San Mateo County Comprehensive Bicycle and Pedestrian Plan

Final

Adopted September 8, 2011

City/County Association of Governments of San Mateo County

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San Mateo County Comprehensive Bicycle and Pedestrian Plan

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Glossary and List of Acronyms

ADA	Americans with Disabilities Act, passed in 1990, gives civil rights protections to individuals with disabilities similar to those provided to individuals on the basis of race, color, sex, national origin, age, and religion. Title II of the ADA prohibits discrimination against qualified individuals with disabilities in all programs, activities, and services of public entities, including local governments.
ADAAG	Americans with Disabilities Act Access Guidelines. A guidebook for designing pedestrian rights-of-way that are accessible for people with disabilities.
Bicycle Facilities	Bicycle infrastructure, including bike lanes, bike routes, and bike paths.
Bicycle Support Facilities	Bike racks, bicycle lockers, changing rooms, signal detection, and other amenities that support bicycling.
Bike Lane	A painted lane for one-way bicycle travel with a minimum 5 foot width. Defined as a Class II Bikeway by Caltrans.
Bike Route	A street that is designated for shared bicycle and motor vehicle use by placement of bike route signs along the roadway. Note that bicyclists are legally allowed to ride on all roadways in California, whether they are bike routes or not, unless expressly forbid. Defined as a Class III bikeway by Caltrans.
C/CAG	City/County Association of Governments of San Mateo County.
Caltrans	California Department of Transportation
CBPP	San Mateo County Comprehensive Bicycle and Pedestrian Plan
Countywide Bikeway Network (CBN)	A network of on-street and off-street bikeways defined by the Countywide Bicycle and Pedestrian Plan that provide bicycle access throughout the County.
Demand	A transportation term that describes the desire people have for traveling to a destination. A location with high demand indicates that many people want to travel to that location.
Local implementing agency	A jurisdiction within San Mateo County that is responsible for, constructing and maintaining bicycle and pedestrian infrastructure within its boundaries. They include the county of San Mateo and all the cities and towns within the County. Note that C/CAG does not construct or maintain any bicycle and pedestrian infrastructure.
Measure A	A half-cent sales tax that was approved by San Mateo County voters in 2004. San Mateo County Transportation Authority was enabled and funded by the tax. Three percent of Measure A funds are allocated to bicycle and pedestrian projects.

Mode Share	A measurement of the number of trips or more commonly percentage of trips that are taken by a given type of transportation. Mode shares include, but are not limited to, bicycling, walking, transit, and driving.
MTC	Metropolitan Transportation Commission
Multi-Use Path	A paved path with an 8-foot minimum paved width, that is solely for bicycle and pedestrian travel. Defined as a Class I Bikeway by Caltrans.
MUTCD	Manual of Uniform Traffic Control Devices
Pedestrian Amenities	Street furniture, pedestrian-scale lighting, landscaping, and other infrastructure and design elements that support pedestrians and improve the walkability of a street.
Pedestrian Facilities	Pedestrian infrastructure, including sidewalks and paths.
Pedestrian Focus Areas	Eight general location types defined by the Countywide Bicycle and Pedestrian Plan that are should receive pedestrian improvements.
Regional Bicycle Program (RBP)	Bicycle funding allocated to San Mateo County. C/CAG distributes the funding.
ROW	Right-of-way
Shared Roadway Bicycle Markings (Sharrows)	A stencil of a bicycle and chevron placed in the middle of the right-hand vehicle lane, typically adjacent to parallel parking. The shared lane marking indicates to bicyclists where they should ride to avoid opening car doors and reminds motorists that bicycles will be riding in the middle of the lane.
SMCTA	San Mateo County Transportation Authority
SR	State Route
Statewide Integrated Traffic Report System (SWITRS)	A database of police-reported collisions maintained by the California Highway Patrol.
Transportation Development Act Article 3	Bicycle and pedestrian funding allocated to San Mateo County. Funds are distributed to C/CAG, which is the designated agency to manage the funds.

Executive Summary

Introduction

The City/County Association of Governments of San Mateo County (C/CAG), with support from the San Mateo County Transportation Authority (SMCTA) have developed the *San Mateo County Comprehensive Bicycle and Pedestrian Plan* (CBPP) to addresses the planning, design, funding, and implementation of bicycle and pedestrian projects of countywide significance. The CBPP updates the prior *San Mateo County Comprehensive Bicycle Route Plan* (2000) and expands the earlier plan by adding a pedestrian component. New elements in the CBPP include:

- A policy framework to guide and evaluate implementation of the projects recommended by the CBPP.
- An updated Countywide Bikeway Network that incorporates projects completed to-date and new proposed projects identified by San Mateo County's cities, the County and the community.
- Detailed maps and tables of proposed bikeway projects to assist local implementing agencies in constructing bikeways.
- An analysis of land use and demographics to identify areas with high pedestrian demand to assist local implementing agencies in identifying their most important pedestrian projects.
- Pedestrian Focus Areas and suggested prioritization criteria, which will guide countywide investment in pedestrian infrastructure.
- A companion document to assist local implementing agencies in developing education and promotion programs, and funding and designing bicycle and pedestrian facilities.

Vision and Goals

The CBPP's recommendations flow from the plan's vision and goals. The vision statement expresses what bicycling and walking will be like in San Mateo County in the future:

> *San Mateo County has an interconnected system of safe, convenient and universally accessible bicycle and pedestrian facilities, for both transportation and recreation. These facilities provide access to jobs, homes, schools, transit, shopping, community facilities, parks and regional trails throughout the county. At the same time, the county has strengthened its network of vibrant, higher-density, mixed-use and transit-accessible communities, that enable people to meet their daily needs without access to a car. As a result, many more people in San Mateo County ride bicycles and walk, making our transportation system more balanced, equitable and sustainable. More bicycling and walking have reduced automobile dependence, traffic congestion, pollution and the county's carbon footprint while increasing mobility options, promoting healthy lifestyles, saving residents money and fostering social interaction.*

Goals set the overall directions for efforts to improve non-motorized transportation, and are supported by policies that identify more specific action items to support each goal. The five goals for the CBPP are:

Goal 1: A Comprehensive Countywide System of Facilities for Bicyclists and Pedestrians

Goal 2: More People Riding and Walking for Transportation and Recreation

Goal 3: Improved Safety for Bicyclists and Pedestrians

Goal 4: Complete Streets and Routine Accommodation of Bicyclists and Pedestrians

Goal 5: Strong Local Support for Non-Motorized Transportation

Outreach

The CBPP was developed in consultation with San Mateo County's cities and towns, the County of San Mateo, Caltrans, San Francisco International Airport, and the Metropolitan Transportation Commission. Several of these jurisdictions consulted with their local bicycle and pedestrian advisory groups and community members and passed comments along for inclusion in the CBPP. Information was also presented to the SMCTA Citizens Advisory Committee and Board. The C/CAG Bicycle and Pedestrian Committee reviewed components of the plan as they were developed, and the committee's comments were incorporated into the CBPP. The general public was invited to a workshop in November 2010 to view and comment on existing conditions and a proposed bikeway network. The Public Review Draft of the CBPP was made available for comment between February 2011 and May 2011. Prior to release of the Draft Final CBPP, C/CAG met with key advocacy organizations and members of the public to discuss and clarify comments and requested revisions to the CBPP.

Existing Conditions

Just over 700,000 people live in San Mateo County. Topography and public policy have limited urbanization to the eastern part of the county along the Highway 101 corridor. The county's wide range of development patterns, from urban to rural, precludes a one-size fits all approach to bicycle and pedestrian planning. The CBPP categorizes improvements in both urban and rural areas of the county.

Transit

Caltrain, Bay Area Rapid Transit (BART), San Mateo County Transit (SamTrans), employer shuttles, and local shuttles provide transit services in San Mateo County. These transit operators facilitate bicycle and pedestrian travel by extending the reach of these modes and providing an alternative mode in the case of inclement weather or emergency. Caltrain, BART and SamTrans provide for bicyclists at stations and on transit vehicles and many bicyclists utilize Caltrain, in particular. Bicycle and pedestrian access to stations varies by jurisdiction, but can be improved in many locations. Alameda to San Mateo cross county services such as the M line is provided and operated by AC Transit and Dumbarton Express. Rail line, for commuter rail or freight, can act as barriers to bicycle and pedestrian travel. The CBPP identifies bicycle and pedestrian projects that serve transit stations and includes existing and proposed crossings of rail lines.

Freeways and Roads

Freeways such as Highway 101, Interstate 280, Interstate 380, and grade-separated portions of State Route 92 are barriers to bicyclist and pedestrian travel, and biking or walking through freeway interchanges can be uncomfortable and difficult. Many communities have constructed or are planning to construct bridges or tunnels across freeways and provide improvements through interchanges.

Major roadways, such as El Camino Real (State Route 82), at-grade portions of State Route 92. Highway 1 and Woodside Road (State Route 84) facilitate bicycle and pedestrian travel but also act as barriers. These roadways provide direct continuous access, but are often not designed to adequately accommodate bicyclists and pedestrians. Intersections along these major roadways prioritize motor vehicle traffic flow with minimal consideration of impacts on bicyclists and pedestrians.

The CBPP emphasizes access across freeways and major roadways, and includes an inventory of overcrossings, undercrossings, and interchanges and arterial intersections that should be evaluated for improvement.

Existing Bikeways

Since the adoption of C/CAG's first bicycle plan in 2000, cities and the County have constructed a significant number of bikeways along the 231-mile bikeway network proposed in 2000. As shown in **Table E-1,** as of 2010, 141 miles of the countywide bicycle route network have been constructed.

Table E-1: 2000 Countywide Bicycle Route Network Status

2000 Countywide Bikeways	Off Street	On Street	Total
Existing	42	99	**141**
Yet to be Constructed	12	78	**90**
Total Mileage	**54**	**177**	**231**
Percent Complete	78%	56%	61%

Source: Interviews conducted with towns, cities, and County, Summer and Fall 2010.

The local jurisdictions continue to implement the fifteen priority project areas identified in the 2000 plan.

Existing Pedestrian Facilities

Provisions for pedestrians and the quality of pedestrian infrastructure vary throughout the county. Older downtowns have small blocks, narrow roads, sidewalks, and an active pedestrian life. By contrast, pedestrian amenities along major roadways, such as El Camino Real, Woodside Road, and Highway 1, are lacking. Businesses along these roadways tend to be auto-oriented, some sections lack sidewalks altogether, and crossing these roadways is difficult and uncomfortable for pedestrians. Communities have addressed these problems through several efforts, such as Half Moon Bay's provision of a path along Highway 1, and the Grand Boulevard Initiative to improve the El Camino Real Corridor.

Population and employment density significantly influence pedestrian activity. The largest population and employment densities are concentrated along the El Camino Real Corridor, and as a result, this area has the highest levels of pedestrian activity.

Seniors, children, and people with low incomes are more likely to walk than other groups. The *County Aging Model* predicts a 72 percent increase in people over 65 by 2030, with the largest increase in people over age 85. Low-income populations are found throughout the county, but concentrated in areas of East Palo Alto, Unincorporated County, and Daly City.

Relevant Plans, Policies and Guidelines

The CBPP builds on and supports a number of plans, policies, and projects of other agencies. As described above, the CBPP updates C/CAG's 2000 *Comprehensive Bicycle Route Plan*. The CBPP also incorporates the policies supporting bicycle-transit integration and pedestrian-supportive land uses contained in C/CAG's 2001 *Countywide Transportation Plan* (CTP). C/CAG is currently updating the Countywide Transportation Plan (CTP) in parallel with the development of the CBPP. The updated CTP refers to and reflects the goals and policies of the CBPP.

Regionally, the CBPP incorporates bikeways of countywide significance identified by the Metropolitan Transportation Commission's (MTC) 2009 *Regional Bicycle Plan for the Bay Area* and uses MTC's Communities of Concern[1] as a key criterion for bicycle and pedestrian projects. The CBPP also includes the Bay Trail alignment identified by the Association of Bay Area Governments and the California Coastal Trail and Parallel Trail along the Pacific coast of the County. On a local level, the CBPP incorporates planned and proposed bikeways identified in local implementing jurisdictions' plans, including the Bay-to-Ocean trails proposed in the *Draft San Mateo County Trails Plan*.

Local Agency Bicycle and Pedestrian Planning Efforts

Local bicycle and pedestrian planning efforts are varied, and there has been a trend toward providing more staff time and effort for bicycle and pedestrian planning. Most cities and towns in San Mateo County refer to bicycle and pedestrian infrastructure in their General Plan's Circulation Element. Of the twenty cities and towns in the county, four have stand-alone bicycle master plans and none have pedestrian master plans, although as of February 2011, at least two cities are planning to develop pedestrian master plans. Eight cities have bicycle or pedestrian advisory committees. Numerous specific plans address bicycle or pedestrian planning. The County of San Mateo, in conjunction with local communities in the unincorporated areas, have developed various levels of planning documents.

Needs Analysis

Bicyclists' Needs

The CBPP addresses the needs of all bicyclists, from "strong and fearless" riders who are comfortable riding on any roadway regardless of conditions, to "interested but concerned" riders who only ride on quiet streets or paths during favorable weather. The CBPP focuses recommendations on this latter group of bicyclists, who are likely to bicycle more if provided safe and comfortable bikeways.

Pedestrians' Needs

Pedestrians require safe, connected, and accessible sidewalks and pathways that provide direct access to shops, schools, transit, and residential neighborhoods. The CBPP pays particular attention to the needs of children, seniors and people with disabilities, and suggests design guidelines that support these user groups: slow vehicle speeds, short crossings, refuge islands, bulb-outs, and longer crossing times at signalized intersections. The CBPP focuses pedestrian improvements in eight areas: downtown areas, El Camino Real Corri-

[1] Low-income communities

dor, Highway 1/Coastal Trail/Parallel Trail Corridor, major barriers, safe routes to school, safe routes to transit, access to county/regional activity centers, and regional trails.

How Much are People Biking and Walking?

As is the case with the rest of the country, data for the Bay Area show that biking and walking trips make up a small percentage of all total trips. Biking trips comprise between 1.2 percent and 1.5 percent of all trips taken in the Bay Area and walking trips comprise between 8 and 10 percent of all trips.[2] The exception is school trips; nearly 17 percent of school trips are made by foot, underscoring the importance of quality pedestrian infrastructure near schools.

More recent data from the U.S. Census show that 0.8 percent of the county population biked to work and 2.7 percent walked to work. These percentages are lower than Bay Area averages of 1.1 percent bike to work and 3.2 percent walk to work, though mode splits vary by community, with Redwood City and Menlo Park seeing high bicycle commute rates, and San Mateo and Redwood City seeing the highest number of pedestrian commuters. These data indicate that high bicycle and pedestrian commute rates are achievable in San Mateo County, given investment in bicycle and pedestrian infrastructure.

Who is Biking and Walking?

In the Bay Area, people who bike and walk for transportation tend to be younger and less affluent than the general population. School-aged youth typically walk more than other age groups, with nearly 16 percent of all trips made by foot.[3] Walking rates decrease with age, but rise again in the elderly cohort. Bicycling trips are highest among people under 30, with the 23 to 29 age group biking for 2.4 percent of all trips.[4]

In the Bay Area, walking rates vary with income levels. People from households with incomes under $30,000 (in 2000 dollars) are more than twice as likely to walk—17.4 percent to 7.4 percent as people in the highest income households.[5] These data underscore the importance of providing quality pedestrian infrastructure in low-income communities and employment areas.

Bike and Pedestrian Safety

Between 2004 and 2008, an average of 217 bicyclists and 270 pedestrians were injured in traffic collisions in San Mateo County each year. During this same period, a total of 13 bicyclists and 46 pedestrians were killed in traffic collisions. Fatalities of bicyclists and pedestrians comprise a significant percentage of all traffic fatalities in San Mateo County. Between 2004 and 2008, bicyclist fatalities accounted for 8 percent of all traffic fatalities and pedestrian fatalities accounted for 27 percent. In comparison, these modes comprise only 1.5 and 10 percent of all trips for the Bay Area.

Most collisions are concentrated in urban areas of the county, particularly along the El Camino Real corridor. Bicycle collisions also show a concentration at the intersection of Highway 1 and Highway 92 and in Montara. Pedestrian collisions show a concentration along Mission Street in Daly City.

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[2] Metropolitan Transportation Commission's Bay Area Travel Survey (2000)
[3] Ibid.
[4] Ibid.
[5] Ibid.

Pedestrian Demand Analysis

A demand analysis based on land use, proximity to transit, employment and residential densities, intersection density, street connectivity, demographics, and other factors predicts that pedestrian activity is most concentrated along the Highway 101 corridor (including El Camino Real) in the eastern part of the county, with additional activity along the coast in Half Moon Bay and Pacifica. The pedestrian demand analysis informs the development of focused areas for pedestrian improvements.

Countywide Bikeway Network

The CBPP establishes the Countywide Bikeway Network (CBN)—a comprehensive countywide system of on-street and off-street bikeways, overcrossings, and bicycle friendly intersections and freeway interchanges that provide safe, convenient access to major destinations, transit stops, and recreational amenities. Local implementing agencies and members of the public provided input that was used to develop the CBN. **Figure E-1** shows the CBN.

The CBN focuses on countywide transportation, therefore only includes a sub-set of bikeways identified by local implementing agencies. Bikeways in the CBN are considered of countywide significance by meeting one or more of the following criteria:

- **North-South Connectivity**: Improves connectivity or safety along El Camino Real or Highway 1
- **East-West Connectivity**: Improves connectivity or safety across Highway 101, Caltrain. El Camino Real, Interstate 280, Highway 1, and from Bay to Ocean.
- **Cross-Jurisdictional Connections**: Provides access to Santa Clara or San Francisco Counties, or between jurisdictions within San Mateo County.
- **Access to Destinations of County Significance**: Provides access to or improves safety near transit, colleges, employment centers, parks, recreation centers, etc…
- **Inclusion in Other Countywide or Regional Plan**: Included in a plan adopted by San Mateo County, Metropolitan Transportation Commission, or Association of Bay Area Governments plans.

Bicycle Project Groups

To provide a logical way of discussing and cataloging bicycle projects, and to support bicycling within San Mateo County, the CBPP includes three bicycle project groups:

Key Corridors are corridors that serve key transportation and recreation needs evident in county commute patterns, concentration of population, and geography. They include the North South Bikeway, the East of 101 North-South Corridor, the Bay Trail, Woodside Road, Highway 1/Coastal Trail/Parallel Trail, Crystal Springs Regional Trail (San Bruno to Woodside), the Northern East-West Route (South San Francisco to Pacifica) and Alameda de Las Pulgas.

Bicycle parking is a key element of the bicycle network; secure parking at end-trip locations is essential to making a trip possible. The CBPP lists general bicycle parking locations considered to be of countywide significance.

Bicycle signage, both route numbering and wayfinding signage, is an important tool to improve the legibility of the Countywide Bikeway Network. The CBPP recommends that cities and the County use the Route

Number System developed for the 2000 plan. In addition to installing route numbering along numbered bikeways, the CBPP recommends that cities and the County install bicycle wayfinding signage along all CBN bikeways.

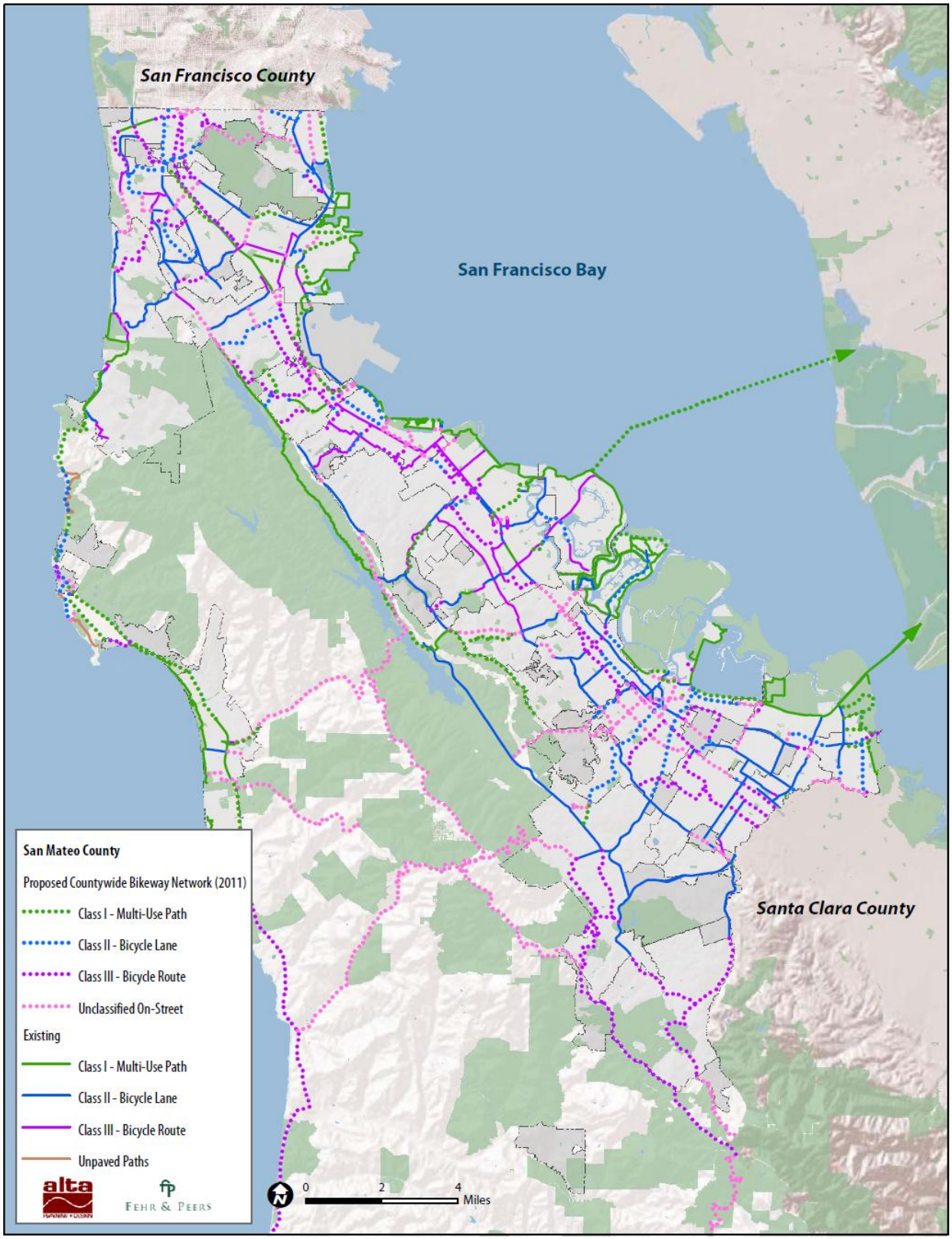

Figure E-1: Countywide Bikeway Network

Bikeway Network Project Categories

The total funding needed to implement the CBN is estimated at $191 million in 2011 dollars. Given limited funding sources, only a portion of the network will be completed in the near term. To assist in distributing bicycle and pedestrian funds, the CBPP scores bikeway projects and sorts them into three implementation categories. The criteria used to score and sort bikeway projects into categories are: collision history, transit access, population and employment density, and location in an underserved community. **Table E-2** Summarizes the costs by project type.

Table E-2: Cost of Countywide Bikeway Network

Project Type	Miles/ Qty	Est. Funding Needed
Off Street	52 miles	$ 33,485,000
On Street	242 miles	$ 6,511,300
Arterial Crossing	55 total	$ 1,330,000
Over/Undercrossing	15 total	$ 149,830,000
Interchange Improvement	5 total	$ 90,000
Total		**$ 191,246,300**

Pedestrian Focus Areas

Specific pedestrian projects identified by the CBPP consist of multi-use pathways and over/undercrossings. These projects are included in the CBN. For all other pedestrian improvements, the CBPP defers to local agencies to identify other pedestrian projects, such as new sidewalks, crossing improvements, and improved streetscape design.

To simplify project tracking and to guide local agencies in developing pedestrian projects, the CBPP establishes eight Focus Areas for pedestrians:

- Downtown Area Improvements
- El Camino Real Corridor Improvements
- Coastal/Highway 1 Corridor Improvements
- Major Barrier Crossings
- Safe Routes to School
- Safe Routes to Transit
- Access to County/Regional Activity Centers
- Regional Trails

The eight Pedestrian Focus Areas encompass different land uses, different levels of pedestrian activity, and as a result, the level of pedestrian improvement appropriate to each Focus Area differs. The CBPP provides

minimum design guidelines for each focus area, covering sidewalk design, crossings, transit connections, and streetscape design. **Figure E-2** shows the Pedestrian Focus Areas.

Recommended Pedestrian Criteria

The CBPP presents the following criteria to assist in the funding of pedestrian projects of countywide significance:

- Projects located in Pedestrian Focus Areas should receive priority over projects that do not.
- Projects that meet or exceed the design guidelines for the Focus Area, should receive priority over those that do not.
- Projects that improve pedestrian safety, either at a high-collision location or through best practices in pedestrian design should be prioritized over those that do not.
- Projects that target seniors, youth, people with disabilities, and low-income communities and individuals should be prioritized over those that do not.

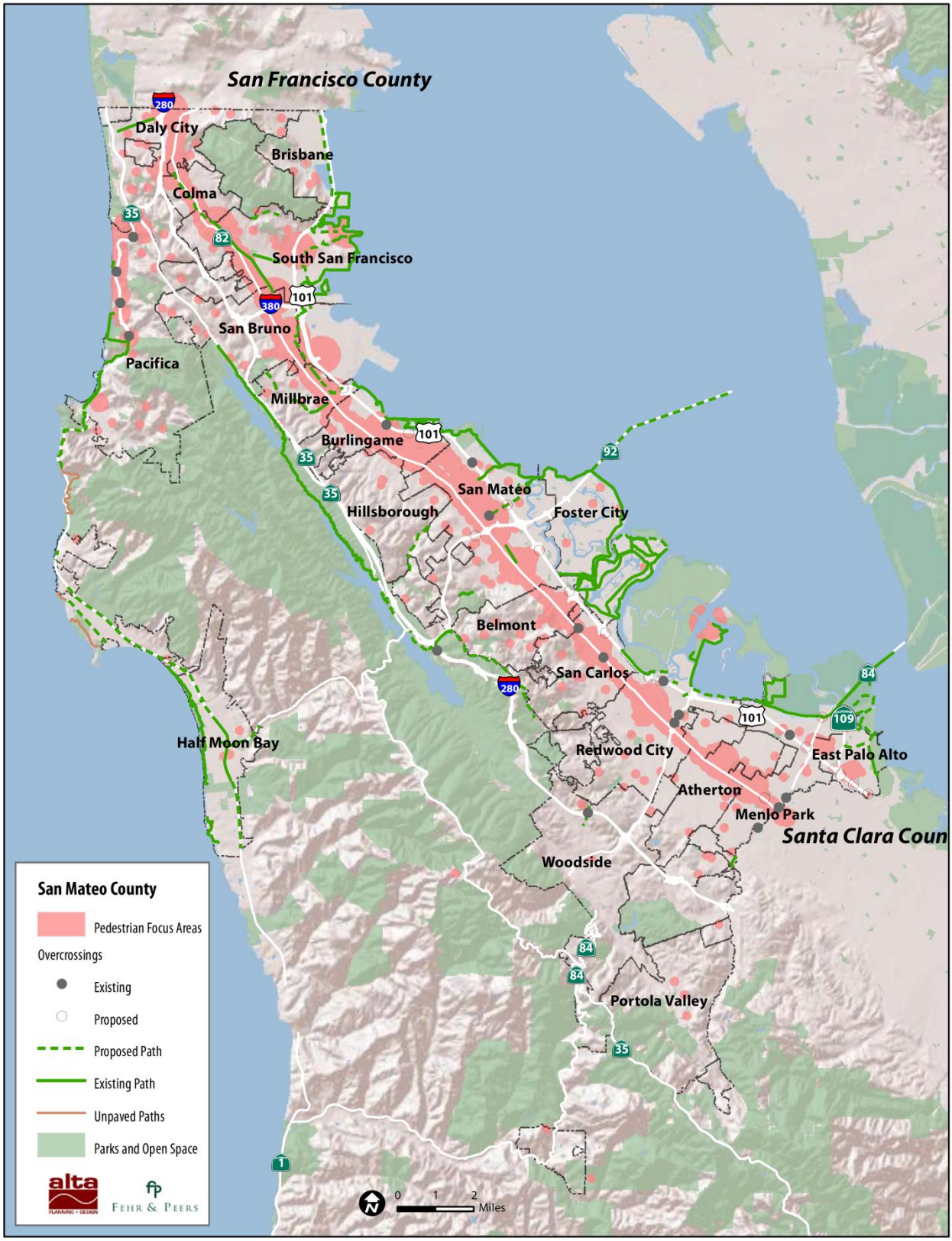

Figure E-2: Pedestrian Focus Areas

Implementation Strategy

Realization of the bicycle and pedestrian projects identified by the CBPP requires continued collaboration between the cities, the County, C/CAG, SMCTA, and Caltrans. Local implementing agencies are responsible for designing, constructing and maintaining projects, and working with Caltrans to construct projects along Caltrans right-of-way. A companion document to this plan provides local implementing agencies with resources to assist in developing projects recommended by the CBPP.

C/CAG's and SMCTA's primary role with respect to implementation of the CBPP is to assist local jurisdictions in implementing projects and programs, and most importantly, to provide funding to the twenty cities and the County for specific bicycle and pedestrian projects that are on the CBN and within the Pedestrian Focus Areas.

Funding

C/CAG is responsible for distributing Transportation Development Act (TDA) Article 3 and Regional Bicycle Program (RBP) funds for bicycle projects within the County. SMCTA administers the Measure A funds for transportation projects and programs in San Mateo County, including the 3 percent of funds for planning, design, and construction of bicyclist and pedestrian infrastructure. The two agencies are responsible for developing processes to solicit projects from the local jurisdictions, encourage submission of project applications, and evaluate and prioritize projects.

For individual bicycle related projects, the CBPP's established categories will facilitate the process of distributing limited local funds. All bicycle projects within the three categories will be considered for funding.

For pedestrian projects, projects within the Pedestrian Focus Areas would be emphasized for funding.

1 Introduction

The C/CAG is the designated Congestion Management Agency (CMA) for San Mateo County, and is responsible for the coordination, planning, and programming of transportation, land-use, and air quality related programs and projects. With regard to bicycle and pedestrian programs, C/CAG is responsible for distributing Transportation Development Act (TDA) Article 3 and Regional Bicycle Program (RBP) funds for projects within San Mateo County.

SMCTA administers the Measure A Program, funded by the half-cent sales tax, for transportation-related projects and programs. The Pedestrian and Bicycle Program, one of six programs, receives three percent of the total sales tax revenue. The Measure A time horizon is 25 years, through the year 2033.

C/CAG, in partnership with the SMCTA and in coordination with the 20 cities and the County, has developed the CBPP to identify bike routes of countywide significance and to identify focused areas for pedestrian improvements and related design guidance. The CBPP will provide guidance on countywide priorities for future funding.

1.1 Plan History

The *2000 San Mateo County Comprehensive Bicycle Route Plan* included a set of goals, objectives, policies and actions to guide development and implementation of bicycling projects and programs in San Mateo County. The plan positioned local cities and the County for state and federal funding and was adopted as an element of the following year's *Countywide Transportation Plan 2010*. Numerous jurisdictions have since developed bicycle, pedestrian, and other multi-modal plans that have further refined and expanded concepts from the 2000 plan, including the Metropolitan Transportation Commission's (MTC) 2001 *Regional Bicycle Plan* and 2009 *Regional Bicycle Plan Update*. The updated CBPP incorporates, but does not supersede, elements from these other efforts. The CBPP reinforces the priorities of the region and cities and will aid C/CAG and partner agency SMCTA in prioritizing expenditure of limited and increasingly valuable transportation funding for pedestrian and bicycle projects.

As the name suggests, C/CAG's *Comprehensive Bicycle and Pedestrian Plan* also provides analysis and review of regionally significant pedestrian issues and related priorities.

1.2 Importance of Improving Biking and Walking

Research from a variety of disciplines confirms the overwhelming benefits of walking and bicycling to community health and stresses the importance of retrofitting a built environment that has largely catered to the automobile for the better half of a century. As a growing and diverse county that takes pride in its commitment to livability, San Mateo has at least six different – and significant – reasons for making it easier to travel without a car:

- **Congestion Reduction**: According to the 2009 National Household Travel Survey, approximately 40% of all trips taken are under two miles –nearly two-thirds of which are taken by car.[6] Other local studies have shown that up to 27% of morning congestion can be attributed to parents dropping their kids off at school.[7] These figures strongly suggest untapped opportunity to relieve congestion through targeted efforts that convert some or all of these trips to walking and biking. This is bolstered by the knowledge that increasing roadway capacity is often neither feasible nor cost-effective for built-out urban areas and can actually lead to inducing new vehicle trips.
- **Economic Competitiveness**: Businesses want to attract talent, and increasingly talent is attracted to walkable, livable neighborhoods. One survey estimates that 30% of all working Americans changed or left their job at one point due to the length of their commute.[8] Walkable and bikeable communities are also more stable and affordable. Walk San Diego, a community-based California non-profit, reports that during the housing crash homes in communities deemed "walkable" maintained almost 5% more of their value than non-walkable communities with similar neighborhood demographics.[9] And by eliminating the need to travel by car residents can save an average of more $4,000/year[10] — effectively increasing their purchasing power (and the availability of "affordable" housing) without increasing average income.
- **Environmental Protection**: The environmental impacts of driving and its related infrastructure are by now well documented and well understood. Whether it is reducing air pollution and emissions of harmful greenhouse gases, saving wildlife habitat and available agricultural resources, or addressing stormwater flooding and degraded water quality—efforts to reduce vehicle miles travelled (VMT) and demand for new roadways by investing in non-motorized travel is and should be a top priority. Under Senate Bill 375, the California Air Resources Board identified targets in greenhouse gas reductions in the Bay Area of 7 percent under 2005 levels by 2020 and 15 percent by 2035. Encouraging pedestrian and bicycle transportation will help to achieve these targets.
- **Public Safety:** The Surface Transportation Policy Partnership (STPP) "pedestrian danger index" considers pedestrian crashes, population, and overall pedestrian activity. Its 2000 report ranked San Mateo County as the fifth most dangerous county for pedestrians in California.[11] The existence of a safety problem is corroborated by analysis from this plan that shows a high concentration of crashes along streets such as El Camino Real and a disproportionately high number of pedestrian crashes among all traffic collisions. Success at making walking safer and more attractive has the added benefits of building social cohesiveness among residents and adding 'eyes on the street' – factors that also often lead to reductions in crime.[12]

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[6] For additional statistics see: http://www.bikeleague.org/resources/reports/pdfs/nhts09.pdf
[7] Transportation Authority of Marin (TAM): http://www.tam.ca.gov/index.aspx?page=94
[8] According to Commute Seattle: http://www.commuteseattle.com/?page_id=223
[9] "Walkable' Communities Lose Less Value, "*The Wall Street Journal*, November 8, 2010.
[10] "Evaluating Non-Motorized Transportation Benefits and Costs," *Victoria Transportation Policy Institute*, November, 2010.
[11] *Dangerous By Design: Solving the Epidemic of Preventable Pedestrian Deaths (And Making Great Neighborhoods Too)*, Surface Transportation Policy Partnership, 2010. http://www.transact.org/Ca/dangerousbydesign.htm
[12] For various sources that discuss the relationship of walkability and crime, see: http://streetswiki.wikispaces.com/Eyes+On+The+Street

- **Social Equity**: For the nearly three percent of San Mateo County households that do not own a car,[13] walking and/or bicycling is an essential, daily activity (even if commuting by transit). Targeting a fair share of resources toward these taxpayers is not only the right thing to do; it will be an especially important strategy to ensure an aging population is not left isolated from important county services.
- **Public Health**: As the percentage of children walking to school has dropped precipitously in a generation, rates of obesity and chronic disease (namely diabetes) have skyrocketed.[14] Following a similar trend, less than half of all U.S. adults now achieve healthy levels of physical activity according to the Centers for Disease Control and Prevention. While the causes and issues involved are complex, there is a growing consensus that poor access to walkable neighborhoods is a prime contributor to this public health epidemic.[15]

1.3 Plan Purpose

The CBPP addresses the planning, design, funding, and implementation for a variety of bicycle and pedestrian infrastructure projects and programs in three important ways:

First, the CBPP provides a new policy framework to guide the implementation and evaluation of this plan. This framework includes a long-term vision statement and a set of goals and policies that incorporate bicycle and pedestrian issues.

Second, the CBPP updates and refines the Countywide Bicycle Network (CBN). To maximize funding available for bikeway projects, and to assist cities without a bicycle plan, the CBPP emphasizes projects that improve safety, that promote access to jobs; that are located within areas of high population density; and that are in areas with the greatest need.

Third, the plan establishes geographic focus areas for countywide investment in pedestrian infrastructure, based on an analysis of pedestrian activity and need throughout the county. To assist jurisdictions with identifying specific pedestrian projects, the CBPP describes minimum design guidelines for these focus areas.

The CBPP also serve as a bicycle and pedestrian plan for cities in the County that currently do not have their own.

1.4 Contents of Plan

The remainder of this plan is organized in a logical sequence to provide information on the state of pedestrian and bicycle needs in San Mateo County and a set of actions for making walking and bicycling safer, easier and more comfortable:

> **Chapter 2, Vision and Goals**, includes a set of goals, objectives, policies, actions, and a long-term vision statement to guide development and implementation of the CBPP.

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[13] According to the 2000 Bay Area Travel Survey (BATS)
[14] The Institute of Medicine of the National Academies (2004) estimates obesity rates among children are three times what they were in the 1980's.
[15] See Frank, et al (2005). "Linking Objectively Measured Physical Activity with Objectively Measured Urban Form," *American Journal of Preventative Medicine28 (2, Sup. 2.)*, pp. 117–125.

Chapter 3, Existing Conditions, reviews existing walking and bicycling conditions in San Mateo County, and includes an inventory of major assets and maps of important land use and demographic characteristics.

Chapter 4, Relevant Plans, Policies and Guidelines, summarizes state, regional, county and local planning efforts related to walking and biking.

Chapter 5, Needs Analysis, provides a detailed analysis of walking and bicycling trends in San Mateo County and identifies the most critical needs for encouraging more walking and bicycling activity. As part of this chapter, pedestrian demand factors are thoroughly explored.

Chapter 6, Countywide Bikeway Network, presents the bikeway projects needed to complete the Countywide Bikeway Network (CBN), and a companion framework that sorts projects into three implementation categories. This Chapter also includes cost estimates by categories.

Chapter 7, Pedestrian Focus Areas, establishes pedestrian "Focus Areas": areas of high pedestrian demand where pedestrian improvements of countywide significance can be located. The Chapter also suggests a methodology to use when prioritizing projects in these Focus Areas.

Chapter 8, Implementation Strategy, describes the roles of the local implementing agencies, C/CAG and the SMCTA, and how the CBPP will be used to guide implementation of bicycle and pedestrian funding programs.

The document is supported by several appendices:

Appendix A, Detailed Bikeway Project Tables, lists roadway segments, overcrossings, and intersection improvements on the CBN by category and by jurisdiction. It also includes maps of CBN projects color-coded by project category.

Appendix B, Detailed Maps of Countywide Bikeway Network, presents city-level maps of the Countywide Bikeway Network, allowing cities and the County to identify specific bikeway segments in their jurisdiction.

Appendix C, Pedestrian Demand Analysis, describes the process to identify high pedestrian demand areas that can be used to prioritize pedestrian projects.

Appendix D, Federal, State, Regional, and County Policy Matrix, summarizes policies and plans relevant to the CBPP and identifies how the CBPP complies with or supports these policies and plans.

Appendix E, Bikeway Signage, presents design details for the Route Number system and bicycle wayfinding for bikeways along the CBN.

A companion document to the CBPP, *A Resource Guide for the Education, Promotion, Funding, and Design of Pedestrian and Bicycle Facilities* provides guidance to cities and the County in implementing bicycle and pedestrian projects. It includes the following information:

Education, Encouragement, and Promotion Guidebook, describes programs and activities local jurisdictions may use to support and promote walking and biking.

Funding Sources, provides implementing agencies with a list of potential sources to fund bicycle and pedestrian projects and programs.

Pedestrian Design Guidelines, and **Bicycle Design Guidelines** provide design guidelines drawn from federal and state sources, as well as innovative and experimental treatments, that communities can consider when designing bikeways and pedestrian infrastructure.

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2 Vision and Goals

This chapter presents a vision, goals, and policies to support bicycling and walking within San Mateo County. The goals and policies reflect C/CAG's role and responsibilities as the countywide transportation planning, funding and coordinating agency, and were developed in collaboration with C/CAG's Bicycle and Pedestrian Advisory Committee. The CBPP's recommended bikeways and pedestrian focus areas are designed to support these goals and policies.

2.1 Vision Statement

The following vision statement expresses what bicycling and walking will be like in San Mateo County in the future upon implementation of projects contained in the CBPP:

> *San Mateo County has an interconnected system of safe, convenient and universally accessible bicycle and pedestrian facilities, for both transportation and recreation. These facilities provide access to jobs, homes, schools, transit, shopping, community facilities, parks and regional trails throughout the county. At the same time, the county has strengthened its network of vibrant, higher-density, mixed-use and transit-accessible communities, that enable people to meet their daily needs without access to a car. As a result, many more people in San Mateo County ride bicycles and walk, making our transportation system more balanced, equitable and sustainable. More bicycling and walking have reduced automobile dependence, traffic congestion, pollution and the county's carbon footprint while increasing mobility options, promoting healthy lifestyles, saving residents money and fostering social interaction.*

2.2 Goals, Objectives and Policies

The five goals presented here are broad statements of purpose, each dealing with a separate topic designed to support implementation of the long-term vision for bicycling and walking in the county. The goals set the overall directions for efforts to improve non-motorized transportation.

Just as the goals buttress the vision statement, several policies support each goal. These policies identify more specific action areas to attain each goal. Together, the goals and policies define the implementation strategy for the CBPP. In most cases, C/CAG and the SMCTA will need to rely on the cooperation of other agencies, especially local jurisdictions, to pursue and achieve the policies and goals outlined here.

Goal ❶: A Comprehensive Countywide System of Facilities for Bicyclists and Pedestrians

- **Policy 1.1:** Program funds for bicycle, pedestrian and accessibility improvements to local jurisdictions for the planning, design, construction and maintenance of facilities of countywide priority.
- **Policy 1.2:** In developing a countywide system of facilities, place special attention on implementing or improving north–south routes (particularly for bicyclists) and reducing barriers to east–west access.
- **Policy 1.3:** Encourage and collaborate with Caltrans and local agencies to implement countywide priority facilities within their jurisdiction. In particular, encourage Caltrans to provide safe bicycle and pedestrian

crossings of state highways in San Mateo County and local agencies to include bicycle and pedestrian projects in their capital improvement programs.

- **Policy 1.4:** Promote cooperation among local agencies and with San Francisco and Santa Clara counties to pursue funding for multi-jurisdictional projects and implement bicycle and pedestrian facilities across jurisdictional lines.
- **Policy 1.5:** Provide funding for support facilities, including short- and long-term bicycle parking; a countywide bikeway signage scheme; locker rooms, showers and other amenities in public facilities for changing and for storing clothes and equipment; and devices for improving accessibility for people with disabilities.
- **Policy 1.6:** Update this plan every five years, particularly to incorporate needed changes to the list of proposed countywide projects.

Goal ❷: More People Riding and Walking for Transportation and Recreation

- **Policy 2.1:** Work with local, county and regional agencies and organizations—including those with a focus on public health—to develop effective encouragement programs that promote bicycling and walking as safe, convenient and healthy modes of transportation.
- **Policy 2.2:** Provide funding for effective support programs and events that encourage bicycling and walking among a broad range of potential users, including people with disabilities.
- **Policy 2.3:** Encourage local school districts to implement projects and activities that promote bicycling and walking to school among students and staff.
- **Policy 2.4:** Encourage local agencies and transit operators, such as SamTrans, Caltrain and BART, to work cooperatively to promote bicycling and walking to transit by improving access to and through stations and stops, installing bicycle parking and maximizing opportunities for on-board bicycle access.
- **Policy 2.5:** Promote integration of bicycle-related and walking-related services and activities into broader countywide transportation demand management and commute alternatives programs.
- **Policy 2.6:** Serve as a resource to county employers on promotional information and resources related to bicycling and walking.
- **Policy2.7:** Encourage local agencies to provide safe and convenient bicycle and pedestrian infrastructure for underserved communities.

Goal ❸: Improved Safety for Bicyclists and Pedestrians

- **Policy 3.1:** When allocating funds, place an emphasis on projects that address safety deficiencies, especially conflicts with motor vehicles, for bicyclists, pedestrians and people with disabilities.
- **Policy 3.2:** Promote collaboration among the Sheriff's Office, local police departments and other county and local agencies to develop and administer effective safety, education and enforcement strategies related to non-motorized transportation.

- **Policy 3.3:** Provide support for programs that educate drivers, bicyclists and pedestrians about their rights and responsibilities, as well as traffic education and safety programs for adults and youth.

Goal ❹: Complete Streets and Routine Accommodation of Bicyclists and Pedestrians

- **Policy 4.1:** Comply with the complete streets policy requirements of Caltrans and the Metropolitan Transportation Commission concerning safe and convenient access for bicyclists and pedestrians, and assist local implementing agencies in meeting their responsibilities under the policy.
- **Policy 4.2:** For local transportation projects funded by county or regional agencies, encourage that local implementing agencies incorporate "complete streets" principles as appropriate; that they provide at least equally safe and convenient alternatives if they result in the degradation of bicycle or pedestrian access; and that they provide temporary accommodations for pedestrians and bicyclists during construction.
- **Policy 4.3:** Monitor countywide transportation projects to ensure that the needs of bicyclists and pedestrians are considered in programming, planning, design, construction, operation and maintenance, and encourage local agencies to do the same for their projects.
- **Policy 4.4:** Provide support to local agencies in adopting policies, guidelines and standards for complete streets and for routine accommodation of bicyclists and pedestrians in all new transportation projects.
- **Policy 4.5:** Encourage local agencies to adopt policies, guidelines, standards and regulations that result in truly bicycle-friendly and pedestrian-friendly land use developments, and provide them technical assistance and support in this area.
- **Policy 4.6:** Discourage local agencies from removing, degrading or blocking access to bicycle and pedestrian facilities without providing a safe and convenient alternative.

Goal ❺: Strong Local Support for Non-Motorized Transportation

- **Policy 5.1:** Encourage all local jurisdictions to develop comprehensive bicycle and pedestrian plans, and provide assistance and support in this area as appropriate.
- **Policy 5.2:** Encourage all local jurisdictions to designate bicycle and pedestrian coordinators and to establish local bicycle and pedestrian advisory committees or provide other meaningful opportunities for public input on issues related to non-motorized transportation.
- **Policy 5.3:** Involve the public and local agencies meaningfully in making decisions about the planning, design and funding of bicycle and pedestrian projects, and maintain an open and accessible process for providing input and influencing decisions.
- **Policy 5.4:** Provide timely information to local jurisdictions on funding programs and sources not administered by C/CAG that may be used to implement bicycle and pedestrian facilities, and encourage them to submit applications for project funding.

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3 Existing Conditions

This section describes the status of bicycle and pedestrian facilities in San Mateo County as of 2010. By examining existing facilities, connectivity, gaps in the bicycle and pedestrian network, accessibility for all users, safety, and barriers to multi-modal travel, key opportunities and constraints are identified.

3.1 Bicycling and Walking Setting

Bicycling and walking in San Mateo County are affected by the county's geographic features, geographic distribution of population and employment, and transportation system. The county includes flat coastal areas that support everyday walking and bicycling, as well as mountainous areas that provide recreational bicycling opportunities. Residents, jobs, employment, and major transit and freeway corridors are concentrated in the eastern part of the County, and as a result, this area sees more walking and bicycling than other areas of the County. At the same time, the high concentration of through-movement corridors also creates barriers for bicyclists and pedestrians.

The following sections describe these three topics in more detail.

3.1.1 Geographic Features

San Mateo County is framed by the Pacific coast on the west and by the San Francisco Bay to the east. The Santa Cruz Mountains form a ridge along the San Francisco Peninsula from San Francisco to Salinas, separating the Pacific Ocean from San Francisco Bay. More than half a dozen watercourses flow through the county to drain into the ocean or the Bay. Geographic features, such as mountains, hills and streams, create barriers for bicyclists and pedestrians thereby limiting circulation. The mountain ranges and abundance of open space parks and reserves throughout the western portion of the county offer challenging and exciting bike rides to recreational bicyclists.

3.1.2 Development Pattern and Activity Centers

The county is home to 718,451 residents.[16] Topographic limitations and public policy in San Mateo County have limited urbanization to the eastern part of the county along the Highway 101 corridor. Downtowns, employment centers, and transit hubs are distributed throughout the county. Smaller activity centers also exist along Highway 1 in the more rural western part of the county.

The county's wide range of development patterns, from urban to rural, precludes a one-size fits all approach to bicycle and pedestrian planning. This Plan prioritizes improvements in the urbanized areas of the county, while also providing for rural areas. As an example, the design guidelines included in the CBPP's companion document, *A Resource Guide for the Education, Promotion, Funding, and Design of Pedestrian and Bicycle Facilities*, have been tailored to support recommended projects that are located throughout the county, in both urban and rural areas. **Figure 1** maps activity centers and destinations of countywide significance.

[16] 2008 American Community Survey

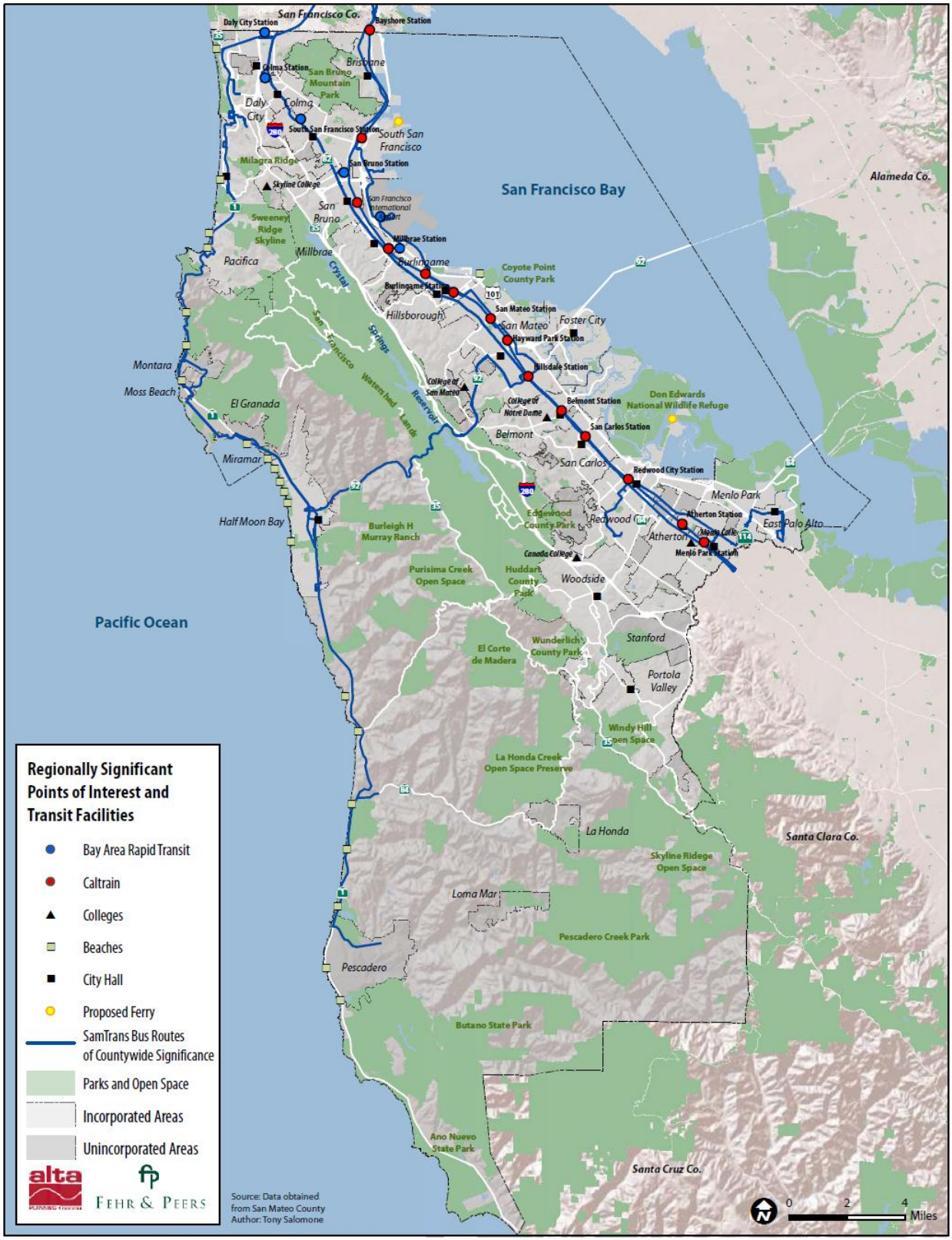

Figure 1: Activity Centers and Destinations of Countywide Significance

3.1.3 Transportation System

The geographic features and land use relationships in San Mateo County have resulted in a transportation system generally oriented in a north-south direction along the San Francisco Bay. Historically, each city developed with a focus on the downtown and around local railroad stations, resulting in a discontinuous street grid system from community to community. The County also has many populated unincorporated areas, such as North Fair Oaks and Montara, whose streets fall under the jurisdiction of County planning and public works agencies. The freeways, major arterials and rail lines that provide transportation between San Mateo County's communities are described below.

Freeways and Roadways

Major north-south arterials and freeways in San Mateo County include Highway 101, El Camino Real (State Route 82), Interstate 280, and Highway l. Major east-west freeways and roadways include Interstate 380, Woodside Road (State Route 84) and Highway 92.

Transit

San Mateo County is served by Caltrain, which provides commuter rail service along the San Francisco Peninsula; Bay Area Rapid Transit (BART), which provides train service throughout the San Francisco Bay Area; and the San Mateo County Transit District (SamTrans), which offers bus and paratransit services for the county. SamTrans has identified the following bus routes of countywide significance: El Camino trunkline service: Routes 390 and 391; Middlefield Rd. corridor: Route 296; Pacifica (Linda Mar) to Daly City BART connection: Route 110; Bayshore Highway (bayside east): Route 292, and Highway 92: Route 294. These are shown in **Figure 1**. C/CAG and SMCTA also fund numerous shuttles that provide access between transit stops and workplaces.

This Plan uses BART and Caltrain station access as a criterion for categorizing bikeway projects and uses bus and rail access to help identify pedestrian projects of countywide significance.

Airports

The San Mateo community is served by the San Francisco International Airport (SFIA). SFIA is one of the world's 30 busiest airports. The San Carlos Airport and Half Moon Bay Airport provide additional aviation access.

3.1.4 Barriers to Bicycle and Pedestrian Travel

The transportation features described above facilitate bicycle and pedestrian access throughout the county, but also act as barriers to bicyclists and pedestrians. These barriers are described below. **Chapter 6** of the CBPP provides recommendations for bicycle and pedestrian bridges and arterial-bikeway intersection improvements that address the barriers presented in this section.

Freeway and Roadway Barriers

Many roadway crossings of the interstates and highways are challenging and uncomfortable for bicyclists and pedestrians, particularly roadway crossings associated with interchanges. On- and off-ramps, high traffic volumes, and steep grades are particularly problematic for bicyclists. Intersections along Woodside Road, El Camino Real and other major arterials are typically configured to accommodate motorists, but do not always comfortably accommodate bicyclists and pedestrians. Shoulders along portions of Highway 92, particularly west of I-280, are often narrow or non-existent. The CBPP includes an inventory of freeway overcrossings and

undercrossings, interchanges, and intersections along major arterials that are relevant to bicycle and pedestrian travel in San Mateo County.

Transit Barriers

Transit services facilitate active transportation by enabling bicyclists and pedestrians to extend their travel distances. At the same time, limited crossings of rail lines within the county serve as barriers to east-west bicycle and pedestrian travel. Grade separated crossings can provide safe access across rail lines if designed to accommodate bicyclists and pedestrians. Retrofitting grade separated crossings with bike lanes, paths or sidewalks can be prohibitive, so often these crossings do not accommodate bicyclists and pedestrians and are gaps in an otherwise continuous bikeway or walkway network. At-grade crossings of rail lines are problematic for bicyclists when the rail tracks intersect the bicyclist line of travel at less than a 45 degree angle. Most at-grade rail crossings in San Mateo County are close to perpendicular, but there are some crossings, particularly of spur lines, that meet at an undesirable angle.

Airport Barriers

Airports are primary destinations not just for travelers, but also for employees of the airline and airport concessions. There is limited direct bicycle and pedestrian access to San Mateo County's airports, and in the eastern part of the county the Bay Trail alignment has been affected by the SFIA and the San Carlos Airport.

Bicycle/Pedestrian Bridges and Undercrossings

C/CAG and local agencies within San Mateo County have recognized the need for improved access over the barriers described above. **Table 1** lists existing bicycle and pedestrian bridges and undercrossings across the major barriers: Highway 101, Highway 280, Highway 1, and Caltrain.

Table 1: Summary of Existing Bicycle and Pedestrian Bridges and Undercrossings Across Major Barriers

Barrier	Type of Crossing	Location	City
Hwy 101	Bike-Ped Overcrossing	Monte Diablo Road	San Mateo
Hwy 101	Bike-Ped Overcrossing	Broadway	Burlingame
Hwy 101	Bike-Ped Overcrossing	Ringwood Ave./Pierce Rd.	Menlo Park
Hwy 101	Median path	3rd Avenue	San Mateo
Hwy 101	Bike-Ped Overcrossing	North of Ralston Avenue	Belmont (Under construction)
Hwy 280	Bike-Ped Overcrossing	State Route 92	Golden Gate National Recreation Area
Hwy 1	Bike-Ped Overcrossing	Oceana/Milagra	Pacifica
Hwy 1	Bike-Ped Overcrossing	Francisco Blvd/San Jose Ave.	Pacifica
Hwy 1	Bike-Ped Undercrossing	Brookhaven Ct	Pacifica
Hwy 1	Bike-Ped Undercrossing	Francisco Blvd/ Lundy Wy	Pacifica
Hwy 84	Bike-Ped Overcrossing	Near Middlefield Road	Redwood City
Caltrain	Bike-Ped Undercrossing	F St./Old County Rd.	Belmont/San Carlos
Caltrain	Bike-Ped Undercrossing	Arroyo Ave./Commercial St.	San Carlos
Caltrain	Bike-Ped Overcrossing	19th Avenue	San Mateo

Sources: Google Earth, Google Street View, City Surveys 2010, and Bike San Mateo County "Crossing Highway 101 by Bicycle *in San Mateo County", Draft August 2010.*

Table 2 summarizes the results of an inventory of roadway crossings of Highway 101, Interstate 280, Highway 1, and Caltrain tracks conducted for the CBPP. Three-quarters of the roadway crossings of these barriers provide sidewalks on one or both sides. The majority of crossings do not include bicycle facilities. Of the 83 roadway crossings inventoried, 18 percent provide bicycle lanes or a separated path or wide sidewalk for bicyclists and pedestrians.

Table 2: Summary of Road Crossings of Major Barriers (Highways 101,280, 1, and Caltrain)

Road Crossings of Major Barriers	Number	Percent
Bike lanes, path or sidewalk wide enough to accommodate bicyclists	15	18%
Sidewalk (one side)	13	16%
Sidewalk (both sides)	49	59%
No sidewalk	17	20%
Total road crossings	83	

3.2 Bicycle and Pedestrian Infrastructure Addressed in this Plan

The CBPP addresses the planning, design, and funding for a variety of types of bicycle and pedestrian infrastructure. General types of infrastructure are defined and illustrated below. More detailed specifications for bicycle and pedestrian infrastructure are provided in the CBPP's companion document, *A Resource Guide for the Education, Promotion, Funding, and Design of Pedestrian and Bicycle Facilities*.

3.2.1 Bicycle Infrastructure

Bicycle infrastructure in San Mateo County is governed by design standards developed by the California Department of Transportation (Caltrans). Local jurisdictions can make modifications to the Caltrans design standards, based on sound engineering judgment, but generally the Caltrans design standards are followed.

Figure 3 illustrates Caltrans' three types of bikeways as defined by the Highway Design Manual:

- **Multi-Use Path** (Class I) allows for two-way, off-street bicycle use and may be used by pedestrians, skaters, people in wheelchairs, joggers and other non-motorized users.
- **Bike lanes** (Class II) are defined as a portion of the roadway designated by striping, signage, and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes are generally appropriate for major arterial and collector roadways and are five to seven feet wide.
- **Bike Routes** (Class III) are defined as streets shared with motor vehicles and signed for bicyclists. They are appropriate for roads with low speeds and traffic volumes, however, can be used on higher volume roads that have wide outside lanes or shoulders.

In addition, **Shared Roadway Bicycle Markings** are included in the California Manual of Uniform Traffic Control Devices as an additional treatment for bike routes, and are currently approved in conjunction with on-street parking. The shared roadway bicycle marking (can serve a number of purposes, such as

making motorists aware of the need to share the road with bicyclists, showing bicyclists the direction of travel, and, with proper placement, reminding bicyclists to bike further from parked cars to prevent "dooring" collisions.

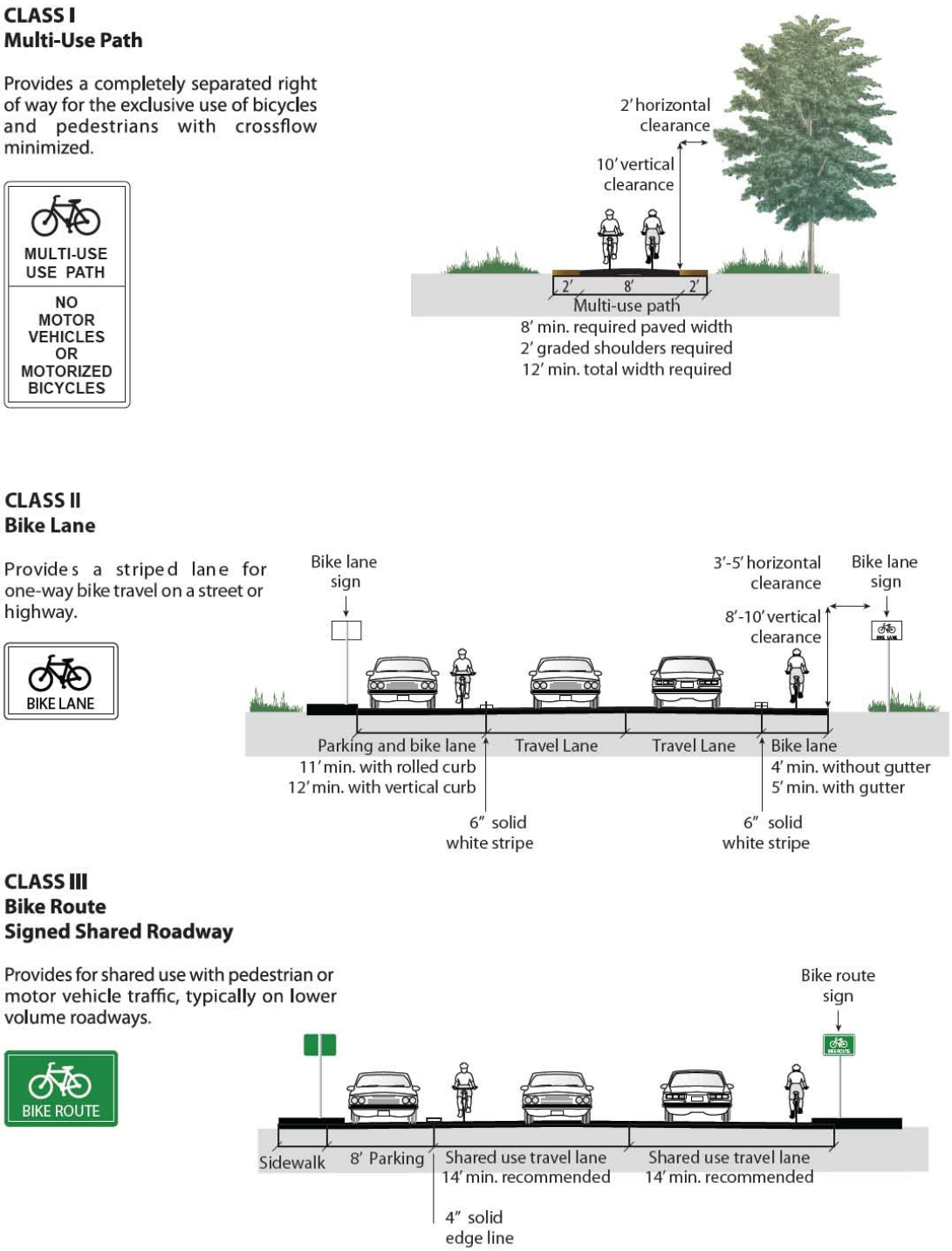

Figure 2: Caltrans Design Standards for Bicycle Facilities

In addition to these standard Caltrans designs, some communities have constructed more innovative bikeways. Innovative bikeway design treatments, such as colored bicycle lanes and bicycle boulevards, are described in more detail in *A Resource Guide for the Education, Promotion, Funding, and Design of Pedestrian and Bicycle Facilities*.

Bicycle infrastructure also includes support systems such as bicycle racks and lockers, changing and shower facilities, wayfinding signage, signal detectors, and other items that make it possible to ride a bicycle.

3.2.2 Pedestrian Infrastructure and Support Facilities

Pedestrian infrastructure addressed by this Plan includes shared use paths (see **Figure 2**), pedestrian-only paths, bicycle and pedestrian bridges, sidewalks, and other public spaces.

Depending on the location and available right-of-way, sidewalks consist of one or multiple zones (see **Figure 3**). Each zone is defined by the predominant activity or feature that occurs there. The Americans with Disabilities Act Accessibility Guidelines (ADAAG) governs the minimum design for pedestrian facilities in the public right-of-way, and requires a minimum clear width of 36 inches.

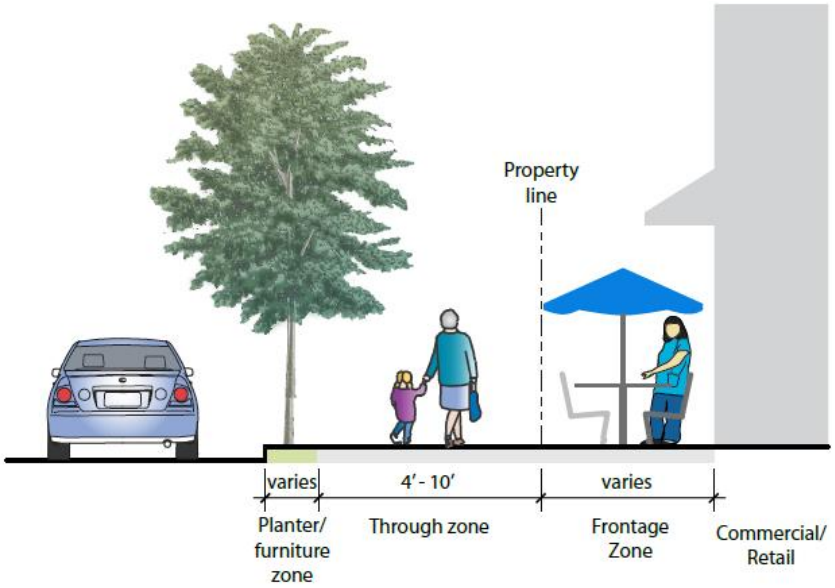

Figure 3: Sidewalk Zones

Pedestrian support facilities include amenities and infrastructure supporting pedestrian travel. Support facilities include, but are not limited to, pedestrian countdown signals and push-buttons, crosswalk markings, warning signage, street furniture, lighting, and wayfinding signage.

Support facilities for pedestrians include wayfinding and signage, street furniture, street trees and pedestrian scale lighting. Providing amenities for pedestrians along their route makes for a more enjoyable and comfortable

walking experience, thus encouraging more walking. Amenities are an essential aspect of street infrastructure that makes pedestrians a priority within the streetscape. These elements enhance the pedestrian realm by serving as functional aspects that serve the needs of walkers while enhancing the character of the street.

3.3 Existing Bikeways

The 2000 *San Mateo County Comprehensive Bicycle Route Plan* identified a 231-mile network of east-west and north-south bicycle routes of countywide significance. Fifteen were identified as key projects. Since 2000, cities and the County have constructed a significant number of bikeways along that network. **Table 3** summarizes the status of the countywide bicycle route network identified in 2000. As of 2010, 141 miles of the 230-mile countywide bicycle route network identified in 2000 have been constructed. The recommendations described in subsequent chapters further expand the 2000 CBN.

Table 3: 2000 Countywide Bicycle Route Network Status

2000 Countywide Bikeways	Off Street	On Street	Total
Existing	42	99	**141**
Yet to be Constructed	12	78	**90**
Total Mileage	**54**	**177**	**231**
Percent Complete	78%	56%	61%

Source: Interviews conducted with towns, cities, and County, Summer and Fall 2010.

In implementing these routes, cities often made modifications to meet local conditions and needs. Significant gaps still exist in the network identified in 2000. The bicycle network identified in 2000 does not include all regional routes identified by MTC's 2009 *Regional Bicycle Plan for the San Francisco Bay Area*, further described in Appendix D. The MTC Plan identifies the regional bikeway network and addresses gaps and connections. In addition the North-South Bikeway identified in the 2000 plan has since been refined.

3.3.1 Status of the 2000 Bicycle Route Network Priority Projects

Pursuant to the adopted *2000 Comprehensive Bicycle Route Plan*, C/CAG prioritized implementation of the fifteen priority projects areas identified therein. **Table 4** summarizes the status of these projects, based on communication with the local jurisdictions.

Table 4: Status of 15 Key Projects Identified in 2000 Comprehensive Bicycle Route Plan

Project Name	Jurisdiction(s)	Description	Status (2010)
1. North-South Bikeway Signing Project	Menlo Park, Atherton, San Mateo County, Redwood City, San Carlos, Belmont, San Mateo, Burlingame, Millbrae, San Bruno, South San Francisco, Colma, Daly City, Brisbane	Directional signage and bicycle signal detection along 37.4-mile corridor in eastern part of County paralleling El Camino Real.	Partially implemented. North south route identified collaboratively by cities and Silicon Valley Bicycle Coalition
2. Colma-Millbrae Bikeway Project	Millbrae, San Bruno, South San Francisco, Colma	Multi-use trail or on-street alternative between Colma and Millbrae located within or proximate to BART right-of-way. Mandated as part of BART SFIA extension.	Bike Lanes provided along Junipero Serra Blvd. from Daly City to Avalon Drive. A Class I trail has been constructed between South San Francisco and San Bruno BART Millbrae completed a Class I path along Monterey Avenue
3. Ralston Avenue Bikeway Projects	Belmont, San Mateo County	Improvements along Ralston Avenue, including bicycle-pedestrian bridge over Highway 101 in Belmont, connections to Caltrain Station.	Bike lanes constructed between 6th Avenue and Villa Avenue in Belmont Ralston Avenue overcrossing currently in construction
4. North-South Bikeway (Southern Section)	Menlo Park, Atherton, San Mateo County, Redwood City	Signal improvements, signing, striping for bicyclists along Middlefield Road, El Camino Real, 5th Avenue, and Semicircular Road through Menlo Park, Atherton and Redwood City.	Atherton: Partially implemented. Bike lanes on Middlefield Road, Selby Lane Redwood City: Partially implemented, remainder in progress Also see North-South bikeway status

Project Name	Jurisdiction(s)	Description	Status (2010)
5. San Mateo County Bay Trail	Redwood City, San Carlos, Menlo Park	Gap closure between Bayfront Park in Menlo Park and Redwood Shores in Redwood City, composed of on- and off-street improvements.	Redwood City: Partially implemented; one Bay Trail gap closure will be completed with RBP grant funding
6. Recreational Route Bikeway Improvements	San Mateo County, Portola Valley, Woodside	Variety of improvements (signing, striping, shoulders, bridges, increased maintenance) along recreational routes in Woodside, County and Portola Valley. Consider Bear Gulch Road as alternative to La Honda Road. Paved route on Upper Alpine Road.	San Mateo County: striping and paving on Canada Road, bike lanes on Alpine Road to Stanford lands. Woodside: Bike lanes on Woodside Road from Alameda de lasPulgas to Kings Mountain Road
7. North Coast Bikeway	Pacifica, Daly City, Half Moon Bay	Pathway, wide shoulders, directional signing connecting Daly City, Pacifica and Half Moon Bay. Includes multi-use path on Highway 1.	Daly City: Bike lanes on Southgate Avenue Pacifica: Bike lanes on Palmetto Avenue, bike path along most of Highway 1 to San Pedro Mountain Road
8. North-South Bikeway (Old County Road Section)	Redwood City, San Carlos, Belmont, San Mateo	Connections to Old County Road. Bike lanes (if feasible) along Old County Road. Redwood City, San Carlos, Belmont, San Mateo. Connection through Bay Meadows.	Redwood City : Completed; San Carlos: Funding secured; Belmont: Proposed; San Mateo: completed from just north of Belmont City limit to Bay Meadows along Pacific Boulevard. Bike path is temporary and will be eliminated upon build-out of Bay Meadows Phase II. Also see North-South bikeway status

Project Name	Jurisdiction(s)	Description	Status (2010)
9. Coastside Bikeway Projects	San Mateo County, Half Moon Bay	Improvements to Highway 92 between Half Moon Bay and Highway 280.Including improvements to Highway 92/Highway 35 intersection. Suggests 7-foot shoulders on Hwy 92 between Hwy 1 and Hwy 35, pathway along Hwy 92 between Hwy 35 to I-280 bike-ped overcrossing. Extension of multi-use trail along Hwy 1 north and south from Half Moon Bay.	San Mateo County: portions of the coast side trail project. Half Moon Bay: Construction of multi-use path along Highway 1.
10. Highway 101/Willow Road Interchange Project	Menlo Park, East Palo Alto	Recommends feasibility study to identify how Willow Road/Highway 101 interchange in East Palo Alto/Menlo Park can be made more bicycle-friendly. Recommends bicycle improvements if interchange is programmed for retrofitting.	Currently in the preliminary engineering phase. East Palo Alto is conducting a survey of schools in the immediate vicinity prior to deciding upon preliminary engineering and specifications to ensure that the design meets current and future needs.
11. North-South Bikeway (Bayshore Corridor)	San Bruno, South San Francisco, Brisbane	Improvements, including shoulders or bike lanes along Huntington Avenue, Herman Street, South Linden Avenue, Linden Avenue, 4th Avenue, Airport Boulevard, and Bayshore Boulevard in South San Francisco and Brisbane. Suggests studying an alternative corridor east of Highway 101.	Partially implemented. South San Francisco: Bike lanes on Airport Blvd and Gateway Blvd, signage on S. Airport Blvd Brisbane: Bike lanes on Sierra Point Parkway and Bayshore Blvd San Bruno: On-street facilities proposed

Project Name	Jurisdiction(s)	Description	Status (2010)
12. Highway 101/Broadway Bikeway Project	Burlingame	Recommends feasibility study to identify how Broadway/Highway 101 interchange in Burlingame can be made more bicycle-friendly. Recommends bicycle improvements if interchange is programmed for retrofitting.	Broadway Bike Ped Bridge constructed. Highway 101/Broadway Interchange in Project Study Report (PSR) phase.
13. North-South Bikeway (Delaware-California Section)	City of San Mateo, Burlingame, Millbrae	On-street improvements from Bay Meadows Race Track in San Mateo to El Camino Real/Center Street intersection in Millbrae.	Millbrae: Proposed on-street facilities. Burlingame: Class III Route on California Drive City of San Mateo: implemented with a combination of Class I, II, and III bikeways.
14. Crystal Springs-3rd/4th Avenue Bikeway	City of San Mateo, County of San Mateo	Improvements along corridor between San Mateo downtown and trailhead for Sawyer Camp Bicycle Trail. Includes providing consistent shoulder width on Crystal Springs Road, signal timing on 3rd and 4th Streets to slow traffic to 20 mph, signing, striping and curb/lane reconfiguration.	City of San Mateo: partially completed. San Mateo County: portions of Crystal Springs Road completed

Project Name	Jurisdiction(s)	Description	Status (2010)
15. San Francisco International Airport East Side/Bay Trail Project	Millbrae, SFIA, San Bruno	Feasibility study of bike path through SFIA's West-of-Bayshore property. Suggests studying an east side connection between Burlingame and South San Francisco on McDonnell Road and Airport Access Road, but notes there are safety, physical and design problems. Completing Bay Trail gaps in Burlingame.	Millbrae completed Project Study Report for the Millbrae Avenue pedestrian overcrossing. San Bruno: Class I Path proposed at city limits. SFIA: Bike lanes striped on McDonnell Road. Shared lane markings exist.

Source: City Surveys, San Mateo County Bicycle Map Data, 2010

3.4 Existing Pedestrian Conditions

This section begins with a general description of pedestrian infrastructure in the county, discusses population densities and land uses that are conducive to pedestrian activity, and includes a discussion of the projected dramatic increase in the aging population in San Mateo County.

3.4.1 Pedestrian Infrastructure

Provisions for pedestrians and the quality of pedestrian infrastructure vary throughout the county. Older downtowns, particularly those along the 101 corridor, are walkable, with small blocks, narrow roads, sidewalks on both sides, and vibrant storefronts. Several communities have invested significantly to enhance the walkability in their downtowns.

Major roadways (such as El Camino Real, Woodside Road, and Highway 1) are wide, have high traffic volumes and infrequent crossings, and act as pedestrian barriers. Pedestrian amenities along these roadways are often lacking, and fronting property tends to be auto-oriented. Highway 1 lacks sidewalks or pathways along most of its length, although pathway segments have been constructed in some coastal communities; pathways along Highway 1 in Half Moon Bay are well used and highly appreciated by the community. El Camino Real remains a barrier to pedestrians and, in many cities, separates residential and downtown areas from the Caltrain stations. Efforts are underway in the county to enhance pedestrian access along and across El Camino Real as part of the *Grand Boulevard Multimodal Transportation Corridor Plan.*

The county's freeways and rail lines create significant barriers to pedestrian access. Several communities have constructed roadway overcrossings of these barriers and basic pedestrian access has typically been provided. Of the 83 roadway crossings of Highways 101, 280, 1, and Caltrain, 80 percent have sidewalks and 59 percent of all roadway crossings have sidewalks on both sides. See **Table 2** for a summary of pedestrian amenities provided on roadways that cross the county's major barriers. Despite these efforts at accommodation, much more can be done to improve the pedestrian experience, particularly at freeway on- and off-ramps.

The county's transit systems are an important part of the pedestrian network. However, the quality and connectivity of pedestrian access to BART and Caltrain stations varies. Major roadways or the tracks themselves often act as pedestrian barriers. A handful of communities have constructed pedestrian under- or overcrossings of the Caltrain tracks or major roadways. These are listed in **Table 1**. In some cases, these crossings are well designed and provide direct access to the stations. In other cases, pedestrians sometimes must travel a distance to the next safe rail crossing.

3.4.2 Employment and Population Densities

Population and employment density significantly influence pedestrian activity. Densities range from 450 persons per square mile to 13,700 persons per square mile (see **Figure 4**). Population density within the county is concentrated along El Camino Real, as shown in **Figure 6**. Some cities are dense, with five cities (Daly City, East Palo Alto, Foster City, San Mateo and San Bruno) having higher average densities than Oakland, California. These higher densities provide a significant opportunity for walking within the county.

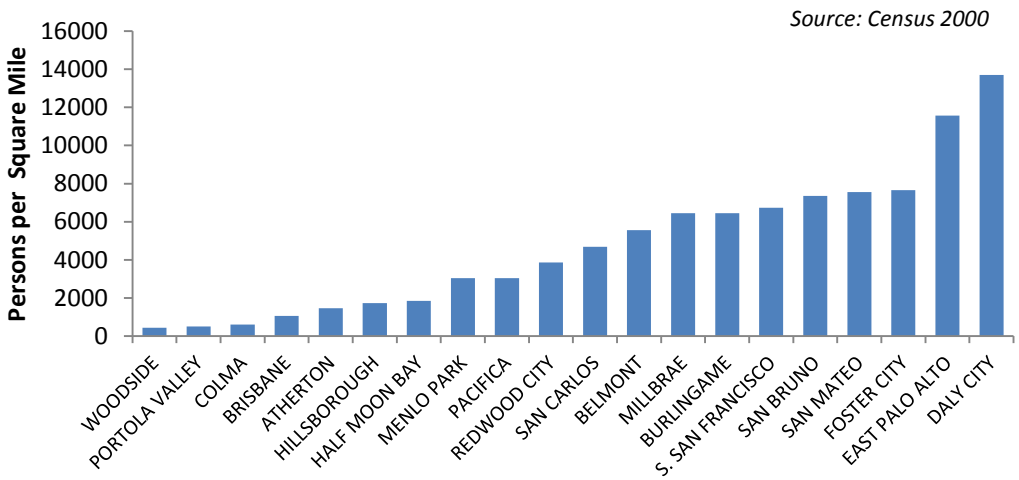

Figure 4: Population Density by Jurisdiction

Employment density is another important factor to determine future walking needs. Employment density is also concentrated along El Camino Real, as shown in **Figure 7**. The cities of East Palo Alto, Redwood City, and San Bruno have the highest average employment densities, though there are also high concentrations of employment in the east of Highway 101 in South San Francisco and in Foster City south of State Route 92.[17] Areas with both high population and employment densities are most likely to have higher pedestrian activity, and are good areas to target for focused pedestrian improvements.

3.4.3 Projected Growth of Senior Population

Population within the County is expected to grow to 842,000 by 2030 from 718,451.[18] This equates to a 17 percent increase, which is less than the projected growth of the entire Bay Area at 19 percent. Of this new population, there will be an increasing number of older adults. The needs of seniors will become an increasing concern for San Mateo County. Planning for this growing population demographic will create new demands on the county's pedestrian network, as community walkability and pedestrian safety is a key element to senior mobility and accessibility.

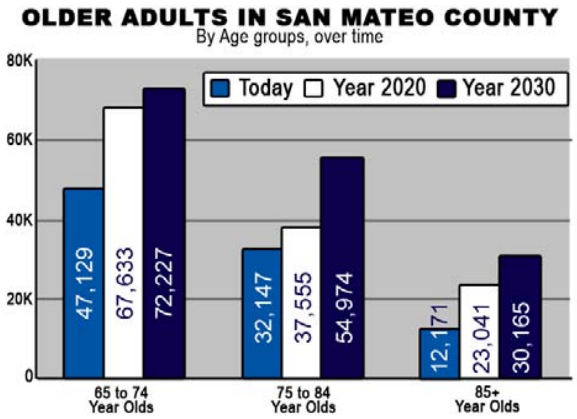

Figure 5: Projected Growth of Senior Population

Source: San Mateo County Aging Model

As shown in Figure 5, the *County Aging Model* predicts a 72 percent increase in people over 65 by 2030. The largest population increase will occur in adults over the age of 85, with a 150 percent increase to

[17] ABAG, 2007
[18] U.S. Census Bureau, 2010

total 30,000 in San Mateo County by 2030. Older adults will be a growing target demographic for pedestrian improvements, indicating the need for special programs to address mobility for seniors.

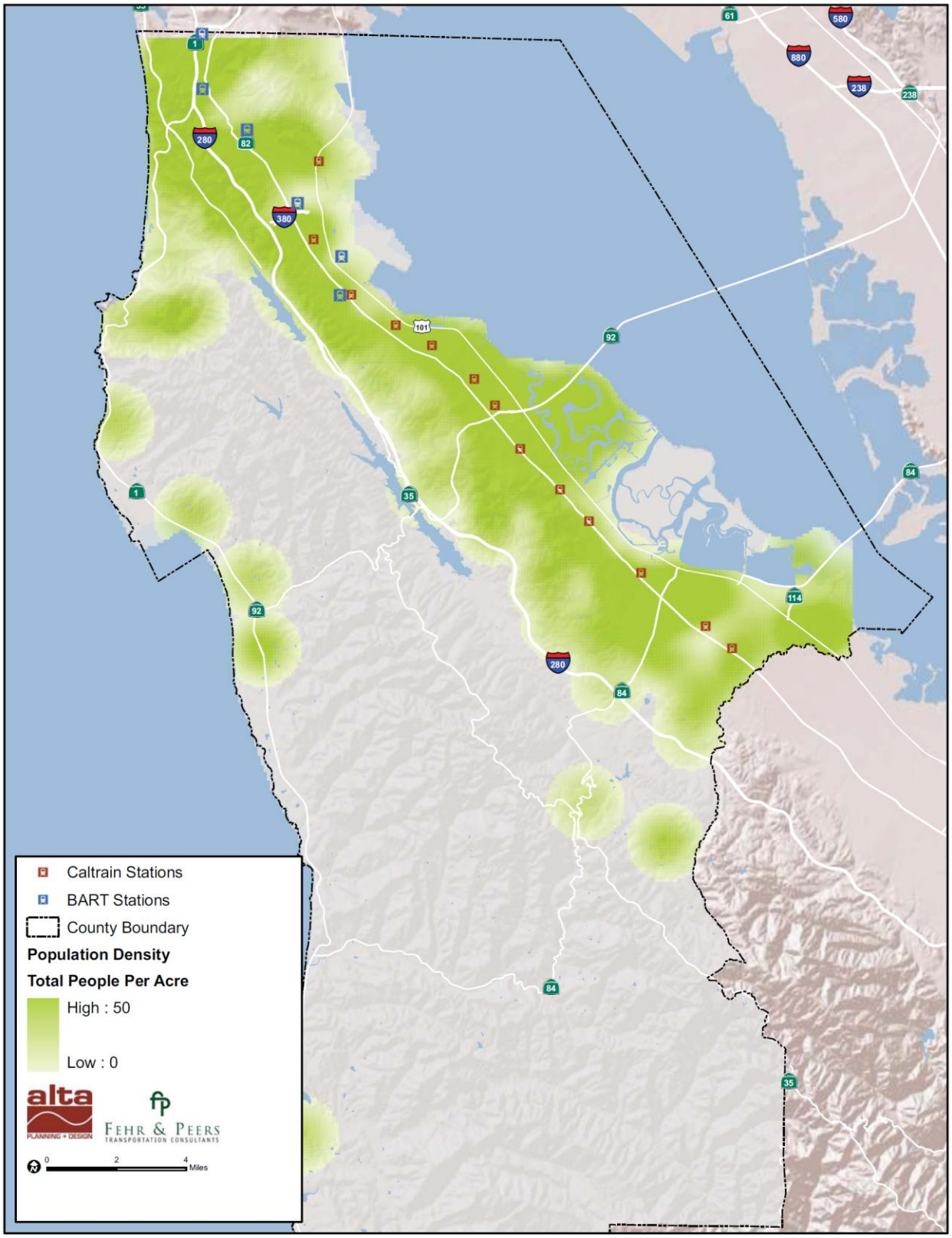

Figure 6: Map of Population Density Per Acre in San Mateo County

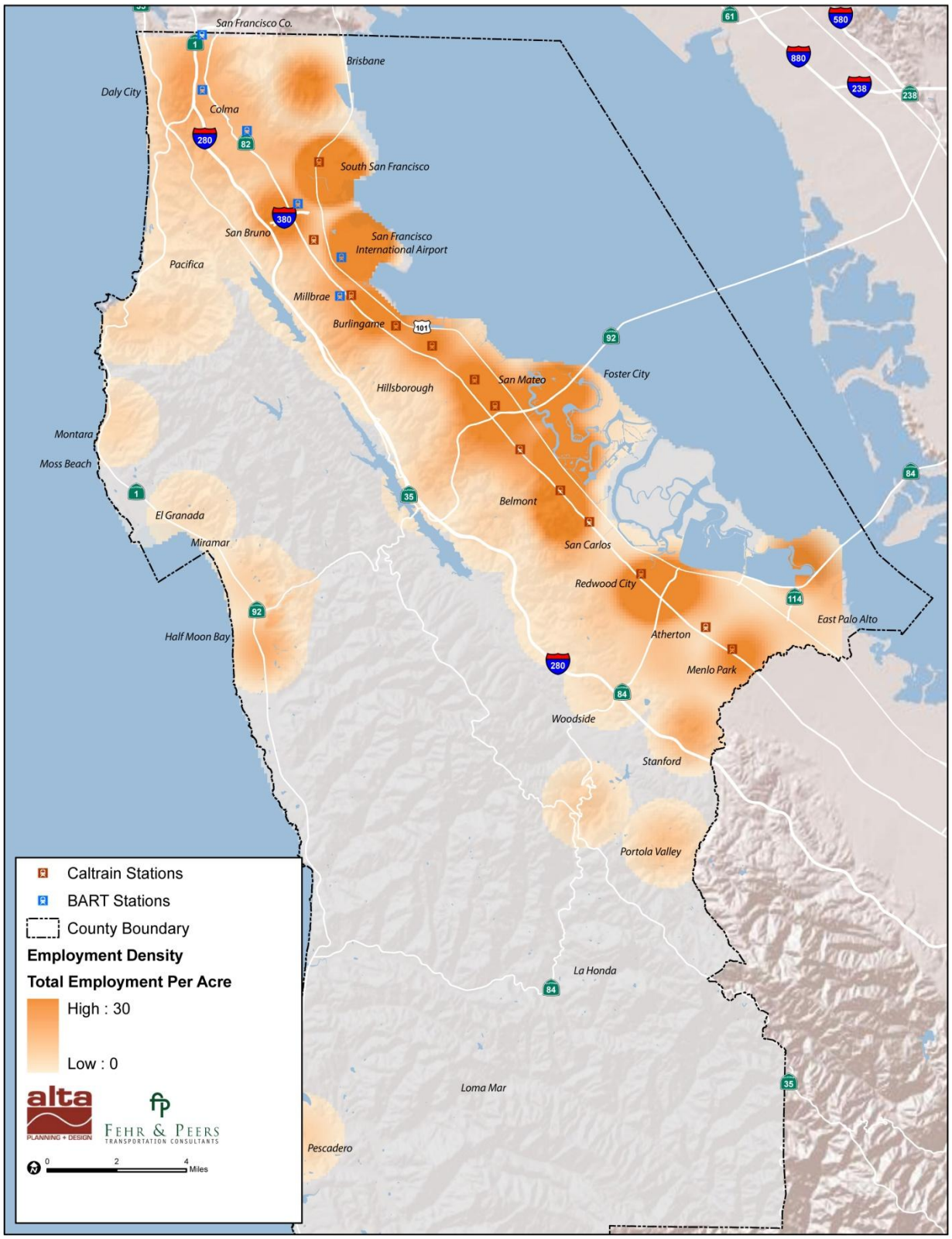

Figure 7: Map of Employment Density Per Acre in San Mateo County

3.5 Pedestrian and Bicycle Education, Encouragement and Enforcement Programs

Increasingly, public agencies are realizing the importance of providing programs and activities to support and promote walking and biking. These programs go beyond the typical public agency role of planning, designing, funding, and constructing bicycle and pedestrian infrastructure. Several local, regional, state and federal funding sources can be used for program implementation. The CBPP's companion document, *A Resource Guide for the Education, Promotion, Funding, and Design of Pedestrian and Bicycle Facilities*, describes programs local jurisdictions may wish to implement.

Several existing programs within San Mateo County complement and support walking and bicycling. These include, but are not limited to:

Bike to Work Day

Bike to Work Day is an annual Bay Area event in which people are encouraged to leave their car at home for a day and bicycle to work. Volunteers at Energizer Stations hand out snacks and beverages to commuting bicyclists, and companies are encouraged to participate in mileage contests such as the Team Bike Challenge. In 2004, the Metropolitan Transportation Commission (MTC) awarded the Bay Area Bicycle Coalition (BABC) with a contract to coordinate the regional Bike to Work Day event for the nine counties in the San Francisco Bay Area. Within San Mateo County, Energizer Stations are coordinated by the Peninsula Traffic Congestion Relief Alliance in partnership with the Silicon Valley Bicycle Coalition.

Streets Alive San Mateo County

Streets Alive organizes open streets throughout San Mateo County. Open streets are temporary events where a street is closed to motor vehicle traffic and opened to bicyclists, walkers, joggers, and all other forms of active transportation. Often, free entertainment, food, and other activities are provided along the street. Streets Alive promotes creative use of public spaces to promote social connection and physical activity.

Great Race for Clean Air

The Spare the Air Program was established by the Bay Area Air Quality Management District (BAAQMD) to educate people about air pollution and to encourage them to change their behavior to improve air quality. As a Spare the Air program, The Great Race for Clean Air is a competition between employers to encourage employees to use commute alternatives to driving alone such as ridesharing, carpooling, vanpooling, biking, walking, or riding transit. The BAAQMD and local Air Quality Resource Team provide participants with information on commute alternatives and one-on-one support, if requested.

County Employees Commute Alternatives

San Mateo County Commute Alternatives Program (CAP) is dedicated to reducing traffic congestion and associated air pollution emissions, conserving energy, and improving the quality of life for employees and the community by offering commute incentives to its employees that promote the use of alternate transportation modes. CAP features a transit pass; vanpool, carpool, bike, and walk subsidies; a rideshare match service; a Guaranteed Ride Home Program; carpool-only parking facilities; and a bike locker program.

Regional Rideshare 511 Program

The 511 Regional Rideshare Program is operated by MTC and is funded by grants from the FHWA, U.S. DOT, MTC, the BAAQMD and county congestion management agencies. The 511 Rideshare program seeks to reduce traffic congestion and auto emissions by encouraging the use of carpools and vanpools and employer transpor-

tation demand management programs. Participants may receive tax benefits, free transit passes, discounted bridge tolls, and cash by carpooling. The San Mateo County CAP is linked with the 511 Ridematch Service and can assist commuters traveling into or out of San Mateo County.

San Mateo County Safe Routes to School Program

In 2011, C/CAG received funding from MTC to establish a countywide Safe Routes to School Program focusing on education, encouragement, and enforcement strategies to promote walking and bicycling to school. As of August 2011, the San Mateo County Office of Education was developing the program.

4 Relevant Plans, Policies and Guidelines

The CBPP will build on and support a number of plans, policies and projects of other agencies. These other planning efforts are being conducted by a variety of public agencies and are occurring not only at the local level but also at the county, regional, state and federal levels. This section provides an overview of the planning framework for bicycling and walking in San Mateo County. It summarizes the key planning efforts that will affect, and in some cases be affected by, implementation of the CBPP.

Appendix D describes the key related state, regional and county plans.

4.1 C/CAG Plans and Policies

Among other functions, C/CAG is the Congestion Management Agency for San Mateo County, and is tasked with alleviating and managing traffic congestion in the county. Planning for bicyclists and pedestrians is a key element of this task. Four primary C/CAG plans and policies are relevant to the CPBB.

- *San Mateo County Comprehensive Bicycle Route Plan* (2000)-The CBPP updates this plan and adds a new pedestrian component.
- *Countywide Transportation Plan* (CTP) (2001)-The overall goal of the CTP is to reduce traffic congestion in San Mateo County. It contains policies supporting bicycle-transit integration and pedestrian-supportive land uses.
- *Congestion Management Plan* (CMP) (Being updated currently, 2011)-This plan identifies the CMP roadway system and sets performance measures (including Level of Service) for the system. Bicycle and pedestrian projects recommended in the CBPP should consider these performance measures.
- *Countywide Transportation Plan* 2035 (in development) -This update to the 2001 CTP includes draft vision, goals, objectives and policies for bicycling and walking.

4.2 National, State, Regional, Countywide Plans and Policies

Numerous plans and policies at the national, state, Bay Area and county level guide bicycle and pedestrian planning.

At the national and state levels, policy statements such as the U.S. Department of Transportation's "Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations" in March 2010, and Caltrans 2008 Deputy Directive 64-R1 "Complete Streets—Integrating the Transportation System," state the agencies' intentions to provide for bicyclists and pedestrians in all transportation facilities. The California legislature has passed two bills that require government agencies to develop plans for reducing greenhouse gas emissions, California Global Warming Solutions Act (AB 32) (2006), and California Senate Bill 375 (2008). Walking and bicycling efforts will be a key component of these plans. The California Legislature also passed AB 1358 (2007), the "Complete Streets Act," which requires cities and counties, upon revision of their general plan, to identify how the jurisdiction will provide for the routine accommodation of all roadway users, including bicyclists and pedestrians. The Act first took effect in January 2009.

At the regional level, the Metropolitan Transportation Commission (MTC) has adopted policies supporting walking and bicycling, and developed plans and studies that focus on walking, bicycling, and equitable provision of mobility. Of key importance to the CBPP are MTC's *Regional Bicycle Plan for the Bay Area* (2009), which identifies regional bikeway connections in the Bay Area, and the agency's *Regional Policy for the Accommodation of Non-Motorized Travelers* (2006), which requires agencies requesting funding to fill out a checklist describing how transportation projects accommodate bicyclists and pedestrians. The CBPP's Countywide Bikeway Network includes regionally significant bikeways in San Mateo County identified in the *Regional Bicycle Plan*.

Also at the regional level, the Association of Bay Area Governments (ABAG) has planned for and supported the construction of the Bay Trail within San Mateo County. ABAG's plan, *The Bay Trail: Planning for a Recreational Ring around San Francisco Bay* (1989), and subsequent *San Francisco Bay Trail Gap Analysis* (2005) outline plans for a 400-mile loop around the San Francisco Bay. The CBPP includes the San Mateo segments of the Bay Trail as bikeways of countywide significance.

At the county level, SMCTA's *Strategic Plan* guides the allocation of Measure A funding for numerous transportation projects through, including bicycle and pedestrian projects. Three percent of Measure A revenues through 2033 are allocated toward bicycle and pedestrian projects. Caltrain has developed bicycle access plans and conducted rider surveys that provide information about access modes. *San Mateo County's Trails Plan*, which is being developed by San Mateo County, contains proposed alignments for trails that inform east-west connections identified in the CBPP. Other San Mateo County planning efforts such as the *Highway 1 Safety and Mobility Improvement Study*, and planning documents for the Coastal Trail and the Parallel Trail inform the CBPP's recommendations for portions of Unincorporated County along the Highway 1 corridor.

4.3 Local Plans and Policies

The CBPP seeks to build upon and support local bicycle and planning efforts. In San Mateo County, the Circulation Element of General Plans most often addresses local bicycle and pedestrian planning. Outside of General Plans, bicycle and pedestrian planning is also addressed as part of area plans. Of note:

- Four cities have bicycle master plans.
- There are no cities with pedestrian master plans, but at least two cities are planning to develop them.[19]
- No cities have a dedicated bicycle and pedestrian coordinator.
- Eight of twenty cities have a bicycle or pedestrian advisory committee.

Table 5 lists the bicycle and pedestrian-related planning efforts by the local jurisdictions.

[19]Menlo Park has a Sidewalk Master Plan, but this plan primarily provides design guideline, and does not deal with pedestrian mobility and access to destinations.

Table 5: Local Bicycle and Pedestrian Planning Efforts

Jurisdiction	Bicycle or Pedestrian Master Plan	Other Relevant Plans	Bike/Ped Advisory Committee?
Town of Atherton	General Plan, Circulation Element (2002)	--	Transportation Committee
City of Belmont	General Plan (1982)	Downtown Specific Plan (1990)	BAC
City of Brisbane	General Plan, Circulation Element (1994)	--	BPAC
City of Burlingame	Bicycle Transportation Plan (2004)	Bayfront Specific Plan, North Burlingame Specific Plan (2004)	BPAC
Town of Colma	General Plan, Circulation Element (1999)	--	No
City of Daly City	Bicycle Master Plan (2004) General Plan, Circulation Element (1987)	Comprehensive Accessibility and Mobility Plan --	BPAC
City of East Palo Alto	General Plan, Circulation Element (1999)	Bay Access Master Plan (2007)	Public Works and Transportation Committee
City of Foster City	General Plan (1993)[20]	--	Ad-Hoc Transportation Committee
City of Half Moon Bay	General Plan, Parks and Recreation Element (1995) General Plan, Circulation Element (1992)	-- --	Parks and Recreation Commission
Town of Hillsborough	General Plan, Circulation Element (2005)	Climate Action Plan (2010)	No
City of Menlo Park	Comprehensive Bicycle Development Plan (2005) Sidewalk Master Plan (2009)	Neighborhood Traffic Manage-ment Plan (2004) Climate Action Plan (2009)	Bicycle Commission
City of Millbrae	General Plan, Circulation Element (1998)	Bicycle and Pedestrian Transpor-tation Plan (2009)	Parks and Recreation Commission and BPAC Sub-Committee
City of Pacifica	General Plan, Circulation Element (1980), Pacifica Bike Plan (2000)	Strategic Plan (2006)	Bicycle Advisory Subcommittee to the Open Space Committee

[20] Finalizing Circulation Element update

Jurisdiction	Bicycle or Pedestrian Master Plan	Other Relevant Plans	Bike/Ped Advisory Committee?
Town of Portola Valley	General Plan, Circulation Element (2003) General Plan, Sustainability Element (2009)	-- --	Use Traffic Committee
City of Redwood City	General Plan, Circulation Element (2010)	Downtown Precise Plan (2011)	Complete Streets Advisory Committee (proposed)
City of San Bruno	General Plan, Transportation Element (2009)	--	BPAC
City of San Carlos	General Plan, Circulation Element (2009) Bicycle Transportation Plan (2003)[21]	Climate Action Plan (2009) --	Transportation and Circulation Commission
City of San Mateo	General Plan, Circulation Element (2010) Bicycle Master Plan[22] Pedestrian Master Plan[23]	Sustainable Initiatives Plan (2007) Climate Action Plan (2008) Downtown Area Plan (2009)	Public Works Commission
City of South San Francisco	General Plan, Transportation Element (N/A) Bicycle Master Plan (2011)	--	BPAC
Town of Woodside	General Plan, Circulation Element (1988)	Town Center Plan ; Skylonda Plan (1988)	Bicycle Committee
County of San Mateo	San Mateo County Trails Plan (2001) Being updated 2011.	ADA Transition Plan (N/A)	No

[21] Currently being updated
[22] Bicycle Master Plan is expected to be adopted in July, 2011
[23] Pedestrian Master Plan is expected to be adopted in August, 2011

5 Needs Analysis

This chapter discusses the general needs and preferences of bicyclists and pedestrians, analyzes bicyclist and pedestrian collision patterns in San Mateo County, and identifies land use and population trends within and surrounding the county. The purpose of this analysis is to understand and assess the needs of bicyclists and pedestrians and identify how the CBPP will meet those needs.

5.1 Bicyclists' General Needs and Preferences

The CBPP addresses the needs of all bicyclists. It is important to understand the range in bicyclists' skill levels in order to develop a successful plan. The skill level of the bicyclist greatly influences travel speeds and behavior. Understanding the behavioral characteristics and transportation infrastructure preferences of different bicyclists is an important part of the planning process. Bicycle infrastructure should accommodate as many user types as possible, and provide a comfortable experience for the greatest number of bicyclists.

Survey data and anecdotal evidence support four categories to address the population's varying attitudes towards biycling:

- **Strong and Fearless (Less than 2 percent)**. These bicyclists typically ride anywhere on any roadway regardless of roadway conditions or weather. They can ride faster than other user types, prefer direct routes and will typically choose on-street facilities – even if shared with vehicles – over separate bicycle facilities such as bicycle paths. Less than two percent of the population can be categorized as 'Strong and Fearless' bicyclists.
- **Enthused & Confident (13 percent)**. These bicyclists are confident and comfortable riding on all types of bicycle facilities but will usually prefer low traffic streets or multi-use pathways when available. They may deviate from a more direct route in favor of a preferred facility type. This group includes all kinds of bicyclists including commuters, recreationalists, racers, and utilitarian bicyclists. Approximately 13 percent of the population fall under the category of 'Enthused & Confident' bicyclists.
- **Interested but Concerned (60 percent)**. These bicyclists do not ride a bicycle regularly. They typically only ride a bicycle on low traffic streets or bicycle paths under favorable conditions and weather. They perceive traffic and safety as significant barriers to increased use of bicycling. These bicyclists may ride more regularly with encouragement, education and experience. Approximately 60 percent of the population can be categorized as 'interested in cycling but concerned about safety.'
- **No Way No How (25 percent)**. Approximately 25 percent of the population are not bicyclists, and perceive severe safety issues with riding in traffic. A significant portion of these people will never ride a bicycle under any circumstance.

Figure 8: Types of Bicyclists

This Plan considers all types of bicyclists and includes recommendations that support them, but primarily focuses on the 'Interested but Concerned' bicyclist as the group most likely to shift modes to bicycling if given safe and comfortable bikeways.

5.2 Pedestrians' General Needs and Preferences

At some point in nearly any journey, a person is a pedestrian. Pedestrians need to know that when they get off a bus or train, or when they park their car, they will be able to walk comfortably, safely, and quickly to their final destination.

All pedestrians have several needs in common, including safety, connectivity, and accessibility to destinations. Pedestrian infrastructure should also consider those with special needs, including children, seniors, and people with mobility impairments. The Americans with Disabilities Act (ADA) mandates that reasonable accommodation for access be provided for those who may need such assistance.

The most important needs of pedestrians include:

- **Direct connections**. Pedestrians must sometimes walk long distances to access adjacent destinations when the street network is a non-grid pattern with cul-de-sacs and limited collector streets that connect to the arterial network. Pedestrian cut-throughs between cul-de-sacs and neighborhood trails that create direct connections reduce walking distances, and make walking a more viable option for transportation.
- **Appropriate crossings**. Proper placement and adequate visibility both contribute to an appropriate crossing location. Crossings should be placed in locations that best serve pedestrian desire lines (i.e., where pedestrians want to cross) and meet required visibility and sight distance requirements. Enhancements to crossing facilities, including crosswalk striping, signage, and other enhancements, should alert both motorists and pedestrians to the presence of the facility.
- **Continuous facilities**. Sidewalk gaps, missing sidewalks and worn crosswalks are all barriers to safe pedestrian travel. Continuous facilities allow pedestrians to choose the safest and most efficient path to and from their destination, encouraging them to choose walking as their mode of transportation.
- **Well-designed walkways**. Narrow sidewalks, sidewalks that are directly adjacent to heavy-volume roadways without vegetation or parking buffer, and sidewalks with utility boxes or lighting poles in the walkway detract from the walking environment and can make it difficult or impossible for the mobility-impaired to use the sidewalk.

- **Reduced traffic speeds**. The likelihood of a pedestrian injury or death in a collision increases dramatically as motor vehicle speeds increase. Reducing traffic speeds substantially increases pedestrian safety.
- **Mixed and diverse land uses**. Segregated land uses generally increase the distance between different destinations, and make it difficult for residents to walk to employment, shopping, schools and recreational facilities from their homes. Mixed land uses make it easier to build housing, employment, shopping, schools, and recreational amenities within walking distance of each other.

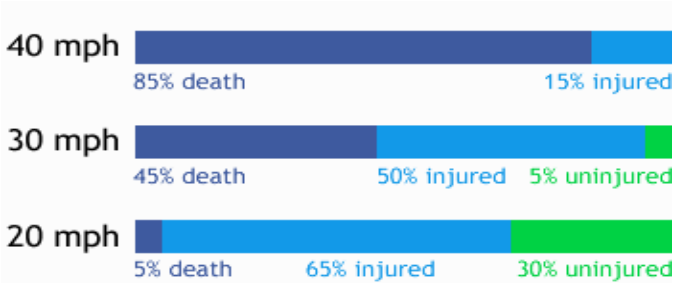

Figure 9 Pedestrian Injuries at Impact Speeds

Data Source: U.K. Department of Transport Image: saferoutesinfo.org

5.2.1 Special Needs of Children and Seniors

Children and seniors have unique needs in the pedestrian realm and thus require special treatments to accommodate. Young children are often too small to be in the line of sight of drivers, so without proper designs, streets may not be safe for these young pedestrians. Children walk slower than adults and may not be able to gauge the amount of time needed to cross an intersection.

Accommodating seniors is especially important considering San Mateo County's growing senior population. Poor sidewalk and crossing conditions may foster isolation with limited opportunities for seniors' mobility; they need travel options other than driving, whether it be walking or taking transit. Seniors have slower walking speeds and reaction times, and may have other impairments that restrict their mobility, vision, and hearing.

Children and seniors are more likely to be severely injured or killed in a pedestrian-vehicle crash than other age groups. Pedestrians age 65 or older are two to eight times more likely to die than younger people who are hit by a motor vehicle.[24] Nationally, Children age 15 and younger accounted for 7 percent of the pedestrian fatalities in 2009 and 25 percent of all pedestrians injured in traffic crashes.[25] Special provisions to accommodate children and seniors include:

- Treatments and enforcement efforts that reduce vehicle speeds

[24] http://safety.fhwa.dot.gov/ped_bike/docs/senior.pdf
[25] Traffic Safety Facts, 2009 Data, Pedestrians, National Highway Traffic Safety Administration, Report DOT HS 811 39. http://www-nrd.nhtsa.dot.gov/Pubs/811394.pdf

- Enhanced street crossings, particularly around schools, senior centers, downtowns, and transit stops
- Reduced crossing lengths using bulb-outs and median refuges
- A network of complete, ADA-accessible sidewalks
- ADA-accessible curb ramps
- Installing benches and other places for seniors to rest
- Adjusting signal timing to account for slower walking speeds

5.3 Bicycle and Pedestrian Travel in San Mateo County

To understand the potential for non-motorized travel in San Mateo County, one naturally looks to existing activity levels: who is walking and bicycling where, for what purposes, and how often? The following is a discussion of existing conditions and data that will help guide the development of infrastructure and policy recommendations for the CBPP.

A detailed understanding of localized walking and biking conditions is often challenging. Data is often limited and tends to focus only on one particular type of trip (e.g. commute to work), rather than the variety of trips that make up one's daily travel. Fortunately, Census data for San Mateo County is supplemented by several travel surveys and in-field counts that have been conducted by the Metropolitan Transportation Commission, SamTrans, Caltrain, and BART. The 2009 U.S. National Household Travel Survey also provides a nice overview of travel trends at the state level. By looking at these data sources, one can begin to create a picture of the bicycling and walking activities that take place in San Mateo County.

5.3.1 How Much Are People Biking and Walking and for What Purpose?

As with much of the country, data for the Bay Area indicates that a relatively small percentage of all trips are made by bike or on foot. Biking trips comprise between 1.2 and 1.5 percent of all trips taken in the Bay Area, while walking comprises between 8 and 10 percent.[26]

While the percentage of trips made by bike remains relatively constant for different trip types, the percentage of trips are made by foot vary for different trip purposes. As shown in **Figure 10**, nearly 17 percent of all school-related trips made by foot.[27]

[26]Metropolitan Transportation Commission's Bay Area Transportation Survey, 2000
[27] Ibid.

Source: Bay Area Travel Survey, 2000, Table 2.2.1.2B

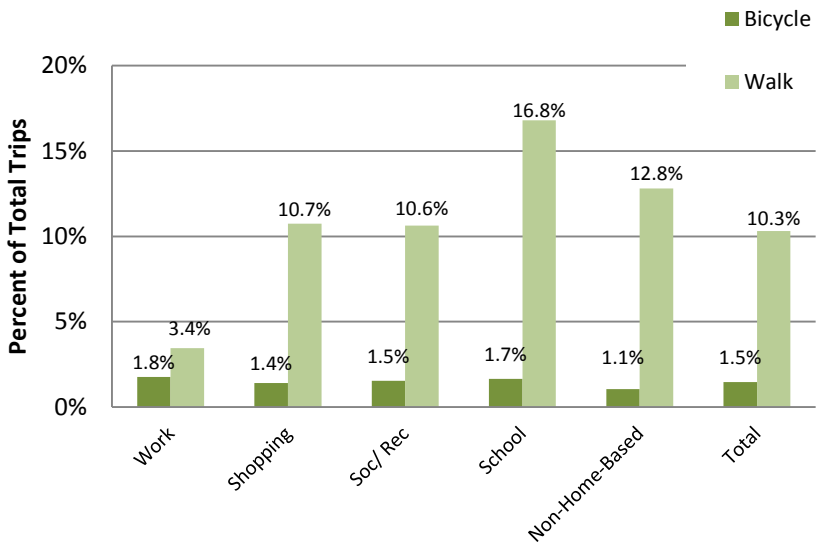

Figure 10: Bay Area Weekday Trips By Purpose: Biking and Walking Mode Share

Commute Mode Share

According to the U.S. Census' 2006-2008 American Community Survey, 1.4 percent of the county population biked to work, 2.7 percent of the county population walked to work, 7.5 percent used transit, and 82.7 percent drove to work.

The biking, walking, and transit percentages are lower than the Bay Area averages, although mode splits do vary by community. **Table 6** shows that Redwood City and Menlo Park had the highest numbers of bicycle commuters in 2000. Menlo Park has the highest percentage of commuters commuting by bicycle-3.7 percent, which is more than three times the Bay Area average. Census data show that Menlo Park has further increased the percentage of people who commute to work by bike, to 7.2 percent of workers in 2006-2008.[28]

In 2000, the City of San Mateo had the highest number of walk commuters, 1,210, of any other community in the County. While total commute numbers are low, the communities of Atherton, Woodside, and Portola Valley had high percentages of people walking to work. More recent Census data from 2006-2008 show that the percentage of people walking to work has increased slightly in many communities.[29]

As many people walk to transit, the transit mode share can capture some additional walking trips. In 2000, Daly City had both the highest number of transit commuters, nearly 9,000, and the highest transit mode share, at 17.8 percent. With the extension of the BART line to Millbrae, the percentage of people taking transit to work has nearly doubled from 5.3 percent to 10.5 percent.[30] Other communities along the BART corridor have also seen increases between 2000 and 2006-2008.

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[28]American Community Survey, 2006-2008 Three-year Estimates.
[29]Ibid.
[30]Ibid.

Table 6: Commute to Work Data by Mode of Transportation for Walk, Bike, Transit
(2000 Census)

Jurisdiction	Bike		Walk		Transit	
	Percent	Number	Percent	Number	Percent	Number
Atherton	0.0%	0	**5.4%**	167	3.2%	100
Belmont	0.4%	49	1.4%	190	3.8%	527
Brisbane	0.5%	10	2.1%	44	5.6%	117
Burlingame	0.7%	108	2.4%	360	7.6%	1,157
Colma	0.0%	0	4.4%	22	10.8%	54
Daly City	0.1%	39	1.3%	664	**17.8%**	**8,858**
East Palo Alto	1.8%	193	1.6%	171	6.2%	688
Foster City	0.7%	106	1.3%	201	3.6%	568
Half Moon Bay	1.5%	89	3.1%	184	1.6%	96
Hillsborough	0.0%	0	1.1%	52	2.4%	112
Menlo Park	**3.7%**	562	2.2%	338	4.0%	614
Millbrae	0.5%	45	2.0%	188	5.3%	502
Pacifica	0.2%	50	1.0%	206	8.1%	1,684
Portola Valley	0.0%	0	3.5%	69	0.0%	-
Redwood City	1.8%	**697**	2.8%	1,097	4.8%	1,899
San Bruno	0.5%	112	2.2%	457	7.9%	1,656
San Carlos	0.6%	86	1.4%	215	3.7%	557
San Mateo (City)	0.6%	275	2.6%	**1,210**	6.2%	2,931
South San Francisco	0.4%	118	2.6%	752	9.2%	2,680
Woodside	0.0%	0	4.8%	116	0.3%	7
Unincorporated County	1.2%	259	3.1%	653	4.8%	1,000
County	0.8%	2,896	2.1%	7,609	7.4%	26,029
Bay Area	1.1%		3.2%		9.7%	

5.3.2 Who is Biking and Walking in San Mateo County?

Data show that people who bike and walk for transportation tend to be younger and less affluent than the general population.

Age

In the Bay Area, school-age youth and people in their twenties are more likely to bike, than other age groups although bicycle trips still make up a very small percentage of total trips for these age groups (see **Figure 11**).

Similarly, school-aged youth typically walk more than other age groups, with nearly 16 percent of trips made on foot.[31] Although people in their forties tend to walk the least, the percentage of walking trips increases as one gets older.

[31] Metropolitan Transportation Commission's Bay Area Transportation Survey, 2000

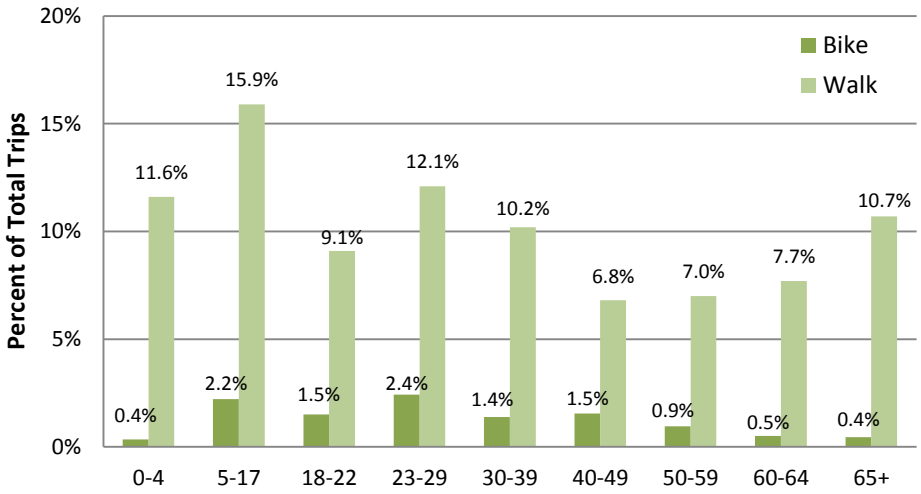

Figure 11: Percent of Weekday Trips Made by Bicycling and Walking: By Age Group (2000)

These findings suggest that pedestrian and bicycle improvements can be targeted at specific age groups, particularly school-age children. Treatments to be considered include safe, separated bikeways and paths and sidewalks with well-marked, easy to understand crossings. Education and encouragement directed at youth can instill the active lifestyle as a lifelong habit.

Income

Bicycling rates in the Bay Area do not show a dramatic link to income levels, though people with low incomes are more likely to bicycle than all other groups. In contrast, as shown in **Figure 12**, walking rates are strongly linked to income. People from households with incomes under $30,000 are more than twice as likely to walk – 17.3 percent to 7.4 percent – as people in the highest income households.

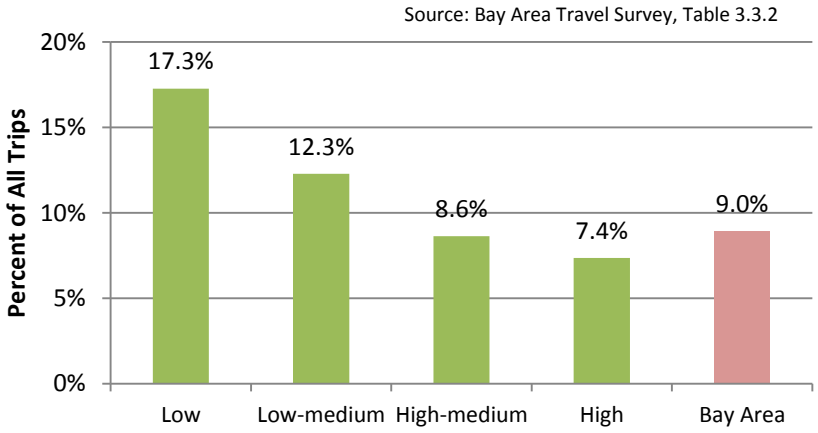

Figure 12: Percent of Weekday Trips Made by Walking: By Income Level (2000)

The fact that higher bicycling and walking rates are tied to lower-income households is reflected in the CBPP's categorization of recommended bikeway projects and identification of Pedestrian Focus Areas.

5.3.3 How Are People Accessing Transit?

Transit ridership data, including information about how people access transit stops and stations, provides more information about walking and biking in the county. Most transit trips either start or end with a walking or biking trip on at least one end of the journey. Transit service provides a backup transportation option for walkers and cyclists who encounter unanticipated barriers, such as inclement weather. Fortunately, transit agencies in San Mateo County have conducted several studies that are helpful in understanding walking and biking to transit in the county. Key transit access findings are:[32]

- For San Mateo County BART stations, 11 percent of transit riders walk to BART and 1 percent bike, which is lower than the system-wide average of 31 percent walk and 4 percent bike (2008)
- Daly City BART station has the highest percent walking to their station from home (18%)
- Bicycle commuting to BART stations in San Mateo County is consistently around one percent of all trips
- 28 percent of Caltrain riders walk to the train station, and 7 percent bike (2007)
- 70 percent of SamTrans riders walk to the bus stop, and 2 percent bike (2009)

5.4 Collision Analysis

Historic collision data, including bicyclist and pedestrian collisions, are available from the California Highway Patrol's Statewide Integrated Traffic Report System (SWITRS). This section reviews SWITRS data for the years 2004-2008 to identify high collision areas in San Mateo County.

5.4.1 Key Findings

- Between 2004 and 2008, an average of 217 bicyclists and 270 pedestrians were injured in traffic collisions in San Mateo County each year.
- During this same timeframe, a total of 13 bicyclists and 46 pedestrians were killed in traffic collisions.
- Fatalities of bicyclists and pedestrians comprise a significant percentage of all traffic fatalities in San Mateo County. Between 2004 and 2008, bicyclist fatalities accounted for 8 percent and pedestrian fatalities accounted for 27 percent of all collision fatalities in San Mateo County. In comparison, these modes comprise only 1.5 and 10 percent of all trips for the Bay Area.[33]
- Bicyclist and pedestrian collisions show similar geographic dispersion, with concentrations in urban areas of the county, particularly along El Camino Real. Bicyclist collisions also tend to concentrate at the Highway 1-Highway 92 intersection and in Montara.
- Time of day is related to bicycle and pedestrian crashes, with nearly half of all bicyclist and pedestrian injury-causing crashes occurring in the evening hours between 3 p.m. and 8 p.m. Forty-six percent of bicycle fatalities occurred mid-day and 41 percent of pedestrian fatalities occurred at night between 8 p.m. and 6 a.m.
- Sixty percent of pedestrian collisions were the fault of a car driver.

[32] BART Station Profile Study (2008) and Caltrain Onboard Survey (2007)
[33] Bay Area Travel Survey (2000)

5.4.2 Analysis

In general, the number of reported bicycle collisions per year in San Mateo County has remained constant at around 235. The number of pedestrian collisions per year has also remained constant at around 260. **Table 7** presents the number of bicycle collisions in San Mateo County from 2004 to 2008 and **Table 8** presents the number of pedestrian collisions.

Table 7: Collisions Involving Bicyclists in San Mateo County, 2003-2008

Year	Total Bike/ Automobile Collisions	Bicyclists Injured	Bicyclists Killed	Total Fatalities in All Collision Types
2004	233	212	1	37
2005	224	207	3	35
2006	212	188	1	38
2007	248	231	4	27
2008	264	245	4	36

Source: SWITRS Victim Data, January 2003-December 2008

Table 8: Collisions Involving Pedestrians in San Mateo County, 2003-2008

Year	Total Pedestrian/ Automobile Collisions	Pedestrians Injured	Pedestrians Killed	Total Fatalities in All Collision Types
2004	260	263	13	37
2005	247	264	6	35
2006	264	277	13	38
2007	260	269	6	27
2008	268	276	8	36

Source: SWITRS Victim Data, January 2003-December 2008

Figure 13 and **Figure 14** map the concentration of bicycle and pedestrian collisions. The maps show collision density per quarter mile.

The collision maps illustrate that bike collisions tend to cluster around State Highways 82 and 84 in the eastern part of the county, with a smaller concentration of collisions near Highway 1 in the west. Pedestrian collisions show a similar pattern along State Highways 82 and 84, with the addition of a much higher incidence of pedestrian collisions in Daly City, many occurring on Mission Street.

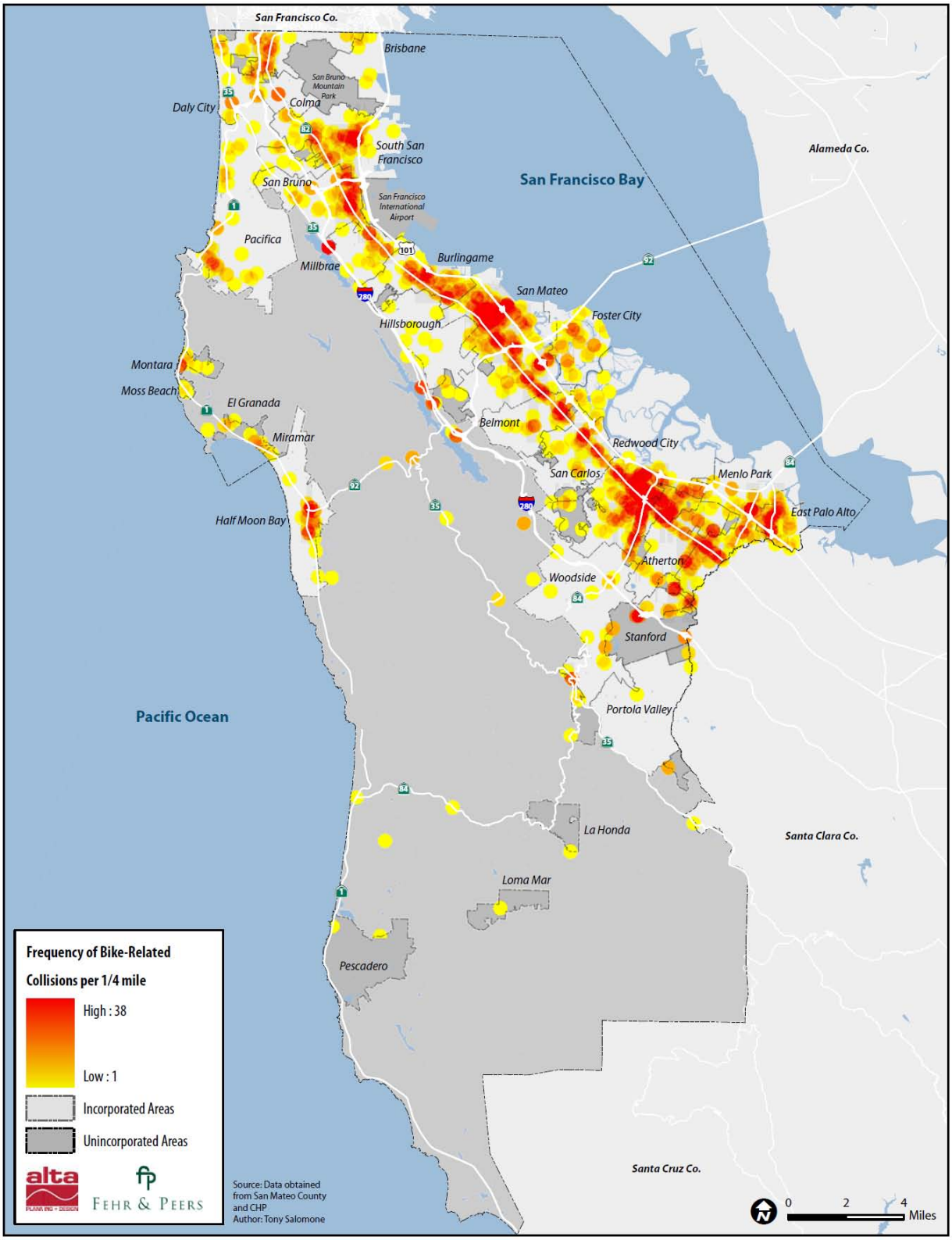

Figure 13: Frequency of Bike-Related Collisions, San Mateo County

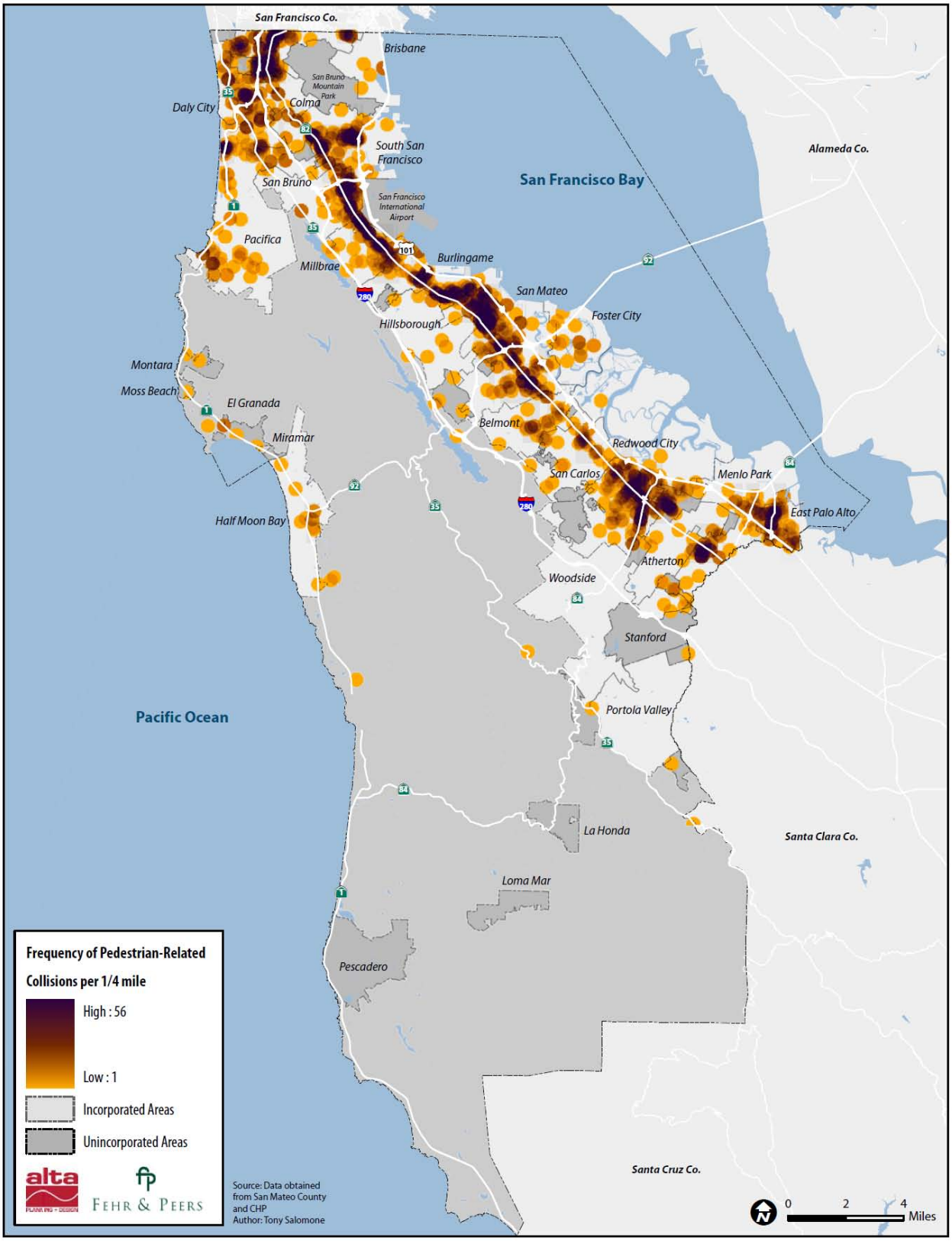

Figure 14: Frequency of Pedestrian-Related Collisions, San Mateo County

Table 9 provides bicycle and pedestrian collisions by city or town during the period of data collection.

Table 9: Bicycle and Pedestrian Collisions by City or Town

City/Town in San Mateo County	% of Total County Bike Collisions[34]	% of Total County Pedestrian Collisions	% of Total County Population[35]
San Mateo	17%	17%	13.0%
Redwood City	15%	12%	10.6%
Unincorporated San Mateo County	14%	4%	8.8%
Menlo Park	9%	4%	4.3%
South San Francisco	5%	9%	8.5%
San Bruno	5%	7%	5.6%
Burlingame	5%	6%	4.0%
Daly City	4%	17%	14.5%
East Palo Alto	4%	5%	4.1%
San Carlos	4%	3%	3.9%
Pacifica	3%	5%	5.4%
Belmont	3%	2%	3.5%
Atherton	3%	1%	1.0%
Foster City	3%	1%	4.0%
Half Moon Bay	3%	1%	1.7%
Millbrae	2%	5%	2.9%
Hillsborough	1%	1%	1.5%
Woodside	1%	0%	0.8%
Colma	0%	1%	0.2%
Brisbane	0%	0%	0.5%
Broadmoor	0%	0%	0.6%
Portola Valley	0%	0%	0.6%

Nearly half of all bicyclist and pedestrian injury-causing collisions in San Mateo County occurred in the evening hours, between three and eight p.m. Forty-six (46) percent of bicycle fatalities occurred mid-day between 10 am and 3 pm, while 41 percent of pedestrian fatalities occurred at night between 8pm and 6am.

[34] Includes collisions on Caltrans right-of-way
[35] Based on 2010 Census Data.

The most common bicyclist traffic violations were infringing on automobile right-of-way and riding on the wrong side of the road. Other frequent traffic violations included improper turning, traffic signals and signs, and unsafe speed.

Sixty (60) percent of pedestrian collisions were the fault of a vehicle, while only 29 percent were caused by pedestrian violations. The most common cause of collisions was violating the pedestrian right-of-way.

5.5 Pedestrian Demand Model

Land use development type and proximity to certain destinations strongly influence the demand for walking in the County. By categorizing levels of pedestrian demand based on land use and other factors, this Plan identifies places that have the most desirable walking conditions. The methodology is based on research conducted for the US Environmental Protection Agency (EPA) on the relationship between the built environment and travel patterns. Through this and subsequent studies, several factors have been shown to have significant effects on the number of people walking in a given area.[36] This analysis produces generalized estimates of pedestrian activity along all streets in San Mateo County.

Indicators of pedestrian demand are organized into four categories: built environment; proximity to walking destinations; demographics; and street network and pedestrian permeability. Within these four groups, the following seventeen indicators were used to estimate pedestrian demand:

- Population Density
- Employment Density
- Land Use Mix
- Schools
- Parks/Beaches
- Transit Proximity – Bus lines
- Transit Proximity – Rail stops
- Neighborhood Shopping Districts
- Social and Recreational Destinations
- Employment Centers
- Age
- Income
- Vehicle Ownership
- Priority Development Areas
- Street Segment Length
- Intersection Density
- Street Connectivity

[36]The literature on travel behavior substantiates that several "D-factors" independently affect travel behavior, including: land use Density, Diversity (land use mix); pedestrian Design, and access to regional Destinations. Because these "Ds" work at a very local level, most travel demand models are too aggregate in scale to capture the effects of the Ds. Additional "D" factors such as Distance to Transit and population Demographics are also included based on their demonstrated relationship to walking/biking.

Figure 15 illustrates the results of this analysis for San Mateo County. The Pedestrian Index is a score that ranges from zero to 100 that estimates the pedestrian demand along all streets in San Mateo County. Areas with red shades have higher relative walking rates than areas with orange and yellow shades. In general, the areas with the highest pedestrian demand are concentrated along the El Camino Real Corridor. This includes El Camino Real itself and many streets on either side of it, which combined rank as some of the streets with the highest walking demand in the County.

The weighting of each individual variable is based on the results of the EPA research described above. A more detailed description of the methodology and maps at a higher scale are provided in **Appendix C.**

Based on the model results, the areas with the highest walking demand are located in Daly City, South San Francisco, San Bruno, San Mateo and Redwood City. Moderate walking demand can be found in other downtown districts, including Burlingame, Belmont, San Carlos, Menlo Park and East Palo Alto. Several areas in the western part of the County, including Half Moon Bay and Pacifica have neighborhoods with moderate to high pedestrian demand.

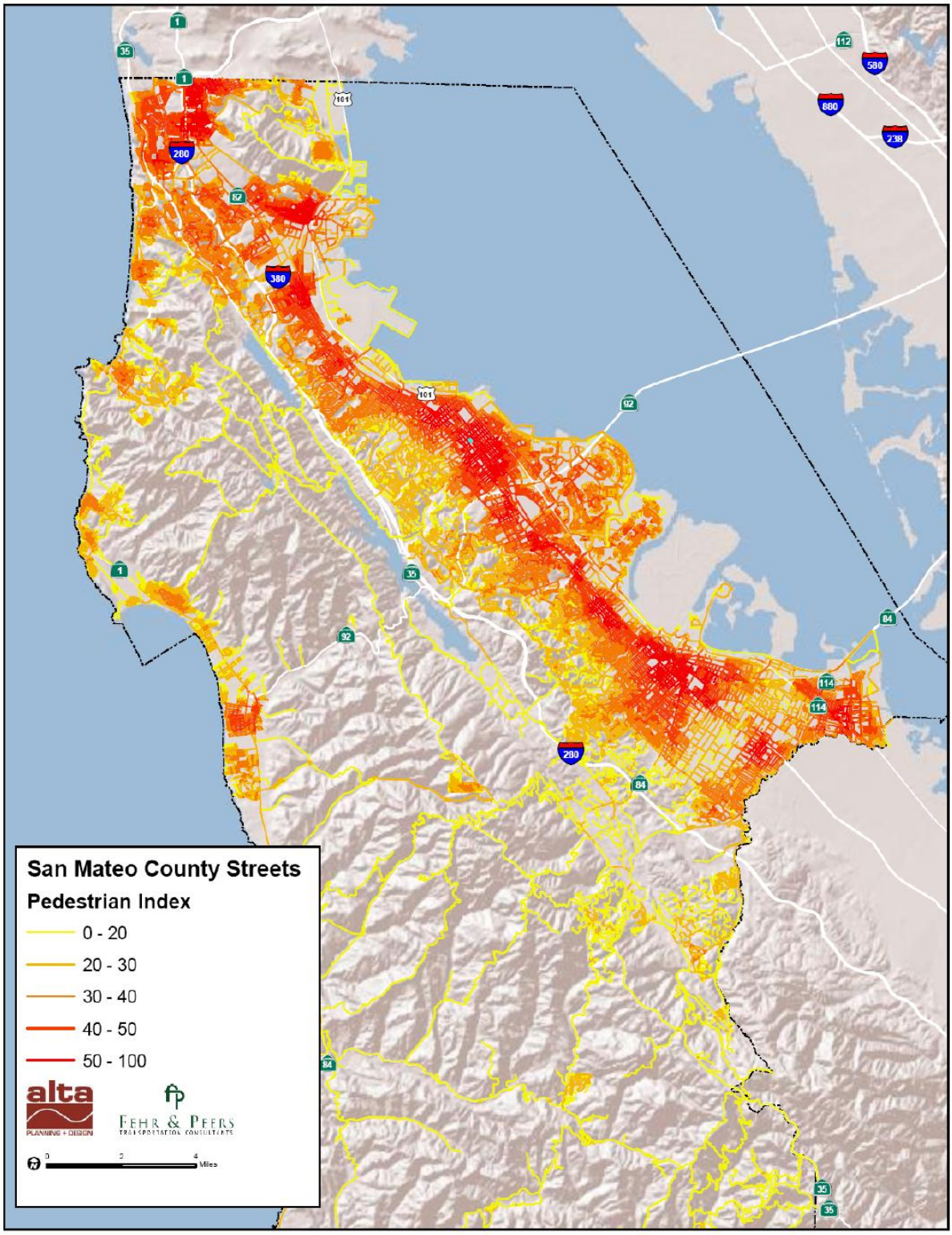

Figure 15: Pedestrian Demand in San Mateo County

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6 Countywide Bikeway Network

6.1 Introduction

This chapter presents the bikeway projects needed to complete the Countywide Bikeway Network (CBN). The recommendations are based on a review of local and regional bicycle planning efforts, existing conditions within the county, discussions with local agency staff (including the Public Works and Planning Departments), and input from members of the public. They have been developed to meet the vision, goals and policies of the CBPP.

To support C/CAG's role as San Mateo County's Congestion Management Agency, and to maximize funding available for bikeway and pedestrian projects, this plan prioritizes utility trips by promoting access to jobs, places where most county residents live, and communities with the greatest need.

This chapter consists of the following sections:

- **The Countywide Bikeway Network**– Describes the CBN and criteria used to determine countywide significance. The CBN consists of linear bikeways, streets, roadways and paths that will provide a continuous bikeway network throughout the county, and major barrier crossings, over and undercrossings and intersection and interchange improvements that facilitate bicycling across freeways, major arterials, and other transportation and geographic features
- **Design Minimums for the Countywide Bikeway Network**–Provides recommended design standards to be applied to bikeways on the CBN, and includes a discussion of low volume parallel routes that can be designed to accommodate bicyclists of all abilities.
- **Development of the Countywide Bikeway Network** – Describes the outreach process used to create the 2011 CBN.
- **Bicycle Focus Areas**– Describes countywide projects and programs that support the CBN, and include: Key Corridors, which consist of nine corridors that serve key countywide transportation needs; bikeway signage; and bicycle parking.
- **Bikeway Network Project Categories** – Describes the criteria used to sort the CBN projects into implementation categories. Criteria support the goals and policies of this Plan and include access to activity centers, access to transit, safety, and social equity. Also provides a summary of recommended CBN projects, sorted into three implementation categories.
- **Cost Estimates** – Presents the unit costs used to develop per-mile cost estimates for bicycle routes, bicycle lanes, pathways, and other proposed improvements.

6.2 The Countywide Bikeway Network

The Countywide Bikeway Network is a comprehensive countywide system of on-street and off-street bikeways, overcrossings, and bicycle-friendly intersections that provide safe, convenient access to major destinations, transit stops, and recreational amenities. The CBN encompasses the two main needs for bicyclists in San Mateo County—a continuous network of bicycle facilities and connections across major barriers.

6.2.1 Linear Bikeways

As the CBN is focused on countywide bicycle transportation, it only includes a sub-set of the bikeways identified by San Mateo County's cities and the County. Linear bikeways include bicycle paths, bicycle lanes, bicycle routes, and other new and emerging facility types. The network includes streets and roadways that will provide continuous bicycle facility connections between San Mateo County jurisdictions and to adjacent counties. The CBN incorporates many of the roadways identified in the 2000 countywide plan, with updates and modifications requested by stakeholders and members of the public.

To be considered of countywide significance, a bikeway must meet one or more of the criteria listed in **Table 10**. Linear bikeways are shown in **Figures 16 through 20** and listed in Appendix A.

Table 10: Criteria Used to Determine Bikeways of Countywide Significance

Criteria	Description
North-south connectivity	Does the bikeway improve connectivity or improve safety, particularly along the Highway 82 and Highway 1 corridors?
East-west connectivity	Does the bikeway improve connectivity or improve safety, particularly across Highway 101, Caltrain, Highway 82, Highway 280, and Highway 1?
Cross-jurisdictional connections	Does the bikeway provide access to the Santa Clara County or San Francisco County network, or between jurisdictions within San Mateo County?
Access to destinations of county significance	Does the bikeway provide access to or improve safety near destinations of county significance (e.g. transit, colleges, downtowns, employment centers, park and ride lots, parks, beaches)?
Inclusion in other County or Regional Plan	Is the bikeway included in a countywide or regional plan, such as the *San Mateo County Parks Master Plan Draft* (2010), the Metropolitan Transportation Commission's *Regional Bicycle Plan* (2009) or identified as part of the Bay Trail?

6.2.2 Major Barriers

In addition to linear bikeways, the CBN includes bicycle and pedestrian crossings of major barriers: freeways, major arterials, and rail lines. This category of improvements includes proposed bicycle and pedestrian over/undercrossings, arterial crossing improvements, and interchange improvements. Projects were derived from several sources. Proposed over/undercrossing projects are drawn from stakeholder interviews and background planning documents. Arterial crossing improvements and interchange improvements were identified by reviewing aerial photos of locations where the CBN bikeways cross major arterials and interchanges and determining locations that could be improved for bicyclists. Major barriers are shown in **Figures 16** through **20** and listed in **Appendix A**. Proposed bicycle and pedestrian bridge overcrossings and undercrossings and interchange improvements are summarized in **Table 11**. Proposed arterial crossing improvements are summarized in **Appendix A**.

Table 11: Proposed Bicycle and Pedestrian Over/Undercrossings and Interchange Improvements

Location	Project Type	Project Name
Brisbane	Overcrossing	Bayshore north of Valley at Highway Bayshore Blvd
East Palo Alto	Overcrossing	Clarke Avenue at US 101
East Palo Alto	Overcrossing	E. Bayshore Road at US 101
East Palo Alto	Overcrossing	University Avenue at US 101 - improvements to existing facility
Menlo Park	Overcrossing	Carlton Avenue at US 101
Menlo Park	Overcrossing	Highway 84/114 Intersection at Highway 84
Millbrae	Overcrossing	E. Millbrae Avenue at US 101
Redwood City	Overcrossing	Whipple Road at US 101
San Carlos	Overcrossing	Holly Street at US 101
San Mateo	Overcrossing	Borel Street to Spuraway Drive at Hwy 92
San Mateo	Overcrossing	E. Hillsdale Boulevard at US 101
San Mateo	Overcrossing	Near Lodi Avenue at US 101
San Mateo County	Overcrossing	San Bruno Avenue at US 101
South San Francisco	Overcrossing	Airport Boulevard/Bayshore Boulevard at US 101
Menlo Park	Undercrossing	Near Middle Avenue at Highway 82
Pacifica	Interchange Improvement	1 & Sharp Park Road
San Mateo (City)	Interchange Improvement	101 & E. 3rd/E. 4th Street
San Mateo County	Interchange Improvement	101 & Grand Avenue
South San Francisco	Interchange Improvement	101 & Oyster Point Boulevard
Uninc. County (Stanford Lands)	Interchange Improvement	280 & Sand Hill Road

6.3 Design Minimums for the Countywide Bikeway Network

All bikeways, major intersections, and interchanges included within the Countywide Bikeway Network should be designed to provide for safe and convenient bicycle travel in accordance with Caltrans Deputy Directive 64-R-1 for routine accommodations and the Complete Streets Act (AB 1358). Roadways, intersections, paths, overcrossings, and undercrossings identified in the Countywide Bikeway Network should be designed to the highest standard of bikeway that is appropriate for the local context. Implementing agencies should refer to the CBPP's companion document, *A Resource Guide for the Education, Promotion, Funding, and Design of Pedestrian and Bicycle Facilities*, for further details. Additional design sources include *Caltrans Complete*

Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians, the updated *Caltrans Highway Design Manual* (forthcoming), and the National Association of City Transportation Officials *Urban Bikeway Design Guide*.[37]

Designing for Bicyclists of All Abilities

Due to the street layout and geography of the County, many of the CBN bikeways follow high-volume, major arterials and highways. Lower-volume local roads that provide a more pleasant bicycling experience generally do not provide county-level connections. Implementing agencies should consider the wide range of bicyclists' abilities, and strive to design a CBN that accommodates all types of bicyclists, including "interested but concerned" bicyclists, as described in **Section 5.1**. In some cases, agencies may need to look to innovative or experimental treatments such as traffic calming, bicycle boulevards, cycletracks, colored bicycle lanes, and high-intensity actuated crosswalk beacons.

In other cases, agencies may wish to designate a parallel bikeway along a lower-volume street as a bicycle boulevard or other high-quality bicycle facility. Parallel routes should be a minimum of a mile long, provide a similar level of connectivity as the CBN route, be located within a quarter mile or less of the CBN route, and provide for bicyclists of all abilities. Ideally, a parallel route provides continuous access through multiple jurisdictions. A parallel route is not intended to replace the CBN route or serve as a detour around a short, challenging segment of the CBN, but rather provide a longer-distance alternative route for less-experienced bicyclists. The CBN contains a handful of low-volume routes that parallel El Camino Real and the North South Bikeway. These were identified by the public. While an extensive analysis and identification of low-volume parallel routes was not undertaken for this update of the CBPP, future updates may include such an effort.

6.4 Development of the Countywide Bikeway Network

The CBN is derived from the countywide bicycle route network identified in the 2000 *San Mateo County Comprehensive Bicycle Route Plan*. The 2011 CBN reflects input received during meetings with stakeholders at the cities and the County, communications with local bicycle advocacy organizations, and public comments received at a public workshop and through the project website. The 2009 Countywide Bikeway Map was used to identify existing bikeways and confirm alignments. Subsequent meetings with city and County staff refined the network. A description of the city/County and public outreach processes follows.

6.4.1 Input from Local Jurisdictions

As a countywide plan, this CBPP serves to coordinate bicycle and pedestrian planning among San Mateo County's jurisdictions and the countywide agencies. Local implementing agencies – the cities and County – were consulted throughout plan development, and recommendations within this plan are built on and reflect their recommendations. The following outreach efforts sought input from the local implementing agencies:

- The cities and County completed surveys indicating progress toward the 2000 *Countywide Bicycle Plan* and suggested bicycle and pedestrian projects of countywide significance.

[37] http://www.dot.ca.gov/hq/traffops/survey/pedestrian/Complete-Intersections-A-Guide-to-Reconstructing-Intersections-and-Interchanges-for-Bicyclists-and-Pedestirans.pdf
http://nacto.org/cities-for-cycling/design-guide/

- Additional interviews were conducted with staff at cities, the County of San Mateo, the SMCTA, the Metropolitan Transportation Commission, and Caltrans District 4.
- The C/CAG Bicycle and Pedestrian Advisory Committee (BPAC) provided guidance towards development of the CBPP.

6.4.2 Public Outreach

A Public Open House was held on October 28, 2010 to present the vision, goals, and policies of the CBPP; the existing and proposed Countywide Bikeway Network (CBN); and analysis of pedestrian demands and identifying improvement needs. The Open house allowed members of the public (including bicycle advocacy group members) and local agency staff the opportunity to review, discuss, and provide comments and inputs on the various components of the Plan. Over 40 individuals attended. Additional inputs were received from individuals and advocacy groups, including Bike San Mateo County and Silicon Valley Bicycle Coalition, through written correspondence (letters and e-mails) after the Open House.

The Public Review Draft Plan was released in February 2011 and a two-month comment period followed. In June 2011, C/CAG invited key stakeholders from the community to participate in an in-person discussion of comments received during the public comment period.

All comments were taken into consideration and as applicable, were incorporated into the CBPP. Comments that were considered to be outside the scope of the CBPP were noted and will be referred to the appropriate agencies.

6.4.3 Summary of Revisions and Additions to the Countywide Bikeway Network

While conditions in San Mateo County have changed since 2000, many of the alignments identified in the 2000 bicycle route network remain key to the bikeway network. Most alignments from the 2000 plan have been brought over to the 2011 Countywide Bikeway Network. If alignments were modified or added, it was for the following typical reasons:

- The city or County has implemented an alternative alignment, or identified an alternative alignment within an adopted plan.
- Multiple parallel alignments in close proximity were refined to only one or two options.
- An alignment identified in the 2000 plan is infeasible or no longer relevant.
- A destination of countywide significance is not adequately served by the 2000 network.
- Members of the public requested a new or modified alignment.

Key additions and modifications to the network include:

- The north-south route has been updated to reflect a combination of recommended alignments identified by the Silicon Valley Bicycle Coalition and final preferred routes approved by the respective cities.
- Bikeways identified in the Metropolitan Transportation Commission's 2009 *Regional Bicycle Plan* have been added.

- On-street portions of the Bay to Ocean trails identified as part of the update of the *San Mateo County Trails Master* Plan have been added.
- The Bay Trail has been updated to reflect ABAG's most recent maps.
- Bikeways recommended in Caltrain's *Bicycle Access and Parking Plan* and BART station area plans have been added.
- An inventory of existing and proposed overcrossings of major barriers has been added.
- An inventory of major arterial crossings has been added.
- Two north-south bikeways on low-volume residential streets west of El Camino Real have been added. One travels through the cities of San Bruno, Millbrae, and Burlingame on Elm, Magnolia, and Quesada. The other travels through the cities of San Carlos, Redwood City, Atherton, and Menlo Park along Elm, Hudson, Austin, Elena, and San Mateo.
- Woodside Road between Alameda De Las Pulgas and the Bay Trail has been added as a proposed on-street bikeway.
- Removal of Forest View Avenue and Bella Vista Drive as proposed bikeways in Hillsborough.
- Removal of Preston Road and Espinosa Road as proposed bikeways in Thornewood Open Space.
- The Coastal Trail and Parallel Trail were enhanced to reflect planning efforts at the County level.
- Numerous minor revisions to the network based on comments received from jurisdictions and the public.

Figures 16 through **20** show the existing and proposed Countywide Bikeway Network. The class of the proposed bikeway is shown when that information is available. If it is not available, the bikeway is shown as "unclassified on-street." When applicable, a bikeway's route number is included on the maps. Detailed maps of the CBN, organized by jurisdiction, are provided in **Appendix B**. **Figures 16** through **20** also show key corridors highlighted. These are explained further in **Section 6.5**.

Figure 16: Countywide Bikeway Network Map North County

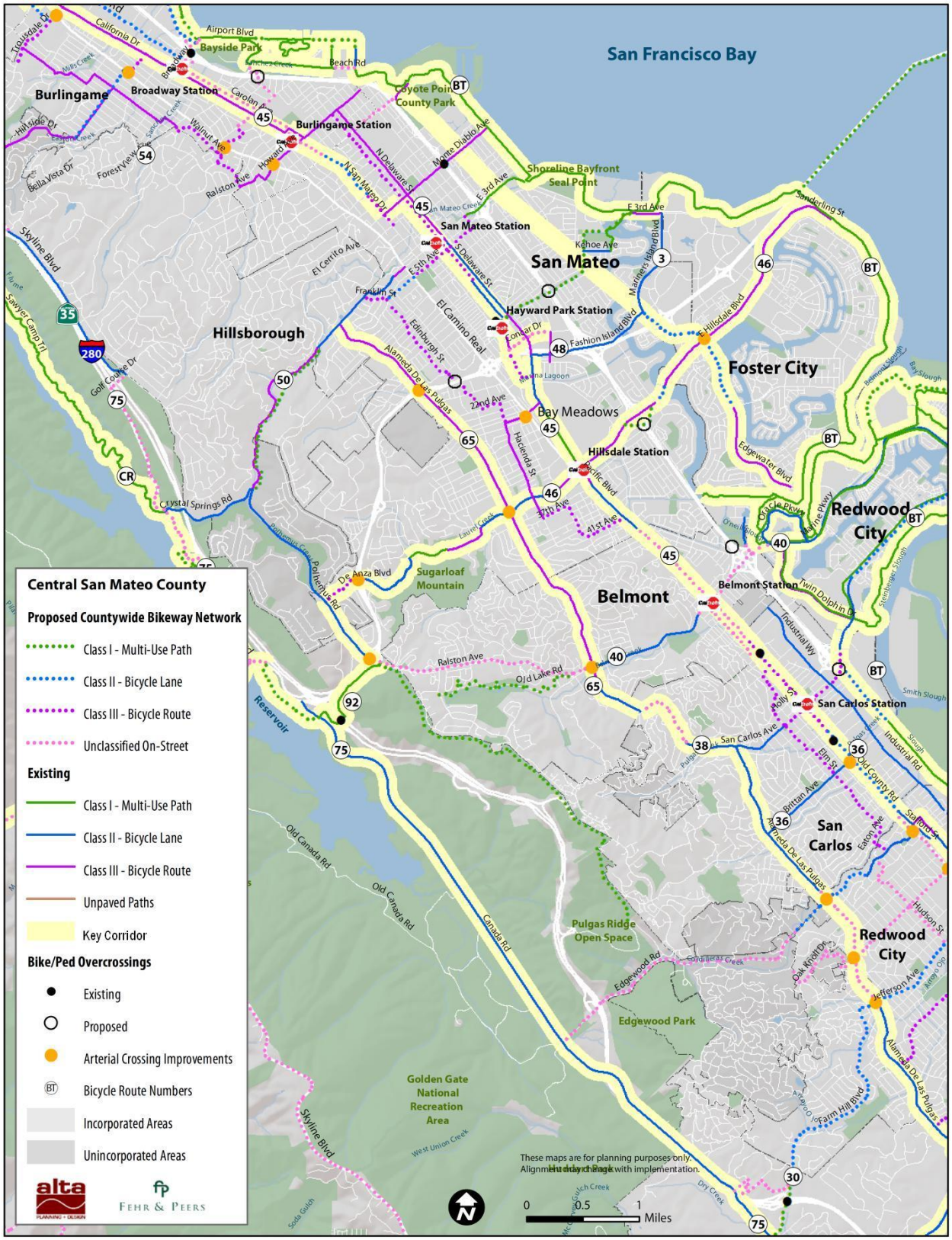

Figure 17: Countywide Bikeway Network Map Central County

Figure 18: Countywide Bikeway Network Map Coastal

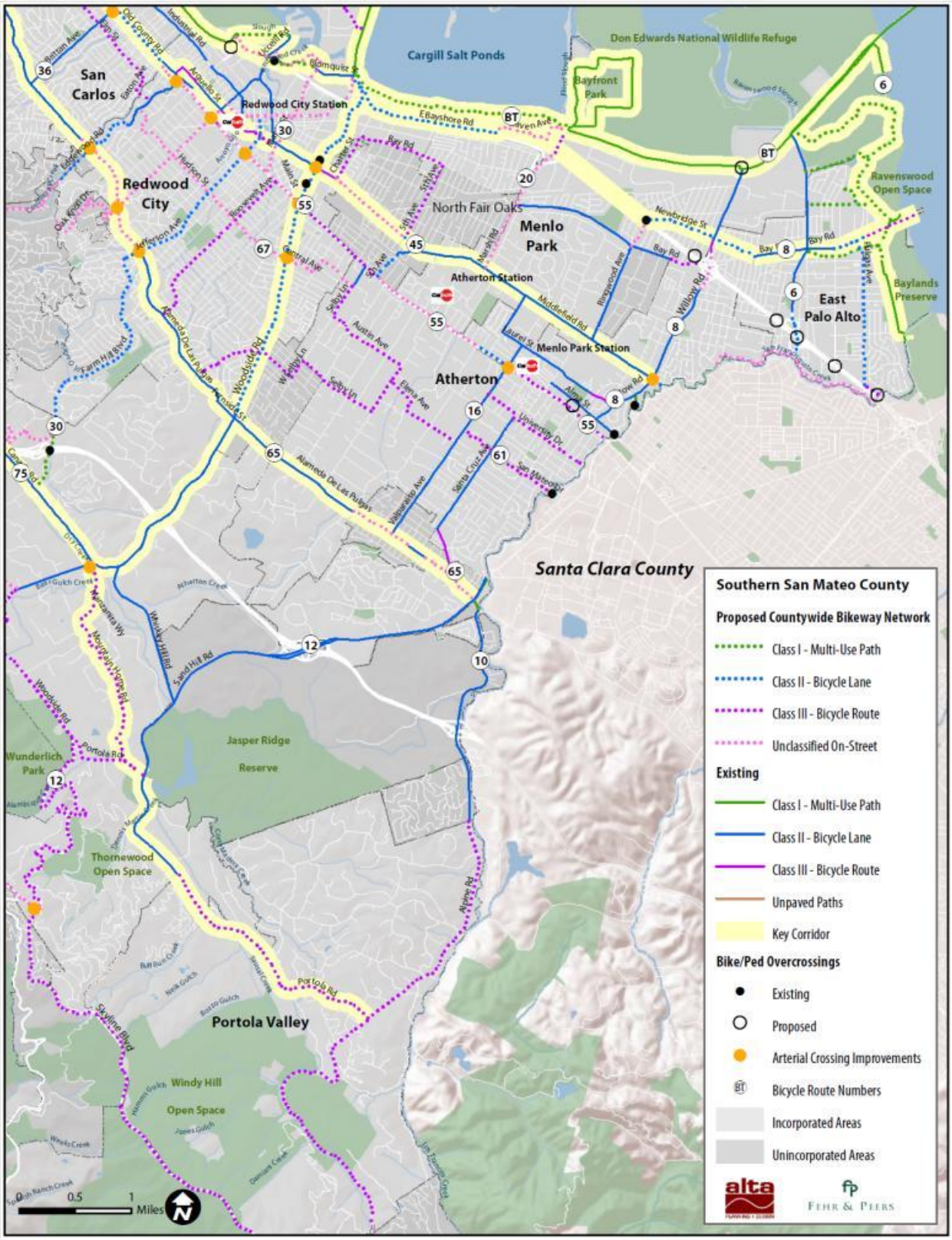

Figure 19: Countywide Bikeway Network Map South County

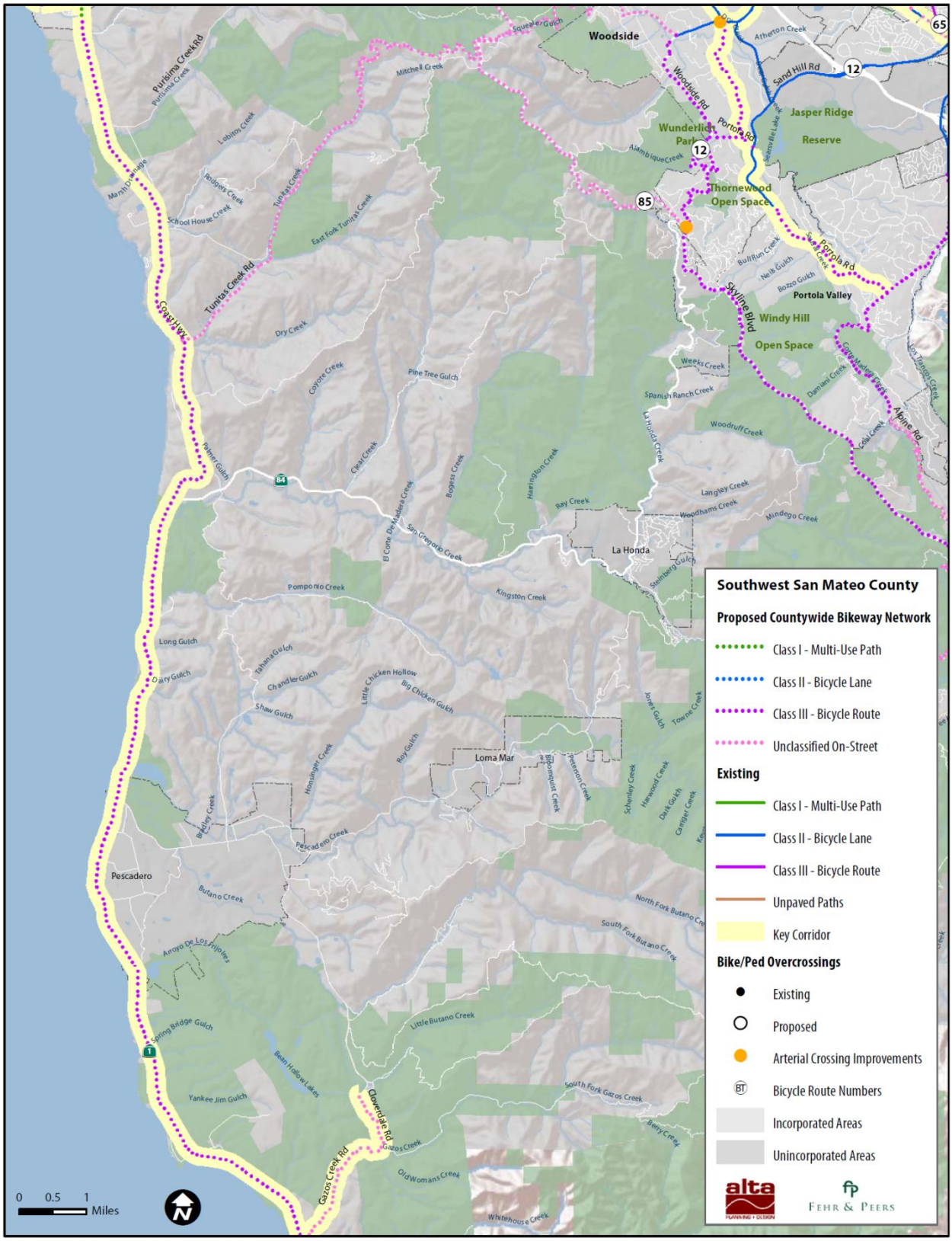

Figure 20: Countywide Bikeway Network Map Southwest County

6.5 Bicycle Project Groups

To support the CBN, the CBPP identifies three project groups that emerged from the 2000 Plan, other background planning documents, stakeholder discussions, and review of potential projects. The project groups are countywide programs that support bicycling and consist of key corridors, bicycle signage and bicycle parking. By defining project groups, the CBPP enables C/CAG to monitor funding and progress for these important support programs. More detailed definitions for each of the categories are provided below.

Countywide Key Corridors

Key Corridors are defined as long-distance corridors that serve key transportation and recreation needs evident in county commute patterns, concentration of population and county geography. Four of these—the North-South Bikeway, the San Francisco Bay Trail, the Highway 1/Coastal Trail/Parallel Trail, and the East of 101 North-South Corridor were identified in whole or in part as key projects in the 2000 plan. With the exception of the East of 101 North-South Corridor, all Key Corridors are identified in MTC's *Regional Bicycle Plan*. Key Corridors are illustrated in **Figure 21** and highlighted in **Figures 16 through 20.**

- **San Francisco Bay Trail**—The San Francisco Bay Trail is a 500-mile partially-constructed bicycle and pedestrian loop around the San Francisco Bay. The Bay Trail is a priority for Regional, County and local jurisdictions. It provides key recreation opportunities, and in San Mateo County, serves in part as a commute corridor. The Bay Trail consists primarily of Class I Bike Paths, but in some locations, Class II Bike Lanes and adjacent sidewalks are provided. The entire Bay Trail and access spurs to the Bay Trail are included in this key corridor.
- **East of 101 North-South Corridor**—This corridor runs from Santa Clara County to San Francisco County between Highway 101 and the Bay Trail. A specific alignment has not been identified, though there are some existing and proposed bikeways that could become segments of this corridor. The need for a continuous on-street bikeway alignment east of 101 was identified by members of the public during the development of the CBPP. It is intended to serve bicycle commuters.
- **North South Bikeway**—El Camino Real provides the most direct north-south connection on the eastern part of the county, and connects downtowns, Caltrain, BART, and residences. The multi-jurisdictional *Grand Boulevard Initiative* envisions El Camino Real as a multi-modal corridor that provides for all modes, including bicyclists. However, at this time very few jurisdictions provide on-street bikeways along El Camino Real and bicycling conditions on the roadway are challenging and uncomfortable. High traffic volumes and transit use makes it difficult to replace vehicle lanes with bicycle lanes. The North South Bikeway, identified through a collaborative effort of local jurisdictions and bicyclists, provides an alternative parallel route to El Camino Real. Many segments of the North South Bikeway have bike lanes, and bicycling conditions along this route are a significant improvement over those on El Camino Real. Improvements along El Camino Real and the North South Bikeway, as well as nearby lower volume parallel routes are included in this key corridor.
- **Alameda de Las Pulgas**—This corridor has been identified by the public and local jurisdictions as a key bicycling corridor connecting the County of Santa Clara to San Mateo. It provides an inland alternative to the North South Bikeway. Bike lanes are striped on approximately half the length of the corridor (South of Belmont) while the remainder is a signed bicycle route. Several key sections do

not have designated bicycle facilities. Improvements can be made along the entire corridor to improve bicycling conditions, particularly at intersections. It serves both commute and recreational needs.

- **Crystal Springs Regional Trail** (San Bruno to Woodside) – This Class I Bike Path is a highly-used recreational corridor in the central part of the county. It has been identified as a key corridor in the *Draft County Trails Master Plan*.
- **Highway 1/Coastal Trail/Parallel Trail**—The Highway 1 corridor, including the Parallel Trail, which runs adjacent to Highway 1, and the Coastal Trail, which is located adjacent to the Coast, provide key recreational and commute opportunities for the coastal communities in the western part of San Mateo County. Improvements along this corridor will provide bicycle (and pedestrian) facilities where few currently exist, and serve the low-income population, agricultural workers, and transit riders who are already biking and walking along this corridor. The Parallel Trail parallels Highway 1 from Montara to Half Moon Bay and consists of Class I Bike Paths and Class II Bike Lanes. The Coastal Trail is part of a larger statewide effort to provide a network of public trails along the entire California coastline. In San Mateo County, the final alignment of the Coastal Trail and type of facilities proposed are still under discussion, and may change from the alignments identified in the CBPP. The trail consists of Class I Bike Paths, Class II Bike Lanes, Class III Bike Routes, and unpaved gravel trails. Recognizing the importance of the Coastal Trail, the CBPP includes the entire alignment through San Mateo County, including the dirt trails. It should be noted, however, that unpaved trails do not meet Class I Bike Path standards—Class I paths are required to be paved—and therefore are technically not under the purview of this CBPP.
- **Northern East-West Route (South San F**rancisco to Pacifica)— This commute corridor has been identified as a potential Bay to Ocean route in the *Draft County Trails Master Plan.* It consists of on-street bikeways.
- **Highway 92 Corridor** (San Mateo to Half Moon Bay)—This east-west corridor provides commute opportunities at its western end in Half Moon Bay, and provides recreational opportunities along the more rural section in the central part of the County. Improvements along this corridor will provide bicycle (and pedestrian) facilities where few currently exist, and serve the low-income population, agricultural workers, and transit riders who are already biking and walking along this corridor. In the urbanized eastern portion of the County, in the City of San Mateo and Foster City, highway 92 is grade-separated and acts as a barrier to north-south movement. Improvements paralleling and crossing Highway 92 are important to facilitate bicycle access.
- **Woodside Road** – This roadway is a key east-west connection in the southern part of the county, and connects the following north-south corridors: the Bay Trail, the East of 101 Corridor, the North-South Bikeway and El Camino Real, Alameda de Las Pulgas and the Crystal Springs Regional Trail.

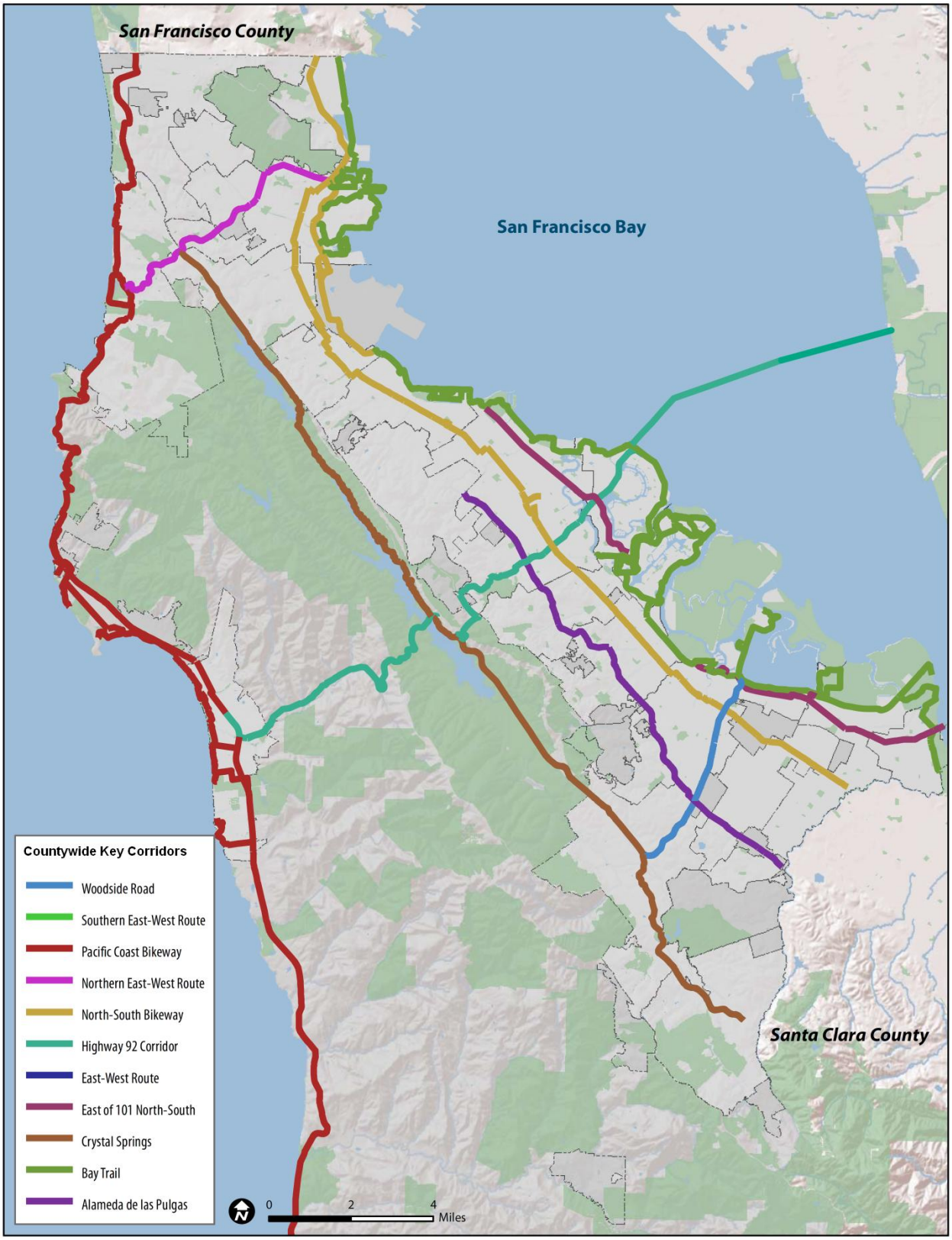

Figure 21: Countywide Key Corridors

Signage

The CBPP recommends that cities and the County use the Route Number System shown in **Figures 16** through **20**. The numbering system was developed for the *San Mateo County Comprehensive Bicycle Route Plan* (2000), and has been carried over without changes. Route numbers should be used with the *California MUTCD*'s bicycle route number marker (SG45 CA). The sign can be modified to include a city logo. **Appendix E** provides design guidelines for the Route Number System.

In addition to recommending route numbering along numbered bikeways, the CBPP recommends that cities and the County install bicycle wayfinding signage along all CBN bikeways. Wayfinding signage provides information necessary for bicyclists to navigate along a bicycle route, including the distance to key destinations, advance notice for turns in the bicycle route, and identification of intersecting bicycle routes. Wayfinding signs are typically placed at key locations leading to and along bicycle facilities, including where multiple routes intersect and at key bicyclist "decision points." Wayfinding signs displaying destinations, distances and "riding time" can dispel common misperceptions about time and distance while increasing users' comfort and accessibility to the priority street network. Wayfinding signs also visually cue motorists that they are driving along a bicycle route and should correspondingly use caution. Note that too many road signs tend to clutter the right-of-way, and it is recommended that these signs be posted at a level most visible to bicyclists and pedestrians, rather than per vehicle signage standards.

Cities and the County should install wayfinding signage based on the *California MUTCD*'s bike route sign (D11-1) bicycle guide sign (D1-1b), and street name sign (D1-1c).[38]

Bicycle Parking

End of trip bicycle facilities including bicycle parking, lockers and showers are a key element of a bicycle network. Every bicycle trip not only includes travel between destinations, it includes parking at the origin and destination. Shower and locker facilities at large commercial developments encourage bicycling by providing storage space for clothing and an opportunity to freshen up before work. Employees who exercise on their lunch break can also benefit from shower and locker facilities.

Bicycle parking is important to San Mateo County because it is a key element of the bicycle network. While the CBPP outlines recommendations for investment in a transportation network for travel, it also recognizes the importance of bicycle parking at end-trip locations. Secure parking at end-trip locations is essential to making a trip possible. Locations without bicycle parking are not attractive or inviting to bicyclists. As a result, bicyclists may not journey to these destinations. Studies show that though many factors influence bicycling, secure parking has a significantly positive effect.[39]

The following types and locations of bicycle parking are considered to be of countywide significance, and will be eligible for funding through the CFP process:

- Bicycle racks at regional destinations including:
    - Transit stations
    - Transit hubs

[38] In the Bay Area, the City of Oakland has developed a logical and easy to use wayfinding signage system based on CA MUTCD signs. See http://www.oaklandpw.com/Page122.aspx#wayfinding for Oakland's Bicycle Wayfinding Design Guidelines.
[39] John E. Abraham and John Douglas Hunt, "Influences on Bicycle Use," *Transport* 34, no. 4 (2007): 466.

  - Community downtowns
  - Public hospitals
  - Regional parks
- Bicycle lockers or similar long-term secure parking facility at the following regional destinations:
  - Transit stations
  - Transit hubs
  - Community downtowns

6.6 Bikeway Network Project Categories

The total funding needed to implement the CBN is estimated at $191 million in 2011 dollars. The CBN is based on data from project description received by the jurisdictions for the purpose of this planning document. Given projected funding sources, only a portion of the network will be completed within the near-term. In order to assist C/CAG, the SMCTA, and other funding agencies in distributing the limited available funds, this Plan sorts CBN projects into three categories based on the project ranking criteria described in **Table 11**. These criteria are based on the goals and policies for the CBPP.

Note that this ranking only scores linear bikeways and barrier crossings on the CBN. The designation of a bikeway as a key corridor, described in **Section 6.5**, does not influence the project ranking of that bikeway. While most key corridors score high on the project categorization described below, some key corridors, particularly those in rural areas, may not score high.

6.6.1 Project Categorization Process

The criteria used to score and sort projects into categories are: collision history, transit access, population and employment density, and location in an underserved community. Values for each criterion were assigned to the recommended bikeway projects using a Geographic Information System (GIS)-based tool. The assumptions used to assign values are identified in the "Notes" column of **Table 12.** Once values had been assigned in GIS, the population density, employment density, and crashes per mile were normalized. Finally, the normalized scores were weighted to reflect the relative importance of each criterion: collision history 20 points, transit access 15 points, population density 8 points, employment density 12 points, underserved community 8 points.

The weighting process emphasizes utility trips—commute, shopping, and personal business trips. Focusing on these types of trips maximizes the benefit and funding available for bikeway projects. Shifting people from driving to bicycling for utility trips—particularly for commute trips— can help reduce congestion. Most bikeway funding from county, regional, state, and federal agencies require eligible bikeway projects to support utility trips. Funding for purely recreational bikeways is more limited.

Each category includes a mix of on-street and off-street bikeways, arterial crossing improvements, interchange improvements, and proposed bicycle/pedestrian overcrossings.

These categories are meant to be guidelines. The distribution of funds should consider these categories but ultimately be made on a project-by-project basis, considering an individual project's merits compared to the other competing projects for a funding cycle. **Tables 13, 14** and **15** summarize costs for each project group for the three categories. **Appendix A** contains detailed tables listing individual projects by jurisdiction, and maps showing projects by category.

Table 12: Project Ranking Criteria

Criterion	Definition	Max. Points	Notes	Supporting Goals and Policies
Safety Improvement that Addresses Collision History	SWITRS data, most recent available five years	20	Linear bikeways: Bike or pedestrian crashes per mile. 8.4 < Crashes Per mile = 20 Points 4 - 8.4 = 15 points 1.7 - 4 = 10 Points 0 - 1.7 = 5 points 0 = 0 points Overcrossings and intersections: bike or pedestrian crashes within 150 ft radius. Max. crashes oberved at overcrossings is 1. Max crashes observed at arterial crossings is 5. Point range reflects this difference. *Overcrossings* 1 crash = 20 points 0 crashes = 0 points *Arterial Crossings* 5 crashes = 20 points 3 crashes = 15 points 2 = 10 points 1 = 5 points 0 = 0 points Data: SWITRS 2004-2008	Goal 3, Policy 3.1
Station Access Improvement / Safe Routes to Transit	Stations defined by Caltrain, BART	15	Projects within 0.5-mile buffer of Caltrain/BART station receive 15 points, within 1-mile buffer receive 10 points, and within 1.5-mile buffer receive 5 points.	Policy 2.4, Policy 2.4
Activity Center Access Improvement (Population Density)	Areas of high population density	8	Population density measured in people/acre (Census 2008) 11+ people/acre = 8 points 5.5 - 11 people/acre = 6 points 1 - 5.5 people/acre = 4 points Less = 2 points	Policy 2.1, Policy 2.2, Policy 2.3, Policy 2.5
Activity Center Access Improvement (Employment Density)	Areas of high employment density	12	Employment density measured by jobs/acre (Census 2008) 7.5+ jobs/acre = 12 points 2 - 7.5 jobs/acre = 9 points 0.4 - 2 jobs/acre = 6 points < 0.4 = 3 points	Policy 2.1, Policy 2.2, Policy 2.3, Policy 2.5
Underserved Communities	MTC Communities of Concern boundary definitions	8	Projects that lie within or partially within a COC receive 8 points. All others receive 0. COC's are areas with high density of poverty and/or minority populations.	Policy 2.7

Table 13: Category A Costs by Project Group[40]

Project Type	Miles/ Qty	Est. Funding Needed
Off Street	3 miles	$ 2,064,000
On Street	62 miles	$ 1,740,000
Arterial Crossings	19 total	$ 770,000
Bicycle/Pedestrian Over/Undercrossing	4 total	$ 41,830,000
Interchange Improvement	1 total	$ 20,000
Total		**$ 46,424,000**

Table 14: Category B Costs by Project Group[41]

Project Type	Miles/ Qty	Est. Funding Needed
Off Street	14 miles	$ 8,790,000
On Street	53 miles	$ 1,436,000
Arterial Crossings	17 total	$ 220,000
Bicycle/Pedestrian Over/Undercrossing	5 total	$ 43,000,000
Interchange Improvement	2 total	$ 40,000
Total		**$ 53,486,000**

Table 15: Category C Costs by Project Group

Project Type	Miles/ Qty	Est. Funding Needed
Off Street	35 miles	$ 22,631,000
On Street	128 miles	$ 3,335,300
Arterial Crossings	19 total	$ 340,000
Bicycle/Pedestrian Over/Undercrossing	6 total	$ 65,000,000
Interchange Improvement	2 total	$ 30,000
Total		**$ 91,336,300**

6.7 Cost Estimates

The CBPP uses a per-mile cost estimate for bike routes, bike lanes, and shared use paths and unit cost estimates for major barriers. Cost estimates (**Table 16**) are in 2011 dollars, derived from Bay Area unit costs, and should be used for reference only. Actual costs to construct the facilities may vary depending on market fluctuations, design specifications, engineering requirements, available right of way, and availability of materials.

[40]Funding for these projects are described in Chapter 8, Implementation Strategy and categorization criteria are listed in Table 12.

[41]Funding for these projects are described in Chapter 8, Implementation Strategy and categorization criteria are listed in Table 12.

Table 16: Unit Cost Estimates

Item	Quantity	Units	Unit Cost	Total*
Class 3 Bike Route - Urban - Per Mile				
Bike Route Sign/Wayfinding[1]	10	EA	$300	$3,000
Shared Lane Marking[2]	20	EA	$250	$5,000
Total Cost Per Mile				$8,000
Class 3 Bike Route - Rural - Per Mile				
Bike Route Sign/Wayfinding/Warning[3]	4	EA	$300	$1,200
Total Cost Per Mile				$1,200
Class 2 Bike Lanes				
Bike Lane Sign/Wayfinding	10	EA	$300	$3,000
Traffic Striping (Lanes & Removal)	21,120	LF	$1.87	$39,600
Total Cost Per Mile				$42,600
Class I Shared Use Path - 10' paved, 2' shoulders				
Wayfinding	4	EA	$300	$1,200
Pathway Construction	73,920	SF	$8.14	$601,920
Striping[4]	15,840	LF	$2.50	$39,600
Total Cost Per Mile				$642,720
Major Barriers				
Arterial Intersection - Non-Complex[5]	1	EA		$10,000
Arterial Intersection - Complex[5]	1	EA		$20,000
Interchange Improvements[5]	1	EA		$20,000
Overcrossing	1	EA		$12,000,000
Undercrossing	1	EA		$12,000,000

[1] Assumes five signs per mile in each direction.

[2] Assumes shared lane markings are placed approximately every 500 feet in each direction.

[3] Assumes two signs per mile in each direction.

[4] Includes center stripe and striping along path edges.

[5] Arterial Intersection and Interchange cost estimates assume restriping and bicycle signal detection or signal detection. They do not include major reconstruction or signal installation.

** Total costs per mile are rounded to nearest hundred.*

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7 Pedestrian Focus Areas

7.1 Introduction

Pedestrians have a more limited mobility range than other transportation users. Unlike bicyclists and drivers, pedestrians do not typically travel long distances and instead are concentrated in local, accessible areas with short, direct routes. Consequently, rather than describing a countywide network of facilities this chapter identifies pedestrian areas with high pedestrian demand and includes a methodology to use when evaluating projects in these high demand areas.

7.2 Pedestrian Focus Areas

The pedestrian demand analysis[42] described in **Chapter 5** identifies areas of high pedestrian demand. To simplify project tracking and to guide local agencies in developing pedestrian projects, the CBPP establishes eight Focus Areas for pedestrians, described below.

Jurisdictions may wish to consider land use and development policies within these Focus Areas that support pedestrian activity. Such policies may include requiring new and redeveloped areas to include walking access, connecting existing cul-de-sacs, dead ends or long blocks with paseos, limiting block size, and encouraging a dense accessible mix of land uses and services.

Downtown Area Improvements

Downtown areas within San Mateo County generally have high levels of walking activity. As a result, many downtown areas also have excellent pedestrian facilities- wide sidewalks, attractive landscaping and frequent, high-visibility crosswalks. However, there are many locations with moderate to high levels of walking demand that do not have high quality walking environments. These areas would benefit from additional improvements that encourage walking, since a greater number of people would benefit, and such improvements can have a significant economic impact on the community.

Projects in this Focus Area should consist of improvements to pedestrian environments and connections on streets and corridors where there would be a substantial benefit from enhanced facilities. Sidewalks should ideally include a planted/furniture zone, a wide pedestrian through zone, and a frontage zone. Communities may consider pedestrian plazas, peripheral parking, congestion-priced parking and other emerging designs and programs to enhance the environment and encourage pedestrian activity.

El Camino Real Corridor Improvements

Improvements to the El Camino Real corridor are critical for increasing and encouraging walking in the county. In addition to running through many downtown areas and commercial districts, many Caltrain stations are located near El Camino Real. Population and employment densities on the corridor are also very high relative to most other areas in the county.

While El Camino Real currently has signalized crossings in some locations, controlled crossing opportunities are not well spaced for pedestrians, which results in the corridor being a substantial barrier to walking, despite high demand.

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[42]The results of this model are also described in **Appendix C**, which also includes detailed maps of expected walking demand "PedIndex" score on each street.

Projects in this Focus Area should make crossings more frequent, safer and more convenient and enhance the experience of walking along the corridor, particularly where ground floor retail is located. Sidewalks should ideally include a planting or furniture zone, a wide pedestrian through zone, and a frontage zone.

The Grand Boulevard Initiative is an ongoing multi-jurisdictional effort to improve transportation conditions for all modes on El Camino Real, including walking. Key goals of the Grand Boulevard Initiative are to create a pedestrian-oriented environment and improve the corridor's streetscape design. The CBPP complements the goals of the Grand Boulevard Initiative for the El Camino Real corridor. The CBPP's companion document, *A Resource Guide for the Education, Promotion, Funding, and Design of Pedestrian and Bicycle Facilities*, provides design guidance for introducing additional pedestrian crossings and promoting a convenient and comfortable sidewalk network along the corridor – in particular around Caltrain and BART stations.

Highway 1/Coastal Trail/Parallel Trail Improvements

The Highway 1 corridor runs north to south along the western part of San Mateo County. The corridor includes several town centers and provides access to many state parks and beaches. In many places, pedestrian access along the Highway 1 corridor is limited by infrequent crossing opportunities, heavy traffic volumes, high vehicle speeds and unimproved pedestrian facilities. As a result, there is substantial need for improvements along certain sections of the corridor.

The Parallel Trail and the Coastal Trail improvements will provide pedestrian facilities where few currently exist. The Parallel Trail runs along Highway 1 from Montara to Half Moon Bay and consists of Class I Bike Paths and Class II Bike Lanes. The Coastal Trail consists of Class I Bike Paths, Class II Bike Lanes, Class III Bike Routes, and unpaved dirt trails.

Improvements in this Focus Area will generally consist of new walking pathways along Highway 1 and new or enhanced crossing opportunities. Design treatments in the mid-coast section between Pacifica and Half Moon Bay will follow the guidelines set forth in the *Highway 1 Safety and Mobility Improvement Study*, which identifies barriers to multimodal travel on the corridor and proposes context-sensitive design standards.

Major Barrier Crossings

Barrier crossings are defined as improved connections across physical barriers to walking, and may include traditional grade-separated crossings of freeways, railroads and waterways, in addition to large arterials such as Woodside Road. Providing connections across major barriers is beneficial for both bicyclists and pedestrians. New or improved crossings for pedestrians are especially beneficial where they would connect separated areas with high levels of walking demand such as major employment centers. Additionally, new or reconstructed freeway interchanges can benefit from additional design improvements to encourage safe convenient pedestrian and bicycle access or dedicated bicycle and pedestrian overcrossings.

As a first step, existing roadway crossings of major barriers should be upgraded to provide improved pedestrian access via wide sidewalks and other improvements. Grade-separated pedestrian and bicycle crossings may be considered where anticipated use will be high and no alternative at-grade option exists. Use of a grade-separation is highly sensitive to the time it takes compared to an alternative at-grade crossing, with less than 20 percent of pedestrians using a crossing if it takes 50 percent longer than the at-grade crossing.[43]

[43] AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities. (2004) page 96, cited from ITE study, "Pedestrian Use of Bridges/Tunnels Based on Convenience." (1998).

Projects in this Focus Area will generally consist of pedestrian over- and undercrossings, improvements to at-grade arterial intersections, and pedestrian-related improvements to interchanges associated with the following: Highway 1, Highway 101, Highway 280, Highway 92, Highway 84/Woodside Road, Highway 380, Caltrain, future high-speed rail, major creeks or waterways.

Safe Routes to School

Safe Route to School improvements facilitate walking and bicycling access to schools in San Mateo County. The area within a one-mile radius of a school is considered the highest priority for Safe Routes to School infrastructure improvements. Projects in this Focus Area may include the addition of bulb-outs at intersections along recommended school access routes, development of improved pedestrian crossings, and traffic calming measures to help reduce motor vehicle speeds.

Other types of Safe Routes to School improvements, including educational programs, are described in detail in the CBPP's companion document, *A Resource Guide for the Education, Promotion, Funding, and Design of Pedestrian and Bicycle Facilities*. State and federal Safe Routes to School funding is available, and C/CAG is developing a program for distribution of county-level Safe Routes to School funding.

Safe Routes to Transit

Pedestrian access to transit hubs is critical for encouraging transit ridership. Stations that are isolated by freeways or busy arterials or have no safe or convenient walkways between residential areas and transit stops should be prioritized. Intersections and crossings near station areas can also be challenging and unpleasant to navigate due to their location on busy arterials, and are priority locations for improvement. Projects within this Focus Area will generally consist of sidewalks, wayfinding signage, intersection improvements within a half-mile radius of Caltrain and BART stations and a quarter-mile of major bus lines, and bus stop and transit station amenities that improve the pedestrian experience.

MTC's Safe Routes to Transit (SR2T) funding program, funded by Regional Measure 2 and administered by TransForm and the East Bay Bicycle Coalition, provides additional funding sources for transit-related projects. *A Resource Guide for the Education, Promotion, Funding, and Design of Pedestrian and Bicycle Facilities* describes the SR2T program.

Access to County/Regional Activity Centers

Many county and regional activity centers would benefit from improved walking connections. These include major hospitals, civic uses, employment districts, and parks, as well as rural town centers and neighborhood shopping / commercial districts. Projects within this Focus Area will generally consist of new sidewalks, intersection improvements, and crossing improvements.

Regional Trails

Regional trails provide key recreational and commute opportunities for pedestrians. All Class I paths identified in the CBN are also considered Pedestrian Focus Areas. Trails of countywide significance include: Bay Trail, Parallel Trail, Coastal Trail, Crystal Springs Regional Trail, and multi-use pathway portions of the Bay to Ocean Trails as identified in the San Mateo County Trails Master Plan. Projects within this Focus Area will consist of construction of new trails, upgrading existing trails, constructing trailheads, and roadway crossing improvements along trails.

Table 17 summarizes Pedestrian Focus Areas and **Figures 22** through **26** map the Focus Areas.

Table 17: Pedestrian Areas of Focus

Focus Area	Typical Projects
Downtown Area Improvements	• Sidewalks, walking pathways and crossing improvements in downtown or highest pedestrian demand areas
El Camino Real Corridor Improvements	• Walking pathways and crossing improvements along El Camino Real, including Grand Boulevard Initiative projects
Highway 1/Coastal Trail/ Parallel Trail Corridor Improvements	• Walking pathways and crossing improvements along the Highway 1 corridor
Major Barrier Crossings	Bicyclist and pedestrian crossings of major transportation barriers, including: • Freeway crossings; over/under crossing projects • Major arterial crossings; intersection crossing/signalization improvements. Eligible transportation and other barriers: Highway 1, Highway 101, Highway 280, Highway 92, Highway 84/Woodside Road, Highway 380, Caltrain, BART, future high-speed rail, major creeks or waterways
Safe Routes to School	• Walking pathways, sidewalks and intersection improvements within one-eighth of a mile of a K-12 school • Education, encouragement, enforcement programs at a K-12 school
Safe Routes to Transit	• Sidewalks and pedestrian intersection improvements within ½ mile of a Caltrain station or BART station • Sidewalks and pedestrian intersection improvements within ¼ mile of a major bus line
Access to County/ Regional Activity Centers	• Sidewalks and pedestrian intersection improvements connecting to activity centers of county or regional significance • Sidewalks and pedestrian intersection improvements in rural town centers or neighborhood shopping districts
Regional Trails	Regional paved multi-use trails including: • Construction of new trails • Upgrading existing trails • Construction of trailheads accessing regional trails • Roadway crossing improvements along regional trails Regional trails include: Bay Trail, Coastal Trail, Crystal Springs Regional Trail, multi-use pathway portions of the Bay to Ocean Trails as identified in the San Mateo County Trails Master Plan

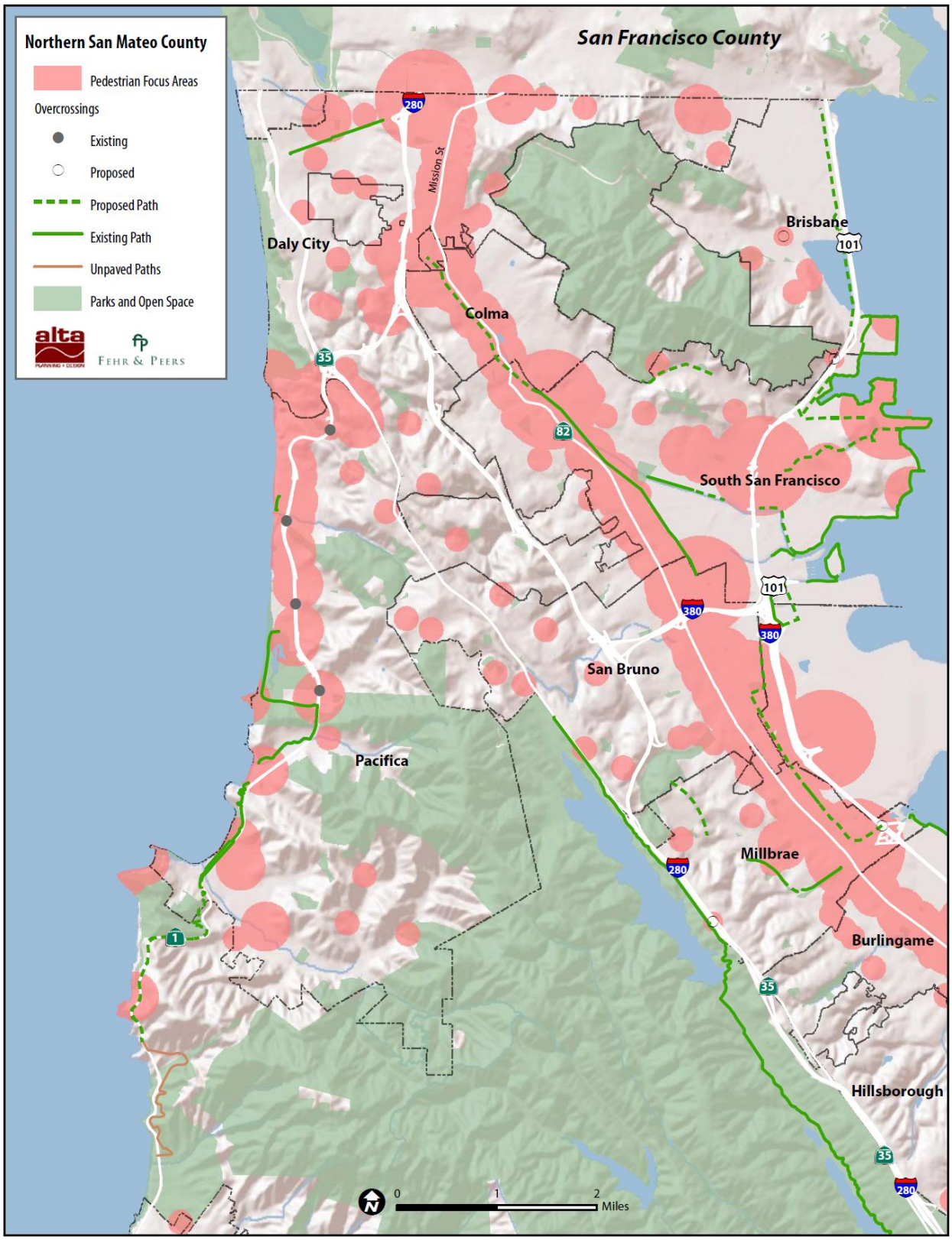

Figure 22: Pedestrian Focus Areas: Northern San Mateo County

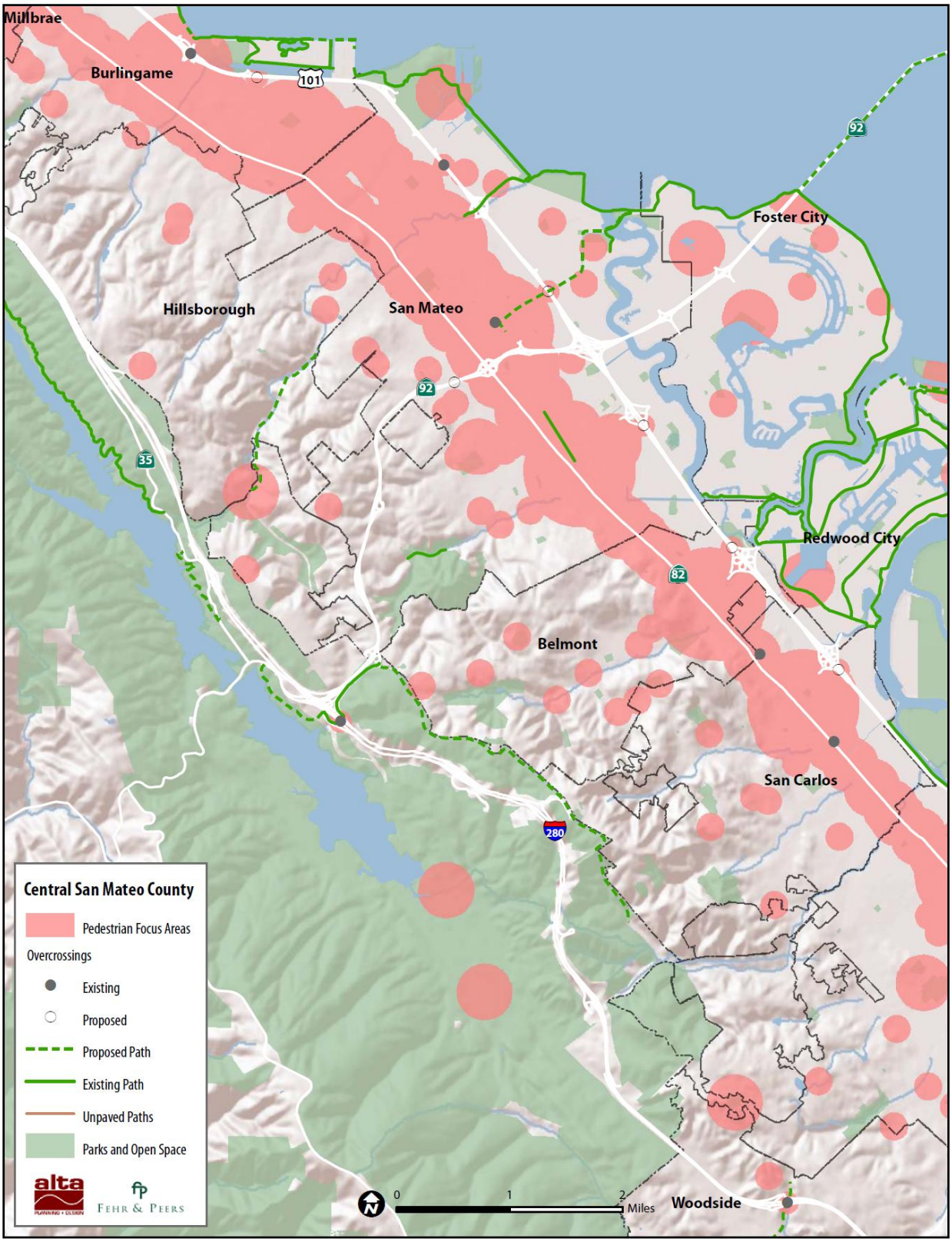

Figure 23: Pedestrian Focus Areas: Central San Mateo County

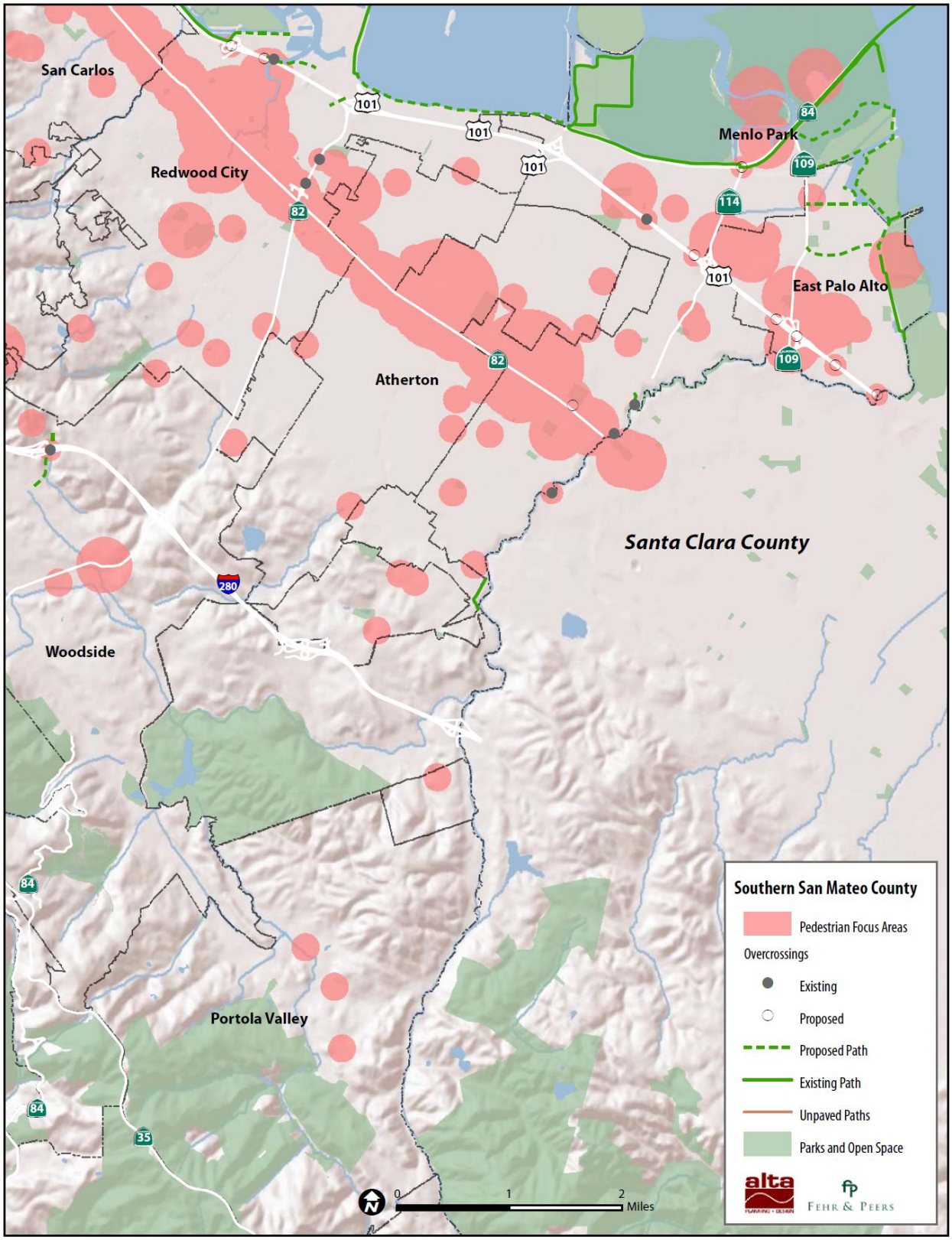

Figure 24: Pedestrian Focus Areas: Southern San Mateo County

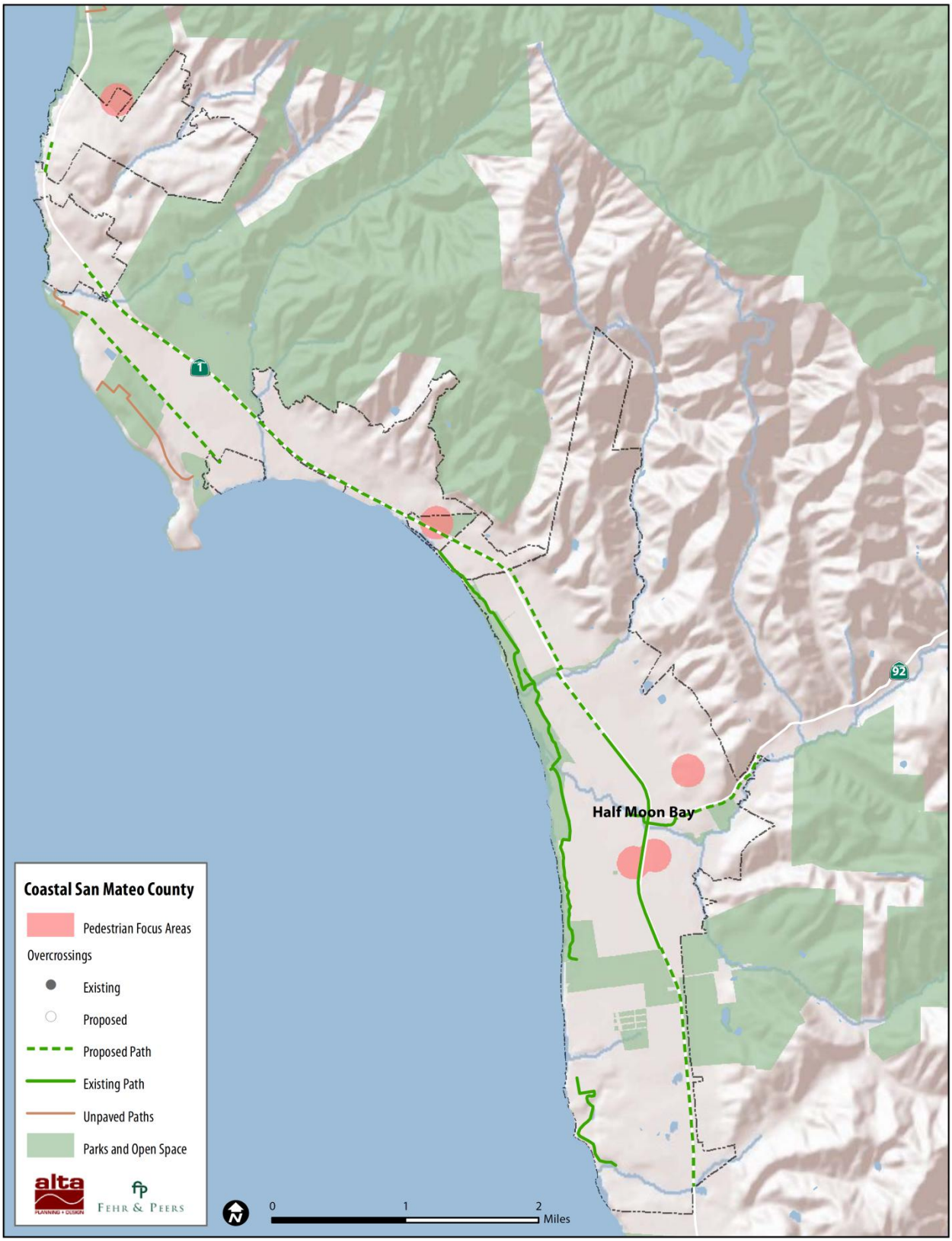

Figure 25: Pedestrian Focus Areas: Coastal San Mateo County

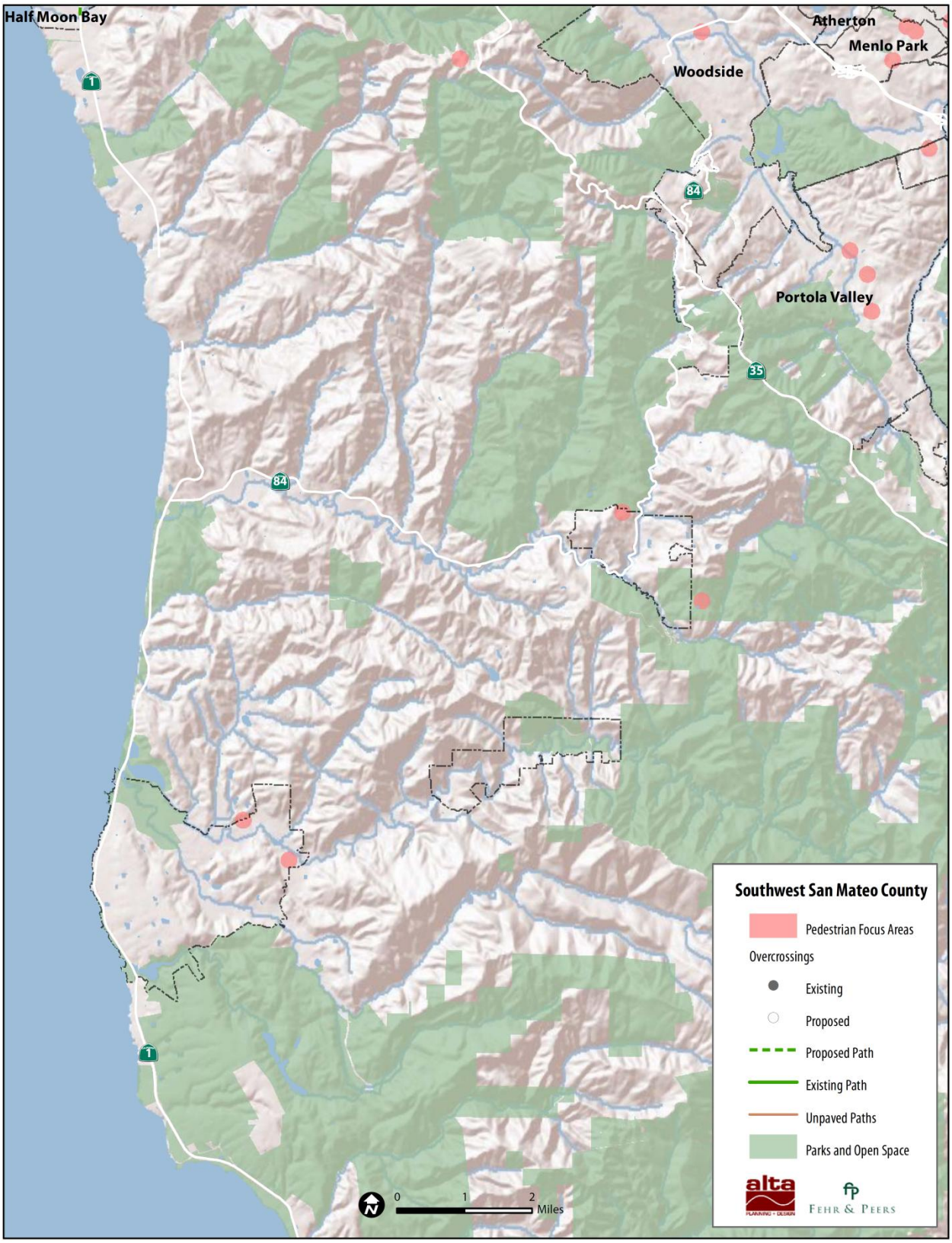

Figure 26: Pedestrian Focus Areas: Southwest San Mateo County

7.2.1 Designing for Pedestrian Improvements in Focus Areas

The eight Pedestrian Focus Areas encompass different land uses, different levels of pedestrian activity, and different types of projects. As a result, the level of pedestrian improvement appropriate to each Focus Area differs. **Table 18**, on the following pages, describes the minimum design guidelines for each Focus Area. In some cases right-of-way, intersection capacity, or other constraints may preclude meeting these design guidelines. However, towns, cities and the County should strive to provide pedestrian environments that meet or exceed these guidelines whenever possible.

Table 18: Design Guidelines for Pedestrian Focus Areas

Design Guidelines for Pedestrian Focus Areas								
	Urban Downtown/ Station Area	**El Camino Real Corridor**	**Highway 1/ Coastal Trail/ Parallel Trail Improvements**	**Major Barrier Crossings**	**Safe Routes to School**	**Safe Routes to Transit**	**Connections to Activity Centers**	**Recreational Trails**
Streets & Sidewalks	• 10' - 20' sidewalk • 7' unobstructed pedestrian right-of-way required • Vertical curb and gutter • Obstacles removed from pedestrian way • ADA-compliant curb ramps • Pedestrian-scale lighting • Minimum 5' landscape buffer • Street trees • On-street parking or bike lane buffer	• 8' - 20' sidewalk • 7' unobstructed pedestrian right-of-way required • Vertical curb and gutter • Obstacles removed from pedestrian way • ADA-compliant curb ramps • Pedestrian-scale lighting • Minimum 5' landscape buffer • Street trees • On-street parking or bike lane buffer	• Sidewalk in developed areas or access routes to recreation areas; 4' – 12' pathway in undeveloped areas with pedestrian activity • Vertical curb and gutter where sidewalks exist • Obstacles removed from pedestrian way • ADA-compliant curb ramps • Pedestrian-scale lighting in developed areas • Minimum 5' landscape buffer where possible • On-street parking buffer in developed areas	• 10' - 20' paths or min. 5' detached sidewalks; wider pathways where high pedestrian and/or bicycle demand expected • Min. 12' path if vertical enclosure • Obstacles removed from pedestrian way • ADA-compliant curb ramps • Pedestrian-scale lighting, min. at crossings	• 4' – 12' sidewalk or pathway • Vertical curb and gutter where sidewalks exist • Obstacles removed from pedestrian way • ADA-compliant pathways • Pedestrian-scale lighting, min. at crossings	• 6' - 16' sidewalk • Vertical curb and gutter • Obstacles removed from pedestrian way • ADA-compliant curb ramps • Pedestrian-scale lighting • Minimum 5' landscape buffer • Street trees • On-street parking or bike lane buffer	• 6' - 16' sidewalk • Vertical curb and gutter • Obstacles removed from pedestrian way • ADA-compliant curb ramps • Pedestrian-scale lighting • Minimum 5' landscape buffer • Street trees • On-street parking or bike lane buffer	• 10' - 20' paths • Obstacles removed • ADA-compliant curb ramps • Pedestrian-scale lighting, min. at crossings • Min. 12' path if vertical enclosure

Design Guidelines for Pedestrian Focus Areas								
	Urban Downtown/ Station Area	**El Camino Real Corridor**	**Highway 1/ Coastal Trail/ Parallel Trail Improvements**	**Major Barrier Crossings**	**Safe Routes to School**	**Safe Routes to Transit**	**Connections to Activity Centers**	**Recreational Trails**
Crossings	• Marked crossings at signalized and stop controlled locations • Accessible pedestrian signals • High visibility, enhanced crossings at uncontrolled locations • High visibility, enhanced mid-block crossings where appropriate • Median islands • Bulb-outs • Max 300' between crossings	• Marked crossings at signalized locations • Accessible pedestrian signals • High visibility, enhanced crossings at uncontrolled locations • High visibility, enhanced mid-block crossings where appropriate • Pedestrian beacons • Median islands • Bulb-outs • Max 300' between crossings in high demand areas, 600' between crossings in other areas	• Crossings at key desire lines • High visibility, enhanced crossings at uncontrolled locations • Median islands • Max 600' between crossings in developed areas	• Max 1 mile between crossings • Marked crossings at signalized and stop controlled locations on access routes to barrier crossing	• Marked crossings at signalized and stop controlled locations • High visibility, enhanced crossings at uncontrolled locations, including possible raised crosswalks • Median islands and bulbouts possible	• Marked crossings at signalized and stop controlled locations • Accessible pedestrian signals • High visibility, enhanced crossings at uncontrolled locations • High visibility, enhanced mid-block crossings where appropriate • Median islands • Bulb-outs • Max 300' between crossings	• Marked crossings at signalized and stop controlled locations • Accessible pedestrian signals • High visibility, enhanced crossings at uncontrolled locations • High visibility, enhanced mid-block crossings where appropriate • Median islands • Bulb-outs • Max 300' between crossings	• Marked crossings at signalized and stop controlled locations • Accessible pedestrian signals • High visibility, enhanced crossings at uncontrolled locations • High visibility, enhanced mid-block crossings where appropriate • Median islands and bulbouts possible
Multi-modal Connections	• Frequent transit service during peaks • Convenient transit stops • Connected bike network	• Frequent transit service during peaks • Convenient transit stops • Connected bike network	• Regular transit service during peaks in developed areas • Convenient transit stops in developed areas • Connected bike network	• Connected bike network	• Connected bike network	• Frequent transit service during peaks • Convenient transit stops • Connected bike network	• Frequent transit service during peaks • Convenient transit stops • Connected bike network	• Convenient transit stops at trailhead areas, depending on proximity to activity center • Connected bike network

Design Guidelines for Pedestrian Focus Areas								
	Urban Downtown/ Station Area	**El Camino Real Corridor**	**Highway 1/ Coastal Trail/ Parallel Trail Improvements**	**Major Barrier Crossings**	**Safe Routes to School**	**Safe Routes to Transit**	**Connections to Activity Centers**	**Recreational Trails**
Pedestrian Realm Vitality	• High density housing, employment • Regional, community shopping destinations • Public art • Street fairs • Street furniture • Wayfinding • Sidewalk seating/cafes • Show windows • Vendor carts • Awnings/shade structures • Paseos: Public pathways with active frontage designed for pedestrian use	• Medium/high density housing, employment • Regional, community shopping destinations • Public art • Street fairs • Street furniture • Wayfinding • Sidewalk seating/cafes • Show windows • Vendor carts • Awnings/shade structures • Paseos	• Low density housing • Agricultural uses • Recreational destinations • Street furniture (in developed areas) • Wayfinding • Sidewalk seating/cafes (in developed areas) • Awnings/shade structures (in developed areas)	• Street furniture • Wayfinding • Crime prevention through environmental design measures (lighting, visibility, regular maintenance, etc.)	• Slow zones for vehicles • Walking programs (e.g. walking school bus)	• Medium/high density housing, employment • Regional, community shopping destinations • Public art • Street fairs • Street furniture • Wayfinding • Sidewalk seating/cafes • Show windows • Vendor carts • Awnings/shade structures • Paseos	• Medium/high density housing, employment • Regional, community shopping destinations • Public art • Street fairs • Street furniture • Wayfinding • Sidewalk seating/cafes • Show windows • Vendor carts • Awnings/shade structures • Paseos	• Street furniture • Wayfinding • Crime prevention through environmental design measures (lighting, visibility, regular maintenance, etc.)

Notes: Additional design guidance provided in ***A Resource Guide for the Education, Promotion, Funding, and Design of Pedestrian and Bicycle Facilities****.*
For improvement considerations on El Camino Real, also refer to Chapter 5 of the Grand Boulevard Multimodal Corridor Transportation Plan (2010)
Source: Fehr & Peers, 2010

7.3 Recommended Pedestrian Prioritization Criteria

Specific pedestrian projects identified by this plan – pedestrian and bicycle overcrossings and undercrossings, and multi-use pathways – are identified in **Chapter 6, Countywide Bikeway Network**. The CBPP defers to local agencies to identify other pedestrian projects, such as new sidewalks, crossing improvements, and improved streetscape design. This section describes criteria that can be used to prioritize these other pedestrian projects during the funding process. These criteria reflect the goals and policies of the CBPP, and ask the following questions:

- Does the project fall within a pedestrian focus area?
- Is the project consistent with relevant pedestrian design guidelines and pedestrian focus area characteristics?
- Does the project improve pedestrian safety?
- Does the project target people with disabilities, children, seniors, or an underserved population?

7.3.1 Improvement Located in a Pedestrian Focus Area

Projects located in Pedestrian Focus Areas described in **Section 7.2** should be encouraged.

Pedestrian Focus Areas encompass key pedestrian activity areas within the County, and the CBPP has identified these locations for pedestrian improvements. Projects in Focus Areas will affect a large number of pedestrians where the need for improvements may be greatest. They include downtowns, El Camino Real, Highway 1, major barrier crossings, school areas, transit stops, and access to destinations of countywide significance.

This criterion supports CBPP Policies 2.3 and 2.4.

7.3.2 Consistency with Design Guidelines and Complete Streets Policies

Projects that meet or exceed the design guidelines listed in **Table 18**, should be emphasized.

For additional reference, the Pedestrian Design Guidelines included in the CBPP companion document *A Resource Guide for the Education, Promotion, Funding, and Design of Pedestrian and Bicycle Facilities* are intended to provide a toolbox of potential strategies to improve walking conditions. These Guidelines were developed to be consistent with Complete Streets and Routine Accommodations policies. They also provide references to other useful design guidance for pedestrian facilities, such as the *San Mateo County Sustainable Green Streets and Parking Lots Design Guidebook* (2009).

This criterion supports CBPP Policies 4.1, 4.2, and 4.5.

7.3.3 Pedestrian Safety

Projects that improve pedestrian safety, either at a high-collision location or through best practices in pedestrian design should be prioritized over those that do not.

A high rate of pedestrian injuries and fatalities suggest the pedestrian realm is an undesirable place to travel and may benefit from enhanced pedestrian facilities focusing on safety. While the total number of police-reported pedestrian collisions in a given area is readily available, it is often difficult to establish a rate – pedestrian collisions per pedestrian exposed to motor vehicles. Local agencies can collect counts of pedestrian

exposure to establish the rate, or can refer to the estimated pedestrian demand maps included as an appendix to the CBPP.

This criterion supports CBPP Policy 3.1 and 3.4.

7.3.4 Target Demographics

Projects that target seniors, youth, people with disabilities, and low-income communities and individuals should be prioritized over those that do not.

Several key demographic groups would benefit significantly from improved pedestrian infrastructure. They include people with disabilities, children, seniors, and people living in underserved communities. People with disabilities often require a connected transportation network that meets or exceeds ADA guidelines. Children and seniors are more at risk of being injured or killed in a car crash than other age groups. In San Mateo County, people with low incomes are also much more likely to walk than other income groups.

This criterion supports CBPP Policies 2.2, 2.3, 2.7 and 3.1.

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8 Implementation Strategy

8.1 Introduction

The CBPP identifies bicycle and pedestrian projects of countywide significance through the Countywide Bikeway Network (CBN) and Pedestrian Focus Areas. Realization of the bicycle and pedestrian projects described in this plan requires continued collaboration between the cities, County, C/CAG, San Mateo County Transportation Authority, and Caltrans.

8.2 Local Implementing Agency Role

Local cities and San Mateo County will need to design, construct and maintain the bicycle and pedestrian infrastructure. The CBN is drawn from the bike plans and proposed projects of local agencies. Local agencies should refer to the detailed project tables and detailed maps provided in **Appendices A** and **B**, respectively.

The Pedestrian Focus Areas are described in **Chapter 7** of this plan. Local agencies should refer to those Focus Areas when identifying pedestrian projects that are eligible for countywide funding.

8.2.1 Construction Funding

Cities and the County have limited funds available to construct and maintain all infrastructure, including bicycle and pedestrian projects. Many local implementing agencies will rely on grant funding to construct projects recommended in the CBPP. Maximum grant awards for bicycle and pedestrian projects tend to be low—ranging up to a million dollars. More costly projects recommended in the CBPP will need to be phased over time or integrated into larger transportation projects. For example, proposed pedestrian over/undercrossings identified in the CBPP should be constructed as part of any freeway widening project and proposed bicycle lanes should be striped when a roadway is scheduled for routine repaving.

Cities and the County may also consider funding bicycle and pedestrian infrastructure identified in the CBPP as part of conditions of development, based on the impact the development has on bicycle and pedestrian circulation. Pedestrian streetscape improvements can be codified in city design guidelines and constructed with new development or redevelopment.

Other local sources of construction funding include creating an assessment district or business improvement district to fund construction and maintenance costs.

8.2.2 Maintenance Funding

New bicycle and pedestrian projects will increase costs of operations and maintenance for local implementing agencies. Maintenance and operations for on-street bikeways can typically be rolled into existing street sweeping and repaving programs, but maintenance of sidewalks, pathways, bridges and undercrossings will require significant additional resources.

Ideally, funding for maintenance and operations should be secured before local implementing agencies decide to construct new bicycle or pedestrian infrastructure. As grant funding is generally not available for on-going costs of maintenance and operations, local implementing agencies will need to identify local revenues to fund these activities. Local funding mechanisms for maintenance include development of a local assessment district, business improvement district, community facilities district, and requiring property owners to

maintain adjacent sidewalks and pathways. Any funding source should include an automatic increase linked to inflation and bring in enough to support a reserve fund for larger maintenance needs, such as emergency repair, path resurfacing, or bridge replacement.

Local implementing agencies may also consider volunteer community-based maintenance and patrols for pathways, and adopt-a-trail programs. The costs of administering these programs should be weighed against the benefits of reduced maintenance and operations costs.

8.2.3 Projects on Caltrans Roadways

The CBPP recommends bicycle and pedestrian projects on Caltrans-owned roadways, including Woodside Road (SR 84), El Camino Real (SR 82), Highway 1, Highway 92, Skyline Boulevard (SR35), as well as bicycle and pedestrian under and over crossings across Highway 101 and Interstate 280. Local implementing agencies will need to work with Caltrans to encourage the agency to design and construct bicycle and pedestrian improvements along these roadways, in accordance with Caltrans' routine accommodation policy.

8.2.4 Other Resources for Local Implementing Agencies

The CBPP includes a companion document intended to assist San Mateo County's cities and County in designing and funding bicycle and pedestrian infrastructure, and developing programs to support walking and bicycling. This document, *A Resource Guide for the Education, Promotion, Funding, and Design of Pedestrian and Bicycle Facilities* contains the following information:

- **Education, Safety, and Promotion Guidebook** – provides description and cost estimates of proven programs to support walking and biking
- **Funding Sources** – summarizes local, county, regional, state and Federal funding sources that can be used for development of bicycle and pedestrian infrastructure and programs
- **Pedestrian Design Guidelines** – illustrates best practices for pedestrian design, including innovative designs
- **Bicycle Design Guidelines** – illustrates best practices for bicycle design, including innovative designs

8.3 C/CAG and SMCTA Roles

C/CAG provides countywide-level guidance in assisting local jurisdictions to implement bicycle and pedestrian projects and programs, and most importantly, provides funding for bicycle and pedestrian improvements within the County. The cities, County and other transportation agencies are responsible for bringing projects forward. C/CAG and SMCTA provide funding to the projects that best meet the guidelines established by the CBPP and the specific call for project criteria.

It is recognized that there are benefits in increasing bicycle and pedestrian coordination between jurisdictions in the County such as providing an expanded website with bicycle and pedestrian information to serve San Mateo County stakeholders, collaborating with local agencies to implement demonstration projects to showcase bicycling and walking, and strengthening the oversight of routine accommodation requirements by encouraging project sponsors to consider the bicyclists and pedestrian needs early on during the project development and planning process, as appropriate.

8.3.1 Funding the CBPP

C/CAG's and SMCTA's primary role with respect to implementation of the CBPP is to provide funding to the twenty cities and the County for bicycle and pedestrian specific projects that are on the CBN and within the Pedestrian Focus Areas. The CBPP and resulting project list provides local jurisdictions information for determining projects to sponsor for funding through the Transportation Development Act (TDA) Article 3, Measure A, and other state and federal funding opportunities.

C/CAG is responsible for distributing TDA Article 3 and Regional Bicycle Program (RBP) funds for bicycle projects within the County. C/CAG, as part of the funding process, is also responsible for developing a process to solicit projects from the local jurisdictions, encouraging submission of project applications, and evaluating and prioritizing projects.

The SMCTA administers the Measure A funds for transportation projects and programs in San Mateo County. The new Measure A includes a Pedestrian and Bicycle Program category that provides funding for construction of facilities for bicyclists and pedestrians. The goal of the category is to fund infrastructure projects that encourage and improve bicycling and walking conditions in San Mateo County. Annually, three percent (3%) of the new Measure A sales tax revenues are set aside for Pedestrian and Bicycle Program. The Pedestrian and Bicycle Program call for projects is conducted biennially.

8.3.2 CBPP Recommended Projects

For individual bicycle related projects, the CBPP's established categories will be utilized to help facilitate the process of distributing limited local funds. All bicycle projects within the three catgegories will be considered for funding. Since there is a wide array of pedestrian related projects, projects within the Pedestrian Focus Areas would receive higher consideration for funding over projects in areas not defined in the CBPP.

8.3.3 Implementation Approach

Ultimately, the 20 cities and the County will plan, design, construct, and maintain the bicycle and pedestrian projects identified in this Plan. These recommended projects, located throughout San Mateo County, address different needs and requirements, vary in type, size and cost, and would be implemented by the jurisdictions in phases and over multiple years. Most of the individual projects are already identified in the CBPP in some level of detail, by either a specific location or located within a focus area. To facilitate the implementation of these projects, C/CAG and the SMCTA will work collaboratively with the cities and County. It is important to keep in mind that both pedestrian and bicycle projects are eligible for funding. The call for projects and selection system should be sensitive to this such that a reasonable balance between pedestrian and bicycle projects is achieved each funding cycle.

The SMCTA and C/CAG will commit to using a focused implementation strategy to complete projects in a more structured manner. By utilizing a focus it also provides direction to prospective applicants on the projects desired for funding. This may help advance key projects since neither C/CAG or SMCTA are typically project sponsors.

The proposed strategy is to further group the projects by types, focus areas, and key corridors. The general project groups would be associated and linked with current regional and countywide transportation planning efforts including the Grand Boulevard Initiative, US 101 Corridor System Management Plan, Sustainable

Communities Strategies, and other plans as applicable. Project groupings are included in the following Implementation Categories and specific Project Types:

- **Address Broad Objectives**
  - Link Bicycle and Pedestrian crossings with major freeway improvement projects on US-101, I-280, Hwy 84 and Hwy 92. Due to the cost of bicycle and pedestrian crossings, it is best to fund them in conjunction with the major improvement project.
  - Meet the needs of a broad variety of groups (i.e., seniors, people with disabilities, school children, etc…)
  - Projects co-sponsored by two or more jurisdictions
  - Projects that serve multiple purposes
- **Address Specific Issues of Concern**
  - Safety deficiencies, particularly with motor vehicles
  - Mitigate access barriers
  - Improve key crossings across major highway and freeways
  - Improve existing facilities (as opposed to constructing new facilities that expand the system)
  - Add new facilities as needed to close gaps
- **Implement Specific Project Category**
  - Installation of signage along designated routes
  - Smaller-sized projects that are ready for construction and relatively easy to implement
  - Pedestrian crossings across El Camino Real
- **Corridor Connectivity and Gap Closures**
  - Completion of the Bay Trail
  - Completion of signs for the N-S Bikeway
  - Serve the primary connectivity needs between jurisdictions

SMCTA and C/CAG should take into consideration the above Implementation Categories when developing the biennial bicycle and pedestrian funding program for the Measure A and TDA Article 3. One or more Implementation Categories may be emphasized in any one program cycle. This emphasis essentially assigns an additional preference layer and increases the opportunity for a particular project category to receive funding. For each funding cycle that SMCTA and C/CAG administer, different Implementation Categories or Project Types may be encouraged based on the number of eligible projects and availability of funds. A predetermined amount of funds could be set aside towards specific Project Types.

Appendix A

Detailed Bikeway Project Tables and Priority Maps

San Mateo County Comprehensive Bicycle and Pedestrian Plan

Final

Adopted September 8, 2011

Prepared by: Alta Planning + Design

in association with Fehr & Peers and Eisen | Letunic

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A Detailed Bikeway Project Tables

Table A-1: Category A Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
Atherton						
Atherton	Linear Bikeway	El Camino Real	5th Avenue to Alejandra Avenue	1.09	2/3	$46,000
Atherton	Linear Bikeway	El Camino Real	Redwood City Line to 5th Avenue	0.26	3	$2,000
Belmont						
Belmont	Linear Bikeway	El Camino Real	Ralston Avenue to San Carlos Line	0.64	2/3	$27,000
Belmont	Linear Bikeway	Old County Road	Laurie Meadows to Quarry Road	1.43	2/3	$61,000
Belmont	Linear Bikeway	Ralston Avenue	Laurel Avenue to Redwood City	0.78	2/3	$33,000
Belmont	Linear Bikeway	Ralston Avenue Bikeway	Alameda de las Pulgas to Villa Avenue	0.05	2	$2,000
Burlingame						
Burlingame	Linear Bikeway	Bayshore Highway	Millbrae Line to Bayside Park	1.2	2	$51,000
Burlingame	Linear Bikeway	Broadway	California Drive to Bayshore Highway	0.41	2/3	$18,000
Burlingame	Linear Bikeway	Cadillac Way	Carolan Avenue to Rollins Road	0.1	2/3	$4,000
Burlingame	Linear Bikeway	California Dr	North Lane to Peninsula Drive	0.41	2/3	$17,000
Burlingame	Linear Bikeway	Dwight Road	Peninsula Avenue to Howard Avenue	0.24	3	$2,000
Burlingame	Linear Bikeway	Floribunda Avenue	Ansel Avenue to El Camino Real	0.29	3	$2,000
Burlingame	Linear Bikeway	Magnolia Avenue	Murchion Drive to Trousdale Drive	0.21	2	$9,000
Burlingame	Linear Bikeway	Murchison Drive	Magnolia Avenue to California Drive	0.19	3	$1,000
Burlingame	Linear Bikeway	Oak Grove/Winchester	Anza Boulevard to Farringdon Lane	0.85	2/3	$36,000
Burlingame	Linear Bikeway	Trousdale Drive	S. Ashton Avenue to California Drive	0.69	3	$6,000
Burlingame	Arterial Crossing	Howard Avenue at El Camino Real				$10,000
Burlingame	Arterial Crossing	Murchison Drive at El Camino Real				$20,000
Colma						
Colma	Linear Bikeway	Colma-Millbrae Bikeway (BART ROW)	Colma BART to South San Francis-co Line	1.24	1	$795,000
Colma	Linear Bikeway	Serramonte Boulevard	Hillside Boulevard to Daly City Line	0.99	2/3	$42,000
Colma	Linear Bikeway	State Highway 82	City Limits to Mis-sion Road	0.99	3	$8,000
Colma	Arterial Crossing	Serramonte Boulevard at State Highway 82				$20,000
Daly City						
Daly City	Linear Bikeway	Bayshore Boulevard	San Francisco Line to Geneva Avenue	0.27	2	$12,000
Daly City	Linear Bikeway	E. Market Street	Hillside Boulevard to San Bruno Mt. Park	0.68	2	$29,000
Daly City	Linear Bikeway	Eastmoor	Baldwin to Sulli-van	0.77	2	$33,000
Daly City	Linear Bikeway	Gellert Boulevard	Serramonte Bou-levard to Hickey	0.32	3	$3,000
Daly City	Linear Bikeway	Geneva Avenue	San Francisco Line to Bayshore	0.71	2	$30,000
Daly City	Linear Bikeway	Hickey Boulevard	State Highway 35 to South San Fran-cisco Line	1.18	3	$9,000

Table A-1: Category A Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
Daly City	Linear Bikeway	Hillside Boulevard	San Jose Avenue to Colma Line	1.42	3	$11,000
Daly City	Linear Bikeway	John Daly Boulevard	Sheffield Drive to San Jose Avenue	0.74	3	$6,000
Daly City	Linear Bikeway	Junipero Serra Boulevard	John Daly Boulevard to Colma Line	1.59	2	$68,000
Daly City	Linear Bikeway	Lake Merced Boulevard	John Daly Boulevard to Southgate Avenue	0.28	3	$2,000
Daly City	Linear Bikeway	Palmcrest Drive	Southgate Avenue to Broadmoor Line	0.25	3	$2,000
Daly City	Linear Bikeway	San Jose Avenue	John Daly Boulevard to San Francisco County Line	0.29	2/3	$12,000
Daly City	Linear Bikeway	San Pedro Road	Junipero Serra Boulevard to Hillside Boulevard	0.63	2	$27,000
Daly City	Linear Bikeway	San Pedro Road	Sullivan Avenue to State Highway 82	0.11	2	$5,000
Daly City	Linear Bikeway	Serramonte Boulevard	Colma Line to Gellert Boulevard	0.26	2/3	$11,000
Daly City	Linear Bikeway	Serramonte Boulevard	St Francis Boulevard to Callan Boulevard	0.26	2/3	$11,000
Daly City	Linear Bikeway	Southgate Avenue	Westmoor Avenue to St. Francis Boulevard	0.9	2	$38,000
Daly City	Linear Bikeway	St. Francis Boulevard	Southgate Avenue to Serramonte Boulevard	0.47	2/3	$20,000
Daly City	Linear Bikeway	State Highway 82	John Daly Boulevard to City Limits	1.26	3	$10,000
Daly City	Linear Bikeway	State Highway 82	San Jose Avenue to San Francisco Line	0.4	2/3	$17,000
Daly City	Linear Bikeway	Vendome Avenue	San Francisco Line to San Jose Avenue	0.25	2/3	$11,000
Daly City	Linear Bikeway	Washington Street	Annie Street to Junipero Serra Boulevard	0.28	3	$2,000
Daly City	Arterial Crossing	Gellert Boulevard at Hickey Boulevard				$20,000
Daly City	Arterial Crossing	Hillside Boulevard at State Highway 82				$20,000
Daly City	Arterial Crossing	San Pedro Road at State Highway 82				$20,000
East Palo Alto						
East Palo Alto	Linear Bikeway	U.S. 101 Overcrossing	300' N. of Donahoe Street to Woodland Avenue	0.41	2	$17,000
East Palo Alto	Overcrossing	Clarke Avenue at US 101				$12,000,000
Half Moon Bay						
Half Moon Bay	Arterial Crossing	Kelly Avenue at State Highway 1				$10,000
Half Moon Bay	Arterial Crossing	Poplar Street at State Highway 1				$10,000
Half Moon Bay	Arterial Crossing	State Highway 92 at State Highway 1				$20,000
Hillsborough						
Hillsborough	Linear Bikeway	Floribunda Avenue	El Camino Real to Walnut Avenue	0.1	3	$1,000
Menlo Park						
Menlo Park	Linear Bikeway	El Camino Real	Alejandra Avenue to Valparaiso Avenue	0.33	2	$14,000
Menlo Park	Linear Bikeway	El Camino Real	Valparaiso Avenue to Santa Clara County Line	1.05	3	$8,000
Menlo Park	Linear Bikeway	Marsh Road	Bay Road to US 101	0.58	2/3	$25,000

Table A-1: Category A Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
Menlo Park	Linear Bikeway	University Drive	Valparaiso Avenue to Santa Clara County	1.08	3	$9,000
Menlo Park	Arterial Crossing	Middlefield Road at State Highway 114				$10,000
Menlo Park	Undercrossing	Near Middle Avenue at Highway 82				$12,000,000
Millbrae						
Millbrae	Linear Bikeway	Center/Broadway/Magnolia	San Anselmo Avenue to California Drive	1.3	3	$10,000
Millbrae	Linear Bikeway	E. Millbrae Avenue	Magnolia Avenue to Old Bayshore Boulevard	0.86	2/3	$37,000
Millbrae	Linear Bikeway	Hillcrest/Larida/Beverly	Magnolia Avenue to Aviador Avenue	0.48	3	$4,000
Millbrae	Linear Bikeway	Linden Avenue	El Camino Real to Millbrae Caltrain	0.07	2	$3,000
Millbrae	Linear Bikeway	Old Bayshore Boulevard	Coast Guard Road to Burlingame Line	0.21	2/3	$9,000
Millbrae	Linear Bikeway	Rollins Road	Aviador Avenue to Burlingame Line	0.29	3	$2,000
Millbrae	Arterial Crossing	Hillcrest Boulevard at El Camino Real				$10,000
North Fair Oaks						
North Fair Oaks	Linear Bikeway	Middlefield Road	Charter Road to 5th Avenue	0.81	2/3	$35,000
Redwood City						
Redwood City	Linear Bikeway	Canyon/Oak Knoll/Brewster	Cordilleras Road to Emerald Lake Hills	1.55	2/3	$66,000
Redwood City	Linear Bikeway	Chestnut Street	Marsha Street to Veterans Boulevard	0.08	2/3	$3,000
Redwood City	Linear Bikeway	Chestnut to Seaport undercrossing	Chestnut Street to Stein Am Rhein Circuit	0.16	1	$103,000
Redwood City	Linear Bikeway	El Camino Real	Broadway to Beech Street	0.62	2/3	$26,000
Redwood City	Linear Bikeway	El Camino Real	Lincoln Avenue to Main Street	0.32	2/3	$13,000
Redwood City	Linear Bikeway	El Camino Real	San Carlos Line to Brewster Avenue	0.64	2/3	$27,000
Redwood City	Linear Bikeway	El Camino Real	Woodside Road to Atherton Line	0.73	3	$6,000
Redwood City	Linear Bikeway	Jefferson Avenue	Marsha Street to El Camino Real	0.39	2	$16,000
Redwood City	Linear Bikeway	Jefferson Avenue	Oak Ridge Road to El Camino Real	1.47	2	$63,000
Redwood City	Linear Bikeway	Maple Street	El Camino Real to Blomquist St	1.03	2/3	$44,000
Redwood City	Linear Bikeway	Marshall Street	Chestnut Street to Arguello Avenue	0.83	2/3	$35,000
Redwood City	Linear Bikeway	Middlefield Road	Main Street to Maple Street	0.04	2	$2,000
Redwood City	Linear Bikeway	Middlefield Road	Winslow Street to Main Street	0.2	3	$2,000
Redwood City	Linear Bikeway	Roosevelt	Alameda de las Pulgas to El Camino Real	1.63	3	$13,000
Redwood City	Linear Bikeway	Warren Street	Brewster Avenue to Marshall Street	0.17	2/3	$7,000
Redwood City	Linear Bikeway	Woodside Road	El Camino Real to Alameda de las Pulgas	1.99	2	$85,000
Redwood City	Linear Bikeway	Woodside Road	El Camino Real to Seaport Center	1.25	2	$53,000

Table A-1: Category A Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
Redwood City	Arterial Crossing	Brewster Avenue at El Camino Real				$10,000
Redwood City	Arterial Crossing	El Camino Real at State Highway 84 Exits				$20,000
Redwood City	Arterial Crossing	Jefferson Avenue at El Camino Real				$10,000
Redwood City	Arterial Crossing	Middlefield Road at Highway 84				$500,000
San Bruno						
San Bruno	Linear Bikeway	E. Huntington Avenue	Tanforan Avenue to Herman Street	0.4	2/3	$17,000
San Bruno	Linear Bikeway	Herman Street	Tanforan Avenue to E. Huntington Avenue	0.41	2/3	$17,000
San Bruno	Linear Bikeway	Huntington Avenue	Interstate 380 to San Felipe Avenue	1.17	3	$9,000
San Bruno	Linear Bikeway	San Bruno Avenue	State Highway 35 to Huntington Avenue	1.98	2	$85,000
San Bruno	Arterial Crossing	San Bruno Avenue at El Camino Real				$20,000
San Carlos						
San Carlos	Linear Bikeway	Elm/Magnolia/Laurel/Hull	San Carlos Avenue to El Camino Real	0.59	3	$5,000
San Carlos	Linear Bikeway	Old County Road	Quarry Road to Bransten Road	1.05	3	Funded
San Carlos	Linear Bikeway	San Carlos Avenue	Elm Street to El Camino Real	0.22	3	$2,000
San Carlos	Linear Bikeway	Skyway	Redwood Shores to Class I Bike Path	0.65	2	$28,000
San Carlos	Arterial Crossing	Brittan Avenue at El Camino Real				$10,000
San Carlos	Overcrossing	Holly Street at US 101				$8,000,000
San Mateo						
San Mateo	Linear Bikeway	41st Avenue	Edison Street to El Camino Real	0.32	3	$3,000
San Mateo	Linear Bikeway	5th/Humboldt	El Camino Real to 3rd Avenue	0.82	3	$7,000
San Mateo	Linear Bikeway	Claremont Street	Peninsula Avenue to 10th Avenue	1.69	3	$14,000
San Mateo	Linear Bikeway	Concar Drive	Pacific Boulevard to Grant Street	0.43	2/3	$18,000
San Mateo	Linear Bikeway	E. Hillsdale Boulevard	Foster City Line to Norfolk Street	0.17	2	$7,000
San Mateo	Linear Bikeway	N. San Mateo Drive	Burlingame Line to Poplar Avenue	0.52	2	$22,000
San Mateo	Linear Bikeway	N. San Mateo Drive	Poplar Avenue to Titlton Avenue	0.36	3	$3,000
San Mateo	Linear Bikeway	Peninsula Avenue	N. Delaware Street to Coyote Point Drive	0.44	2/3	$19,000
San Mateo	Linear Bikeway	West 5th Avenue	Virginia Avenue to El Camino Real	0.3	2	$13,000
San Mateo	Arterial Crossing	Alameda de las Pulgas at SR 92 Exits				$10,000
San Mateo	Overcrossing	E. Hillsdale Boulevard at US 101				$9,830,000
South San Francisco						
South San Francisco	Linear Bikeway	Colma Canal Bike Path	S. Spruce Avenue to S. Linden Avenue	0.34	1	$215,000
South San Francisco	Linear Bikeway	E. Grand Avenue	Airport Boulevard to Gateway Boulevard	0.36	2	$16,000
South San Francisco	Linear Bikeway	Forbes Boulevard Bike Path	Gateway Boulevard to Shoreline	1.48	1	$951,000
South San Francisco	Linear Bikeway	Geneva Boulevard	Oyster Point Boulevard to E. Grand Avenue	0.68	2/3	$29,000
South San Francisco	Linear Bikeway	Mission Road	Colma Line to Chestnut Avenue	0.91	3	$7,000

Table A-1: Category A Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
South San Francisco	Linear Bikeway	Village Way	Linden Avenue to Dead End	0.08	2/3	$4,000
South San Francisco	Linear Bikeway	Westborough Boulevard	Callan Boulevard to Interstate-280	0.85	3	$7,000
Unincorporated County (Colma)						
Uninc. County (Colma)	Linear Bikeway	El Camino Real	Daly City to Colma	0.24	3	$2,000
Unincorporated County (North Fair Oaks)						
North Fair Oaks	Linear Bikeway	5th Avenue	Semicircular Road to El Camino Real	0.29	2	$12,000
North Fair Oaks	Linear Bikeway	5th/Bay/Charter	Middlefield Road to Middlefield Road	1.94	3	$16,000
North Fair Oaks	Linear Bikeway	Middlefield Road	Semicircular Road to 5th Avenue	0.17	2	$7,000
Unincorporated County (South San Francisco)						
Uninc. County (South San Francisco)	Arterial Crossing	Chestnut Avenue at State Highway 82				$20,000
Uninc. County (South San Francisco)	Interchange Improve-ment	101 & Grand Avenue				$20,000

Total Category A Projects	**64.9**		**$46,424,000**
Class 1	3.2		$ 2,064,000
Class 2/3	61.7		$1,740,000
Arterial Crossings	19		$770,000
Over/Undercrossings	4		$41,830,000
Interchange Improvements	1		$20,000
		Total	$46,424,000

Table A-2: Category B Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
Atherton						
Atherton	Linear Bikeway	Elena/Austin/Selby	Oakwood Boulevard to Valparaiso Avenue	2.12	3	$17,000
Atherton	Linear Bikeway	Marsh Road	Middlefield Road to Bay Road	0.63	2/3	$27,000
Atherton	Linear Bikeway	Oakwood Boulevard	Redwood City Line to Selby Lane	0.12	2/3	$5,000
Atherton	Linear Bikeway	Selby - Atherton	West Selby to Elena Avenue	1.1	3	$9,000
Belmont						
Belmont	Linear Bikeway	Ralston Avenue Bikeway	City Limits to Alameda de las Pulgas	1.82	2/3	$78,000
Brisbane						
Brisbane	Linear Bikeway	Alana Way	Beatty Road to San Francisco Line	0.09	2/3	$4,000
Brisbane	Linear Bikeway	Guadalupe Canyon Parkway	N. Hill Drive to City Limits	1.08	2/3	$46,000
Brisbane	Linear Bikeway	Tunnel Avenue	San Francisco Line to Lagoon Road	1.32	2/3	$56,000
Brisbane	Linear Bikeway	U.S. 101 Bike Path	Beatty Road to Sierra Point	2.25	1	$1,448,000
Burlingame						
Burlingame	Linear Bikeway	Bay Trail: Korean Airlines Section	Airport Boulevard	0.08	1	$49,000
Burlingame	Linear Bikeway	Beach Road	Sanchez Creek/Bayfront Channel to Airport Blvd	0.18	2/3	$8,000
Burlingame	Linear Bikeway	Burlingame Hotel Complex	Existing Bay Trail to Airport Boulevard	0.22	1	$140,000
Burlingame	Linear Bikeway	Carolan Avenue	Broadway to North Lane	1.11	2/3	$47,000
Burlingame	Linear Bikeway	Grove Avenue	El Camino Real to California Drive	0.23	3	$2,000
Burlingame	Linear Bikeway	Hillside Dr	Alvarado Drive to El Camino Real	0.75	2	$32,000
Burlingame	Linear Bikeway	Rollins Road	Millbrae Line to Broadway	1.25	2	$53,000
Burlingame	Linear Bikeway	Sanchez Creek-Channel Path	Bay Trail to Airport Boulevard	0.08	1	$52,000
Burlingame	Linear Bikeway	Walnut/Pepper	Sanchez Avenue to Ralston Avenue	0.49	3	$4,000
Burlingame	Arterial Crossing	Grove Avenue at El Camino Real				$10,000
Burlingame	Arterial Crossing	Trousdale Road at El Camino Real				$10,000
Colma						
Colma	Linear Bikeway	F Street	Mission Road to Hillside Boulevard	0.42	3	$3,000
Colma	Linear Bikeway	Hillside Boulevard	Daly City Line to Serramonte Boulevard	0.43	3	$3,000
Colma	Linear Bikeway	Mission Road	State Highway 82 to South San Francisco Line	0.73	3	$6,000
Daly City						
Daly City	Linear Bikeway	Acton/Templeton/Crocker	San Bruno Mountain Park to San Francisco	1.24	3	$10,000
Daly City	Linear Bikeway	Carter Street	Geneva Avenue to Guadalupe Canyon Pkwy	0.69	2/3	$30,000
Daly City	Linear Bikeway	Gellert Boulevard	Hickey Boulevard to King Drive	1.27	2	$54,000
Daly City	Linear Bikeway	Mayfair Avenue	Ashland Drive to Westmoor Avenue	1.36	3	$11,000
Daly City	Linear Bikeway	Skyline Drive	Menlo Avenue to Pacifica Line	1.19	2/3	$51,000
Daly City	Linear Bikeway	St Charles Avenue	San Francisco Line to De Long Street	0.17	2	$7,000
Daly City	Arterial Crossing	Callan Boulevard at Hickey Boulevard				$10,000
Daly City	Arterial Crossing	Lake Merced Drive at John Daly Boulevard				$20,000
East Palo Alto						
East Palo Alto	Linear Bikeway	Bay Road	Clarke Avenue to Rogge Road	0.32	2	$14,000
East Palo Alto	Linear Bikeway	Bay Trail Spur	State Highway 109 to Baylands Preserve	0.68	1	$437,000
East Palo Alto	Linear Bikeway	E. Baydshore Road	Pulgas Avenue to San Francisquito Creek	0.15	3	$1,000
East Palo Alto	Linear Bikeway	Bay Trail Spur	Stevens Avenue to Highway 109 Spur	0.22	1	$141,000
East Palo Alto	Linear Bikeway	Woodland	Menlo Park Line to US 101 Overcrossing	1.18	2/3	$50,000
East Palo Alto	Overcrossing	University Avenue at US 101 - existing facility				$500,000

Table A-2: Category B Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
Foster City						
Foster City	Arterial Crossing	E. Hillsdale Boulevard at Mariner's Island Blvd				$20,000
Foster City	Linear Bikeway	Edgewater Boulevard	San Mateo Line to Beach Park Boulevard	0.96	2	$41,000
Hillsborough						
Hillsborough	Linear Bikeway	Walnut/Pepper	Sanchez Avenue to Ralston Avenue	0.45	3	$4,000
Hillsborough	Arterial Crossing	Floribunda Avenue at El Camino Real				$10,000
Menlo Park						
Menlo Park	Linear Bikeway	Haven Avenue	E. Bayshore Road to Marsh Road	0.73	2/3	$31,000
Menlo Park	Linear Bikeway	Marsh Road	US 101 to Haven Avenue	0.21	3	$2,000
Menlo Park	Linear Bikeway	Middlefield Road	Willow Rd to Santa Clara County Line	0.09	2	$4,000
Menlo Park	Linear Bikeway	Newbridge Street	US 101 Overcrossing to Bay Road	1.03	2	$44,000
Menlo Park	Linear Bikeway	San Mateo Drive	Valparaiso Avenue to Santa Clara County Line	1.01	3	$8,000
Menlo Park	Linear Bikeway	State Highway 114/U.S. 101 Interchange	North side overpass to South side overpass	0.19	2/3	$8,000
Menlo Park	Linear Bikeway	Woodland	Pope Street to East Palo Alto Line	0.63	2/3	$27,000
Menlo Park	Arterial Crossing	Valparaiso Avenue at El Camino Real				$10,000
Millbrae						
Millbrae	Linear Bikeway	Aviador Avenue	Beverly Avenue to E. Millbrae Avenue	0.34	3	$3,000
Millbrae	Linear Bikeway	Connection to BART/Caltrain	Bay Trail to Aviador Avenue	0.84	1	$537,000
Millbrae	Linear Bikeway	El Paseo Bike Path	Hillcrest Boulevard to Ashton Avenue	0.19	1	$125,000
Millbrae	Linear Bikeway	Helen/Richmond	Junipero Serra Park to Magnolia Avenue	1.75	3	$14,000
Millbrae	Linear Bikeway	Hillcrest Boulevard	Minorca Bike Path to Sawyer Camp Trail	0.96	3	$8,000
Millbrae	Linear Bikeway	Huntington Avenue	San Anselmo Avenue to Santa Paula Avenue	0.39	2/3	$17,000
Millbrae	Linear Bikeway	Magnolia Avenue	Meadow Glen Avenue to Park Boulevard	0.67	3	$5,000
Millbrae	Linear Bikeway	Park/Cypress/Santa Lucia	Magnolia Avenue to Elm Avenue	0.44	3	$4,000
Millbrae	Linear Bikeway	San Anselmo Avenue	Santa Helena Avenue to Center Street	0.4	3	$3,000
Pacifica						
Pacifica	Linear Bikeway	Avalon Drive	Esplanade Drive to Palmetto Avenue	0.09	2/3	$4,000
Pacifica	Linear Bikeway	Highway 1 Overpass	Palmetto Avenue to Oceana Boulevard	0.08	3	$1,000
Pacifica	Linear Bikeway	Johnson/Nelson/Hickey	State Highway 35 to State Highway 1	1.73	3	$14,000
Pacifica	Linear Bikeway	Palmetto Avenue	Avalon Drive to Highway 1 On Ramp	0.11	2/3	$5,000
Pacifica	Linear Bikeway	Sharp Park Road	Francisco Boulevard to Lundy Way	0.08	2/3	$4,000
Redwood City						
Redwood City	Linear Bikeway	Cargill Salt Ponds Segment	Seaport Boulevard to Bayfront Park	2.03	1	$1,304,000
Redwood City	Linear Bikeway	Chesapeake Drive	Cardinal Way to Seaport Boulevard	0.32	3	$3,000
Redwood City	Linear Bikeway	E. Bayshore Road	Stein Am Rhein Ct to Haven Avenue	1.51	2	$64,000
Redwood City	Linear Bikeway	Hudson/Central/Oakwood	Whipple Avenue to Atherton Line	2.37	2/3	$101,000
Redwood City	Linear Bikeway	Ralston Avenue	Belmont Line to Marine Parkway	0.1	2/3	$4,000
Redwood City	Linear Bikeway	Redwood Creek Crossing	Uccelli Road to Maple Street	0.47	1	$299,000
Redwood City	Linear Bikeway	San Mateo Bay Trail	Whipple Avenue to Maple Street	1.1	2/3	$47,000
Redwood City	Linear Bikeway	Smith Slough Levee	E. Bayshore Road to Uccelli Road	0.47	1	$300,000
Redwood City	Linear Bikeway	Stein Am Rhein Ct	Seaport Boulevard to US 101	0.23	2/3	$10,000
Redwood City	Arterial Crossing	Brewster Avenue at Alameda de las Pulgas				$20,000

Table A-2: Category B Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
Redwood City	Arterial Crossing	Edgewood Road at Alameda de las Pulgas				$10,000
Redwood City	Arterial Crossing	Edgewood Road at El Camino Real				$10,000
Redwood City	Arterial Crossing	Farm Hill Boulevard at Alameda de las Pulgas				$10,000
Redwood City	Arterial Crossing	Hudson Street/Central Ave. at State Hwy 84				$10,000
Redwood City	Overcrossing	Whipple Road at US 101				$12,000,000
San Bruno						
San Bruno	Linear Bikeway	Cherry Avenue	Sneath Lane to San Bruno Avenue	0.57	2/3	$24,000
San Bruno	Linear Bikeway	Elm Avenue	San Bruno Avenue to Santa Lucia Avenue	1.09	3	$9,000
San Bruno	Linear Bikeway	Lions Park Trail	Airport Boundary to Airport Boundary	0.37	1	$238,000
San Bruno	Linear Bikeway	San Antonio Avenue	San Felipe Avenue to Santa Helena Avenue	0.54	3	$4,000
San Bruno	Linear Bikeway	Sharp Park Road	Susan Drive to South San Francisco Line	0.08	2/3	$3,000
San Bruno	Arterial Crossing	Sneath Lane at El Camino Real				$20,000
San Carlos						
San Carlos	Linear Bikeway	Elm Street	San Carlos Avenue to Redwood City	1.47	3	Grant secured
San Carlos	Linear Bikeway	Old County Road	Bransten Road to Redwood City line	0.96	2	$41,000
San Carlos	Linear Bikeway	San Carlos Avenue	Belmont Line to Beverly Drive	0.62	2/3	$27,000
San Mateo						
San Mateo	Linear Bikeway	37th - Edison	Hacienda Street to 41st Avenue	0.59	3	$5,000
San Mateo	Linear Bikeway	Edinburgh Street	5th Avenue to Borel Avenue	0.85	3	$7,000
San Mateo	Linear Bikeway	Hacienda/22nd/Isabelle/20th	Highway 92 Overcrossing to 25th Avenue	0.55	3	$4,000
San Mateo	Linear Bikeway	Pacific Boulevard	S. Delaware Street to Concar Drive	0.38	3	$3,000
San Mateo	Linear Bikeway	San Mateo Caltrain/shore connector	San Mateo Caltrain to E. 3rd Avenue	1.78	1	$1,147,000
San Mateo	Arterial Crossing	25th Avenue at El Camino Real				$10,000
San Mateo (City)	Arterial Crossing	El Cerrito Avenue at State Highway 82				$10,000
San Mateo (City)	Interchange Improvement	101 & E. 3rd/E. 4th Street				$20,000
San Mateo	Overcrossing	Borel Street to Spuraway Drive at Hwy 92				$12,000,000
San Mateo	Overcrossing	Near Lodi Avenue at US 101				$12,000,000
South San Francisco						
South San Francisco	Linear Bikeway	Chestnut Avenue	Hillside Boulevard to Commercial Avenue	0.69	2/3	$29,000
South San Francisco	Linear Bikeway	Colma Creek Spur	S. Airport Boulevard	0.69	1	$442,000
South San Francisco	Linear Bikeway	Colma-Millbrae Bikeway (BART ROW)	Colma Line to Existing Path	0.5	1	$320,000
South San Francisco	Linear Bikeway	Hickey Boulevard	Daly City Line to Junipero Serra Boulevard	0.12	3	$1,000
South San Francisco	Linear Bikeway	Oyster Point Road Bike Path	Airport Boulevard to Gull Drive	0.81	1	$519,000
South San Francisco	Linear Bikeway	US 101 Bike Path	Oyster Point Boulevard	0.59	1	$380,000
South San Francisco	Arterial Crossing	Geneva Boulevard at Oyster Point Boulevard				$10,000
South San Francisco	Interchange Improvement	101 & Oyster Point Boulevard				$20,000
Woodside						
Woodside	Arterial Crossing	Canada Road at State Highway 84				$20,000
Unincorporated County						
San Mateo County	Overcrossing	San Bruno Avenue at US 101				$6,500,000
San Mateo County	Linear Bikeway	Bay Trail SFO	San Bruno Avenue to Millbrae Line	1.16	1	$744,000
Unincorporated County (Broadmoor)						
Broadmoor (Uninc)	Linear Bikeway	Washington Street	Palmcrest Drive to Annie Street	0.78	3	$6,000
Unincorporated County (Montara)						

Table A-2: Category B Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
Montara (Uninc)	Linear Bikeway	Main Street	Highway 1/2nd Street to 11th Street	0.5	2	$21,000
Unincorporated County (Moss Beach)						
Moss Beach (Uninc)	Linear Bikeway	Highway 1 Bike Path	Pacifica to Half Moon Bay	0.26	1	$168,000
Unincorporated County (San Bruno Mtn Park)						
San Bruno Mtn Park (Uninc)	Linear Bikeway	Guadalupe Canyon Parkway	Brisbane to Daly City	2.26	2/3	$96,000
Unincorporated County (West Menlo Park)						
West Menlo Park (Uninc)	Linear Bikeway	Alameda de las Pulgas	Liberty Park to Sand Hill Road	0.29	2/3	$12,000
West Menlo Park (Uninc)	Linear Bikeway	Alameda de las Pulgas	Camino Al Lago to Ashton	0.57	2/3	$24,000
West Menlo Park (Uninc)	Linear Bikeway	Santa Cruz Avenue	Alameda de las Pulgas to Sand Hill Road	0.28	2/3	$12,000

Total Category B Projects	**66.3**		**$53,486,000**
Class 1	13.7		$8,790,000
Class 2/3	52.6		$1,436,000
Arterial Crossings	17		$220,000
Over/Undercrossings	5		$43,000,000
Interchange Improvements	2		$40,000
		Total	$53,486,000

Table A-3: Category C Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
Belmont						
Belmont	Linear Bikeway	Island Connector	Island Parkway to Ralston Avenue	0.1	2/3	$4,000
Belmont	Linear Bikeway	Water Dog Lake Park Trail	Ralston Avenue to Hallmark Dr	1.64	1	$1,054,000
Belmont	Arterial Crossing	Ralston Avenue at Alameda de las Pulgas				$10,000
Brisbane						
Brisbane	Linear Bikeway	Old Country Road	Bayshore Boulevard to San Bruno Avenue	0.31	2	$13,000
Brisbane	Linear Bikeway	San Bruno Avenue	San Francisco Avenue to Bayshore Boulevard	0.76	3	$6,000
Brisbane	Linear Bikeway	Visitacion Avenue	San Francisco Ave to Klamath Street	0.22	2	$9,000
Brisbane	Arterial Crossing	Tunnel Road at Bayshore Boulevard				$20,000
Brisbane	Overcrossing	Bayshore north of Valley at Highway Bayshore Blvd				$5,000,000
Burlingame						
Burlingame	Linear Bikeway	Burlingame Lagoon Segment	Burlingame Hotel Complex to Sanchez Creek	0.19	1	$122,000
Burlingame	Linear Bikeway	Fisherman's Park	Sanchez Creek/Bayfront Channel to Airport Blvd	0.3	1	$190,000
East Palo Alto						
East Palo Alto	Linear Bikeway	Bay Road	Rogge Road to Shoreline	0.49	3	$4,000
East Palo Alto	Linear Bikeway	Highway 109 Spur	State Highway 109 to Rogge Road	0.53	1	$344,000
East Palo Alto	Linear Bikeway	Ravenswood Open Space Trail	Weeks St to Menlo Park Line	0.37	1	$236,000
East Palo Alto	Linear Bikeway	State Highway 114/U.S. 101 Interchange	North side overpass to South side overpass	0.16	2/3	$7,000
East Palo Alto	Overcrossing	E. Bayshore Road at US 101				$12,000,000
Foster City						
Foster City	Linear Bikeway	San Mateo Bridge		4.32	1	$2,774,000
Half Moon Bay						
Half Moon Bay	Linear Bikeway	Highway 1 Bikeway	Miramar Line to Kehoe	1.51	1	$973,000
Half Moon Bay	Linear Bikeway	Highway 92	Main Street to City Limits	0.82	2/3	$35,000
Half Moon Bay	Linear Bikeway	Kelly Avenue	Ocean Boulevard to Miramontes St	0.49	2/3	$21,000
Half Moon Bay	Linear Bikeway	Poplar/2nd/Seymour/Main	Coast Line Trail to Higgins Canyon Rd	1.26	2/3	$54,000
Half Moon Bay	Linear Bikeway	State Highway 1	Seymour Street to City Limits	1.82	1	$1,168,000
Half Moon Bay	Linear Bikeway	State Highway 92	Highway 1 to City Limits	1.02	1	$654,000
Half Moon Bay	Arterial Crossing	Frenchman's Creek Road at Highway 1				$20,000
Hillsborough						
Hillsborough	Linear Bikeway	Crystal Springs Path	San Mateo Highlands to San Mateo	1.02	1	$655,000
Menlo Park						
Menlo Park	Linear Bikeway	Bay Road	Windermere Avenue to US 101	0.24	3	$2,000
Menlo Park	Linear Bikeway	Highway 109 Spur	State Highway 109	0.57	1	$367,000
Menlo Park	Linear Bikeway	Ravenswood Open Space Trail	East Palo Alto Line to State Hwy 109	2.33	1	$1,495,000
Menlo Park	Linear Bikeway	Ringwood Avenue	Bay Rd to US 101 Overcrossing	0.27	2/3	$12,000
Menlo Park	Overcrossing	Carlton Avenue at US 101				$12,000,000
Menlo Park	Overcrossing	Highway 84/114 Intersection at Highway 84				$12,000,000
Millbrae						
Millbrae	Linear Bikeway	Bay Trail SFO	Airport Boundary to Center Street	0.23	1	$145,000
Millbrae	Linear Bikeway	Larkspur Drive	Proposed Bike Path to Interstate 280	0.57	2	$24,000
Millbrae	Linear Bikeway	Richmond Drive	Helen Drive to Bike Path	0.27	2	$11,000
Millbrae	Linear Bikeway	Ridgewood Bike Path	Junipero Serra Park to Larkspur Dr	0.67	1	$429,000

Table A-3: Category C Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
Millbrae	Linear Bikeway	S. McDonnell Road	San Francisco Airport to Coast Guard Road	0.31	2/3	$13,000
Millbrae	Arterial Crossing	Center Street at El Camino Real				$20,000
Millbrae	Arterial Crossing	Millbrae Avenue at El Camino Real				$20,000
Millbrae	Overcrossing	E. Millbrae Avenue at US 101				$12,000,000
Montara						
Montara	Linear Bikeway	Parallel Trail (Montara)	10th Street to 14th Street	0.3	2	$13,000
Pacifica						
Pacifica	Linear Bikeway	Highway 1 Bike Path	Pedro Point to City Limits	0.31	1	$197,000
Pacifica	Linear Bikeway	Skyline Drive	Daly City Line to Westline Drive	0.2	2/3	$8,000
Pacifica	Interchange Improvement	1 & Sharp Park Road				$10,000
Pacifica	Arterial Crossing	Hickey Boulevard at State Highway 35				$10,000
Portola Valley						
Portola Valley	Linear Bikeway	Alpine Road	Portola Road to City Limits	2.18	3	$3,000
Portola Valley	Linear Bikeway	Alpine Road	Portola Road to Santa Clara County	2.86	3	$3,000
Portola Valley	Linear Bikeway	Portola Road	Woodside Line to Alpine Road	2.3	3	$3,000
Redwood City						
Redwood City	Linear Bikeway	Alameda de las Pulgas	Eaton Avenue to Brewster Avenue	0.72	2/3	$31,000
Redwood City	Linear Bikeway	Brewster Avenue	Emerald Lake Hills to Topaz Street	0.06	2/3	$3,000
Redwood City	Linear Bikeway	Edgewood Road	City Limits to Blanford Boulevard	0.55	2	$23,000
Redwood City	Linear Bikeway	Farm Hill Road	Woodside Line to Jefferson Avenue	1.57	2	$67,000
Redwood City	Linear Bikeway	Jefferson Avenue	Farm Hill Boulevard to Oak Ridge Road	0.28	2	$12,000
Redwood City	Linear Bikeway	Massachusetts Avenue	Alameda de las Pulgas to Woodside Road	0.62	3	$5,000
Redwood City	Linear Bikeway	Redwood Shores Parkway	Governor's Bay Drive to Shoreline Drive	1.59	2	$68,000
Redwood City	Linear Bikeway	Redwood Shores Trail	Steinberger Slough Trail to E. Belmont Slough Trail	1.89	1	$1,214,000
Redwood City	Linear Bikeway	Somerset/Arlington/Woodstock	Edgewood Road to Whipple Avenue	0.3	2/3	$13,000
Redwood City	Linear Bikeway	Warwick Street/Stanford Lane	San Carlos Avenue to Edgewood Road	0.1	3	$1,000
San Bruno						
San Bruno	Linear Bikeway	Crestmoor Drive	Junipero Serra Park to Skyline Drive	1.18	3	$9,000
San Bruno	Linear Bikeway	San Anselmo Avenue	Santa Inez Avenue to Santa Helena Avenue	0.28	3	$2,000
San Bruno	Linear Bikeway	State Highway 35	San Bruno Avenue to Bike Path	0.71	2/3	$30,000
San Bruno	Linear Bikeway	State Highway 35	Berkshire Drive to W. San Bruno Ave	1.16	2/3	$50,000
San Bruno	Arterial Crossing	Sharp Park Road at State Highway 35				$20,000
San Mateo						
San Mateo	Linear Bikeway	Coyote Point Drive	Peninsula Avenue to Coyote Point Drive	0.04	2/3	$2,000
San Mateo	Linear Bikeway	De Anza Boulevard	State Highway 92 to Polhemus	0.34	3	$3,000
San Mateo	Linear Bikeway	Franklin Street	Crystal Springs Road to Virginia Avenue	0.22	3	$2,000
San Mateo	Linear Bikeway	Mariners Island Boulevard	Fashion Island Boulevard to Foster City Line	0.34	2	$14,000
San Mateo	Arterial Crossing	De Anza Boulevard at State Highway 92 Exits				$20,000
San Mateo	Arterial Crossing	Hillsdale Avenue at Alameda de las Pulgas				$10,000

Table A-3: Category C Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
Sequoia Tract						
Sequoia Tract	Linear Bikeway	San Carlos - Selby	Woodside Road to Atherton City Limit	0.55	3	$4,000
South San Francisco						
South San Francisco	Linear Bikeway	Airport Boulevard/US 101/US 380 Overcrossing	South San Francisco to Airport Boundary	0.24	1	$153,000
South San Francisco	Linear Bikeway	Oyster Point Marina	Oyster Point Trail to San Bruno Point	0.06	1	$37,000
South San Francisco	Linear Bikeway	Safe Harbor Trail	Loop from Safe Harbor Shelter Trail	0.16	1	$105,000
South San Francisco	Linear Bikeway	Sharp Park Road	San Bruno Line to Fleetwood Drive	0.02	2/3	$1,000
South San Francisco	Linear Bikeway	Sister Cities Bike Path	Chestnut Avenue to Hillside Blvd	0.79	1	$505,000
South San Francisco	Overcrossing	Airport Boulevard/Bayshore Boulevard at US 101				$12,000,000
Woodside						
Woodside	Linear Bikeway	280 Undercrossing Path	Farm Hill Road to Canada Road	0.56	1	$363,000
Woodside	Linear Bikeway	Canada College Access Road	Canada Road to Farm Hill Boulevard	0.92	2/3	$39,000
Woodside	Linear Bikeway	Farm Hill Road	Canada College to Redwood City Line	0.06	2	$3,000
Woodside	Linear Bikeway	Kings Mountain Road	City Limits to Woodside Road	1.59	2/3	$68,000
Woodside	Linear Bikeway	Recreational Route Bikeway Improvements	Woodside to Portola Valley	9.17	3	$73,000
Woodside	Linear Bikeway	State Highway 35	City Limit to Woodside Road	0.26	2/3	$11,000
Woodside	Arterial Crossing	La Honda Boulevard at State Highway 35				$10,000
Unincorporated County (Emerald Lake Hills)						
Emerald Lake Hills (Uninc)	Linear Bikeway	Alameda de las Pulgas	Brewster Avenue to Jefferson Avenue	0.45	2/3	$19,000
Emerald Lake Hills (Uninc)	Linear Bikeway	Edgewood Road	Belle Roche Avenue to Redwood City Line	0.32	2	$14,000
Emerald Lake Hills (Uninc)	Linear Bikeway	Edgewood Road	Area Boundary to Belle Roche Avenue	1.21	2/3	$52,000
Emerald Lake Hills (Uninc)	Linear Bikeway	Oak Knoll/Upland/Brewster	Warren St to Edgewood Rd	0.64	2/3	$27,000
Unincorporated County (Half Moon Bay)						
Half Moon Bay (Uninc)	Linear Bikeway	California Coastal Trail	Surfer's Beach to Mirada Surf West	0.61	1	$392,000
Unincorporated County (Los Trancos Woods)						
Los Trancos Woods (Uninc)	Linear Bikeway	Alpine Road	Portola Valley Line to Portola State Park	2.91	2/3	$124,000
Unincorporated County (Moss Beach)						
Moss Beach (Uninc)	Linear Bikeway	Bernal Avenue	Esmerelda Avenue to Ocean Avenue	0.22	2/3	$9,300
Moss Beach (Uninc)	Linear Bikeway	California Avenue	Wienke Way to Fitzgerald Marine Reserve	0.31	2	$13,000
Moss Beach (Uninc)	Linear Bikeway	Carlos Street	Highway 1 to Vermont Avenue	0.74	2	$32,000
Moss Beach (Uninc)	Linear Bikeway	Coastal Trail (Vallemar)	15th Street to Wienke-Vallemar	0.59	3	$5,000
Moss Beach (Uninc)	Linear Bikeway	Midcoast Community Council Bikeway	Juliana Avenue to Moss Beach City Limits	0.74	2/3	$31,000
Moss Beach (Uninc)	Linear Bikeway	Parallel Trail	Vermont Avenue to Half Moon Bay	3.92	1	$2,518,000
Unincorporated County (Princeton)						
Princeton (Uninc)	Linear Bikeway	Cornell - California - Capistrano	Airport Road to Highway 1	0.79	3	$6,000
Unincorporated County (Stanford Lands)						
Unincorporated County (Stanford Lands)	Interchange Improvement	280 & Sand Hill Road				$20,000
Unincorporated County						
San Mateo County	Linear Bikeway	Beach Way - Ocean Avenue	Cypress Avenue to Bernal Avenue	0.56	2	$24,000
San Mateo County	Linear Bikeway	California Coastal Trail	Montara State Beach Crossing to 2nd Street	0.59	1	$381,000
San Mateo County	Linear Bikeway	Crystal Springs North	Skyline Boulevard to Skyline Boulevard	0.91	1	$583,000

Table A-3: Category C Countywide Bikeway Network Projects

Notes: Class 1=multi-use path, Class 2=bike lanes, Class 3=bike route. Cost estimates are based on average cost per mile for bikeway type, rounded to the nearest thousand, and are subject to change. Where a proposed on-street bikeway does not have a designated class (Class 2/3), the per mile cost for bike lanes is used.

Location	Project Type	Project Name	Extents	Miles	Class	Cost
San Mateo County	Linear Bikeway	Crystal Springs Trail	State Highway 92 to Canada Road	0.8	1	$515,000
San Mateo County	Linear Bikeway	Cypress Avenue	Highway 1 to Beach Way	0.29	2	$12,000
San Mateo County	Linear Bikeway	East Ridge Boundary Trail	Ralston Avenue to Pulgas Ridge Open Space	3.62	1	$2,328,000
San Mateo County	Linear Bikeway	Edgewood Road	Canada Road to Emerald Lake Hills	1.29	2/3	$55,000
San Mateo County	Linear Bikeway	Gazos Creek/Cloverdale	Highway 1 to Olma Fire Road	3.13	2/3	$133,000
San Mateo County	Linear Bikeway	Higgins Canyon Road	Half Moon Bay to Purisima Creek Road	4.36	2/3	$186,000
San Mateo County	Linear Bikeway	Highway 1 Bike Path	Pacifica Line to Devil's Slide Tunnel	0.64	1	$410,000
San Mateo County	Linear Bikeway	Highway 1 Bike Path	Pacifica to South Portal	1.55	1	$998,000
San Mateo County	Linear Bikeway	Kings Mountain Road	State Highway 35 to Woodside Line	3.3	2/3	$140,000
San Mateo County	Linear Bikeway	Old Page Mill Road	Skyline Drive to Portola Redwoods State Park	5.27	2/3	$224,000
San Mateo County	Linear Bikeway	Ralston Avenue	Highway 92 to Belmont Line	0.21	2/3	$9,000
San Mateo County	Linear Bikeway	Recreational Route Bikeway Improvements	Woodside to Portola Valley	4.58	3	$5,000
San Mateo County	Linear Bikeway	Seal Cove Extension	Moss Beach to El Granada	1.56	1	$999,000
San Mateo County	Linear Bikeway	SFIA East Side/Bay Trail	Airport Boundary to San Bruno Avenue	0.16	2/3	$7,000
San Mateo County	Linear Bikeway	State Highway 1	Half Moon Bay to Santa Clara County Line	26.1	3	$31,000
San Mateo County	Linear Bikeway	State Highway 1	Graywhale Cove to Montara State Beach	1.26	2	$52,000
San Mateo County	Linear Bikeway	State Highway 35	Golf Course Drive to State Hwy 92	3.1	2/3	$132,000
San Mateo County	Linear Bikeway	State Highway 35	La Strada Ct to Summit Drive	0.29	2/3	$12,000
San Mateo County	Linear Bikeway	State Highway 35	State Highway 92 to Woodside Road	12.16	2/3	$518,000
San Mateo County	Linear Bikeway	State Highway 92	Half Moon Bay to Interstate 280	6.3	2/3	$268,000
San Mateo County	Linear Bikeway	Tunitas Creek Road	State Highway 1 to State HIghway 35	9.55	2/3	$407,000
San Mateo County	Arterial Crossing	Polhemus Avenue at State Highway 92 On Ramps				$20,000
San Mateo County	Arterial Crossing	California Coastal Trail at Hwy 1				$20,000
San Mateo County	Arterial Crossing	California Coastal Trail at Hwy 1				$20,000
San Mateo County	Arterial Crossing	Capistrano Road (North) at Hwy 1				$20,000
San Mateo County	Arterial Crossing	Capistrano Road (South) at Hwy 1				$20,000
San Mateo County	Arterial Crossing	Coronado Street at Hwy 1				$20,000
San Mateo County	Arterial Crossing	Cypress Avenue at Hwy 1				$20,000
San Mateo County	Arterial Crossing	HMB Airport at Hwy 1				$20,000
San Mateo County	Arterial Crossing	Mirada Road at Hwy 1				$20,000
Unincorporated County (San Mateo Highlands)						
San Mateo Highlands (Uninc)	Linear Bikeway	Crystal Springs Path	Polhemus to Hillsborough Line	0.51	1	$327,000
Unincorporated County (Sky Londa)						
Sky Londa (Uninc)	Linear Bikeway	State Highway 35	Morse Lane to Woodside Line	0.22	2/3	$9,000

Total Category C Projects	**163.0**	**$91,336,300**
Class 1	35.2	$22,631,000
Class 2/3	127.8	$3,335,300
Arterial Crossings	19	$340,000
Over/Undercrossings	6	$65,000,000
Interchange Improvements	2	$30,000
	Total	$91,336,300

Table A-4: Arterial Crossings

Location	Project Type	Project Name
Belmont	Arterial Crossing	Ralston Avenue at Alameda de las Pulgas
Brisbane	Arterial Crossing	Tunnel Road at Bayshore Boulevard
Burlingame	Arterial Crossing	Grove Avenue at El Camino Real
Burlingame	Arterial Crossing	Howard Avenue at El Camino Real
Burlingame	Arterial Crossing	Murchison Drive at El Camino Real
Burlingame	Arterial Crossing	Trousdale Road at El Camino Real
Colma	Arterial Crossing	Serramonte Boulevard at State Highway 82
Daly City	Arterial Crossing	Callan Boulevard at Hickey Boulevard
Daly City	Arterial Crossing	Gellert Boulevard at Hickey Boulevard
Daly City	Arterial Crossing	Hillside Boulevard at State Highway 82
Daly City	Arterial Crossing	Lake Merced Drive at John Daly Boulevard
Daly City	Arterial Crossing	San Pedro Road at State Highway 82
Foster City	Arterial Crossing	E. Hillsdale Boulevard at Mariner's Island Blvd
Half Moon Bay	Arterial Crossing	Frenchman's Creek Road at Highway 1
Half Moon Bay	Arterial Crossing	Kelly Avenue at State Highway 1
Half Moon Bay	Arterial Crossing	Poplar Street at State Highway 1
Half Moon Bay	Arterial Crossing	State Highway 92 at State Highway 1
Hillsborough	Arterial Crossing	Floribunda Avenue at El Camino Real
Menlo Park	Arterial Crossing	Middlefield Road at State Highway 114
Menlo Park	Arterial Crossing	Valparaiso Avenue at El Camino Real
Millbrae	Arterial Crossing	Center Street at El Camino Real
Millbrae	Arterial Crossing	Hillcrest Boulevard at El Camino Real
Millbrae	Arterial Crossing	Millbrae Avenue at El Camino Real
Pacifica	Arterial Crossing	Hickey Boulevard at State Highway 35
Redwood City	Arterial Crossing	Brewster Avenue at Alameda de las Pulgas
Redwood City	Arterial Crossing	Brewster Avenue at El Camino Real
Redwood City	Arterial Crossing	Edgewood Road at Alameda de las Pulgas
Redwood City	Arterial Crossing	Edgewood Road at El Camino Real
Redwood City	Arterial Crossing	El Camino Real at State Highway 84 Exits
Redwood City	Arterial Crossing	Farm Hill Boulevard at Alameda de las Pulgas
Redwood City	Arterial Crossing	Hudson Street/Central Ave. at State Hwy 84
Redwood City	Arterial Crossing	Jefferson Avenue at El Camino Real
Redwood City	Arterial Crossing	Middlefield Road at Highway 84
San Bruno	Arterial Crossing	San Bruno Avenue at El Camino Real
San Bruno	Arterial Crossing	Sharp Park Road at State Highway 35
San Bruno	Arterial Crossing	Sneath Lane at El Camino Real
San Carlos	Arterial Crossing	Brittan Avenue at El Camino Real
San Mateo	Arterial Crossing	25th Avenue at El Camino Real
San Mateo	Arterial Crossing	Alameda de las Pulgas at SR 92 Exits
San Mateo	Arterial Crossing	De Anza Boulevard at State Highway 92 Exits
San Mateo	Arterial Crossing	Hillsdale Avenue at Alameda de las Pulgas
San Mateo (City)	Arterial Crossing	El Cerrito Avenue at State Highway 82
San Mateo County	Arterial Crossing	California Coastal Trail at Highway 1
San Mateo County	Arterial Crossing	California Coastal Trail at Highway 1
San Mateo County	Arterial Crossing	Capistrano Road (North) at Highway 1
San Mateo County	Arterial Crossing	Capistrano Road (South) at Highway 1
San Mateo County	Arterial Crossing	Chestnut Avenue at State Highway 82
San Mateo County	Arterial Crossing	Coronado Street at Highway 1
San Mateo County	Arterial Crossing	Cypress Avenue at Highway 1
San Mateo County	Arterial Crossing	HMB Airport at Highway 1
San Mateo County	Arterial Crossing	Mirada Road at Highway 1
San Mateo County	Arterial Crossing	Polhemus Avenue at State Highway 92 On Ramps
South San Francisco	Arterial Crossing	Geneva Boulevard at Oyster Point Boulevard
Woodside	Arterial Crossing	Canada Road at State Highway 84
Woodside	Arterial Crossing	La Honda Boulevard at State Highway 35

Table A-5: Interchange Improvements

Location	Project Type	Project Name
Pacifica	Interchange Improvement	1 & Sharp Park Road
San Mateo (City)	Interchange Improvement	101 & E. 3rd/E. 4th Street
San Mateo County	Interchange Improvement	101 & Grand Avenue
South San Francisco	Interchange Improvement	101 & Oyster Point Boulevard
Unincorporated County (Stanford Lands)	Interchange Improvement	280 & Sand Hill Road

Table A-6: Over/Undercrossings

Location	Project Type	Project Name
Brisbane	Overcrossing	Bayshore north of Valley at Highway Bayshore Blvd
East Palo Alto	Overcrossing	Clarke Avenue at US 101
East Palo Alto	Overcrossing	E. Bayshore Road at US 101
East Palo Alto	Overcrossing	University Avenue at US 101 - improvements to existing facility
Menlo Park	Overcrossing	Carlton Avenue at US 101
Menlo Park	Overcrossing	Highway 84/114 Intersection at Highway 84
Millbrae	Overcrossing	E. Millbrae Avenue at US 101
Redwood City	Overcrossing	Whipple Road at US 101
San Carlos	Overcrossing	Holly Street at US 101
San Mateo	Overcrossing	Borel Street to Spuraway Drive at Hwy 92
San Mateo	Overcrossing	E. Hillsdale Boulevard at US 101
San Mateo	Overcrossing	Near Lodi Avenue at US 101
San Mateo County	Overcrossing	San Bruno Avenue at US 101
South San Francisco	Overcrossing	Airport Boulevard/Bayshore Boulevard at US 101
Menlo Park	Undercrossing	Near Middle Avenue at Highway 82

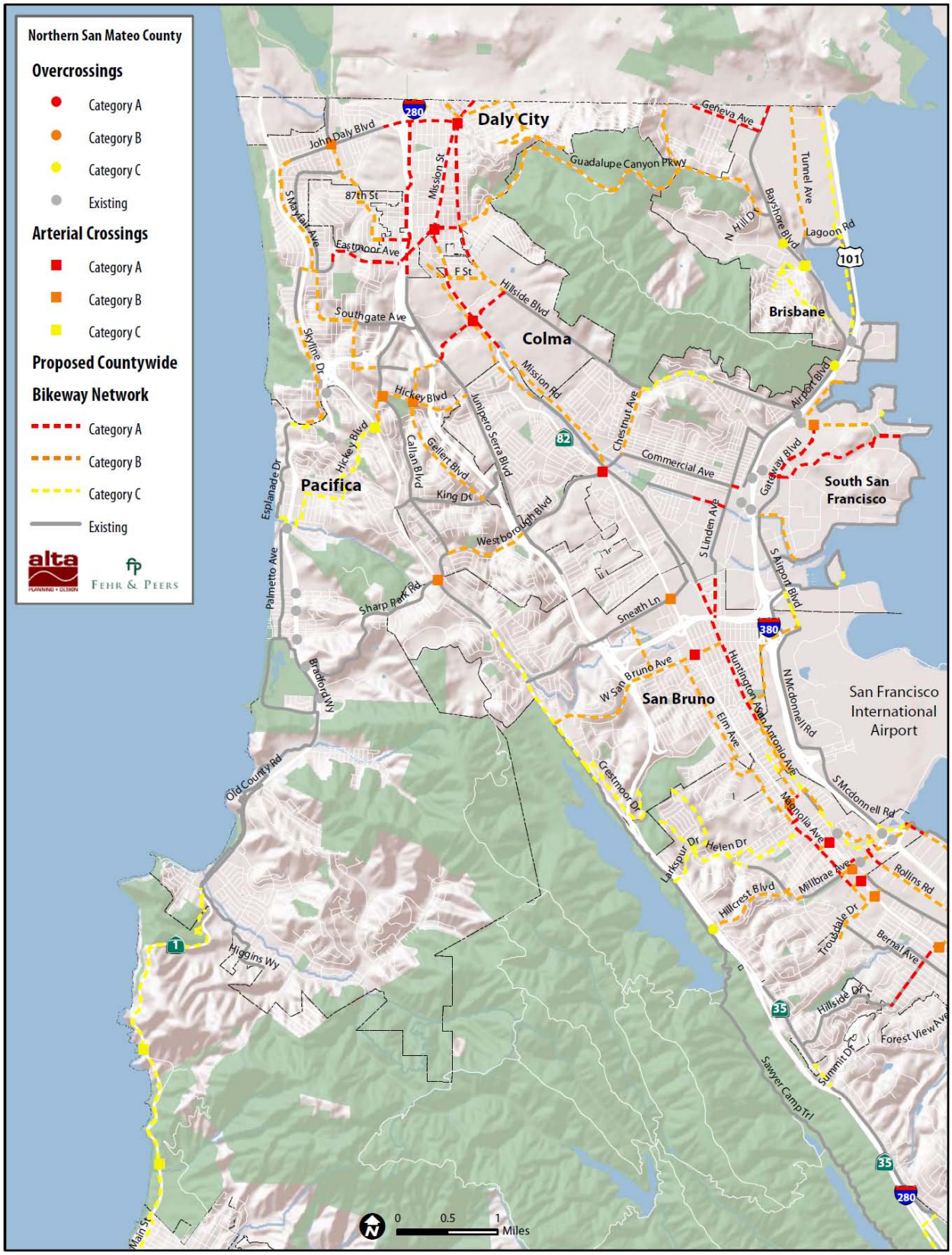

Figure A-1: Categorization Map North County

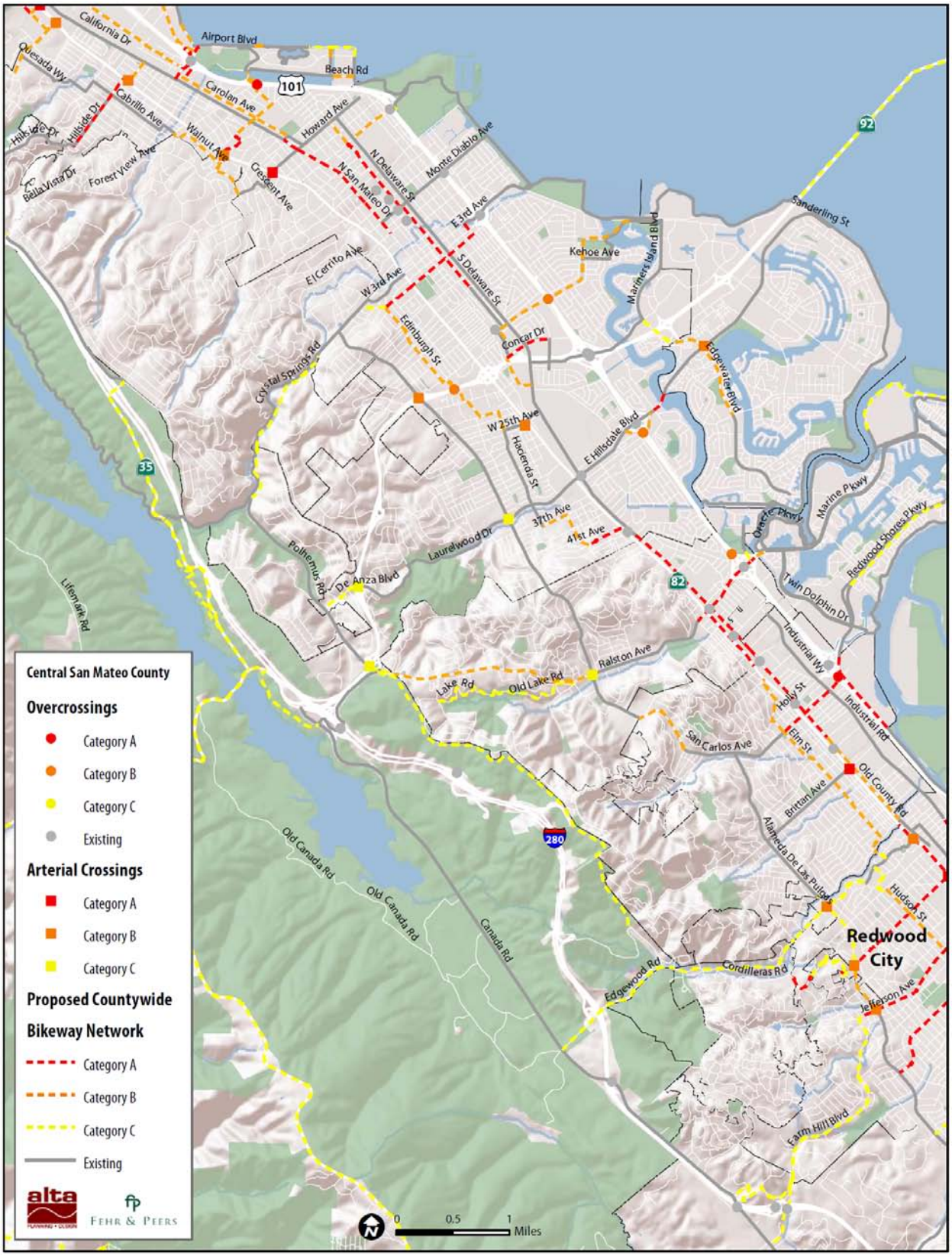

Figure A-2: Categorization Map Central County

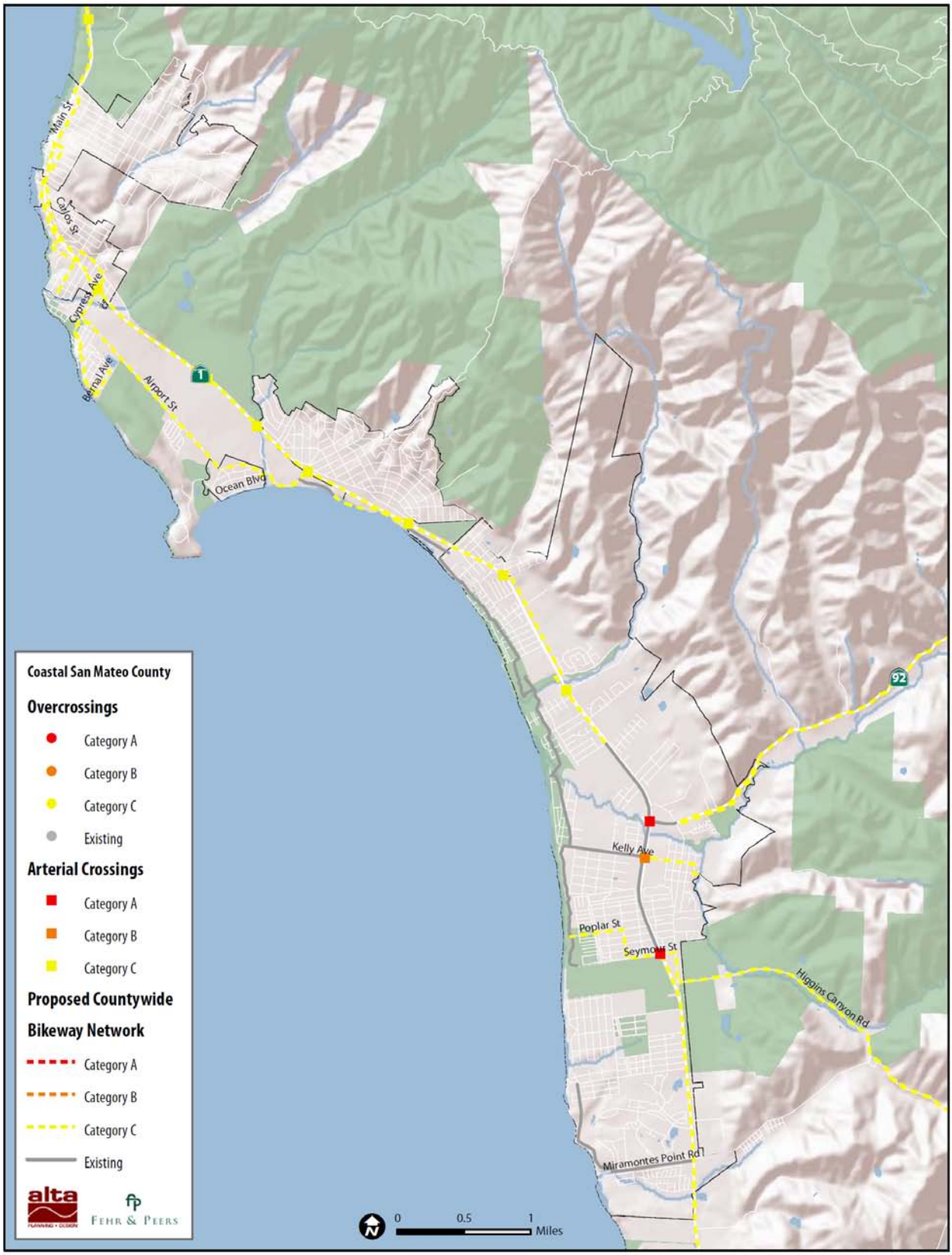

Figure A-3: Categorization Map Coastal County

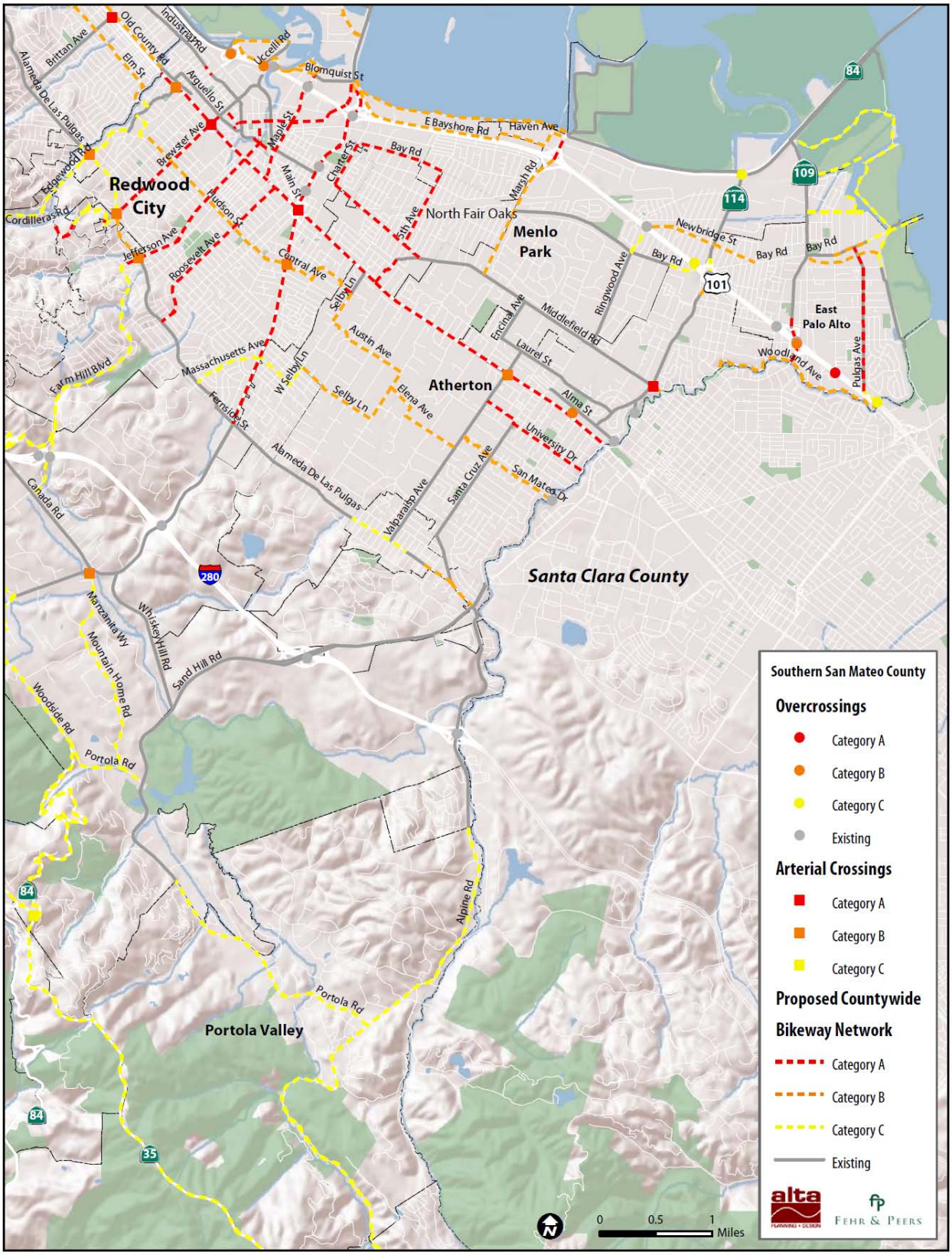

Figure A-4: Categorization Map South County

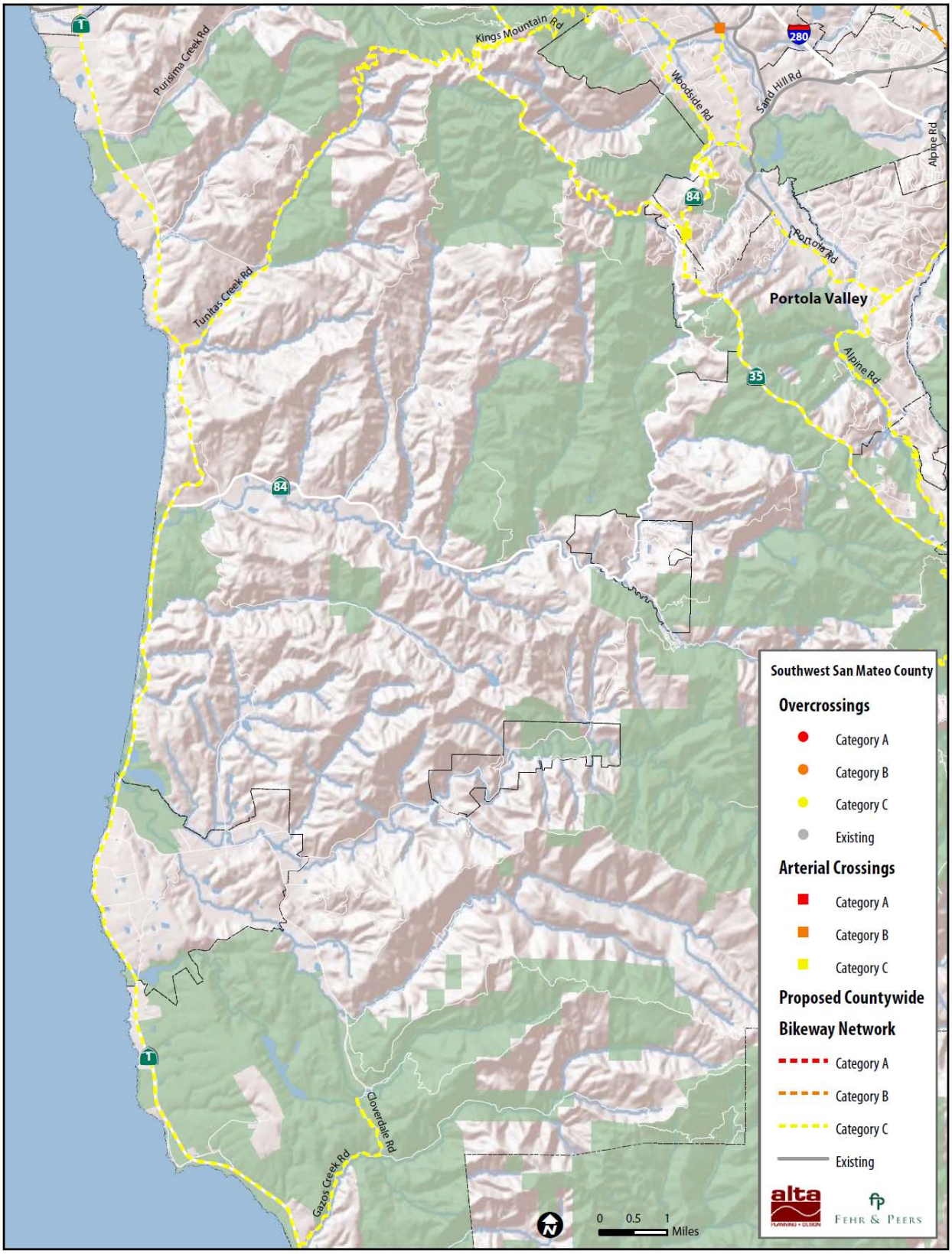

Figure A-5: Categorization Map Southwest County

Appendix B

Detailed Maps of Countywide Bike-way Network

San Mateo County Comprehensive Bicycle and Pedestrian Plan

Final

Adopted September 8, 2011

Prepared by: Alta Planning + Design

in association with Fehr & Peers and Eisen | Letunic

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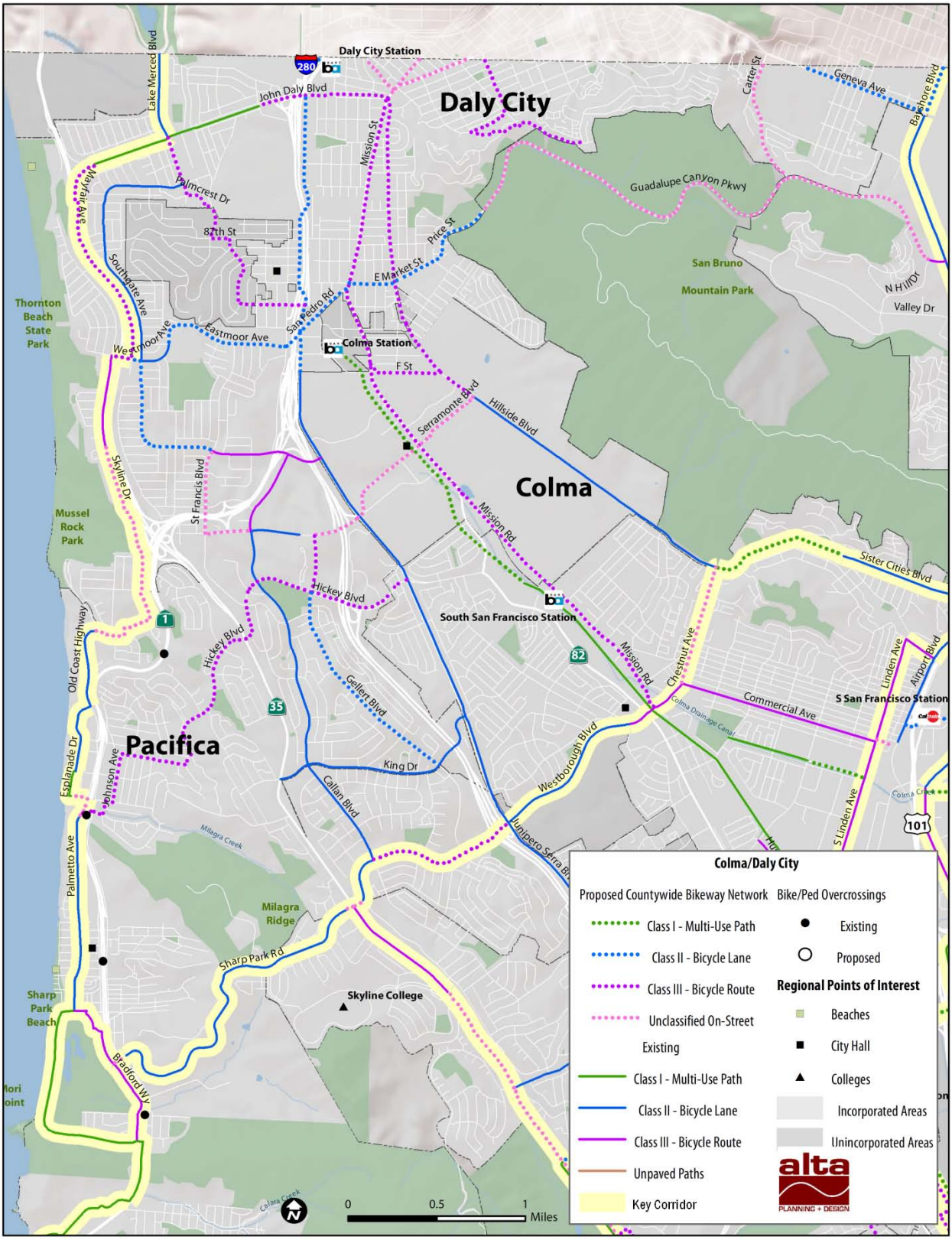

Figure B-1: Countywide Bikeway Network - Daly City, Coloma, and Pacifica

Figure B-2: Countywide Bikeway Network - Brisbane

Figure B-3: Countywide Bikeway Network - Pacifica

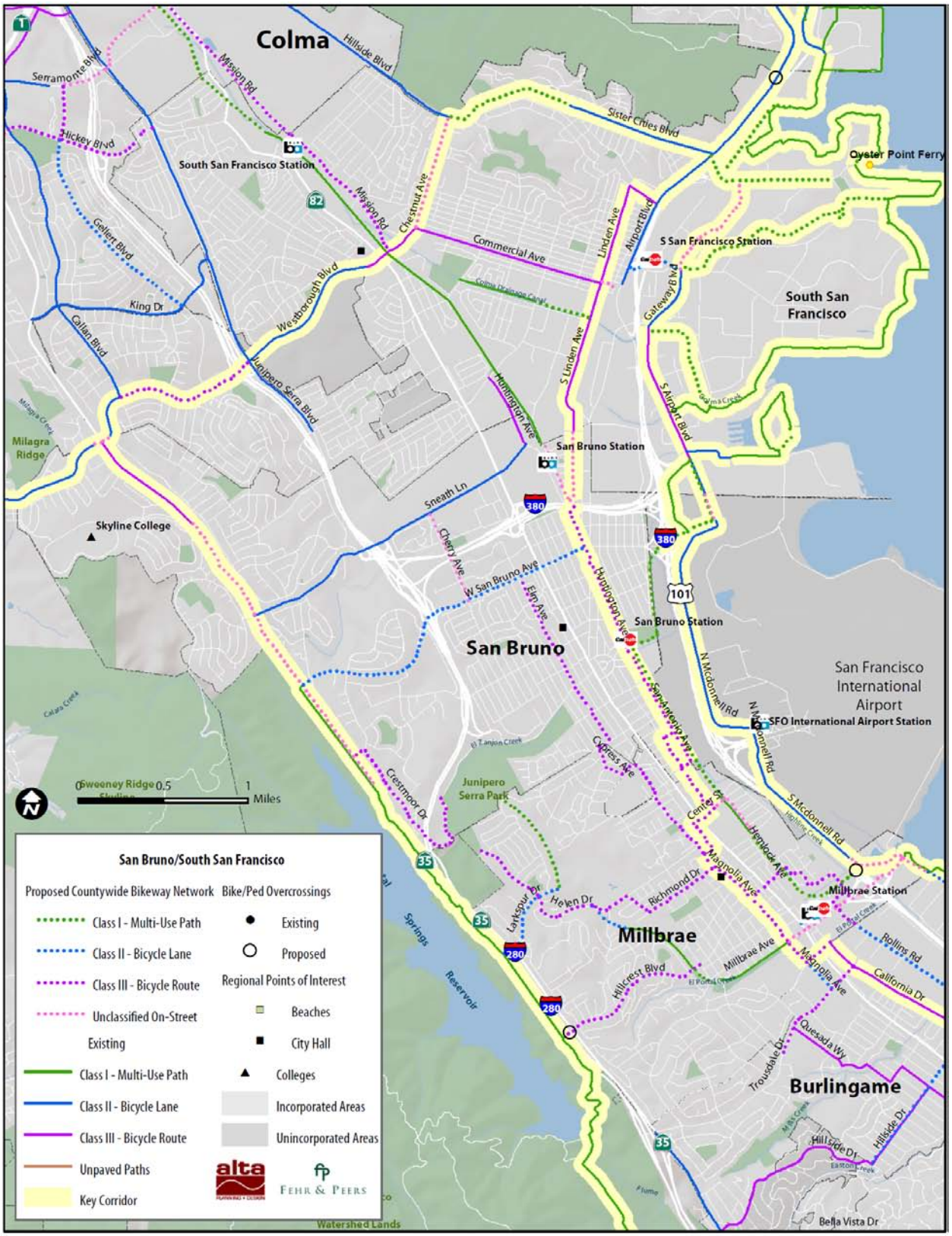

Figure B-4: Countywide Bikeway Network – Colma, San Bruno, South San Francisco, Millbrae, and Burlingame

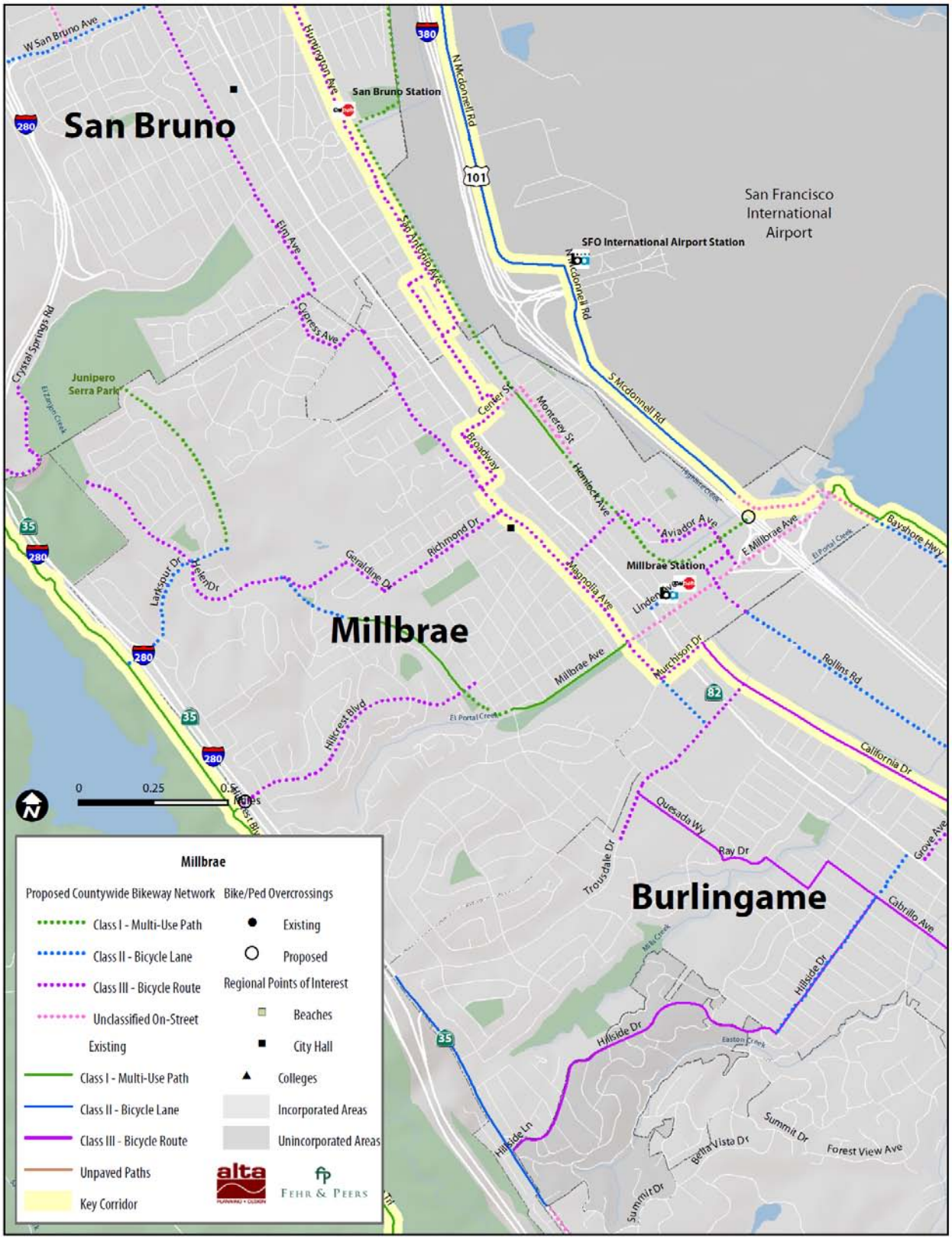

Figure B-5: Countywide Bikeway Network: Millbrae, Burlingame

Figure B-6: Countywide Bikeway Network: Burlingame, Hillsborough

Figure B-7: Countywide Bikeway Network – Hillsborough, San Mateo, Foster City, Belmont and San Carlos

Figure B-8: Countywide Bikeway Network – Half Moon Bay

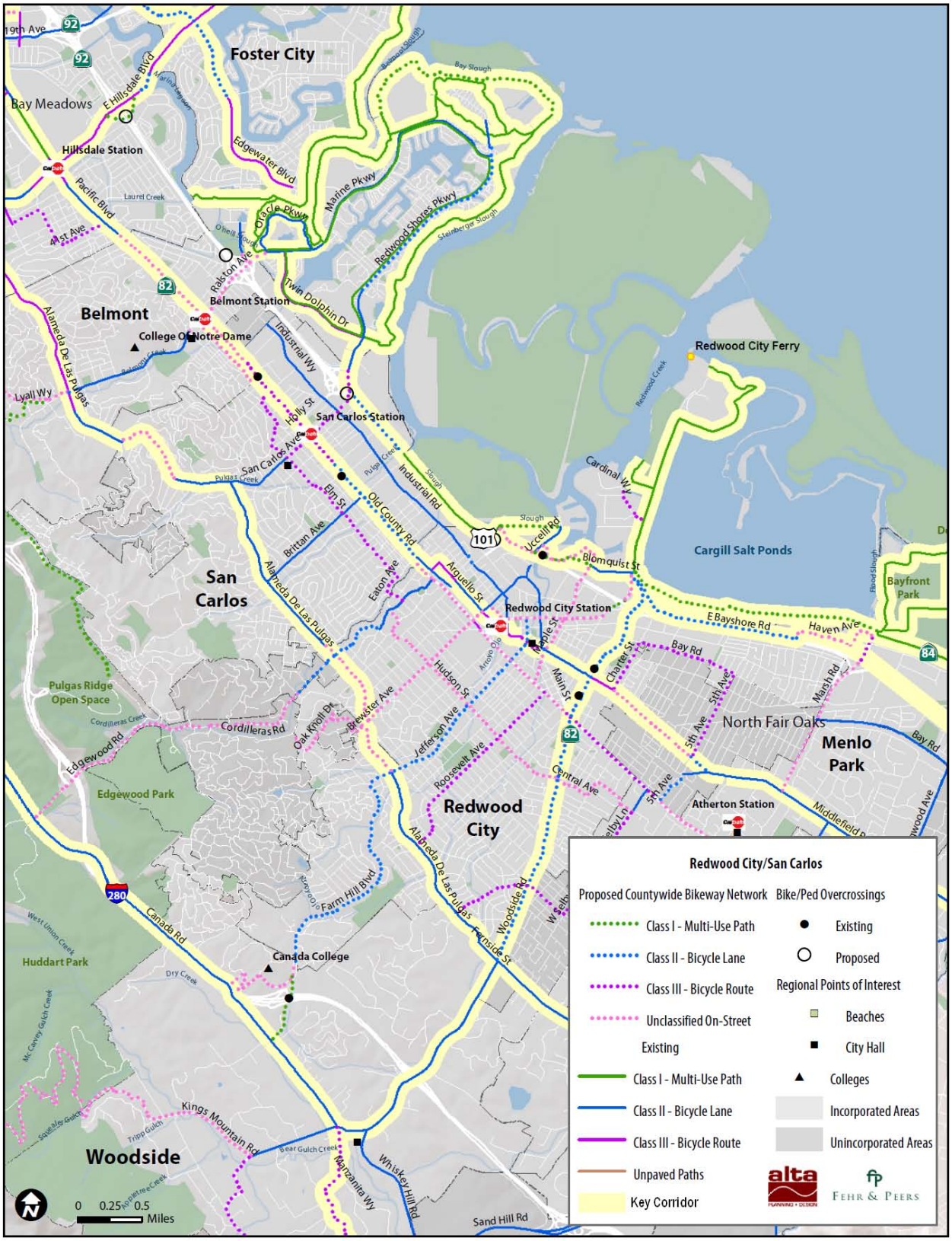

Figure B-9: Countywide Bikeway Network – Foster City, Belmont, Redwood City, San Carlos, and Woodside

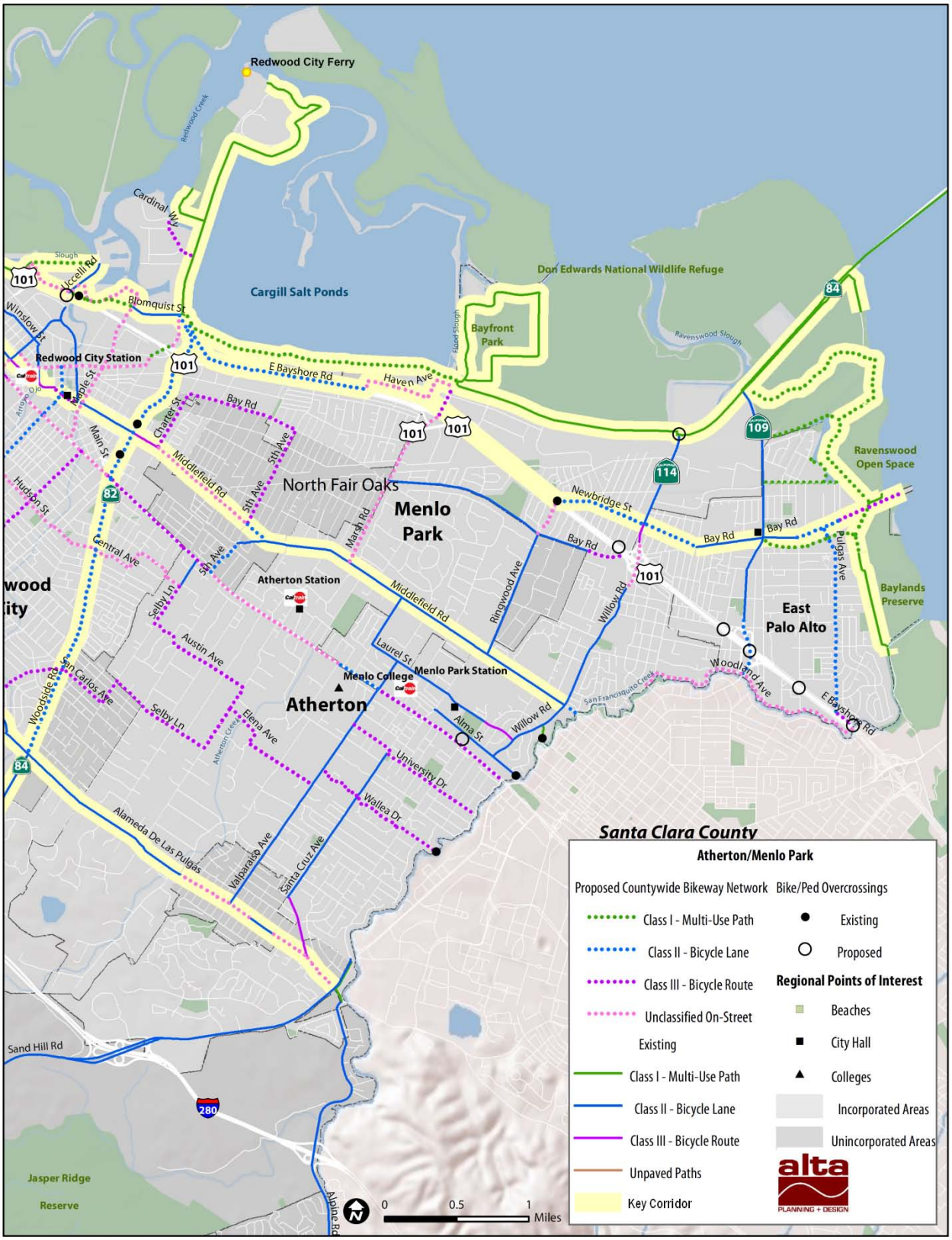

Figure B-10: Countywide Bikeway Network – Menlo Park, Atherton, and East Palo Alto

Figure B-11: Countywide Bikeway Network – East Palo Alto

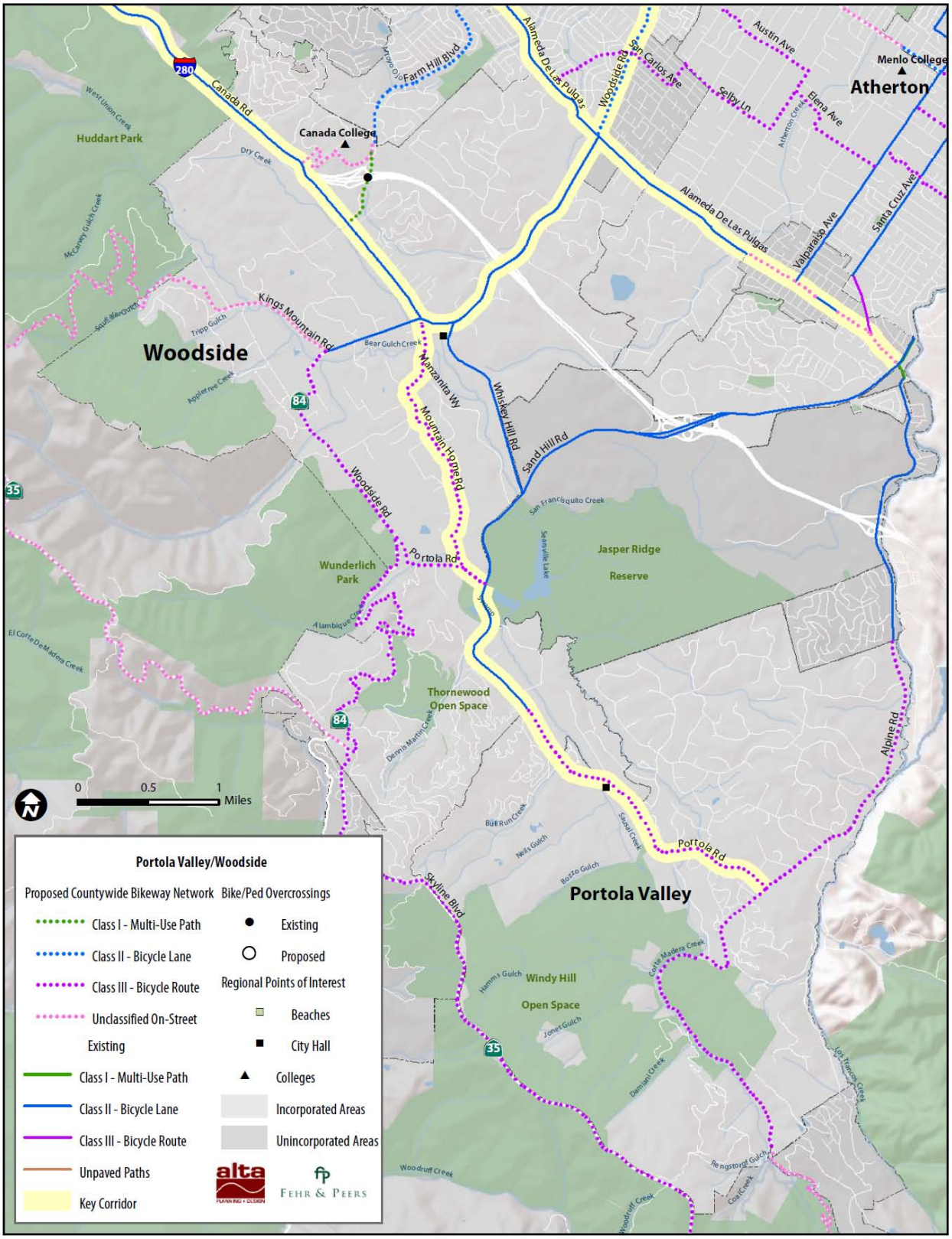

Figure B-12: Countywide Bikeway Network – Woodside, Atherton, and Portola Valley

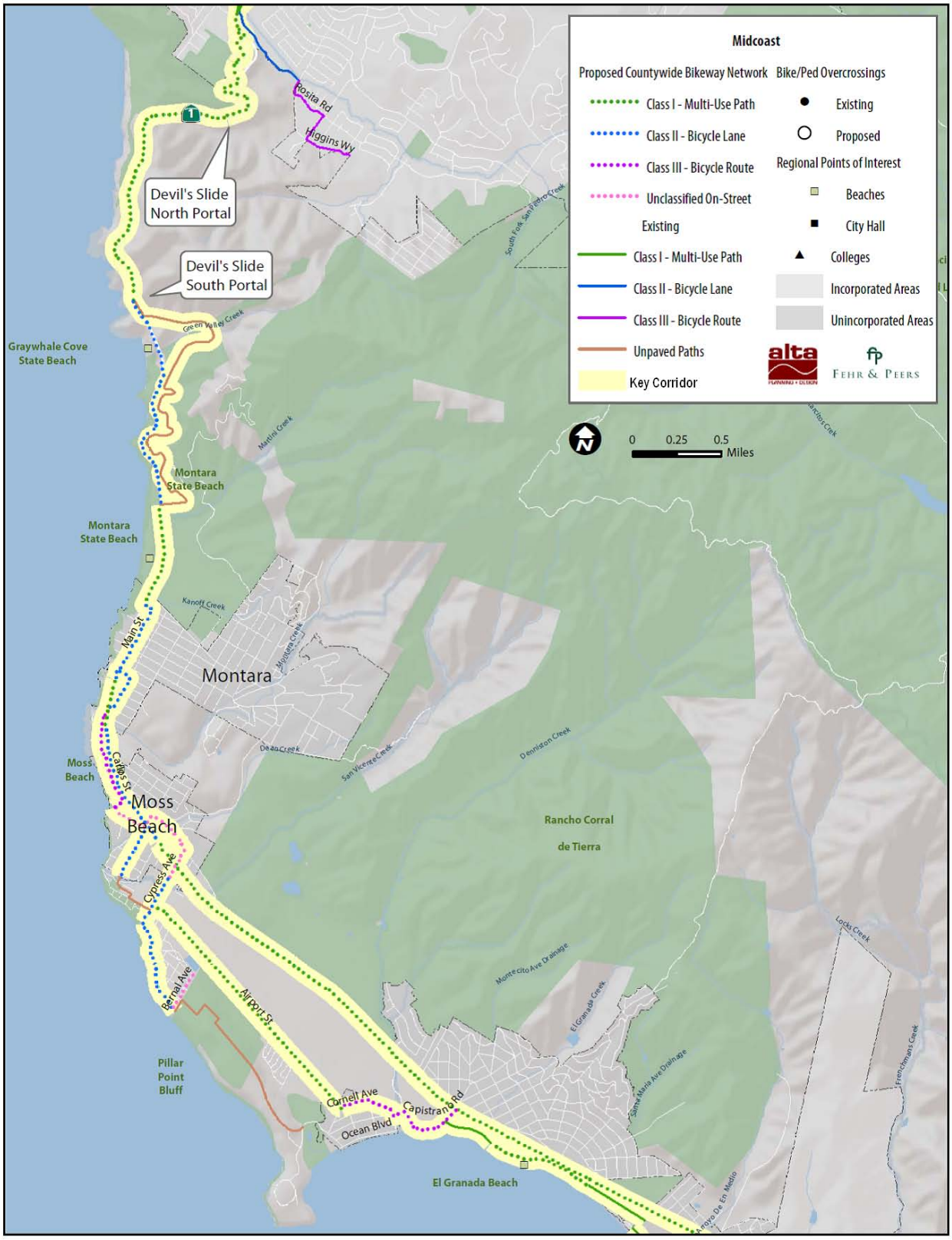

Figure B-13: Countywide Bikeway Network – Midcoast Region

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Appendix C

Pedestrian Demand Analysis

San Mateo County Comprehensive Bicycle and Pedestrian Plan

Final

Adopted September 8, 2011

Prepared by: Alta Planning + Design

in association with Fehr & Peers

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C Pedestrian Demand Analysis

This appendix describes the walking demand forecasting process for the San Mateo County Comprehensive Bicycle and Pedestrian Plan. The purpose of this task is to model the demand for walking at the countywide level in order to better evaluate the location and type of future pedestrian improvements of countywide significance.

C.1 Pedestrian Demand Estimation Methodology

The goal of this analysis is to produce generalized estimates of pedestrian activity along all streets in San Mateo County. The methodology is based on research Fehr & Peers has conducted for the US Environmental Protection Agency (EPA) on the relationship between the built environment and travel patterns. Through this and subsequent studies, several factors have been shown to have significant effects on the number of people walking in a given area[1].

The analysis uses a combination of existing GIS data and newly collected information to develop variables highly correlated with walking activity. The weighting of each individual variable is based on the results of the EPA research described above.

Variables are organized into four categories:

- Built Environment
- Proximity to Walking Destinations
- Demographics
- Street Network and Pedestrian Permeability

In total, seventeen (17) indicators were selected to estimate pedestrian demand within the County, including specific variables identifying the density and diversity of land uses, proximity to walking destinations, transit accessibility and pedestrian supportiveness of the street network.

The methodology for developing the PedINDEX walking model is comprised of the following steps:

- Step 1: Compile GIS data that will be used to create pedestrian demand model
- Step 2: Perform GIS analysis and processing
- Step 3: Summarize walking results scores for all street segments in the County

Step 1: Compile GIS Data

Several variables were compiled and analyzed in order to forecast future pedestrian demand. The seventeen indicators, identified in **Table C-1**, illustrate the diversity of variables that have an effect on pedestrian activity.

[1] The literature on travel behavior substantiates that several "D-factors" independently affect travel behavior, including: land use Density, Diversity (land use mix); pedestrian Design, and access to regional Destinations. Because these "Ds" work at a very local level, most travel demand models are too aggregate in scale to capture the effects of the Ds. Additional "D" factors such as Distance to Transit and population Demographics are also included based on their demonstrated relationship to walking/biking.

Table C-1: List of Variables Used in GIS Model

Factor	Type	Date	Source	Variable Used
Built Environment (Density and Diversity of land uses)				
1. Population Density	Polygon: Census Tract	2000	Census 2000	Score based on average density within a 2 mile buffer
2. Employment Density	Polygon: TAZ	2007	MTC	Score based on average density within a 2 mile buffer
3. Land Use Mix	Polygon: Census Tracts, Blocks	2007	Census 2000, MTC, County of San Mateo	Index score based on population/ employment mix and parcel density
Proximity Factors (Destinations)				
4. Schools	Point File	-	County of San Mateo	Value based on distance to nearest school (all school levels within county)
5. Parks/ Beaches	Point File	-	County of San Mateo	Value based on distance to nearest park
6. Transit Proximity – Bus lines	Polyline	-	MTC	Value based on distance to nearest bus line
7. Transit Proximity – Rail stops	Point File	2010	MTC	Value based on distance to nearest rail (Caltrain or BART) stop
8. Neighborhood Shopping Districts	Point File	2010	Fehr & Peers	Buffer of 400 ft around designated districts
9. Social and Recreational Destinations	Point File	-	Peninsula Library System/ County of San Mateo	Value based on distance to nearest senior center or major county recreational destination
10. Employment Centers	Point File	2010	Fehr & Peers	Value based on distance to nearest employment center
Demographics				
11. Age	Polygon: Census Tract	2000	Census 2000	Percent of population below 18 and above 65
12. Income	Polygon: Census Tract	2000	Census 2000	Percent of population below poverty level
13. Vehicle Ownership	Polygon: Census Tract	2000	Census 2000	Percent of population with 1 or fewer vehicles
14. Priority Development Areas	Polygon	2008	MTC	Value based on location within or outside of PDA
Street Permeability / Accessibility (Design)				
15. Street Segment Length	Polyline	2006	San Mateo County Street Centerline	Score based on length of street segment
16. Intersection Density	Polyline	2006	San Mateo County Street Centerline	Score based on number of intersections per square mile
17. Street Connectivity	Polyline	2006	San Mateo County Street Centerline	Score based on street connected at both ends or a cul de sac

Source: Fehr & Peers, 2010

Step 2: GIS Data Processing

Each of the 17 variables was processed in GIS, utilizing several tools and extensions. Each variable was weighted and assigned to the street centerline file.

Step 3: Develop Final Database and Join Attributes to Street Centerline File

The processed GIS data was then assigned to the countywide street centerline file in order to derive the pedestrian model. Each street segment has a walking potential rating, or pedestrian demand score, ranging from 0-100; this number is applied to the street segment based on the corresponding GIS factors used in the PedINDEX model. This final process utilizes all the input variables to calculate the street segments within San Mateo County (approximately 24,260 street segments).

Figure C-1 through **Figure C-4** illustrate pedestrian demand in San Mateo County. These streets hold the highest ranking when all 17 variables are calculated and given their respective weighting. In general, the areas

with the highest pedestrian demand are concentrated along the El Camino Real Corridor. This includes El Camino Real itself and many streets on either side of it, which combined rank as some of the streets with the highest walking demand in the County.

Based on the PedINDEX model results, the highest street segment walking demand are located in the downtown areas of Daly City, South San Francisco, San Bruno, San Mateo and Redwood City. Other downtown districts, including Burlingame, Belmont, San Carlos, Menlo Park and East Palo Alto, also have many streets with a high walking demand. Several areas in the western part of the County, including Half Moon Bay and Pacifica, also have neighborhoods with moderate to high pedestrian demand.

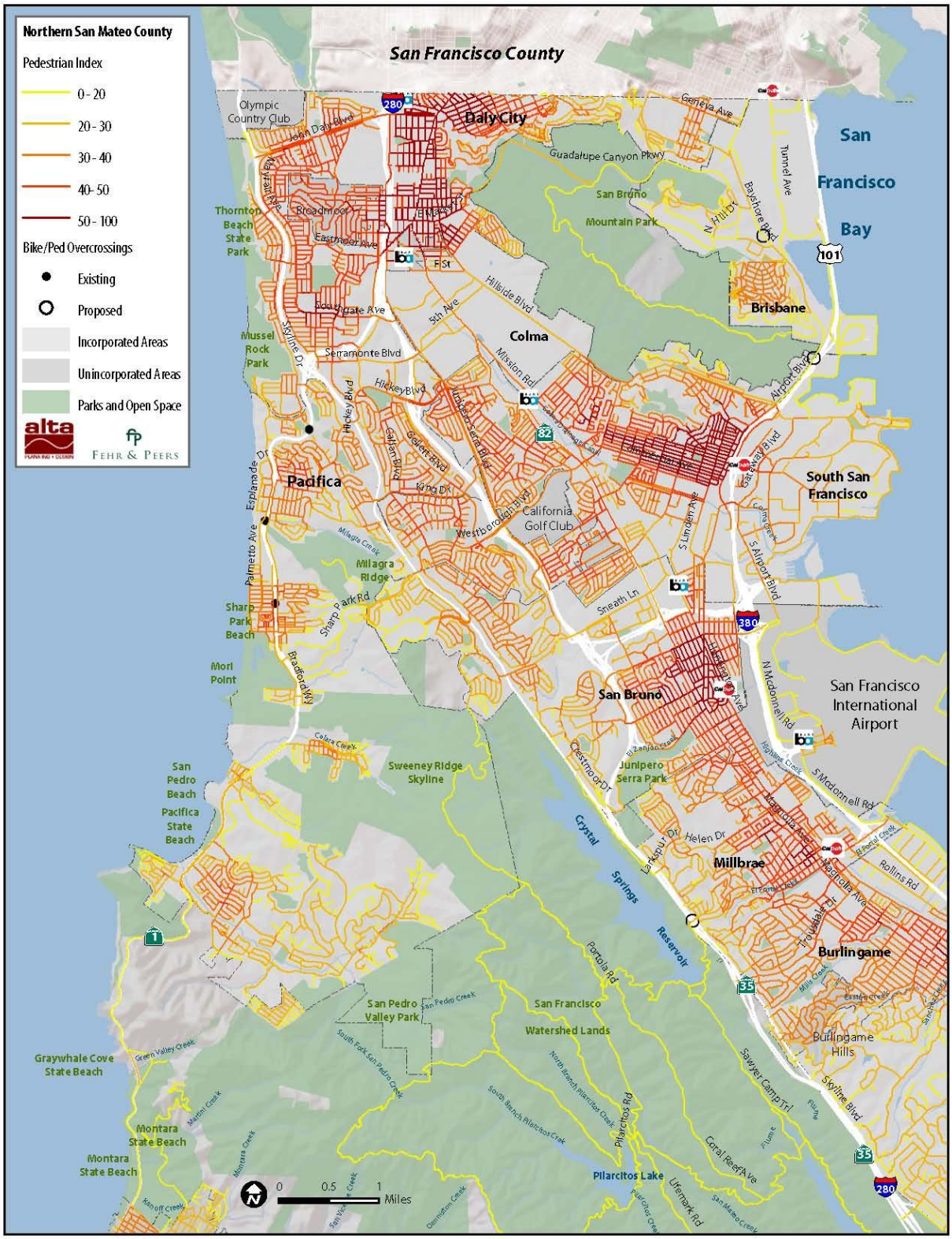

Figure C-1: San Mateo County Pedestrian INDEX Walking Demand Score – North

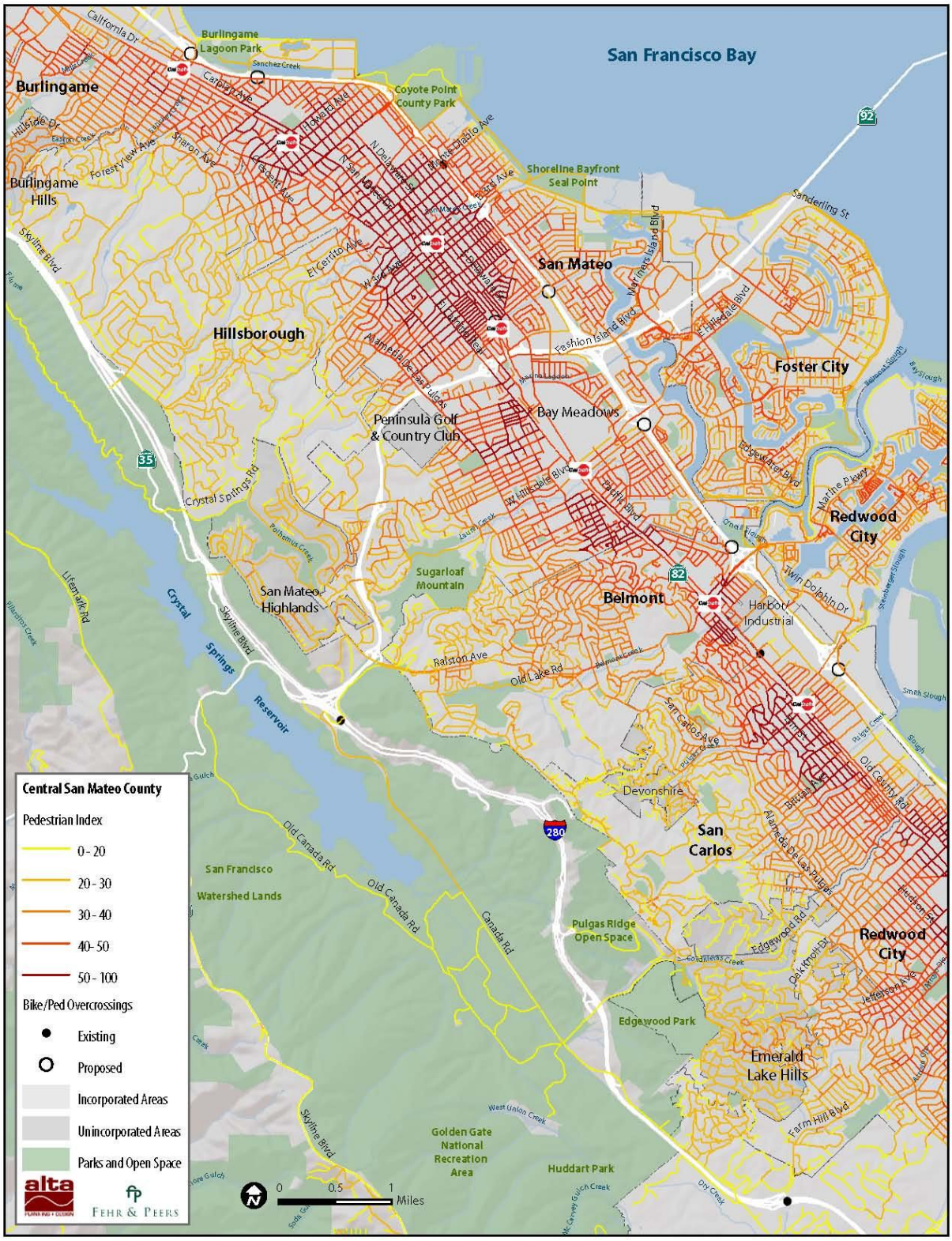

Figure C-2: San Mateo County Pedestrian INDEX Walking Demand Score -Central

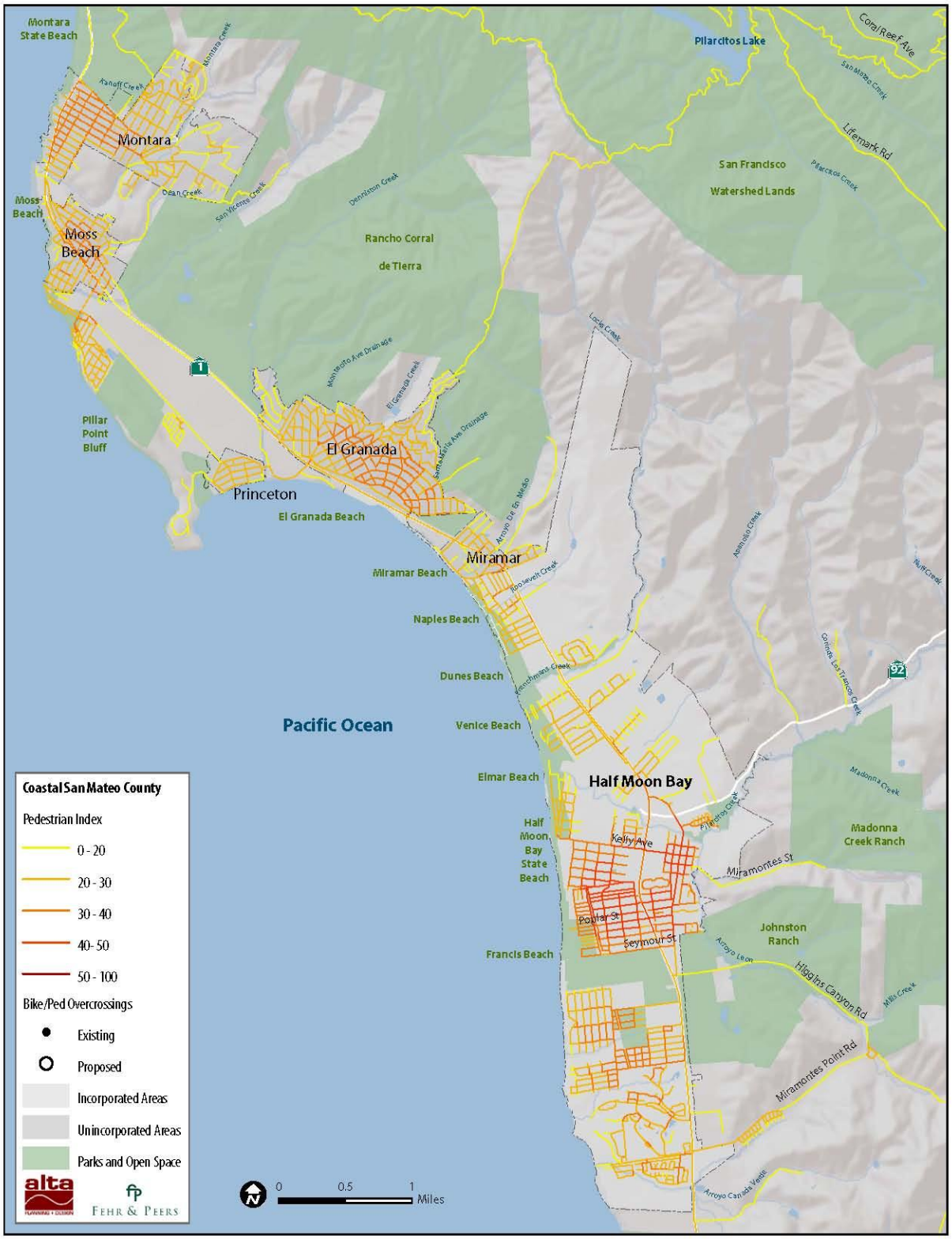

Figure C-3: San Mateo County Pedestrian INDEX Walking Demand Score -Coastal

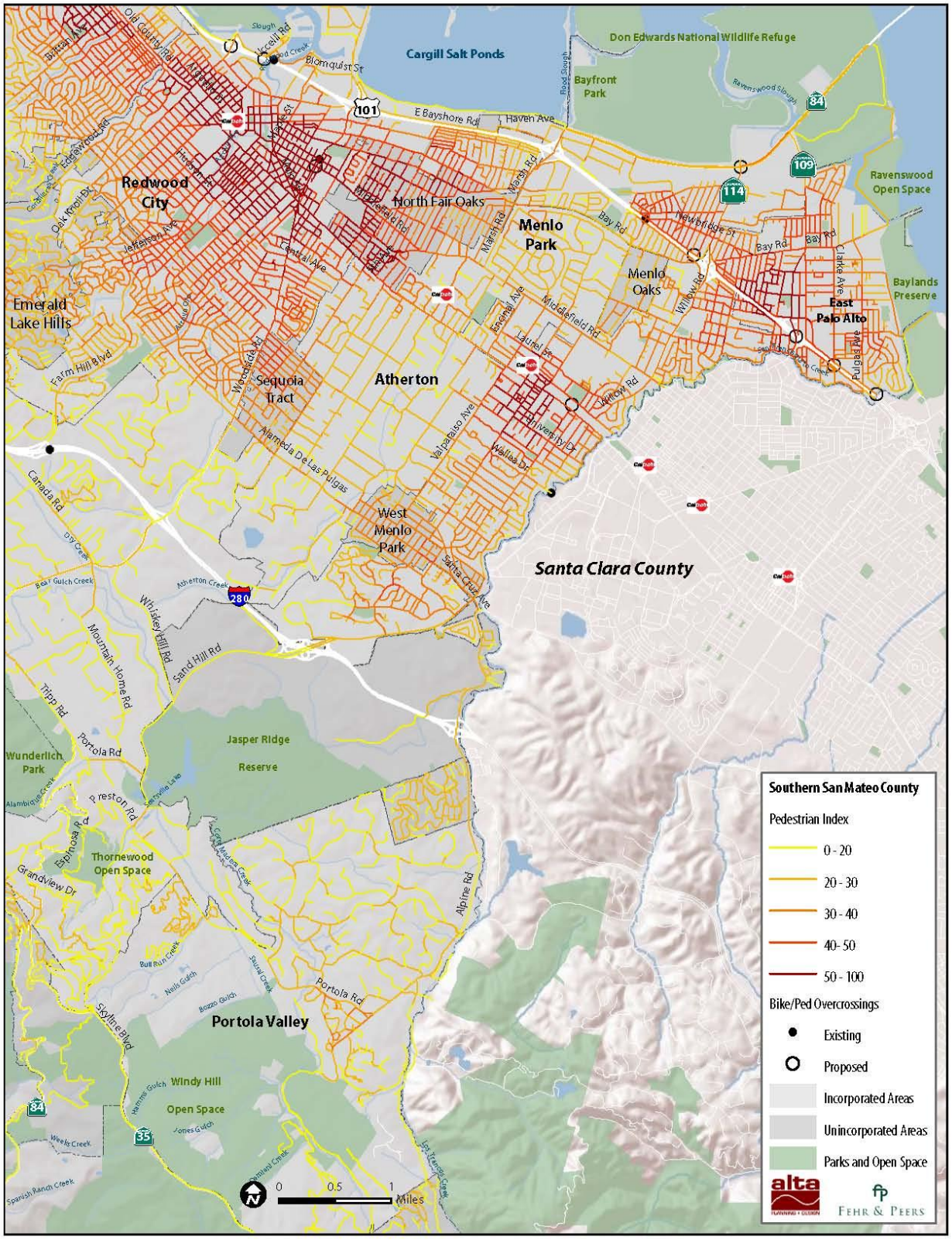

Figure C-4: San Mateo County Pedestrian INDEX Walking Demand Score -South

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Appendix D

Federal, State, Regional, and County Policy Matrix

San Mateo County Comprehensive Bicycle and Pedestrian Plan

Final

Adopted September 8, 2011

Prepared by: Alta Planning + Design

in association with Fehr & Peers and Eisen|Letunic

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Table D-1: Summary of National, State, Regional, and County Plans and Policies

Agency	Plan or Policy	Description	Relevance to CBPP
C/CAG	San Mateo County Comprehensive Bicycle Route Plan (2000)	This Plan presents a strategic guide to implementing bike routes in the San Mateo County, including the City jurisdictions, identifies a countywide network of bike routes and 15 high-priority projects.	The CBPP is updating the bicycle component of this plan and adding a pedestrian component.
C/CAG	Countywide Transportation Plan 2010 (2001)	CTP's overarching goal is to reduce traffic congestion in San Mateo County by increasing transit and non-motorized facility capacity, performance and demand and increasing the performance of existing roadways. The CTP is currently being updated.	CBPP implements the bike and pedestrian policies identified in the CTP: 1) Develop a bikeway system that is fully integrated into the transit system and provides more incentives for integrating bikeways and transit modes. 2) Encourage cities to promote land use patterns and development that make walking more viable and inviting and to identify and improve existing locations that are dangerous for pedestrians.
C/CAG	Countywide Transportation Plan 2035 Bicycle and Pedestrian Goals and Policies (in development)	C/CAG is currently updating the CTP 2010 and has developed draft vision, goals, objectives, and policies for both bicycling and walking. The goals and policies include benchmarks for increasing the market share of walking and bicycling trips for all purposes and for commute trips, recommended prioritization criteria, and general policies relating to land use, barriers, traffic calming, education, encouragement, and integration with public transit.	The CBPP goals and policies should complement those in the Draft CTP 2035 goals and policies.
C/CAG	Congestion Management Program for 2009	C/CAG, as the Congestion Management Agency for San Mateo County, is required to prepare and adopt a Congestion Management Program (CMP) on a biennial basis. The CMP identifies strategies to meet transportation needs, develops procedures to alleviate motor vehicle congestion, and promotes countywide solutions. The CMP roadway system includes all State highways in the County, Mission Street, Geneva Avenue, and Bayshore Boulevard.	This plan focuses on vehicular traffic congestion relief and does not propose bike/ped facilities. Proposed bicycle and pedestrian improvements on the CMP network should consider the LOS and other performance standards contained in the CMP.
National and State Plans, Policies, Guidelines, and Practices			
UCDOT/ FHWA	Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations (March 2010)	This policy statement on integrating bicycling and walking into transportation infrastructure encourages, but does not require, public agencies and professional associations to "[commit] themselves to integrating bicycling and walking into the transportation mainstream."	The CBPP assists local jurisdictions in integrating bicycling and walking into the transportation infrastructure.

Agency	Plan or Policy	Description	Relevance to CBPP
California	California Complete Streets Act (AB 1358) (2008)	This law requires "that the legislative body of a city or county, upon any substantive revision of the circulation element of the general plan, modify the circulation element to plan for a balanced, multimodal transportation network that meets the needs of all users" including bicyclists and pedestrians. This provision goes into effect on January 20111.	The CBPP includes information that could assist local cities and the County update their Transportation Elements to meet the needs of bicyclists and pedestrians.
California	California Global Warming Solutions Act (AB 32) (2006)	This law aims to reduce the state's emissions of greenhouse gases (GHG) to 1990 levels by 2020 and to 80 percent below 1990 levels by 2050. The law requires the state's Air Resources Board (ARB) to adopt a "scoping plan" indicating how the 2020 target for emissions reductions may be achieved.	The CBPP promotes walking and bicycling as strategies that reduce GHG by reducing vehicle miles traveled (VMT).
California	California Senate Bill 375 (2008)	This law requires the Air Resources Board to develop regional targets for reductions in greenhouse gas emissions from passenger vehicles for 2020 and 2035. MTC is required to prepare a "sustainable communities strategy" for meeting the emissions reductions target through transportation and land use actions that reduce the number of vehicle-miles traveled.	The CBPP promotes walking and bicycling as strategies that reduce VMT.
Caltrans	Complete Streets—Integrating the Transportation System (DD 64-R1) (2008)	This Deputy Directive, an update of the original 2001 Deputy Directive, establishes a routine accommodation policy for Caltrans. The policy "recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system" and addresses the needs of bicyclists, pedestrian users regardless of funding. "Bicycle, pedestrian and transit travel is facilitated by creating "complete streets" beginning early in system planning and continuing through project delivery and maintenance and operations."	The CBPP will integrate bicycling and walking into the transportation infrastructure.
Caltrans	California Strategic Highway Safety Plan (SHSP), v. 2	The SHSP is a statewide plan that provides a coordinated framework for reducing fatalities and serious injuries on public roads in California. The SHSP identifies Challenge Areas for improving road safety in the State. Relevant Challenge Areas include intersections (Challenge Area 7), pedestrians (Challenge Area 8), and bicyclists (Challenge Area 13).	CBPP goals and policies are compatible with the SHSP.

Agency	Plan or Policy	Description	Relevance to CBPP
Regional Plans, Policies, Guidelines, and Practices			
ABAG	The Bay Trail: Planning for a Recreational Ring Around San Francisco Bay (1989)	ABAG adopted this Plan with the goal of developing a 400-mile loop trail around the San Francisco Bay Area. Senate Bill 100 mandates that the Bay Trail provide connections to existing parks and recreation facilities, create links to existing and proposed transportation facilities, and be planned in such a way as to avoid adverse effects on environmentally sensitive areas.	The Bay Trail is partially complete within San Mateo County. The CBPP includes the Bay Trail alignment as a countywide bicycle route and refers local agencies to Bay Trail policies that guide trail alignment, trail design, environmental protection, transportation access, and implementation.
ABAG	San Francisco Bay Trail Gap Analysis (2005)	The San Francisco Bay Trail Gap Analysis Study is a continuation of the Bay Trail Plan (1989), which seeks to complete a continuous 500-mile trail around the San Francisco Bay.	The Gap Analysis identifies short-, mid-, and long-term gap segment projects in San Mateo County (pp. 30, 39-40, 48), ranks the gap segments (Appendix C), discusses next steps for closing the gaps, and estimates funding needs to complete the trail (Appendix A).
BART	Bicycle Access Parking Plan (2002)	This plan presents a system-wide approach to planning for bicycle access and parking in the BART system to encourage bicycling as a station access mode. Volume 1 of the plan includes system-wide recommendations for improvements to bicycle access (pp. 3-1), parking (pp. 3-6), promotion (pp. 3-18), and future station projects and transit villages (pp. 3-16).	The policies are applicable to the five BART stations located within San Mateo County: the Daly City, Colma, South San Francisco, San Bruno and Millbrae stations.
BART	Station Access Plans	These plans include site-specific bicycle access and parking plans for BART stations. In San Mateo County, only Daly City has a completed Station Access Plan (2002). BART also provides brief station area planning updates on its website. Planning updates for Colma, San Bruno, Millbrae and South San Francisco describe TOD/mixed use development at those stations	Daly City BART Station Access Plan includes recommendations for bicycle and pedestrian improvements. The CBPP is consistent with this plan.
Caltrain	Caltrain Bicycle Access and Parking Plan (2008)	The Plan proposes improvements to the 10 stations that account for 75 percent of the system's cyclist-passenger volumes with the goal of increasing the number of people that arrive at the stations by bicycle. The plan identifies system-wide and station-specific issues, including the existing bicycle parking capacity (Table 3.1) and recommended bicycle parking (Table 3.2) for each station.	The Millbrae, Hillsdale, San Mateo, and Redwood City stations are assessed by the plan. The CBPP is consistent with this plan.

Agency	Plan or Policy	Description	Relevance to CBPP
MTC	Regional Policy for the Accommodation of Non-Motorized Travelers (MTC Resolution No. 3765) (2006)	The policy calls for creation and implementation of a checklist that promotes the routine accommodation of non-motorized travelers in project planning and design.	Supports the concept of routine accommodation in San Mateo County.
MTC	Transportation 2035 Plan for the San Francisco Bay Area (April 2009)	The vision for the Plan is to support a prosperous and globally competitive Bay Area economy, provide for a healthy and safe environment, and promote equitable mobility opportunities for all residents. The Plan identifies how approximately $218 billion in anticipated federal, state and local transportation funds should be spent in the Bay Area over the next 25 years.	The Transportation 2035 Plan commits $1 billion to the Regional Bicycle Program. San Mateo County projects are discussed on pages 116 to 118.
MTC	Snapshot Analysis Development Report (2010) and Associated Maps	The Snapshot Equity Analysis analyzes key transportation-related indicators in order to assess transportation conditions in low-income and minority communities of concern today and to track changes over time. Of particular interest are the SF Bay Area Walkability Index (Map 3), the Bicycle Collisions (2006) (Map 10), and Pedestrian Collisions (2006) (Map 11) maps.	Within San Mateo County, the communities of concern consist of Daly City, South San Francisco/San Bruno, San Mateo and East Palo Alto/North Fair Oaks. The CBPP considers communities of concern when prioritizing bikeways and pedestrian projects.
MTC	Regional Bicycle Plan for the San Francisco Bay Area (2009)	This Plan identifies regional bikeway connections in the San Francisco Bay Area and strategies to fill gaps in the regional bikeway network (RBN). The goals and policies of the plan (pp. 6-10) include routine accommodation of bicyclists and pedestrians; bicycle safety, education and promotion; multi-modal integration; and development of comprehensive support facilities and mechanisms.	CBPP should incorporate the bikeways identified in the Regional Bicycle Plan. The plan identifies built and unbuilt regional bikeway network links in San Mateo County (pp. 39, 86-87, and 97).
County Policies, Guidelines, and Practices			
County	Draft Trails Master Plan (2010)	The County is in the process of updating the Trails Master Plan (2001) and drafts were not available at the time of this writing (August 2010). Among several goals, the Trails Plan Update seeks to review opportunities for linkages to other City, Special District, State and other facilities. As part of the Trails Master Plan effort, the County has identified potential Bay to Ocean multi-use trails, which include shared-use paths, on-street bicycle facilities and sidewalks.	The CBPP includes relevant portions of the Bay to Ocean Trails identified in the Trails Master Plan.

Agency	Plan or Policy	Description	Relevance to CBPP
County	San Mateo County 2001 Trails Plan (2001)	The Trails Plan includes an inventory of existing trails, proposed trail routes, County trails policies, design guidelines, and use and management guidelines. The County is currently updating this plan. (See entry above.)	The Trails Plan identifies 166.5 miles of existing trails and approximately 304.45 miles of proposed trails. Trails are identified as either County Trail Routes or Regional Trail Routes. Of the four Regional Trail Routes described in the Plan, three are part of the Countywide Bicycle Network proposed in 2000: the California Coast Trail, the Juan Bautista de Anza National Historic Trail (includes El Camino Real) and the San Francisco Bay Trail
C/CAG, Sam Trans, Valley Transportati on Authority (VTA)	Grand Boulevard Multimodal Transportation Corridor Plan	The Corridor Plan directs development within the 43-mile El Camino Real Corridor from Daly City to San Jose's Diridon Station. This Plan provides guidance to local communities on how to accommodate all transportation modes on El Camino Real.	The CBPP supports the Grand Boulevard Initiative by prioritizing projects along El Camino Real.
SMCTA	Strategic Plan 2009-2013 (2008)	SMCTA's Strategic Plan provides a policy framework for guiding programming and allocation decisions within the structure established by the 2004 Transportation Expenditure Plan. The Strategic Plan is a living document that continues to evolve as the SMCTA implements the Measure A program.	Three percent of the 2009-2033 Measure A funds are dedicated to bicycle and pedestrian projects ($45 million in 2004 dollars over the life of the program). Qualified expenditures include paths, trails and bridges over roads and highways.

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Appendix E

Bikeway Signage

San Mateo County Comprehensive Bicycle and Pedestrian Plan

Final

Adopted September 8, 2011

Prepared by: Alta Planning + Design

in association with Fehr & Peers and Eisen|Letunic

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E Bikeway Signage

E.1 Route Number System

The CBPP recommends that cities and the County use the Route Number System developed for the *San Mateo County Comprehensive Bicycle Route Plan* (2000), which has been carried over to the CBPP without changes. Route numbers should be used with the *California MUTCD*'s bicycle route number marker California Special Guide (SG) sign, SG45. The sign can be modified to include a city logo. See **Table E-1** for a summary of minimum sign sizes for bicycle guide signs, and **Figures E-1 through E-3** for illustrations of these signs and placement guidance. **Table E-2**, at the end of this appendix, lists the designated bike route numbers and corresponding street names, sorted by route number. The start and end points for streets with route numbers are provided as a guide and can be adjusted by the jurisdictions accordingly. **Figure E-4** provides sign specifications for the SG45 (CA) sign.

Table E-1: Minimum Sign Sizes for Bicycle Guide Signs

Sign	MUTCD Code	Minimum sign size Shared Use Path	Minimum sign size Roadway
Bicycle Guide	D1-1b	24x6	24x6
Street Name	D1-1c	18x6	18x6
Bike Route	D11-1	24x18	24x18
Bicycle Route Sign	M1-8	12x18	12x18
Interstate Bicycle Route Sign	M1-9	18x24	18x24
Bicycle Route Supplemental Plaques	M4-11, 12, 13	12x4	12x4
Route Sign Supplemental Plaques	M7-1, 2, 3, 4, 5, 6, 7	12x9	12x9
Bicycle Route Number Marker	SG45(CA)	n/a	12x18
Bicycle Route Name Marker	S17(CA)	n/a	24x6

Source: Drawn from CA MUTCD 2010, Part 9, Page 9B-16 through 9B-18, Tables 9B-1 and 9B-1(CA)

E.2 Wayfinding Signage

In addition to recommending route numbering along numbered bikeways, the CBPP recommends that cities and the County install bicycle wayfinding signage along all CBN bikeways. Wayfinding signage provides information necessary for bicyclists to navigate along a bicycle route, including the distance to key destinations, advance notice for turns in the bicycle route, and identification of intersecting bicycle routes.

Cities and the County should install wayfinding signage based on the *California MUTCD*'s bike route sign (D11-1) bicycle guide sign (D1-1b), and street name sign (D1-1c). See **Table E-1** for a summary of minimum sign sizes for bicycle guide signs, and **Figures E-1 through E-3** for illustrations of these signs and placement guidance.

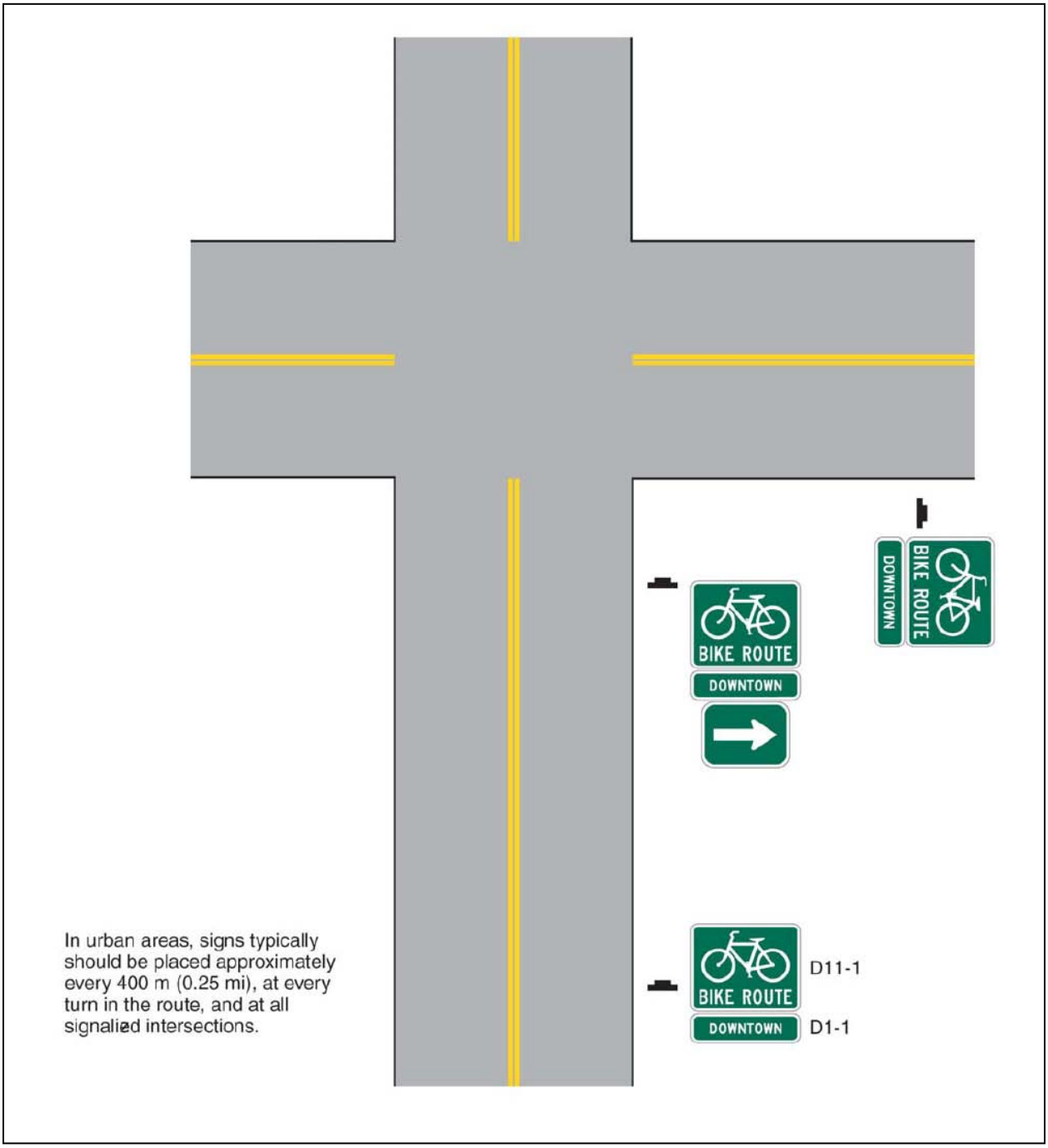

Figure E-1: Example Signing for an On-Roadway Bicycle Route

Source: CA MUTCD Figure 9B-6

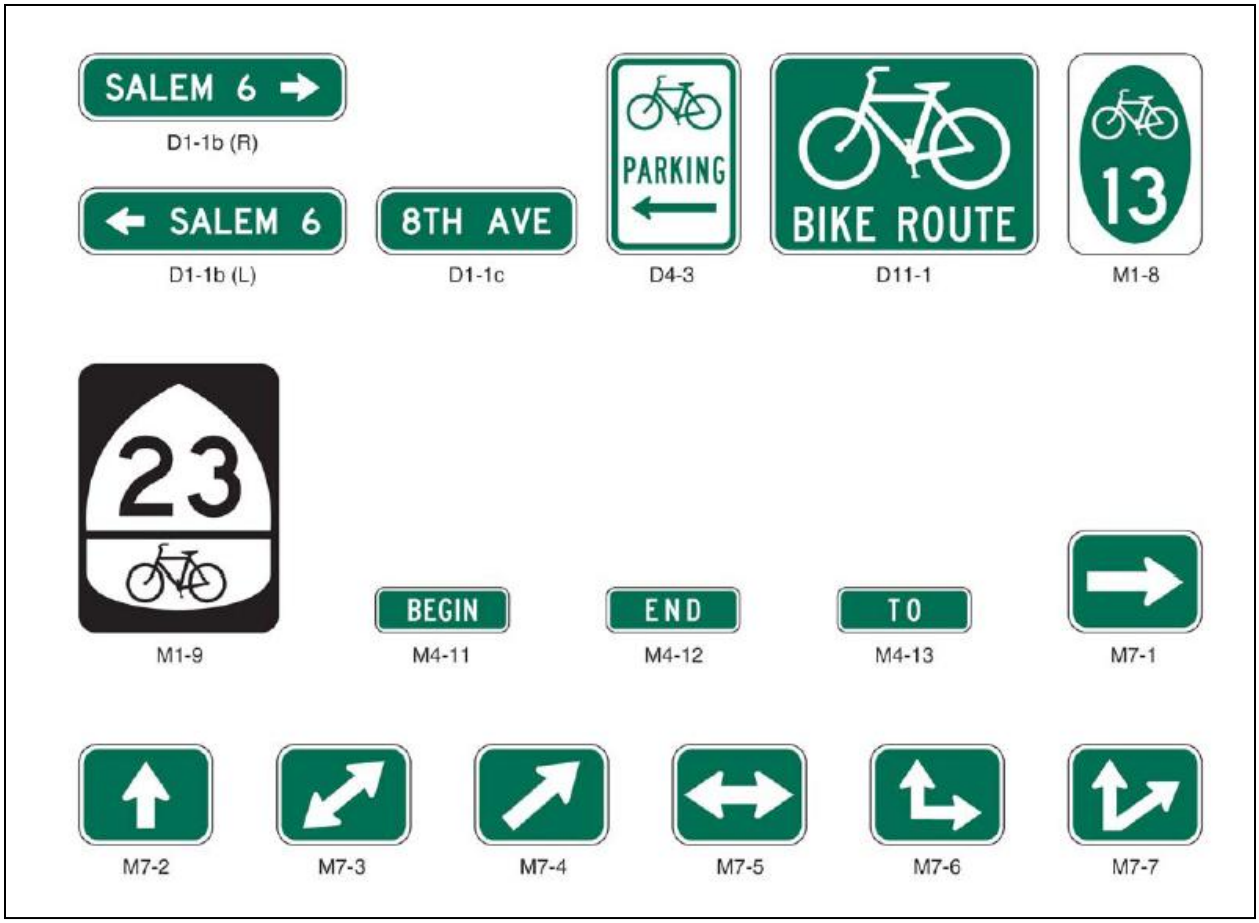

Figure E-2: Guide Signs for Bicycle Facilities
Source: CA MUTCD 2010, Part 9, Figure 9B-4, page 9B-12

Figure E-3: California Guide Signs for Bicycle Facilities
Source: CA MUTCD 2010, Part 9, Figure 9B-4(CA), page 9B-12

Table E-2: CBN Bike Route Numbers

Route No.	Street Name	From	To	CBPP Figure
3	Mariner's Island Blvd	E. 3rd Ave	Fashion Island Blvd	17
5	McDonnell Rd	San Bruno Ave	E. Millbrae Ave	16
	S. Airport Blvd	Gateway Blvd	N. McDonnell Rd	16
	Tunnel Ave	County Line	Lagoon Road	16
6	University Ave	Donohoe St	Bayfront Expwy	19
8	Bay Rd	Newbridge St	Clarke Ave	19
	Willow Rd	Alma St	Bayfront Expwy	19
10	Alpine Rd	Alameda de las Pulgas	County Line	19
12	La Honda Rd	Skyline Blvd	Pescadero Rd	19
	Sand Hill Rd	Portola Rd	Vine St	19, 20
15	S. Linden Ave	Airport Blvd	San Mateo Ave	16
16	Valparaiso Ave	Alameda de las Pulgas	Laurel St	19
20	Marsh Rd	Middlefield Ave	Bayfront Expwy	19
30	Farm Hill Road	Canada Rd	Alameda de las Pulgas	17
	Jefferson Ave	Alameda de las Pulgas	Middlefield Ave	17
	Maple Rd	Middlefield Ave	Bloomquist Ave	19
36	Brittan Ave	Alameda de las Pulgas	Old County Rd	17, 19
38	San Carlos Ave	Alameda de las Pulgas	El Camino Real	17
40	Marine Pkwy	Twin Dolphin Dr	Shearwater Pkwy	17
	Ralston Ave	Alameda de las Pulgas	Twin Dolphin Dr	17
45	California Dr	Broadway Ave	Ralston Ave/Howard Ave	16
	Delaware St	Howard Ave	25th Ave	16
	Mission St	John Daly Blvd	County Line	16
	Old County Rd	Ralston Ave	Brittan Ave	16
	Pacific Blvd	E. Hillsdale	Ralston Ave	16
	Rollins Rd	E. Millbrae Ave	Broadway Ave	16
	W. San Bruno Ave	Skyline Blvd	Huntington Ave	16
46	Hillsdale Blvd	Glendora Dr/ De Anza Blvd	Beach Blvd	17
48	Fashion Island Blvd	Pacific Blvd	Mariners Island Blvd	17
50	Crystal Springs Rd	Skyline Blvd	El Camino Real	17
54	Bernal Ave	Devereux Dr	Carmelita Ave	17
	Carmelita Ave	Bernal Ave	Cortez Ave	17
	Cortez Ave	Carmelita Ave	Forestville Ave	17
	Forestville Ave	Newhall Rd	Walnut Ave	17
	Quesada Way	Trousdale Dr	Ray Dr	17
	Ray Dr	Queseda Way	Devereux Dr	17
	Walnut Ave	Forestville Ave	Floribunda Dr	17
55	El Camino Real	San Carlos Ave	County line	19
61	Santa Cruz Ave	Alameda de las Pulgas	University Dr	19
65	Alameda de las Pulgas	Crystal Springs Rd	County Line	17, 19, 20
67	Hudson St	Whipple Ave	Woodside Rd	19
	Woodstock Pl / Melrose Pl	Woodside Rd	Edgewood Rd	19

Table E—2: CBN Bike Route Numbers (Continued)

Route No.	Street Name	From	To	CBPP Figure
70	Skyline Blvd	Sneath Ln	Larkspur Dr	16
	Sneath Lane	Skyline Blvd	El Camino Real	16
75	Canada Rd	Ralston Ave	Farmhill Rd	17
	Canada Rd	Farmhill Rd	Woodside Rd	19
	Junipero Serra Blvd	Westborough Blvd	Avalon Dr	16
	Mountain Home Rd	Woodside Rd	La Honda Rd	19
	Portola Rd	La Honda Rd	Sand Hill Rd	19
	Skyline Blvd	Trousdale Dr	Hayne Rd	17
	Soutgate Ave	Lake Merced Blvd	Junipera Serra Blvd	16
80	Sharp Park Rd	Bradford Way	Callan Blvd	16
	Westborough Blvd	Callan Blvd	El Camino Real	16
84	Hillside Blvd	John Daly Blvd	Chestnut Ave	16
	Serramonte Blvd	Hillside Blvd	Hickey Blvd	16
85	Skyline Blvd	La Honda Rd	Tunitas Creek Rd	20
	Tunitas Creek Rd	Skyline Blvd	Hwy 1	20
92	John Daly Blvd	Skyline Blvd	I-280	16
	Ralston Ave (Bike trail)	Canada Rd	Ralston Ave	17
95	Bradford Way	Lakeside Ave	Pacific Coast Hwy	16
	Esplanade Dr	Palmetto Ave	Monterey Rd	16
	Lake Merced Blvd	County Line	John Daly Blvd	16
	Palmetto Ave	Monterey Rd	Lakeside Ave	16
	Skyline Blvd (or Skyline Drive)	Westmoor Ave	Northridge Dr	16
BA	El Camino Real	A St	Sneath Blvd	16
	Mission Rd	Serramontes Blvd	Westborough	16
	Mission St	John Daly Blvd	A St	16
BT	Bay Trail	County Line	County Line	16, 17, 19
CR	Crystal Springs Trail	W. San Bruno Ave	Crystal Springs Rd	16, 17
CT	Pacific Coast Hwy	Bradford Way	County Line	16

Notes:

BA Parallel to BART
BT (San Francisco) Bay Trail
CR Crystal Springs Reservoir / Sawyer Camp Recreational Trail
CT Coastal Trail

The CBPP Figures referenced in Table E-2 are included to the end of his appendix. The CBPP Figures 16 – 20 from Chapter 6 – Countywide Bikeway Network are as follows:

- Figure 16 – Countywide Bikeway Network Map North County
- Figure 17 – Countywide Bikeway Network Map Central County
- Figure 18 – Countywide Bikeway Network Map Coastal
- Figure 19 – Countywide Bikeway Network Map South County
- Figure 20 – Countywide Bikeway Network Map Southwest County

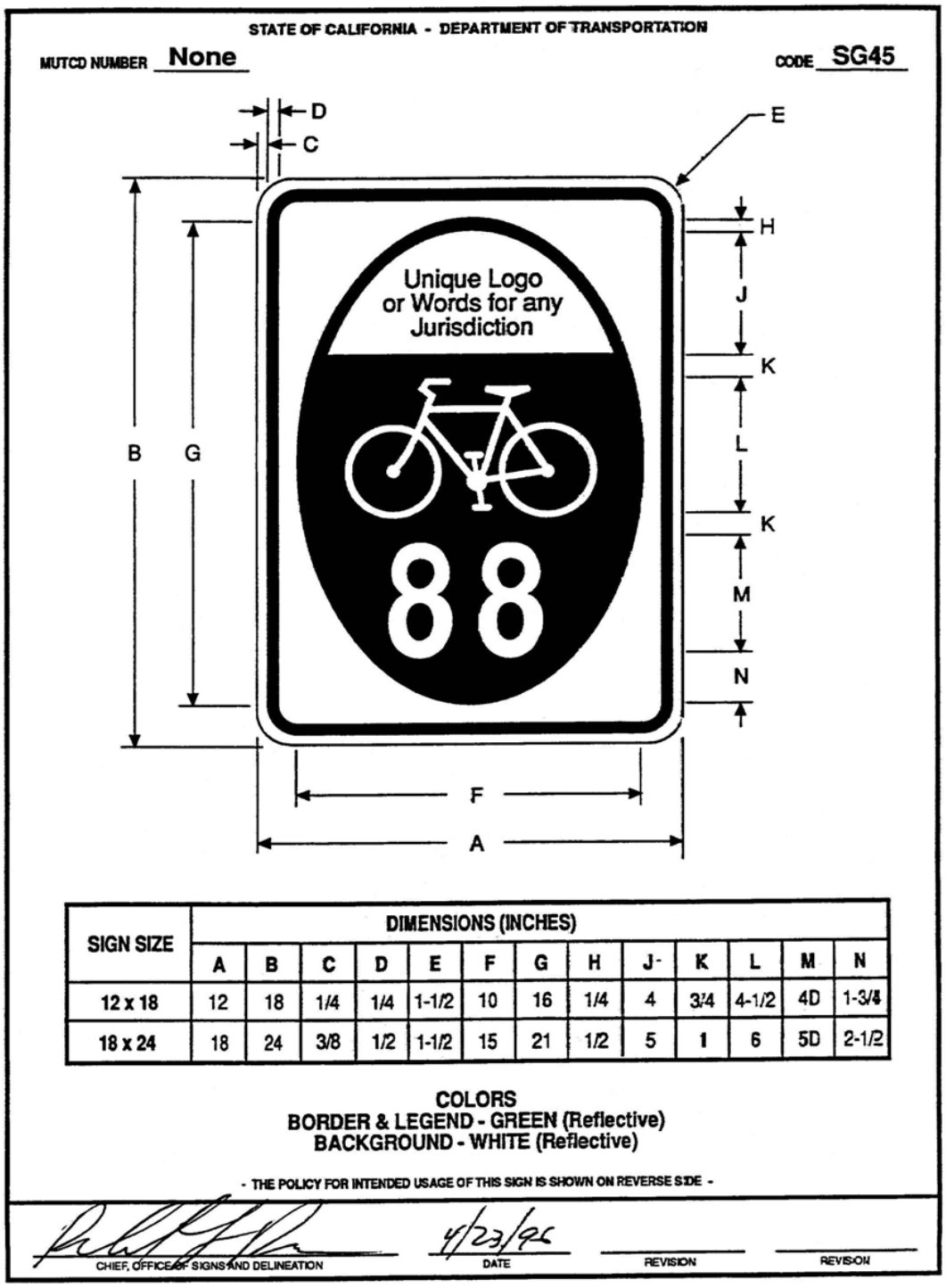

Figure E-4: SG45 (CA) Bicycle Route Number Marker

Source: California Sign Specifications (January 21, 2010)

Figure 16: Countywide Bikeway Network Map North County

Figure 17: Countywide Bikeway Network Map Central County

Figure 18: Countywide Bikeway Network Map Coastal

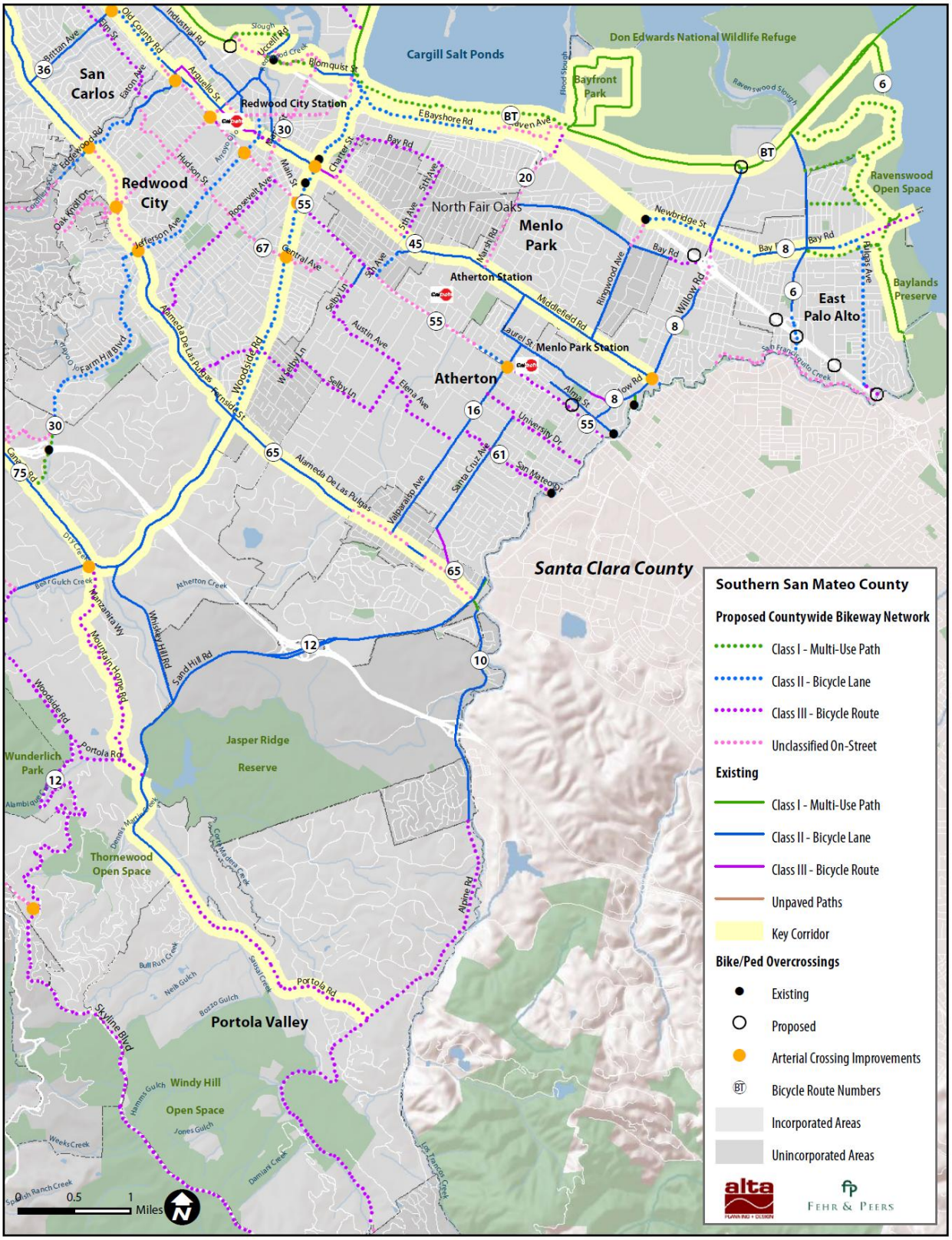

Figure 19: Countywide Bikeway Network Map South County

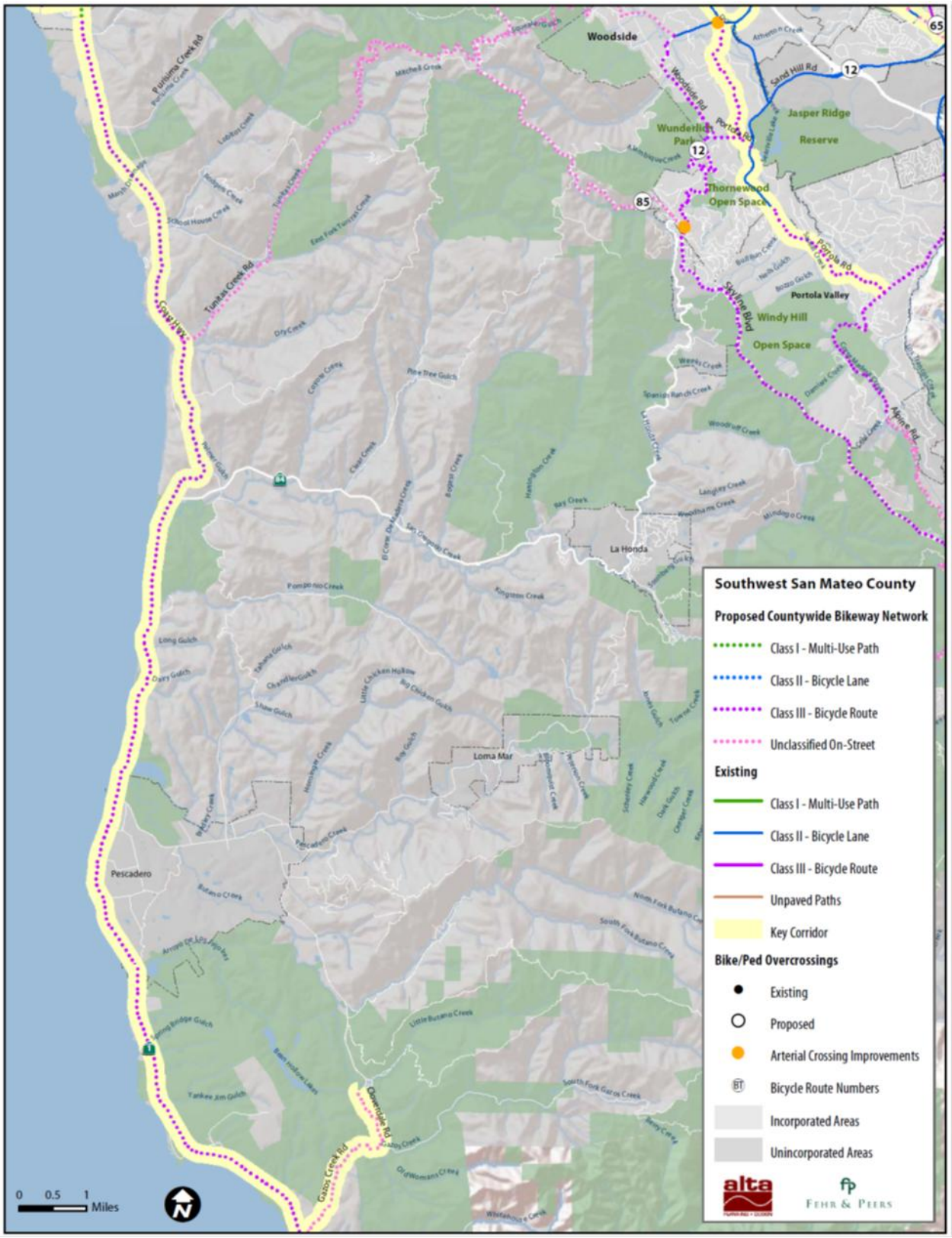

Figure 20: Countywide Bikeway Network Map Southwest County