Marin County Unincorporated Area Bicycle and Pedestrian Master Plan

Adopted February 27, 2018

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County of Marin

COUNTY OF MARIN

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1 Introduction

This update to the Marin County Unincorporated Area Bicycle and Pedestrian Master Plan (Plan) was created through the coordinated efforts of the Transportation Authority of Marin (TAM), the Marin County Public Works Department, the Marin County Bicycle Advisory Committee, and citizens interested in improving the bicycling and pedestrian environment in unincorporated Marin County (County). Without the sustained efforts of these organizations and citizens, the continuing improvements to the bicycling and pedestrian environment throughout the County would not be realized. This Plan is one component of the continued effort towards making bicycling and walking an integral part of daily life in Marin County.

This plan was completed for the Marin County Department of Public Works between 2014 and 2018 as a part of a countywide effort to update all local bicycle and pedestrian master plans and includes only the unincorporated areas of Marin County. While the plan serves as a coordinating and resource document for the entire county, its focus is on specific recommendations for the unincorporated areas which must be adopted by the Board of Supervisors. It is important to note that some of the county's unincorporated areas are adjacent to or islands surrounded by incorporated cities and towns. Although the plan makes recommendations for many of these enclaves of unincorporated development, their size and geographic isolation means that bicycle and pedestrian planning and project development will require coordination with the incorporated community to avoid disjointed or discontinuous facilities. By referencing local plans being developed concurrently with this effort, this Plan attempts to reconcile local and countywide planning efforts to create a seamless and intuitive network of facilities across jurisdictions.

1.1. Bicycle and Pedestrian Improvements

1.1.1 Bicyclists

Like many communities around the United States, Marin County continues to experience strong growth of bicycling as a means of transportation. The bicycle is a low-cost and effective means of transportation that is quiet, non-polluting, extremely energy-efficient, versatile, healthy, and fun. Bicycles also offer low-cost mobility to the non-driving public, especially the young.

Bicycling as a means of transportation has been growing in popularity as many communities work to create more balanced transportation systems and look to create multiple transportation options for their residents and visitors.

Figure 1-1: Bicyclists near St. Andrew Presbyterian Church in Marin City

Marin County has made major gains in increasing bicycle use, thanks to several factors:

First, Marin County has many of the attributes needed to become a bicycle-friendly community. This includes smaller, compact towns and cities, a moderate climate, and a population interested in health, environment, and livable neighborhoods. The popularity of recreational bicycling in Marin County has significantly increased bicycle ridership. This plan addresses bicycles as a mode of travel for transportation, defined as any trip for commuting, shopping, traveling to and from school, or to reach a recreational destination.

Second, there is a long history of bicycling and bikeway planning in Marin County. As more residents have been bicycling for recreation, more have been commuting as well. Consequently, more residents have been advocating for improved bicycling conditions. As early as 1975, with the creation of Marin County's first bicycle plan, residents expressed a desire for more miles of bicycle lanes, bicycle boulevards, and off-street paths; more bicycle parking; and better maintenance of existing facilities, the provision of which has encouraged more bicycle riding.

Third, policy support and additional funding are available for bicycle transportation improvements. This has been true on the local, state, and national level thanks to the passage of the Measure A half-cent Transportation Sales Tax, the **California Bicycle Transportation Act** (effective 1994 and last amended in 2016), the state and federal Safe Routes to Schools programs, and other grant sources.

The increased ridership, resulting advocacy, and increased policy and financial support from all government levels have resulted in a desire for significant bicycle transportation improvements. The following Plan is a direct result of these changes and is intended to continue a proactive course toward making bicycling and walking an integral part of daily life in unincorporated Marin County.

1.1.2 Pedestrians

Throughout this document, all references to pedestrians are inclusive of persons with disabilities who use mobility aids (scooters, walkers, and manual or powered wheelchairs) to access public pedestrian walkways.

Walking is the oldest and most basic form of human transportation. It is clean, requires little infrastructure, and is integral to the health of individuals and communities. People who walk know their neighbors and their neighborhood. A community that is designed to support walking is desirable.

Although pedestrians have been valued for their contribution to urban vitality, walking, like bicycling, has not always been considered a legitimate means of transportation in the United States. Thanks in part to the passage of the 1991 **Intermodal Surface Transportation Efficiency Act** (ISTEA) legislation and continuing with the development of subsequent federal, state, and local funding opportunities and policy directives, this has begun to change. Communities are recognizing the need for and value of developing pedestrian facilities, whether it be to enhance safety, health, or for commuting.

Marin County's beautiful scenery has long attracted pedestrians, but getting from housing areas to employment areas or transit by foot can be challenging. Many streets in Marin's unincorporated villages have discontinuous sidewalks and crossing streets can be intimidating. In some cases, adding sidewalks is expensive and is seen as taking away from a street's rustic quality. On the other hand, the trade-off in choosing to retain 'rustic' or 'rural' road characteristics may be adverse to pedestrian and bicycle safety.

Opportunities certainly exist for improving the pedestrian system in Marin's unincorporated communities, thereby offering more residents the option of walking to school, shopping, work, or recreational facilities. These opportunities will be discussed in the subsequent sections.

1.2. Setting

Marin is defined by its topography and geography. Mt. Tamalpais dominates southern and central Marin County. Rugged hills and ridges separate the county, creating distinctive communities but making intercity travel difficult for bicyclists and pedestrians. The beauty of Marin's waterfronts, mountains, parks, and towns attracts people to visit and to live here—providing a livable scale within sight of downtown San Francisco.

Of the County's total estimated population of 258,349, approximately 68,640 residents live in unincorporated areas, which include communities such as Tamalpais Valley, Greenbrae, Kentfield, Strawberry, Santa Venetia, Marinwood, Bel Marin Keys, Black Point, Loma Verde, Wild Horse Valley, and all of West Marin (American Community Survey, 2011-2015).[i]

Households within these unincorporated communities have a median income of $100,833, roughly 63 percent greater than the statewide median household income of $61,818 and roughly 11 percent greater than the Marin County median household income of $93,257 (ACS, 2011-2015).[ii]

Marin County is well connected to surrounding counties via major transportation corridors, with Highway 101 providing north-south connections to San Francisco (via the Golden Gate Bridge) and Sonoma County, and I-580 connecting to the East Bay via the Richmond Bridge. Highway 37 provides east-west connections to Vallejo and Napa, while Highway 1 (Shoreline Highway) links popular visitor destinations such as Stinson Beach, Muir Woods, and Pt. Reyes National Seashore. However, because of Marin's topography and policies that have discouraged roadway connections between Marin County communities, there are several locations where few to no through roads exist, creating choke points that concentrate traffic in key corridors which in turn creates challenges in providing connections for bicyclists and pedestrians.

Marin County Transit District (Marin Transit) was formed by a vote of the people of Marin County in 1964 and was given the responsibility for providing local transit service within Marin County. Marin Transit operates its local service through contracts with Golden Gate Transit and the West Marin Stagecoach and community shuttles, as well as paratransit service provided by Whistlestop Wheels.

Marin County is connected to other regional centers by scheduled regional bus transit service provided by Golden Gate Transit, Sonoma County Transit, and Greyhound. Transbay ferry service is provided by the Blue and Gold Fleet and Golden Gate Ferry. Regional airport access in Marin County is provided by the Marin Airporter to San Francisco International Airport and by the Sonoma County Airport Express to Oakland International Airport. Significantly, Marin County is a major regional visitor destination and is served by numerous tour bus operators primarily out of the San Francisco area.

1.3. Why does Unincorporated Marin County Need a Bicycle and Pedestrian Plan?

Bicycle and pedestrian master plans create a shared vision for active transportation within a community, make it easier for communities to request project funding, and help ensure that stated community priorities, such as safety, are reflected in the list of projects a community tries to develop.

The State of California encourages communities applying for funding to have an adopted bicycle and pedestrian master plan. While no longer a requirement of the California Bicycle Transportation Act, having an adopted plan helps demonstrate the community's commitment to improving its active transportation network to reviewers from various grant programs and other funding sources, such as the state and regional Active Transportation Program.

Development of a bicycle and pedestrian master plan provides the community an opportunity to consider and set its project, program, and policy priorities. Needs shift over time, and periodically updating a community's master plan highlights progress made since the previous plan's adoption and updates the list of community priorities, helping the County and community leaders remain responsive to those needs. The bicycle and pedestrian master plan process also provides an opportunity to address controversial issues and to take into account changes in prevailing design and facility management practices.

1.4. Progress Since Adoption of the 2008 Marin County Unincorporated Area Bicycle and Pedestrian Master Plan

Substantial progress has been made in Marin County toward realizing the goals established in the 2008 Unincorporated Marin County Bicycle and Pedestrian Master Plan. This progress is due in large part to the partnership between the many public agencies throughout the county. The County of Marin Department of Public Works, Transportation Authority of Marin (TAM), towns and cities of Marin County, Caltrans, Golden Gate Bridge, Highway and Transportation District, California State Parks, the National Park Service, and San Francisco Bay Trail have all played a role in the progress since the adoption of the previous plan. Specific accomplishments are summarized below.

1.4.1 Unincorporated Area and Countywide Planning, Programs, and Policies

Numerous policy and planning efforts have taken place that encourage non-motorized transportation in Marin County. The funding programs and policies in the **Measure A Transportation Sales Tax**, selection of Marin County as one of the four communities in the federal Nonmotorized Transportation Pilot Program (NTPP), and other funding programs have enabled the County to implement many of the projects and programs identified in the 2008 plan. Completed planning and outreach activities include:

- Planning and feasibility studies for the Mill Valley to Corte Madera corridor, East Sir Francis Drake Corridor, Miller Creek/Las Gallinas corridor, East Strawberry/Greenwood Cove area by the Bay Trail, Tiburon Boulevard interchange, and Tam Junction area by TAM.
- Conducted countywide outreach, education, and encouragement programs including Street Skills riding classes, bicycle repair, personal travel planning, and improved mapping.
- Adoption of a Complete Streets Policy in 2016, successor to the 2006 Department of Public Works Multimodal Policy. The new policy reflects changes in best practices that have occurred over the last decade and complies with standards established by the Metropolitan Transportation Commission to be eligible for various grant funding opportunities.
- Nonmotorized Transportation Pilot Program (NTPP) – Begun in 2006 and continuing through 2016, the program has allocated over $28 million to bicycle and pedestrian projects. Included in the program was an extensive public outreach and planning process to identify, rank, and select infrastructure projects and educational programs to be funded by the program.
- Ongoing support for the Safe Routes to Schools program to encourage more schoolchildren to walk or bicycle to school and decrease vehicle congestion.

1.4.2 Infrastructure Improvements Completed

Many infrastructure improvements have been completed in the unincorporated area since adoption of the 2008 Unincorporated Marin County Bicycle and Pedestrian Master Plan:

- Construction of 3.3 miles of new Class I multiuse path in Bolinas and Greenbrae, and the Cal Park tunnel, Central Marin Ferry Connection, McGlashan Path, and Novato Narrows through Olompali State Park.
- Construction of 14.3 miles of new Class II bike lanes on Alameda del Prado, Atherton Avenue, Bel Marin Keys Boulevard, Lomita Drive, Lucas Valley Road, Miller Creek Road, Olive Avenue, Ranchitos Road, Point San Pedro Road, San Antonio Road, and Sir Francis Drake Boulevard.
- Completion of the Cal Park tunnel and bridges and the Central Marin Ferry Connection structure over East Sir Francis Drake.
- Rehabilitation of the Corte Madera Creek Path between Bon Air Road and College Avenue.
- Reconstruction and widening of the Corte Madera Creek Path between College of Marin and Ross.
- Repaving by Caltrans of the Pacheco Hill and Horse Hill paths along Highway 101.
- In west Marin, added shoulders as feasible in conjunction with roadway repaving projects, including on Novato Boulevard, Point Reyes-Petaluma Road, and Nicasio Valley Road.
- Constructed a bicycle roundabout at the junction of the Mill Valley-Sausalito and Sycamore Avenue paths in Mill Valley. The project was completed through a partnership with the City of Mill Valley and addresses the intersection of two highly-used paths with significant crossing activity due to adjacent playfields and Mill Valley Middle School.
- Expanded the countywide guide signage program to west Marin roadways. The signed route network is now complete in Marin, with the exception of Shoreline Highway (Highway 1).
- Managed Bay Area air district grant programs for bicycle parking.
- Intersection improvements for pedestrians and bicyclists at multiple locations, including pedestrian ramps and improved detection of bicycles by signal equipment.
- Construction of several Safe Routes to Schools projects, including sidewalks, bicycle lanes, and warning beacons at multiple locations.
- Construction by the National Park Service of wider shoulders and other improvements within Fort Baker and Fort Cronkite.

1.4.3 Infrastructure Improvements in Progress

In addition to completed projects, several infrastructure projects are in progress:

- Central Marin Ferry Connection – Phase 2 of the Central Marin Ferry Connection will provide improved connectivity between the current Corte Madera Creek path junction on East Sir Francis Drake and Wornum Drive in Corte Madera. This phase has two separate components. The first component will widen the current walkway along the northbound freeway ramp structure over Corte Madera Creek to Class I standards and provide a direct connection to the pedestrian overcrossing over Highway 101 south of Corte Madera Creek and Lucky Drive. The second component will construct a connection between Lucky Drive and Wornum Drive via one of two alternatives which remain under discussion: new and improved facilities along the frontage road or as a separate path behind the frontage road businesses on the old Northwestern Pacific Railroad right-of-way.
- Mill Valley-Sausalito Path Rehabilitation – The path, originally constructed in 1982, has significant areas of deterioration and is in need of repaving. Further, the four bridges on this section of path are beyond their expected lifespans and require replacement. The County has been coordinating on repaving the path in three phases, the first of which is fully funded and the second is partially funded. A structural analysis of the bridges is currently under way. Future improvements to the path include potential widening to address its high rate of usage and addressing current and expected future flooding issues attributable to sea level rise.
- Sir Francis Drake Boulevard – The section of the roadway between Highway 101 and the Ross Town Limits is the subject of a major rehabilitation program. As part of this project, several improvements are proposed for pedestrians and bicyclists, including a sidepath through the Greenbrae section to improve connectivity between adjacent neighborhoods, the shopping center, and schools. At Ash Avenue, an improved crosswalk is proposed which would provide a refuge area in the median, lighting, and warning beacons. Nearly all intersections are slated for improvements including ADA-compliant crossings, modernized signals, widened sidewalks, and reduced potential for vehicle-pedestrian conflicts.
- West Marin Roadway Improvements "Widen Where Feasible" – The County continues to provide additional shoulder area along selected rural roadways where feasible as part of road repaving projects. Additional shoulder width provides areas for bicyclists to ride without being in the vehicle lane with faster moving traffic, which is especially important on uphill grades. This policy will be continued as ongoing road repaving projects occur. Caltrans is also implementing a similar program along Highway 1 as part of a larger project on that roadway.
- Tam Junction Improvements – The Transportation Authority of Marin is managing a project at the Tam Junction intersection which will provide improved pedestrian connections and bicycle lanes, connecting with existing bicycle lanes on Almonte Boulevard and the Charles McGlashan path. This project is a key gap closure connecting the Tam Valley community with Mill Valley, Tam High School, and other Marin County communities.

- Marin-Sonoma Narrows – Caltrans is constructing improvements on Highway 101 between Novato and Petaluma. Much of the Marin County portion of this project has been completed, including construction of bicycle facilities from Novato to San Antonio Road. Remaining projects in Marin County include realignment of the San Antonio Creek bridge at the county line and connection to the Sonoma County portion of the project's bicycle facilities.
- Vista Point Trail – The National Park Service is coordinating with Caltrans on constructing a multi-use path connection between Vista Point at the northeast end of the Golden Gate Bridge with East Road through Fort Baker. The path would provide a direct connection from the east side bridge path to the less trafficked East Road headed towards Sausalito. Currently bicyclists coming off the east side of the bridge heading towards Sausalito must either ride on Alexander Avenue - a busy, high-speed corridor - or use a series of stairs and ramps to reach East Road by going to the west side of the bridge. With the significant number of tourist bicyclists traveling through this corridor, an alternative connection to Sausalito will improve safety and comfort for users unfamiliar with the area.

1.4.4 Funding

Marin County has received a substantial boost from numerous funding sources in the years since the adoption of the 2008 plan. In addition to project-specific funding, other major funding opportunities include Measure A Transportation Sales Tax, which can be spent on stand-alone bicycle and pedestrian improvements, the separate Marin County Parks Measure A, and other regional and state funds, such as Transportation for Clean Air (TFCA), Transportation Development Act (TDA), and the Active Transportation Program (ATP). Additional funding opportunities may be available as SB-1, an increase in the State gas tax, designates a portion of anticipated revenues to active transportation projects. Future modification to the Active Transportation Program criteria may enable the County to be more competitive in qualifying for these funds than it has been to-date.

1.5. Becoming a Bicycle- and Pedestrian-Friendly Community

As Marin County moves forward, safety, access, quality of life, and effective implementation are imperative elements for Marin County's continued success as a bicycle- and pedestrian-friendly community.

Safety continues to be the number one concern of citizens, whether they are avid commuter or casual recreational bicyclists or walkers. In many cases, bicyclists and pedestrians must share narrow, high volume roadways and cross busy intersections. To assist bicyclists not familiar with local routes, the County, in conjunction with local cities and towns, has implemented a countywide numbered route network to facilitate navigation on the county's roads and paths (See **Figure 1-2** and **Appendix C**). While there has been substantial progress made since the 2008 plan, a uniform and complete bicycle network consisting of off-street pathways and either bicycle lanes or wider curb lanes in the county still has significant gaps, particularly in rural areas.

Figure 1-2: Marin County Bicycle Route Guide Signage

For pedestrians, factors such as steep terrain and narrow rights-of-way have resulted in a minimal and frequently discontinuous sidewalk system in many neighborhoods, especially along busy streets and in older areas, which forces pedestrians to walk in the street.

Figure 1-3: Person walking bicycle on Greenbrae Boardwalk

Access improvements for bicyclists and pedestrians are important to help improve the ability to take utilitarian trips to destinations like shops, work, and school. Currently, Highway 101 presents a number of barriers in accessing key destinations, and forces people to negotiate busy interchanges. Additionally, in several locations, Marin County still lacks continuous and connected bikeways and walkways into the County's village centers, schools, parks, and employment and shopping areas. This Plan urges Marin County to take measurable steps toward the goal of improving the quality of life for the residents of Marin County, creating a more sustainable environment, reducing traffic congestion, vehicle exhaust emissions, noise, and energy consumption. Developing a bicycle and

pedestrian system that is attractive and inviting is an important element in preserving Marin County as a place where people want to live, work, and visit, in addition to providing safe and attractive means to get around without an automobile. The attractiveness of the environment not only invites bicyclists and pedestrians to explore Marin County, but more importantly, a beautiful environment helps to improve everyone's positive feelings about the quality of life in Marin County.

Education, enforcement, engineering, and funding are the basic components of an effective implementation program for this Plan. Education must be crafted specifically for bicyclists and pedestrians, as well as to motorists, regarding the rights and responsibilities of all roadway users. Also critical are comprehensive enforcement of existing traffic and parking laws and the implementation of sound design and engineering principles for bikeways and walkways. 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.

1.6. Major Recommendations of the Unincorporated Marin County Bicycle and Pedestrian Master Plan

This Plan contains recommendations that, if implemented over the next 20 years, will continue to make unincorporated Marin County a model community for bicycling and walking in the United States. Since the development of the **2008 Unincorporated Marin County Bicycle and Pedestrian Master Plan**, the public and community leaders continue to ask for a bold vision for the county that will dramatically alter conditions for those who choose to bicycle or walk. The public continues to cite concerns about safety, traffic congestion, and general livability of towns and cities in Marin County as the primary impetus to implement this Plan. Important community members for whom the complete bicycle and pedestrian system is being developed includes new riders, non-bicyclists most likely to start bicycling when safety considerations and infrastructure are put into place, commuter and utilitarian bicyclists, and recreational bicyclists. Additionally, the following two groups have been identified as important future beneficiaries of the Plan:

School Children	Parents have indicated a desire for improvements that will allow their children to bicycle or walk to school. Roughly three-quarters of school-aged children in the United States are driven to school in a car.* Safe Routes to School is aimed at promoting bicycling, walking, taking transit, or carpooling to school; planning safer bicycling and walking routes to schools; funding the construction of safe pathways to school; and providing crossing guards at major intersections.
Senior Citizens & People with Disabilities	Demographically, senior citizens and people with disabilities represent a growing proportion of the county's population. Senior citizens need access to more facilities to encourage bicycling or walking away from busy streets, as well as improvements to Marin County's existing sidewalks, such as curb cuts, to allow access to their destinations and for exercise.

* National Center for Chronic Disease Prevention and Health Promotion (2001). *KIDSWALK-TO-SCHOOL: A Guide To Promote Walking to School. Atlanta: Centers for Disease Control and Prevention*, U.S. Department of Health and Human Services.

Expected benefits of the Plan include:

1. Improving safety;
2. Increasing opportunities for exercise;
3. Reducing vehicular traffic and congestion;
4. Enhancing public streets and making use of other routes for bicycling and walking;
5. Increasing bike-to-transit and walk-to-transit trips, helping to bolster transit, and legitimizing bicycling and walking as viable and attractive transportation options; and
6. Reducing greenhouse gas emissions through increased mode shift to bicycling and walking.

It is highly desirable that an integrated, complete network of multi-use paths, bicycle lanes, bicycle routes, and pedestrian improvements be developed in Marin County. Transportation systems that thrive require complete system integration and complete networks at the regional, community, and neighborhood levels. One aspect of this system is the use of the old Northwestern Pacific Railroad and SMART rights-of-way, tunnels, and bridges to help connect neighborhoods and overcome the steep terrain, to the extent it is compatible with SMART rail service.

Finally, it is the goal of this Plan to dramatically increase the number of people bicycling or walking for utilitarian trips, such as for work, school, or shopping. Each trip made by bicycling or walking takes one more car off the road, helping to reduce pollution and alleviate the traffic congestion that plagues so many communities.

1.6.1 Types of Recommendations

There are three distinct types of recommendations in the Plan: bicycle facilities, pedestrian facilities, and bicycle and pedestrian programs. These are discussed in more detail in **Chapter 5: Proposed System & Improvements**. Physical projects such as new bikeways or walkways are broken down between short-term (1 to 5 years), mid-term (5 to 15 years), and long-term (over 15 years). They are grouped into four categories of improvements:

1. Countywide projects;
2. Local bikeway network gap closure projects;
3. Local community bicycle and pedestrian projects; and
4. Pedestrian projects

These projects generally derive from the recommendations of local advisory committees, but they may be packaged together to make them more feasible and competitive for outside funding.

Companion documents to this Plan are Chapter 1000 of the **Caltrans Highway Design Manual**, **Caltrans Manual on Uniform Traffic Control Devices**, AASHTO manuals on highway, bikeway, and pedestrian facility design, and NACTO guides on bicycle and pedestrian facility design. On a case-by-case basis, local agencies may seek design exceptions to established State and Federal standards based on local conditions and environmental and economic issues. All projects must be approved by the applicable Public Works Director or County engineering staff and, in some cases, Caltrans or the Federal Highway Administration.

Finally, this Plan provides recommendations for education, outreach, and other programs that will ultimately be implemented by public or private groups.

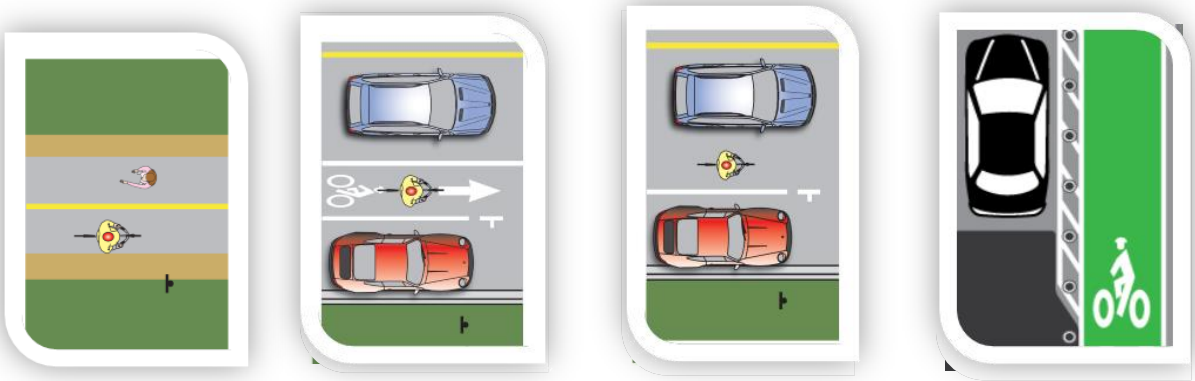
1.6.2 Long Term System

The long-term time horizon of this Plan calls for the completion of a network of primary and secondary bikeways. It also calls for the completion of pedestrian improvements. The proposed system will connect the major destinations in unincorporated Marin County and adjacent communities.

1.6.3 Bikeway Classifications

In Marin County, as everywhere, there is a tremendous diversity of opinion on what is the best type of bikeway to construct in a given context. Caltrans identifies four types of Bikeways in Chapter 1000 of its Highway Design Manual: Class I, Class II, Class III, and Class IV (See **Figure 1-4**).

Figure 1-4: Bikeway Classifications

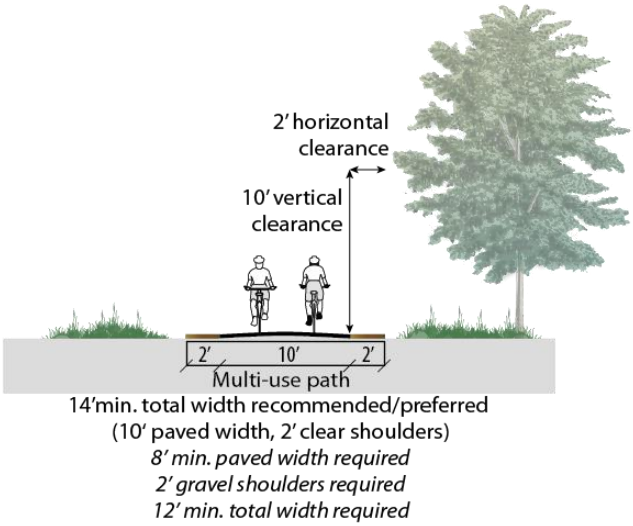


Class I Bikeway: Typically called a multi-use path or pathway, Class I bikeways provide for bicycle and pedestrian travel on a paved right-of-way completely separated from a street or highway. Paved pathways exist in Marin County that do not conform to established Caltrans design standards, and therefore, are not classified as Class I bikeways. This plan documents those paved pathways as functional transportation and recreational facilities. All new facilities are proposed to be built to Caltrans standards (see **Figure 1-5**).

Figure 1-5: Class I Bikeway

CLASS I
Multi-Use Path

Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow minimized.

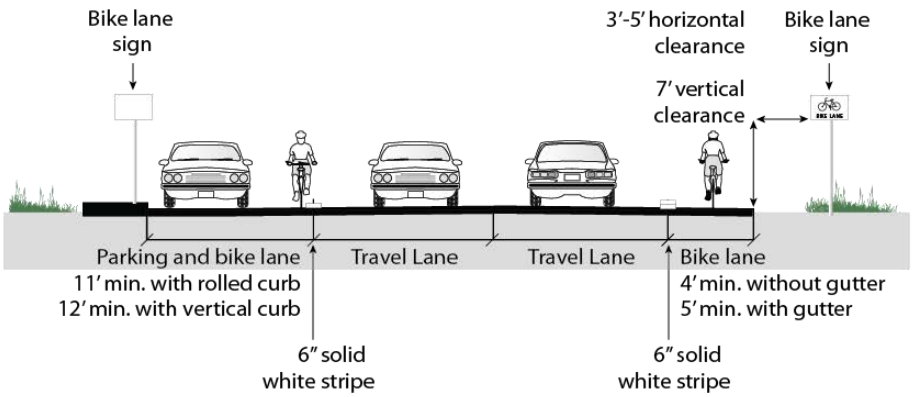


Class II Bikeway: More commonly referred to as bicycle lanes, Class II bikeways provide a striped lane for one-way travel on a street or highway (see **Figure 1-6**). Bicycle lanes can be accompanied by a striped buffer that provides clearer separation from the bicycle lane and either the adjacent travel lane and/or a parking aisle. To maintain the rural character in west Marin County, Class II bikeways are not signed or stenciled, though the pavement width does meet Caltrans Class II standards. These existing and proposed facilities are designated as Class IIr in this Plan.

Figure 1-6: Class II Bikeway

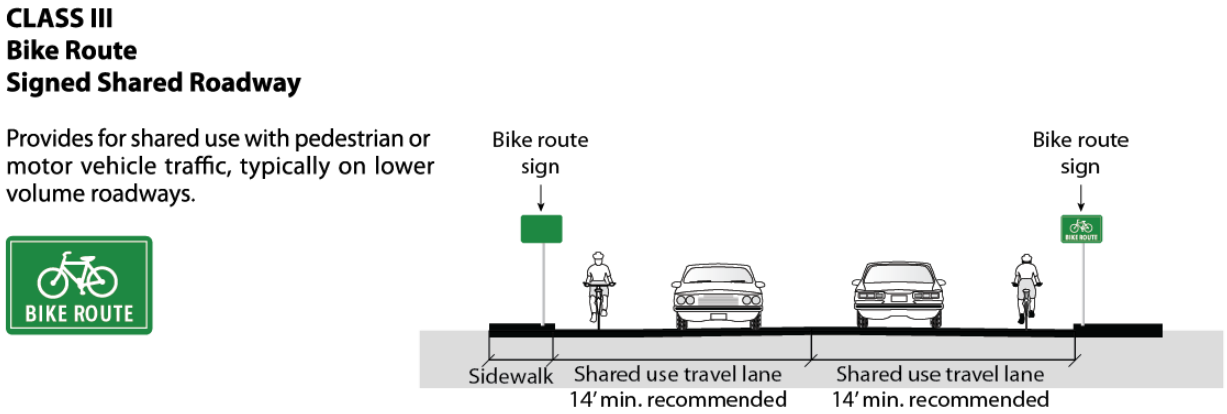
CLASS II
Bike Lane

Provides a striped lane for one-way bike travel on a street or highway.



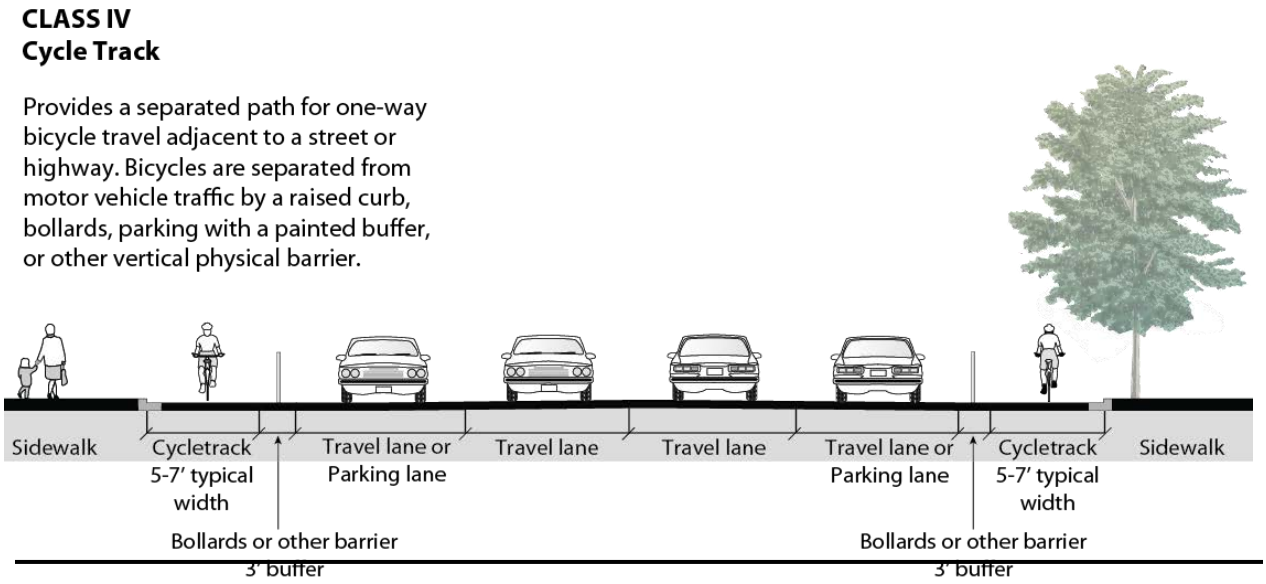
Class III Bikeway: More customarily called a bicycle route, Class III bikeways provide for shared use with on-street motor vehicle traffic (see **Figure 1-7**) and are identified by signing and/or the stenciling of "sharrows" (shared roadway bicycle pavement markings).

Figure 1-7: Class III Bikeway



Class IV Bikeway: Often referred to as separated bikeways, cycle tracks, or green lanes, Class IV bikeways are located within a street or highway right-of-way, provide a designated area for one-way or two-way bicycle travel, and offer physical protection from adjacent motor vehicle traffic using barriers, bollards, curbing, parked cars, posts, planters, or other vertical-oriented elements (see **Figure 1-8**).

Figure 1-8: Class IV Bikeway



Ideally, bicycle facilities should be provided that serve the greatest number of users, both existing and potential. Many bicyclists are comfortable riding using bicycle lanes or mixing with traffic while others, particularly children, may not have the same level of comfort and, thus, desire a facility separated from motor vehicle traffic. The patterns under which Marin County developed make it challenging to provide a wide range of facilities for every user. Marin County's topography and former rail service directed much of the early growth patterns, particularly in the central and southern portions of the county. Few places in Marin County have a connected gridiron street pattern found in many other communities and result in the need to use high-traffic arterial roadways as the primary bicycle routes through and between communities. The former Northwestern Pacific Railroad and current SMART grades are ideally suited for separated paths as they are generally flat and have minimal road crossings; much of this corridor is envisioned as the North-South Greenway, running as a spine through the urbanized eastern corridor of the county. Other segments of Class I paths connect to this spine and penetrate into several communities. Other connecting facilities must make use of the existing roadway network.

As a result, the countywide network envisioned in this Plan recognizes the progress to date on providing a connected network while identifying additional segments that are necessary to have complete connectivity. The types of facilities proposed are dependent on several factors, including relationship to adjoining jurisdictions' facilities, available right-of-way, feasibility of roadway modifications, and community desires and support for a particular treatment.

1.6.4 The Primary Network

The primary network in Marin County consists of key north-south and east-west corridors that form the backbone of bicycle and pedestrian facilities and provide connectivity between Marin County's communities and the greater Bay Area. The primary network includes many portions of the historic rail lines that traverse the county, including the SMART right-of-way; routes along high-volume arterials providing access to local communities and important destinations; and major roadways in west Marin County. Within the primary network, three major corridors have been identified and developed starting with the first Marin County Bicycle Plan in 1975. Those corridors are the North-South Greenway, North-South Bikeway, and East-West Bikeway. A fourth corridor, the Bay Trail, generally follows the shoreline of San Francisco and San Pablo Bays.

North-South Greenway

The legacy of the old Northwestern Pacific Railroad (NWP) in Marin County along with the natural geography of the county makes the creation of a North-South Greenway a logical primary spine. The North-South Greenway starts at the Golden Gate Bridge and connects Sausalito, Mill Valley, Corte Madera, Larkspur, San Rafael, Novato, and Sonoma County, generally following the old NWP alignment.

The recommendations from the 1994 North-South Bikeway Plan are incorporated into this Plan, which proposes implementing the North-South Greenway in a series of discrete segments that best match available funding sources. This strategy is intended to recognize the high cost of the proposed multi-use path, its enormous potential to increase bicycling and walking, and the nature of the current funding climate.

The major remaining gaps in the North-South Greenway are between Mill Valley and Corte Madera in the Alto tunnel corridor; Wornum Drive in Corte Madera to East Sir Francis Drake Boulevard in Corte Madera and Larkspur; Andersen Drive and Fourth Street in San Rafael; and the vast majority of the SMART corridor between North San Pedro Road in northern San Rafael to the San Marin SMART station in Novato.

North-South Bikeway

Recognizing that the SMART right-of-way and future North-South Greenway alignment north of Puerto Suello Hill travels primarily east of Highway 101 through less-developed areas while the area west of Highway 101 is where many businesses and residential neighborhoods are located, a parallel route to the North-South Greenway was identified in the 2001 **Unincorporated Marin County Bicycle and Pedestrian Master Plan**. Beginning at Puerto Suello Hill summit, this route travels north along roadways and Class I pathways through Terra Linda, Marinwood, and Novato. Except for short sections occurring along segments of Las Gallinas Avenue in Terra Linda (San Rafael) and Ignacio, Diablo, and Redwood boulevards in Novato, the North-South bikeway is complete and signed as part of Bicycle Route 5. The bicycle and pedestrian master plans for San Rafael and Novato identify the remaining segments as proposed Class II facilities.

East-West Bikeway

The East-West Bikeway was first identified in a Cross Marin Trail proposal in the 1970s and later formally studied in the **Fairfax to San Rafael Cross Marin Bikeway Feasibility Study** (2010). Similar to the North-South Bikeway, this bikeway would generally follow the alignment of the NWP right-of-way from Point Reyes Station through Samuel P. Taylor State Park, Lagunitas, San Geronimo, Woodacre, Fairfax, and San Anselmo. In downtown San Anselmo, one branch of the bikeway would continue down into Ross Valley through Ross, Kentfield, and Greenbrae to Larkspur Landing and finally to San Quentin. The other branch would continue easterly into San Rafael. The only completed sections are between Remillard Park and South Eliseo Drive in Larkspur, Bon Air Road in Greenbrae to Lagunitas Road in Ross, and through Samuel P. Taylor State Park between the campground and Platform Bridge Road. Between Ross and Lagunitas, and San Anselmo and San Rafael, the right-of-way has been used for roadways or has been sold off and developed, necessitating consideration of alternate alignments through these communities. Between Platform Bridge and Point Reyes Station, the original right-of-way traverses lands of the Golden Gate National Recreation Area, except for one parcel still in private ownership. The County is currently engaged in a feasibility study to identify options for making the connection in this segment. The final alignment is dependent on numerous factors including acquisition of property, environmental approval, condition, cost to rehabilitate the White's Hill Tunnel and other issues in the developed areas. In addition, specific facilities of the East-West Bikeway are subject to the engineering judgment of the local jurisdiction and the input of local residents as detailed in the local bicycle and pedestrian plans being updated concurrently with this Plan. Similar to the North-South Greenway and North-South Bikeway, this Plan recommends treating the East-West Bikeway as a series of discrete segments that best match available funding sources.

Bay Trail

The San Francisco Bay Trail is a planned 500-mile walking and bicycling path around the entire San Francisco Bay running through all nine Bay Area counties, 47 cities, and across seven toll bridges. With over 350 miles in place, the Bay Trail connects communities to parks, open spaces, schools, transit and to each other, and also provides a great alternative commute corridor. The ultimate goal of the Bay Trail is to build a continuous shoreline bicycle and pedestrian path for all to enjoy. In Marin County, completed sections of the Bay Trail utilize facilities such as the North-South Greenway, shared use pathways, sidewalks, bike lanes, and levee paths. The continuity of the Bay Trail in Marin will continue to improve as bicycle and pedestrian facilities are developed on the Bay Trail's preferred alignment. A map of the Bay Trail is in **Appendix B**.

1.6.5 Tunnels and Railroad Rights-of-Way

The numerous railroad tunnels in Marin County, some of which were constructed in the 1880s and have been closed since the 1960s, are considered to be a unique resource and opportunity by many Marin County residents. The NWP once served all of Marin County through a network of direct commuter train routes. Some of the railroad rights-of-way have been converted to multi-use trails, such as the popular Sausalito-Mill Valley pathway, while others have been repurposed for use by SMART train service with a parallel multiuse path. The Cal Park tunnel, connecting San Rafael and Larkspur, was reconstructed and reopened in 2010. As the only two-track tunnel in the county, it was reconstructed to provide one track for SMART train service to Larkspur Landing and the ferry terminal while the other side is now a multiuse path and part of the North-South Greenway.

The County has studied the conditions and potential costs of reopening the Alto tunnel, between Corte Madera and Mill Valley, to connect the multi-use paths that approach it on either side. Because the tunnel is of similar construction to the Cal Park tunnel, it has been assumed that the structural supports will require complete replacement. The tunnel involves easements held by the County, Union Pacific Railroad (successor agency to NWP), and a private holder. As a result, the study looked at ownership issues and conducted geotechnical analysis on the tunnel to evaluate its condition and develop a more refined cost for its rehabilitation. The outcomes of the analysis are discussed further in **Section 5.2.3**.

The Puerto Suello Hill tunnel has been rehabilitated by SMART for exclusive use of SMART rail service. The parallel route for this corridor is the Puerto Suello Hill path along Highway 101 and Bicycle Lanes on Ranchitos Road.

The White's Hill tunnel, between Fairfax and Woodacre, is identified as part of the proposed East-West Bikeway. Rail service through the tunnel ceased in 1929 and the portals have been sealed. On the east side, the tunnel portal and former railroad grade are on private property. No further analysis of this tunnel is envisioned for the foreseeable future.

The remaining tunnels, two between Tiburon and Corte Madera and two near Tomales (one of which was removed completely) are not proposed as part of any bicycle or pedestrian facility and are on private property.

1.6.6 School Commute

Safe travel to local schools remains a high priority among Marin County residents, with many of the proposed short- to mid-term projects in Chapter 5 providing enhanced connections to schools, plus coordination with the existing Safe Routes to Schools program. Both bicycling and walking "school buses" were formed in several communities where groups of students, with some parent assistance, bicycle or walk together to school. The Measure A transportation funding plan includes funds for Safe Routes to Schools projects, along with state and federal Safe Routes funding programs.

1.6.7 Environmental Issues

This Plan offers Marin County a viable strategy to help mitigate the environmental impacts caused by motor vehicle trips, including air quality, energy consumption, noise, and use of land for roadways and parking lots. Because of the minimal construction involved with on-street bikeways, some off-street pathways, and walkways, the environmental impact of bikeways and walkways are usually negligible, although each project proposal may need to go through its own environmental review. Potential environmental impacts of the bicycle and pedestrian projects in this Plan are limited almost exclusively to those projects adjacent to adjacent wetlands and habitats along the NWP right-of-way. The impacts of reuse of this right-of-way as a multi-use path have been detailed in the SMART FEIR released in 2006 with which this plan is consistent.

1.6.8 New Era of Respect

An important factor in bicycle- and pedestrian-friendly communities is the mutual respect between people bicycling, walking, and driving. While Marin County prides itself on being a livable community, the public continues to express concern about the lack of respect between bicyclists, pedestrians, and motorists. It is sometimes noted in the media and in public meetings how few people stop their cars for bicyclists or pedestrians at crosswalks to allow people—even children—to cross, how few bicyclists stop at stop signs, and how some pedestrians are distracted by their electronic devices that they step into the roadway without looking. Many bicyclists told stories of aggression towards them from motorists. It is also not uncommon to see bicyclists running stop signs or riding two or three abreast on narrow roads.

Local advocacy groups have partnered with Marin County law enforcement to develop and implement Share the Road and Share the Path programs. This Plan calls for continuation and expansion of these and similar efforts to achieve a new era of mutual respect between all people using public rights-of-way. The Plan identifies several strategies to educate the general public on the rights of bicyclists and pedestrians, and on the importance of sharing the road and deferring to bicyclists and pedestrians when needed. 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, California, Portland, Oregon, and Boulder, Colorado, 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 emphasizes the link between this level of respect and the overall quality of life in Marin County for everyone.

1.7. Role of the Bicycle and Pedestrian Plan

This Plan serves primarily as a coordinating and resource document for the County, with a focus on developing a primary network of bikeways, pedestrian enhancements, and programs. This Plan also helps to ensure good connectivity between the county's unincorporated communities and adjacent cities and towns, while promoting consistent design standards. Because this Plan is being updated concurrently with local bicycle and pedestrian plans, emphasis is on specific facilities in unincorporated areas, as well as ensuring consistent countywide and regional connections.

Projects and programs included in this Plan would be sponsored by the County or agency responsible for the particular right-of-way and may require additional feasibility analysis, design, environmental review, and public input prior to being funded and constructed. All projects and plans would, as applicable, need to be consistent with local community plans and the **2007 Marin Countywide Plan**.

1.8. Bicycle and Pedestrian Master Plan Process

This Plan was developed between 2014 and 2018 under the purview of Marin County's Public Works Department. To fully engage residents in the production of this Plan, in conjunction with plan updates in other communities, multiple workshops were held throughout the county to discuss the existing plans and accomplishments and solicit input for future improvements. These workshops were advertised through the media and on the County website. In addition, the County's Bicycle Advisory Committee (BAC) met regularly to provide input and guidance during throughout the plan update process. The BAC is comprised of members of the community from each supervisorial district and is staffed by the Marin County Department of Public Works.

1.9. Overview of the Plan

This Plan outlines the actions needed, priorities, cost estimates, and timelines to keep unincorporated Marin County bicycle- and pedestrian-friendly. Chapter 2 summarizes the goals, policies, and objectives guiding the implementation of the Plan. Chapter 3 details the existing bikeway and walkway systems in unincorporated Marin County. Chapter 4 looks at what is needed to make bikeway and walkway improvements. Chapter 5 outlines the recommended bikeway and walkway improvements, including education programs and maintenance needs. Chapter 6 provides references to applicable local, state, and federal design guidelines for the construction of bicycle and pedestrian facilities. Chapter 7 outlines an implementation strategy, including feasibility analyses for some of the highest priority projects in addition to estimated costs and available funding opportunities.

This Plan is meant as a 20-year guide for making unincorporated Marin County a national model for non-motorized transportation. Its success will only be assured by the continued support of Marin County's bicycling and walking community and other residents recognizing the benefits bicycling and walking bring to all residents.

Chapter 1: End Notes

[i] Estimate of residents in unincorporated Marin County based on total Marin County population (258,349) minus the population of incorporated cities and towns in Marin County: Belvedere (1,992), Corte Madera (9,595), Fairfax (7,584), Larkspur (12,219), Mill Valley (14,243), Novato (54,133), Ross (2,306), San Anselmo (12,566), San Rafael (58,819), Sausalito (7,094), and Tiburon (9,158), according to the most recent five-year estimates from the American Community Survey (2011-2015).

[ii] Weighted average of median household income by total population for Census Designated Places in Marin County for which there was available data: Black Point-Green Point CDP (1,250; $126,406), Bolinas CDP (1,358; $74,524), Dillon Beach CDP (139; $45,139), Inverness CDP (1,089; $52,135), Kentfield CDP (6,813; $167,708), Lagunitas-Forest Knolls CDP (1,485; $73,616) Lucas Valley-Marinwood CDP (6,250; $117,071), Marin City CDP (3,048; $40,321), Muir Beach CDP (275; $135,278), Nicasio CDP (93; $72,083), Point Reyes Station CDP (600; $30,978), San Geronimo CDP (599; $85,625), Santa Venetia CDP (5,166; $86,182), Stinson Beach CDP (462; $108,750), Strawberry CDP (5,901; $81,583), Woodacre CDP (1,623; $77,500).

2 Goals, Objectives, and Policy Actions

2.1 Study Area

The study area of the **Marin County Unincorporated Area Bicycle and Pedestrian Master Plan** (Plan) includes all the unincorporated regions of the county. The primary focus of this Plan is on a developing a countywide primary network and local feeder network of bicycle and pedestrian facilities for travel within and between the various unincorporated and incorporated communities in Marin County. This Plan's approach includes consideration of facilities located exclusively within the County's jurisdiction, as well as those which serve a countywide or regional function across multiple jurisdictions.

This chapter establishes a policy framework to guide future transportation decisions and capital improvement programming for the unincorporated areas of Marin County. It is intended to promote regional planning and offer opportunities to coordinate infrastructure improvements among multiple jurisdictions.

2.2 Relationship to Other Marin County Plans

As described above, this Plan is intended to coordinate and guide the provision of all bicycle- and pedestrian-related plans, programs, and projects in Marin County's unincorporated areas. It is intended to assist county staff and staff of other jurisdictions and agencies to implement their priorities, but it does not mandate any particular action. This Plan does not supersede any local bicycle or pedestrian plan but is intended to work in concert with them to establish a countywide non-motorized network. The studies or planning efforts listed below have been reviewed and consulted, studied for consistency, and, where appropriate, folded into this Plan.

Marin Countywide Plan (2007)

The Marin Countywide Plan is the land use 'constitution' for the unincorporated area and sets policy direction for the natural and built environments, as well as addressing economic and social issues. General Plans are required under State law for each county and incorporated community and are required to contain seven Elements, one of which addresses transportation and circulation issues. The first Countywide Plan was adopted in 1973 with updates adopted in 1982, 1994, and 2007. The most relevant sections of the 2007 update include Section 2.9, which details the **Marin Countywide Trails Plan**; Section 3.9, which promotes bicycling and walking as an alternative to drive alone auto trips; and Section 4.7, which creates a framework for community participation in public decision making.

Community Plans

There are 22 community plans covering most of the unincorporated area communities. These plans provide more detailed guidance than what is covered in the Marin Countywide Plan and list goals, policies, and programs specific to each community. The community plans that contain bicycle and pedestrian policies and recommendations have been incorporated into this Plan.

2016-2025 Short-Range Transit Plan, Marin Transit (2015/2016)

The Short Range Transit Plan for Marin Transit includes a complete assessment of the current Marin County transit system and its riders, as well as an identification of transit needs and alternative ways to meet those needs. The goal of the plan is to develop a financially sustainable transit system for Marin County riders that maximizes productivity and mobility for everyone who travels within the County. A majority of Measure A Transportation Sales Tax revenues fund local transit service. Per Measure A requirements, this plan will be updated every two years.

In terms of bicycle access to transit, the plan boasts enhanced bicycle carrying capacity on new transit vehicles, continuation of the 511 program which provides up-to-the-minute transportation information for all modes including bicycling, and ongoing bicycle and pedestrian access studies. This plan also includes bus stop amenity standards, which include the provision of appropriate bicycle storage and/or parking at all high use transit stops defined as over 100 passengers per day.

Collaboration: Sea-level Marin Adaptation Response Team Work Plan (C-SMART, 2014)

C-SMART is an effort led by the Community Development Agency to understand the potential impacts of sea-level rise and to prepare communities for its potential negative consequences. The project's advisory committee is made up of representatives from each of the west Marin communities – Muir Beach, Stinson Beach, Bolinas, Point Reyes Station, Inverness, Marshall, and Dillon Beach. The Technical Advisory Committee is made up of resources managers, utility providers, conservation scientists, and other local and regional experts. C-SMART's work plan describes a two-year process by which the team with assess vulnerabilities in Marin County and develop strategies to mitigate or adapt to those scenarios.

Marin County Safe Routes to Schools Program Evaluation (2016)

Established in 2000, Marin County's Safe Routes to Schools (SR2S) is an award-wining program designed to reduce congestions around schools, while at the same time instilling healthy habits in children and creating a safer and cleaner environment for all. It does this through classroom education, special events, infrastructure improvements, and other strategies that aim to increase the number of non-motorized and higher occupancy carpool and transit trips to and from schools. The 2016 Program Evaluation reviewed behavior data for 62 schools in the SR2S program and found that 26 percent of students at participating schools bicycled or walked to school in the 2014/2015 school year

Mill Valley – Corte Madera Bicycle and Pedestrian Corridor Study (2010)

The Mill Valley to Corte Madera Bicycle and Pedestrian Corridor Study analyzed three alternative routes between Mill Valley and Corte Madera, including 1) the Horse Hill/Alto Hill Pathway and connecting roadways, 2) reconstructing the Alto Tunnel for bicycle and pedestrian use, and 3) the Camino Alto/Corte Madera Avenue on-street route. There was extensive public involvement during the study process, with over 600 people attending one of the two public workshops, along with several hundreds of letters submitted after each workshop.

Alto Tunnel Study (2017)

The Alto Tunnel Study was conducted as an outcome of the 2010 Mill Valley-Corte Madera Corridor Study. The previous study provided a wide cost range to reconstruct the Alto tunnel due to unknown variables related to its geotechnical conditions and ownership. The Alto Tunnel Study conducted geotechnical analysis to evaluate the structural condition of the tunnel and conduct title research into ownership and easements related to the tunnel with the objective of deriving a more refined cost estimate to reconstruct the tunnel. The outcomes of the study are discussed in **Section 5.2.3**.

Alto Tunnel Scoping Study, Volumes I and II (2001)

This study was completed in 2001 following adoption of the 2001 **Unincorporated Marin County Bicycle and Pedestrian Master Plan**. It collected background documents and laid out the scope of a future feasibility study for reopening the Alto tunnel. The studies contain detailed information about the current condition of the tunnel through field inspections and from historical sources. The document recommends a specific strategy for further study of the tunnel's condition.

Sonoma Marin Area Rail Transit Final Environmental Impact Report (SMART FEIR, 2006)

The SMART FEIR detailed plans to establish passenger rail service, as well as a bicycle and pedestrian pathway parallel to the rail line, for the 70-mile corridor from Larkspur Landing in Marin County to Cloverdale in Sonoma County. According to the SMART FEIR, on average 7,000 people would use the pathway on weekdays and over 10,000 people would use it on weekend days. Rail stations were designed to optimize bicycle and pedestrian access, including on-site bicycle parking at all stations and space for staffed bicycle storage and maintenance facilities at the San Rafael and Santa Rosa station sites. With room being designed into rail cars for bicycle storage, passengers would be able take the train and ride their bicycles to work, school, shopping, or for recreation.

One of the goals of the 2001 **Unincorporated County Bicycle and Pedestrian Master Plan** was the creation of a North-South Greenway along the railroad right-of-way. Because SMART owns the railroad right-of-way north of Corte Madera, all proposals for projects in the SMART right-of-way in this Plan and in local bicycle plans in Marin County must be reconciled with the SMART FEIR.

Corte Madera Bay Trail Feasibility Study (2004)

This plan fleshed out the local alignment through Corte Madera of a regionally significant bicycle and pedestrian route. It proposes a combination of Class I, II, and III bikeways along Paradise Drive in Corte Madera from San Clemente to the Tiburon border.

Central Marin Ferry Connection Project Feasibility Study (2004)

This City of Larkspur and Bay Trail Project funded a study to carry forward one of the top priority North-South Greenway projects that proposed the connection of Corte Madera and Larkspur over Corte Madera Creek, which would complete an important segment of the Bay Trail and provide improved bicycle and pedestrian access to the Larkspur Ferry Terminal and the Cal Park Hill Multi-Use Pathway. The report established a preferred alignment for the Central Marin Ferry Connection project which follows the old Northwestern Pacific Railroad right-of-way between Wornum Drive in Corte Madera, across Corte Madera Creek, to East Sir Francis Drake Boulevard along a new bridge connecting to the Cal Park Hill Multi-Use Pathway. The report also identifies alternative alignments that cross Corte Madera Creek on the highway structure, connecting to proposed pathway segments on the south side of the creek.

Marin County Unincorporated Areas Bicycle and Pedestrian Master Plan (2008)

The 2008 plan, which is the subject of the current update, was completed for the Marin County Department of Public Works. The plan outlines improvements to the unincorporated areas of the County of Marin and includes routes of countywide and regional significance, as well as highlighting improvements from the incorporated communities of Marin County.

Local Bicycle and Pedestrian Master Plans

The following jurisdictions have adopted bicycle and pedestrian master plans. Each of the plans, with the exceptions of the City of San Rafael and Town of Ross, were updated concurrently with this Plan. As described above, throughout the planning process, special consideration has been given to locations where countywide and regional facilities cross jurisdictional boundaries in order to coordinate improvements among multiple jurisdictions.

Table 2-1: Local Bicycle and Pedestrian Master Plans

Community	Year of Most Recent Plan Adoption
Corte Madera	2016
Fairfax	2016
Larkspur	2017
Mill Valley	2017
Novato	2015
Ross	2010 (update in progress)
San Anselmo	2016
San Rafael	2011 (update in progress)
Sausalito	2008 (update in progress)
Tiburon	2016

Marin County North-South Bikeway Feasibility Study (1994)

The purpose of the Marin County North-South Bikeway Feasibility Study was to identify and develop a safe and efficient north-south bikeway from the Golden Gate Bridge to the Sonoma County line, generally following the old Northwestern Pacific Railroad (NWP) right-of-way, for commuters. The study was never officially adopted. The Plan's recommendations included development of a long-term alignment along the NWP right-of-way through much of the county. Although SMART did not exist at the time, the study did recognize the difficulties in this alignment due to the intended use of the right-of-way for transit in addition to cost, rebuilding of tunnels, and private site development. Thus, it also recommended a short-term alignment that runs mostly along existing streets and paths, with improvements in signing, striping, and pavement.

Marin County Bicycle Plan (1975)

In 1975, Marin County's Board of Supervisors adopted a document entitled "A Bikeway Policy for Marin County," which emphasized the need for safe accommodation for bicycling in all public streets and roads. The policies called for the County to design new road construction and repair projects to safely accommodate bicycles, integrate bicycle planning into transportation planning and construction, provide recreational bikeways, develop uniform standards for bikeway design, support bicycle safety education, and rules.

The 1975 Plan called for the delineation of over 400 miles of bike routes, the provision of bicycle parking at locations with an apparent demand for such facilities, a bicycle educational and safety program to be initiated in all elementary schools, and the introduction of a bicycle registration program to help recover stolen bicycles. The total cost of implementing the plan was estimated at $3.5 million.

San Quentin Area Bicycle and Pedestrian Access Study (2011)

In conjunction with stakeholder agencies, the County conducted a corridor analysis of the San Quentin peninsula to consider potential bicycle and pedestrian improvements and connections in an area with numerous challenges. The corridor extends from the end of the multi-use path at Remillard Park in Larkspur, along East Sir Francis Drake Boulevard, eastward to the Richmond Bridge via the I-580/E. Francisco Boulevard. Recommended improvements included several alternatives such as extending the multi-use path, provision of bike lanes, construction of a separated bikeway, and connections at the proposed Richmond Bridge path.

Tiburon Bay Trail Gap Closure Study (2012)

The Bay Trail, County, and Town of Tiburon collaborated on a corridor study focused on gaps in the Bay Trail between Strawberry and Blackie's Pasture. This segment is also a gap in the County's and Town's bicycle and pedestrian network. The study recommended providing a Class I multi-use path on the south side of Tiburon Boulevard between East Strawberry Drive and Greenwood Beach Road to provide a safe path of travel where bicyclists and pedestrians must use the shoulder of the high-speed roadway. Other recommended improvements included intersection modifications, provision of bike lanes, and sidewalks, along the corridor to provide complete connections.

2.3 Regional Bicycle and Pedestrian Plans

Regional Bicycle Plan for the San Francisco Bay Area (2009)

The 2009 Regional Bicycle Plan for the San Francisco Bay Area is one component of the Metropolitan Planning Commission's multipronged effort to promote bicycling and bicycle safety while reversing decades of automobile-oriented development. **Transportation 2035,** the regional transportation plan update, boosts bicycle spending fivefold over prior regional bicycle plan expenditures (from $20 million to $1 billion), increases funds to help spur compact transit-oriented development, and launches a new Climate Action Program that will include programs for bicycle facilities.

The San Francisco Bay Trail Plan (1989) and Gap Feasibility Study (2005)

The Bay Trail Project is a nonprofit organization administered by the Association of Bay Area Governments (ABAG) that plans, promotes, and advocates for the implementation of a continuous 500-mile bicycling and hiking path around San Francisco Bay. The goals of the Bay Trail Project 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. Major Marin County sections that have been fully completed include the Tiburon Multi-use Path, the Mill Valley-Sausalito Multi-use Path, the Corte Madera-Larkspur Bay Trail, Hamilton Field Path, and sections of the San Rafael Shoreline Park Pathway.

2.4 Plan Goals, Objectives, and Policy Actions

2.6.1 Goals

Goals provide the context for the specific objectives and policy actions discussed, provide a long-term vision, and serve as the foundation of this Plan. Goals are broad statements of purpose that do not provide specific descriptions, while policy actions provide a bridge between general policies and actual implementation guidelines. As with the Plan recommendations, none of the Goals or Objectives are explicitly funded at this time, although funding opportunities are continually pursued. This Plan and its goals, objectives, and policy actions herein do not mandate any specific action by the Transportation Authority of Marin or the County. For a full list of existing bicycle- and pedestrian-related goals and policies included in the 2007 **Marin Countywide Plan**, see **Appendix A**.

Goal 1 Increased Bicyclist and Pedestrian Access

Expand bicycle and pedestrian facilities and access in and between neighborhoods, employment centers, shopping areas, schools, and recreational sites, in pursuit of the Marin Countywide Plan goal of having 20 percent of all trips made by walking or biking by 2020 and add a 2030 goal of 25 percent bicycling and walking mode share. Provide facilities that are accessible to the greatest number of users.

Goal 2 Bicycle Transportation

Make the bicycle an integral part of daily life in Marin County, particularly for trips of less than five miles, by implementing and maintaining a bikeway network, providing end-of-trip facilities, improving bicycle/transit integration, encouraging bicycle use, and making bicycling safer and more convenient for people of all ages and abilities.

Goal 3 Pedestrian Transportation

Encourage walking as a daily form of transportation in Marin County by completing a pedestrian network that services short trips and transit, improving the quality of the pedestrian environment, improving the health of all citizens, and increasing safety, convenience and access opportunities for all users.

2.6.2 Objectives

Objective A

Implement this Plan, which identifies existing and future needs, and provides specific recommendations for facilities and programs over the next 20 years.

Objective A Policy Actions

1. Fund a bicycle/pedestrian coordinator who would help implement the county and local bicycle plans.
2. Update this Plan periodically to reflect new policies and/or requirements for bicycle and pedestrian funding.
3. Maximize coordination between all municipalities, schools, and community organizations to review and comment on bicycle and pedestrian issues of mutual concern.
4. Implement the recommendation to regularly monitor bicycle- and pedestrian-related collision levels and seek a reduction in these collision levels on a per capita basis over the next 20 years.

Objective B
Complete a continuous network of bikeways that are feasible, fundable, and that serve bicyclists' needs, especially for travel to employment centers, schools, commercial districts, transit stations, and institutions.

Objective B Policy Actions
1. Seek funding for bikeway projects through current local, regional, State, and federal funding programs and encourage multi-jurisdictional funding applications.
2. Implement high-priority projects, such as the North-South and East-West bikeways.
3. Complete implementation of the Countywide Bicycle Route Guide Signage Project.
4. Continue implementation of the 2016 MTC Complete Streets Resolution.

Objective C
Complete a network of walkways that serves pedestrian needs, especially for short trips to employment centers, schools, commercial districts, transit stations, and institutions.

Objective C Policy Actions
1. Complete missing connections to make direct routes for walking.
2. Identify and mitigate impediments and obstacles to walking to school.
3. Continue implementation of the 2016 MTC Complete Streets Resolution.
4. For new development projects, where appropriate, require pedestrian facilities to provide connections to nearby transit facilities.
5. Work with transit authorities to ensure that pedestrian concerns are addressed in the design of transit stops.
6. Provide opportunities for walking for recreational purposes.

Objective D
Maintain and improve the quality, operation, and integrity of bikeway and walkway network facilities.

Objective D Policy Actions:
1. Undertake routine maintenance of bikeway and walkway network facilities, such as sweeping bicycle lanes and sidewalks, as funding and priorities allow.
2. Ensure that repair and construction of transportation facilities minimizes disruption to the bicycling and walking environment to the extent practical.
3. Ensure that new bicycle and pedestrian improvements do not have a net negative impact on the environment.
4. Maximize opportunities to ensure that the pedestrian walkway network is accessible to, and usable by, persons with disabilities.

Objective E

Provide secure short- and long-term bicycle parking in employment and commercial areas, in multifamily housing, at schools, and at transit facilities, including covered and/or attended parking.

Objective E Policy Actions:

1. Amend the Development Code to require bicycle parking spaces as part of new development projects.
2. Encourage the installation of short- and long-term bicycle parking in the public right-of-way.
3. Work with local elementary, middle, and high schools to promote bicycle commuting and to assist in purchasing and siting long- and short-term bicycle parking.
4. Amend the Development Code to require lockers and showers to be added to new or remodeled buildings, subject to certain thresholds.
5. Develop an ordinance to require the provision of bicycle parking at major events to help ease traffic and parking.

Objective F

Increase the number of bicycle-transit trips and pedestrian access to transit.

Objective F Policy Actions:

1. Support and promote bicycle access to and parking at bus and ferry transit services in Marin County.
2. Assist transit providers in providing and promoting secure, covered bicycle racks and lockers in the transit system to encourage bicycle use.
3. Encourage bicycle rental opportunities near ferry terminals, major recreation destinations, and other locations where visitors are entering Marin County.
4. Require that any future rail transit service in Marin County provide adequate bicycle and pedestrian access, on-board storage capacity, and secure bicycle parking.
5. Support and promote transit facility enhancements, such as bus stop access improvements, that will encourage increased bicycle and pedestrian access to transit.

Objective G

Develop and implement education and encouragement plans aimed at youth, adult bicyclists, pedestrians, and motorists. Increase public awareness of the benefits of bicycling and walking and of available resources and facilities.

Objective G Policy Actions

1. Develop adult and youth bicycle and pedestrian education, encouragement, and safety programs.
2. Market the health benefits of bicycling and walking.

3 Existing Conditions

3.1. Introduction

Existing conditions in unincorporated Marin County include both current bicycling and walking patterns, as well as physical infrastructure and programs that support these activities. While Marin County has some of the most bikeable and walkable towns and cities in the Bay Area, bicyclists must still contend with large gaps in the bikeway network and pedestrians must still negotiate streets with sub-standard to no sidewalks or try to cross busy streets with limited protection. One aspect of existing conditions that can be difficult to measure, but widely identified by the public as an important determinant of the decision to bicycle of walk, is the general attitude of people toward bicyclists and pedestrians. Numerous public comments were heard about the lack of courtesy between people using the same roadway, whether they are by foot, bicycle, or motor vehicle.

3.2. Bicycle Facilities

3.2.1 Existing Bikeways

The existing bikeway system in Marin County's unincorporated area consists of an incomplete system of approximately 135.37 miles of bikeways, including 11.3 miles of Class I Bikeway or Multi-use Pathways (See **Table 3-1**), 31.0 miles of Class II on-street bicycle lanes (See **Table 3-2**), and 93.8 miles of bicycle routes (see **Table 3-3**). Currently, there are no Class IV protected bikeways in unincorporated Marin County. Maps of existing bikeways are shown in **Figure 3-2** to **Figure 3-6**.

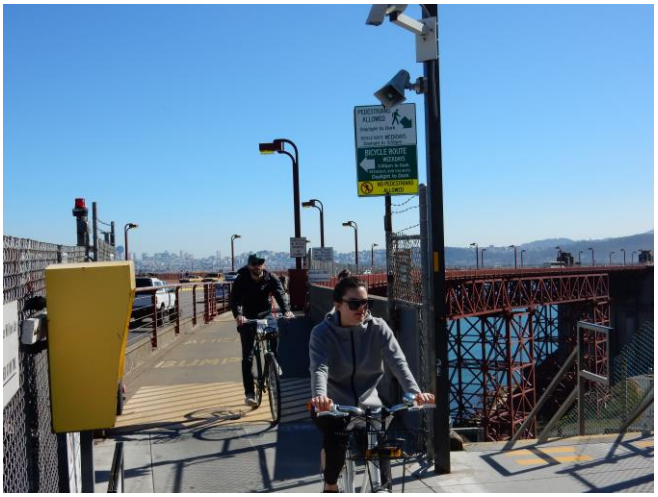


Figure 3-1: Bicycle and pedestrian access to the Golden Gate Bridge

Bikeway designations used in this Plan are from Chapter 1000 of Caltrans' Highway Design Manual, except for a "Class IIr" designation described below. Class I multi-use paths must meet specific width, clearance, curve radii, gradient, and other requirements, while Class II bicycle lanes and Class III bicycle routes must meet specific striping, signing, and other requirements. In west Marin, the use of excessive signage and other markings is discouraged in various planning documents. For this area, a Class IIr (Class II – rural) designation is used in which the pavement section meets Class II standards but "Bike Lane" signage and pavement stencils are not used. Additionally, some

facilities designated as Class III (Bicycle Route) are indicated in maps as Class III-S; these facilities are signed as bicycle routes but also have Shared Lane Markings ("Sharrows") on the pavement. In situations where an existing facility does not meet Caltrans standards or adhere to local policy, those facilities are either shown as "Proposed" or "Other" for mapping purposes.

Bicycles are allowed on all paved public roadways in Marin except freeways (highways with interchanges) with the following exceptions: both shoulders of Richardson Bay Bridge (Highway 101) including adjacent on- and off- ramps; on a short section of eastbound I-580 near San Quentin; and on Highway 37 from Hanna Ranch Road to the Sonoma County line.

Bicycles are currently not allowed on the Richmond-San Rafael Bridge; bicyclists must use the bus to make this connection. A project to provide a separated bicycle facility on the upper deck of the bridge is planned for completion in 2018. Bicyclists have exclusive use of the west walkway of the Golden Gate Bridge evenings and weekends, but must share the east walkway with pedestrians during the week when the west walkway is used for bridge maintenance access during the day.

Notable existing bikeways which are totally or partially in unincorporated Marin County include:

1. **Mill Valley-Sausalito Multi-use Path:** A three-mile paved pathway on the former NWPRR railroad right-of-way that traverses wetland areas and serves numerous activity centers between Gate 6 Road in Sausalito and Vasco Court in Mill Valley. This path is an important recreational and commuting route, is part of the regional Bay Trail system, and sees the highest usage of any multi-use path in Marin County, regularly exceeding 4,000 users per day.

2. **Corte Madera Creek Pathway:** This paved path consists of three distinct segments between Remillard Park in Larkspur and Ross and is signed as Bicycle Route 20. These segments comprise the only completed sections of the East-West Bikeway in the eastern portion of the county. From east to west:

- Remillard Park to South Eliseo Drive - Near Larkspur Landing within Larkspur, the Class I path is located south of East Sir Francis Drake Boulevard and serves Larkspur Landing, the ferry terminal and connects to the North-South Greenway (Bicycle Route 5) just east of Highway 101 while west of Highway 101, the path continues parallel to Corte Madera Creek and is popular for recreational and commuter use. A gap in the path exists between Lower Via Casitas and Bon Air Road in which bicyclists and pedestrians must use South Eliseo Drive for three-quarters of a mile.
- Bon Air Road to College Avenue – This Class I segment runs alongside Corte Madera Creek, partially on the north side, crossing a bridge at Stadium Way, and then continuing on the south side to a crossing at College Avenue. This segment provides connections to Creekside Park, Marin General Hospital, Marin Catholic High School, Bacich School, Kent Middle School, and neighborhoods along the north side of the creek. While not a formal Class I path, a separated path through the college property is designated.

- College of Marin to Ross – This segment continues on the south side of the Corte Madera Creek channel, providing access to the college, various residential and commercial complexes, and Ross Common. Previously a narrow connector path, this section was widened and upgraded to Class I standards in 2016.

3. Pacheco Hill Pathway: This Class I path provides an important link in Northern Marin County between Miller Creek Road in Marinwood to Alameda del Prado in Ignacio. The path provides the only linkage for bicyclists and pedestrians in this entire corridor.

4. **Horse Hill Pathway:** This Class I path links Corte Madera with Alto and Mill Valley alongside Highway 101. While containing relatively steep grades, it is separated from vehicle traffic and involves less climbing than the other route through this corridor, Camino Alto/Corte Madera Avenue.

5. Cross Marin Trail: This partially paved pathway extends from the Inkwells Bridge just west of Lagunitas through the park on the old Northwestern Pacific Railroad right-of-way to Tocaloma, and is popular with bicyclists, hikers, and equestrians. From the Inkwells bridge to the park campground the path is unpaved but hard-packed earth. Starting at the campground to Platform Bridge it is a Class I facility.

6. **Olompali Pathway:** A Class I multi-use path constructed in conjunction with the Novato Narrows project (Highway 101). It is part of County Bike Route 5 and the North-South Greenway, and it connects the Class II on-street bicycle lanes coming from Novato on Redwood Boulevard at the Olompali State Park entrance north to the Class II on-street bicycle lanes on San Antonio Road which provide a connection to Petaluma.

Table 3-1: Existing Bikeway Facilities in Unincorporated Marin County, Class I

Name	Facility Class	Mileage	Location
Bon Air Path	I	0.31	Kentfield
Bon Air Path Spur	I	0.07	Kentfield
Conzelman Road	I	0.10	Fort Baker
Corte Madera Creek Path	I	1.48	Kentfield
Corte Madera Creek Path Spur	I	0.14	Kentfield
Creekside Park Path	I	0.36	Kentfield
Cross Marin Trail	I	2.88	West Marin
Golden Gate Bridge	I	1.01	County
Inkwells Bridge	I	0.07	Lagunitas
Manzanita Connector	I	0.10	Tam Valley
McGlashan Path	I	0.70	
Mill Valley-Sausalito Path	I	1.44*	Almonte – Waldo Point
Mission Pass Trail	I	0.22*	Sleepy Hollow
Olema Bolinas Road	I	0.36	Bolinas
Olompali Path	I	1.02	Unincorporated Novato
Pacheco Hill Path	I	0.71*	Marinwood - Novato
Vista Point Path	I	0.37	Fort Baker
Total		**11.34**	

* Path also traverses incorporated cities; mileage figure for unincorporated segment only

Table 3-2: Existing Bikeways in Unincorporated Marin County, Class II/IIr

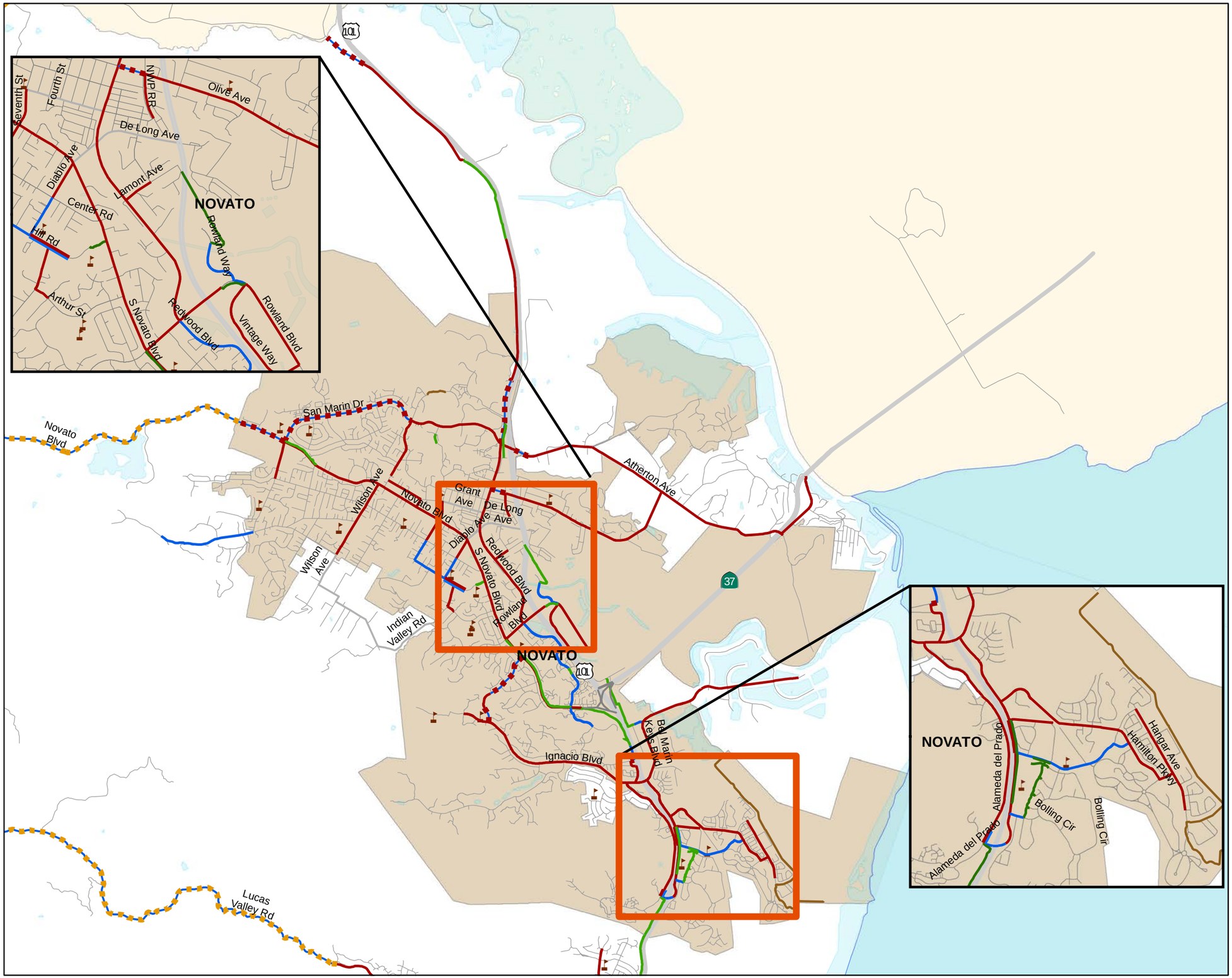
Name	Facility Class	Mileage	Location
Alameda del Prado	II	0.43	Loma Verde
Almonte Boulevard	II	0.35	Almonte
Atherton Avenue	II	2.34	Black Point
Atherton Avenue	II	0.70	North Novato
Bel Marin Keys Boulevard	II	1.64	Bel Marin Keys
Bunker Road	II	0.67	Fort Baker
College Avenue	II	0.40	Kentfield
Conzelman Road	II	1.23	Fort Baker
Donahue Street	II	0.16	Marin City
Harbor Drive	II	0.77	Black Point
Las Gallinas Avenue	II	1.03	Marinwood
Los Ranchitos Road	II	0.83	Los Ranchitos
Lucas Valley Road	II	3.40	Marinwood – Lucas Valley
Miller Creek Road	II	1.05	Marinwood
Nicasio Valley Road	IIr (shoulder)	2.66	Nicasio
North Redwood Boulevard	II	0.59	Unincorporated Novato
Olive Avenue	II	0.50	Unincorporated Novato
Point Reyes Petaluma Road	IIr (shoulder)	4.22	West Marin
San Antonio Road	II	1.50	Unincorporated Novato
Seminary Drive	II	0.90	Strawberry
Sir Francis Drake Boulevard	IIr (shoulder)	5.67	Fairfax - Lagunitas
Total		**31.04**	

Table 3-3: Existing Bikeways in Unincorporated Marin, Class III

Name	Facility Class	Mileage	Location
Bear Valley Road	III	2.13	West Marin
Belvedere Drive	III	0.72	Strawberry
Conzelman Road	III	0.64	Fort Baker
Cypress Avenue	III	0.35	Dillon Beach
Dillon Beach Road	III	3.82	Tomales – Dillon Beach
East Road	III	1.77	Fort Baker
Fawn Drive	III	0.58	Sleepy Hollow
Greenwood Cove Drive	III	0.36	Strawberry
Kent Avenue	III	0.56	Kentfield
Lomita Drive	III	0.51	Alto
Lucas Valley Road	III	6.63	Upper Lucas Valley - Nicasio
Lucky Drive	III	0.11	Unincorporated Corte Madera
Main Street	III	0.25	San Quentin
McCullough Road	III	0.90	Fort Baker
Meadow Drive	III	0.28	Alto
Moore Road	III	0.19	Fort Baker
Muir Woods Road	III	3.92	West Marin
N. San Pedro Road	III	5.40	Santa Venetia – San Rafael
Nicasio Valley Road	III	4.93	San Geronimo - Nicasio
Novato Boulevard	III	5.72	Novato – Hicks Valley
Olema Road	III	0.45	Unincorporated Fairfax
Panoramic Highway	III	8.89	West Marin
Paradise Drive	III	5.70	Unincorporated Tiburon
Platform Bridge Road	III	2.38	West Marin
Point San Pedro Road	III	1.30	Unincorporated San Rafael

Name	Facility Class	Mileage	Location
Point Reyes Petaluma Road	III	9.25	West Marin
Redwood Highway Frontage Road	III	0.75	Strawberry
San Antonio Road	III	0.49	Unincorporated Novato
San Geronimo Valley Drive	III	2.39	Woodacre – San Geronimo
Seminary Drive	III	0.59	Strawberry
Shell Road	III	0.11	Alto
Sir Francis Drake Boulevard	III	12.80	Lagunitas – Inverness Park
Stadium Way	III	0.09	Kentfield
Taylor Park Road	III	0.61	County
Tennessee Valley Road	III	1.30	Tamalpais Valley
Tomales Petaluma Road	III	5.45	West Marin
Tower Drive	III	0.12	Alto
Vineyard Road	III	1.03	Unincorporated Novato
Woodland Avenue	III	0.32	California Park
Total		**93.79**	

NORTHERN MARIN COUNTY EXISTING BIKEWAY NETWORK FIGURE 3.1



Legend

Bicycle Facilites

Existing

- Existing Class I Path
- Existing Class II Bike Lane
- Existing Class IIr Shoulder
- Existing Class III Route
- Existing Class III Route with Sharrows
- Existing One Way Class IV Bikeway
- Existing Two Way Class IV Bikeway
- Existing Class III/Proposed Class II
- Existing Class III/Proposed Class IIr
- Class II/III Combination
- Class II/IIIs Combination
- Class IIr/III Combination
- Freeway Legal Route
- Existing Other Facility
- School

0 0.5 1 2

Miles

DATA SOURCE MARINMAP

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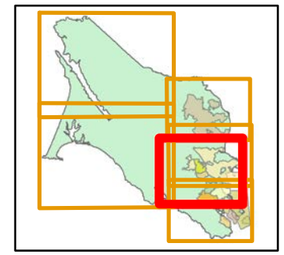
CENTRAL MARIN COUNTY EXISTING BIKEWAY NETWORK FIGURE 3.2



Legend

Bicycle Facilites

Existing

- Existing Class I Path
- Existing Class II Bike Lane
- Existing Class IIr Shoulder
- Existing Class III Route
- Existing Class III Route with Sharrows
- Existing One Way Class IV Bikeway
- Existing Two Way Class IV Bikeway
- Existing Class III/Proposed Class II
- Existing Class III/Proposed Class IIr
- Class II/III Combination
- Class II/IIIs Combination
- Class IIr/III Combination
- Freeway Legal Route
- Existing Other Facility
- School

0 0.5 1 2

Miles

DATA SOURCE MARINMAP

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SOUTHERN MARIN COUNTY EXISTING BIKEWAY NETWORK FIGURE 3.3

Legend

Bicycle Facilites

Existing

- Existing Class I Path
- Existing Class II Bike Lane
- Existing Class IIr Shoulder
- Existing Class III Route
- Existing Class III Route with Sharrows
- Existing One Way Class IV Bikeway
- Existing Two Way Class IV Bikeway
- Existing Class III/Proposed Class II
- Existing Class III/Proposed Class IIr
- Class II/III Combination
- Class II/IIIs Combination
- Class IIr/III Combination
- Freeway Legal Route
- Existing Other Facility
- School

0 0.5 1 2

Miles

DATA SOURCE MARINMAP

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WESTERN MARIN COUNTY (northern portion) EXISTING BIKEWAY NETWORK FIGURE 3.4

Tomales Petaluma Rd

1

Hicks Valley Rd

Pt Reyes Petaluma Rd

Novato Blvd

Nicasio Valley Rd

Sir Francis Drake Blvd

Legend

Bicycle Facilites

Existing

- Existing Class I Path
- Existing Class II Bike Lane
- Existing Class IIr Shoulder
- Existing Class III Route
- Existing Class III Route with Sharrows
- Existing One Way Class IV Bikeway
- Existing Two Way Class IV Bikeway
- Existing Class III/Proposed Class II
- Existing Class III/Proposed Class IIr
- Class II/III Combination
- Class II/IIIs Combination
- Class IIr/III Combination
- Freeway Legal Route
- Existing Other Facility
- School

0 0.75 1.5 3

Miles

DATA SOURCE MARINMAP

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WESTERN MARIN COUNTY (southern portion) EXISTING BIKEWAY NETWORK FIGURE 3.5

Sir Francis Drake Blvd
Pt Reyes Petaluma Rd
Novato Blvd
Bear Valley Rd
Nicasio Valley Rd
Lucas Valley Rd
Sir Francis Drake Blvd
1

Legend

Bicycle Facilites

Existing

- Existing Class I Path
- Existing Class II Bike Lane
- Existing Class IIr Shoulder
- Existing Class III Route
- Existing Class III Route with Sharrows
- Existing One Way Class IV Bikeway
- Existing Two Way Class IV Bikeway
- Existing Class III/Proposed Class II
- Existing Class III/Proposed Class IIr
- Class II/III Combination
- Class II/IIIs Combination
- Class IIr/III Combination
- Freeway Legal Route
- Existing Other Facility
- School

0 0.75 1.5 3

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DATA SOURCE MARINMAP

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3.2.2 Bikeway Projects in Progress

The following projects were identified as high priorities in the 2008 **Marin County Unincorporated Area Bicycle and Pedestrian Plan** and are either fully funded, have completed the design phase, and/or are in construction. Project-specific status details are provided below.

Countywide Bicycle Route Guide Signage Project

Begun in 2000, the Countywide Bicycle Route Guide Signage project was initiated to provide a comprehensive system of bicycle route signs that would guide bicyclists along the safest and most direct routes between Marin County's cities and towns and from one end of the county to the other. The project was aimed at both experienced and inexperienced bicyclists, and it was intended that the routes marked by the signs would encourage novice bicyclists to ride their bicycles more frequently. Installation of signage was motivated in part by feedback from visitors that found navigating Marin County's unfamiliar roads and paths to be difficult.

The project was a cooperative effort led by the County in partnership with local departments of public works and Caltrans. The project was initiated by a local advocacy group, which created an early version of the numbered bicycle route system that the County later adapted for use in the final project.

The County began installation of the first countywide bicycle route signs in late July 2005, starting in Sausalito and Mill Valley, working northward until all communities in the urbanized corridor were signed as originally planned. Subsequent funding has allowed expansion of the system into West Marin; as of 2016 all designated routes in West Marin, except for Shoreline Highway/Highway 1, have been signed. As new projects are completed new signed segments are brought into the system, County staff typically install the signs, but in certain cases, the signs are being provided to the local jurisdiction for installation by local crews.

Interchange and Intersection Projects

Several interchange and intersection improvements were identified in the 2008 plan. Currently, the Tam Junction area (Shoreline Highway and Almonte Boulevard) are scheduled for construction of bicycle and pedestrian improvements as part of two separate projects. Once complete, there will be continuous sidewalks and bicycle lanes along Shoreline Highway between Coyote Creek and Flamingo Road. There will also be continuous bicycle lanes on Almonte Boulevard from Shoreline Highway to Helen Avenue, providing a connection to the existing bicycle lanes that continue north into Mill Valley. Various improvements for bicyclists to Tiburon Boulevard (SR 131) are also in various stages of design or construction, including at Greenwood Cove Road and at North Knoll Road. Overall corridor improvements for pedestrians and bicyclists along Tiburon Boulevard have been included in drafts of Caltrans' District 4 Bicycle and Pedestrian Plan.

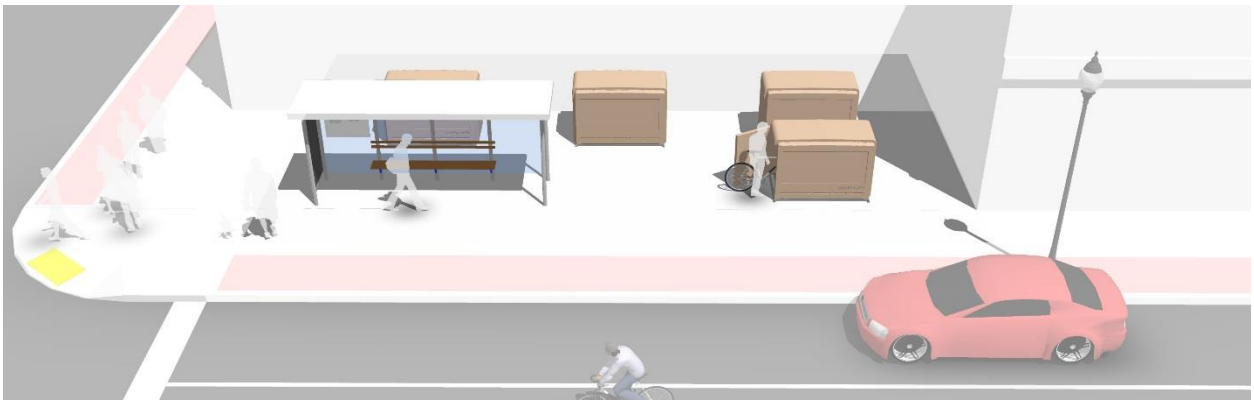
Central Marin Ferry Connector – Phase 2

Phase 2 of the Central Marin Ferry Connector (CMFC) extends the North-South Greenway from the terminus of CMFC-Phase 1 at the Corte Madera Creek Path south to Wornum Drive in Corte Madera. Phase 2 consists of two distinct segments: north and south. The northern segment is currently funded and in design. It will extend the path over Corte Madera Creek on the freeway ramp structure to near the existing pedestrian overpass that crosses over Highway 101 to the west. The freeway structure portion will require widening of the current narrow walkway to accommodate a Class I facility. The alignment of the south segment is still to be determined. One alternative would extend a combination of Class I and Class II facilities southward along Redwood Highway Frontage Road. The other would route the path through private property at the north end to the SMART rail right-of-way east of the industrial complex and then follow the rail right-of-way south and then west to Wornum Drive, following the designated alignment of the North-South Greenway.

3.2.3 Bicycle Parking

Bicycle parking is typically categorized into long- and short-term bicycle parking. Long-term bicycle lockers are covered storage units that typically accommodate one or two bicycles per locker and provide additional security and protection from inclement weather (See **Figure 3-7**). They are typically located at large employment centers, colleges, and transit stations. Modern bicycle lockers feature card-swipe access which allow multiple users to be able use the lockers compared to personally-assigned bicycle lockers that require a dedicated key to access them.

Figure 3-7: Long-term Bicycle Parking, Bike Lockers



Bicycle Secure Parking Areas (Bike SPAs) provide long-term storage of bicycles and can be found at schools and stadiums or at special events and other locations. They typically involve a fencing system that can securely store numerous bicycles (See **Figure 3-8**). Bike SPAs can be monitored via camera or by an attendant, and they often limit access to the facility through a key pad or key card.

Figure 3-8: Long-term Bicycle Parking, Bike SPA

Short-term bike parking, shown in **Figure 3-9**, is best used to accommodate visitors, customers, messengers, and other bicyclists expected to depart within two hours of arrival. Bicycle racks provide support for the bicycle but do not have locking mechanisms; users are expected to use their own locks. Racks are relatively low-cost, typically hold between one to two bicycles, allow bicyclists to securely lock their frames and wheels, are secured to the ground, and are located in highly visible areas. They are usually located at schools, commercial locations, and activity centers such as parks, libraries, retail locations, and civic centers.

Figure 3-9: Short-term Bicycle Parking, Bicycle Racks

The Association of Pedestrian and Bicycle Professionals (APBP) published the second edition of **Essentials of Bike Parking** (2015) guide for people planning to purchase or install bike parking fixtures on a limited scale. It is available for download here: http://www.apbp.org/?page=publications.

Bicycle Parking in Marin

Bicyclists visiting stores, restaurants, places of employment, and community facilities are largely left to their own devices to temporarily store their bicycles. The lack of secure parking has become a major consideration in Marin County and around the country, in part, the result of the increased value of bicycles. Most new bicycles today cost between $350 to $5,000. Bicycles are one of the top stolen items in all communities, with individual components being stolen even when a bicycle is securely locked.

Existing bicycle parking facilities in unincorporated Marin County are found at the Civic Center, where bicycle racks are provided for short-term visitor and bicycle lockers are available for long-term employee use. Bicycle racks have been added to many of Marin County's downtown areas, and the College of Marin provides racks at its Kentfield and Novato campuses. Some smaller retail areas such as Woodlands Market in Kent Woodlands provide bicycle racks but generally secure, modern bicycle parking is not available at these locations. Limited bicycle parking has been provided at the Larkspur Ferry terminal within the paid area to provide an additional level of security for bicyclists not wishing to leave a bike in an exposed rack for an extended period. SMART has also provided key-card access lockers at its stations for train riders not needing their bicycle for the other end of their journey. Opportunities for additional secure bicycle parking, such as Bike SPAs, attended indoor bicycle stations, or other secure parking facilities, would help to address the shortage of bicycle parking at major transit facilities such as the Larkspur Ferry Terminal and the San Rafael Transit Center and could contribute to bridging the "last mile" gap between users' origin or destination and the transit facility.

A field review for the 2008 Plan shows racks are typically provided at most elementary and middle schools throughout Marin County. An aggressive funding program to provide bicycle racks for schools was undertaken in the late 2000s and included the construction of bicycle corrals at several campuses countywide. When it occurs, vandalism and theft may be due in part to poor design or placement of bicycle racks plus inadequate locking devices and techniques used by students. The lack of adequate racks is a result of many factors, including the absence of requirements for properly designed school bicycle parking.

No official public shower or locker facility for bicycle commuters is known to exist in Marin County, although facilities are provided for employees at the Marin County Civic Center. Some employers provide private facilities, while some bicycle commuters may use facilities in local health clubs.

3.2.4 Bicycle Safety Education Programs

One of the most effective way to improve the safety of bicycling is simply to improve the quality of bikeway facilities in Marin County. However, bikeways cannot improve safety conditions alone. There is also a need for proper education of youth and adult bicyclists, as well as motorists.

With the development of the Safe Routes to Schools program, formal bicycle safety education programs are now offered to schools in Marin County. More information on this program is provided in **Section 3.4**.

In addition, several nonprofits conduct bicycle safety initiatives. The Marin County Bicycle Coalition (MCBC), Bicycle Trails Council of Marin (BTCM), and Trips for Kids offer skill and other education programs for adults and youth.

Basic Street Skills Classes are provided free of charge by local bicycle advocacy groups. Classes provide information on how to avoid collisions and citations, how to ride safely, improve visibility, and the legal rights and responsibilities of bicyclists. Bicyclists who have received a bicycle violation may attend this class to reduce their fine. Share the Road presentations are also offered for the public. The presentation is available by request and includes information on the rights and responsibilities of bicyclists and motorists, as well as ways in which they can behave courteously to avoid collisions.

3.2.5 Multi-Modal Connections

Improving the bicycle-transit link is an important part of making bicycling a part of daily life in Marin County. Linking bicycles with mass transit (bus, train, and ferry) helps to overcome such barriers as trips generally too long to be made solely by bicycle, personal security concerns, and riding at night, in poor weather, or up hills. Increased transit connectivity also enables bicyclists to reach more distant areas and helps to increase transit ridership midday and on weekends.

Bicycling to transit instead of driving benefits communities by reducing air pollution, demand for land to support park-and-ride lots, energy consumption, and traffic congestion through relatively low-cost investments. There are four main components of bicycle-transit integration:

- Allowing bicycles on transit;
- Offering secure bicycle parking at transit locations;
- Improving bikeways to transit; and
- Encouraging usage of bicycle and transit programs.

Approximately 10 percent of Marin County commuters use public transit (ACS, 2010-2015). Local transit service is coordinated by Marin Transit, which contracts with Golden Gate Transit (GGT) and other providers for local transit and paratransit service.

The following transit services are available in Marin County: Marin Transit and Golden Gate Transit Bus Service, Golden Gate Ferry, SMART rail service, Whistlestop (paratransit), West Marin Stagecoach, Marin Transit Community Shuttles, and the Blue and Gold Fleet (daily ferry service to San Francisco).

As of June 2016, bicycle storage is available on all public transit vehicles in Marin County. Bicycle racks on transit vehicles can be used day and night and at the same fare as passengers without bicycles. Front-mounted racks with capacity for 3 bicycles are installed on all of Golden Gate Transit's buses (excluding 45-foot motor coaches, Marin Transit's local services including the West Marin Stagecoach and the three community shuttles). Additionally, Golden Gate Transit installed underfloor style racks that hold two bicycles in the luggage compartment of 45-foot long motor coaches that previously had no bicycle carrying capacity due to state law limits on bus length. This improvement ensures that all transit buses in Marin County now have bicycle storage capabilities. Bicycles are also allowed on all ferries. Secure, weather-protected bicycle parking is available inside the paid area of the Larkspur Ferry Terminal to ensure adequate overflow storage if ferries reach capacity. SMART trains can carry up to 24 bicycles on board and SMART stations have key-card accessible e-lockers.

3.2.6 Encouragement and Support Programs

Support Groups

There are numerous bicycle repair, supply, and rental shops located throughout Marin County. In addition to these shops, Marin County is also home to several bicycle advocacy and riding groups.

Events

Bike-to-Work Week takes place every year in May (National Bike Month). 511.org, a travel and commuter referral service, sponsors the event for the entire Bay Area.

Biketoberfest is a festival held every October in Fairfax and celebrates bicycling, its history, and the latest trends in bicycles, including a focus on utilitarian bicycling the greater use of bicycles for everyday trips.

While there are no support groups in Marin County dedicated specifically to pedestrians, several groups include walking or hiking as part of their mission.

3.3. Pedestrian Facilities

This section briefly describes the general conditions and attributes that exist with regard to pedestrian facilities. Although the topographies, histories, and populations of the various communities and villages differ, the problems faced by pedestrians are similar. This statement of existing conditions has been synthesized from a number of sources including community workshops, pedestrian surveys, communication with residents, staff members, and field inspections.

This section is divided into three parts. The first part discusses sidewalk issues, the second part comments on issues related to steps, lanes, and paths, and the third part notes pedestrian access to transit issues. Although many good examples of each of these kinds of facilities exist, this report has focused on deficiencies, in large part because that has been the focus of past community input.

In addition to this brief analysis, the **Marin Countywide Plan** (2007) contains more specific information needs in Marin County. The plan includes policies for integrating pedestrian accommodations into the roadway design process and the development review process.

Sidewalks

Sidewalks are defined as the portion of the road right-of-way, other than the roadway, set apart by curbs, barriers, markings, or other delineation for pedestrian travel. Many of Marin County's unincorporated communities, particularly those in West Marin, are small, rural villages which generally lack sidewalk facilities. Residents have expressed a desire to balance the need to safely and adequately move about on foot with the desire to retain on-street parking and/or the rural or small-town character of their communities.

Nonexistent or Inadequate Facilities

There are numerous places were sidewalks do not exist or end abruptly. These conditions are prevalent throughout Marin County's unincorporated communities. Most neighborhoods pre-dating World War II do not have sidewalks. Steep, hilly neighborhoods and many rural subdivisions also lack sidewalks. In these areas it is necessary to walk in the roadway. For small residential streets, this is not necessarily an issue, but along busier roadways, walking is discouraged because of the proximity and speed of passing vehicles.

Accessibility

Where sidewalks are provided, not all meet the latest the Americans with Disabilities Act (ADA) guidelines for accessibility. Further, sidewalks in the unincorporated area are more prevalent in commercial areas and often do not connect to nearby residential areas. The lack of sidewalks beyond commercial areas in these communities limits the accessibility to local services by wheelchair users. While the County is actively retrofitting existing sidewalks to meet these standards, addressing all sidewalks is a multiple-year process because of the large number of locations and the complex nature of some retrofit projects. Several sidewalk and pedestrian safety projects have been implemented through grant programs such as Safe Routes to Schools.

Continuity and Connectivity

In several instances, gaps in the sidewalk network have been created by changing requirements for developers. For example, there may be sidewalks near a new development but not near an older, neighboring development that was built before sidewalks were required as a condition of development. In areas that were developed by various parties over time, the result can be a patchwork of discontinuous walkways, allowing use of the sidewalk in some sections but then having to step out into the roadway to continue one's journey. Among the problems created by nonexistent sidewalks or those that are discontinuous is that pedestrians cannot rely on sidewalks to connect them to places to which they desire to walk. This problem is evident for various unincorporated areas such as the Tamalpais Valley, Kentfield, Sleepy Hollow, Santa Venetia, and Bayside Acres communities which are situated adjacent to incorporated areas with sidewalks.

Physical Obstacles

A problem common to many of the sidewalks and paths are utility poles, fire hydrants, and other pieces of infrastructure located within the intended walkway. Additionally, there are places where vegetation and other obstacles encroach upon or obstruct passage. A further challenge is ongoing enforcement of parking regulations on sidewalks and bikeways.

Safety

A number of issues related to safety have been mentioned during community meetings. In addition to excessive motor vehicle speed - which has been cited as a problem in almost every community - a lack of signage alerting motorists to the potential presence of pedestrians has been identified as an issue in unincorporated Marin County.

Tripping hazards, which are generally created by the roots of invasive trees or damaged concrete, are also a problem in many of the unincorporated communities.

Although streetlights are opposed as an urban amenity in some areas of Marin County, there are places, particularly in the more urbanized areas, where existing lighting is considered inadequate for pedestrian passage.

Conflicts between people bicycling and walking on multi-use paths in Marin County are another safety concern. Measures to separate these groups, establish a protocol for trail behavior, and improve enforcement of regulations are needed, especially on the more popular facilities. The County's Parks Department has conducted outreach and in-the-field campaigns on the Mill Valley-Sausalito Multi-use Path to encourage safe and courteous usage of the path by all users. Center striping has been included on most new path projects and path repaving projects to help delineate bi-directional travel.

3.3.1 Steps, Lanes, and Paths

Networks of hillside paths and steps exist in many of Marin County's communities, particularly along old railroad routes where the steps and paths would provide direct access to the rail line at the bottom of a hill. Many of these step and path corridors were never formally accepted by the local agency and as a result have not been constructed or maintained.

There are a number of issues that affect the pedestrian step and path systems, including their ability to function as alternative networks to and around neighborhoods and village centers. These issues include physical neglect, in which paths have fallen into disrepair, overgrown landscaping, which has caused many paths to be hidden or inaccessible, and a general lack of knowledge by many community members of paths that exist in their neighborhoods and communities.

Mill Valley has done extensive research to catalog the extent and condition of their paths, stairs, and pedestrian facilities in that community while other communities have also shown an increased interest in their own pathways and steps.

3.3.2 Pedestrian Access to Transit

Transit facility enhancements, such as bus stop improvements, are important for increasing pedestrian mobility and access to transit. Perceived safety concerns can discourage residents from walking to transit or from using transit at all. Continuous sidewalks with ramps at intersections to provide access to transit facilities are critical for pedestrians. Marin Transit has inventoried high-usage bus stops in Marin County and identified necessary access improvements to the bus stops. Marin Transit will need to partner with the local agencies who have responsibility over the sidewalks and paths that access the bus stops to ensure a seamless path of travel.

3.4 Safe Routes to Schools

Safe Routes to Schools is a Transportation Authority of Marin (TAM) program funded by the Measure A transportation sales tax and combines safety education for bicycling and walking with infrastructure improvements that benefit both bicyclists and pedestrians. The Safe Routes to Schools program began in 2000 as a grassroots effort to reduce congestion and encourage healthy habits among school-aged children in Marin County. A local advocacy group initially developed the program with funding from the National Highway Transportation Safety Administration as one of two model programs nationwide. The program has since expanded every year to its current level, with 58 schools and over 23,500 students participating countywide. According to the **Marin County Safe Routes to Schools Program Evaluation** (2016), participating schools have maintained a 26 percent to 28 percent bicycling and walking mode share.[i]

3.4.1Program Elements

The program consists of five program elements described below:

- **Education** - Classroom lessons teach children the skills necessary to navigate through busy streets and show them how to be active participants in the program. A Safe Routes instructor developed the curriculum that includes lessons on safety, health, and the environment. Lessons are typically offered during the physical education period of the school day.
- **Engineering** - The program's licensed traffic engineer coordinates with the local agency, schools, and other stakeholders to develop a plan to provide a safer environment for children to bicycle and walk to school. The focus is on creating physical improvements to the infrastructure surrounding the school, reducing speeds, and establishing safer crosswalks and pathways.
- **Encouragement** - Events, contests and promotional materials are incentives that encourage children and their parents to try bicycling and walking. The program supports and coordinates volunteer organizers and provides schools with promotional and contest materials, prizes, and ongoing consultation.
- **Enforcement** – Local police, sheriff, California Highway Patrol officers, crossing guards, and other law enforcement officials participate throughout the Safe Routes process to encourage safe travel through the community. Targeted enforcement of speed limits and other traffic laws around schools make the trip to school more predictable for students and allow them to interact with motorists and other travelers in the safest possible way. This program also includes outreach to drivers through driver safety campaigns.
- **Evaluation** – Program evaluation is regularly conducted to ensure the success of the program. Program participation is regularly monitored to determine the growth in student and parent participation. Typically, hand tallies are conducted to ascertain the change in travel mode to school over the course of the year.

Marin County Safe Routes to Schools program works in partnership with residents, volunteers, local schools, cities, towns, and the County's public works and public health staff. All of these partners must participate to have a successful Safe Routes to Schools Program. More details about the Marin Safe Routes to Schools program's specific elements, including a list of participating schools in the unincorporated areas of Marin County and details regarding proposed engineering projects and education and outreach programs can be found in the **Marin County Safe Routes to Schools Program Evaluation** (2016).[i]

[i] http://www.tam.ca.gov/wp-content/uploads/2017/02/FINAL-Marin-SR2S-Evaluation-Report-20160929-RED.pdf

4 Needs Analysis

4.1. Introduction

This section summarizes the needs of bicyclists and pedestrians in Marin County that have been identified by staff and the public through a series of meetings, public workshops, and previous iterations of this Plan. This section places these needs for non-motorized transportation in the context of current and future bicycle and pedestrian usage, safety trends, and potential congestion and environmental benefits.

4.2. Commuter and Utilitarian Bicyclist Needs

A 2003 national survey conducted by America Bikes showed that 52 percent of Americans want to bicycle more and 53 percent support federal funding for infrastructure that makes bicycling easier and safer. A similar survey conducted by PeopleForBikes in 2015 found that 53 percent of American adults want to bicycle more often. Of the roughly half of respondents from the survey that wanted to bicycle more often, about one-third said that they were dissatisfied with existing bicycle infrastructure. Transportation Authority of Marin's Strategic Vision Plan identified that 27 percent of Marin County residents have access to a bicycle as a secondary mode of transportation. The same study also identifies emerging technologies in transportation, particularly autonomous vehicles, which may significantly alter the function of our roadways with potential safety benefits for all users. These suggest that there is a large reservoir of potential bicyclists that are waiting for improvements in bicycle facilities before riding.[1,2]

A primary focus of this Plan is encouraging an increase in the number of commuter and utilitarian bicyclists, defined as those riding to work and school or for shopping, errands, and other trip purposes. It is important to understand the specific needs of these users and what types of improvements would most encourage more people to bicycle or walk for everyday trips.

Bicycling requires the need for shorter commutes, typically less than five miles, which runs counter to land use, technology, and transportation trends in the United States which have enabled people to live farther and farther from where they work. Access to transit helps extend the commute range of bicyclists, but transit systems also face an increasingly dispersed live-work pattern that is difficult to serve. Despite these facts, Marin County has great potential to increase the number of people who ride to work or school because of (1) the small size of many of the towns and communities, (2) moderate density residential neighborhoods near employment centers, (3) a favorable climate, (4) a high percentage of work trips that are less than 15 minutes, and (5) high-quality multi-jurisdictional pathways.

Major commuter concerns include conflicts with people driving, bicycle ownership, being able to store a bicycle securely, changes in weather (rain), riding in darkness, and personal safety. Commuters typically seek the most direct and fastest route available, with some regular, adult commuters preferring to ride on arterials with bicycle lanes rather than indirect routes on side streets or off-street facilities. Many prefer routes where they are required to stop as few times as possible, thereby minimizing delay. Commute periods typically coincide with peak traffic volumes and congestion, increasing the exposure to potential

[1] U.S. Bicycling Participation Benchmarking Study. (2015). PeopleForBikes. ‹http://www.peopleforbikes.org/pages/u.s.-bicycling-participation-benchmarking-report›

[2] Getting Around Marin: Strategic Vision Plan (2017). Transportation Authority of Marin ‹http://2b0kd44aw6tb3js4ja3jprp6-wpengine.netdna-ssl.com/wp-content/uploads/2017/07/TAM-SVP-GettingAroundMarin_072617.pdf›

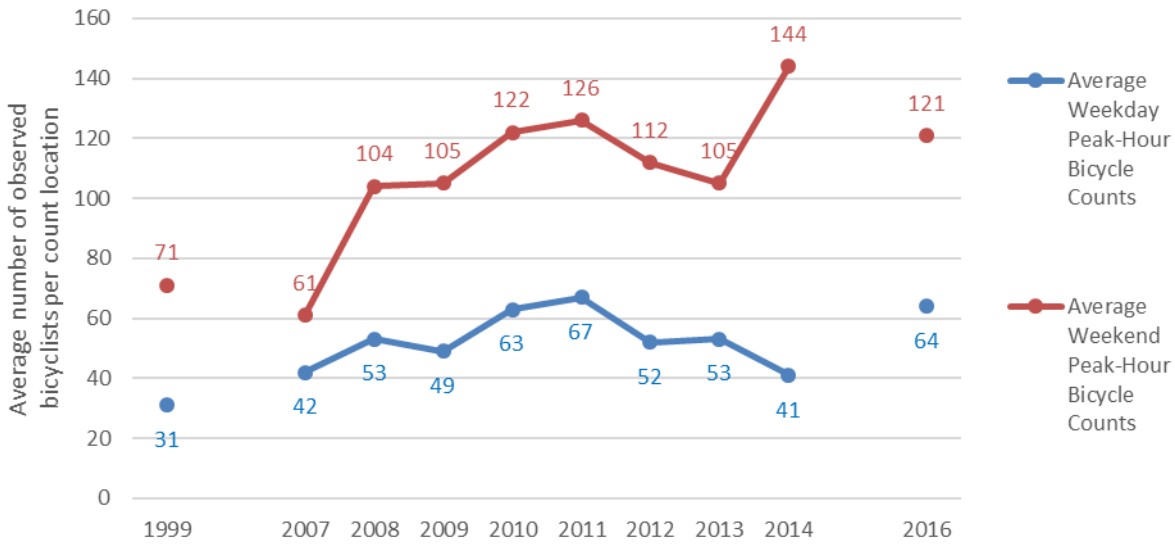
conflicts with motor vehicles. Places to securely store bicycles are of paramount importance to all bicycle commuters. Availability of lockers and shower facilities at their place of employment is also an important factor in encouraging workers to commute by bike. Commuter and utilitarian bicyclists need improvements in the commercial and downtown areas of Marin County, as well as access to work sites outside those areas, in order to reach their destinations.

Many younger students (ages seven to 11) 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 risk of collisions. Older students (12 years or older) who consistently ride at speeds over 10 miles per hour (mph) should be directed to riding on-street wherever possible. People riding the wrong-way on-street are common and account for a large percentage of bicycle-related collisions in California, pointing to the need for safety education.

4.2.1 Bicycle Counts in Marin County

Bicycle counts captured at various locations in Marin County show that many of the County's existing bikeways are well used. On average, about 31 bicyclists were observed during weekday peak-hour at each of the 12 count locations in 1999. This average increased to 64 bicyclists at the 28 count locations in 2016, or about a 106 percent increase in the average number of bicyclists observed during the weekday peak-hour (See **Figure 4-1**). A detailed breakdown of the change in weekday peak-hour counts can be found in **Table 4-1.**

*Figure 4-1: Average Peak-hour Bicycle Volumes (1999, 2007-2014, 2016)**



Sources: Marin County NTPP Bicycle and Pedestrian Counts (2013 Update), 2014 Transportation System Monitoring Report, and 2016 Transportation System Monitoring Report

Weekend peak-hour bicycle counts also increased between 1999 and 2016. There were 71 bicyclists observed on average at the 12 count locations in 1999 and an average of 121 bicyclists observed at the 28 count locations in 2016, or a 70 percent increase (See **Figure 4-1**). A detailed breakdown of the change in weekend peak-hour counts can be found in **Table 4-2.**

In addition to peak-hour counts, automated 24-hour bicycle counters in place at two locations, one on the Mill Valley-Sausalito path and the other on the Corte Madera Creek path, show an average daily usage of 1,307 and 375 bicyclists, respectively.

Table 4-1: Weekday Peak-Hour Bicycle Counts and Percent Change, 1999-2016

ID	Streets	Bicycle Counts† (Percent Change Between Most Recent Available Counts)									
		1999	2007	2008	2009	2010	2011	2012	2013	2014††	2016†††
1	Tiburon Blvd. at Main St., Tiburon	* (N/A)	64 (4.9%)	54 (-11.5%)	84 (37.7%)	40 (-34.4%)	76 (24.6%)	53 (-13.1%)	67 (9.8%)	45 (-26.2%)	61
2	Miller Ave. at Throckmorton Ave, Mill Valley	* (N/A)	23 (0.0%)	37 (60.9%)	36 (56.5%)	38 (65.2%)	36 (56.5%)	12 (-47.8%)	23 (0.0%)	* (N/A)	*
3	Fourth St. at B St., San Rafael	* (N/A)	31 (0.0%)	19 (-38.7%)	35 (12.9%)	43 (38.7%)	33 (6.5%)	21 (-32.3%)	31 (0.0%)	* (N/A)	*
4	Bridgeway at Princess St., Sausalito	45 (-78.8%)	129 (-39.2%)	184 (-13.2%)	121 (-42.9%)	127 (-40.1%)	40 (-81.1%)	207 (-2.4%)	314 (48.1%)	132 (-37.7%)	212
5	San Anselmo Ave. at Tunstead Ave., San Anselmo	34 (-45.2%)	41 (-33.9%)	40 (-35.5%)	69 (11.3%)	62 (0.0%)	100 (61.3%)	46 (-25.8%)	60 (-3.2%)	36 (-41.9%)	62
6	Broadway at Bolinas Rd., Fairfax	20 (-75.0%)	61 (-23.8%)	67 (-16.3%)	80 (0.0%)	58 (-27.5%)	303 (278.8%)	55 (-31.3%)	61 (-23.8%)	50 (-37.5%)	80
7	Grant Ave. at Redwood Blvd., Novato	12 (33.3%)	21 (133.3%)	17 (88.9%)	14 (55.6%)	14 (55.6%)	25 (177.8%)	70 (677.8%)	9 (0.0%)	* (N/A)	*
8	Magnolia Ave. at Ward St., Larkspur	* (N/A)	25 (-40.5%)	33 (-21.4%)	45 (7.1%)	25 (-40.5%)	26 (-38.1%)	16 (-61.9%)	31 (-26.2%)	28 (-33.3%)	42
9	Mill Valley-Sausalito Path at E Blithedale Ave., Mill Valley	88 (-22.1%)	84 (-25.7%)	98 (-13.3%)	93 (-17.7%)	81 (-28.3%)	99 (-12.4%)	122 (8.0%)	64 (-43.4%)	69 (-38.9%)	113
10	Mill Valley-Sausalito Path at Tennessee Valley Path Junction, Tam Junction	42 (-76.4%)	101 (-43.3%)	156 (-12.4%)	116 (-34.8%)	166 (-6.7%)	114 (-36.0%)	153 (-14.0%)	112 (-37.1%)	93 (-47.8%)	178
11	Tiburon Bike Path at Blackie's Pasture, Tiburon	32 (68.4%)	77 (305.3%)	58 (205.3%)	93 (389.5%)	93 (389.5%)	86 (352.6%)	36 (89.5%)	41 (115.8%)	58 (205.3%)	19
12	Larkspur-Corte Madera Path at Baltimore Ave., Larkspur	42 (-58.8%)	28 (-72.5%)	44 (-56.9%)	41 (-59.8%)	36 (-64.7%)	68 (-33.3%)	31 (-69.6%)	43 (-57.8%)	35 (-65.7%)	102
13	Corte Madera Creek Path at Bon Air Rd., Greenbrae	4 (-93.7%)	27 (-57.1%)	38 (-39.7%)	35 (-44.4%)	61 (-3.2%)	* (N/A)	24 (-61.9%)	32 (-49.2%)	35 (-44.4%)	63
14	Medway Rd. at Belvedere St., San Rafael	* (N/A)	44 (22.2%)	80 (122.2%)	51 (41.7%)	49 (36.1%)	41 (13.9%)	40 (11.1%)	36 (0.0%)	* (N/A)	*
15	Camino Alto at E. Blithedale Ave., Mill Valley	* (N/A)	36 (-47.8%)	33 (-52.2%)	18 (-73.9%)	93 (34.8%)	20 (-71.0%)	12 (-82.6%)	8 (-88.4%)	14 (-79.7%)	69
16	Alameda Del Prado at Pacheco Hill Path, Novato	* (N/A)	6 (-66.7%)	11 (-38.9%)	4 (-77.8%)	28 (55.6%)	27 (50.0%)	13 (-27.8%)	17 (-5.6%)	21 (16.7%)	18
17	Los Ranchitos Rd. at Puerto Suello Summit, San Rafael	16 (-20.0%)	22 (10.0%)	11 (-45.0%)	15 (-25.0%)	65 (225.0%)	101 (405.0%)	29 (45.0%)	17 (-15.0%)	23 (15.0%)	20
18	Doherty Dr. at Larkspur Plaza Dr/Rose Ln (west), Larkspur	* (N/A)	28 (-79.1%)	26 (-80.6%)	40 (-70.1%)	78 (-41.8%)	86 (-35.8%)	* (N/A)	115 (-14.2%)	15 (-88.8%)	134
19	Sir Francis Drake Blvd. at Wolfe Grade, Kentfield	22 (340.0%)	9 (80.0%)	12 (140.0%)	10 (100.0%)	88 (1660.0%)	40 (700.0%)	51 (920.0%)	5 (0.0%)	* (N/A)	*
20	Cal Park Tunnel Path at Andersen Dr., San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	60 (-4.8%)	33 (-47.6%)	40 (-36.5%)	20 (-68.3%)	63
21	S. Novato Blvd. at Rowland Way, Novato	* (N/A)	18 (-18.2%)	* (N/A)	12 (-45.5%)	76 (245.5%)	12 (-45.5%)	5 (-77.3%)	15 (-31.8%)	10 (-54.5%)	22
22	Bellam Blvd. at Anderson Dr. (West Side), San Rafael	* (N/A)	37 (42.3%)	39 (50.0%)	35 (34.6%)	30 (15.4%)	60 (130.8%)	66 (153.8%)	24 (-7.7%)	17 (-34.6%)	26
22x	Bellam Blvd. at Anderson Dr. (East Side), San Rafael	16 (-44.8%)	21 (-27.6%)	* (N/A)	25 (-13.8%)	26 (-10.3%)	29 (0.0%)	* (N/A)	* (N/A)	* (N/A)	*
23	Nicasio Valley Rd. near Nicasio School, Nicasio	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	27
24	S. Knoll Rd. and Tiburon Blvd., Mill Valley	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	22
25	Tower Dr. at E. Blithedale Ave., Mill Valley	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	25
26	Central Marin Ferry Connector Bridge at Sir Francis Drake Blvd., Larkspur	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	59
27	Doherty Dr. at Rose Ln. (east), Larkspur	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	98
28	Enfrente Bike Path at S. Novato Blvd., Novato	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	15
29	Almonte Blvd. at Shoreline Hwy., Mill Valley	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	95
30	Francisco Blvd. E. at Bay St., San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	52
31	Andersen Dr. at Du Bois St., San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	50
32	Merrydale Rd. at Lincoln Hill Multi-use Pathway, San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	13
33	NB US 101 Off-ramp/Bike Path at Sir Francis Drake Blvd., Larkspur	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	40
Average Count per Location		31 (-51.6%)	42 (-34.4%)	53 (-17.2%)	49 (-23.4%)	63 (-1.6%)	67 (4.7%)	52 (-18.8%)	53 (-17.2%)	41 (-35.9%)	64

*Data unavailable
†Source: Marin County Nonmotorized Transportation Pilot Program Bicycle and Pedestrian Counts, 2013 update
††Source: 2014 Transportation System Monitoring Report, Transportation Authority of Marin, https://www.tam.ca.gov/wp-content/uploads/2017/03/2014-TAM-Monitoring-Report_FINAL.pdf
††† Source: 2016 Transportation System Monitoring Report, Transportation Authority of Marin

Table 4-2: Weekend Peak-Hour Bicycle Counts and Percent Change, 1999-2016

ID	Streets	Bicycle Counts† (Percent Change Between Most Recent Available Counts)									
		1999	2007	2008	2009	2010	2011	2012	2013	2014††	2016†††
1	Tiburon Blvd. at Main St., Tiburon	43 (-73.3%)	154 (-4.3%)	147 (-8.7%)	64 (-60.2%)	213 (32.3%)	185 (14.9%)	127 (-21.1%)	103 (-36.0%)	150 (-6.8%)	161
2	Miller Ave. at Throckmorton Ave, Mill Valley	36 (-16.3%)	56 (30.2%)	58 (34.9%)	36 (-16.3%)	235 (446.5%)	89 (107.0%)	60 (39.5%)	43 (0.0%)	* (N/A)	*
3	Fourth St. at B St., San Rafael	32 (28.0%)	27 (8.0%)	46 (84.0%)	23 (-8.0%)	20 (-20.0%)	41 (64.0%)	40 (60.0%)	25 (0.0%)	* (N/A)	*
4	Bridgeway at Princess St., Sausalito	188 (-77.0%)	91 (-88.9%)	467 (-42.8%)	502 (-38.6%)	460 (-43.7%)	476 (-41.7%)	283 (-65.4%)	573 (-29.9%)	746 (-8.7%)	817
5	San Anselmo Ave. at Tunstead Ave., San Anselmo	73 (-55.8%)	102 (-	34 (-79.4%)	128 (-	119 (-27.9%)	166 (0.6%)	233 (41.2%)	124 (-24.8%)	134 (-18.8%)	165
6	Broadway at Bolinas Rd., Fairfax	42 (-78.6%)	167 (-14.8%)	82 (-58.2%)	239 (21.9%)	128 (-34.7%)	238 (21.4%)	302 (54.1%)	164 (-16.3%)	233 (18.9%)	196
7	Grant Ave. at Redwood Blvd., Novato	10 (25.0%)	9 (12.5%)	24 (200.0%)	19 (137.5%)	135 (1587.5%)	0 (-100.0%)	15 (87.5%)	8 (0.0%)	* (N/A)	*
8	Magnolia Ave. at Ward St., Larkspur	36 (-68.1%)	76 (-32.7%)	102 (-9.7%)	104 (-8.0%)	113 (0.0%)	125 (10.6%)	188 (66.4%)	239 (111.5%)	87 (-23.0%)	113
9	Mill Valley-Sausalito Path at E Blithedale Ave., Mill Valley	144 (-45.7%)	11 (-95.8%)	302 (14.0%)	300 (13.2%)	243 (-8.3%)	279 (5.3%)	355 (34.0%)	241 (-9.1%)	252 (-4.9%)	265
10	Mill Valley-Sausalito Path at Tennessee Valley Path Junction, Tam Junction	122 (-69.5%)	266 (-33.5%)	339 (-15.3%)	397 (-0.8%)	344 (-14.0%)	386 (-3.5%)	308 (-23.0%)	367 (-8.3%)	360 (-10.0%)	400
11	Tiburon Bike Path at Blackie's Pasture, Tiburon	106 (265.5%)	80 (175.9%)	139 (379.3%)	153 (427.6%)	251 (765.5%)	255 (779.3%)	114 (293.1%)	106 (265.5%)	190 (555.2%)	29
12	Larkspur-Corte Madera Path at Baltimore Ave., Larkspur	62 (-31.9%)	57 (-37.4%)	57 (-37.4%)	69 (-24.2%)	66 (-27.5%)	77 (-15.4%)	47 (-48.4%)	79 (-13.2%)	69 (-24.2%)	91
13	Corte Madera Creek Path at Bon Air Rd., Greenbrae	30 (-60.0%)	35 (-53.3%)	26 (-65.3%)	49 (-34.7%)	66 (-12.0%)	* (N/A)	40 (-46.7%)	45 (-40.0%)	35 (-53.3%)	75
14	Medway Rd. at Belvedere St., San Rafael	* (N/A)	32 (14.3%)	57 (103.6%)	92 (228.6%)	87 (210.7%)	82 (192.9%)	7 (-75.0%)	28 (0.0%)	* (N/A)	*
15	Camino Alto at E. Blithedale Ave., Mill Valley	* (N/A)	38 (-77.9%)	131 (-23.8%)	42 (-75.6%)	20 (-88.4%)	21 (-87.8%)	82 (-52.3%)	43 (-75.0%)	50 (-70.9%)	172
16	Alameda Del Prado at Pacheco Hill Path, Novato	* (N/A)	5 (-82.1%)	13 (-53.6%)	30 (7.1%)	22 (-21.4%)	32 (14.3%)	32 (14.3%)	24 (-14.3%)	22 (-21.4%)	28
17	Los Ranchitos Rd. at Puerto Suello Summit, San Rafael	* (N/A)	67 (67.5%)	4 (-90.0%)	11 (-72.5%)	11 (-72.5%)	38 (-5.0%)	59 (47.5%)	17 (-57.5%)	47 (17.5%)	40
18	Doherty Dr. at Larkspur Plaza Dr/Rose Ln (west), Larkspur	* (N/A)	19 (-52.5%)	31 (-22.5%)	12 (-70.0%)	9 (-77.5%)	37 (-7.5%)	* (N/A)	21 (-47.5%)	18 (-55.0%)	40
19	Sir Francis Drake Blvd. at Wolfe Grade, Kentfield	* (N/A)	15 (87.5%)	7 (-12.5%)	7 (-12.5%)	12 (50.0%)	38 (375.0%)	36 (350.0%)	8 (0.0%)	* (N/A)	*
20	Cal Park Tunnel Path at Andersen Dr., San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	68 (7.9%)	47 (-25.4%)	57 (-9.5%)	29 (-54.0%)	63
21	S. Novato Blvd. at Rowland Way, Novato	* (N/A)	13 (-31.6%)	* (N/A)	10 (-47.4%)	11 (-42.1%)	15 (-21.1%)	20 (5.3%)	16 (-15.8%)	21 (10.5%)	19
22	Bellam Blvd. at Anderson Dr. (West Side), San Rafael	* (N/A)	23 (130.0%)	23 (130.0%)	14 (40.0%)	95 (850.0%)	79 (690.0%)	30	10 (0.0%)	11 (10.0%)	10
22x	Bellam Blvd. at Anderson Dr. (East Side), San Rafael	* (N/A)	8 (-83.7%)	* (N/A)	16 (-67.3%)	22 (-55.1%)	49 (0.0%)	* (N/A)	* (N/A)	* (N/A)	*
23	Nicasio Valley Rd. near Nicasio School, Nicasio	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	32 (-77.3%)	68 (-51.8%)	* (N/A)	141
24	S. Knoll Rd. and Tiburon Blvd., Mill Valley	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	87
25	Tower Dr. at E. Blithedale Ave., Mill Valley	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	101
26	Central Marin Ferry Connector Bridge at Sir Francis Drake Blvd., Larkspur	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	64
27	Doherty Dr. at Rose Ln. (east), Larkspur	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	35
28	Enfrente Bike Path at S. Novato Blvd., Novato	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	20
29	Almonte Blvd. at Shoreline Hwy., Mill Valley	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	97
30	Francisco Blvd. E. at Bay St., San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	26
31	Andersen Dr. at Du Bois St., San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	56
32	Merrydale Rd. at Lincoln Hill Multi-use Pathway, San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	21
33	NB US 101 Off-ramp/Bike Path at Sir Francis Drake Blvd., Larkspur	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	45
Average Count per Location		71 (-41.3%)	61 (-49.6%)	104 (-14.0%)	105 (-13.2%)	122 (0.8%)	126 (4.1%)	112 (-7.4%)	105 (-13.2%)	144 (19.0%)	121

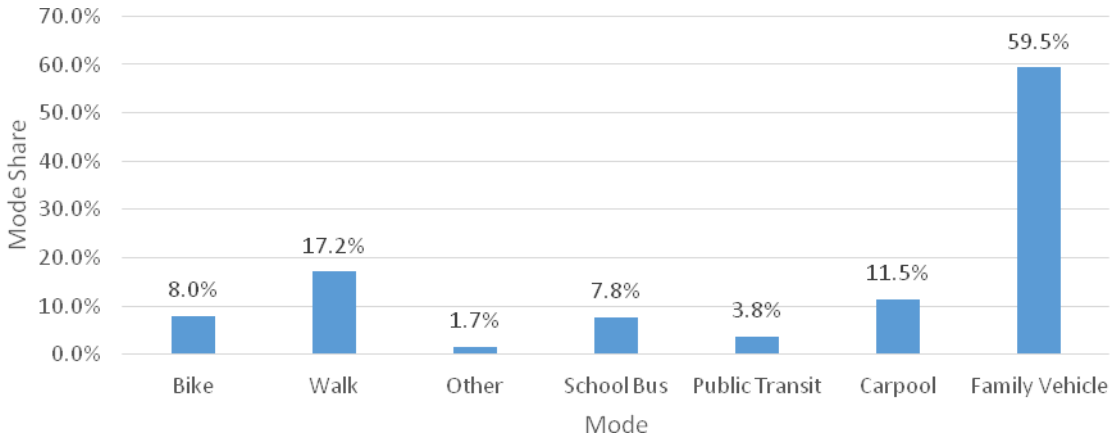
*Data unavailable
†Source: Marin County Nonmotorized Transportation Pilot Program Bicycle and Pedestrian Counts, 2013 update
††Source: 2014 Transportation System Monitoring Report, Transportation Authority of Marin, https://www.tam.ca.gov/wp-content/uploads/2017/03/2014-TAM-Monitoring-Report_FINAL.pdf
††† Source: 2016 Transportation System Monitoring Report, Transportation Authority of Marin

Gender and age were observed during the 2013 bicycle counts. Women made up only 28 percent of observed bicyclists at the 23 count locations during the weekday and weekend evening two-hour peak periods (1,651 bicyclists out of a total 5,915 bicyclists). Children represented 9 percent of all bicyclists during the same time period (514 bicyclists out of a total 5,915 bicyclists). Both figures severely underrepresent the portion of women and children in the Marin County population, suggesting that the type of infrastructure or programming in place is more suited for adult males and that many of the count locations are in places with high vehicle traffic volumes and potential conflicts that typically deter less experienced riders. While bicyclist gender data was not collected in 2014, bicyclist age data was collected, showing an even larger gap between adult and child bicyclists compared to 2013 (the ratio decreased from 85:15 to 172:15, according to the 2014 **Transportation Systems Monitoring Report**).

The 2013 update of the **Marin County Bicycle and Pedestrian Counts** also marked a starting point for collecting data on helmet use and wrong-way bicycling. Of the 5,915 observed bicyclists during the weekday and weekend evening two-hour peak period, 903 were wearing helmets (15 percent). Helmet use is mandatory for bicyclists under age 16 in Marin County. Many adults opt to not wear a helmet for shorter trips around town, though these areas also have the higher probability of being involved in a collision because of multiple potential conflicts in a more urban environment. An even lower number of observed bicyclists were bicycling in the wrong direction, with 168 out of the total 5,915 observed going against traffic (3 percent). The 2014 **Transportation System Monitoring Report** did not record helmet or wrong-way data.

As reported in the 2016 **Marin County Safe Routes to Schools Program Evaluation**, noticeable increases in bicycling (and concurrent decreases in automobile trips and congestion) have occurred as a result of past implementation of the Safe Routes to Schools program (SR2S). Among the 56 schools participating in the SR2S program with count data for the year they entered the program and the 2014/2015 school year, there was an average schoolwide increase of 19 percent in green trips (i.e. carpooling, public transit, school buses, etc.) and a 40 percent increase in green active trips (i.e. walking, bicycling, scootering, etc.). However, there remains an opportunity to continue to increase the percent of students bicycling and walking to school. As noted in **Figure 4-2**, approximately 60 percent of students at schools participating in the Safe Routes to Schools program still travel to by family vehicle.

*Figure 4-2: Mode Share of Marin County SR2S Participating Schools (Baseline to 2014/2015)**



*Source: Marin County Safe Routes to Schools, Program Evaluation (2016)

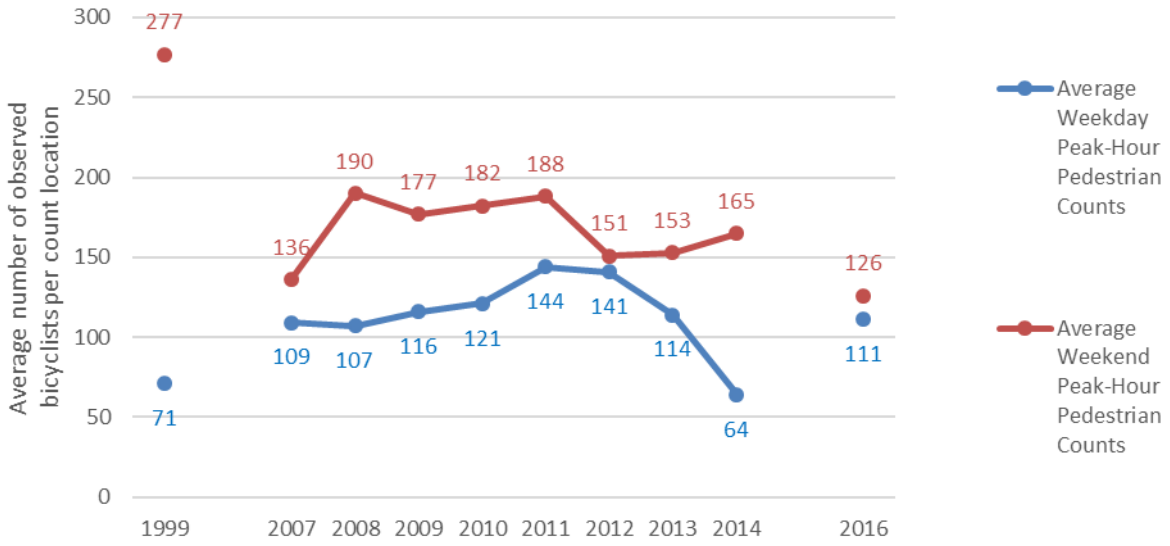
4.3. Pedestrian Needs

This section discusses the pedestrian facility and program needs in unincorporated Marin County that were identified during community meetings, interviews with County staff, conversations with community members, and field inspections.

4.3.1 Pedestrian Counts in Marin County

Pedestrian counts taken at various locations in Marin County show that many of the County's existing walkways are well used (See **Figure 4-3**). On average, about 71 pedestrians were observed during weekday peak hour at each of the 12 count locations in 1999. This number increased to an average of 111 pedestrians at the 28 count locations in 2016, or about a 56 percent increase in the average number of pedestrians observed during the weekday peak hour (See **Table 4-3**).

*Figure 4-3: Average Peak-hour Pedestrian Volumes (1999, 2007-2014, 2016)**



Sources: Marin County NTPP Bicycle and Pedestrian Counts (2013 Update), 2014 Transportation System Monitoring Report, and 2016 Transportation System Monitoring Report

Conversely, weekend peak-hour pedestrian counts decreased between 1999 and 2016. There were 277 pedestrians observed on average at the 12 count locations in 1999 and an average of 126 pedestrians observed at the 28 count locations in 2016, or a 55 percent decrease (See **Table 4-4**). This decrease may be explained by the locations selected for observation in 1999. This original group of count locations represented some of the highest-volume pedestrian locations in the County. Pedestrian counts at these locations were carried out in 2016, along with 16 additional locations that represent lower volume pedestrian locations that could be depressing the overall average.

The automated 24-hour pedestrian counters in place in two locations, one on the Mill Valley-Sausalito path and the other on the Corte Madera Creek path show average daily usage of 1,549 and 610 pedestrians, respectively.

Table 4-3: Weekeday Peak-Hour Pedestruab Counts and Percent Change, 1999-2016

ID	Streets	Pedestrian Counts† (Percent Change Between Most Recent Available Counts)									
		1999	2007	2008	2009	2010	2011	2012	2013	2014††	2016†††
1	Tiburon Blvd. at Main St., Tiburon	* (N/A)	269 (27.5%)	134 (-36.5%)	226 (7.1%)	161 (-23.7%)	82 (-61.1%)	234 (10.9%)	228 (8.1%)	130 (-38.4%)	211
2	Miller Ave. at Throckmorton Ave, Mill Valley	* (N/A)	95 (-33.1%)	161 (13.4%)	162 (14.1%)	230 (62.0%)	254 (78.9%)	227 (59.9%)	142 (0.0%)	* (N/A)	*
3	Fourth St. at B St., San Rafael	* (N/A)	669 (121.5%)	147 (-51.3%)	390 (29.1%)	258 (-14.6%)	317 (5.0%)	312 (3.3%)	302 (0.0%)	* (N/A)	*
4	Bridgeway at Princess St., Sausalito	57 (-92.2%)	348 (-52.5%)	514 (-29.8%)	394 (-46.2%)	520 (-29.0%)	506 (-30.9%)	696 (-4.9%)	638 (-12.8%)	376 (-48.6%)	732
5	San Anselmo Ave. at Tunstead Ave., San Anselmo	238 (10.2%)	122 (-43.5%)	66 (-69.4%)	140 (-35.2%)	129 (-40.3%)	181 (-16.2%)	228 (5.6%)	186 (-13.9%)	107 (-50.5%)	216
6	Broadway at Bolinas Rd., Fairfax	107 (-58.7%)	74 (-71.4%)	178 (-31.3%)	121 (-53.3%)	166 (-35.9%)	252 (-2.7%)	187 (-27.8%)	131 (-49.4%)	69 (-73.4%)	259
7	Grant Ave. at Redwood Blvd., Novato	71 (173.1%)	52 (100.0%)	69 (165.4%)	184 (607.7%)	95 (265.4%)	98 (276.9%)	237 (811.5%)	26 (0.0%)	* (N/A)	*
8	Magnolia Ave. at Ward St., Larkspur	* (N/A)	84 (-58.6%)	105 (-48.3%)	123 (-39.4%)	119 (-41.4%)	125 (-38.4%)	97 (-52.2%)	159 (-21.7%)	81 (-60.1%)	203
9	Mill Valley-Sausalito Path at E Blithedale Ave., Mill Valley	36 (-43.8%)	38 (-40.6%)	41 (-35.9%)	26 (-59.4%)	42 (-34.4%)	86 (34.4%)	78 (21.9%)	44 (-31.3%)	35 (-45.3%)	64
10	Mill Valley-Sausalito Path at Tennessee Valley Path Junction, Tam Junction	52 (-37.3%)	20 (-75.9%)	54 (-34.9%)	40 (-51.8%)	15 (-81.9%)	33 (-60.2%)	106 (27.7%)	46 (-44.6%)	44 (-47.0%)	83
11	Tiburon Bike Path at Blackie's Pasture, Tiburon	54 (217.6%)	84 (394.1%)	164	78 (358.8%)	115 (576.5%)	117 (588.2%)	92 (441.2%)	72 (323.5%)	79 (364.7%)	17
12	Larkspur-Corte Madera Path at Baltimore Ave., Larkspur	90 (16.9%)	64 (-16.9%)	42 (-45.5%)	51 (-33.8%)	60 (-22.1%)	51 (-33.8%)	31 (-59.7%)	56 (-27.3%)	55 (-28.6%)	77
13	Corte Madera Creek Path at Bon Air Rd., Greenbrae	90 (23.3%)	35 (-52.1%)	48 (-34.2%)	35 (-52.1%)	46 (-37.0%)	* (N/A)	44 (-39.7%)	37 (-49.3%)	36 (-50.7%)	73
14	Medway Rd. at Belvedere St., San Rafael	* (N/A)	244 (7.0%)	319 (39.9%)	324 (42.1%)	377 (65.4%)	322 (41.2%)	214 (-6.1%)	228 (0.0%)	* (N/A)	*
15	Camino Alto at E. Blithedale Ave., Mill Valley	* (N/A)	35 (59.1%)	13 (-40.9%)	15 (-31.8%)	67 (204.5%)	112 (409.1%)	10 (-54.5%)	20 (-9.1%)	11 (-50.0%)	22
16	Alameda Del Prado at Pacheco Hill Path, Novato	* (N/A)	7 (-22.2%)	15 (66.7%)	7 (-22.2%)	20 (122.2%)	29 (222.2%)	22 (144.4%)	2 (-77.8%)	18 (100.0%)	9
17	Los Ranchitos Rd. at Puerto Suello Summit, San Rafael	2 (-75.0%)	14 (75.0%)	1 (-87.5%)	4 (-50.0%)	11 (37.5%)	78 (875.0%)	8 (0.0%)	6 (-25.0%)	9 (12.5%)	8
18	Doherty Dr. at Larkspur Plaza Dr/Rose Ln (west), Larkspur	(-100.0%)	38 (-80.3%)	46 (-76.2%)	161 (-16.6%)	44 (-77.2%)	387 (100.5%)	* (N/A)	118 (-38.9%)	15 (-92.2%)	193
19	Sir Francis Drake Blvd. at Wolfe Grade, Kentfield	9 (28.6%)	25 (257.1%)	13 (85.7%)	17 (142.9%)	59 (742.9%)	42 (500.0%)	61 (771.4%)	7 (0.0%)	* (N/A)	*
20	Cal Park Tunnel Path at Andersen Dr., San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	0 (-100.0%)	10 (-33.3%)	10 (-33.3%)	1 (-93.3%)	15
21	S. Novato Blvd. at Rowland Way, Novato	* (N/A)	39 (-62.5%)	(-100.0%)	9 (-91.3%)	82 (-21.2%)	29 (-72.1%)	16 (-84.6%)	41 (-60.6%)	16 (-84.6%)	104
22	Bellam Blvd. at Anderson Dr. (West Side), San Rafael	* (N/A)	11 (-69.4%)	19 (-47.2%)	31 (-13.9%)	26 (-27.8%)	43 (19.4%)	54 (50.0%)	11 (-69.4%)	11 (-69.4%)	36
22	Bellam Blvd. at Anderson Dr. (East Side), San Rafael	42 (40.0%)	39 (30.0%)	* (N/A)	9 (-70.0%)	14 (-53.3%)	30 (0.0%)	* (N/A)	* (N/A)	* (N/A)	*
23	Nicasio Valley Rd. near Nicasio School, Nicasio	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	0
24	S. Knoll Rd. and Tiburon Blvd., Mill Valley	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	16
25	Tower Dr. at E. Blithedale Ave., Mill Valley	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	24
26	Central Marin Ferry Connector Bridge at Sir Francis Drake Blvd., Larkspur	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	25
27	Doherty Dr. at Rose Ln. (east), Larkspur	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	356
28	Enfrente Bike Path at S. Novato Blvd., Novato	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	11
29	Almonte Blvd. at Shoreline Hwy., Mill Valley	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	67
30	Francisco Blvd. E. at Bay St., San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	140
31	Andersen Dr. at Du Bois St., San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	123
32	Merrydale Rd. at Lincoln Hill Multi-use Pathway, San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	9
33	NB US 101 Off-ramp/Bike Path at Sir Francis Drake Blvd., Larkspur	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	18
Average Count per Location		71 (-36.0%)	109 (-1.8%)	107 (-3.6%)	116 (4.5%)	121 (9.0%)	144 (29.7%)	141 (27.0%)	114 (2.7%)	64 (-42.3%)	111

*Data unavailable
†Source: Marin County Nonmotorized Transportation Pilot Program Bicycle and Pedestrian Counts, 2013 update
††Source: 2014 Transportation System Monitoring Report, Transportation Authority of Marin, https://www.tam.ca.gov/wp-content/uploads/2017/03/2014-TAM-Monitoring-Report_FINAL.pdf
††† Source: 2016 Transportation System Monitoring Report, Transportation Authority of Marin

Table 4-4: Weekend Peak-Hour Pedestruab Counts and Percent Change, 1999-2016

ID	Streets	Pedestrian Counts† (Percent Change Between Most Recent Available Counts)									
		1999	2007	2008	2009	2010	2011	2012	2013	2014††	2016†††
1	Tiburon Blvd. at Main St., Tiburon	770	564 (120.3%)	187 (-27.0%)	238 (-7.0%)	200 (-21.9%)	394 (53.9%)	332 (29.7%)	159 (-37.9%)	427 (66.8%)	256
2	Miller Ave. at Throckmorton Ave, Mill Valley	552 (78.1%)	258 (-16.8%)	328 (5.8%)	270 (-12.9%)	371 (19.7%)	478 (54.2%)	300 (-3.2%)	310 (0.0%)	* (N/A)	*
3	Fourth St. at B St., San Rafael	510 (68.3%)	770 (154.1%)	762 (151.5%)	385 (27.1%)	448 (47.9%)	501 (65.3%)	44 (-85.5%)	303 (0.0%)	* (N/A)	*
4	Bridgeway at Princess St., Sausalito	490 (-71.7%)	303 (-82.5%)	1,388 (-19.9%)	1,782 (2.9%)	1676 (-3.2%)	1055 (-39.1%)	890 (-48.6%)	1316 (-24.0%)	1,381 (-20.3%)	1732
5	San Anselmo Ave. at Tunstead Ave., San Anselmo	450 (70.5%)	222 (-15.9%)	60 (-77.3%)	194 (-26.5%)	258 (-2.3%)	394 (49.2%)	307 (16.3%)	202 (-23.5%)	234 (-11.4%)	264
6	Broadway at Bolinas Rd., Fairfax	146 (-54.7%)	125 (-61.2%)	276 (-14.3%)	124 (-61.5%)	121 (-62.4%)	205 (-36.3%)	204 (-36.6%)	209 (-35.1%)	197 (-38.8%)	322
7	Grant Ave. at Redwood Blvd., Novato	133 (98.5%)	111 (65.7%)	61 (-9.0%)	96 (43.3%)	187 (179.1%)	79 (17.9%)	219	67 (0.0%)	* (N/A)	*
8	Magnolia Ave. at Ward St., Larkspur	120 (-46.4%)	102 (-54.5%)	114 (-49.1%)	133 (-40.6%)	48 (-78.6%)	195 (-12.9%)	170 (-24.1%)	128 (-42.9%)	165 (-26.3%)	224
9	Mill Valley-Sausalito Path at E Blithedale Ave., Mill Valley	* (N/A)	19 (-26.9%)	39 (50.0%)	28 (7.7%)	29 (11.5%)	33 (26.9%)	31 (19.2%)	63 (142.3%)	34 (30.8%)	26
10	Mill Valley-Sausalito Path at Tennessee Valley Path Junction, Tam Junction	14 (-87.6%)	48 (-57.5%)	40 (-64.6%)	55 (-51.3%)	52 (-54.0%)	53 (-53.1%)	76 (-32.7%)	65 (-42.5%)	43 (-61.9%)	113
11	Tiburon Bike Path at Blackie's Pasture, Tiburon	50 (100.0%)	75 (200.0%)	97 (288.0%)	145 (480.0%)	166 (564.0%)	267 (968.0%)	148	212	153 (512.0%)	25
12	Larkspur-Corte Madera Path at Baltimore Ave., Larkspur	10 (-90.6%)	33 (-68.9%)	44 (-58.5%)	59 (-44.3%)	33 (-68.9%)	52 (-50.9%)	29 (-72.6%)	41 (-61.3%)	64 (-39.6%)	106
13	Corte Madera Creek Path at Bon Air Rd., Greenbrae	75 (0.0%)	26 (-65.3%)	37 (-50.7%)	47 (-37.3%)	25 (-66.7%)	* (N/A)	42 (-44.0%)	23 (-69.3%)	28 (-62.7%)	75
14	Medway Rd. at Belvedere St., San Rafael	* (N/A)	198 (1.5%)	279 (43.1%)	258 (32.3%)	247 (26.7%)	256 (31.3%)	257 (31.8%)	195 (0.0%)	* (N/A)	*
15	Camino Alto at E. Blithedale Ave., Mill Valley	* (N/A)	15 (-58.3%)	12 (-66.7%)	6 (-83.3%)	9 (-75.0%)	8 (-77.8%)	22 (-38.9%)	10 (-72.2%)	15 (-58.3%)	36
16	Alameda Del Prado at Pacheco Hill Path, Novato	* (N/A)	11 (450.0%)	8 (300.0%)	11 (450.0%)	14 (600.0%)	12 (500.0%)	16 (700.0%)	7 (250.0%)	5 (150.0%)	2
17	Los Ranchitos Rd. at Puerto Suello Summit, San Rafael	* (N/A)	20 (122.2%)	1 (-88.9%)	4 (-55.6%)	5 (-44.4%)	11 (22.2%)	0 (-100.0%)	13 (44.4%)	6 (-33.3%)	9
18	Doherty Dr. at Larkspur Plaza Dr/Rose Ln (west), Larkspur	* (N/A)	30 (-6.3%)	26 (-18.8%)	13 (-59.4%)	8 (-75.0%)	30 (-6.3%)	* (N/A)	22 (-31.3%)	21 (-34.4%)	32
19	Sir Francis Drake Blvd. at Wolfe Grade, Kentfield	* (N/A)	15 (114.3%)	8 (14.3%)	5 (-28.6%)	5 (-28.6%)	26 (271.4%)	25 (257.1%)	7 (0.0%)	* (N/A)	*
20	Cal Park Tunnel Path at Andersen Dr., San Rafael	* (N/A)	(-100.0%)	* (N/A)	* (N/A)	* (N/A)	17 (-34.6%)	3 (-88.5%)	5 (-80.8%)	2 (-92.3%)	26
21	S. Novato Blvd. at Rowland Way, Novato	* (N/A)	13 (-27.8%)	* (N/A)	6 (-66.7%)	7 (-61.1%)	8 (-55.6%)	25 (38.9%)	9 (-50.0%)	11 (-38.9%)	18
22	Bellam Blvd. at Anderson Dr. (West Side), San Rafael	* (N/A)	21 (-25.0%)	24 (-14.3%)	10 (-64.3%)	71 (153.6%)	37 (32.1%)	30 (7.1%)	5 (-82.1%)	11 (-60.7%)	28
22	Bellam Blvd. at Anderson Dr. (East Side), San Rafael	* (N/A)	20 (-35.5%)	(-100.0%)	34 (9.7%)	31 (0.0%)	31 (0.0%)	* (N/A)	* (N/A)	* (N/A)	*
23	Nicasio Valley Rd. near Nicasio School, Nicasio	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	0
24	S. Knoll Rd. and Tiburon Blvd., Mill Valley	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	6
25	Tower Dr. at E. Blithedale Ave., Mill Valley	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	10
26	Central Marin Ferry Connector Bridge at Sir Francis Drake Blvd., Larkspur	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	13
27	Doherty Dr. at Rose Ln. (east), Larkspur	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	62
28	Enfrente Bike Path at S. Novato Blvd., Novato	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	5
29	Almonte Blvd. at Shoreline Hwy., Mill Valley	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	42
30	Francisco Blvd. E. at Bay St., San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	43
31	Andersen Dr. at Du Bois St., San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	24
32	Merrydale Rd. at Lincoln Hill Multi-use Pathway, San Rafael	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	8
33	NB US 101 Off-ramp/Bike Path at Sir Francis Drake Blvd., Larkspur	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	* (N/A)	19
Average Count per Location		277 (119.8%)	136 (7.9%)	190 (50.8%)	177 (40.5%)	182 (44.4%)	188 (49.2%)	151 (19.8%)	153 (21.4%)	165 (31.0%)	126

*Data unavailable
†Source: Marin County Nonmotorized Transportation Pilot Program Bicycle and Pedestrian Counts, 2013 update
††Source: 2014 Transportation System Monitoring Report, Transportation Authority of Marin, https://www.tam.ca.gov/wp-content/uploads/2017/03/2014-TAM-Monitoring-Report_FINAL.pdf
††† Source: 2016 Transportation System Monitoring Report, Transportation Authority of Marin

4.3.2 Traffic Calming

Safety for bicyclists and pedestrians has been a primary concern expressed by community members. Measures to calm vehicular traffic could be introduced to address these safety concerns. At many locations more or improved crosswalks may be needed. Many crosswalks, both new and existing, might be better served by improving their visibility to motorists, such as enhancing pavement markings, adding pedestrian-activated flashing lights, or installing a HAWK-type beacon, assuming they meet established warrants and criteria. This would be particularly appropriate near schools and on heavily-traveled streets like Sir Francis Drake Boulevard. Pedestrian warning beacons have been installed in several locations around the unincorporated area, with a particular focus on school routes. In short, anything that would improve the visibility of crosswalks and improve compliance and observance of the pedestrian right-of-way would provide a greater degree of safety for pedestrians.

A number of strategies could be introduced to calm traffic speeds depending on the context, including:

- street trees and landscaping
- corner and mid-block curb bulb-outs
- narrower streets and/or vehicle lanes
- signalization
- enforcement of existing speed limits
- speed humps and tables
- surface treatments
- raised intersections/crosswalks

4.3.3 Sidewalk Improvements

Continued evaluation of existing sidewalks for accessibility along with consideration of new sidewalks is crucial, especially on roads providing access to schools and in other areas with high levels of pedestrian activity. When contemplating sidewalk improvements, the following should be considered:

- *Physical Condition.* The condition of many sidewalks needs to be improved. Tripping obstacles range from broken and hazardous sidewalk sections to overgrown shrubs and landscaping that block passage.
- *Accessibility.* Many intersections lack curb cuts and ramps for wheelchairs that meet current ADA guidelines. Additionally, sidewalks in some places need to be widened to provide an adequate and comfortable capacity for wheelchairs. As sidewalks are widened and made accessible by the introduction of ramps, utility poles, hydrants, and other street furniture need to be located to provide an accessible path of travel. Right-of-way constraints can make installation or widening of sidewalks infeasible without other measures, such as removing on-street parking to provide sufficient width to fit the sidewalk.
- *Connectivity.* One jurisdiction has noted that maintenance and improvements to existing urban trail systems would enable residents to make better use of these facilities and access transit stops for travel out of their community. Better connectivity in the framework of the pedestrian facilities can also foster a "sense of place" at town centers.
- Signage that makes existing amenities more available to pedestrians.
- Alleviation of congestion at school sites.
- Routes to schools.
- Accessibility to recreation.
- Provision of paths on rural streets in accordance with the Caltrans Highway Design Manual.

Sidewalks are typically required as part of any new development project (e.g., new subdivisions), but there are few locations in Marin County for this to be implemented because of the slow pace of development countywide and because most development is now the reuse of existing sites. Rather, improved sidewalk facilities depend on retrofitting existing neighborhoods with new sidewalks and closing gaps between existing sidewalks. The needs for this challenging process include getting adjacent property owners to support such improvements, finding funding to complete the projects, and staffing the project construction. On many residential streets, there is insufficient right of way to install a sidewalk without removing on-street parking on one side of the street which presents an additional challenge for many neighborhoods.

4.3.4 Walking to School

As noted in **Section 4.2.1**, walking to schools in Marin County has increased as a result of the Safe Routes to Schools program (SR2S) and implementation of capital projects that specifically support and encourage walking to schools. As a result of this success, the demand for increased SR2S activities in Marin County has grown, and awareness of the needs of pedestrians should continue to be incorporated into school programs through the use of expanded pedestrian safety courses.

4.3.5 Access to Transit

Transit facility enhancements, such as bus stop improvements, are important for increasing pedestrian mobility and access to transit. Marin Transit has historically had no responsibility for bus stop access in the unincorporated area. Marin Transit must partner with local communities to ensure that bus stops meet accessibility standards and offer a level of amenities appropriate for the amount of use the stop receives. Because Marin Transit does not have physical jurisdiction over the stops, coordination with cities, the County, Golden Gate Transit, and Caltrans will be required to make any improvements. Both the City of Novato and the City of San Rafael have existing shelter programs with an advertising company that installs and maintains bus shelters in exchange for shared revenues from advertisements. Golden Gate Transit has a similar bus shelter advertising contract for their shelters at freeway bus pads in Marin County.

Conditions at local stops in the Marin Transit system range from basic to substandard. A concentrated program of bus stop improvements is necessary to bring Marin Transit's stops up to standard. More than any other improvement in the system, improving information and conditions at bus stops will send a positive message to customers, encourage new riders to try the system, and will increase pedestrian access across the county. Not all stops need to be treated equally. Highest priority for bus stop improvements include those stops that do not meet current ADA accessibility standards and stops with more than 100 users per day. Improvements at other stops should be prioritized by level of usage. Similar to widening sidewalks, providing additional transit amenities such as shelters and/or benches can be challenging within the limits of a constrained right of way. Acquisition of adjacent land is feasible but is typically very expensive and not supported by affected land owners.

Safer access to freeway interchange bus pads and more bus shelters appropriate for inclement weather are two additional issues that should be addressed with regard to the interplay of pedestrian and transit facilities. Marin Transit and Golden Gate Transit have partnered with local agencies and Caltrans to evaluate access improvements to the freeway bus pads, most recently with the Highway 101/SR 131 (Tiburon Boulevard.) interchange as part of an overall bicyclist, pedestrian, and transit user access improvement study.

4.4. Collision Analysis

The following section details the safety needs of bicyclists and pedestrians.

4.4.1 Bicycle-involved Collisions

Between 2011 and 2015 (the most recent five years of available collision data), 284 bicycle-involved collisions occurred in unincorporated areas of Marin County. As a whole, Marin County experienced 707 bicycle-involved collisions during the same time period. These totals likely undercount the actual number of bicycle-involved collisions because the data only includes reported collisions resulting in an injury and do not include collisions resulting in only property damage or unreported collisions.

Between 2011 and 2015, Marin County had the fifth most bicycle-involved collisions per 10,000 people among California's 58 counties (28 per 10,000 people), behind Alpine County (53 per 10,000 people), Santa Cruz County (36 per 10,000 people), San Francisco County (35 per 10,000 people), and Santa Barbara County (28 per 10,000 people).[2]

Most of the bicycle-involved collisions in unincorporated Marin County took place during the daylight hours of 9:00 AM to 6:00 PM (82.4 percent), when bicyclists and motorists are most likely to be on the road. There were an average of 57 bicycle-involved collisions in Marin County between 2011 and 2015, fluctuating from a low of 50 collisions and a high of 70 collisions. (See **Table 4-5**).

Table 4-5: Bicycle-involved Collisions in Unincorporated Marin County by Time of Day (2011-2015, SWITRS)

Time	2011	2012	2013	2014	2015	Total
12:00 PM – 2:59 AM	0	0	0	0	1	1
3:00 AM – 5:59 AM	0	0	0	0	0	0
6:00 AM – 8:59 AM	5	8	6	6	3	28
9:00 AM – 11:59 AM	13	12	23	10	15	73
12:00 PM – 2:59 PM	18	18	16	21	22	95
3:00 PM – 5:59 PM	14	6	20	15	11	66
6:00 PM – 8:59 PM	3	7	5	4	1	20
9:00 PM – 11:59 PM	0	0	0	1	0	1
Total	53	51	70	57	53	284

The majority of reported bicycle-involved collisions in unincorporated Marin County resulted in a visible injury (81.7 percent), among which 18.7 percent resulted in a severe injury (See **Table 4-6**). Unincorporated Marin County experienced one fatality resulting from a bicycle-involved collision in 2013. The fatal collision took place near Sir Francis Drake Boulevard and Vallejo Avenue in Inverness Park, and police officers listed the primary collision factors as improper turning.

[2] Source: Transportation Injury Mapping System (UC Berkeley), SWITRS (2011-2015), and US-Places (2012 census estimates)

Table 4-6: Bicycle-involved Collisions in Unincoporated Marin County by Injury Serverity (2011-2053, SWITRS)

Time	2009	2010	2011	2012	2013	Total
Fatal	0	0	1	0	0	1
Severe Injury	13	8	13	6	13	53
Visible Injury	32	30	40	40	36	178
Complaint of Pain	8	13	16	11	4	52
Total	53	51	70	57	53	284

The primary factor reported for bicycle-involved collisions between 2011 and 2015 was unsafe speed, with 28 of those collisions involving a non-parked motor vehicle (28.6 percent). The majority of the bicycle-involved collisions resulting from unsafe speed involved bicyclists colliding with fixed or other objects, parked motor vehicles, or non-collisions, such as becoming imbalanced on a bicycle and falling over. The second most common collision factor in a bicycle-involved collision was improper turning, resulting in 54 collisions (19 percent of total bicycle-involved collisions). Bicycle-involved collisions involving automobile right-of-way issues were the third most common issue, resulting in 34 collision (12 percent of total bicycle-involved collisions).

Table 4-7: Bicycle-involved Collisions in Unincorporated Marin County by Primary Collision Factor (2011-2015, SWITRS)

Primary Collison Factor Reported	2011	2012	2013	2014	2015	Total	Rank
Unsafe Speed	21	20	18	18	21	98	1
Improper turning	13	7	18	7	9	54	2
Automobile right of way	5	5	11	7	6	34	3
Other improper driving	2	6	2	8	4	22	4
Unknown	2	3	3	5	6	19	5
Wrong side of the road	5	1	4	5	2	17	6
Improper passing	3	3	6	2	1	15	7
Other than driver	0	1	2	2	1	6	8
Other hazardous violation	1	0	2	1	1	5	9
Traffic signals and signs	0	2	1	0	0	3	10 (tie)
Unsafe starting or backing	0	2	0	1	0	3	10 (tie)
Driving or bicycling under the influence of alcohol or drug	0	0	1	0	1	2	12
Impeding Traffic	0	0	0	0	1	1	13 (tie)
Following too closely	0	0	1	0	0	1	13 (tie)
Unsafe lane change	0	0	0	1	0	1	13 (tie)
Pedestrian right of way	0	0	1	0	0	1	13 (tie)
Pedestrian violation	1	0	0	0	0	1	13 (tie)
Not stated	0	1	0	0	0	1	13 (tie)
Total	53	51	70	57	53	284	

While bicycle-involved collisions took place all over Marin County, several locations experienced disproportionate levels of collisions and are listed below:

- Between the Golden Gate Bridge and the south border of Sausalito on Highway 101 and Alexander Avenue (45 bicycle-involved collisions between 2011 and 2015)
- Along Shoreline Highway in Tamalpais Valley and Tamalpais Valley Junction (20 bicycle-involved collisions between 2011 and 2015)
- Tiburon Boulevard or Greenwood Cove Drive between Highway 101 and Blackie's Pasture (13 bicycle-involved collisions between 2011 and 2015)
- Lucas Valley Road between Nicasio Valley Road and Las Gallinas Avenue (12 bicycle-involved collisions between 2011 and 2015)
- Kent Avenue between Woodland Road and Hillside Avenue (5 bicycle-involved collisions between 2011 and 2015)
- Sir Francis Drake Boulevard between Baywood Canyon Road and Old Railroad Grade Trail (5 bicycle-involved collisions between 2011 and 2015)
- North San Pedro Road between Highway 101 and Point Gallinas Road (5 bicycle-involved collisions between 2011 and 2015)

See **Figure 4-4**, **Figure 4-5**, **Figure 4-6**, and **Figure 4-7** for maps of bicycle-involved collisions in unincorporated Marin County.

4.4.2 Pedestrian Collisions

Between 2011 and 2015, 348 pedestrian-involved collisions took place in Marin County, with 46 of those collisions occurring in unincorporated areas. Marin County ranks sixteenth in pedestrian-involved collisions per 10,000 people (14 per 10,000 people) among California's 58 counties. The highest-ranking counties were San Francisco County (47 per 10,000 people), Los Angeles (25 per 10,000 people), Alameda (21 per 10,000 people), and Humboldt (21 per 10,000 people).

The number of annual reported pedestrian-involved collisions has declined steadily between 2011 and 2015, decreasing from a high of 12 collisions in 2011 to a low of 6 collisions in 2015. A larger percent of pedestrian-involved collisions took place during dawn (6:00 AM to 8:59 AM) and dusk (6:00 PM to 8:59 PM) periods compared to bicycle-involved collisions (36 percent and 17 percent, respectively). However, the large majority of pedestrian-involved collisions occurred during daylight hours between 9:00 AM and 5:59 PM (26 collisions or 56.5 percent). For a full list of pedestrian-involved collisions by time of day, see **Table 4-8**).

Table 4-8: Pedestrian-involved Collisions in Unincorporated Marin County by Time of Day (2011-2015, SWITRS)

Time	2011	2012	2013	2014	2015	Total
12:00 PM – 2:59 AM	0	0	0	0	0	0
3:00 AM – 5:59 AM	0	0	0	0	0	0
6:00 AM – 8:59 AM	3	1	3	1	0	8
9:00 AM – 11:59 AM	2	0	0	0	0	2
12:00 PM – 2:59 PM	1	3	2	1	3	10
3:00 PM – 5:59 PM	5	5	1	2	1	14
6:00 PM – 8:59 PM	1	2	1	4	1	9
9:00 PM – 11:59 PM	0	0	1	1	1	3
Total	12	11	8	9	6	46

One pedestrian-involved collision resulted in a fatality between 2011 and 2015, occurring 572 feet north of Seminary Drive at Hodges Drive in 2011. Visible injuries comprised 43.5 percent of all pedestrian-involved collisions, with severe injuries and complaint of pain making up 28.3 and 26.1 percent of collisions, respectively (See **Table 4-9**).

Table 4-9: Pedestrian-involved Collisions in Unincorporated Marin County by Injury Severity (2011-2015, SWITRS)

Time	2011	2012	2013	2014	2015	Total
Fatal	1	0	0	0	0	1
Severe Injury	4	2	3	3	1	13
Visible Injury	4	7	1	4	4	20
Complaint of Pain	3	2	4	2	1	12
Total	12	11	8	9	6	46

Between 2011 and 2015, the three most common collision factors that led to pedestrian-involved collisions were pedestrian violations (32.6 percent), unsafe speed (15 percent), and pedestrian right of way (13.0 percent). See **Table 4-10** for a full list of pedestrian primary collision factors by year.

Table 4-10: Pedestrian-involved Collisions in Unincorporated Marin County by Primary Collision Factor (2011-2015, SWITRS)

Time	2011	2012	2013	2014	2015	Total	Rank
Pedestrian violation	3	2	3	5	2	15	1
Unsafe Speed	3	2	0	1	1	7	2
Pedestrian right of way	1	4	1	0	0	6	3
Improper turning	1	0	1	2	0	4	4
Driving or bicycling under the influence of alcohol or drug	0	0	0	1	2	3	5 (tie)
Unsafe starting or backing	2	0	1	0	0	3	5 (tie)
Other improper driving	1	0	1	0	0	2	7 (tie)
Unknown	0	1	0	0	1	2	7 (tie)
Not stated	0	1	1	0	0	2	7 (tie)
Automobile right of way	0	1	0	0	0	1	10 (tie)
Traffic signals and signs	1	0	0	0	0	1	10 (tie)
Total	12	11	8	9	6	46	

Small clusters of pedestrian-involved collisions formed at the north end of the Golden Gate Bridge (5 collisions), on Shoreline Highway between Almonte Boulevard and Highway 101 (4 collisions), and on North San Pedro Road between Highway 101 and Birch Way (4 collisions). See **Figure 4-4**, **Figure 4-5**, **Figure 4-6**, and **Figure 4-7** for maps of pedestrian-involved collisions in unincorporated Marin County.

Figure 4-4: Bicycle- and Pedestrian-involved Collisions, Unincorporated West Marin County (2011-2015)

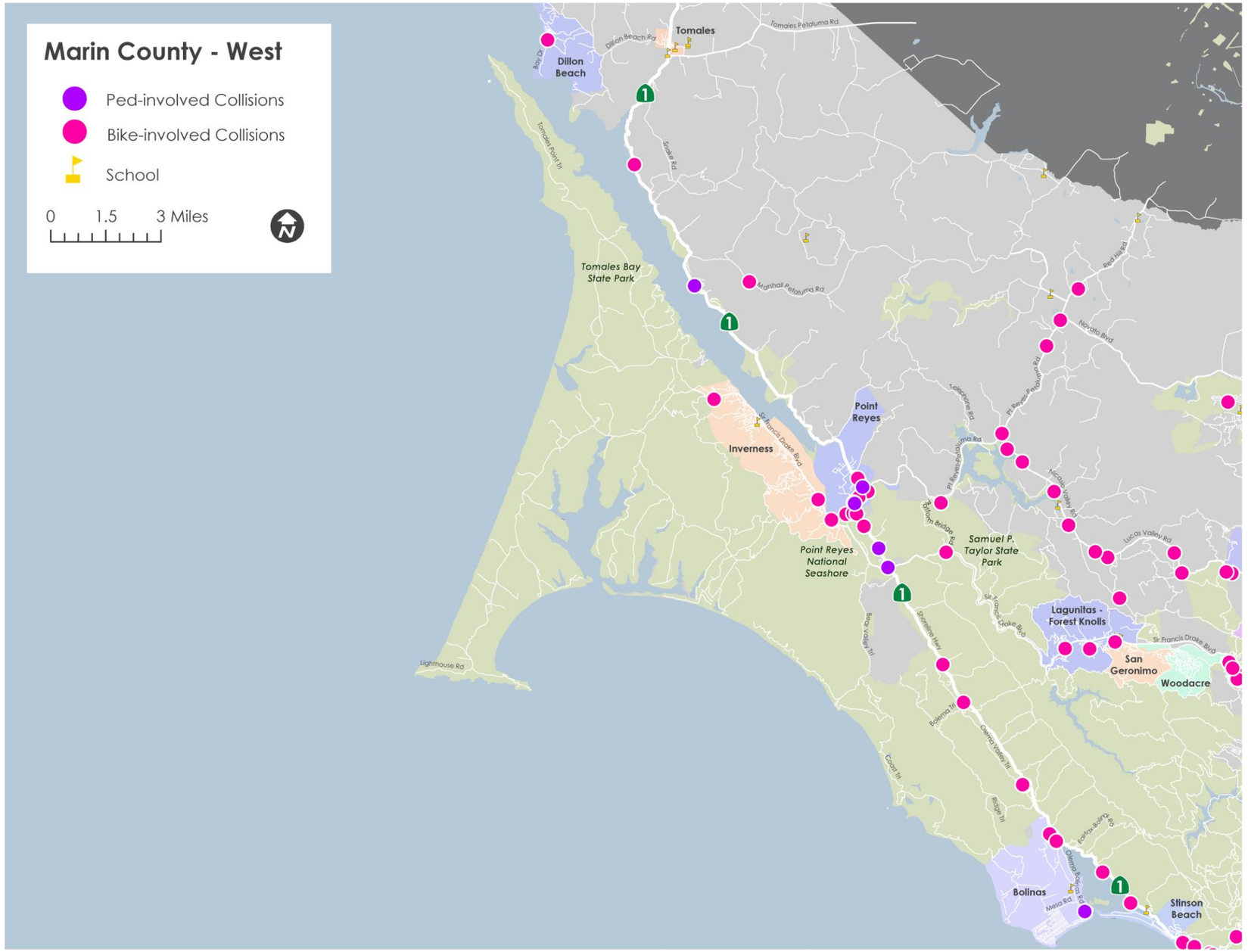


Figure 4-5: Bicycle- and Pedestrian-involved Collisions, Unincorporated North Marin County (2011-2015)

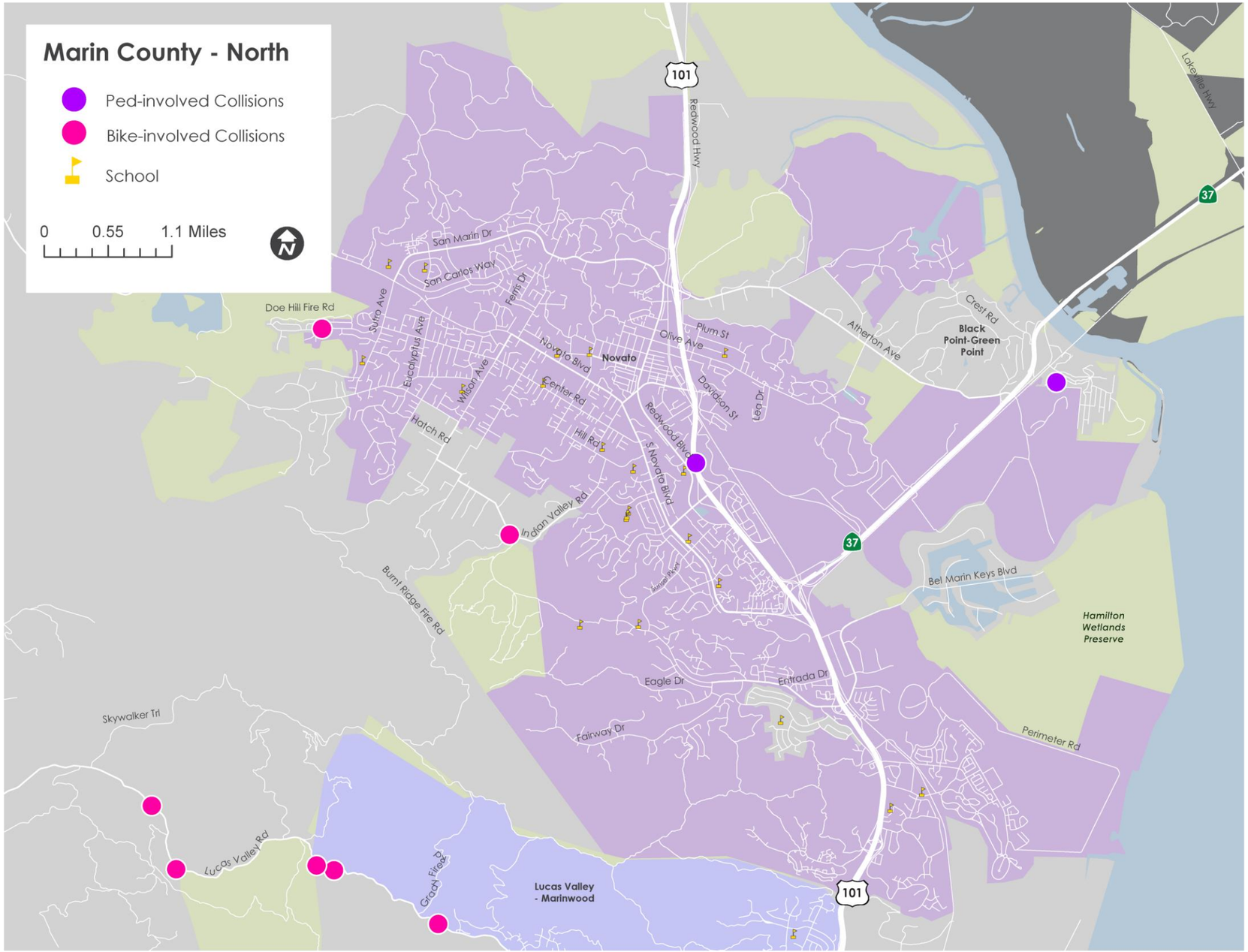


Figure 4-6: Bicycle- and Pedestrian-involved Collisions, Unincorporated Central Marin County (2011-2015)

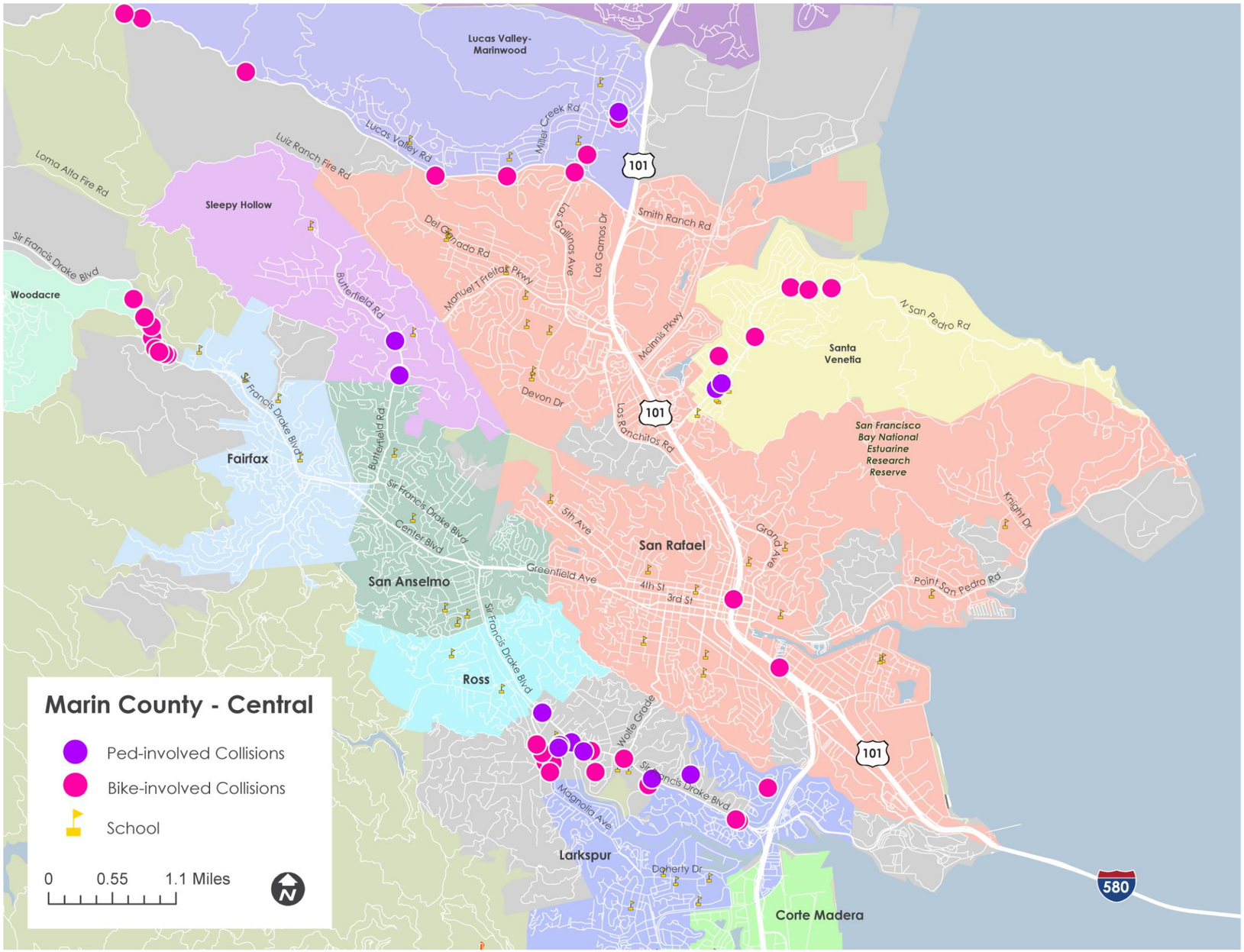
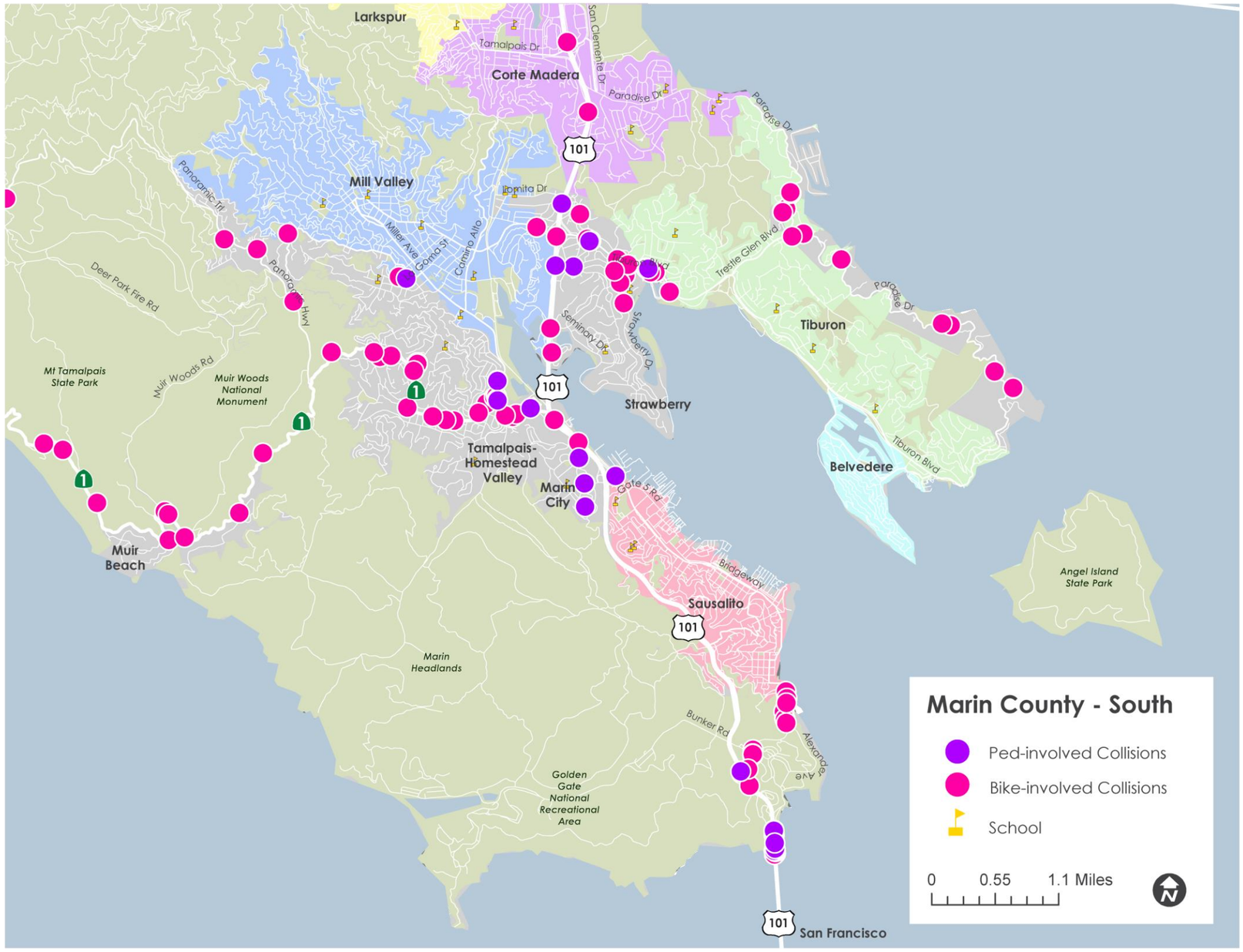


Figure 4-7: Bicycle- and Pedestrian-involved Collisions, Unincorporated South Marin County (2011-2015)



4.5. Identified Needs

4.5.1 Public Workshops Input

As part of the Bicycle and Pedestrian Plans update process, a series of public workshops were held. Specific to the unincorporated area, one workshop was held on June 2, 2015 in San Rafael, and the second workshop was held on June 3, 2015 in West Marin. Workshops held in conjunction with city and town plan updates were done jointly with the County. The workshops were designed to solicit feedback on problem areas and issues facing bicyclists and pedestrians in unincorporated areas of Marin County. A summary of the main comments related to the unincorporated area is noted below.

- Problematic intersections or crossings:
    - Bon Air Road, east of Creekside Park
    - Bridgeway at Gate 6 Road – dangerous intersection
    - Bell Lane and Marin Avenue – needs a crossing guard
    - E. Strawberry Drive at Tiburon Boulevard and Belvedere Drive – need striped crosswalk and to tighten curb radii
    - Tiburon Boulevard/E. Blithedale Avenue and Highway 101 crossing – off-ramps are dangerous to cross
    - Lucky Drive pedestrian overcrossing – maintain
    - Flamingo Road and Tennessee Valley Road – improve bicycle signal detection
    - Tiburon Boulevard at Blackfield Drive – dangerous intersection
- Maintenance, lighting, sight distance issues, and enforcement:
    - Alexander Avenue, approaching south border of Sausalito – improve quality of street lighting
    - 25 Loring Avenue – improve sight distance
    - Loring Avenue and Shoreline Highway – improve sight distance
    - Montford Avenue between Pixie Trail and Ethel Avenue – poor pavement quality
    - S. Vernal Avenue at Greenhill Road – improve sight distance
    - Redwood Highway Frontage Road – poor pavement quality
    - Seminary Drive between Chapel Drive and Seminary Cove Drive – prevent parking in the bikeway
    - Maintain Lucky Drive pedestrian overcrossing
- New bikeway, sidewalk, trail, bridge, overcrossing, or multi-use facilities:
    - De Silva Island Drive to Seminary Drive – construct bridge with multi-use path
    - Harbor Cove Way to Greenwood Bay Drive – widen existing bridge
    - E. Strawberry Drive – install Class III bikeway
    - Flamingo Road, south of Cardinal Court – install Class III bikeway

  - Redwood Frontage Road from Seminary Drive to Belvedere Drive – consider Class II bikeways
  - Marin Avenue between Maple Street and Laurel Way – install Class III bikeway
  - Sequoia Valley Road – install bikeway on uphill segment
  - Belvedere Drive – construct continuous sidewalk
  - Reed Boulevard between Knoll Lane and Belvedere Drive – construct continuous sidewalk
  - Laurel Grove Avenue at Sir Francis Drake Boulevard – improve signal timing for pedestrians
  - Tiburon Boulevard from Highway 101 to Blackfield Drive – study potential for on-street bikeway
  - Lucas Valley Road – construct parallel sidepath
  - Pierce Point Road – pave roadway
  - Park Road from Cross Marin Trail to Sir Francis Drake Boulevard – install Class I bikeway
- Improved wayfinding:
  - Harbor Cove Way off E. Strawberry Drive – add directional signage indicating connection to Greenwood Bay Drive
  - Paradise Drive – add "Share the Road" signage
- Slow motor vehicle speed:
  - Marin Avenue at Laurel Way, Poplar Street, Pine Street, and Spruce Street – install stop control, roundabouts, or speed humps
  - Alexander Avenue, approaching south border of Sausalito – reduce motor vehicle speeds
- Safe Routes to Schools
  - Tamalpais Valley School – study bicycle and pedestrian access improvements
  - Dixie Elementary School – study bicycle and pedestrian access improvements

4.6. Future Use

A goal of this Plan is to maximize the number of local bicycle and pedestrian commuters in order to help reduce traffic congestion and air pollution. In order to set the framework for these benefits, land use, commute patterns and national trends are used as a basis for determining the potential benefits to Marin County.

4.6.1 Land Use

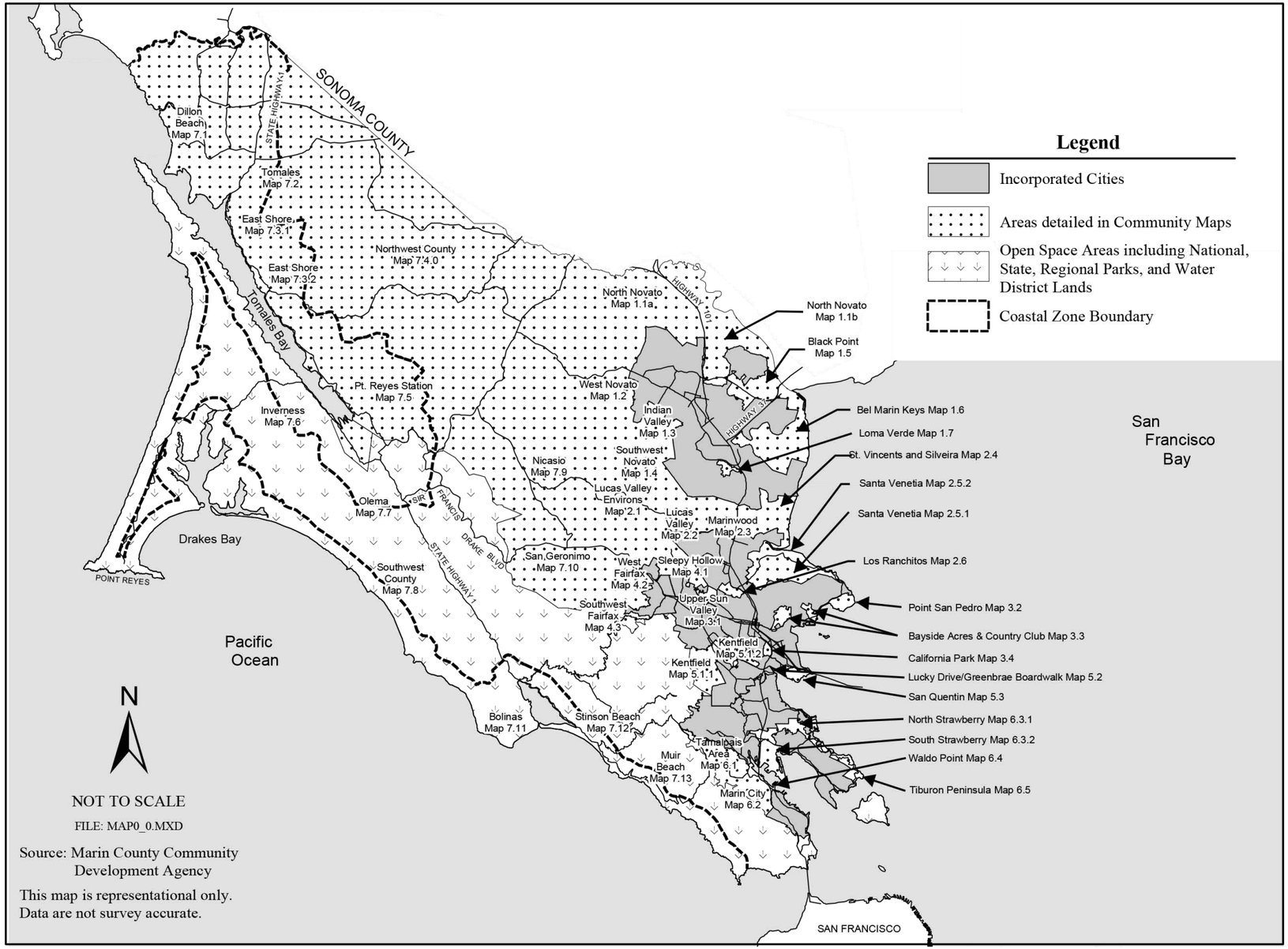
The "demand" for bicycle facilities can be difficult to predict. Unlike automobile use, where historical trip generation studies and traffic counts allow for the estimation of future "demand" for travel, bicycle trip generation methods are less advanced and standardized. Land use patterns can help predict demand and are important to planning bikeways because changes in land use (and particularly employment areas) will affect average commute distance, which in turn affects the attractiveness of bicycling as a commute mode. For more information on land use planning in Marin County, see the 2007 **Marin Countywide Plan**.

The unincorporated areas bikeway and pedestrian network is intended to connect the neighborhoods where people live to the places they work, shop, engage in recreation, or go to school. An emphasis will be placed on regional bikeways and transit connections centered on the major activity centers in the County as well as connecting to the bicycle networks in Marin's cities and towns, including:

- Downtown commercial districts
- Civic buildings such as the community centers, senior centers and libraries
- Schools
- Transit Hubs
- Neighborhood parks and regional recreational areas
- Shopping Centers
- Major Employers

Figure 4-8 shows Marin County's land use policy map. For more detailed planning area maps, see the 2007 **Marin Countywide Plan**.

Figure 4-8: Marin County Land Use Policy Map Index (2007 Marin Countywide Plan)



4.6.2 Commute Patterns

Commute information is presented to identify the current "mode split" of people that live and work in Marin County. Mode split refers to the choice of transportation a person selects to move to destinations, be it walking, bicycling, taking a bus, or driving. One major objective of any bicycle or pedestrian facility improvement is to increase the "split" or percentage of people who choose to bicycle or walk rather than drive or be driven. Every saved vehicle trip or vehicle-mile represents quantifiable reductions in air pollution and can help in lessening traffic congestion. Documenting current bicycle and pedestrian mode share and predicting future use and benefits supports these objectives. Mode splits from the most recent five years of American Community Survey data (2011-2015) for unincorporated Marin County are shown in **Table 4-11** and compared to incorporated Marin County, the county as a whole, and the State of California.

Table 4-11: Commute Mode Split Comparison (ACS, 2011-2015)

	Unincorporated	Incorporated	Marin County	California
Drive Alone	8,412 (70.5%)	73,549 (64.7%)	81,961 (65.2%)	12,380,153 (73.4%)
Carpool	792 (6.6%)	10,533 (9.3%)	11,325 (9.0%)	1,823,481 (10.8%)
Public Transit	353 (3.0%)	12,020 (10.6%)	12,373 (9.9%)	881,550 (5.2%)
Bicycle	213 (1.8%)	1,927 (1.7%)	2,140 (1.7%)	188,736 (1.1%)
Walk	280 (2.3%)	3,780 (3.3%)	4,060 (3.2%)	458,523 (2.7%)
Other	157 (1.3%)	961 (0.8%)	1,118 (0.9%)	236,281 (1.4%)
Worked at Home	1,720 (14.4%)	10,915 (9.6%)	12,635 (10.1%)	900,328 (5.3%)
Total	11,927 (100.0%)	113,685 (100.0%)	125,612 (100.0%)	16,869,052 (1.4%)

As shown, 1.8 percent of all employed unincorporated Marin County residents commute primarily by bicycle and 2.3 percent commute by walking. Census data do not include the number of people who bicycle for recreation or for utilitarian purposes, students who bicycle to school, commuters who use multiple modes in their commute (such as bicycling or walking to transit), and bicycle commuters who travel from outside unincorporated Marin, and are therefore likely to undercount true bicycling and walking rates. According to a 2000 Metropolitan Transportation Commission study looking at all trips in Marin County, as a whole, 1.7 percent bike and 9.7 percent walk, indicating that bicycling and walking are more common for non-commute utilitarian trips. In unincorporated Marin, recreational bicycling is especially popular, where large groups of bicyclists and families out for a bicycle ride are a common sight on the weekends.

4.6.3 Potential Future Air Quality Improvements

The following information regarding potential air quality benefits is not intended to establish any new goals or targets for air quality attainment for Marin County. This information should not be regarded as a definitive statement of the air quality benefits that will result from the construction of bicycle and pedestrian improvements described in this Plan. Rather, this information is presented in an attempt to capture, at a countywide concept level, the potential for air quality benefits that may be possible through implementation of the proposed improvements.

Unincorporated Marin County lies within the San Francisco Bay Area Basin, which is regulated by the Bay Area Air Quality Management District (BAAQMD). According to the California Air Resources Board, as of April 2015, the air quality in the San Francisco Bay Area Basin did not meet the minimum State health-based standards for one- or eight-hour concentrations ground-level ozone and the state standards for Particulate Matter (PM_{10}) and Fine Particulate Matter ($PM_{2.5}$).[3] Currently, the Basin is classified as marginal non-attainment area for the Federal 8-hour ozone standard.

According to the BAAQMD, motor vehicles are responsible for approximately 75 percent of the smog in the Bay Area. Reducing vehicle-miles traveled (VMTs) is a major goal of the BAAQMD, and fully implementing unincorporated Marin's bicycle and pedestrian network could help achieve this goal by providing residents safe and functional ways to get to work, school, or shopping without relying on motor vehicles. Based on data from the 2011-2015 American Community Survey estimates of commute mode share, the current number of daily bicycle commuters in unincorporated Marin County is estimated to be 213 riders, making an estimated 426 daily roundtrips. The estimated number of daily walk commuters in unincorporated Marin County is 280 pedestrians, making an estimated 560 daily roundtrips.

Table 4-9 provides an example of the potential estimated reduction in vehicle-miles traveled and air pollutants based on the best available local and national data for unincorporated Marin County. It is estimated that bicycling and walking contribute to the reduction in 3 kg of Hydrocarbons, 30 kg of Carbon Monoxide, 22 kg of Nitrous Oxides, and 1,164 kg of Carbon Dioxide per weekday.

[3] BAAQMD. Ambient Air Quality Standards & Bay Area Attainment Status. Last updated April 2015. http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status.

Figure 4-9: Potential Bicycle and Walk Air Quality Projections for Unincorporated Marin County

Commute Data	Value	Source
Total Population	26,904	Unincorporated Marin County, American Community Survey (2011-2015), Table B01003
Employed Population	11,927	Unincorporated Marin County, American Community Survey (2011-2015), Table B08301
Bicycle Commute Mode Share	1.8%	Unincorporated Marin County, American Community Survey (2011-2015), Table B08301
Daily Bicycle Commuters	213	Unincorporated Marin County, American Community Survey (2011-2015), Table B08301
Daily Bicycle Commute Trips	426	Assumed 2 commute trips per commuter per day
Transit Mode Share	3.0%	Unincorporated Marin County, American Community Survey (2011-2015), Table B08301
Transit Commuters	353	Unincorporated Marin County, American Community Survey (2011-2015), Table B08301
Estimated Bicycle-to-Transit Mode Share	5.1%	Marin Transit 2016-2025 Short Range Transit Plan, Table A-1: Ridership Activity by Geography
Daily Bicycle-to-Transit Commute Trips	36	Assumed 2 commute trips per commuter per day
Walk Commute Mode Share	2.35%	Unincorporated Marin County, American Community Survey (2011-2015), Table B08301
Daily Walk Commuters	280	Unincorporated Marin County, American Community Survey (2011-2015), Table B08301
Daily Walk Commute Trips	560	Assumed 2 commute trips per commuter per day

School Data	Value	Source
K-12 School Enrollment	3,642	Unincorporated Marin County, American Community Survey (2011-2015), Table B14001
Estimated K-12 Bicycle Mode Share	8.00%	Marin County Safe Routes to Schools, Program Evaluation (2016)
Estimated Daily Bicycle School Trips	291	Marin County Safe Routes to Schools, Program Evaluation (2016)
Estimated K-12 Walk Mode Share	17.20%	Marin County Safe Routes to Schools, Program Evaluation (2016)
Estimated Daily Walk School Trips	626	Marin County Safe Routes to Schools, Program Evaluation (2016)
College Enrollment	2223	Unincorporated Marin County, American Community Survey (2011-2015), Table B14001
Estimated College Bicycle Mode Share	5%	National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995. Review of bicycle commute share in seven university communities (5%) x 2 for roundtrips (rounded down); 2005 Traveler Opinion and Perception Survey (FHWA) found 4.9% of all trips to school were by walking.
Estimated Bicycle College Commuters	111	College enrollment multiplied by estimated college bicycle mode share
Estimated Daily Bicycle College Trips	222	Assumed 2 commute trips per commuter per day
Estimated College Walk Mode Share	5%	National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995. Review of bicycle commute share in seven university communities (5%) x 2 for roundtrips (rounded down); 2005 Traveler Opinion and Perception Survey (FHWA) found 4.9% of all trips to school were by walking.
Estimated College Walk Commuters	111	College enrollment multiplied by estimated college walk mode share
Estimated Daily College Walk Trips	222	Assumed 2 commute trips per commuter per day

Estimates	Value	Source
Estimated Daily Bicycle and Walk Commute and School Trips	1,939	Sum of estimated daily bicycle, bicycle-to-transit, and walk commute and school trips
Ratio of Commute/School Bicycle Trips to Other Trips	0.95	National Household Travel Survey (2009), Number of Person Miles by Mode and Purpose
Ratio of Commute/School Walk Trips to Other Trips	1.34	National Household Travel Survey (2009), Number of Person Miles by Mode and Purpose
Estimated Daily Bicycle and Walk Non-Commute Trips	2,299	Estimated daily bicycle, bicycle-to-transit, and walk commute and school trips multiplied by non-commute/school trip ratios
Estimated Daily Bicycle and Walk Trips	4,238	Sum of estimated daily commute/school trips and daily non-commute/school trips
New Commuters with Less than 10 Minute Commutes	814	American Community Survey (2011-2015), Table B08303; less number of existing bike/walk commuters
Number of Potential Daily Bicycle/Walk Commute Trips	4,319	Estimated daily bicycle and walk trips plus 10% of commutes less than 10 minutes
Estimated Motor Vehicle Trip Replacement Rate	65.30%	National Bicycling & Walking Study (1995), National Household Travel Survey (2009)
Estimated Daily Motor Vehicle Trips Reduced	2,820	Estimated daily bicycle and walk trip multiplied by estimated motor vehicle trip replacement rate
Estimated Average Bicycle and Pedestrian Trip Length	1.12	National Household Travel Survey (2009)
Estimated Future Daily Vehicle-Miles Traveled Reduced	3,160	Estimated daily motor vehicle trips reduced multiplied by estimated average bicycle and pedestrian trip length
Estimated Future Reduced Hydrocarbon Emissions per Weekday	3	0.001077 kg/VMT
Estimated Future Reduced Carbon Monoxide Emissions per Weekday	30	0.0094 kg/VMT
Estimated Future Reduced Nitrous Oxide Emissions per Weekday	22	0.00693 kg/VMT
Estimated Future Reduced Carbon Dioxide Emissions per Weekday	1,164	0.3684 kg/VMT

5 Proposed System & Improvements

This chapter presents the proposed bicycle and pedestrian system and improvements for unincorporated Marin County. The recommended short- and long-term system improvements consist of three distinct components:

- Bicycle Facilities: including the bicycle system, bicycle parking, and support facilities
- Pedestrian Facilities: including the sidewalks and street crossings
- Bicycle and Pedestrian Programs: as related to education, enforcement, and encouragement

Although the improvements described in this Plan are limited to the unincorporated areas of the Marin County, they are part of a larger vision for Marin County that includes each of the local cities' and towns' bicycle, pedestrian, and Safe Routes to Schools plans. The projects listed are recommended for implementation over the next 10 to 20 years, or as funding is available, as some of the more expensive projects may take longer to implement. It is important to note that many of the funding sources are highly competitive, and therefore, it is difficult to determine exactly which projects will be funded and when.

5.1. Creating a Bikeway System

A bikeway 'system' is a network of bicycle routes that, for a variety of reasons including safety and convenience, provide a superior level of service for bicyclists. It is important to state that, by law, bicyclists are allowed on all streets and roads (except where specifically prohibited) regardless of whether they are a part of the bikeway system. The bikeway system is a tool that allows the County to focus and prioritize implementation efforts where they will provide the greatest community benefit and provide the best opportunities to attract more people to bicycling.

There is an established methodology for selecting a bikeway system for any community. One of the major goals of the Plan is to build on local bikeway networks already approved or proposed by communities or regional plans. Thus, local community plans provide the basis for much of the primary bikeway system. Another important criterion is input from the local bicycling community and staff familiar with the best routes and existing constraints and opportunities. Input was received through two public workshops conducted in 2015, at which residents were asked to identify the routes they regularly ride plus corridors they saw as either opportunities or constraints, helping to identify the types and locations of improvements designed to meet residents' needs.

5.2. Bicycle and Pedestrian System

Marin County's various unincorporated communities each have their own distinct qualities and unique attributes that contribute to the region's overall quality of life. This remains evident even though many of these unincorporated communities are landlocked or function as small, residential neighborhoods immediately adjacent to their more urban, incorporated neighbors. From a practical standpoint and for purposes of continuity, it makes sense for projects in these areas to be included in the adjacent incorporated jurisdiction's bicycle and pedestrian plan, where possible.

Examples of the recommended strategies for bicycle circulation consist of a comprehensive network of utilitarian bikeways connecting residential neighborhoods in Marin County with schools, parks, community centers, downtowns, and other destinations. It focuses around a primary system of north-south and east-west corridors, using a combination of paths, lanes, and routes. Bikeway improvements have been broken down between a primary and secondary system, and short-term, mid-term, and long-term projects.

Pedestrian improvements by nature are highly localized, and therefore prototype solutions have been developed that have widespread applicability in unincorporated Marin County. In addition, several pedestrian treatments for specific areas were developed. In some cases, projects listed under Bikeway improvements, such as multi-use paths, are also pedestrian facilities as well.

The proposed bikeways in Marin's unincorporated regions consist of approximately 131 miles of bikeways, including approximately 22 miles of Class I multi-use pathways, approximately 106 miles of Class II on-street bicycle lanes and Class IIr shoulders, and approximately 2 miles of signed bicycle routes and shoulder improvements (See **Table 5-6**).

Over 5,000 lineal feet of additional sidewalk are proposed in several locations countywide. As described in Chapter 3, all new facilities must meet standards provided in Chapter 1000 of Caltrans' *Highway Design Manual*. Note that some facilities listed below may be under other agencies' jurisdictional or maintenance responsibility.

The proposed bicycle and pedestrian projects in unincorporated Marin County are organized into a series of priority projects that fall into one of the following four categories:

1. North Marin (**Figure 5-1** and **Table 5-1**)
2. Central Marin (**Figure 5-2** and **Table 5-2**)
3. Southern Marin (**Figure 5-3** and **Table 5-3**)
4. West Marin (**Figure 5-4, Figure 5-5,** and **Table 5-4**)
5. Other projects (**Table 5-5**)

The top priority bikeway and pedestrian projects were selected based on input from Marin County staff, the public, and the consultant team based on their knowledge of the current direction of funding programs.

5.3. Cost Breakdown

An initial cost breakdown for bicycle and pedestrian infrastructure projects is presented in **Table 5-1** through **Table 5-5**. The total capital cost is estimated to be over $222 million. Assumptions for the high-level planning cost estimates include:

- All cost estimates are conceptual because no feasibility or preliminary design has been completed
- Funded costs only include capital projects which have not yet initiated
- Where several alternatives were considered, estimates for the most cost-effective option are used

NORTHERN MARIN COUNTY PROPOSED AND EXISTING BIKEWAY NETWORK FIGURE 5.1

Legend

Bicycle Facilites

Existing/Proposed

- Existing Class I Path
- Proposed Class I Path
- Existing Class II Bike Lane
- Proposed Class II Bike Lane
- Existing Class IIr Shoulder
- Proposed Class IIr Shoulder
- Existing Class III Route
- Proposed Class III Route
- Existing Class III Route with Sharrows
- Proposed Class III Route with Sharrows
- Existing One Way Class IV Bikeway
- Proposed One Way Class IV Bikeway
- Existing Two Way Class IV Bikeway
- Proposed Two Way Class IV Bikeway
- Existing Class III/Proposed Class II
- Existing Class III/Proposed Class IIr
- Class II/III Combination
- Class II/IIIs Combination
- Class IIr/III Combination
- Class IIr/IIIs Combination
- Freeway Legal Route
- Existing Other Facility
- Proposed Other Facility
- School

0 0.5 1 2

Miles

DATA SOURCE MARINMAP

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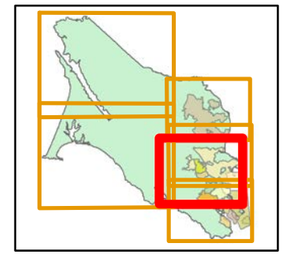
CENTRAL MARIN COUNTY PROPOSED AND EXISTING BIKEWAY NETWORK FIGURE 5.2



Legend

Bicycle Facilites

Existing/Proposed

- Existing Class I Path
- Proposed Class I Path
- Existing Class II Bike Lane
- Proposed Class II Bike Lane
- Existing Class IIr Shoulder
- Proposed Class IIr Shoulder
- Existing Class III Route
- Proposed Class III Route
- Existing Class III Route with Sharrows
- Proposed Class III Route with Sharrows
- Existing One Way Class IV Bikeway
- Proposed One Way Class IV Bikeway
- Existing Two Way Class IV Bikeway
- Proposed Two Way Class IV Bikeway
- Existing Class III/Proposed Class II
- Existing Class III/Proposed Class IIr
- Class II/III Combination
- Class II/IIIs Combination
- Class IIr/III Combination
- Class IIr/IIIs Combination
- Freeway Legal Route
- Existing Other Facility
- Proposed Other Facility
- School

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DATA SOURCE MARINMAP

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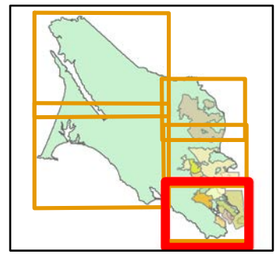
SOUTHERN MARIN COUNTY PROPOSED AND EXISTING BIKEWAY NETWORK FIGURE 5.3



Legend

Bicycle Facilites

Existing/Proposed

- Existing Class I Path
- Proposed Class I Path
- Existing Class II Bike Lane
- Proposed Class II Bike Lane
- Existing Class IIr Shoulder
- Proposed Class IIr Shoulder
- Existing Class III Route
- Proposed Class III Route
- Existing Class III Route with Sharrows
- Proposed Class III Route with Sharrows
- Existing One Way Class IV Bikeway
- Proposed One Way Class IV Bikeway
- Existing Two Way Class IV Bikeway
- Proposed Two Way Class IV Bikeway
- Existing Class III/Proposed Class II
- Existing Class III/Proposed Class IIr
- Class II/III Combination
- Class II/IIIs Combination
- Class IIr/III Combination
- Class IIr/IIIs Combination
- Freeway Legal Route
- Existing Other Facility
- Proposed Other Facility
- School

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DATA SOURCE MARINMAP

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WESTERN MARIN COUNTY (northern portion) PROPOSED AND EXISTING BIKEWAY NETWORK FIGURE 5.4

Tomales Petaluma Rd
1
Hicks Valley Rd
Pt Reyes Petaluma Rd
Novato Blvd
Sir Francis Drake Blvd
Nicasio Valley Rd

Legend

Bicycle Facilites

Existing/Proposed

- Existing Class I Path
- Proposed Class I Path
- Existing Class II Bike Lane
- Proposed Class II Bike Lane
- Existing Class IIr Shoulder
- Proposed Class IIr Shoulder
- Existing Class III Route
- Proposed Class III Route
- Existing Class III Route with Sharrows
- Proposed Class III Route with Sharrows
- Existing One Way Class IV Bikeway
- Proposed One Way Class IV Bikeway
- Existing Two Way Class IV Bikeway
- Proposed Two Way Class IV Bikeway
- Existing Class III/Proposed Class II
- Existing Class III/Proposed Class IIr
- Class II/III Combination
- Class II/IIIs Combination
- Class IIr/III Combination
- Class IIr/IIIs Combination
- Freeway Legal Route
- Existing Other Facility
- Proposed Other Facility
- School

0 0.75 1.5 3

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DATA SOURCE MARINMAP

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WESTERN MARIN COUNTY (southern portion) PROPOSED AND EXISTING BIKEWAY NETWORK FIGURE 5.5

Sir Francis Drake Blvd
Pt Reyes Petaluma Rd
Novato Blvd
Bear Valley Rd
Nicasio Valley Rd
Lucas Valley Rd
Sir Francis Drake Blvd
1

Legend

Bicycle Facilites

Existing/Proposed

- Existing Class I Path
- Proposed Class I Path
- Existing Class II Bike Lane
- Proposed Class II Bike Lane
- Existing Class IIr Shoulder
- Proposed Class IIr Shoulder
- Existing Class III Route
- Proposed Class III Route
- Existing Class III Route with Sharrows
- Proposed Class III Route with Sharrows
- Existing One Way Class IV Bikeway
- Proposed One Way Class IV Bikeway
- Existing Two Way Class IV Bikeway
- Proposed Two Way Class IV Bikeway
- Existing Class III/Proposed Class II
- Existing Class III/Proposed Class IIr
- Class II/III Combination
- Class II/IIIs Combination
- Class IIr/III Combination
- Class IIr/IIIs Combination
- Freeway Legal Route
- Existing Other Facility
- Proposed Other Facility
- School

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Miles

DATA SOURCE MARINMAP

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*Table 5-1: Proposed Projects, North Marin**

ID	Segment	Begin	End	Length	Facility Type	Total Cost	Unfunded Cost	Funded Cost
1	**North Marin: Oakview Path**	Lucas Valley Road	Marinwood Avenue	0.9 mi	Class I	$1,049,000	$1,049,000	$0
2	**North Marin: Marinwood Ave**	South End	Grande Paseo (North)	0.2 mi	Class II	$10,000	$10,000	$0
3	**North/Central Marin: SMART Pathway (coordinate with SMART and cities of Novato and San Rafael)**	Smith Ranch Road	SMART Hamilton Station	2.7 mi	Class I	$2,970,000	$2,970,000	$0
4	**North Marin: Lucas Valley Path (Old Lucas Valley Road / Canyon Oak Drive)**	Bridgegate Drive	Miller Creek Road	2.2 mi	Class I	$1,760,000	$1,760,000	$0
5	**North Marin: San Antonio Road**	San Antonio Road at Korean Church	Sonoma County Boundary	0.6 mi	Class II	$260,000	$260,000	$0
6	**North Marin: State Route 37**	Petaluma River	Hanna Ranch Road	3.3 mi	Class I	$6,209,000	$6,209,000	$0
7	**North Marin: Vineyard Rd / Indian Valley Golf Club Service Road**	Novato Boulevard	Woodside Court	2.4 mi	Class III	$5,000	$5,000	$0
8	**North Marin: Stafford Lake Path**	Stafford Lake	Sutro Avenue	1.9 mi	Class I	$3,200,000	$3,200,000	$0
	TOTAL			14.2 mi		$15,463,000	$15,463,000	$0

*Planning-level cost estimates are based on latest available implementation unit costs in the Bay Area and includes design costs. Many projects are undefined at this level, and the final type and scope of the project is yet to be determined. The estimates do not include any major right-of-way, environmental, or engineering costs that may be discovered in the feasibility analysis process. Costs from available feasibility studies or inflation-adjusted costs from the previous Plan update were used, where available.

*Table 5-2: Proposed Projects, Central Marin**

ID	Segment	Begin	End	Length	Facility Type	Total Cost	Unfunded Cost	Funded Cost
9	**Central Marin: College of Marin Access Improvements - College Ave**	Corte Madera Creek Pathway	Sir Francis Drake Boulevard	0.1 mi	Class II	$2,000	$2,000	$0
10a	**Central Marin: Central Marin Ferry Connection Phase II****	East Sir Francis Drake Blvd.	Redwood Highway	0.4 mi	Class I	$11,100,000	$2,100,000	$9,000,000
10b		Redwood Highway	Wornum Drive	0.3 mi	Class I	$7,950,000	$7,950,000	$0
11	**Central Marin: E. Sir Francis Drake Boulevard (coordinate with City of San Rafael and Caltrans)**	Larkspur City Limits	Main St (San Quentin)	1.4 mi	Class I	$3,540,000	$3,540,000	$0
12	**Central Marin: North San Pedro Road**	Civic Center Drive/San Pablo Avenue Drive	Vendola Drive	1.7 mi	Class II	$34,000	$34,000	$0
13	**Central Marin: Sir Francis Drake Boulevard (Greenbrae)**	Wolfe Grade	Eliseo Drive	1.2 mi	Class I	$2,500,000	$2,500,000	$0
14	**Central Marin: Sir Francis Drake Boulevard (Kentfield)**	Ross Town Limits	Wolfe Grade	1.0 mi	Class II	$42,000	$42,000	$0
15	**Central Marin: Butterfield Road**	San Anselmo Town Limits	Van Winkle Drive	1.3 mi	Class II	$104,000	$104,000	$0
16	**Central Marin: Point San Pedro Road**	Mooring Road	Main Drive	0.8 mi	Class II	$20,000	$20,000	$0
	TOTAL			8.2 mi		$25,292,000	$16,292,000	$9,000,000

*Planning-level cost estimates are based on latest available implementation unit costs in the Bay Area and includes design costs. Many projects are undefined at this level, and the final type and scope of the project is yet to be determined. The estimates do not include any major right-of-way, environmental, or engineering costs that may be discovered in the feasibility analysis process. Costs from available feasibility studies or inflation-adjusted costs from the previous Plan update were used, where available.
**In design

*Table 5-3: Proposed Projects, Southern Marin**

ID	Segment	Begin	End	Length	Facility Type	Total Cost	Unfunded Costs	Funded Cost
17	**Southern Marin: Redwood Highway Frontage Road**	Tiburon Boulevard	Mill Valley City Limits	1.2 mi	Class II	$96,000	$96,000	$0
18	**Southern Marin: Tennessee Valley Road**	Tennessee Valley Trailhead	Enterprise Concourse	1.3 mi	Class II	$1,300,000	$1,300,000	$0
19	**Southern Marin: Tiburon Boulevard**	Highway 101	Tiburon Town Limits	1.2 mi	Class II	$60,000	$60,000	$0
20	**Southern Marin: Tiburon Boulevard**	East Strawberry Drive/Bay Vista Drive	Greenwood Cove Drive/Blackfield Drive	0.2 mi	Class I	$2,933,000	$2,933,000	$0
21	**Southern Marin: North-South Greenway/Alto Tunnel**	Vasco Court	Tamalpais Drive	1.2 mi	Class I	$52,600,000	$52,600,000	$0
22	**Southern Marin: Lomita Drive**	Shell Road	Horse Hill Path	0.2 mi	Class II	$210,000	$210,000	$0
23	**Southern Marin: Lomita Drive**	Edna Maguire School	Shell Road (E)	0.4 mi	Class II/III	$32,000	$32,000	$0
24	**Southern Marin: Lomita Drive Pedestrian Improvements (joint with Mill Valley)**	Ashford Avenue	Edna Maguire School	1,100 ft	Sidewalk	$321,000	$321,000	$0
25	**Southern Marin: Seminary Drive**	Redwood Highway Frontage Road	Gilbert Drive	0.6 mi	Class II	$248,000	$248,000	$0

ID	Segment	Begin	End	Length	Facility Type	Total Cost	Unfunded Costs	Funded Cost
26	**Southern Marin: Alexander Avenue (Fort Baker)**	Bunker Road	Sausalito City Limits	0.8 mi	Class II	$132,000	$65,000	$67,000
27	**Southern Marin: Vista Point Path Extension**	Vista Point (GG Bridge)	Conzelman Road	0.3 mi	Class I	$6,000,000	$6,000,000	$0
28	**Southern Marin: Bikeway Access Improvements - Shoreline Hwy (Coordinate with Caltrans)**	Maple Street	Almonte Blvd	0.8 mi	Class II	$301,000	$201,000	$101,000
29	**Southern Marin: Redwood Highway Frontage Pedestrian Improvements (Tamalpais Motel frontage)**	Seminary Drive	Strawberry Village	300 ft	Sidewalk	$33,000	$33,000	$0
30	**Southern Marin: Almonte Boulevard Pedestrian Improvements**	Shoreline Highway	Helen Avenue	250 ft	Sidewalk	$28,000	$28,000	$0
31	**Southern Marin: Belvedere Drive Sidewalk**	Bayview Terrace	Ricardo Road	750 ft	Sidewalk	$110,000	$110,000	$0
	TOTAL			8.2 mi (bikeways)/ 2,400 ft (sidewalks)		$64,404,000	$64,237,000	$168,000

*Planning-level cost estimates are based on latest available implementation unit costs in the Bay Area and includes design costs. Many projects are undefined at this level, and the final type and scope of the project is yet to be determined. The estimates do not include any major right-of-way, environmental, or engineering costs that may be discovered in the feasibility analysis process. Costs from available feasibility studies or inflation-adjusted costs from the previous Plan update were used, where available.

*Table 5-4: Proposed Projects, West Marin**

ID	Segment	Begin	End	Length	Facility Type	Total Cost	Unfunded Cost	Funded Cost
32	**West Marin: Railroad Avenue (Woodacre)**	Sir Francis Drake Boulevard	Elm Avenue	1.0 mi	Class IIr	$800,000	$800,000	$0
33	**West Marin: Point Reyes-Petaluma Road**	Shoreline Highway	Laurel Canyon Road	3.6 mi	Class IIr	$3,960,000	$3,960,000	$0
34	**West Marin: Point Reyes-Petaluma Road/Red Hill Road**	Nicasio Valley Road	Bottom of Red Hill Grade north side	6.5 mi	Class IIr	$7,150,000	$7,150,000	$0
35	**West Marin: Shoreline Highway (Point Reyes Station)**	Point Reyes-Petaluma Road	Main Street	1900 ft.	Sidewalk	$420,000	$420,000	$0
36	**West Marin: Lucas Valley Road**	Westgate Drive	Nicasio Valley Road	6.6 mi	Class IIr	$7,260,000	$7,260,000	$0
37	**West Marin: Shoreline Highway**	Maple Street (Tam Valley)	Sonoma County Boundary	53.9 mi	Class IIr	$59,290,000	$59,290,000	$0
38	**West Marin: Nicasio Valley Road**	Sir Francis Drake Boulevard	Nicasio School	4.8 mi	Class IIr	$5,280,000	$5,280,000	$0
39	**West Marin: Novato Boulevard**	Point Reyes-Petaluma Road	Novato City Limits	5.8 mi	Class IIr	$5,220,000	$5,220,000	$0
40	**West Marin: Panoramic Highway**	Shoreline Highway (S)	Gravity Car Grade	2.6 mi	Class IIr	$2,880,000	$2,880,000	$0

ID	Segment	Begin	End	Length	Facility Type	Total Cost	Unfunded Cost	Funded Cost
41	**West Marin: Cross Marin Trail/Taylor Park Road (East End Pathway Upgrade)**	Sir Francis Drake Boulevard/Inkwells Bridge	Park Road	1.4 mi	Class I	$1,120,000	$1,120,000	$0
42	**West Marin: Panoramic Highway**	Shoreline Highway (N)	Mt. Tamalpais State Park Boundary (MP 7.8)	1.4 mi	Class IIr	$2,280,000	$2,280,000	$0
43	**West Marin: Cross Marin Trail/ Tocaloma-Pt. Reyes Pathway**	Sir Francis Drake Boulevard	Shoreline Highway	4.5 mi	Class I	$4,950,000	$4,950,000	$0
44	**West Marin: Sir Francis Drake Boulevard**	Platform Bridge Road	Shoreline Highway	1.8 mi	Class IIr	$4,980,000	$4,980,000	$0
45	**West Marin: Tomales-Petaluma Road**	Shoreline Highway	Sonoma County Line	5.5 mi	Class IIr	$5,220,000	$5,220,000	$0
46	**West Marin: Shoreline Highway/ Stinson Beach Pedestrian Improvements**	Belvedere Avenue	West of Calle del Mar	980 ft	Sidewalk	$208,000	$208,000	$0
	TOTAL			99.4 mi (bikeways)/ 2,880 ft (sidewalks)		$111,018,000	$111,018,000	$0

*Planning-level cost estimates are based on latest available implementation unit costs in the Bay Area and includes design costs. Many projects are undefined at this level, and the final type and scope of the project is yet to be determined. The estimates do not include any major right-of-way, environmental, or engineering costs that may be discovered in the feasibility analysis process. Costs from available feasibility studies or inflation-adjusted costs from the previous Plan update were used, where available.

*Table 5-5: Other Projects, Unincorporated Marin County**

ID	Segment	Begin	End	Length	Facility Type	Total Cost	Unfunded Cost	Funded Cost
47	**Rural Road Improvement Project - Shoulders/Turnouts**	N/A	N/A	25% of total Class III mileage	Paving	$1,323,000	$1,150,000	$0
48	**101/ Tiburon Blvd Interchange Improvements**	Tower Drive	Redwood Highway Frontage Road	0.4 mi	Class II	$978,000	$850,000	$0
49	**Interchange and Intersection Project - New Overcrossing**	N/A	N/A	1.0 mi	Bridge	$2,300,000	$2,000,000	$0
50	**Safe Routes to Schools - Safe Pathways Projects**	N/A	N/A	Varies	Varies	$1,700,000	$0	$1,700,000[1]
	TOTAL			1.4 mi +		$6,301,000	$4,000,000	$1,700,000

*Planning-level cost estimates are based on latest available implementation unit costs in the Bay Area and includes design costs. Many projects are undefined at this level, and the final type and scope of the project is yet to be determined. The estimates do not include any major right-of-way, environmental, or engineering costs that may be discovered in the feasibility analysis process. Costs from available feasibility studies or inflation-adjusted costs from the previous Plan update were used, where available.

[1] Measure A

*Table 5-6: Total Projects, Unincorporated Marin County**

Facility Type	Length	Total Cost	Unfunded Cost	Funded Cost
Class I	21.9 mi	$107,881,000	$98,881,000	$9,000,000
Class II/IIr	106.1 mi	$108,149,000	$107,854,000	$168,000
Class III	2.4 mi	$5,000	$5,000	$0
Class IV	0.0 mi	$0	$0	$0
Sidewalks	5,280 ft	$1,120,000	$1,120,000	$0
Other	N/A	$5,323,000	$3,150,000	$1,700,000
TOTAL	131.4 mi (bikeways)/ 5,280 ft (sidewalks)	$222,478,000	$211,010,000	$10,868,000

*Planning-level cost estimates are based on latest available implementation unit costs in the Bay Area and includes design costs. Many projects are undefined at this level, and the final type and scope of the project is yet to be determined. The estimates do not include any major right-of-way, environmental, or engineering costs that may be discovered in the feasibility analysis process. Costs from available feasibility studies or inflation-adjusted costs from the previous Plan update were used, where available.

In addition, some of the following criteria were also considered in selecting and prioritizing projects:

- Existing bicycling patterns based on counts and observation
- Traffic volumes and travel speeds on streets
- Amount of side friction (i.e., driveways, side streets, etc.)
- Pavement or roadway width
- Number of destinations served (i.e., schools, parks, employment centers, etc.)
- Topography and gradients
- Connectivity with the regional system
- Presence of reasonable alternatives for bicyclists
- Directness and connectivity to destinations
- Collision data and safety concerns

The unincorporated Marin County bicycle and pedestrian systems were developed with a focus on connecting existing segments of bikeways and walkways, addressing routes used by bicyclists and pedestrians, and focusing on specific opportunities and constraints. The street pattern and topography of Marin County is such that the bicycle and pedestrian system naturally follows primary north-south and east-west routes.

Finally, it is important to remember that the bicycle and pedestrian systems and the top projects serve as guidelines for agencies responsible for implementation. The system and segments themselves may change over time as a result of changing bicycling and walking patterns and implementation constraints and opportunities.

5.4. Long Term Vision

Marin County and its unincorporated communities are already recognized as some of the most livable communities in the country. One of the aspects that make a community livable is that people feel comfortable bicycling or walking there, whether they be children, families, or senior citizens. The long-term vision of this Plan is to make unincorporated Marin County a model for livable communities, a place where there is a balance between the various transportation modes and where the fragments of existing bikeways are connected to provide a consistent experience from community to community. In addition to the policies recommended in Chapter 2, this Plan provides the following physical and program improvements to help reach this goal. Because this Plan is limited in scope to the unincorporated areas of Marin County, coordination between the Marin County Department of Public Works, local cities and towns, the Transportation Authority of Marin, Caltrans, and local transit agencies will be critical to the realization of this countywide vision which goes beyond the North-South Bikeway and extends into every community in the county.

5.4.1 Bikeway Network

The Countywide Bikeway Network is composed of a primary and secondary bikeway system. The primary system provides critical inter-community and regional connections and serves all of the primary activity centers in unincorporated Marin County. The secondary system provides important connections to local neighborhoods and other destinations, acting as feeder routes to the primary system. It is important to note that the portions of the primary and secondary bikeway system described here are located in unincorporated Marin County. Where the bikeway system is located in one of the numerous small pockets of unincorporated Marin County adjacent to incorporated towns and cities, this Plan attempts to coordinate improvements with the plans of those incorporated areas.

5.4.2 SMART/Northwestern Pacific Railroad Right of Way

The proposed primary bikeway system described in this section and the SMART and Northwestern Pacific Railroad (NWP) are so intertwined that it is useful to discuss the history of these railroads in the context of the proposed bikeway improvements. The NWP and its predecessors actually helped form the transportation system as it is known today in Marin County, predating the development of a roadway system. Starting from the 1860s, a railroad system developed that eventually connected virtually all Marin County communities to ferry service to San Francisco. By the early 1900s, an efficient double-track electric commuter rail operation brought commuters from the growing towns of Marin County to schools and jobs on a daily basis. Decreasing revenue and increased operating costs resulted in the abandonment of the rail right of way west of Manor (just north of Fairfax) in 1933. By the 1940s increased competition from the automobile and completion of the Golden Gate Bridge led to the abandonment of the electric commuter service and eventually to the abandonment of the entire passenger system south of Ignacio, though freight service continued into the late 1970s. North and east of Ignacio, freight service is still provided by Northwestern Pacific Railroad Authority (NWPRA).

At the time of cessation of service south of Ignacio, the Northwestern Pacific Railroad was a subsidiary of the Southern Pacific Railroad Company. Subsequently, the Southern Pacific was purchased by the Union Pacific Railroad (UPRR). The railroad sold off nearly all its interests south of the Ignacio Wye to various agencies and private owners, including the section between Ignacio and eastern Corte Madera to the Golden Gate Bridge, Highway, and Transportation District (GGBHTD) for future use as a transitway. Sections of railbed through western San Rafael, Kentfield, and in the upper Ross Valley were abandoned and sold off or reused as roadways. Remaining segments south to Sausalito and Tiburon were sold to the County and various cities. Several of these segments were reconstructed as multi-use paths in the early 1980s, representing some of the first rail-to-trail conversions in the country.

Sonoma-Marin Area Rail Transit (SMART) was formed on January 1, 2003 as a new regional transportation district to oversee the development and implementation of a "rail with trail" passenger rail service and multi-use pathway extending from Cloverdale in Sonoma County to Larkspur in Marin County, including portions acquired from GGBHTD. In 2006 SMART released the Final Environmental Impact report for this proposal, which described in Chapter 2 of this Plan. A sales tax measure in Marin County and Sonoma County to fund SMART passed in 2008. The initial operating segment, between Santa Rosa and San Rafael was completely reconstructed for rail service commencing in 2017, and subsequent funding was obtained to construct the planned system extension southward to Larkspur for operation by 2019.

Construction of the multi-use path portion of the project, much of which is also part of the North-South Greenway, is being constructed in segments as additional funding becomes available. The path segment between Andersen Drive in San Rafael and the Larkspur station was constructed as part of the Cal Park Tunnel rehabilitation project, which as the only two-track tunnel in the county was reconstructed to provide one track for SMART and the other track for a multi-use path. Other pathway segments in Marin County constructed through the Initial Operating Segment include the section between Ranchitos Road and the Civic Center Station in north San Rafael and several segments in Novato. Other sections of the ultimate path alignment have been constructed as part of other roadway and development projects.

5.4.3 Tunnels

There is a total of eight historic railroad tunnels in Marin County. Most of the tunnels are within various city limits, but the tunnels themselves, as well as portals and the approaching rights of way for several of the tunnels, are under control of the County, SMART, private owners, or still retained by Union Pacific. **Table 5-7** lists the tunnels in Marin County.

Table 5-7: Marin County Tunnels

Tunnel	Length (ft)	Year Built	Status
White's Hill Tunnel	3,190	1904	Closed; substantial collapse
Tiburon-Reed Tunnel	566	1884	Closed; unknown
Reed-Meadowsweet Tunnel	1,849	1884	Closed; unknown
Alto Tunnel	2,183	1884	Closed with partial collapse
Cal Park Hill Tunnel	1,105	1884	Reconstructed and reopened in 2010 for multiuse pathway and SMART use.
Puerto Suello Tunnel	1,351	1879	Reconstructed and reopened in 2016 for SMART use
North Tomales Tunnel	1,706	1875	Rock; on private property
South Tomales Tunnel	98	1874	Rock; on private property

All of the tunnels accommodated single tracks and were approximately 15-20 feet wide by almost 30 feet high except for the Cal Park Hill tunnel which was a double-tracked tunnel with an approximate width of 30 feet.

With the exception of the Puerto Suello Tunnel (which was rehabilitated for use by SMART), the Cal Park Hill Tunnel (which was reconstructed in 2010 as a combined pedestrian, bicycle and SMART facility), and the Alto Tunnel (which was analyzed using tunnel borings and remote sensors in 2017), the condition of the tunnels is not known.

The two tunnels in Tomales are still somewhat intact but are on private property and isolated from the remainder of the former rail right of way. All of the other tunnels are sealed off and inspection is not possible without significant resources to evaluate their condition. Similar to the Cal Park Tunnel's original construction, the Alto, White's Hill, and Tiburon-Reed tunnels are predominately timber lined and over time with moisture inside the bore and no fresh air, it is likely that the supports have been compromised and would likely require complete replacement of the tunnel support structure to reopen them for bicycle and pedestrian use.

The cost of reconstructing the tunnels is difficult to estimate and can change over time. Reconstruction of the Cal Park Tunnel and pathway cost $27.7 million in 2010.

Alto Tunnel

The Alto Tunnel has been the subject of multiple studies over the last twenty years. The tunnel has long been identified as a key component of the North-South Greenway, envisioned as a continuous, separated pathway between the Golden Gate Bridge and Sonoma County line. It would also be the only level route available between Corte Madera and Mill Valley and has been identified as a crucial link to encourage bicycling and walking by all ages and abilities. As other segments of the North-South Greenway are completed, this segment stands out as a major gap. At the same time, significant deterioration of the tunnel structure over the years has resulted in collapses and remedial actions to preclude further collapse.

Corridor and tunnel studies have projected costs to reconstruct the Alto tunnel over the years. The 2017 Jacobs study conducted borings into the tunnel to better ascertain its condition. This information, combined with inflation-adjusted data from previous studies, resulted in a focused cost estimate of $52,600,000 which includes reconstruction of the tunnel structure and providing a Class I multi-use path between the current path termini at either end. No funding is allocated at this time to proceed with any action in this corridor, though it remains shown as a proposed project should conditions change in the future.

The various studies related to the Alto tunnel can be viewed at: http://walkbikemarin.org/projects.php

5.4.4 Access to Public Park and Open Space Lands

With the Golden Gate National Recreation Area, Pt. Reyes National Seashore, Muir Woods National Monument, and numerous State and County Parks, watersheds, and open space areas, Marin County is a major destination for visitors. While a great natural resource, these parklands also attract tremendous seasonal traffic flows to unincorporated Marin County, resulting in congestion for residents and visitors alike. Bicycling and walking are already very popular means of touring and sometimes accessing visitor destinations, as witnessed by the number of hotels in San Francisco that promote or offer bicycle rentals for visitor use to Marin County and the large number of bicyclist tourists that ride across the Golden Gate Bridge to Marin County on rented bicycles. The National Park Service has undertaken several roadway improvements in the Fort Baker and Fort Cronkite areas that have provided wider shoulders for bicyclists, particularly on uphill grades. Shuttle services from locations in southern Marin County, including the Manzanita Park and Ride Lot to Muir Woods and other West Marin destinations, was implemented in 2005 as a means to address the significant visitor traffic impacts.

Many of the short- to mid-term recommendations in this Plan directly address access to the numerous parkland destinations in Marin County, including the Alexander Avenue Project, Rural Road Improvement Project, and the Samuel P. Taylor Pathway project. Pathway improvements within the parks should be considered within the limitations on use and environmental impacts set by each park agency.

5.4.5 Environmental Protection

Bicycling and walking are two of the most environmentally sound forms of travel and directly help reduce problems associated with motor vehicle use, such as air, noise, and water pollution, over development, and loss of pervious surfaces due to paving. At the same time, some of the more ambitious pathway proposals in this Plan may have environmental impacts of their own. Some of these may be direct, such as impacts to wetlands, and others may be indirect, such as impacts of unleashed dogs in habitat areas. All of the projects in this Plan will require additional feasibility and environmental analyses. Additional California Environmental Quality Act (CEQA) review will be completed as needed once the project is deemed feasible and a preliminary design developed. Once approved and constructed, the bicycle and pedestrian improvements and programs in this Plan will continue to make unincorporated Marin County one of the most environmentally sound communities in the country.

5.5. Short- and Mid-Term Priority Projects

Much of the Plan is also built on projects developed by individual communities. Based on the criteria described previously, the highest priority short- to mid-term bikeway and walkway projects for unincorporated Marin County are described on the following pages.

5.5.1 Countywide Projects

Marin Pathway Maintenance Program

Jurisdiction(s): Transportation Authority of Marin, County of Marin, local cities and towns, Caltrans

Project Location(s): Countywide

Many residents and visitors have commented on the need to maintain and improve Marin County's existing multi-use pathways. Maintenance of some of these pathways is performed by the Marin County Parks and Open Space Department, whereas bicycle lanes are maintained through the Department of Public Works' road maintenance programs. The County currently maintains sections of the Mill Valley-Sausalito Bike Path, Mission Pass Path (Fawn Drive), Corte Madera Creek Path, and Novato Bike Path (from San Marin High School to Stafford Lake) that run through the unincorporated county area. Some of the existing pathways are maintained in partnership with Caltrans such as the Pacheco Hill Pathway between Novato and Marinwood and the Alto Hill Pathway, also called Horse Hill Pathway, between Mill Valley and Corte Madera. The Samuel P. Taylor Park Pathway is maintained by California State Parks and the National Park Service.

The maintenance needs for these pathways typically fall into two categories – routine maintenance and major maintenance. The former consists of regular activities such as sweeping, debris removal, trimming vegetation and minor spot repairs to the pathway surface. The latter calls for extensive repaving overlays or full reconstruction of the path and associated structures. The Transportation Authority of Marin has implemented a program under Measure A to provide routine and capital maintenance funds for multi-use pathways, though only for those constructed since 2008. This program consists of a variety of improvements listed below, with each pathway and section requiring different improvements for paths constructed prior to 2008. As appropriate for the individual pathway, one goal of this effort would be to bring pathways up to Caltrans minimum standards regarding width and safety of entrances and exits, to invite a wider range of users to the facility.

Details of the expanded program are to be determined based on whether a consistent local source of funds can be used for pathway maintenance.

Routine Maintenance

A common concern expressed by agency staff responsible for building and maintaining infrastructure is the lack of consistent and adequate funds for maintenance. Capital funding for the projects identified in this Plan may be available through Federal and State sources, but maintenance funds are not included. This implementation project would seek to establish a regular source of maintenance funds for multi-use pathways, similar to the streetlight agreement already in place in the county. Recommended minimum maintenance activities and practices to be funded under this project are presented below.

Many of Marin County's paths need maintenance attention, such as fixing broken asphalt and clearing plant overgrowth. Bicycle lanes need regular sweeping to clear debris. Class I multi-use path maintenance costs include labor, supplies, and amortized equipment costs for weekly trash removal, monthly sweeping, bi-annual resurfacing and repair patrols, cleaning, spot repairs to the asphalt path, repairs to crossings, cleaning drainage systems, trash removal, and landscaping. Underbrush and weed abatement should be performed once in the late spring and again in mid-summer. Maintenance access on Class I multi-use paths is typically achieved using standard County pick-up trucks. Sections with narrow widths or other clearance restrictions should be clearly marked.

Other bicycle- and pedestrian-related maintenance costs include centerline and crosswalk restriping, sweeping debris, and tuning/equipping signals for bicycle and pedestrian sensitivity at pathway/roadway intersections. In addition, maintenance and operation costs of maintaining the pathways through tunnels should also be considered.

Recommendation #1: Support efforts to expand funding for routine bicycle and pedestrian pathway maintenance

This would expand the TAM funding program to include all multi-use pathways in the county and would oversee a mechanism for funding pathway maintenance.

Recommendation #2: Consider bicycles and pedestrians in performing maintenance and repair work:

- Provide suitable construction warning signs where appropriate.
- Where necessary, provide detour routes around areas undergoing construction.

Recommendation #3: Evaluate the feasibility of implementing a web-based application to report maintenance needs:

- Such a program should be countywide, across jurisdictions and be inclusive of all roadway users.

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Major Maintenance

As detailed below, major maintenance is a less frequent but more costly maintenance activity. It consists of structural repairs to facilities to ensure the following standards are met and to maintain compliance with Caltrans' requirements.

1. Resurfacing as needed to provide a consistent, smooth surface including centerline striping where pathway volumes are high.
2. Widening the paved section to 10 feet with unpaved shoulders on each side is mandatory unless deemed infeasible based on environmental, visual, and community review.
3. Providing a more compacted and consistent unpaved surface on one or both sides of the pathway for runners and walkers.

Improvements, such as the following, should be included to improve user safety, especially for the most vulnerable users such as children and the elderly, and to encourage people to bicycle and walk.

1. Evaluation of roadway crossings and improvements as needed including additional advisory and warning signs, longer signal times, etc.
2. Providing consistent pathway management signing advising users about maximum speed limits, overtaking protocol, slower traffic staying to the right, leash requirements and dog etiquette, and any applicable enforcement codes.
3. Pathway enhancements such as benches, historic markers, gateways, and/or landscaping as appropriate to make the pathway a more functional and enjoyable transportation facility.
4. Exploration of innovative techniques such as colored pavement demarking user groups if approved for use in California, or possibly through a California Traffic Control Devices Committee-approved demonstration project. Colored bikeways have proven effective in other communities in California especially where the paths cross busy roadways.
5. Raising the pathway elevation to reduce or eliminate the impacts of flooding or tidal action.
6. Improving existing bridges as needed.
7. Guide signs and informational kiosks

Recommendation #3: Apply adopted uniform standards for path width, bridge structure width, and pathway/roadway intersections as goals for long-term major maintenance safety improvements.

When undertaking new construction or major rehabilitation projects, review for conformance with applicable standards, guidelines, and best practices.

Emerging Technologies

Jurisdiction(s): All agencies

Project Location(s): All unincorporated areas

The last several years have seen rapid shifts in mobility and how emerging technologies have shifted the focus on how our public rights-of-way will be used in the future. Ride hailing applications, autonomous passenger and freight vehicles, car sharing services, bicycle sharing services, and changing demographics will continue to evolve. The County, in conjunction with partner transportation agencies, stay abreast of these trends and what the future may hold.

Recommendation #4: Monitor and evaluate shifting trends in mobility and work with related agencies to account for those shifts, including revised parking standards, shared-use streets, provision of autonomous vehicle loading and dwell zones, reallocation of lane assignment, increased use of bicycle sharing, and improved connectivity and schedule coordination with transit operators..

Designing for All Ages and Abilities

Jurisdiction(s): County

Project Location(s): All unincorporated areas

Having public rights-of-way usable to everyone, within the appropriate context, is the philosophy of All Ages and Abilities. Its premise is that whether anyone from an eight-year old child trying to get to school to a young adult going to work, to a senior trying to get to the library should not be excluded from using the public realm to get to their destination, even if they do not have access to an automobile. Because many of Marin County's roadways are constrained and overtaxed, providing additional roadways, bicycle lanes, or sidewalks is not easily achievable. There are several resources available to aid communities in evaluating their options when it comes to providing more inclusive streets. The National Association of City Transportation Officials (NACTO) is one of several organizations that have developed guidance and criteria for evaluating transportation improvements and its recommendations have been adopted by many transportation agencies to improve access for all users. For more information, visit: *https://nacto.org/*

Rural Roads Improvements

Jurisdiction(s): County, Caltrans

Project Location(s): All unincorporated areas

Bicycle use on the roads outside of the developed portions of Marin County is high and consists of both recreational and commuting use. Rural roads typically are located outside developed areas and have no (or limited) curbs, gutters, or sidewalks. Many people cited a variety of problems on rural roads throughout the county, which are packaged into one countywide project here. This project would provide a mechanism to address specific problems at locations along Marin County's rural roads, which could be addressed through a combination of any of the following methods:

1. Advisory and warning signs and pavement stencils, including, where appropriate, "Share the Road" signs, "Give 3 Feet" signs, or "Bicycles Allowed Full Use of Lane" signs.
2. Continued implementation of the County's "widen where feasible" program that adds or widens shoulders on designated roadways as part of resurfacing projects where additional improvements such as retaining walls or drainage modifications are not necessary as an interim measure until more comprehensive shoulder improvements can be undertaken.
3. Shoulder widening or new shoulders on designated roadways, particularly on higher-speed segments and on uphill grades (see **Figure 5-6** and **Figure 5-7**)
4. Travel lane re-striping where excess width is available
5. New or improved turnouts, especially in areas where shoulder widening is difficult to accomplish.
6. Enhanced roadway surface maintenance, such as increased sweeping and through a pavement management program.
7. Completion of the County's Bicycle Route Guide Signage Project

Designated on select roadways in West Marin are Class IIr bikeways. Class IIr bikeways are those where the pavement section meets Caltrans standards for Class II bikeways, including width and line striping, but do not include signs or pavement stencils. Class IIr bikeways are in recognition of the need for de facto bicycle lanes while acknowledging concerns about excessive signage and stenciling negatively affecting the rural character of the area.

Some Rural Roads Program example sections most frequently mentioned for improvements include:

1. Highway 1/Shoreline Highway north of Northern Avenue in Tam Valley to the Sonoma County line.
2. Nicasio Valley Road between Sir Francis Drake Boulevard and Nicasio School
3. Sir Francis Drake Boulevard west of Lagunitas
4. Paradise Drive
5. Novato Boulevard west of Stafford Lake
6. Pt. Reyes-Petaluma Road north of Nicasio Reservoir and between Platform Bridge Road and Highway 1
7. Lucas Valley Road west of Westgate Drive
8. North San Pedro Road east of Buck's Landing

Recommendation #4: Continue implementation of the Rural Roads Improvement Program and seek funding to design and construct more robust improvements such as Class IIr bikeways.

Figure 5-6: Sample Rural Class IIr Lane/Shoulder in Steeper Sections

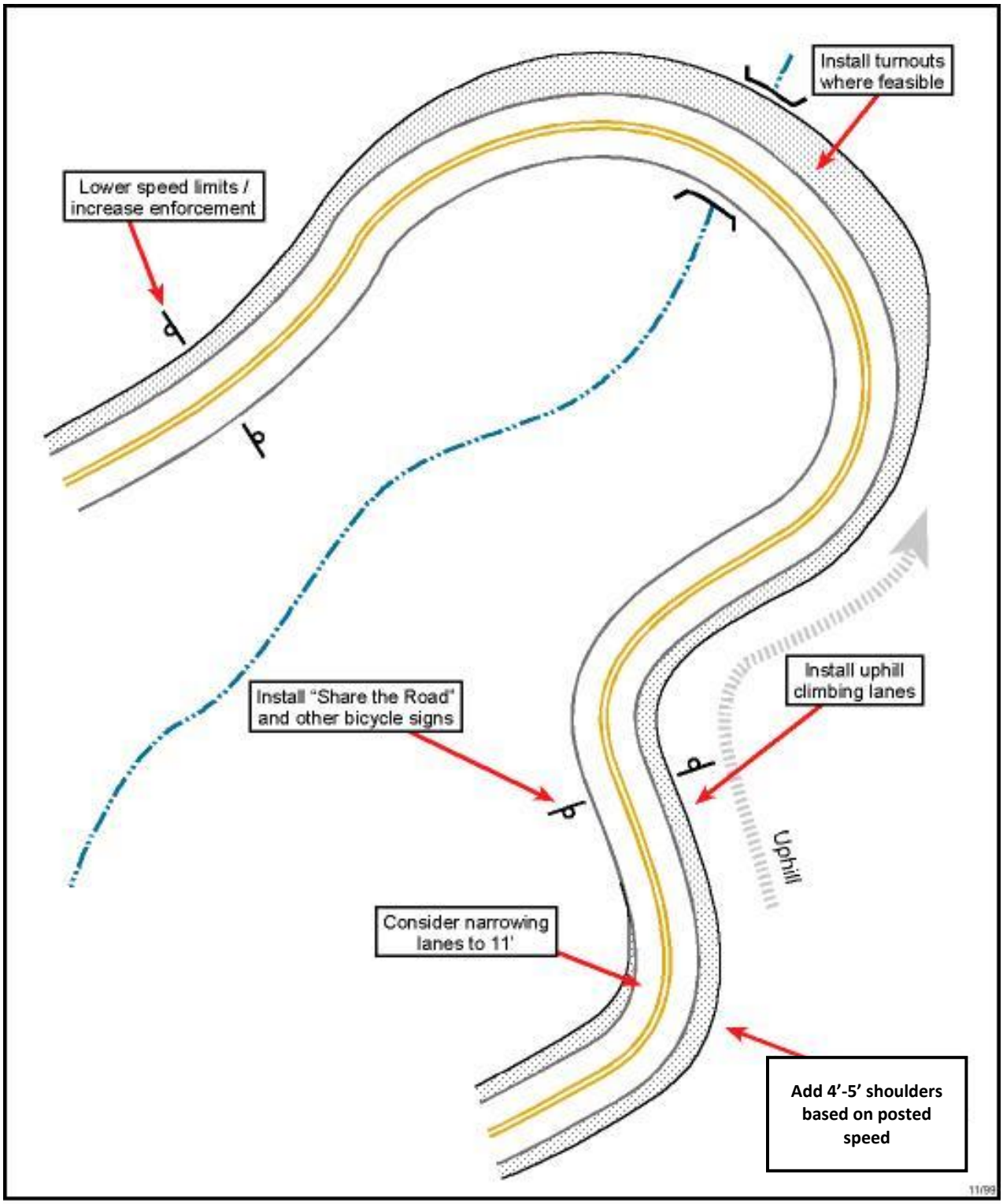
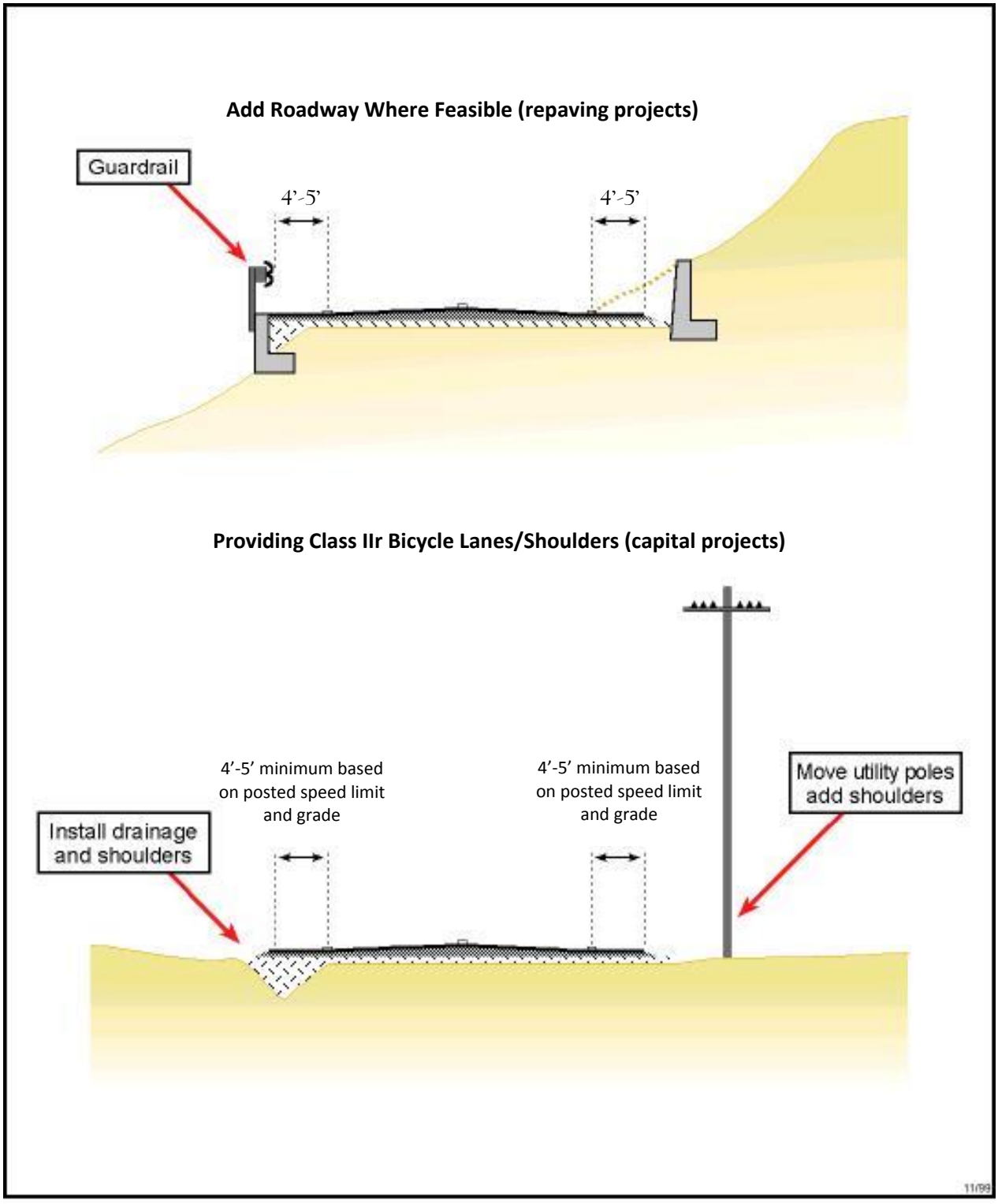


Figure 5-7: Sample Rural Roadway Improvement Cross-sections



Bicycle Parking Project

Jurisdiction(s): County, local cities and towns, school districts, Marin Transit, Golden Gate Transit, Caltrans

Project Location(s): Countywide

Recommended design standards for bicycle parking facilities are summarized below. In addition, *Essentials of Bike Parking: Selecting and Installing Bicycle Parking that Works* (APBP, 2015) provides state of the art national best practices for bicycle parking layout and design and can be downloaded at the following website:

http://c.ymcdn.com/sites/www.apbp.org/resource/resmgr/Bicycle_Parking/EssentialsofBikeParking_FINA.pdf

These standards are a resource available for the County and local agencies to use as they see fit.

In general, all bicycle parking should be in a safe, secure, covered area (if possible), be anchored to the ground, and allow bicycles to lock both frame and wheels. Bicycle parking on sidewalks in commercial areas would be provided according to specific design criteria, reviewed by merchants and the public, and installed as demand warrants. As a general rule, 'U' type racks bolted into the sidewalk are preferred on downtown sidewalks, to be located intermittently and/or at specific bicycle destinations (such as bicycle shops).

Bicycle parking can be provided on public property, required through development entitlements on private property, or provided to private entities on an at-cost basis.

The following bicycle parking improvements are recommended for adoption:

Recommendation #6: Countywide Bicycle Rack Program

In order to provide bicycle parking on the public right of way at all public buildings, shopping centers, employment centers, community facilities, libraries, parks, schools, and transit stops, the County should continue to support bicycle rack funding programs, such as the program funded by the Bay Area Air Quality Management District (BAAQMD) for installation at approved locations.

Recommendation #7: Require bicycle parking for non-residential public and private land uses.

Develop bicycle parking standards for each land use category triggered at appropriate thresholds and utilizing floor area ratios, residential units, activity types, or other criteria to determine the number of spaces. In addition, bicycle parking for existing uses could be implemented by promoting bicycle parking per the adopted standards.

Recommendation #8: A special program to construct sheltered bicycle parking at Marin County Schools should be continued and enhanced, where needed.

Sheltered bicycle parking provides a designated area for enclosed, long-term bicycle parking, that is secured either through lock or by an attendant where bicycles can be securely parked. These simple enclosed facilities are locked from the beginning to the end of school, and address the theft and vandalism concerns of students.

Recommendation #9: Continue and expand existing secure attended bicycle parking at all major special events, to encourage residents and visitors to bicycle rather than drive.

Since adoption of the previous version of this Plan, attended bicycle parking has been provided by the Marin County Bicycle Coalition at some special events in partnership with private sponsors and public agencies. Partnerships like this should be continued and expanded, with event sponsors seeking additional funding to defray the operating expenses.

Recommendation #10: Encourage people to "bike to transit" by expanding bicycle parking, building bicycle stations or other support facilities at key transit facilities, and creating marketing and information materials to increase the public's awareness of the location of bicycle-accessible transit facilities in Marin County.

Bicycle-related improvements such as increased bicycle parking (covered and/or uncovered parking or attended bicycle stations), wayfinding signage, and bike and transit information kiosks can be provided as a part of larger transit facility improvement projects.

Recommendation #11: Improve bicycle access to transit by providing for increased bicycle capacity on transit vehicles.

Currently, bicycle storage is available on all public transit vehicles in Marin County. In 2006 Golden Gate Transit purchased and installed underfloor style racks that hold two bicycles in the luggage compartment of 45-foot long buses which previously had no bicycle carrying capacity due to state law limits on bus length. The remainder of Golden Gate's fleet has the capacity to carry at least three bicycles per vehicle. Front-mounted bicycle racks with capacity for three bicycles are installed on all of Marin Transit's local services, including the West Marin Stagecoach and its three community shuttles.

Innovative Bikeways Program

Jurisdiction(s): County of Marin, local agencies

Project Location(s): Countywide

Caltrans' California Traffic Control Devices Committee (CTCDC) has established a program for testing experimental treatments. This process was used to test and approve the Shared Roadway Bicycle Marking adopted by Caltrans in 2006. More information on the CTCDC process is found at http://www.dot.ca.gov/trafficops/ctcdc/docs/example-experimentprocess.pdf

The Federal Highway Administration (FHWA) has a federal program for testing experimental facilities for possible future inclusion in the Manual of Uniform Traffic Control Devices (MUTCD). More information about the FHWA process can be found at http://mutcd.fhwa.dot.gov/condexper.htm

Recommendation #12: Pursue innovative solutions where appropriate through the established Caltrans or FHWA process.

5.5.2 Freeway Interchange Improvements

Two areas have been identified as major safety concerns, especially for bicyclists traveling between communities or across the county: freeway interchanges and locations where bicycle facilities cross signalized intersections.

Highway 101 in Marin County acts as a major barrier for bicyclists and pedestrians of all ages and abilities. Limited separated overcrossings mean everyone, including young children, is forced to negotiate ramps and intersections – sometimes unprotected – with high traffic volumes simply to reach school, work, or shopping destinations. Even transit users must negotiate these interchanges simply to reach the bus pads. Public comments mentioned these locations from Novato to Sausalito as major barriers in the county.

This proposed project recognizes both the complexity and the similar nature of the issue from interchange to interchange. Many interchanges share the same characteristics, meaning that prototype solutions may have wide applicability. Caltrans has modified interchanges in Marin County, notably the southbound East Blithedale Avenue off-ramp, partially to improve bicycle and pedestrian safety. The Transportation Authority of Marin conducted an extensive study of the Highway 101/Tiburon Boulevard/E. Blithedale Avenue interchange for bicyclist, pedestrian, and transit access improvements, and they developed many short- and long-range project concepts.

Rather than attempt to solve each interchange individually, which is beyond the scope of this Plan, this proposed project encourages a multi-jurisdictional approach. A traffic engineering analysis needs to be done for each site, possibly by Caltrans or by the applicable jurisdiction, which would work with Caltrans to achieve the desired goals. The unincorporated area interchanges mentioned by the public and staff have been: (1) E. Blithedale Avenue/Tiburon Boulevard, (2) E. Sir Francis Drake Boulevard/I-580/Main Street, (3) North San Pedro Road., and (4) Lucas Valley Road. In this manner, similar problems at interchanges, such as high-speed loop ramps, can be addressed at one time rather than on a recurring basis. Recommended modifications to these critical interchanges should be included in Caltrans' District 4 Bicycle/Pedestrian Plan, being drafted as of February 2018.

Types of improvements that might be considered at interchanges include:

- Reducing the ramp entry/merge radius so that vehicles have to slow down rather than be able to accelerate
- Replacing speed ramps with signal-controlled intersections
- Improving crosswalks and warning signs
- New or improved sidewalks or bicycle lanes/shoulders
- Separated facilities
- Constructing new pedestrian crossings near interchanges to serve local needs, especially access to schools and parks for children. A new pedestrian/bicycle overcrossing of U.S 101 is included in the cost estimate, located in Corte Madera.

Recommendation #13: Encourage TAM to establish a multi-jurisdictional project to identify and implement safety improvements for cyclists and pedestrians at freeway interchanges. Work with Caltrans to implement projects in conformance with Caltrans Deputy Directive 64-1 and relevant Complete Streets policies.

5.5.3 Signalized Intersection Improvements

Bicyclists, especially those traveling along major roads at night, are frequently faced with a dangerous double-bind when they arrive at signalized intersections. In the absence of suitable detection or push-buttons, they must frequently choose between running a red light in order to cross or waiting until a car approaches to trip the light in their favor. This creates a situation where bicyclists are forced to behave illegally and thus endanger themselves and others. Most signalized intersections in the unincorporated area have been upgraded since the last Plan update. However, some intersections continue to experience challenges in effectively detecting bicycles, particularly those primarily featuring carbon fiber and/or non-ferrous metals.

Recommendation #14: Install and mark traffic detection loops or employ other detection technology which are responsive to bicycles at all signalized intersections except timed signal locations.

New signal detectors that can detect bicycles and yet not be influenced by motor vehicles on the roadway should be installed where appropriate. Signal detectors and stencils identifying where bicyclists should place their bicycles to trigger signals should be reviewed and approved by the County Department of Public Works staff prior to implementation. Specific implementation criteria may include: sensitivity, impact of overlay projects, cost, and need. One possible alternative to signal detectors is the use of push buttons that are convenient for bicyclists to use, although loops or video detection are preferable to ensure that bicyclists remain safely visible to drivers in the roadway.

Safe Routes to Schools

Jurisdiction(s): Transportation Authority of Marin, County and local agencies, school districts, community groups

Project Location(s): All unincorporated areas

Since adoption of the 2001 and 2008 Plan updates, school commute improvements continue to be a major focus of public and staff comments, partially out of concerns about current safety and impacts of school-related traffic, and partially because of dedicated State and Federal funding opportunities, such as Measure A which provides local funding for Safe Routes educational and safety activities and capital improvements.

As noted in Chapter 3, the Marin Safe Routes to Schools program, administered by TAM, has been successful both from the point of view of mode shift and traffic reduction. The program is also popular with students, parents, advocates, and elected officials. Given the growing size and scope of the program, it is anticipated that the program will continue to produce numerous new, detailed infrastructure and education and safety recommendations.

Unincorporated Areas School Participation

Most school districts serving the unincorporated areas of the county currently participate in the Safe Routes (SR2S) program. SR2S projects and programs may be developed for other communities. Virtually all schools in Marin, especially those not currently participating in the program, could use additional funds for bicycle racks, long-term bicycle parking, and crossing guards, the latter of which are funded by Measure A (Strategy 4.2).

Recommendation #15: Continue to seek funding for school access improvements identified through Safe Routes Improvement Plans

The Safe Routes to Schools program identifies targeted improvements for school access through Improvement Plans developed in consultation with the school and traffic engineers in recommending safety and access improvements that meet engineering standards. As these plans are developed, the County should include appropriate improvements in capital planning and seek funding to construct those improvements.

Recommendation #16: Utilize the Safe Pathways Program

One of the most exciting things SR2S has to offer parents is the opportunity to work on actual capital improvements that will make their children's route to school, and ultimately the whole community, safer. This requires on-going capital funding for SR2S projects, which the Safe Pathways to School program was designed to provide and facilitate. Where SR2S identifies needed circulation and safety improvements, the Safe Pathways program is meant to provide the engineering, environmental clearance, and construction funding for pathway, sidewalk, and street-crossing improvements. The success of this program in leveraging state and federal dollars has benefited the entire community, as a safe network of pedestrian and bicycle facilities becomes a reality and local congestion is reduced. As the lack of safe pathways is the main reason why parents are unwilling to allow their children to walk or bike to school, it is in the best interest of the program to engage parents and clearly identify barriers for the implementation of traffic safety improvements

Recommendation #17: Sustain and Increase Participation, Enthusiasm, and Continuity

The SR2S program success is due largely to its volunteers. The program needs to be creative and tireless at making team leader positions engaging and attractive. An email network, social media outreach, and informal interactive events need to be established that build enthusiasm and promote participation among volunteers. Materials should also be evaluated for "user friendliness" so that team leaders are comfortable using them.

Volunteers should be encouraged to recruit and train their replacements, with positions of responsibility passing on from one year to the next. Volunteers who spend considerable time in one year should be encouraged to serve in an advisory capacity in the next year to mentor their replacements.

Recommendation #18: Continue to Remove Barriers to Alternative Modes

Parent surveys have revealed a high-level of interest in alternative modes if the children were supervised and if the process to become involved did not require much effort. Parents would allow their children to walk or bicycle if accompanied by other parents or children. Carpooling would be an option if the matches were already established. Several schools have established walking or bicycling "school buses" which gather larger numbers of students who walk or ride together with some parental assistance to create a visible and critical mass to enhance safety. These responses show that in order for alternative modes to be attractive, "walking school buses", "bicycling school buses" and carpools should be organized for the parents, preferably by the team leader, to remove any barriers to participation.

Recommendation #19: Increase Transit Access

The survey also showed low public and school bus ridership among students for reasons including safety concerns at bus stops and inconvenient schedules. Between the reinstatement of yellow school buses in some communities and the use of supplemental bus services from Marin Transit, additional opportunities have been provided to allow children to walk and take the bus to school instead of being driven by a parent. Incentives and funding programs to subsidize fares for disadvantaged youth have aided in supporting transit options. Encourage Marin Transit and related school districts to better coordinate school bell times with transit schedules to further encourage transit use to schools.

Marin Transit and Golden Gate Transit staff regularly monitor and evaluate ridership on the supplemental school routes and work to communicate any possible service changes with school and district administrators.

Marin Transit hopes that the Youth Pass program will accomplish similar objectives to the previous demonstration project by providing a convenient medium to local transit. SR2S should work to evaluate these changes as it continues to encourage bus ridership by Marin County students.

Regional Connection Projects

Jurisdiction(s): Marin County, Caltrans, Novato, GGNRA, San Rafael, ABAG (Bay Trail), MTC

Project Location(s): Black Point, San Quentin, Fort Baker, North Novato

Most current intra-regional bicycle or pedestrian travel in Marin County is across the Golden Gate Bridge, which carries the heaviest bicycle flows in the county. The National Park Service, in partnership with other agencies, has made improvements to portions of Alexander Avenue, East Road, and adjacent motor vehicle parking to improve access for bicyclists through Class II on-street bicycle lanes, widened shoulders, and improved directional signage. An additional project will construct a multi-use path from Vista Point down to Fort Baker to provide a direct connection to East Road to provide a less-trafficked route to Sausalito than Alexander Avenue.

A demonstration project to allow bicycles on the Richmond-San Rafael Bridge is under way, provided by placing a movable barrier on the upper deck to separate vehicle lanes from the former shoulder to create a bicycle path. North of Novato, the Highway 101 widening project is providing a combination of Class II on-street bicycle lanes on frontage roads and Class I multi-use path segments, such as the one through Olompali State Park, to provide dedicated bicycle facilities between Novato and Petaluma where previously bicyclists were required to ride on the narrow shoulders of the former expressway.

S.R. 37 to Black Point and Sonoma County involves the legal use of shoulders on a high-speed and heavily-trafficked highway which includes two narrow bridges without shoulders and has safety concerns for bicyclists and pedestrians. Currently, it is rare to see people bicycling or walking on this route. The Bay Trail shows the S.R. 37 corridor as a proposed segment of the Bay Trail, though no specific alignment is identified at this time. The greatest challenge of this corridor is the Petaluma River bridge which has no shoulders and is a substantial structure. The feasibility of adding bicycle facilities on this bridge has not been considered.

This project grouping consists of distinct components, which can be addressed jointly or separately by the appropriate agency:

1. Complete the gap closure between Marin and Sonoma counties by constructing the planned parallel, off-freeway route as part of the Marin-Sonoma Narrows freeway project.
2. Fill the gap between Marin and Sonoma counties by constructing a safe, continuous route along the Highway 37 through completion of this section of the Bay Trail.
3. Improve connections from Sausalito to the Golden Gate Bridge by completing the Class II on-street bicycle lanes on Alexander Avenue and the Class I multi-use path from Vista Point to Fort Baker.
4. Provide shoulders, as appropriate, along Shoreline Highway, Pt. Reyes Petaluma Road, and Tomales-Petaluma Road to connect Marin County with rural Sonoma County (see Rural Roads Improvement Project)

Recommendation #20: Partner with the appropriate agencies to support regional connections to the East Bay, Sonoma County, and San Francisco as described above.

5.5.4 Corte Madera-Mill Valley Connections and Gap Closure–

Mill Valley-Corte Madera Bikeway Project

Jurisdiction(s): Mill Valley, Corte Madera, County of Marin

Project Location(s): Mill Valley, Corte Madera, Unincorporated Mill Valley (Alto area)

A suitable bicycle and pedestrian connection between Mill Valley and Corte Madera has been long-desired, going back to the original countywide bicycle and pedestrian master plan in the 1970s. The greatest challenge is Blithedale Ridge, which separates the two communities. There are three identified routes in this corridor: Camino Alto/Corte Madera Avenue, Horse Hill (Lomita-Meadowsweet), and the closed Alto railroad tunnel.

Corte Madera Avenue/Camino Alto: This two-lane roadway connects the two communities through a gap in Blithedale Ridge and predates current Highway 101 as the original north-south highway. It is relatively steep, winding, and narrow and, except at the bottom of the grade on both sides, lacks sidewalks. Corte Madera Avenue is under the jurisdiction of the Town of Corte Madera while Camino Alto is under the jurisdiction of the City of Mill Valley. Both sections of the roadway were repaved in the mid-2010s; on the Camino Alto portion, the City widened the roadway to provide an uphill Class II on-street bicycle lane. Further improvements to the corridor would necessitate substantial grading and retaining wall structures to provide the necessary space for bicycle lanes or sidewalks.

Horse Hill (Highway 101) Path: This path connects eastern Mill Valley and Corte Madera via a Class I multi-use pathway parallel to Highway 101 and neighborhood streets. Connections to the path are from Lomita Drive on the south side and Meadowsweet Drive or Casa Buena Drive on the north. The gap in the ridge that this route traverses is lower in elevation than the Corte Madera Avenue/Camino Alto route but does have substantial grades, particularly on the path itself and on Lomita Drive. The County installed sidewalks and provided uphill Class II on-street bicycle lanes on a portion of Lomita Drive as part of a school access improvement project, but the remainder of the roadway, as well as much of Meadowsweet and Casa Buena Drives in Corte Madera, do not have bicycle facilities or sidewalks. Further improvements to this corridor would also require substantial grading and retaining walls to provide additional pavement width or sidewalk space.

Alto Tunnel: The Alto Tunnel is a former Northwestern Pacific Railroad tunnel that has been closed since the railroad ceased operations in the late 1970s. The tunnel corridor would provide a flat connection under Blithedale Ridge between the two communities without any roadway crossings and which would provide an accessible path of travel for all ages and abilities. Both the Larkspur-Corte Madera Path and the Mill Valley-Sausalito Path are constructed on the former railroad right of way to the north and south, respectively, of the tunnel, leaving the tunnel corridor segment a gap in the North-South Greenway. Similar in construction technique to the Cal Park Tunnel, it is assumed that a reconstruction of the tunnel structure will be necessary. Several known collapses and subsequent efforts to stabilize the tunnel with gravel and slurry plugs further highlight the complexity of reconstructing the tunnel. The Alto Tunnel is discussed in more detail in **Section 5.2.3**.

5.5.5 Local Pedestrian and Bikeway Projects – Southern Marin

Gate 6 Road Intersection Improvements

Jurisdiction(s): Caltrans, City of Sausalito, County of Marin

Pedestrians and bicyclists at this intersection experience challenges in nearly every direction of travel. Southbound bicyclists on the Mill Valley Sausalito Pathway have no clear route to traverse the intersection and get to the southbound Bridgeway bicycle lanes. Northbound bicyclists are in conflict with southbound bicyclists riding the wrong way to avoid crossing the intersection. Both bicyclists and pedestrians encounter conflicts from a free double right turn from Donahue Street onto southbound Bridgeway. The City of Sausalito has taken the lead to coordinate with the County and Caltrans on modifications to this busy intersection. Planned improvements include:

- Establishment of a clear southbound route for bicyclists traveling from the pathway to the bicycle lanes by installing a designated lane through the intersection arcing from the northwest corner to the southeast corner.
- Provision of a bicyclist queuing area at the northwest corner of the intersection to allow bicyclists waiting to cross the roadway to do so without obstructing other users of the pathway or standing in the roadway.
- Retiming of signals and re-signing the intersection to remove turning movement conflicts and provide dedicated phases for selected movements.
- Retiming of signals to ensure appropriate pedestrian phase length.
- Provision of pedestrian push-buttons and countdown pedestrian signal heads.

Tam Valley Improvements

Jurisdiction(s): Caltrans, County of Marin

Several improvements have been made in the Tam Valley area since the last Plan update, such as construction of the McGlashan/Tennessee Valley Pathway, the Manzanita Pathway, a new bridge over Coyote Creek, installation of sidewalks on Marin Avenue, and traffic signals on Shoreline Highway at Flamingo Road and Tennessee Valley Road to provide a safer crossing for pedestrians. Other desired improvements remaining to be implemented include:

- Provision of Class II on-street bicycle lanes on Shoreline Highway between Coyote Creek and Northern Avenue. The section between Coyote Creek and Flamingo Road is currently funded and scheduled for construction.
- Construction of sidewalk improvements along Shoreline Highway west of Coyote Creek. This project is currently funded as a Caltrans project..
- Safety improvements on Almonte Boulevard and Shoreline Highway at Tam Junction.
- Study of long-term improvements to this area, including extending the McGlashan pathway or installing Class II on-street bicycle lanes to the south towards the Tennessee Valley trailhead.

Tiburon Boulevard Improvements (Strawberry/Tiburon)

Jurisdiction(s): Caltrans, County of Marin, Town of Tiburon

Tiburon Boulevard (S.R. 131) is the primary access route to Tiburon, Belvedere, and Strawberry. It is designed to expressway standards with two travel lanes in each direction, wide shoulders, and a large median, and it has a posted speed of 35 mph to 45 mph. Access to adjacent parcels is generally limited and all intersections but one are signalized. Two different studies have been conducted related to the corridor: one for the area surrounding the corridor and including the interchange with Highway 101 and the other looking at Bay Trail connections between Strawberry and Tiburon. This project features several components, each of which could generally be undertaken separately:

1. Stripe and sign Class II on-street bicycle lanes between Redwood Highway Frontage Road and Trestle Glen Boulevard in conjunction with the Town of Tiburon. This could be done using the existing shoulders which are sufficiently wide that a painted separation zone could be provided to move the bicycle lanes further away from vehicle traffic. Transition/weave zone markings, such as green paint, will be necessary at most intersections due to the geometric features of those intersections, including slip lanes.
2. Construct Highway 101 interchange improvements between Tower Drive/Kipling Drive in Mill Valley to Redwood Highway Frontage Road. The TAM study for this interchange recommended several modifications to improve bicyclist and pedestrian circulation through the interchange, including adding bicycle lanes, widening sidewalks, closing sidewalk gaps, and improving access to the transit stops and freeway bus pads. Proposed improvements were divided into short-, medium-, and long-term aspects. The County should coordinate with Caltrans, TAM, and the City of Mill Valley in seeking to have these improvements implemented.

3. Construct a Class I multi-use path connection on the south side of Tiburon Boulevard between East Strawberry Drive and Greenwood Cove Road, connecting Strawberry to Tiburon. The path was analyzed as part of the Bay Trail study to provide an off-roadway connection between the two streets. Currently there is no sidewalk on Tiburon Boulevard and this one-block section is the only connection for a major bicycling corridor. Pedestrians must walk on the roadway shoulder and westbound bicyclists commonly ride contraflow on the shoulder to avoid crossing Tiburon Boulevard twice to get to E. Strawberry Drive and Belvedere Drive. The project would construct a Class I multi-use path between the two intersections and modify their geometries.
4. Consider installation of Class IV protected bikeways through the corridor instead of Class II on-street bicycle lanes. In conjunction with Caltrans and the Town of Tiburon, the County should study the feasibility of Class IV protected bikeways on each side of Tiburon Boulevard. The study would address right of way availability, roadway and shoulder design factors, any needed grading or retaining walls, and any intersection modifications necessary to provide a proper interface.

Lomita Drive Improvements (Alto/Mill Valley)

Jurisdiction(s): County of Marin, City of Mill Valley

Lomita Drive is a primary access route for the Alto neighborhood. It also provides access to two schools, a shopping center, and is a designated bicycle route between Mill Valley and Corte Madera. It is primarily maintained by the County, but there are also some sections maintained by the City of Mill Valley. Lomita Drive is primarily residential in character with two lanes; some sections have sidewalks but others do not.

The County, through a Safe Pathways grant, constructed sidewalks and added uphill Class II on-street bicycle lanes on a portion of Lomita Drive in 2014. However, several sections remain without sidewalks and the roadway can experience significant traffic volumes during school drop-off and pick-up times. Providing continuous pedestrian and bicycle facilities will improve access for the neighborhood and enables a safe path of travel to nearby schools. This project consists of four components:

1. Close the sidewalk gap between Ring Mountain School and Greenfield Court, including a short section of missing sidewalk between the school and the subdivision, to create a continuous sidewalk between the Mill Valley-Sausalito Path and Shell Road (east).
2. Install Class II on-street bicycle lanes in front of Ring Mountain and Edna Maguire schools. The bicycle lanes were anticipated as part of the Safe Pathways sidewalk project and the reconstruction of Edna Maguire School; however, completion of some remaining drainage improvements will need to occur when this section of Lomita Drive is resurfaced. During roadway resurfacing, there will be an opportunity to add bicycle lanes.

3. Sidewalk installation and replacement on the north-south segment of Lomita Drive between Edna Maguire School and Ashford Avenue. This segment is also an important school access route with some sections under the City of Mill Valley's jurisdiction and others under the jurisdiction of the County. The project would replace damaged or substandard sidewalks that currently exist and construct a new, raised concrete sidewalk where there is currently only a modified shoulder of the roadway.

Belvedere Drive Sidewalk (Strawberry)
Jurisdiction: County of Marin

Belvedere Drive is an important link between Strawberry Village, Strawberry Elementary School, and the surrounding residential neighborhoods. There is a major gap in the existing sidewalk on Belvedere Drive between Bayview Terrace (west) and Ricardo Road, so pedestrians must walk in the roadway of a high-volume collector street. Providing a sidewalk would provide a safe path of travel for pedestrians in the neighborhood to get to the shopping center and transit services as well as for children attending the school.

Redwood Highway Frontage Road Bike Lanes (Strawberry)
Jurisdiction(s): Caltrans, County of Marin

Redwood Highway Frontage Road is the main north-south spine on the east side of Strawberry and is a critical link for pedestrians and bicyclists looking to travel between Mill Valley, Strawberry, and Tiburon. The route includes a pedestrian overcrossing and a roadway undercrossing of Highway 101 that provide a more desirable route than navigating the Tiburon Boulevard interchange. This project would install Class II on-street bicycle lanes between Tiburon Boulevard and the Mill Valley city limits near the Richardson Bay Bridge. The vast majority of the roadway can accommodate bicycle lanes as it is currently constructed, although widening the pavement by two feet would allow for a more favorable roadway cross section, particularly in relation to the on-street parking in front of the shopping center.

The segment between Seminary Drive and the Highway 101 ramps/DeSilva Island Drive is extremely constrained and in the interim, could only be designated as a Class III bicycle route with sharrows for added emphasis. At such a time as any of the fronting properties are redeveloped, dedication or acquisition of additional right of way should occur to enable the provision of Class II bicycle lanes in this segment.

Mill Valley-Sausalito Path Rehabilitation

Jurisdiction(s): Caltrans, County of Marin

The Mill Valley-Sausalito Path is a Class I multi-use path extending from Vasco Court in Mill Valley in the north to Gate 6 Road in Sausalito to the south. It was originally constructed in 1982 on the railbed of the former Northwestern Pacific Railroad and is by far the most highly-used pathway in Marin County, seeing an average of over 2,500 users per day and over 5,000 users on some of its busiest days. As a major segment of the North-South Greenway, it serves as the primary spine route through southern Marin County while also providing local access to several parks, schools, neighborhoods, commercial areas, and the Mill Valley Community Center. With the exception of a bicycle roundabout near Mill Valley Middle School, nearly all of the pavement on the path is original. In 2017, two segments of the path were repaved, from Vasco Court to East Blithedale Avenue and from East Blithedale Avenue to Almonte Boulevard. The remaining segment to the south will be repaved once funding is secured.

The path faces several challenges, including four wooden bridges that are at or beyond their useful life and tidal flooding that periodically inundates sections of the path. The high number of path users has also resulted in conflicts between pedestrians, bicyclists, people walking dogs, and others. Widening the path to accommodate the increased usage is desirable but faces several challenges related to environmental concerns. Further, with the assumed increase in sea levels in the coming decades, the base elevation of the path means it will be subjected to increased tidal flooding.

Recommendation #21: As part of a comprehensive evaluation of the area in regards to sea level rise, incorporate a resilient, wider pathway as part of the project through the corridor, including the possibility of a modified alignment. In the interim, continue to maintain the existing path and seek ways to address the periodic tidal flooding that currently occurs.

5.5.6 Local Pedestrian and Bikeway Projects – Central Marin

Central Marin Ferry Connection Project – Phase 2

Jurisdiction(s): Corte Madera, Larkspur, Marin County, GGBHTD, Caltrans, SMART

Project Location(s): Unincorporated, Larkspur, and Corte Madera

With the completion of the first phase of the Central Marin Ferry Connection project in 2016 that included the truss bridge over East Sir Francis Drake Boulevard, there is now a continuous, grade-separated pathway between Andersen Drive in San Rafael to the Corte Madera Creek Path via the Cal Park Tunnel. The next phase of this project is to address the current condition of a narrow sidewalk along the Highway 101 northbound off ramp over Corte Madera Creek. The funded project will widen the current walkway on the freeway structure over the creek to a full multi-use facility and connect to Redwood Highway Frontage Road near the pedestrian overcrossing. Additional analysis is under way on extending the path southward to the Wornum Drive undercrossing and Sandra Marker Path, either continuing south along the frontage road or connecting to the former Northwestern Pacific right of way east of the commercial and industrial area.

The designated North-South Greenway alignment from previous studies and analyses remains the railroad right of way south from the existing bridge over East Sir Francis Drake to a new bridge over Corte Madera Creek and continuing on the railroad right of way to Wornum Drive. This alignment is the most direct and traffic-separated route for this segment of the North-South Greenway.

Recommendation #22: Continue to pursue completion of Central Marin Ferry Connection Project and the North-South Greenway in this corridor.

East Sir Francis Drake Boulevard Bikeway

Jurisdiction(s): Larkspur, San Rafael, Marin County, Caltrans

The East Sir Francis Drake Bikeway is a gap closure project on one of the county's major east-west spines and provides access to a regional connection at the Richmond Bridge; it is also designated as part of the Bay Trail. The corridor was analyzed in 2011 in the San Quentin Area Bicycle and Pedestrian Access Study, analyzing several alternatives to connect the current terminus of the Corte Madera Creek pathway at Remillard Park in Larkspur with eastern San Rafael, San Quentin Village, and a planned connection to a bikeway on the Richmond Bridge. With the construction of the Richmond Bridge bikeway in 2017, this remaining gap becomes more critical due to the lack of current connections to the San Quentin peninsula. Currently, at the end of the Corte Madera Creek path, E. Sir Francis Drake Boulevard is one lane in each direction with wide shoulders up to its intersection with Andersen Drive and the I-580 ramps. The ramps and the shoulders of eastbound I-580 to the Main Street/San Quentin exit are one of the few locations in Marin in which it is legal for bicyclists to ride on the freeway shoulder, though sections are extremely narrow. The project contains two components:

1. Extending the Corte Madera Creek Class I multi-use path from its current terminus at Remillard Park along the south/east side of E. Sir Francis Drake Boulevard to Andersen Drive. Plans to make congestion-related improvements to the roadway will extend the path slightly eastward from its current terminus. Once northeast of the west gate to San Quentin State Prison, the roadway ascends a grade towards the gap in the ridge at Andersen Drive. In this section it is likely that retaining walls will be necessary to support the pathway.

2. From Andersen Drive to Main Street, there were several alternative routings considered. One alternative was extending the Class I multi-use path beyond Andersen Drive along the south side of I-580 to Main Street. A second alternative considered was using a combination of path connections and on-street bicycle lanes on the freeway structure to access E. Francisco Boulevard. A hybrid of these two options was also considered. This segment will require additional analysis to determine the best alternative as each solution has considerable cost-intensive aspects, such as cutting the hillside on the east side of the roadway back, constructing a path tunnel under the E. Sir Francis Drake Boulevard/Andersen Drive intersection, and/or widening the freeway overpass. Whether the E. Sir Francis Drake Boulevard/Andersen Drive intersection is signalized may further direct the level of improvements.

Sir Francis Drake Boulevard Improvements (Greenbrae/Kentfield)

Jurisdiction(s): Larkspur, Marin County, Caltrans

Sir Francis Drake Boulevard through Greenbrae and Kentfield is one of the county's most congested corridors. Previous Plan updates have identified the roadway for potential Class II on-street bicycle lanes. Significant constraints in pavement width and usage of the roadway for vehicle lanes east of Wolfe Grade make provision of bicycle lanes difficult, though a proximate parallel route exists to the south on the Corte Madera Creek Path and South Eliseo Drive. A corridor rehabilitation project currently in planning for the corridor is recommending improvements focused on traffic congestion relief, pedestrian safety improvements, and facilitating paths of travel for area children to get to schools. In addition to substantial pedestrian crossing improvements at multiple intersections, the rehabilitation project is also analyzing the concept of widening the current 4- to 5-foot-wide sidewalk on the north side of the roadway between Eliseo Drive and Bon Air Road to a 10+ foot-wide sidewalk/pathway to provide a safer path of travel for bicyclists and pedestrians, particularly those who reside on the Greenbrae hills. A similar widened path would be constructed on the southside of the roadway from Bon Air Road to Laurel Grove Avenue.

In addition to the widened sidewalk component of the corridor rehabilitation project, this Plan retains the proposed Class II on-street bicycle lane designation for the corridor, with the following assumptions:

- *West of Wolfe Grade to the Ross Town Limits*: The roadway has sufficient width to stripe Class II on-street bicycle lanes without affecting current functionality of the roadway, including retention of existing on-street parking needed by area businesses.
- *East of Wolfe Grade to Eliseo Drive*: It is currently not feasible to provide Class II on-street bicycle lanes in this segment because anticipated right-of-way constraints. Should conditions change in the future, this segment should be considered for Class II on-street bicycle lanes to improve connections in the east-west corridor.

Sir Francis Drake Boulevard Bike Lanes Gap Closure (Fairfax)

Jurisdiction(s): Marin County

Between the Fairfax Town Limits and the recently-constructed Class II bicycle lane on Sir Francis Drake Boulevard ascending White's Hill, there is a short gap with no bicycle facilities. Closing this gap entails mostly striping and signage improvements with minor pavement widening. A pavement rehabilitation project scheduled for this area should incorporate these improvements as part of the work program.

Butterfield Road Bike Lanes (Sleepy Hollow)

Jurisdiction(s): Marin County

The unincorporated segment of Butterfield Road in Sleepy Hollow has wide shoulders and sufficient right of way to implement a bicycle facility. Currently, vehicles are permitted to park in the shoulder area which forces bicyclists out into the vehicle lanes. Butterfield Road is the sole access to Sleepy Hollow and is a major school access route which sees significant congestion. Providing a safe path of travel for bicyclists on this busy roadway may encourage students to bicycle to school and help reduce some of the existing school traffic congestion. The project would prohibit parking on the paved shoulder of the roadway while permitting it off of the pavement or on paved pads outside of the bicycle facilities.

North San Pedro Road Bike Lanes (Santa Venetia)

Jurisdiction(s): Marin County, San Rafael

Other than the new SMART pathway to the north, North San Pedro Road is effectively the only access to the Santa Venetia community, including providing access to China Camp State Park, and, as a result, it sees a significant number of bicyclists. This Plan designates North San Pedro Road from Civic Center Drive to Buck's Landing for proposed Class II on-street bicycle lanes. On-street parking is permitted for the vast majority of this segment; east of Vendola Drive the road is rural in nature. Providing the needed space for bicycle lanes can be accomplished on the portion between Oxford Drive and Vendola Drive with minor striping and signing modifications. Between Oxford Drive and Civic Center Drive, the roadway is more constrained. In particular, the high volume of on-street parking from surrounding land uses that have insufficient on-site parking for their operations presents a difficult tradeoff for roadway space. Absent prohibiting parking in this section, a redesign of the roadway is necessary which may affect current medians and other aspects of the current layout.

College of Marin Pedestrian and Bicycle Access Improvements (Kentfield, Ross, Larkspur)

Jurisdiction(s): Larkspur, Ross, Marin County

This project calls for improvements in the unincorporated areas surrounding the College of Marin Kentfield campus. Specific improvements would include:

- Extending the existing Class II bicycle lanes on College Avenue from the Corte Madera Creek Path to Sir Francis Drake Boulevard.
- Adding Sharrows to Kent Avenue to designate safer riding areas outside the "door zone" alongside parallel parking.
- Upgrading the pedestrian beacon at the Corte Madera Creek path crossing of College Avenue to a more visible and user-responsive treatment.
- Improve bicycle and pedestrian access and facilities at bus stops serving the College of Marin.
- Improve pedestrian crossings on Sir Francis Drake Boulevard at Ash Avenue, College Avenue, and Toussin Avenue as designated for the Sir Francis Drake Boulevard Rehabilitation Project.

5.5.7 Local Pedestrian and Bikeway Projects – Northern Marin

Oakview Connector Project (Marinwood)

Jurisdiction(s): San Rafael, Marin County, Caltrans

This project is a potential public-private partnership in which local development and construction of a new roadway would be used as an opportunity to create an important linkage through an area of unincorporated Marin County.

The Oakview Connector is proposed to be a combination of Class II on-street bicycle lanes and Class I multi-use paths between the end of Los Gamos Road at Lucas Valley Road and the end of Marinwood Avenue to the north. New street construction at the south end of Marinwood Avenue as a part of planned development would allow for on-street bicycle lanes to be extended south through the new development. At the point the new street ends, approximately 0.5 miles south of Miller Creek Road, a new Class I multi-use path would connect the neighborhood to the north end of Los Gamos Road. Alignment of the path would be affected by the future reconstruction of the Lucas Valley interchange and the likely need for a new signal at Los Gamos Drive.

This project has been established as a priority for four reasons. First, it serves as an important connector for the populous neighborhoods of North San Rafael which currently have limited bikeway access opportunities. Second, the project has the potential for minimal fiscal impact if it can be funded entirely through development mitigation requirements. Third, the project will connect directly to the existing Pacheco Hill Pathway that leads to Novato and to Los Gamos Drive, which provides a relatively flat connection for bicyclists and pedestrians to Terra Linda.

Recommendation #23: Pursue the Oakview connector through public-private partnership as a condition of development, where possible; pursue funding to design and build segments that must be completed by public agencies.

Lucas Valley Path

Jurisdiction(s): City of San Rafael, Marin County

In the 2008 Plan, a Class I multi-use path was proposed on the former alignment of Lucas Valley Road. This segment is now a County Parks facility with an unpaved path between Canyon Oak Drive and Mt. Lassen Drive. The 2008 Plan update included an extension of the alignment southeast along a new bridge over Miller Creek to the intersection of Lucas Valley Road and Miller Creek Road. This extension remains unconstructed. This Plan extends the proposed Class I pathway on the remaining old Lucas Valley Road alignment westward to Bridgegate Drive.

San Antonio Road Bike Lanes

Jurisdiction(s): Marin County, Caltrans

As part of the Highway 101 "Narrows" freeway project, San Antonio Road was extended southward on a new frontage road to connect with the new interchange. The new frontage road was constructed with Class II on-street bicycle lanes. However, the remnant segment of the roadway, continuing northward to the Sonoma County Line, has not been improved as part of that project while the entire road sees relatively high-speed motor vehicle traffic. Upon completion of the freeway project this northernmost section of the North-South Bikeway will be the regional connection to Petaluma and the rest of Sonoma County through the Highway 101 corridor. This project widens the remaining section of San Antonio Road to construct 5 foot-wide Class II on-street bicycle lanes, completing the link to Sonoma County.

Stafford Lake Path

Jurisdiction(s): City of Novato, Marin County

The Stafford Lake Path would consist of a Class I multi-use path originating in the City of Novato at Novato Boulevard and Sutro Avenue then continuing west to Stafford Lake. The existing asphalt sidepath runs adjacent to Novato Boulevard and is within the road right of way. However, it is narrow and has experienced deterioration, making it not suitable for combined bi-directional bicycle and pedestrian travel. Because Novato Boulevard has narrow shoulders in this area, even in its decrepit state the existing sidepath is preferred by many users going to the popular park at the lake.

The path has been proposed for improvement over the years with the greatest challenge being that widening the path adjacent to the roadway is not feasible due to insufficient right-of-way width and separation requirements for Class I multi-use paths. Additional challenges occur between the golf course entrance and the top of the lake's dam as the narrow path is sandwiched between the roadway and the dam's spillway. Marin County Parks has been evaluating options for constructing the path on alternative alignments away from the roadway and closer to Novato Creek. Construction of this new path will require coordination with the City of Novato and adjacent landowners and may necessitate acquisition of certain lands.

5.5.8 Local Pedestrian and Bikeway Projects – West Marin

White's Hill Gap Closure Project

Jurisdiction(s): Marin County, Fairfax

Project Location(s): Trestle Glen/Baywood Canyon, Woodacre, West Marin

As with other gap closure projects defined by connecting two communities separated by hills, this project involves several alternatives which must be evaluated first to determine the most cost-effective solution. Any alternative that utilizes private property will require negotiation with the owner first.

Option #1: Evaluate the White's Hill Tunnel as a potential connection to Woodacre. While this would provide a level, direct connection between Fairfax and San Geronimo Valley, it has significant obstacles. First, the tunnel is known to be at least partially collapsed. Second, both approaches have constraints including fill material on the west side, and private property issues on the east side. Finally, the east approach would require a new undercrossing of Sir Francis Drake Boulevard so that bicyclists and pedestrians would not have to cross this road on a blind curve.

Option #2: Evaluate the use of the original NWP narrow gauge (North Pacific Coast Railroad) grade that was used between 1875 and 1904. This route is visible from the White's Hill summit looking down Ross Valley and San Geronimo Valley. This route could provide a gentle, steady grade for people climbing White's Hill, especially from Fairfax. However, there are several major obstacles to this proposal. First, the right of way is partially owned by the Open Space District which may not permit paving and bridge improvements in this area, while a couple of locations are privately owned. Access on the Fairfax side would require traversing a private development. There are several major gaps where trestles once existed and where current users are required to make steep descents and ascents. Creating a grade-separated pathway connection through the summit cut would be expensive and would be necessary to avoid having people crossing the roadway on a blind curve.

Samuel P. Taylor Bike Path/East-West Bikeway Project

Jurisdiction(s): Marin County, State Parks, GGNRA

Location(s): Lagunitas, West Marin, Tocaloma, Jewell, Pt. Reyes Station

The segment of the former NWP narrow gauge line between Woodacre and Pt. Reyes Station followed the course of Lagunitas and Papermill Creeks, creating an ideal location for a Class I multi-use path when it was abandoned. Part of this right of way is already in use as a paved trail between Tocaloma and Samuel P. Taylor State Park, offering an important safety amenity to bicyclists and pedestrians moving through this corridor. It also offers a direct safety benefit to motor vehicles by removing a large number of people bicycling that would have otherwise needed to share the narrow, twisting roadway.

In 2005, the Inkwells Bridge was completed, fulfilling the first of the recommendations for this project identified in the 2001 Plan update.

This project is composed of several remaining components, described below.

1. It is recommended that a 10-foot-wide hard surface pathway be installed over the current soft-surface path from the Inkwells Bridge to the existing paved segment through Samuel P. Taylor Park. A substantial area alongside the proposed hard surface area should be left unpaved for pedestrian and equestrian use. Where feasible, this soft surface area should be of equal width to the paved area, to ensure equity among users.
2. Alternative paving methods should be explored to provide a hard surface for the above pathway that can be efficiently maintained and provide ADA compliance while preserving the natural character of the existing facility. Much of this segment has sufficient width that a paved surface and unpaved surface could be provided.
3. Improve the existing paved section through Samuel P. Taylor Park to Tocaloma, especially maintenance in the winter and fall.
4. Complete the current feasibility study analyzing extending the trail 5.2 miles from Tocaloma to Pt. Reyes Station, through private ranchland and GGNRA property. This link would provide a total of 10.6 miles of separated pathway between the Inkwells Bridge and Pt. Reyes Station, offering a uniquely level scenic route and important safety benefits to the area residents and numerous visitors, including removing the need to ride on either Sir Francis Drake Boulevard or Point Reyes-Petaluma Road to Olema and Point Reyes Station as both roads are winding and without shoulders. Potential constraints to this linkage, other than gaining access to private property with active cattle operations or designing a bypass which circumnavigates the private lands, would be environmental impacts, open space impacts, and the need to reconstruct a bridge of significant length across Lagunitas Creek near Pt. Reyes Station.
5. Support the development of a pathway or bikeway (or a combination of the two, as appropriate) to connect Point Reyes Station to Inverness Park. Other segments, particularly those between Inverness and Inverness Park, may need to be addressed by improvements along Sir Francis Drake Boulevard in the County's jurisdiction. This segment of the project was consistently identified by West Marin residents as a top priority.

Recommendation #24: Pursue the above five recommendations with the goal of implementing, where possible, a continuous east-west route between Lagunitas and Inverness Park separated from automobile traffic.

Stinson Beach Sidewalk/Path
Jurisdiction(s): Caltrans, Marin County, State Parks, GGNRA

Location: Stinson Beach

The segment of Shoreline Highway between Calle del Arroyo and Willow Street serves as Stinson Beach's Main Street. On its eastern half it is lined with local businesses and beach access while the western half connects to the beach neighborhoods to the west. Parking is somewhat haphazard and there is no dedicated pedestrian path of travel along the roadway which, especially during busy weekends, means pedestrians are walking in the vehicle lanes of the roadway. The sidewalk/path is a desire expressed by local residents to create a safe, separated path of travel through the village which would also include addressing the parking arrangements along the roadway

Point Reyes Station Safe Routes to Schools Improvements
Jurisdiction(s): Caltrans, Marin County,

Location: Pt. Reyes Station

Safe Routes to Schools has recommended several improvements to the section of Shoreline Highway between Point Reyes Petaluma Road and A Street in its West Marin School Improvement Plan, including high-visibility crosswalks and signage, path improvements, and improved delineation of the pedestrian right of way.

5.6. Additional Local Community Bikeway and Pedestrian Project Ideas

Residents of Marin County's unincorporated communities, organizations, and committees contributed a information and ideas during the development of this Plan and previous updates. The following project ideas have been suggested by these individuals, local advisory committees, and/or staff. All of the ideas identified in the following descriptions are strictly concepts at this point. The need, feasibility, impact, location, cost, or other basic information is not known. The purpose of listing ideas or concepts here is to initiate discussion and, if appropriate, additional feasibility analysis, ultimately leading to adoption by the Board of Supervisors.

Recommendation #25: Local planning groups, organizations, and others, in conjunction with the County, should initiate local discussions and planning for bikeway and pedestrian projects, some of which are listed below. Where needed, conduct additional analysis to determine overall project feasibility cost, impacts, and other information. Prior to implementation, additional public and CEQA input and review should be completed, along with needed funding, design, and construction.

5.6.1 West Marin

West Marin is a unique land setting of agricultural, urban, recreational, and tourism uses. West Marin comprises the area south to Stinson Beach and north to Tomales along with the San Geronimo Valley and the Point Reyes Peninsula.

The West Marin area gets 2.6 million plus visitors per year to the Point Reyes National Seashore and has roads not conducive to safe bicycle and pedestrian travel. Features of this area include former railway rights of ways, levee roads, existing road rights-of-way, and the possibility for roadway reconfiguration to allow for safer use by pedestrians and bicyclists.

West Marin is in need of improved routes linking its communities for safer pedestrian and bicycle travel. Specific routes to be considered in linking communities in West Marin for pedestrians and bicyclists are:

1. Tocaloma to Point Reyes Station
2. Tocaloma to Olema
3. Point Reyes Station to the Bear Valley Visitors Center
4. Point Reyes Station to Inverness
5. Olema south paralleling Highway 1 to Bolinas (Rift Zone Trail)
6. Olema to the Bear Valley Visitors Center
7. Point Reyes to Marshall
8. Highway 1 corridor south from Bolinas to Stinson and Muir Beach Communities

Pt. Reyes and Inverness Area

The document *West Marin Pathways Study* (1988) prepared by Brian Wittenkeller & Associates for the County and West Marin Paths, a local community group, provided detailed information for a route from Point Reyes Station to Inverness and then to the Visitor Center. Concerns with potential costs and ecological effects put the plan on hold. A portion of the path was constructed in the vicinity of White House Pool west of Point Reyes Station and is currently maintained by the Marin County Parks Department.

Consideration of the following should be made for a network of paths in this area of West Marin:

1. This Plan should be coordinated with National Park Service General Management Plan for Point Reyes National Seashore.
2. The Rift Zone Trail should be identified as a possible bicycle and pedestrian corridor for safer travel between Olema and Bolinas.
3. Sir Francis Drake Boulevard and Highway 1 in Olema are unsuitable for pedestrian foot traffic. Design considerations should be suggested to improve the safety on this stretch of road.
4. Explore the possibility of a path from Tocaloma to Olema.

Bolinas

Construct the second phase of the Class I multi-use path that connects to downtown Bolinas by extending it to Mesa Road.

Muir Beach

1. Improve shoulders on Panoramic Highway and Muir Woods Road, where feasible.
2. New crosswalks in heavily crossed trailhead locations, such as the Dipsea Trail and the Panoramic-Bayview intersection.

Stinson Beach

1. Intersection of Highway 1 and Calle del Mar in the center of town (under Caltrans jurisdiction): need improvements for pedestrians and bicyclists to more safely cross this busy intersection.
2. Install better signage and flashing warning light at the Stinson Campus of the Bolinas-Stinson School on Highway 1 (under Caltrans jurisdiction).
3. Create a designated pick up or drop off area for students. A safe walkway from this area to the school gate is needed (under Caltrans jurisdiction).
4. Install bicycle racks or lockers at all major points of interest, together with informational placards to direct usage. This will encourage greater bicycle usage for local recreation and commercial business, as well as provide bicycling visitors with an opportunity to patronize local businesses and recreational facilities on foot.
5. Advisory and warning signs should be installed where appropriate at all areas of use and congestion (under Caltrans jurisdiction).
6. Shoulders should be improved where feasible.

San Geronimo Valley

1. Consider bikeway facilities on Castro Street and Meadow Way.
2. Construct a tunnel under Sir Francis Drake Boulevard between the school and Meadow Way.
3. If the San Geronimo Golf Course is publicly acquired and modified, consider providing a multi-use path connecting Woodacre and the Lagunitas School through the property as an alternative to Sir Francis Drake Boulevard.

5.6.2 Central Marin

Kentfield/Greenbrae Area

Construct a Class I multi-use path in and around the college campus connecting both sides of College Avenue with the Magnolia commercial area.

5.6.3 Southern Marin

North Strawberry & Alto

Explore an east-west connection across Highway 101 between the Alto Ridge and Tiburon Open Space areas.

5.6.4 Northern Marin

Marinwood/Lucas Valley

1. Construct Class IV protected bikeways, roundabouts, speed tables, and high-visibility safety treatments on Las Gallinas Avenue and Miller Creek Road.
2. Connect to the future SMART pathway through St. Vincent's/Silveira.

5.7. Pedestrian Projects

Preliminary pedestrian projects developed by Design, Community, & Environment are presented on the following pages. These consist of both prototype and site-specific recommendations. In addition to this information, the County's *General Plan* provides policies regarding the implementation and integration of pedestrian needs into the transportation system.

5.7.1 New Sidewalks In Residential Neighborhoods

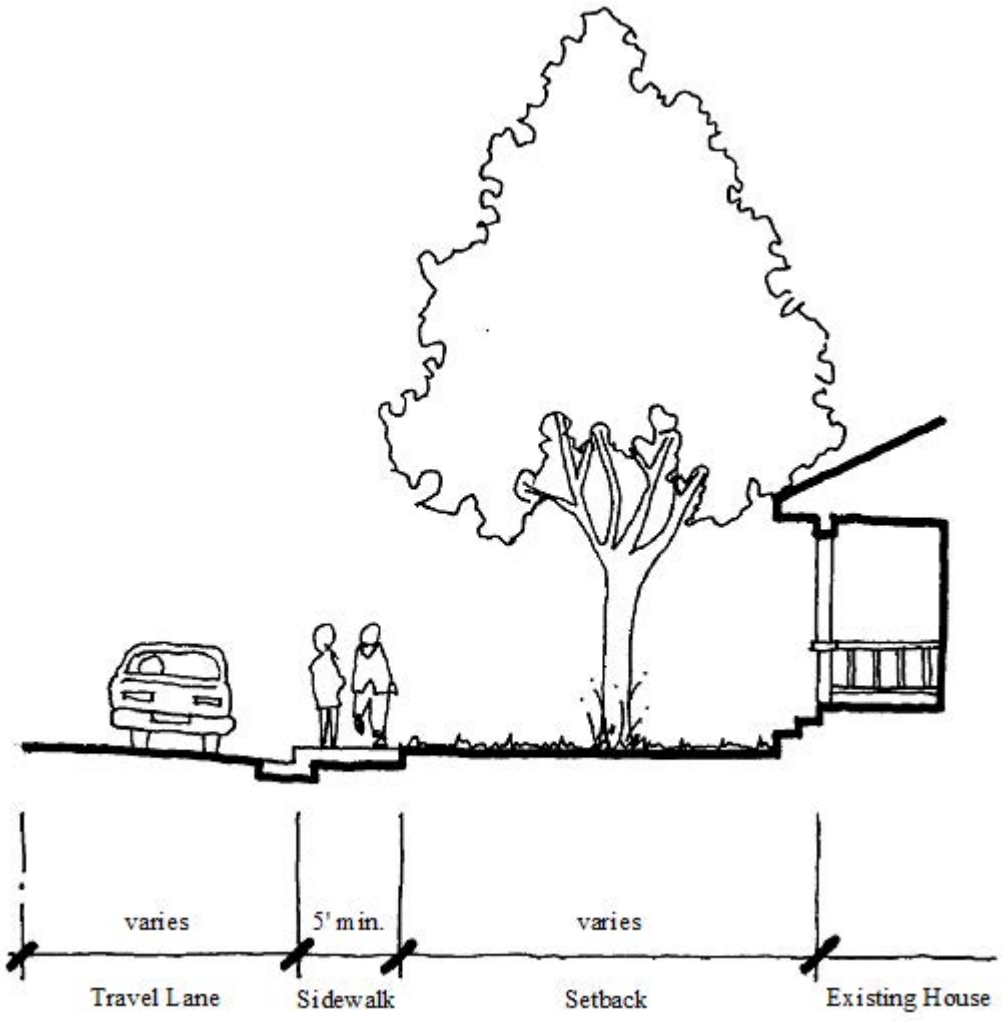
Many of Marin County's unincorporated communities and villages lack sidewalks. Although not every neighborhood may desire sidewalks, there will be places that could benefit from their installation. Safer trips by schoolchildren, shopping trips, and recreation trips are just some of the reasons that a community may wish to see sidewalks built in one of their existing neighborhoods.

It is preferable that sidewalks be at least 5 feet wide to allow two pedestrians to pass each other or walk abreast. However, in constrained situations, the sidewalks may be limited to a width of 4 feet. Below are some basic guidelines that should be followed when installing new sidewalks.

Sidewalks on Narrow Streets

The illustration on this page shows the minimal solution for new sidewalks in existing neighborhoods. It shows a site constrained by a small setback to the existing house or significant landscaping and a narrow street condition that does not allow for a parking lane between the pedestrians on the sidewalk and the motor vehicle travel lane.

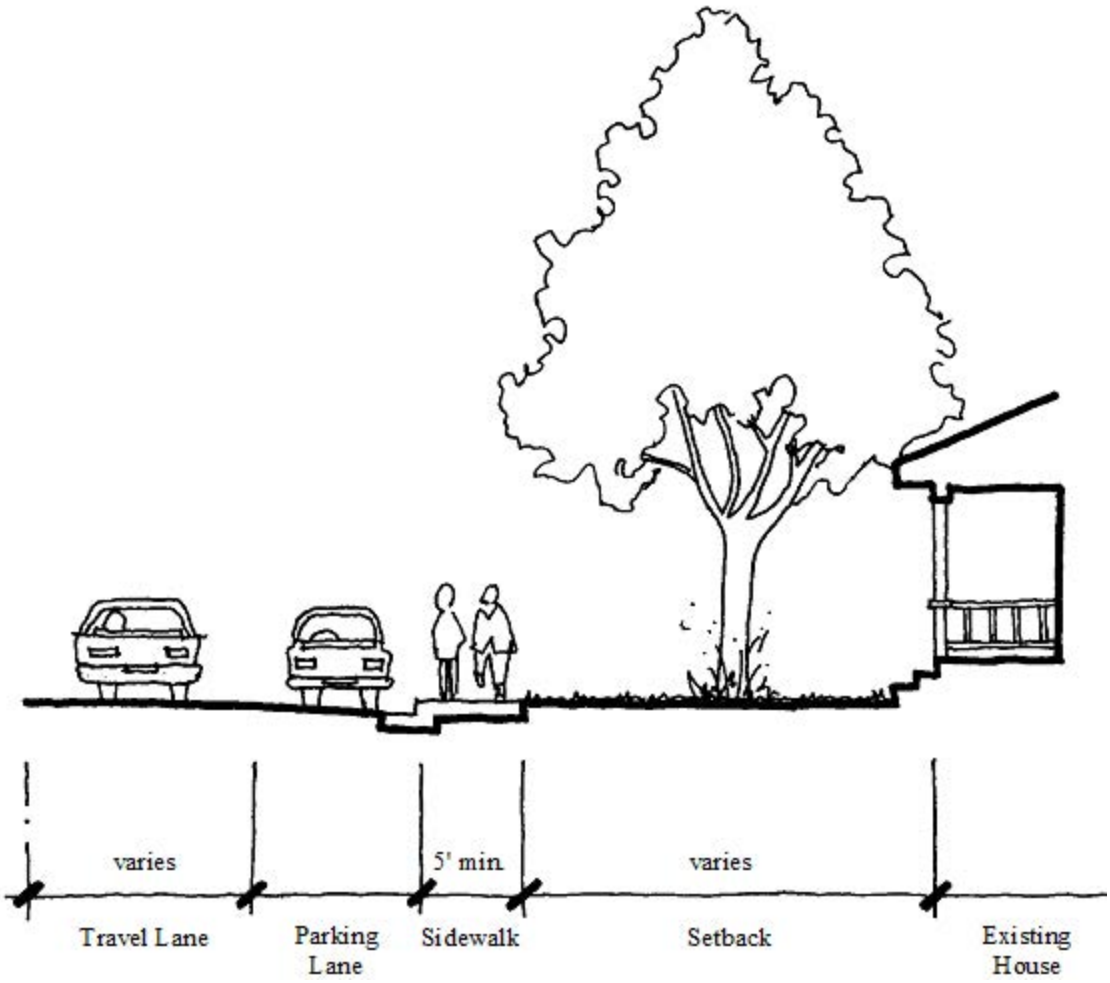
Figure 5-8: Sidewalks on Narrow Streets



Sidewalks on Wider Streets

The illustration below demonstrates the preferred design where a parking aisle exists between the walkaway and the motor vehicle travel lane. A parking aisle is generally preferred for pedestrian safety since it separates pedestrians from moving cars. If the street is not wide enough to install this improvement, and the existing house or landscaping is set back far enough, the possibility of acquiring land to widen the right of way should be investigated.

Figure 5-9: Sidewalks on Wider Streets

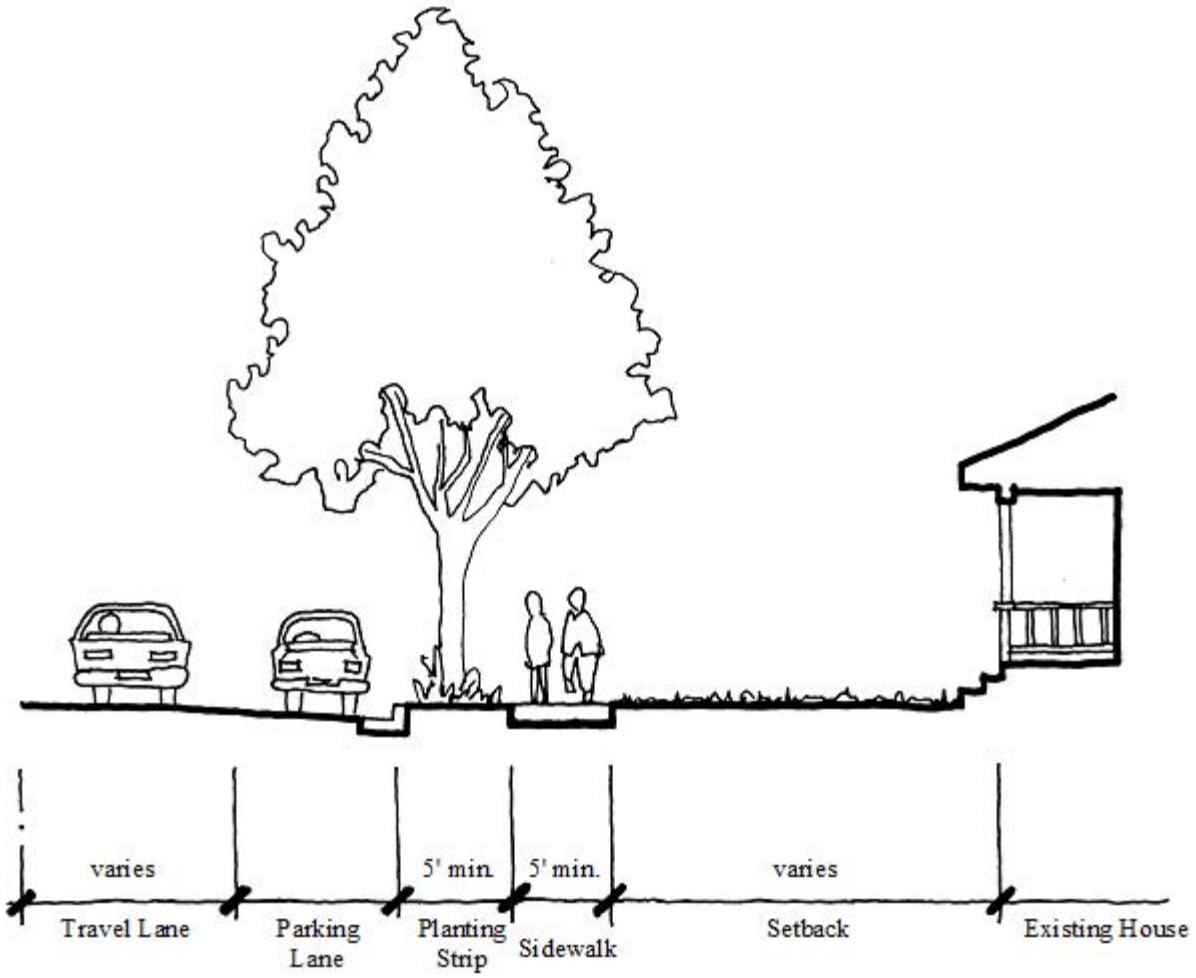


Sidewalk with Planting Strip

The most desirable condition, as illustrated here, is for the pedestrian to be buffered from motor vehicle traffic by both a parking lane and a planting strip. This is particularly important on streets with higher traffic volumes and speeds. Ideally, the planting strip should contain street trees at an interval of 20 to 50 feet on center. The trees help to create a more amenable pedestrian corridor and give better spatial definition to the street. This can make the street appear narrower, which helps to slow vehicular traffic.

If the street is not wide enough to install this improvement, and the existing house or landscaping is set back far enough, the possibility of acquiring land to widen the right of way should be investigated.

Figure 5-10: Sidewalks with a Planting Strip



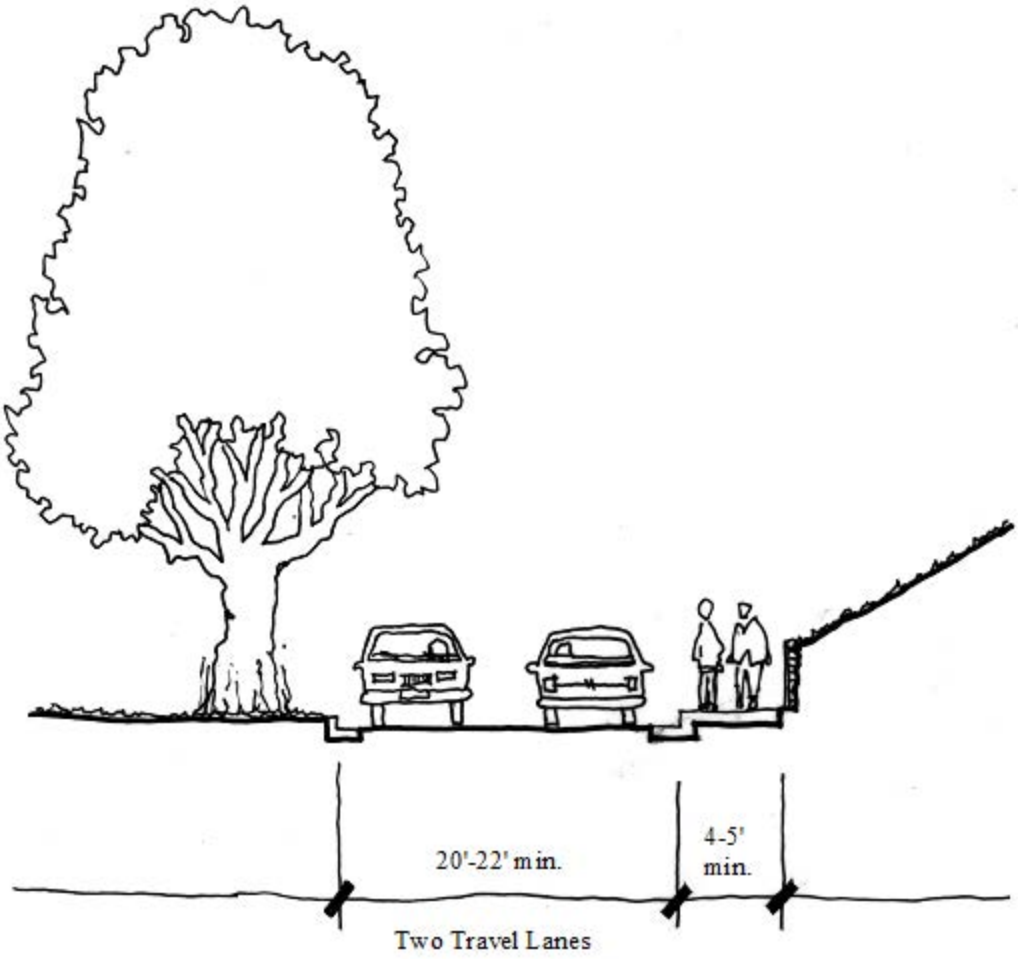
5.7.2 Pedestrian Facilities On Constrained Residential Streets

Some neighborhoods in Marin County have severe constraints that prevent the installation of sidewalks. Such constraints would include the topography immediately adjacent to one or both sides of the street, significant trees or landscape features, small front yard setbacks and/or right-of-way limitations. This section shows various options for addressing pedestrian safety on these streets.

Sidewalk in Cut Slope Area

One option, as shown below, is to install a retaining wall along a hillside in order to provide the preferred width of 5 feet or the minimum width of 4 feet for sidewalk access. Other topographical barriers could be overcome using similar soil retaining methods.

Figure 5-11: Sidewalks in Cut Slope Areas



5.8. Access Ramps

In many locations in Marin County, corners do not have access ramps conforming to ADA standards. Upgrades to conform to ADA are required when streets are repaved. However, for other locations improvements should be made as funding becomes available for projects at non-conforming intersections in accordance with applicable standards.

5.9. Enforcement, Education, and Support Programs

This Plan provides both physical recommendations (such as bicycle lanes) and program recommendations. Some of the program recommendations, such as possible changes in zoning requirements for bicycle parking, have already been covered. This section covers future efforts to educate bicyclists and motorists, and efforts to increase bicycling and walking. Some of these efforts will be provided by local agencies and non-profit groups, TAM's Safe Routes to Schools Program, and in collaboration with public agencies and private sponsors.

5.9.1 Education

The school districts, police departments, and public works departments for the County and various cities and towns have a long history of trying to improve safety conditions for bicyclists and pedestrians. However, with the exception of the Share the Road program, motorist education on the rights of bicyclists and pedestrians is virtually non-existent. Many people 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 or it is full of gravel or potholes.

Recommendation #1: Encourage Continuation of Current School Education Programs

Per the recommendations in the previous section, existing school educational and encouragement programs should continue to be supported in a cooperative effort between the County, TAM, and the Marin County School Districts.

Recommendation #2: Continue support of bicycle outreach programming.

Marin County Bicycle Coalition (MCBC) offers several courses designed to educate new riders on safer and proper riding techniques, assist parents with riding and demonstrating good practices while riding with their children, and provide more experienced riders with guidance on riding in traffic. MCBC also produces a countywide bicycling map to assist cyclists with navigating the county's paths and roadways. TAM and/or the County should continue to support these efforts through:

- *Mapping*: Coordinate with MCBC in production of updates to the Marin County Bicycle Map .
- *Course Offerings*: Continue to support the offering of various classes such as Basic Street Skills, Family Biking, and other courses emphasizing safer bicycling behaviors and habits, such as how to avoid collisions and citations, how to ride safely, how to improve visibility, and knowing the legal rights and responsibilities of bicyclists. Continue to support the Court Diversion Program that enables cyclists who have received a bicycle violation to attend a class to reduce their fine. TAM should seek annual funding for the provision of classes, as well as courses for pedestrians.

5.9.2 Bikeshare

Bikesharing programs have been implemented in multiple communities worldwide and usually focus on short trips within a defined area. Typical bikeshare programs feature a standardized bicycle suited for the local conditions with multiple locations at which a bicycle may be picked up or parked. Fee collection methods vary from kiosks that accept credit cards to online accounts accessed via smartphone apps. Funding for the programs is a combination of fare recovery and outside financing, such as a corporate sponsorship.

Most bikeshare programs have been undertaken in places with greater density than Marin County due to the typical bikeshare model and operational concerns necessary to make them functional. However, subsequent generations of bikeshare program approaches have been successful in less urban environments. With the evolving variety of bikeshare programs, select areas of Marin County as noted in the *Marin County Bicycle Share Feasibility Study* (2013)[2] may be suitable for a such a program. TAM has been evaluating the possibility of establishing bikeshare in Marin and should be encouraged to pursue bikesharing where it will be effective and utilized.

5.9.3 Other Support Programs

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

[2] https://www.tam.ca.gov/wp-content/uploads/2017/02/Bike-Share-Feasibility-Study_Final-November-2013.pdf

Bicycle Donation Program

A fleet of loaner bicycles available to employees to use as a commute alternative has proved successful in Portland and other U.S. cities. The bicycle may be purchased new or obtained from police auctions, repaired, painted, and engraved with ID numbers, and made available free of charge to employees. Depending on demand, bicycles may be made available through reservations or on a rotating basis. The bicycles themselves should be lower-end, heavy-duty bicycles that have minimal re-sale value. Employers' responsibilities would be limited to an annual maintenance inspection and repairs as necessary. The objective of the program is to encourage employees to try bicycling to work as an alternative, without making a major investment. Employers may wish to allow bicycle commuters to leave 15 minutes early from work, or some other type of incentive to encourage use of the bicycles. The County may consider such a program and may wish to encourage private employers to follow suit by offering travel demand management (TDM) credits or subsidized purchases of bicycles.

Bicycle Clunker and Parts Program, Bicycle Repair Program

San Rafael's 'Trips for Kids' Re-Cyclery program ties directly into the bicycle donation program by obtaining broken, stolen, abandoned, or donated bicycles and restoring them to working condition. The program's dual mission is to provide people in need with bicycles and to train young people (ages 12 to 18) how to repair bicycles as part of a summer jobs training effort. Bicycles are an excellent medium to teach young people on the fundamentals of mechanics, safety, and operation. Young people can use these skills to maintain their own bicycles or to build on related interests. The program is often staffed by volunteers from local bicycling organizations and bicycle shops, who can help build an interest in bicycling as an alternative to driving. The seed money to begin this program often comes from a local private funding source. The bicycles themselves could be obtained from unclaimed stolen bicycles from the police department or from donated bicycles. A program will need to qualify as a Section 501c(3) non-profit organization to offer tax deductions.

Community Adoption

Programs to have local businesses and organizations 'adopt' a Class I multi-use path similar to the adoption of segments of state highways. Small signs located along the pathway would identify supporters, acknowledging their contribution. Support would be in the form of an annual commitment to pay for the routine maintenance of the pathway, which in general costs about $10,578 per mile. Parks & Recreation or other groups may administer this program.

Bike and Walking Fairs and Races

To encourage increased bicycling and walking, interest groups are well-positioned to capitalize on the growing interest in on-road and off-road bicycle races, criterions, marathons, and other fairs and races. Events would need to be sponsored by local businesses and involve some promotion, insurance, and development of adequate circuits for all levels of riders. It is not unusual for these events to draw up to 1,000 bicyclists and walkers, which could bring spur additional spending in and around the event area.

The County can assist in developing these events by acting as a co-sponsor, and expediting and possibly underwriting some of the expenses of, for example, police time. The County should also encourage these events to have races and tours that appeal to the less experienced bicyclist. For example, in exchange for local governments underwriting part of the costs of a race, the event promoters could hold a bicycle repair and maintenance workshop for kids, short fun races for kids, and/or a tour of the route lead by experienced bicyclists who could show less experienced riders how to safely negotiate County streets.

Employer Incentives

Beyond programs previously mentioned such as the Bicycle Donation Program, countywide employer incentives to encourage employees to try bicycling or walking to work include sponsoring bike fairs and races, providing bicycle lockers and shower facilities, providing convenient and safe bicycle parking for employees and customers, and offering incentives to employees who commute by bicycle or walking by allowing for more flexible arrival and departure times. The County may offer incentives to employers to institute these improvements through air quality credits, lowered parking requirements, reduced traffic mitigation fees, or other means. For example, the County of Marin has an award-winning Employee Commute Alternative Program designed to encourage alternative modes of transportation for their work commute through provision of cash stipends. This program includes incentives for bicyclists and actively participates in Bike-to-Work and Bike-to-School Days.

In addition to the existing 511.org annual bike-to-work days, the County and TAM should continue to help promote local bike or walk-to-work/school days, such as "Walk and Roll to School". Bike-to-school days could be jointly sponsored with the School District, possibly in conjunction with bicycle education programs and through the Safe Routes to Schools Program.

5.9.4 Bikeway and Walkway Security

Unless covered by prior agreement, the Marin County Sheriff's Department, using both bicycles and vehicles will perform enforcement of applicable laws on bicycle paths within the unincorporated County jurisdiction, depending on available resources and priorities. Note that additional funding for this effort will be needed. Enforcement of vehicle statutes relating to bicycle operation will be enforced on Class II and Class III bikeways as part of the department's normal operations. No additional staff or equipment is anticipated for Class II or III segments. The County should consider the installation of lighting on pathways in urbanized areas.

5.9.5 Marketing the Bicycle and Pedestrian Plan

The success of this Plan depends largely on the community's acceptance and promotion of its contents. The following are steps that will help ensure it becomes a living document that shapes Marin County's future.

- Recognize that most of these education and encouragement programs and activities will likely be cooperative efforts between Transportation Authority of Marin (TAM), the County of Marin, local governments, private sponsors, and community groups and work to foster those relationships.
- Provide bicycle and pedestrian planning and design training for all transportation engineers and planners at county and local levels, as needed.
- Encourage local businesses to participate in the Bicycle-Friendly Business Program sponsored by the League of American Bicyclists.
- Work with towing companies and emergency clean up crews so they better understand the needs of bicyclists.
- Work with contractors and subcontractors and County and City maintenance and utility crews to help them better understand the needs of bicyclists and pedestrians.
- Develop, promote, and publicize bicycle commuter services, such as bicycle shops selling commute gear and regular escorted commute rides.
- Create events such as "bicycle to the grocery store" days, when bicyclists get vouchers for or coupons off items in the store or "walk to the movies" days when bicyclists and pedestrians receive free popcorn or a discount on a movie or refreshments.
- Work with the Department of Parks and Open Space to deliver a "benefits of bicycling and walking message" to youth that are working on water, air, and general pollution activities.
- Hold an annual community event to encourage residents to replace one car trip a week with a bicycle trip.
- Promote and publicize new and existing education and encouragement efforts by community groups and businesses.
- Support planning and implementation of an annual mass bicycling ride in Marin County to attract new riders, showcase Marin County, and demonstrate the benefits of bicycling.
- Develop and implement a public education campaign to encourage bicycling and walking, such as ads on movie screens, city bench, bicycle locker and billboard advertising, and videos on cable access television.
- Develop measures to reduce bicycle theft such as a registration program, subsidized locks, and training for proper locking techniques.

6 Implementation Strategy

This section discusses funding and financing the proposed projects in Chapter 5.

6.1. Implementation of Countywide Projects

Some of the primary goals of this Plan are to continue countywide efforts such as bicycle parking or Safe Routes to Schools programs that serve all unincorporated areas, construct specific projects such as local bikeway gap closures, and complete multi-jurisdictional improvements on the Primary Regional Bikeway system. The ultimate objective is to build out the identified countywide bicycle network and complete pedestrian improvements to provide connectivity through and between neighborhoods, commercial districts, employment areas, recreation facilities, transit hubs, and other activity nodes.

Local funding programs, such as TDA or Measure A Transportation Sales Tax, should be allocated whenever possible to projects that meet the funding criteria of those programs. The actual schedule for implementation on a year-to-year basis should be determined by (a) the readiness of each project in terms of local support, (b) CEQA approvals, (c) right-of-way control, (d) timing with other related improvements, and/or (e) success in obtaining competitive funding. Projects on the Primary County System may also be deemed higher priority projects.

6.2. Implementation of Local Projects

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

1. Adoption of the Unincorporated Area Plan by the Marin County Board of Supervisors,
2. If not already completed, preparation of a Feasibility Study involving a conceptual design (with consideration of possible alternatives and environmental issues) and a cost estimate.
3. Secure, as necessary, outside funding and any applicable environmental approvals.
4. Inclusion of the project in the appropriate department's or agency's work program, including commitment to provide any unfunded portion of the cost.
5. Completion of final Plans, Specifications, and Estimates (PS&E), advertising for bids, receipt of bids and award of contract(s).
6. Construction of the Project.

6.3. Maintenance

The total annual maintenance cost of all existing and proposed county unincorporated area bikeways identified in this plan is estimated to be approximately $964,000 (2017 dollars) when fully implemented. About one-quarter of the maintenance costs are associated with the proposed Class I multi-use paths. Class I path annual maintenance costs are based on an estimate of $12,000 (2017 dollars) per mile,[1] which covers labor, supplies, and amortized equipment costs for weekly trash removal, monthly sweeping, and bi-annual resurfacing and repair patrols includes cleaning, resurfacing and re-striping the asphalt path, repairs to crossings, cleaning drainage systems, trash removal, landscaping, underbrush and weed abatement (performed once in the late spring and again in mid-summer). Maintenance access on Class I paths will be achieved using standard pick-up trucks on the pathway itself. Sections with narrow widths or other clearance restrictions should be clearly marked. Class II on-street bicycle lanes annual maintenance costs are based on an estimate of $4,000 per mile which includes materials and labor for restriping and re-stenciling once every five years and sign replacement as necessary. Routine maintenance activities such as street sweeping of bicycle lanes are included by most jurisdictions in their regular street maintenance costs and so incur no additional expenses. Class III bicycle routes annual maintenance costs are based on an estimate of $400 per mile which includes materials and labor for sign replacement as necessary.

Two Class I paths, the Pacheco Hill Path between Novato and Marinwood, and the Horse Hill Path between Corte Madera and Mill Valley are under a joint maintenance agreement with Caltrans in which the County (Parks) is responsible for routine maintenance such as sweeping and litter removal while Caltrans is responsible for capital maintenance including pavement and associated infrastructure. Some Class I multi-use paths receive maintenance funds from a program administered by the Transportation Authority of Marin which is disbursed to the responsible agency to offset maintenance costs.

Actions: Ensure continued funding support by TAM for Class I pathways and encourage expansion of the program to provide maintenance funding for all Class I pathways. Seek sufficient and stable maintenance funding in the County Roads budget to enable regular maintenance of Class II and III bikeway facilities. All proposed designs should be closely examined to minimize future maintenance costs.

[1] Inflation-adjusted value. Transportation Authority of Marin. *Marin County Bike Path Maintenance Report*, 2007

6.4. Security

Security may be perceived as an issue along portions of the proposed Class I multi-use paths, bridges, and tunnels. High-speed bicyclists are incompatible with other users of Class I multi-use paths, particularly in congested areas while loitering and other inappropriate behaviors on the path can result in discomfort for other users of the facility. The advent of motorized-assist bicycles has resulted in the potential for increased user conflict because of the higher speeds to which these bicycles are capable. Illegal parking or other obstructions on bicycle lanes force bicyclists into motor vehicle travel lanes which can discourage bicycling by novice bicyclists. The following action is recommended to address these concerns.

Action: Enforcement of applicable laws on paths will be performed using both bicycles and motor vehicles. In Marin County's unincorporated areas, the California Highway Patrol is responsible for all vehicle code enforcement actions on all county roads, while the Marin County Sheriff's Department is responsible for all civil and criminal matters. Enforcement of vehicle statues relating to bicycle operation will be enforced on Class II and Class III bikeways as part of the department's normal operations. No additional staff or equipment is anticipated for Class II or III segments. Class I multi-use paths may require additional patrol and enforcement services, whether by local police agencies or park rangers. Marin County Parks has adopted specific regulations for users on paths it maintains, including the use of motorized bicycles. Those regulations are found in section 10.05 of the Marin County Code and are enforced by Parks staff and local law enforcement.

6.5. Financing

Proposed improvements and programs to be developed over the next 20 years in Marin County have been analyzed to determine the annual financing requirements, and to allow the County to budget its resources and target funding applications. Funding programs administered by the Transportation Authority of Marin provide a local funding source with fewer constraints than other funding programs are shared amongst all of Marin County's agencies. While these funds work towards the overall goal of building out the countywide network, the County competes for these same funding pools with other local communities to fund its projects in the unincorporated area. Funding for many bicycle and pedestrian projects, particularly more complex projects, is typically derived from regional, State and Federal sources. These funding sources are extremely competitive, and require a combination of sound applications, local support, and lobbying on the regional, state and national level. Depending on the funding program, the local match requirement can also require a considerable contribution from the local community.

6.6. Funding Opportunities

This section provides information on potential funding sources for bicycle and pedestrian improvements. Federal, state and local government agencies invest billions of dollars every year in the nation's transportation system. Only a fraction of that funding is used in development projects, policy development, and planning to improve conditions for pedestrians and bicyclists. Even though appropriate funds are limited, they are available. To support agency efforts to find outside funding sources to implement bicycle and pedestrian improvements, a summary by source type is provided below.

6.6.1 Federal Sources

The Fixing America's Surface Transportation Act (FAST Act)

The FAST Act, which replaced Moving Ahead for Progress in the 21st Century Act (MAP-21) in 2015, provides long-term funding certainty for surface transportation projects, meaning States and local governments can move forward with critical transportation projects with the confidence that they will have a Federal partner over the long term (at least five years).

The law makes changes and reforms to many Federal transportation programs, including streamlining the approval processes for new transportation projects and providing new safety tools. It also allows local entities that are direct recipients of Federal dollars to use a design publication that is different than one used by their State DOT, such as the *Urban Bikeway Design Guide by the* National Association of City Transportation Officials. *More information:* https://www.transportation.gov/fastact

Surface Transportation Block Grant Program (STBGP)

The Surface Transportation Block Grant Program (STBGP) provides states with flexible funds which may be used for a variety of highway, road, bridge, and transit projects. A wide variety of bicycle and pedestrian improvements are eligible, including trails, sidewalks, bike lanes, crosswalks, pedestrian signals, and other ancillary facilities. Modification of sidewalks to comply with the requirements of the Americans with Disabilities Act (ADA) is also an eligible activity. Unlike most highway projects, STBGP-funded pedestrian facilities may be located on local and collector roads which are not part of the Federal-aid Highway System.

Fifty percent of each state's STBGP funds are sub-allocated geographically by population. These funds are funneled through Caltrans to the metropolitan planning organizations in the state. The remaining 50 percent may be spent in any area of the state.

STBGP Set-Aside: Transportation Alternatives Program

Transportation Alternatives Program (TAP) has been folded into the Surface Transportation Block Grant program (STBG) as a set-aside funded at $835 million for 2016 and 2017, and $850 million for 2018, 2019, and 2020. Up to 50 percent of the set-aside is able to be transferred for broader STBGP eligibility.

Improvements eligible for this set-aside fall under three categories: Transportation Enhancements (TE), Safe Routes to Schools (SR2S), and the Recreational Trails Program (RTP). These funds may be used for a variety of pedestrian and streetscape projects including sidewalks, multi-use paths, and rail-trails. TAP funds may also be used for selected education and encouragement programming such as Safe Routes to Schools.

Non-profit organizations (NGOs) are now eligible to apply for funding for transportation safety projects and programs, including SR2S programs and bike share.

Complete eligibilities for TAP include:

1. **Transportation Alternatives**. This category includes the construction, planning, and design of a range of pedestrian infrastructure including "on–road and off–road trail facilities for pedestrians, bicyclists, and other active forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety–related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990." Infrastructure projects and systems that provide "Safe Routes for Non-Drivers" is still an eligible activity.
2. **Recreational Trails.** TAP funds may be used to develop and maintain recreational trails and trail-related facilities for both active and motorized recreational trail uses. Examples of trail uses include hiking, in-line skating, equestrian use, and other active and motorized uses. These funds are available for both paved and unpaved trails, but may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along roads. Recreational Trails Program funds may be used for:
    - Maintenance and restoration of existing trails
    - Purchase and lease of trail construction and maintenance equipment
    - Construction of new trails, including unpaved trails
    - Acquisition or easements of property for trails
    - State administrative costs related to this program (limited to seven percent of a state's funds)
    - Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a state's funds)

3. **Safe Routes to Schools.** There are two separate Safe Routes to Schools Programs administered by Caltrans. There is the Federal program referred to as SRTS, and the state-legislated program referred to as SR2S. Both programs are intended to achieve the same basic goal of increasing the number of children walking and bicycling to school by making it safer for them to do so. All projects must be within two miles of primary or middle schools (K-8).

   The Safe Routes to Schools Program funds non-motorized facilities in conjunction with improving access to schools through the Caltrans Safe Routes to Schools Coordinator.

   Eligible projects may include:
   - Engineering improvements. These physical improvements are designed to reduce potential bicycle and pedestrian conflicts with motor vehicles. Physical improvements may also reduce motor vehicle traffic volumes around schools, establish safer and more accessible crossings, or construct walkways or trails. Eligible improvements include sidewalk improvements, traffic calming/speed reduction, and pedestrian crossing improvements.
   - Education and Encouragement Efforts. These programs are designed to teach children safe walking skills while educating them about the health benefits and environmental impacts. Projects and programs may include creation, distribution and implementation of educational materials; safety based field trips; interactive pedestrian safety video games; and promotional events and activities (e.g., assemblies, walking school buses).
   - Enforcement Efforts. These programs aim to ensure that traffic laws near schools are obeyed. Law enforcement activities apply to cyclists, pedestrians and motor vehicles alike. Projects may include development of a crossing guard program, enforcement equipment, photo enforcement, and pedestrian sting operations.
   - Planning, designing, or constructing roadways within the right-of-way of former Interstate routes or divided highways. At the time of writing, detailed guidance from the Federal Highway Administration on this new eligible activity was not available.

405 National Priority Safety Program

Approximately $14 million annually (5 percent of the $280 million allocated to the program overall) will be awarded to States to decrease bike and pedestrian crashes with motor vehicles. States where bike and pedestrian fatalities exceed 15 percent of their overall traffic fatalities will be eligible for grants that can be used for:

- Training law enforcement officials on bike/pedestrian related traffic laws
- Enforcement campaigns related to bike/pedestrian safety
- Education and awareness programs related to relevant bike/pedestrian traffic laws

Highway Safety Improvement Program (HSIP)

The Highway Safety Improvement Program (HSIP) provides $2.4 billion nationally for projects that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. Non-infrastructure projects are no longer eligible. Eligible projects are no longer required to collect data on all public roads. Pedestrian safety improvements, enforcement activities, traffic calming projects, and crossing treatments for active transportation users in school zones are examples of eligible projects. All HSIP projects must be consistent with the state's Strategic Highway Safety Plan. *The 2015 California SHSP is located here:* http://www.dot.ca.gov/hq/traffops/shsp/docs/SHSP15_Update.pdf

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

The Congestion Mitigation and Air Quality Improvement Program (CMAQ) provides funding for projects and programs in air quality nonattainment and maintenance areas for ozone, carbon monoxide, and particulate matter which reduce transportation related emissions. These federal dollars can be used to build pedestrian and bicycle facilities that reduce travel by automobile. Purely recreational facilities generally are not eligible.

To be funded under this program, projects and programs must come from a transportation plan (or State (STIP) or Regional (RTIP) Transportation Improvement Program) that conforms to the SIP and must be consistent with the conformity provisions of Section 176 of the Clean Air Act. States are now given flexibility on whether to undertake CMAQ or STBGP-eligible projects with CMAQ funds to help prevent areas within the state from going into nonattainment.

In the Bay Area, CMAQ funding is administered through the Metropolitan Transportation Commission (MTC) on the local level. These funds are eligible for transportation projects that contribute to the attainment or maintenance of National Ambient Air Quality Standards in non-attainment or air-quality maintenance areas. Examples of eligible projects include enhancements to existing transit services, rideshare and vanpool programs, projects that encourage pedestrian transportation options, traffic light synchronization projects that improve air quality, grade separation projects, and construction of high-occupancy vehicle (HOV) lanes. Projects that are proven to reduce direct PM2.5 emissions are to be given priority.

Partnership for Sustainable Communities

Founded in 2009, the Partnership for Sustainable Communities is a joint project of the Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (USDOT). The partnership aims to "improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide." The Partnership is based on five Livability Principles, one of which explicitly addresses the need for pedestrian infrastructure ("Provide more transportation choices: Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health").

The Partnership is not a formal agency with a regular annual grant program. Nevertheless, it is an important effort that has already led to some new grant opportunities (including the TIGER grants). Mill Valley should track Partnership communications and be prepared to respond proactively to announcements of new grant programs.

For more information, visit: https://www.sustainablecommunities.gov/

6.6.2 State Sources

Active Transportation Program (ATP)

In 2013, Governor Brown signed legislation creating the Active Transportation Program (ATP). This program is a consolidation of the Federal Transportation Alternatives Program (TAP), California's Bicycle Transportation Account (BTA), and Federal and California Safe Routes to Schools (SRTS) programs.

The ATP program is administered by Caltrans Division of Local Assistance, Office of Active Transportation and Special Programs.

The ATP program goals include:

- Increase the proportion of trips accomplished by biking and walking,
- Increase safety and mobility for non-motorized users,
- Advance the active transportation efforts of regional agencies to achieve greenhouse gas reduction goals,
- Enhance public health,
- Ensure that disadvantaged communities fully share in the benefits of the program, and
- Provide a broad spectrum of projects to benefit many types of active transportation users.

The California Transportation Commission ATP Guidelines are available here:
http://www.catc.ca.gov/meetings/agenda/2014Agenda/2014_03/03_4.12.pdf

Eligible bicycle and Safe Routes to Schools projects include:

- Infrastructure Projects: Capital improvements that will further program goals. This category typically includes planning, design, and construction.
- Non-Infrastructure Projects: Education, encouragement, enforcement, and planning activities that further program goals. The focus of this category is on pilot and start-up projects that can demonstrate funding for ongoing efforts.
- Infrastructure projects with non-infrastructure components

The minimum request for non-SRTS projects is $250,000. There is no minimum for SRTS projects. *More information is available here:* http://www.dot.ca.gov/hq/LocalPrograms/atp/

Senate Bill 1 (SB1)

Senate Bill 1, signed into law in 2017, increases the vehicle fuel tax to fund various transporation maintenance and construction projects statewide. Some of these funds are directed to the regional and local level to implement projects of importance to the local community. Active transportation projects are eligible for some of the funding streams of this significant dedication of funding to improving transportation statewide.

Office of Traffic Safety (OTS) Grants

The Office of Traffic Safety Program is a partnership effort between the National Highway Traffic Safety Administration (NHTSA), Federal Highway Administration, and the states. In California, the grants are administered by the California Office of Traffic Safety (OTS).

Grants are used to establish new traffic safety programs, expand ongoing programs or address deficiencies in current programs. Eligible grantees are governmental agencies, state colleges, state universities, local City and County government agencies, school districts, fire departments, and public emergency services providers. Grant funding cannot replace existing program expenditures, nor can traffic safety funds be used for program maintenance, research, rehabilitation, or construction. Grants are awarded on a competitive basis, and priority is given to agencies with the greatest need. Evaluation criteria to assess need include potential traffic safety impact, collision statistics and rankings, seriousness of problems, and performance on previous OTS grants.

The California application deadline is January of each year. There is no maximum cap to the amount requested, but all items in the proposal must be justified to meet the objectives of the proposal.

More information: http://www.ots.ca.gov/

6.6.3 Regional & Local Sources

Metropolitan Transportation Commission OneBayArea Grant (OBAG)

The Bay Area Metropolitan Transportation Commission (MTC) OBAG program is a funding approach that aligns the Commission's investments with support for focused growth. Established in 2012, OBAG taps federal funds to maintain MTC's commitments to regional transportation priorities while also advancing the Bay Area's land-use and housing goals.

OBAG includes both a regional program and a county program that targets project investments in Priority Development Areas and rewards cities and counties that approve new housing construction and accept allocations through the Regional Housing Need Allocation (RHNA) process. Cities and counties can use these OBAG funds to invest in:

- Local street and road maintenance
- Streetscape enhancements
- Bicycle and pedestrian improvements
- Transportation planning
- Safe Routes to School projects
- Priority Conservation Areas

In late 2015, MTC adopted a funding and policy framework for the second round of OBAG grants. Known as OBAG 2 for short, the second round of OBAG funding is projected to total about $800 million to fund projects from 2017-18 through 2021-22.

More information: http://www.mtc.ca.gov/our-work/fund-invest/federal-funding/obag-2

San Francisco Bay Trail (ABAG)

The San Francisco Bay Trail organization provides funding to study and construct Bay Trail segments. Since 2002, over $3 million in study and construction funds have been dedicated to Bay Trail segments in Marin County.

Measure A (TAM Sales Tax)

The Transportation Authority of Marin's Measure A sales tax measure was passed by voters in 2004. It has allocated funds to various projects and programs within several funding categories, each with its own objective. Active transporation projects have received funding either directly, such as through specific project allocations, or indirectly, resulting from bicycle and pedestrian improvements being constructed as part of a larger roadway project.

Measure A (County Parks Sales Tax)

Marin County voters passed Measure A in 2012 to provide a revenue source to improve and enhance Marin County's parks and open spaces. Class I multi-use pathways, such as the Mill Valley-Sausalito path, have benefitted from funding allocations to improve pathway experience and functionality.

Developer Impact Fees

As a condition for development approval, municipalities can require developers to provide certain infrastructure improvements, which can include bikeway projects. These projects have commonly provided Class II facilities for portions of on-street, previously-planned routes. They can also be used to provide bicycle parking or shower and locker facilities. The type of facility that should be required to be built by developers should reflect the greatest need for the particular project and its local area. Legal challenges to these types of fees have resulted in the requirement to illustrate a clear nexus between the particular project and the mandated improvement and cost.

Roadway Construction, Repair and Upgrade

Future road widening and construction projects are one means of providing improved pedestrian and bicycle facilities. To ensure that roadway construction projects provide these facilities where needed, it is important that the review process includes input pertaining to consistency with the proposed system. In addition, California's 2008 Complete Streets Act and Caltrans's Deputy Directive 64 require that the needs of all roadway users be considered during "all phases of state highway projects, from planning to construction to maintenance and repair."

More information: *http://www.dot.ca.gov/hq/tpp/offices/ocp/complete_streets.html*

Utility Projects

By monitoring the capital improvement plans of local utility companies, it may be possible to coordinate upcoming utility projects with the installation of bicycle and pedestrian infrastructure within the same area or corridor. Often times, the utility companies will mobilize the same type of forces required to construct bikeways and sidewalks, resulting in the potential for a significant cost savings. These types of joint projects require a great deal of coordination, a careful delineation of scope items and some type of agreement or memorandum of understanding, which may need to be approved by multiple governing bodies.

Cable Installation Projects

Cable television and telephone companies sometimes need new cable routes within public right-of-way. Recently, this has most commonly occurred during expansion of fiber optic networks. Since these projects require a significant amount of advance planning and disruption of curb lanes, it may be possible to request reimbursement for affected bicycle facilities to mitigate construction impacts. In cases where cable routes cross undeveloped areas, it may be possible to provide for new bikeway facilities following completion of the cable trenching, such as sharing the use of maintenance roads.

6.6.4 Other Sources

Local sales taxes, fees and permits may be implemented as new funding sources for pedestrian and bicycle projects. However, any of these potential sources would require a local election. Volunteer programs may be developed to substantially reduce the cost of implementing some routes, particularly multi use paths. For example, a local college design class may use such a multi-use route as a student project, working with a local landscape architectural or engineering firm. Work parties could be formed to help clear the right of way for the route. A local construction company may donate or discount services beyond what the volunteers can do. A challenge grant program with local businesses may be a good source of local funding, in which the businesses can "adopt" a route or segment of one to help construct and maintain it.

Appendix A: Relevant Legislation and Policies

Marin Countywide Plan (2007)

Bicycle- and Pedestrian-Related Policies

Policy TR-1.1 Manage Travel Demand. Improve the operating efficiency of the transportation system by reducing vehicle travel demand and provide opportunities for other modes of travel. Before funding transportation improvements consider alternatives – such as Transportation Demand Management (TDM) – and prioritize projects that will reduce fossil fuel use and reduce single-occupancy vehicle trips.

Policy TR-1.5 Require Necessary Transportation Improvements. Require necessary transportation improvements to be in place, or otherwise guaranteed to result in their timely installation, before or concurrent with new developments. In evaluating whether a transportation improvement is necessary, the County shall consider alternatives to the improvement consistent with Policy TR-1.1, Manage Travel Demand, and the extent to which the improvement will offset the traffic impacts generated by proposed and expected development and restore acceptable traffic levels of service.

Policy TR-1.6 Keep Rural Character in West Marin. Maintain roads in West Marin as two-lane routes, with the possible additions of bicycles lanes, turn lanes at intersections, and turnouts for slow-moving traffic.

Policy TR-1.8 Reduce Vehicle Miles Traveled (VMT). Reduce the rate of increase for total vehicle miles traveled by single-occupant automobile to not exceed the population growth rate.

Policy TR-2.1 Improve the Bicycle and Pedestrian Network. Promote adequate bicycle and pedestrian links, to the extent feasible throughout the county, including streetscape improvements and standards that are safe and pedestrian and bicycle friendly.

Policy TR-2.2 Provide New Bicycle and Pedestrian Facilities. Where appropriate, require new development to provide trails or roadways and paths for use by bicycles and/or on-street bicycle and pedestrian facilities. In-lieu feeds may be accepted if warranted in certain cases.

Policy TR-2.3 Connect to State and Federal Parklands. Explore the possibility of creating bicycle and pedestrian trails that would connect urban areas to federal and State parklands in Marin County.

Policy TR-2.4 Seek Funding Opportunities for Bicycle and Pedestrian Infrastructure. Seek grants and other funding opportunities available to construct new bicycle and pedestrian infrastructure and to connect existing segments.

Policy TR-3.3 Develop Mixed-Use Intermodal Hubs. Support and participate in the development of intermodal transit hubs that expand alternative transportation use.

Policy TR-3.5 Support Bicycle Access to All Transit Systems. Ensure that all new and existing transit systems provide for the storage of bicycles on transit as well as transit centers.

Policy TR-3.3 Reduce Congestion Due to Visitor Traffic in West Marin. Coordinate with Caltrans; local, State, and federal parkland agencies; and local communities to provide alternatives to recreational automobile travel to recreational areas in West Marin.

Bicycle- and Pedestrian-related Implementing Programs

Implementing Program TR-1.c Promote Transportation Alternatives. Work with local, State, and federal governments, businesses, schools, seniors, and environmental groups to encourage use of transit, vanpools, carpools, car sharing, bicycles, and walking, including providing incentives to employers, commuters, and recreational users to support these transportation alternatives.

Implementing Program TR-1.f Analyze Multimodal Performance. Develop methods and adopt standards to assess the performance of pedestrian, bicycle, and transit facilities, and measure the success of those components against the goals of the County *Transportation Vision*.

Implementing Program TR-1.o Keep West Marin Rural. Limit West Marin roads to two lanes, and work with State and federal agencies and local communities to enhance road safety, improve pedestrian, bicycle, and transit access, and maintain or reduce congestion through means such as limiting local parking, creating a multipurpose path from West Marin to the City-Centered Corridor, and providing shuttle service to popular destinations. Shoulder widening for bicycles, turn lanes at intersections, turnouts for slow-moving traffic, traffic calming measures, and similar improvements would be permitted. However, projects will not be undertaken to increase the motorized vehicular capacity of West Marin roads.

Implementing Program TR1.s VMT Reduction Monitoring and Implementation and Transportation Demand Management Program. Develop and implement a countywide program for monitoring and reducing VMT consistent with State and regional efforts and based on information from State and regional planning agencies. Identify and require in new developments specific transportation demand management (TDM) strategies for reducing the VMT below levels that would otherwise occur. Consider the following types of strategies for inclusion in the VMT Reduction Monitoring and Implementation and Transportation Demand Management Program:

- Increased transit.
- All new residential projects consisting of 25 units or more should be located within ½ mile of a transit node, shuttle service, or bus route with regularly scheduled daily service. New multi-family projects consisting of 25 units or more should include TDM measures, such as reduced parking for affordable or senior projects, subsidized public transportation passes, or ride-marching programs, based on site-specific review. For market-rate projects, consider TDM programs such as charging parking fees separate from rent.
- Safe, convenient connections should be provided to existing pedestrian and bicycle facilities, and secure bicycle parking should be provided in new nonresidential developments.
- TDM should be required for new or expanded projects with 50 employees or more, including programs such as parking cash out, subsidized transit passes, ridesharing incentives, and bicycle storage facilities.

Implementing Program TR-1.t Reduce Single Occupancy Trips. Adopt fees and other programs that encourage alternatives to the single occupant vehicle. Consider imposing tolls, congestion pricing, parking fees, gas taxes, and residential parking permit limits. Encourage and assist local cities and towns to adopt similar programs.

Implementing Program TR-2a Encourage Bicycling and Walking. Work with local community groups to encourage bicycling and walking for local trips by students, commuters, visitors, and shoppers through marketing and incentive programs, as well as improved facilities.

Implementing Program TR-2.b Adopt Standards for Pedestrian and Bicycle Access. Amend the County Code and Development Code to include standards for provision of safe pedestrian and bicycle accommodations. Include standards in the design of roadways. As appropriate, require new development

and redevelopment project s to address the following: bicycle and pedestrian access internally and to other areas through easements; safe access to public transportation and construction of paths that connect with other nonmotorized routes; safe road crossing at major intersections for school children and seniors; and secure, weatherproof bicycle storage facilities and shower/changing room facilities for bicycle commuters. Ensure that such facilities will have ongoing maintenance.

Implementing Program TR-2.c Support Bicycle Stations and Consider Attended Parking. Encourage the development of bicycle stations, attended parking, and other bicycle parking support facilities at intermodal hubs, such as the San Rafael Transit Center, the future Southern Marin transportation hub, the Larkspur Landing Ferry Terminal; at future SMART rail stations; and for large public events to encourage people to "bike to transit." Bike stations are full-service bicycle facilities providing secure and guarded "valet bicycle parking in addition to other possible amenities, such as showers or bicycle rentals and repairs.

Implementing Program TR-2.d Fund Projects. Work with the Transportation Authority of Marin and the Bicycle Advisory Group to implement the *Marin County Unincorporated Bicycle and Pedestrian Master Plan*; include pedestrian and bicycle projects in the County Capital Improvement Program; and apply, where feasible, a portion of traffic mitigation feeds toward improvements that will increase bicycle transportation and mitigate congestion. On-site improvements and those located near approved development are a priority.

Implementing Program TR-2.e Prioritize Completion of the North-South and East-West Bikeways. Work with applicable governmental agencies to identify gaps in the North-South and East-West Bikeways, and to place a high priority on obtaining funding for projects that complete these gaps.

Implementing Program TR-2.f Develop "Rails with Trails." Continue to work with SMART to incorporate and fund a multi-use pathway that generally follows the proposed SMART railroad corridor.

Implementing Program TR-2.g Add Bicycle Lanes. Identify roads with shoulders wide enough to be designated as bicycle lanes, and, where feasible, stripe and sign appropriate roadway segments as bike lanes and bike routes.

Implementing Program TR-2.h Encourage Innovative Bicycle Lane Design. Encourage the incorporation of innovative design concepts in the development of bicycle lane projects. Where feasible, consider using techniques and ideas employed in other communities throughout Europe and the United States, such as colored bike lanes, signage, lighting, and other safety features.

Implementing Program TR-2.i Renovate Tunnels Along the Planned North-South Bikeway into Multi-Use Pathways. Support reopening the California Park Hill Tunnel and, if feasible, reopening the Alto Tunnel as key connections in the bicycle and pedestrian network system. The California Park Hill Tunnel provides a key multimodal connection between the San Rafael Transit Center and the Larkspur Landing Ferry terminal, both major transit hubs. The Alto Tunnel provides a direct, nearly level link between Mill Valley and Corte Madera.

Implementing Program TR-2j Ensure Safe Routes to Schools. As funding permits, continue to work with TAM and local school districts to ensure that children have safe walking and bicycling routes to school. Support TAM's program to produce Safe Routes to school Plans for the county's schools providing a required planning bias for the Measure A-financed Safe Routes to Pathways County Capital Improvement Program. Continue the TAM-managed Safe Routes to Schools encouragement and education program, which provides bicycle and pedestrian safety training, events, contests, law enforcement, and the identification of potential bicycle and pedestrian transportation improvements.

Implementing Program TR-2.k Consider Pedestrian Needs. Work with local cities and towns to ensure that traffic signals are timed to allow safe and comfortable pedestrian crossing. Work with Caltrans to improve pedestrian access to freeway bus pads along Highway 101. Work with local communities and school districts to maintain and expand the Measure A-funded school crossing guard program.

Implementing Program TR-2.l Complete Streets. Include safe and convenient bicycle and pedestrian access, where feasible, in all transportation improvement projects. Request that Caltrans and the Federal Highway Administration provide separated, safe, and secure bicycle and pedestrian access as part of any roadway or interchange improvement work, and that access for pedestrians and bicyclists be available during construction. Continue to implement the Department of Public Works' policy on routine accommodation. While the county does not have authority to plan bicycle facilities located in other jurisdictions, it may be appropriate for the Transportation Authority of Marin (TAM) or similar entity or collaboration to assume this responsibility for planning.

Implementing Program TR-2.m Explore Funding Options. Continue to apply for regional, State, and federal grants for bicycle and pedestrian infrastructure projects. Consider using general fund monies, state gas tax subventions, sales tax funds, and development exactions/impact fees to provide bicycle and pedestrian facilities, as well, as Safe Routes to School programs.

Implementing Program TR-2.n Implement Nonmotorized Pilot Transportation Program. Carry out the Nonmotorized Transportation Pilot Program through construction of adopted Pilot projects and initiation of adopted Pilot education and outreach programs. Continue participation in national Pilot efforts, including outreach and mode shift measurement. Encourage continued funding of Pilot activities in future federal transportation bills and other State and local funding sources, including regional funding streams.

Implementing Program TR-3.b Provide Schedules and Shelters. Encourage bus service providers to post current schedules and maps at all transit stops and other key locations, to make real-time arrival information available to riders, and to provide shelters that adequately protect riders from inclement weather.

Bicycle- and Pedestrian-related Goals

Goal TR-1 Safe and Efficient Movement of People and Goods. Provide a range of transportation options that meet the needs of residents, businesses, and travelers.

Goal TR-2 Increased Bicycle and Pedestrian Access. Expand bicycle and pedestrian facilities and access in and between neighborhoods, employment centers, shopping areas, schools, and recreational sites.

Bicycle- and Pedestrian-related Indicator Monitoring

Indicator 2: Combined daily pedestrian/bicycle share of modal split countywide. Target: Increase the percentage of combined pedestrian and bicycle trips from 10.9 percent in 2000 to 20.0 percent by 2020.

Indicator 9: Miles of Class I bicycle pathways in unincorporated areas. Target: Increase from 3.5 miles of Class I in 2000 to 5-10 miles by 2010 and 10-25 miles by 2015.

Indicator 10: Miles of Class II bike lanes in unincorporated areas. Target: Increase from 2.25 miles of Class II in 2000 to 4.5-10 miles by 2010 and 9-25 miles by 2015.

Appendix B: Existing and Proposed Bay Trail

MARIN COUNTY

Bay Trail
- Paved
- Dirt/Gravel
- On Street
- Planned

Other Trail
- Existing
- Planned

0 1 2 kilometers

0 1 2 miles

NOVATO
FAIRFAX
SAN ANSELMO
ROSS
SAN RAFAEL
KENTFIELD
LARKSPUR
TERRA LINDA
SANTA VENETIA
MILL VALLEY
CORTE MADERA
TAMALPAIS JUNCTION
MARIN CITY
BELVEDERE
TIBURON
SAUSALITO
POINT RICHMOND
RICHMOND

Indian Valley Rd
Novato Blvd
Rowland Blvd
Vintage Way
Scottsdale Pond
Marin Audubon Simmons Slough Wildlife Corridor
Deer Island Open Space Preserve
Port Sonoma Marina
Sonoma Baylands Tidal Marsh Restoration Area
Harbor Dr
Black Point
San Pablo Bay National Wildlife Refuge
Black Point Nature Preserve
Petaluma Point
Montego Park
Bel Marin Keys
Bel Marin Keys Restoration Area
Ignacio Blvd
Pacheco Pond
Loma Verde Open Space Preserve
Pacheco Valley Open Space Preserve
Reservoir Hill
SMART (Sonoma-Marin Area Rail Transit)
Hangar Ave
Hamilton Wetland Restoration Area
Lucas Valley Rd
Miller Creek Rd
Las Gallinas Ave
Saint Vincents
Las Gallinas Valley Sanitary District
Olema Rd
Freitas Pkwy
Redwood Hwy
John F. McInnis County Park
Gallinas Creek Marsh Restoration
Country Club
Santa Venetia Marsh Open Space Preserve
Civic Center Lagoon Park
Marin County Civic Center
San Pedro Rd
Back Ranch Meadows
San Pedro Mountain Open Space Preserve
San Pablo Bay
Buckeye Point
Weber Point
Rat Rock
China Camp State Park
Shoreline Trail
China Camp Village
Harry A. Barbier Memorial Park
Dominican College
Boyd Memorial Park
Bettinni Transit Center
Mahon Creek Pathway
Beach Park
McNears Beach County Park
McNear's Beach
Lagoon
Cantera Way
San Pedro Hill
Point San Pedro
Point San Pedro Rd
McNear Brickyard Rd
Schoen Park
Pickleweed Park
Loch Lomond Marina
Kerner Blvd
Bellam Blvd
San Rafael Tidelands
Marin Islands National Wildlife Refuge
Francisco Blvd
Shoreline Park
Sir Francis Drake Blvd
Center Blvd
Bolinas Rd
Terra Linda Ridge/Sleepy Hollow Divide
Red Hill Ave
Ross Ave
Fernhill Ave
Shady Ln
4th St
2nd St
Mission Ave
Grand Ave
Laurel Grove Ave
Kent Ave
Andersen Dr
Mt. Tamalpais State Park
Mt. Tamalpais
Golden Gate National Recreation Area
Magnolia Ave
Doherty Dr
Marin Rowing Association
Niven Park
Remillard Park
Larkspur Ferry
Shorebird Marsh
Corte Madera Marsh Ecological Reserve
Tamalpais Dr
San Quentin State Prison
Point San Quentin
Civic Center Dr
Muzzi Marsh
Muir Woods National Monument
Edgewood Ave
Miller Ave
Blithedale Ave
Alto
Reed St
Bayfront Park
Mill Valley–Sausalito Path
Bothin Marsh
Tennessee Valley Path
Strawberry Park
Harbor Cove Dock
Blackie's Pasture
Trestle Glen Blvd
Strawberry Landing
Richardson Bay Park
Brickyard Park
Kappas Harbor
Strawberry Point
Richardson Bay
Tiburon Blvd
Paradise Beach County Park
Romburg Tiburon Center
Belvedere Lagoon
Tiburon Uplands Nature Preserve
Tiburon Cove
Bridgeway
Marinship Park
Dunphy Park
Schoonmaker Park
Sausalito Yacht Harbor
Sausalito Point
Ferry
Point Tiburon Shoreline Park
Keil Cove
Bluff Point
Lyford Tower
Elephant Rock
Peninsula Point
Ayala Cove
Mt. Livermore Angel Island State Park
Tiffany Beach & Park
Swedes Beach
Hawk Hill
Ayala Vista Point
Fort Baker
Bay Area Discovery Museum
Point Cavallo
Lime Point
Golden Gate Bridge
Point Diablo Lighthouse
Granada Park
San Clemente Park
Paradise Dr
Ring Mountain Preserve
Ring Mountain
Richmond–San Rafael Bridge
Point Molate
Point Molate Beach Park
Point Molate US Naval Fuel Depot
Castro Point
Toll plaza
Chevron Long Wharf
Castro St
Garrard Blvd
Ohio Ave
Washington Park
Cypress Point
Keller Beach
Miller/Knox Regional Shoreline
Ferry Point
Brickyard Cove Marina
Inner Harbor Channel
Harbor Channel
Red Oak Victory Ship
Wildcat Marsh
Brooks Island Regional Preserve
East Brother Island
West Brother Island
San Pablo Point
San Pablo Yacht Harbor
San Francisco Bay

SAN FRANCISCO Bay Trail

Appendix C: Marin County Bicycle Guide Sign System

Marin County Bicycle Guide Sign System North Figure C-1

Legend

- 5 Route Number
- Primary Bike Routes
- Future Connection
- School
- City Areas

0 0.5 1 2

Miles

DATA SOURCE MARINMAP

\\co.marin.ca.us\fs1\CountyShare\DPW\Dan Dawson\Upate2017\PropExistgBikewaySignSystem_20180202_101c.mxd

Marin County Bicycle Guide Sign System Central Figure C-2

Legend

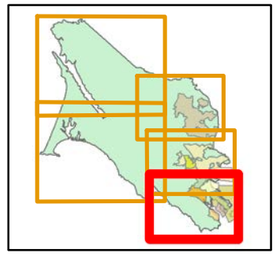
- 5 Route Number
- Primary Bike Routes
- Future Connection
- School
- City Areas

0 0.5 1 2
Miles

DATA SOURCE MARINMAP

\\co.marin.ca.us\fs1\CountyShare\DPW\Dan Dawson\Upate2017\PropExistgBikewaySignSystem_20180202_101c.mxd

Marin County Bicycle Guide Sign System South Figure C-3



Legend

- 5 Route Number
- Primary Bike Routes
- Future Connection
- School
- City Areas

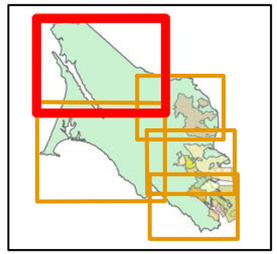
0 0.5 1 2

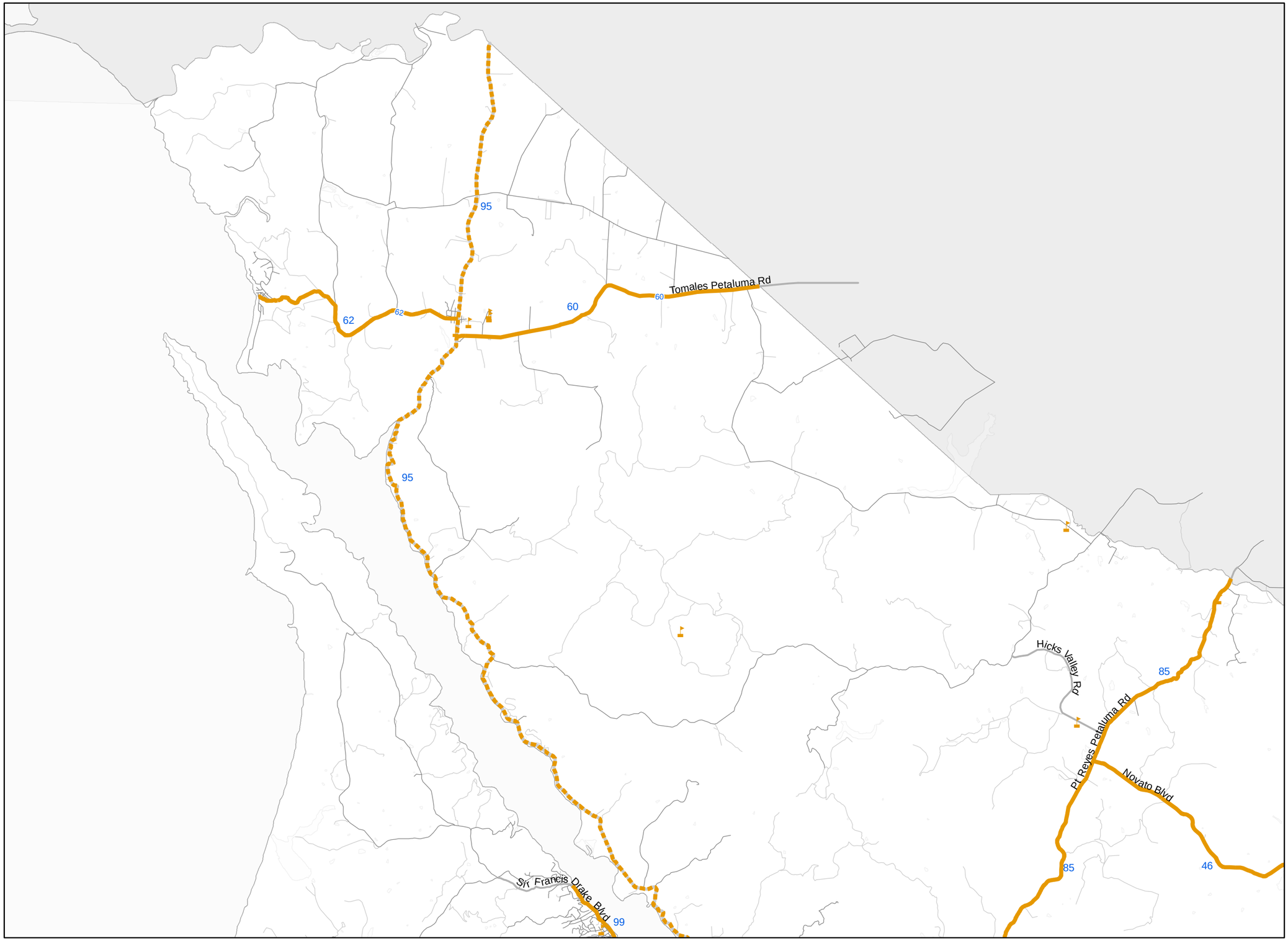
Miles

DATA SOURCE MARINMAP

\\co.marin.ca.us\fs1\CountyShare\DPW\Dan Dawson\Upate2017\PropExistgBikewaySignSystem_20180202_101c.mxd

Marin County Bicycle Guide Sign System West Northern-portion Figure C-4





Legend

- 5 Route Number
- Primary Bike Routes
- Future Connection
- School
- City Areas

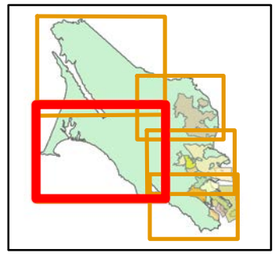
0 0.75 1.5 3

Miles

DATA SOURCE MARINMAP

\\co.marin.ca.us\fs1\CountyShare\DPW\Dan Dawson\Upate2017\PropExistgBikewaySignSystem_20180202_101c.mxd

Marin County Bicycle Guide Sign System West Southern-portion Figure C-5



Legend

- 5 Route Number
- Primary Bike Routes
- Future Connection
- School
- City Areas

0 0.75 1.5 3
Miles

DATA SOURCE MARINMAP

\\co.marin.ca.us\fs1\CountyShare\DPW\Dan Dawson\Upate2017\PropExistgBikewaySignSystem_20180202_101c.mxd