3 million</td>
</tr>
</tbody>
</table>

Source: Fehr & Peers, 2011

As shown in Table 10, the estimated total capital cost for the proposed system of bikeway and pedestrian facilities is between $87.3 million – $295.3 million.

**CLASS I BIKE PATHS OR TRAILS**

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

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

Following a feasibility assessment, the County can either fund project design and construction or pursue grant funding.
CLASS II BIKE LANES

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

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

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

CLASS III BIKE ROUTES

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

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

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

Signage can also be used to display distances to major destinations.

BIKE PARKING

Bike parking can be implemented by the County at County buildings, schools, and parks. Bike parking would also be beneficial at businesses throughout Mariposa County, especially in the community of Mariposa. The cities of Sacramento and Fresno have both developed custom bike racks that reflect community landmarks. In Fresno, the Tower District Marketing Committee developed a program through which local businesses can donate or dedicate a rack for $250. Mariposa could benefit from such a program to implement bike parking throughout the community; the racks could feature a local landmark such as the Mariposa County Courthouse or Half Dome. Grant funding can also be used to acquire and install bike parking.

Tower District bike racks in Fresno, CA
Source: City of Fresno

SIDEWALKS

Per the proposed sidewalk network maps, sidewalks should be required as individual parcels develop. However, most of the proposed sidewalks are located on streets that are unlikely to incur significant further development. For these segments, the County can either fund project design and construction or pursue grant funding. When pursuing grant funding, multiple sidewalk segments should be grouped into a single grant application. Grant applications should include enough sidewalk segments to significantly improve conditions for pedestrians while maintaining a reasonable cost (a cost that has historically been awarded by the grant and for which the County can meet any matching requirements).
SHORT-TERM PROJECT IMPLEMENTATION

High-priority, short-term projects for Mariposa County include

- Class I bike path or trail projects:
  - Extend Mariposa Creek Trail south of existing trail to Mariposa County Fairgrounds
  - Extend Mariposa Creek Trail north of existing trail to SR 49
  - Class I bike path or trail between Catheys Valley Elementary School and Catheys Valley Park

- Class II bike lanes on SR 49 in Mariposa between SR 140 (south junction) and SR 140 (north junction)

- Class II bike lanes on SR 49 in Mariposa between SR 140 (north junction) and Mari Way

- Class III bike route with multi-use shoulder on Foresta Road between Yosemite National Park maintenance facility and El Portal Road

- Class III bike route signage for all proposed bike routes in the County

- Pedestrian projects
  - Sidewalks on SR 49 / SR 140 between Jones Street and 3rd Street (both sides)
  - Sidewalks on Jones Street between SR 140 and 6th Street (both sides)
  - Sidewalks on Bullion Street between Jones Street and 1st Street (both sides)
  - Sidewalks on 8th Street between Jessie Street and Mariposa High School (both sides)
Table 11 shows the next steps for the County to achieve the implementation of high-priority projects.

<table>
<thead>
<tr>
<th>Project</th>
<th>Next Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mariposa Creek Trail</td>
<td>Apply for Caltrans Transportation Planning Grant for feasibility study.</td>
</tr>
<tr>
<td></td>
<td>Study should determine proposed right-of-way for trail, how to cross</td>
</tr>
<tr>
<td></td>
<td>SR 140, and how to cross SR 49 to connect to the Mariposa County</td>
</tr>
<tr>
<td></td>
<td>Fairgrounds</td>
</tr>
<tr>
<td>Catheys Valley Bike Path</td>
<td>Apply for Caltrans Transportation Planning Grant for feasibility study</td>
</tr>
<tr>
<td>Class II bike lanes in Mariposa on SR 49 and</td>
<td>Assess feasibility of adding bike lanes without adding roadway width</td>
</tr>
<tr>
<td>SR 140</td>
<td>and apply for Bicycle Transportation Account grant; if roadway width is</td>
</tr>
<tr>
<td></td>
<td>required, first conduct feasibility study</td>
</tr>
<tr>
<td>Class III bike route with multi-use</td>
<td>Assess feasibility of adding multi-use shoulder on at least one side of</td>
</tr>
<tr>
<td>shoulder on Foresta Road</td>
<td>Foresta Road; if significant grading or retaining walls are required,</td>
</tr>
<tr>
<td></td>
<td>apply for feasibility study grant</td>
</tr>
<tr>
<td>Class III bike route signage</td>
<td>Apply for Bicycle Transportation Account Grant for signage/wayfinding</td>
</tr>
<tr>
<td></td>
<td>plan and project construction</td>
</tr>
<tr>
<td>Sidewalk projects</td>
<td>Apply for Safe Routes to School (State or Federal) grant for sidewalks</td>
</tr>
<tr>
<td></td>
<td>within ½ mile of Mariposa Elementary School</td>
</tr>
</tbody>
</table>

Source: Fehr & Peers, 2011

**BICYCLE AND PEDESTRIAN ADVISORY COMMITTEE**

Through the public workshops and online survey, several Mariposa County residents indicated that they would volunteer their time to improve conditions for bicyclists and pedestrians. Several cities and counties in California have established a Bicycle and Pedestrian Advisory Committee (BPAC) to assist staff with the implementation of bicycle- and pedestrian-related projects and programs. A BPAC is typically facilitated by city or county staff, meets once every one to two months, and is made up of residents appointed by an elected official.

**PEDESTRIAN FACILITY DESIGN GUIDANCE**

**Crosswalks**

A uniform crosswalk policy that specifies different treatments for crosswalks at controlled (stop-controlled) and uncontrolled marked crosswalks is beneficial for pedestrians. While standard crosswalk striping is typically sufficient at controlled locations, high-visibility striping (such as “ladder” striping) is preferable at uncontrolled locations where motorist yielding is required, as ladder striping improves visibility for motorists. Consistent crosswalk striping policies passively alert pedestrians and motorists to uncontrolled crosswalks.
A standard marked crosswalk with two parallel stripes – standard crosswalks are appropriate at stop or signal-controlled locations

Ladder crosswalks should be prioritized for use at uncontrolled locations

The first step in identifying candidate marked crosswalk locations at an uncontrolled crossing (without a stop sign or signal) is to identify the places people would like to walk ("pedestrian desire lines"). These places are affected by local land uses (homes, schools, parks, commercial establishments, etc.) and the location of transit stops. This information forms a basis for identifying pedestrian crossing improvement areas and prioritizing such improvements, thereby creating a convenient, connected, and continuous walking environment.

The second step is identifying the locations safest for people to cross. Of all road users, pedestrians have the highest risk because they are the least protected. National statistics indicate that pedestrians represent 14 percent of all traffic incident fatalities, yet walking accounts for only three percent of total trips. Pedestrian collisions occur most often when a pedestrian is attempting to cross the street at an intersection or mid-block location.¹

Several major studies of pedestrian collision rates at marked and unmarked crosswalks have been conducted. In 2002, the Federal Highway Administration (FHWA) published a comprehensive report on the relative safety of marked and unmarked crossings.² In 2006, another study was completed that further assists engineers and planners in selecting the right treatment for marked crosswalks based on studies of

1. Pedestrian Crash Types, A 1990's Information Guide, FHWA. This paper analyzed 5,076 pedestrian crashes that occurred during the early 1990s. Crashes were evenly selected from small, medium, and large communities within six states: California, Florida, Maryland, Minnesota, North Carolina, and Utah.
These studies represent best practice guidance on when to mark an uncontrolled crosswalk and how to enhance the crosswalk where needed (on higher volume, higher speed, wider roadways).

Several Mariposa County residents indicated that Mariposa’s crosswalks are in need of improvement; however, very few residents are in favor of traffic signal installation. The following are examples of preferred non-signal pedestrian safety treatments for uncontrolled locations. Further engineering studies should be completed to determine if candidate treatments are appropriate for a specific location.

### Corner Bulbouts

Corner bulbouts extend the curb and sidewalks further into the roadway, shortening the length of the crosswalk. They act as a traffic calming device by narrowing the effective width of the roadway. Because they extend into the roadway, often past parallel-parked vehicles, they improve visibility for pedestrians. Corner bulbouts can be constructed with reduced curb radii and to accommodate ADA improvements, such as directional curb ramps.

### Pedestrian Refuge Island

Raised islands are placed in the center of the roadway separating opposing lanes of traffic with cutouts or ramps for accessibility along the pedestrian path. Median refuge islands are recommended where right-of-way allows and conditions warrant.

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In-Roadway Warning Lights

Both sides of a crosswalk are lined with pavement markers, often containing an amber LED strobe light. The lights may be push-button activated or activated with passive pedestrian detection.

The County should assess similar jurisdiction’s experiences with In-Roadway Warning Lights’ effectiveness and maintenance before installing In-Roadway Warning Lights.

Stutter Flash (Rectangular Rapid Flashing Beacon)

The Stutter Flash (RRFB) is an enhancement of the flashing beacon that replaced the traditional slow flashing incandescent lamps with rapid flashing LED lamps. The RRFB may be push-button activated or activated with passive detection.

This treatment is not currently approved for use in California, but has provisional approval for use at the Federal level because of recent studies suggesting its high level of effectiveness.

Sidewalks

Based on the feedback received at public workshops, Mariposa County residents generally prefer, bifurcated sidewalks, which are separated from vehicle lanes by a landscaped buffer. However, they require more right-of-way than adjacent sidewalks, which are next to the vehicle lanes. Where possible, new sidewalks should be separated from vehicle lanes by a landscaped buffer; adjacent sidewalks should be used where a landscaped buffer is not possible.

Wider sidewalks can accommodate more pedestrians and further buffer pedestrians from vehicles. Where possible, strive to install new sidewalks at a minimum width of five feet. In busy areas such as downtowns and school areas, sidewalks should be wider.

Meandering sidewalks, as opposed to straight sidewalks, should be avoided since they are inconvenient for pedestrians and are challenging for disabled users.
Curb Ramps

Providing two curb ramps per corner, each that points directly into the crosswalk, improves access for blind pedestrians. When installing new curb ramps, strive to install two ramps per corner where possible. The City of Sacramento’s curb ramp design standards are a best practice.

FUNDING

Bicycle and pedestrian infrastructure and programs can be funded either directly through the County or through various competitive grant programs.

Federal and State Programs

The majority of public funds for bicycle and pedestrian projects are derived through a core group of federal and state programs. Federal funds from the Surface Transportation Program (STP), Transportation Enhancements (TE), and Congestion Mitigation Air Quality (CMAQ) programs are allocated to the County and distributed accordingly.

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

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

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

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

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

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

The California Office of Traffic Safety (OTS) administers the General OTS Grant opportunities. Pedestrian safety is a priority area for grant funding. Funding can be used for certain law enforcement equipment, for signage (vehicle speed feedback signs), and for outreach materials and campaigns.

The Highway Safety Improvement Program (HSIP) is a core federal-aid program that aims to reduce traffic fatalities and serious injuries on public roads. Caltrans administers the program in California and received $74.5 million for the 2010/11 Federal Fiscal Year. HSIP funds can be used for projects such as bike lane or sidewalk projects on local roadways, improvements to Class I multi-use paths, or for traffic...
calming measures. Applications that identify a history of incidents and demonstrate their project’s improvement to safety are most competitive for funding.

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

**Regional and Local Funding**

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

New policies at the federal level have resulted in a series of programs that promise to provide increased funding in the coming years for bicycle projects. The HUD-DOT-EPA Interagency Partnership for Sustainable Communities has generated a series of new grant programs to-date, including Urban Circulator grants, TIGER grants, and Sustainable Communities Planning grants. DOT Secretary Ray LaHood recently announced a new DOT policy initiative, indicating “well-connected walking and bicycling networks [are] an important component for livable communities.”
Table 12 shows the applicability of these various funding sources to project, planning efforts, and programs proposed in this plan.

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Bicycle Projects</th>
<th>Pedestrian Projects</th>
<th>Other Projects</th>
<th>Planning and Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Class I Bike Path</td>
<td>Class II Bike Lane</td>
<td>Class III Bike Route</td>
<td></td>
</tr>
<tr>
<td>Surface Transportation Program (STP)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Transportation Enhancements (TE)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Congestion Mitigation Air Quality (CMAQ)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Local Transportation Fund (LTF)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>California Safe Routes to School (SR2S)</td>
<td>●</td>
<td>·</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Federal Safe Routes to School (SRTS)</td>
<td>●</td>
<td>·</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>California Bicycle Transportation Account (BTA)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>California State Parks Recreational Trails Program</td>
<td>●</td>
<td>·</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Proposition 84 Sustainable Communities Planning Grant and Incentives Program</td>
<td>·</td>
<td>·</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Caltrans Transportation Planning Grants</td>
<td>·</td>
<td>·</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>California Office of Traffic Safety (OTS) Grants</td>
<td>·</td>
<td>·</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Highway Safety Improvement Program (HSIP) Grants</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Land and Water Conservation Program</td>
<td>●</td>
<td>·</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

Notes:
- Includes non-pavement elements such as signal equipment, vehicle speed feedback signs, police equipment, or crossing guard equipment
- ● Funding source is applicable
- · Funding source is potentially applicable
- ○ Funding source is not applicable

Source: Fehr & Peers, 2011
9. EDUCATION, ENCOURAGEMENT, AND ENFORCEMENT

In addition to implementing bicycle and pedestrian facilities, programs aimed at education, encouragement, and enforcement can increase the number of people who bike and walk in Mariposa County.

No formal education, encouragement, or enforcement programs currently exist in Mariposa County. The purpose of this chapter is to identify potential programs that could be implemented in the County.

EDUCATION PROGRAMS

Education programs seek to reduce collisions and help people feel safe and comfortable while biking or walking. These programs include elements that help motorists understand the rights of bicyclists and pedestrians. Simultaneously, education campaigns should target the general public and specific groups that have unique education needs or play a greater role in perpetuating collisions and other dangerous situations. Key target audiences include students, children and families, senior citizens, and drivers.

School Programs

Basic bicycling and walking skills and safety courses can be incorporated into school curriculums. Often, these programs are facilitated by a local volunteer or by a member of the local police force (such as the Sheriff’s department or the California Highway Patrol).

Public Service Announcements

Public service announcements (PSAs) are an important part of creating bicycling and walking awareness, as they can effectively reach the public via TV, radio, Internet, or print media and reinforce other education and outreach messages. A well-produced public service message can be memorable and effective. The County could develop a PSA campaign with messages that encourage residents to bike or walk or that educate residents on bicycling and walking safety.

Online Bicycle Maps

The County should provide existing bicycle network maps on their Web page for residents to use as a trip-planning resource. Additionally, the County could print pocket-sided maps of bicycle facilities. The maps could be used by locals to plan their bicycle trips or alternatively could be used as a marketing piece to attract tourist bicycling in the County. Map printing typically costs $2-$3 per map in addition to the cost to prepare the map digitally. The maps could be printed with educational information, including hand signals, bike lighting, and safety.

Share the Road Campaign

Share the Road campaigns serve as a reminder to all transportation system users – bicyclists, pedestrians, and motorists included – that everyone is a legitimate user of the roadway and that the roadway right-of-way system must be shared between user types. The County could initiate a Share the Road campaign that features education opportunities focused on adult bicyclists, pedestrians, and motorists.
ENFORCEMENT PROGRAMS

The County should also work with the Sheriff and California Highway Patrol (CHP) to conduct enforcement campaigns intended to improve bicyclist and pedestrian safety. Sample enforcement programs include the following.

Targeted Moving Violations

Decreasing moving violations, committed by motorist, bicyclists, and pedestrians alike, is critical to improving safety and encouraging all roadway users to share the road. The County should work with the Sheriff and CHP to develop targeted enforcement efforts or sting operations. Advertising campaigns help the targeted violation efforts reach a wider audience.

Moving violations by motorists that affect bicyclists and pedestrians include:

- Speeding
- Passing without sufficient clearance
- Driving in the bike lane
- Right-turning in front of bicyclists
- Failing to signal
- Double parking
- Failing to yield to pedestrians at a crosswalk

Moving violations by bicyclists and pedestrians include:

- Running stop signs
- Failing to signal
- Wrong-way riding
- Riding without lights at night
- Failing to wear a helmet (if under 18 years of age)
- Jaywalking

Radar Speed Signs

Radar speed signs feature a changeable message sign linked to a radar unit; the signs display the vehicle’s actual speed as the vehicle approaches the sign. Radar speed signs can be mounted permanently to a pole (where they are powered by hard wire or a solar unit) or alternatively they can be mounted to a trailer (also known as a “speed trailer”) and deployed on a temporary basis. Studies in the United States have shown that radar speed signs are an effective way to slow traffic. The County should consider installing additional radar speed signs within school zones in partnership with the school districts. Speed trailers should be deployed to different parts of the County regularly to remind drivers County-wide to obey the speed limit.
Sting Operations

Bicycle or pedestrian sting operations target motorists who dangerously violate the right-of-way of bicyclists or pedestrians, and especially motorists who drive within the bike lane, pass without sufficient clearance, right-turn in front of bicyclists, or fail to yield to pedestrians in a crosswalk. Such operations can also target bicyclists or pedestrians who commit moving violations. Sting operations are most effective on roadways and intersections with high bicycle or pedestrian volumes. The County should consider conducting recurring bicycle and pedestrian sting operations since changes in motorist behavior can be short-term. In addition to, or in lieu of, fines, officers can issue educational materials that inform drivers, bicyclists, and pedestrians of the rules of the road. By working with local news media, the sting operations can reach a broader segment of the public in addition to residents who are pulled over.
APPENDIX A:
PROJECT COST ESTIMATES AND IMPLEMENTATION PRIORITY
APPENDIX B:
SCORING PRIORITY METHODOLOGY
APPENDIX C:
GRANT-READY FACT SHEETS