

Appendix ATP

Draft Active Transportation Plan

City of Millbrae
**Active
Transportation
Plan**
PUBLIC REVIEW DRAFT



July 2021



KITTELSON & ASSOCIATES, INC.
115 Grande Avenue, Suite 505
Oakland, CA 94612 | P 510.839.1742

INTRODUCTION

The City of Millbrae (City) and its consultant team have developed the City of Millbrae Active Transportation Plan to improve the bicycling and walking environment in Millbrae and to achieve the benefits of an active transportation network. This plan serves as a comprehensive action plan for the City to provide a safe and comfortable bicycle and pedestrian network for its residents, employees, and visitors. This plan builds upon and supersedes the City of Millbrae Bicycle and Pedestrian Transportation Plan that was adopted in August 2009. Recognizing that bicycle and pedestrian facilities form an important component of the larger transportation and recreation networks, this plan was developed in conjunction with the updates to the Millbrae General Plan and Parks Master Plan.

The Active Transportation Plan is intended to achieve the mobility, environmental, and health benefits of bicycling and walking, from both a recreation and transportation standpoint, that Millbrae and other cities recognize are important to a thriving 21st century city. The development of this plan is a concerted effort to improve the bicycle and pedestrian network in Millbrae to:

- ▶ Provide more transportation choices;
- ▶ Reduce vehicle traffic and its resultant noise, pollution, and greenhouse gas emissions; and
- ▶ Promote physical activity and improve public health.

VISION

The City of Millbrae Active Transportation Plan is guided by the following vision:

The City of Millbrae Active Transportation plan envisions a safe, interconnected, and accessible environment for bicyclists, pedestrians, and users of evolving modes of mobility of all ages and abilities. The plan's vision consists of a network that is complete and provides convenient walking and biking facilities to local and regional destinations and amenities.

PLAN PURPOSE

This plan serves as a guiding document for the City to improve bicycling and walking conditions in Millbrae. It also is a guide to create a local bicycle and pedestrian network that is integrated into the regional active transportation network and transit systems. This plan sets a course of action for the City to create a safer and more comfortable bicyclist and pedestrian environment for residents, employees, and visitors by:

- ▶ **Providing an understanding of the existing active transportation conditions.** Understanding current conditions in the city is essential to determine needs and areas for improvement. This plan describes existing bicycle and pedestrian facilities, the current regulatory framework, commute patterns, and mode choice trends that inform the City's goals and actions.
- ▶ **Assessing bicyclist and pedestrian needs in the city.** This plan examines the bicycle and pedestrian needs across the city, including the needs of different user groups and for various destinations. These bicycling and pedestrian needs are identified and then used to shape the City's goals and actions.
- ▶ **Presenting a set of goals and actions to achieve the City's vision.** The goals and actions set forth in this plan provide guidance for the City as it works to improve existing facilities and construct new facilities to provide a safer and more comfortable active transportation system in Millbrae.
- ▶ **Identifying priority bicycle and pedestrian projects.** This plan provides a list of priority bicycle and pedestrian projects based on the needs identified through development of this plan. By implementing projects from the list, the City can implement improvements with confidence that users' needs will be met.

- ▶ **Developing cost estimates for key priority projects.** Accurately understanding the level of effort and resources required to enhance the active transportation network is essential to implement the priority projects. Therefore, this plan includes preliminary cost estimates for the priority bicycle and pedestrian projects identified in the plan.
- ▶ **Identifying funding opportunities to augment local funds.** Recognizing the realities of funding constraints, this plan identifies other sources that the City can utilize to complement its funds (e.g., county, regional, state, and/or federal funding sources). Securing additional resources will help the City implement the improvements identified in this plan to address users' needs.

CONTEXT AND REGULATORY FRAMEWORK

PLAN CONTEXT

The City of Millbrae developed this active transportation plan to identify bicyclist and pedestrian needs across the city, develop a set of goals and actions to address those needs, and create an active transportation network that provides safe and comfortable facilities to encourage biking and walking in the city. An understanding of current conditions for bicyclists and pedestrians in Millbrae is essential to create a bicycle and pedestrian network that addresses the City's goals. Multimodal volumes and crash data were collected and analyzed, and existing mode share and facilities were evaluated to identify the bicycling and pedestrian needs in the city. Analysis of these data supports the development of planned bicycle and pedestrian improvements for the City of Millbrae.

SETTING

Millbrae is in northern San Mateo County. It is bordered by (clockwise from the northeast) San Francisco International Airport, San Francisco Bay, the City of Burlingame, unincorporated San Mateo County, and the City of San Bruno. Millbrae and the surrounding regional setting are shown on Figure 1:. This city has an area of 3.26 square miles and a population of 22,394 people, according to the 2019 U.S. Census estimates. Approximately 4,300 residents (19 percent) are under the age of 18, and an additional approximately 4,300 residents (19 percent) are 65 years of age or older. These groups represent a substantial proportion of Millbrae's population that may have limited mobility or mobility choices and could benefit the most from safe and comfortable active transportation facilities.

According to 2019 American Community Survey (ACS) Five-Year Estimates, approximately 5 percent of households in Millbrae do not own a car and instead depend on other modes of transportation (such as bicycling, walking, or taking transit) to reach their destinations.

Selected socioeconomic data for the city, county, state, and national level are presented in Table 1. As presented in the table, the proportion of households without a vehicle is slightly lower in Millbrae when compared to state and national data. While the proportion of the population under 18 years of age is lower in Millbrae than across the county, state, and nation, the proportion of people 65 years of age or older is slightly higher than the county, state, and nation.

Table 1: Select Socioeconomic Data

| | Millbrae | San Mateo County | California | United States |
|--|----------|------------------|------------|---------------|
| Under 18 years of age ¹ | 19% | 20% | 23% | 22% |
| 65 years of age or older ¹ | 19% | 17% | 15% | 17% |
| Households without vehicles ² | 5% | 5% | 7% | 9% |

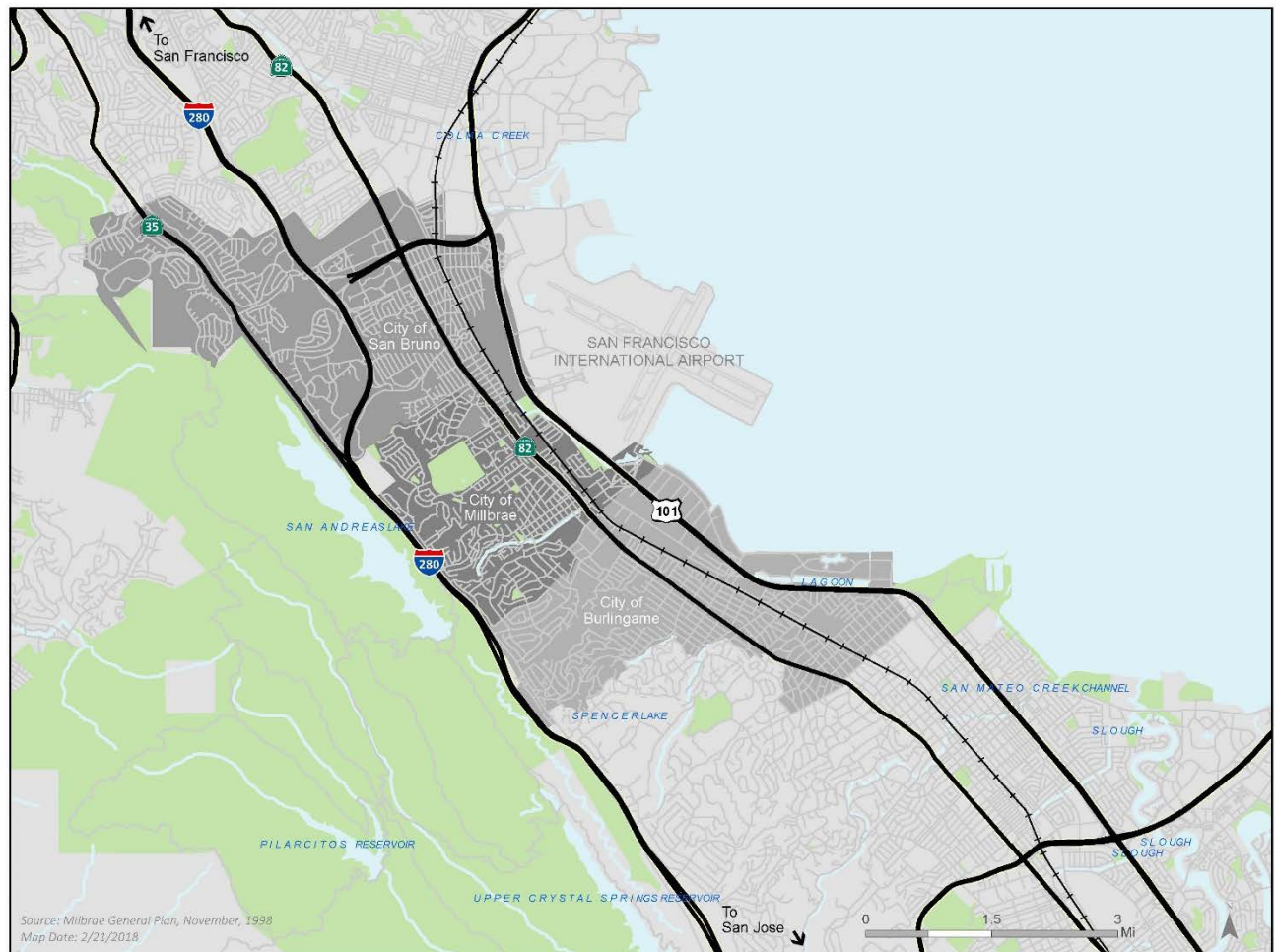
Sources: 2010 U.S. Census; 2012-2016 American Community Survey Five-Year Estimates

Millbrae has a temperate climate. Its topography ranges from the relatively flat terrain of the San Francisco Bay shoreline to the steep hills and ravines of the western neighborhoods, to the Sawyer Camp Trail and San Andreas Trail in the San Andreas Reservoir area parallel to Interstate 280 (I-280). El Camino Real runs north-south and bisects the city. A curvilinear street network and low-density residential neighborhoods compose the area to the west of El Camino Real. The downtown area along Broadway and El Camino Real forms the commercial core of the city. The surrounding areas are primarily residential, except for the Millbrae Intermodal Terminal and commercial uses along Millbrae Avenue.

Key bicycle and pedestrian destinations in the city are shown on Figure 2:, and include:

- ▶ **Downtown Core:** Employment centers and businesses are concentrated in Millbrae’s downtown area, primarily along Broadway. Millbrae City Hall, Millbrae Police Department, Central County Fire Station 37, Millbrae Library, and the Millbrae History Museum to the west of Broadway are in downtown. A U.S. Postal Service office is in downtown on Broadway at Taylor Boulevard.
- ▶ **El Camino Real Commercial Corridor:** Businesses and other commercial facilities exist along El Camino Real to the east of downtown.
- ▶ **Schools:** Schools in Millbrae consist of Millbrae Nursery School, Glen Oaks Montessori, Green Hills Elementary School, Lomita Park Elementary School, Meadows Elementary School, Spring Valley Elementary School, Taylor Middle School, St. Dunstan’s School, Mills High School, and Capuchino High School (located in the City of San Bruno but surrounded by the City of Millbrae).
- ▶ **Parks and Recreational Areas:** Parks and recreational facilities in Millbrae include Bayfront Park, Bayside Park, Central Park, and Spur Trail Park. In addition, neighborhood parks are dispersed throughout the city.
- ▶ **Recreational Trails:** Recreational trails consist of trails that are conducive to bicycling and walking and can connect people to other recreational facilities in the region. Trails within and adjacent to Millbrae are the Bay Trail, San Andreas Trail, Sawyer Camp Trail, and Spur Trail.
- ▶ **Regional Transit:** The Millbrae Intermodal Terminal is northeast of the intersection of El Camino Real and Millbrae Avenue. The station provides access to BART and Caltrain and is a future stop on the California High Speed Rail line. It is also a regional transit hub for SamTrans.
- ▶ **Local Transit:** Millbrae residents, employees, and visitors can access the SamTrans Route ECR bus (providing express service) from any of several bus stops along El Camino Real. Running north-south between Daly City and Palo Alto, Route ECR serves destinations along El Camino Real, with stops within walking distance of downtown Millbrae and the Millbrae Intermodal Terminal.

Figure 1: Regional Setting



Source: Kittelson & Associates Inc. (Kittelson), 2021.

Figure 2: Bicycle and Pedestrian Destinations in Millbrae



REGULATORY FRAMEWORK AND RELATED PLANS

The City of Millbrae Active Transportation Plan will guide the City's efforts to create a safe and comfortable bicycling and walking environment. As the active transportation plan is being developed, it is important to be aware of other plans, programs, and regulations that can inform the planning and design of transportation facilities.

FEDERAL

Americans with Disabilities Act

The Americans with Disabilities Act (ADA) provides comprehensive rights and protections to individuals with disabilities. The goal of the ADA is to assure equality of opportunity, full participation, independent living, and economic self-sufficiency. To implement this goal, the United States Access Board has created accessibility guidelines for public rights-of-way. The guidelines address various issues, including roadway design practices, slope and terrain issues, pedestrian access to streets, sidewalks, curb ramps, street furnishings, pedestrian signals, parking, and other components of public rights-of-way.

STATE

California Bicycle Transportation Act

California Streets and Highways Code section 890-894.2 is known as the California Bicycle Transportation Act. This legislation, adopted in 1994, establishes the responsibilities of state and local agencies regarding bicycle safety, signage, traffic control, right-of-way, and other matters related to non-motorized transportation. The California Bicycle Transportation Act establishes minimum efforts in data collection and planning that local governments must accomplish to remain compliant with state law. The legislation seeks "to establish a bicycle transportation system designed and developed to achieve the functional commuting needs of the employee, student, businessperson, and shopper as the foremost consideration in route selection, to have the physical safety of the bicyclist and bicyclist's property as a major planning component, and to have the capacity to accommodate bicyclists of all ages and skills."

A city or county may complete a bicycle transportation plan pursuant to section 891.2 for their project to be considered by the California Department of Transportation (Caltrans) for funding. In cooperation with county and city governments, Caltrans establishes minimum safety design criteria for the planning and construction of bikeways and roadways where bicycle travel is permitted. Caltrans also establishes uniform specifications and symbols for signs, markers, and traffic control devices to designate bikeways, regulate traffic, improve safety and convenience for bicyclists, and alert pedestrians and motorists of the presence of bicyclists on bikeways and on roadways where bicycle travel is permitted.

Caltrans Deputy Directive 64

On March 6, 2001, Caltrans adopted Deputy Directive 64 (DD-64), a policy directive related to non-motorized travel that applies to state highways. The directive reads:

"[Caltrans] fully considers the needs of non-motorized travelers (including pedestrians, bicyclists and persons with disabilities) in all programming, planning, maintenance, construction, operations, and project development activities and products."

In support of this directive, Assembly Concurrent Resolution No. 211, which became effective in 2002, encourages local jurisdictions to implement the policies in the directive when constructing transportation projects. In 2008, Caltrans issued DD-64-R1, which supersedes DD-64. DD-64-R1 reiterates the policy to provide

for all travelers of all ages and abilities in all activities and products on the state highway system and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system.

California Complete Street Act of 2008

The California Complete Streets Act of 2008 (AB 1358) requires Cities and Counties to include in the circulation elements of their general plans policies and programs supporting the development of a well-balanced, connected, safe, and convenient multimodal transportation network. This network should consist of complete streets, which are designed and constructed to serve all users of local streets and highways, regardless of individuals' age or ability, or whether they are driving, walking, bicycling, or taking transit. The network should allow for all users to travel effectively by motor vehicle, foot, bicycle, and transit to reach key destinations within their community and the larger region.

REGIONAL AND LOCAL

Metropolitan Transportation Commission Policies and Programming

The Metropolitan Transportation Commission (MTC) is the agency responsible for transportation planning and funding for the nine-county Bay Area, which includes San Mateo County. MTC's policy on complete streets states that projects funded, all or in part, by MTC (e.g., using federal, State Transportation Improvement Program, or bridge toll funds) must consider the accommodation of bicycle and pedestrian facilities, as described in Caltrans Deputy Directive 64. The policy requires submittal of a Routine Accommodations checklist evaluating bicycle facility needs as part of the planning and design of each transportation project. These checklist evaluation does not replace locally adopted policies regarding transportation planning, design, and construction. Instead, the evaluation facilitates the accommodation of bicyclists and pedestrians into all projects where bicycle and pedestrian travel may be expected.

San Mateo County Comprehensive Bicycle and Pedestrian Plan

The City/County Association of Governments of San Mateo County (C/CAG) adopted the San Mateo County Comprehensive Bicycle and Pedestrian Plan (CBPP) in September 2011. The plan includes a policy framework, a countywide bikeway network with existing and proposed bikeway facilities, and pedestrian focus areas. The plan identified the following six focus areas in Millbrae for prioritizing pedestrian improvements:

- ▶ Downtown Area
- ▶ El Camino Real Corridor
- ▶ Major Barrier Crossings
- ▶ Safe Routes to School
- ▶ Safe Routes to Transit
- ▶ Regional Recreational Trails

Safe Routes to School San Mateo County

Millbrae participates in Safe Routes to School (SRTS) San Mateo County, which is a countywide program offered by the San Mateo County Office of Education (SMCOE). The program is funded by C/CAG. The goal of the program is to encourage and enable school children to bike and walk to school; to implement projects and activities that improve the health, well-being, and safety of children; and to reduce traffic congestion and emissions caused by school-related travel.

The SMCOE prepared a Safe Routes to School Report in 2012. The report presents programmatic and infrastructure improvements based on community input and walking audit observations for the following five schools:

- ▶ Green Hills Elementary School
- ▶ Lomita Park Elementary School
- ▶ Meadows Elementary School
- ▶ Spring Valley Elementary School
- ▶ Taylor Middle School

The report provides detailed recommendations for each school site, including physical improvements, operational changes, and educational programs.

City of Millbrae General Plan

Concurrent with the development of this active transportation plan, the City of Millbrae updated the Mobility Element of the general plan (Mobility Element). The updated general plan is intended to guide development in the city through the year 2040. This includes creating a multimodal transportation system that will meet the needs of residents, employees, and visitors in the coming decades. Several findings from the update to the general plan about bicyclist and pedestrian mobility in Millbrae include:

- ▶ Bicycling is the least used mode of travel for commuting with a mode share of 0.3 percent among Millbrae residents and employees.
- ▶ Constrained right-of-way along key roadways limits opportunities to provide class II bike lanes.
- ▶ Recreational trails, such as the Spur Trail and Bay Trail, provide off-street connections for bicyclists and pedestrians.
- ▶ Pedestrians have limited opportunities to cross El Camino Real, both due to large distances between crossing locations and lack of marked crossings, which make people feel safer than do legal, unmarked crossings.
- ▶ US 101 and the interchange at Millbrae Avenue are barriers for bicycle and pedestrian access to Bayfront Park and the Bay Trail along San Francisco Bay.
- ▶ The destinations, amenities, and proximity of residential neighborhoods make downtown easily accessible by bike and by foot (with topography being the only limiting factor to western neighborhoods).
- ▶ From 2010 to 2014, 21 percent of crashes in the city involved pedestrians and 7 percent involved bicyclists.
- ▶ Between 2010 and 2014, pedestrian- and bicyclist-related crashes resulting in an injury or fatality averaged about 12 crashes per year. Three pedestrian fatalities occurred during this period.

City of Millbrae El Camino Real and Downtown Area Plan

Concurrent with the development of this active transportation plan, the City of Millbrae prepared the El Camino Real and Downtown Area Plan which develops a vision to create vibrant and connected mixed-use centers for the El Camino Real corridor and Downtown district. The updated general plan is intended to guide development in the city through the year 2040. This includes creating a multimodal transportation system that will meet the needs of residents, employees, and visitors in the coming decades.

Millbrae Bicycle and Pedestrian Transportation Plan

In August 2009, the City amended the circulation element of the Millbrae General Plan to include the Bicycle and Pedestrian Transportation Plan. The plan's purpose was to create a safe bikeway and pedestrian trail network with linkages to other cities and other regional recreational assets. It recognized the potential for Millbrae to be a regional bikeways hub due to its pleasant climate, the presence of the Millbrae Intermodal Station, and its proximity to major transportation corridors and recreational bike trails. To help create a safe bikeway and pedestrian trail network, the plan includes recommendations for bikeways routes, bikeway design, and implementation of projects.

City of Millbrae Parks and Facilities Master Plan Update

The City of Millbrae updated its Parks and Facilities Master Plan concurrent with the development of the Active Transportation Plan. The master plan update includes recommendations and an implementation plan for improving the City's parks and recreation facilities. This includes recommendations for improving the City's Spur Trail recreational bicycle and pedestrian path. The Active Transportation Plan was developed in coordination with the Parks and Facilities Master Plan to ensure consistency in findings, needs, and recommendations.

Millbrae Station Area Specific Plan

In 2016, the City prepared the Millbrae Station Area Specific Plan (MSASP). The MSASP includes improvements to mitigate potential impacts to the transportation network as the area redevelops. Some of the planned improvements include:

- ▶ Rollins Road reconfiguration
- ▶ California Drive extension and realignment
- ▶ Rollins Road/Garden Lane intersection improvements
- ▶ Millbrae Avenue/El Camino Real intersection improvements
- ▶ Millbrae Avenue/Rollins Road intersection improvements
- ▶ Rollins Road/Adrian Road intersection improvements
- ▶ South Station Road reconfiguration
- ▶ El Camino Real/Victoria Avenue pedestrian crossing enhancement
- ▶ California Drive/Murchison Drive intersection signalization
- ▶ Aviator Avenue improvements

These improvements would be implemented through a phased program in conjunction with the phased implementation of land use development.

EXISTING CONDITIONS

This section examines the existing active transportation conditions in Millbrae, including:

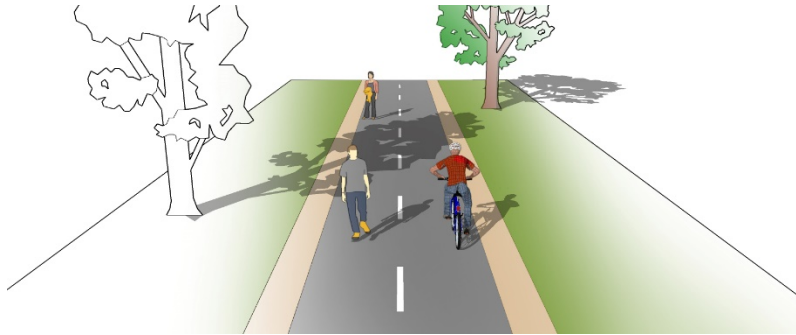
- ▶ Existing facilities,
- ▶ Volume of bicyclist and pedestrian activity,
- ▶ Commute patterns, and
- ▶ Crash history.

EXISTING BIKEWAY NETWORK

Bicycle facilities can be categorized into one of four facility types:

- ▶ **Bike Path or Shared-Use Path (Class I).** A paved right-of-way for bicycle travel that is separate from any street or highway.

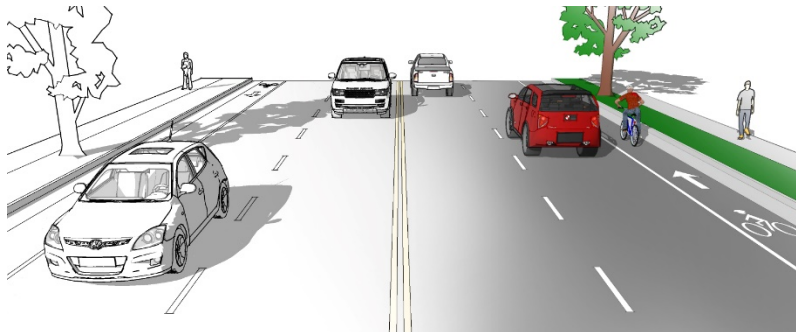
Bike or Shared-Use Path Typical Cross Section



Source: Kittelson, 2021.

- ▶ **Bike Lane (Class II).** A striped and stenciled lane for one-way bicycle travel on a street or highway. This facility could include a buffered space between the bike lane and vehicle lane.

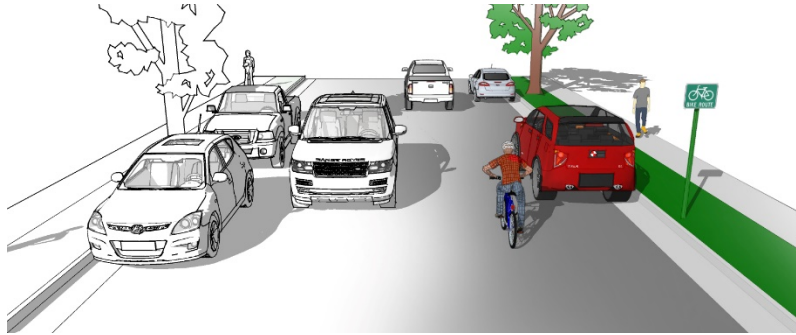
Bike Lane Typical Cross Section



Source: Kittelson, 2021.

- **Bike Route (Class III).** A signed route along a street or highway wherein the bicyclist shares the right-of-way with motor vehicles.

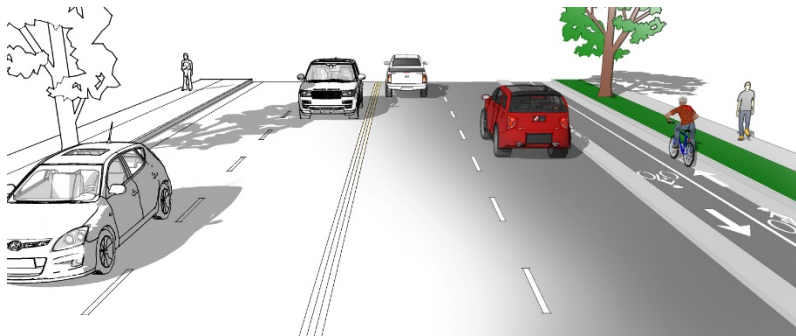
Bike Route Typical Cross Section



Source: Kittelson, 2021

- **Separated Bike Lane (Class IV).** A bikeway for the exclusive use of bicycles including a separation required between the separated bikeway and the through vehicular traffic. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking. Class IV facilities may be located on both sides of the street or on one side of the street.

Two-Way Separated Bike Lane Typical Cross Section

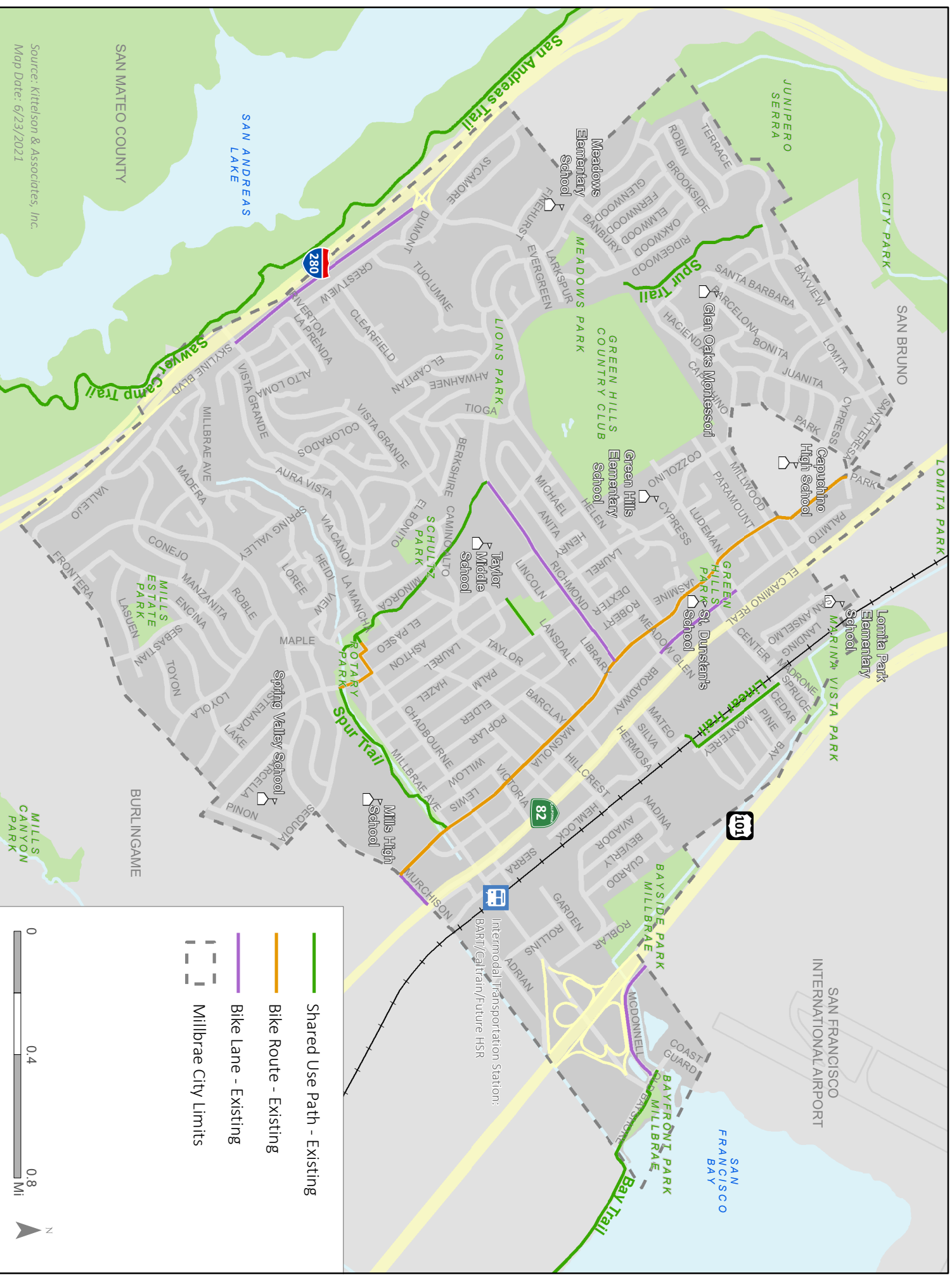


Source: Kittelson, 2021.

Existing bikeways in Millbrae are described below and are presented in Figure 3.

- ▶ **Bike Paths (Class I).** These recreational trails provide off-street connections for both bicyclists and pedestrians:
 - **Spur Trail:** The primary class I facility within the city of Millbrae is the Spur Trail, which runs parallel to Millbrae Avenue from Magnolia Avenue to Ashton Avenue before continuing north to terminate at Richmond Drive. The Spur Trail has a gap between Ashton Avenue and El Paseo.
 - **Bay Trail:** The Bay Trail runs along the San Francisco Bay to destinations east of the city.
 - **San Andreas Trail and Sawyer Camp Trail:** The San Andreas Trail and the Sawyer Camp Trail, located just outside the western city limits, provide connections to San Andreas Lake and other open spaces to the west of the city. These trails are accessible via Larkspur Drive and Hillcrest Boulevard beyond the city limits.
 - **Monterey Linear Park:** A bike path extends the length of the Monterey Linear Park between Cedar Street and Santa Paula Avenue. A walking and biking railroad crossing allows for a connection between the Monterey Linear Park path and Hemlock Avenue.
 - **Central Park:** A short bike trail exists in the Central Park.
- ▶ **Bike Lanes (Class II).** Bicycle lanes are provided on the following streets:
 - McDonnell Road between Bayfront Park and the city limits. These bicycle lanes are continuous along McDonnell Road until South San Francisco;
 - Skyline Boulevard between Larkspur Drive and Hillcrest Boulevard;
 - Richmond Drive between the Spur Trail and Magnolia Avenue
 - Murchison Drive between El Camino Real and Magnolia Avenue; and,
 - Broadway between Ludeman Lane and Meadow Glen Avenue.
- ▶ **Bike Routes (Class III).** The following bike routes are designated in the City:
 - El Camino Real south of Center Street is a class III facility and is designated using shared-lane markings (sharrows).
 - Magnolia Avenue from Murchison Avenue to Park Boulevard connecting the city to the City of Burlingame to the south and City of San Bruno to the north.

Figure 3: Existing Bikeways



EXISTING PEDESTRIAN NETWORK

Pedestrian facilities can include sidewalks, paths, trails, curb ramps, and crossings. Amenities such as street furniture, pedestrian-scale lighting, and landscaping serve to create an environment that is conducive to walking and is inviting for pedestrians.

- ▶ **Sidewalks and Crosswalks.** Sidewalks are available consistently in Millbrae on most streets. This includes neighborhood streets and major streets, such as El Camino Real, Broadway, and Millbrae Avenue. These major streets have sidewalks on both sides of the street, except for a few sections of Millbrae Avenue between El Camino Real and Old Bayshore Highway. Major intersections have marked crosswalks. High-visibility crosswalks are present at some intersection and are concentrated mainly near schools.
- ▶ **Trails.** In addition to on-street facilities, pedestrians in Millbrae can use the trails shown on Figure 3. These trails provide off-street connections for both bicyclists and pedestrians. Trails that connect Millbrae residents to destinations throughout the city include the Spur Trail and the Bay Trail.
- ▶ **Amenities in Downtown.** Millbrae's downtown area is accessible by foot and is a key pedestrian destination. In addition to the traditional city street grid, small blocks, and sidewalks, pedestrian amenities in downtown include palm trees, curb extensions, and thematic banners on light poles, all of which create a sense of place that supports walking. Older residential neighborhoods lie immediately to the west and are within walking distance to the shops and restaurants in downtown.
- ▶ **El Camino Real and Victoria Avenue Crossing.** In 2013, the City installed marked crosswalks, curb extensions, new sidewalk, a bus stop, and landscape enhancements at the signalized intersection of El Camino Real and Victoria Avenue. This signalized crossing provides pedestrians with a safe opportunity to cross El Camino Real when walking to and from the Millbrae Intermodal Station.
- ▶ **Pedestrian Crossing Signals.** As part of the San Mateo County Crosswalk Safety Improvement Project, Caltrans installed pedestrian crossing signals at five previously unsignalized intersections along El Camino Real in Millbrae in 2017. The improvements included high visibility crosswalk markings, ADA curb ramps, curb extensions, crosswalk lighting, signs, and pedestrian hybrid beacons (PHBs), which provide a pedestrian-activated crossing signal. Various pedestrian improvements were installed at or along:
 - Park Boulevard/San Diego Avenue intersection
 - Santa Helena Avenue
 - Ludeman Lane
 - Taylor Boulevard
 - La Cruz Avenue

BARRIERS TO WALKING

Barriers to walking continue to exist in the downtown area and other parts of Millbrae. These include:

- ▶ **El Camino Real.** Crossing El Camino Real is a challenge for pedestrians due to the high volume and high speed of vehicles, particularly during morning and evening commute periods. El Camino Real is an eight-lane highway/regional arterial. Crossing such a wide street can be particularly uncomfortable for pedestrians.
- ▶ **US 101/Millbrae Avenue Interchange.** US 101 and its partial cloverleaf interchange at Millbrae Avenue create a barrier for pedestrian access to the San Francisco Bay. Sidewalks and crosswalks are limited at the interchange and along Millbrae Avenue between the interchange and Bayfront Park.
- ▶ **Rail Lines.** The Caltrain and BART rail lines are barriers for pedestrian travel. They restrict east-west access from the Bayside Manor Subdivision and Marina Vista Subdivision, which are east of the tracks and west of US 101.

- ▶ **Lack of Sidewalks and Crosswalks.** In the western part of the city, limited sidewalks and crosswalks are present for pedestrians crossing the two I-280 interchanges to access the San Andreas and Sawyer Camp Trails.
- ▶ **Grade.** Steep changes in grade can be a barrier for pedestrian activity in neighborhoods in the western part of the city.

BICYCLIST AND PEDESTRIAN COUNTS

Bicyclist and pedestrian counts were collected at key intersections on a weekday during the AM and PM peak hours. The bicyclist and pedestrian volumes are presented on Figures 4 and 5, respectively. As shown on Figure 4, there are high concentrations of bicyclists in the southwestern portion of the city adjacent to I-280 and in the northeastern portion of the city along the San Francisco Bay. This is likely due to bicyclists accessing the San Andreas Trail and Sawyer Camp Trail to the west and the Bay Trail to the east. There is also some concentration of bicyclists in downtown Millbrae and along El Camino Real.

As shown on Figure 5, there are high concentrations of pedestrians in downtown Millbrae and along El Camino Real. This is likely due to the more walkable characteristics of these areas and the presence of key destinations, such as governmental/institutional uses, schools, commercial uses, and transit stops.

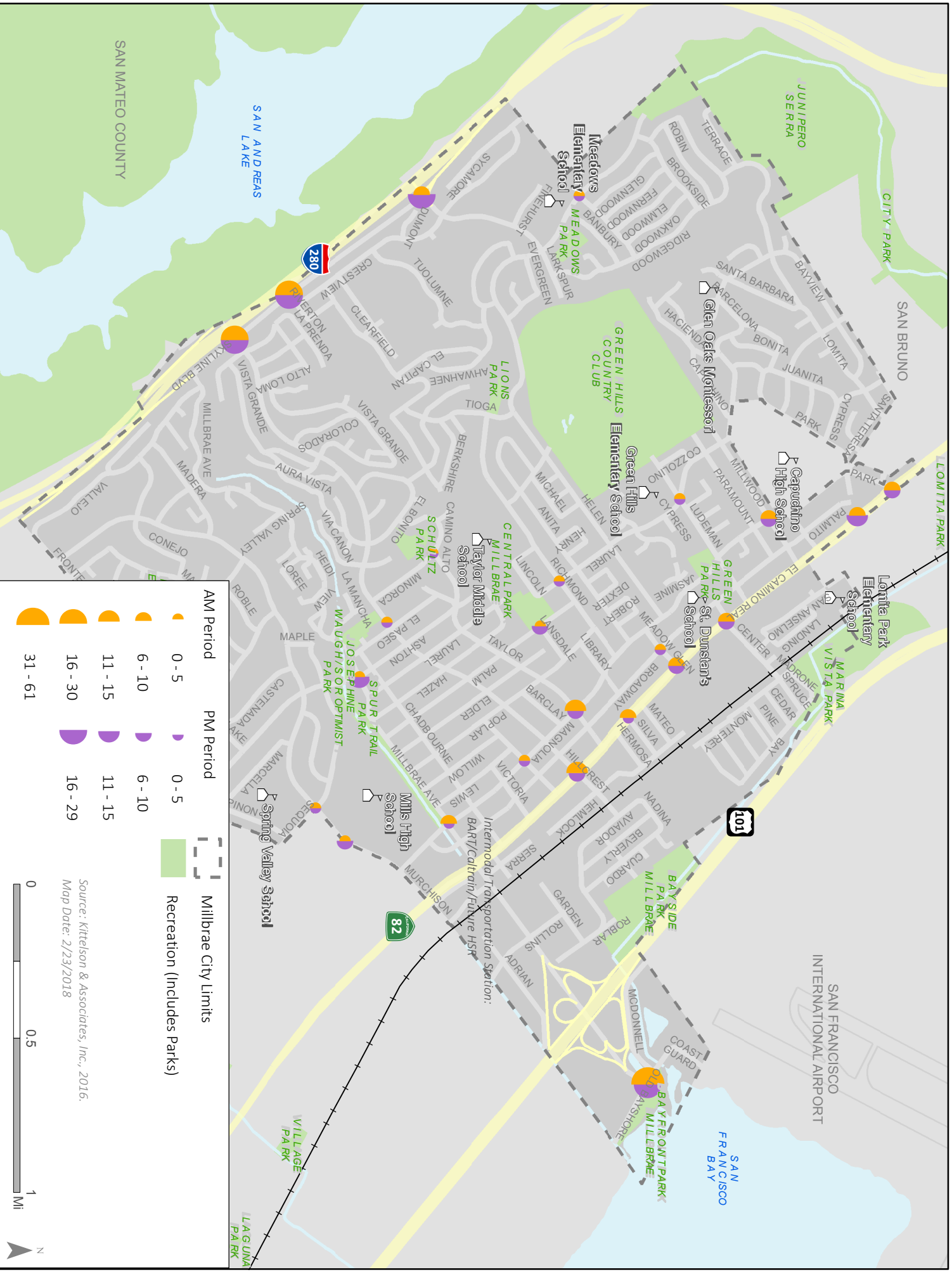
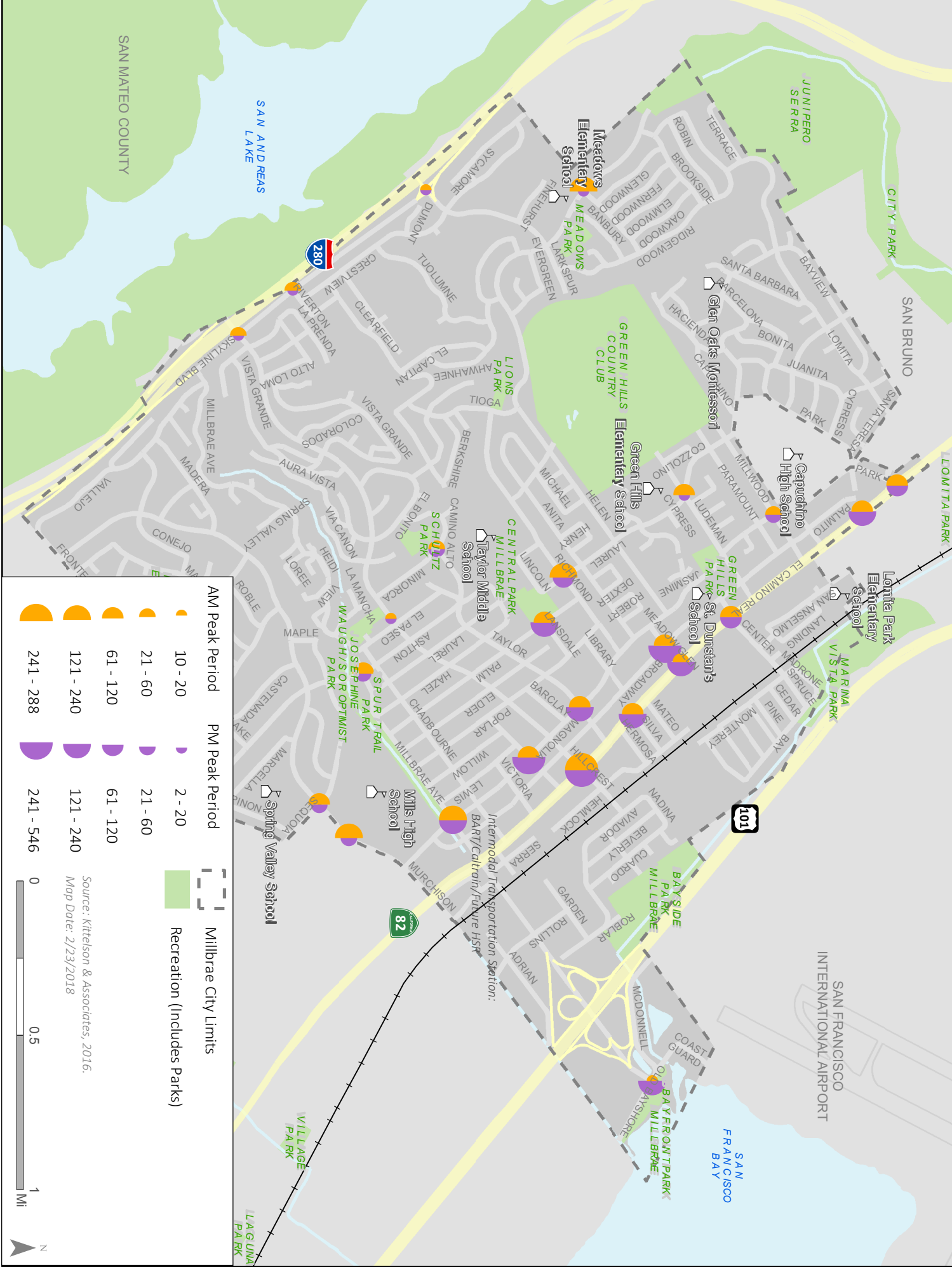
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Figure 5: Peak Period Pedestrian Counts



COMMUTE MODE SHARE

The commute mode shares from the 2019 American Community Survey 5-Year Estimates for workers in Millbrae and San Mateo County are summarized in Table 2. With 1.1 percent of workers biking to work, a smaller share of people living and/or working in Millbrae bike to work than do people living and/or working countywide. The lower rate of bicycle travel may be related to the hilly terrain in many of the residential areas in Millbrae.

Residents and employees in Millbrae tend to walk to work at rates similar to the rates of people throughout San Mateo County, with walking composing 2 percent to 2.7 percent of mode share for residents and employees. Millbrae residents and employees use transit at higher rates than the county averages (approximately 1 percent and 2 percent higher, respectively). This likely is due to the proximity of the Millbrae Intermodal Terminal to major activity centers along El Camino Real.

Table 2: Commute Mode Share, City of Millbrae and San Mateo County

| Travel Mode | Workers | |
|----------------|-------------|------------------|
| | Millbrae | San Mateo County |
| Drive Alone | 63.3% | 67.8% |
| Carpool | 10.2% | 10.2% |
| Public Transit | 16.8% | 11.0% |
| Bike | 1.1% | 1.5% |
| Walk | 1.9% | 2.6% |
| Telecommute | 4.8% | 5.3% |
| Other | 2.0% | 1.7% |
| Total | 100% | 100% |

Source: 2019 American Community Survey.

BICYCLE AND PEDESTRIAN CRASHES

Crash data for the City of Millbrae for the five-year period between 2014 and 2018 from were compiled from the Transportation Injury Mapping System (TIMS) based on the California Highway Patrol (CHP) Statewide Integrated Traffic Records System (SWITRS) consistent with the City of Millbrae's Local Road Safety Plan Collision Data Analysis technical memorandum (February 2021). TIMS data include the number, type, and severity of crashes, possible contributing factors, and involvement of bicyclists or pedestrians. The locations of crashes also are noted. TIMS datasets do not include property damage only (PDO) crashes.

BICYCLIST AND PEDESTRIAN INVOLVEMENT

Crashes resulting in a fatality or injury are summarized by year and party involved in Table 3.

Table 3: Annual Fatal or Injury Crashes by Party Involved, City of Millbrae, 2014-2018

| Vehicle Involvement | 2014 | 2015 | 2016 | 2017 | 2018 | Total | Percent |
|---------------------|-----------|-----------|-----------|-----------|-----------|------------|-------------|
| Bicycle Crash | 3 | 3 | 3 | 3 | 2 | 14 | 4.5% |
| Pedestrian Crash | 10 | 13 | 24 | 15 | 10 | 72 | 23.2% |
| Motorcycle Crash | 2 | 6 | 3 | 1 | 2 | 14 | 4.5% |
| Truck Crash | 1 | 2 | 1 | 2 | 2 | 8 | 2.6% |
| Auto Only | 25 | 38 | 46 | 44 | 49 | 202 | 65.2% |
| Total | 41 | 62 | 77 | 65 | 65 | 310 | 100% |

Source: TIMS, SWITRS, Kittelson, 2021.

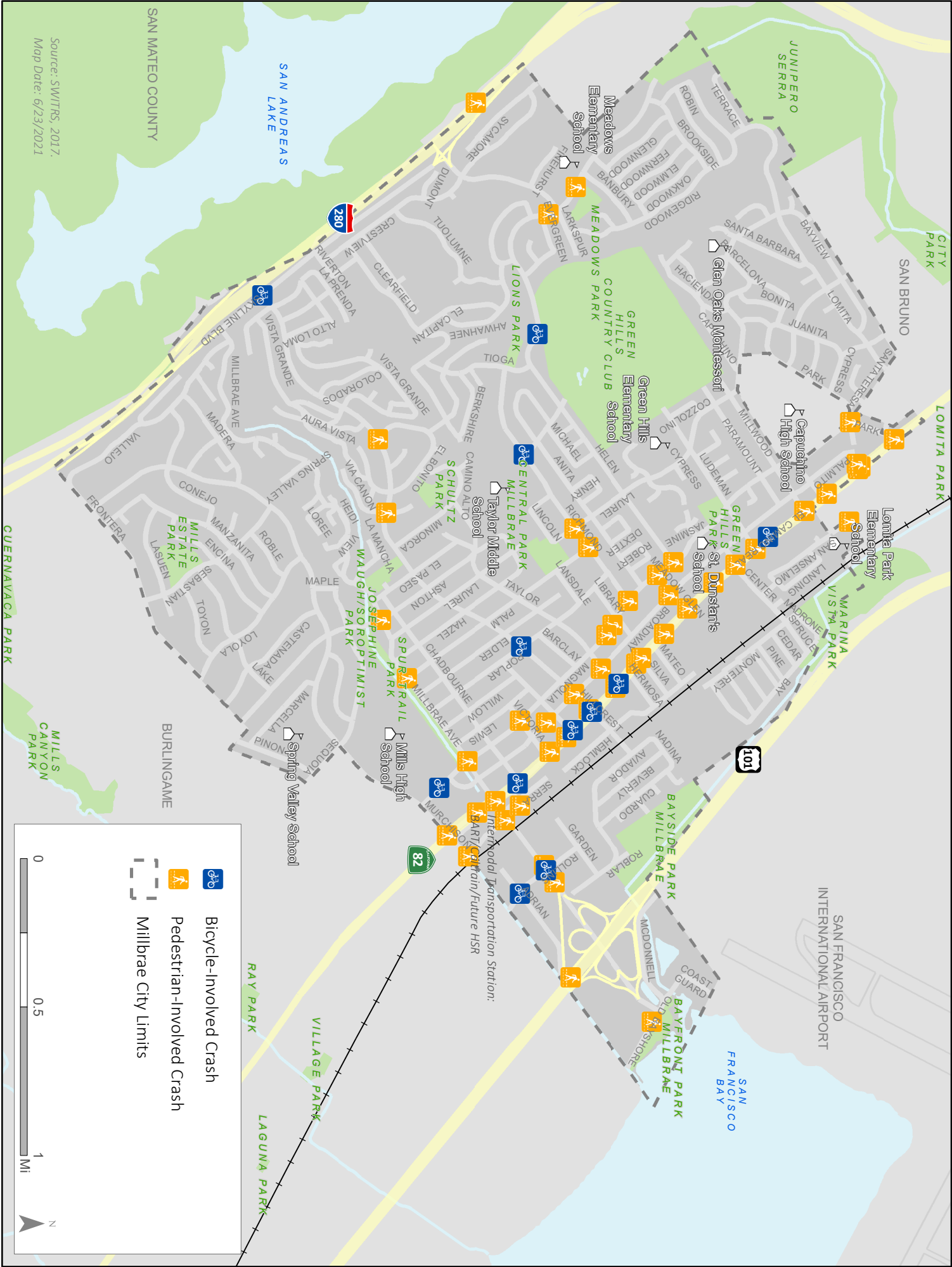
During the five-year period, there were 72 crashes involving pedestrians (23 percent) and 14 crashes involving bicyclists (5 percent). One crash involved both a bicyclist and a pedestrian. The number of fatality and injury crashes involving a bicyclist or pedestrian was relatively consistent from year to year except for pedestrian crashes in 2016 when pedestrian crashes rose to 24 crashes.

CRASHES BY LOCATION

The locations of bicyclist and pedestrian crashes resulting in a fatality or injury are presented in Figure 6. As shown, crashes are concentrated along El Camino Real and at intersections near and within the downtown area. This concentration of crashes likely is due to the high number of people walking along El Camino Real and in and around downtown to access employment, commercial, and governmental facilities in the area. Fatal pedestrian crashes occurred on El Camino Real at Millwood Drive, El Camino Real at Ludeman Lane, and at the intersection of Rollins Road & Adrian Road. Other locations where several bicyclist and pedestrian crashes occurred are along El Camino Real near downtown, as well as along Broadway, Magnolia Avenue, Millbrae Avenue, Rollins Road, and Richmond Drive. Five of the thirteen bicyclist-involved crashes occurred at intersections with or along El Camino Real.

The City of Millbrae and Caltrans installed five new pedestrian hybrid beacons (PHBs) along El Camino Real in late 2017 and early 2018 to improve walking and biking crossings at the intersections of Park Avenue, Santa Helena Avenue, Ludeman Lane, Taylor Boulevard, and La Cruz Avenue. These improvements represent an excellent first step toward enhancing walking and biking safety in Millbrae. Additional improvements are planned along Millbrae Avenue and the City is comprehensively reviewing safety for all road users as part of the Local Road Safety Plan currently under development.

Figure 6: Bicycle- and Pedestrian-Involved Crashes (2014-2018)



CRASH SEVERITY

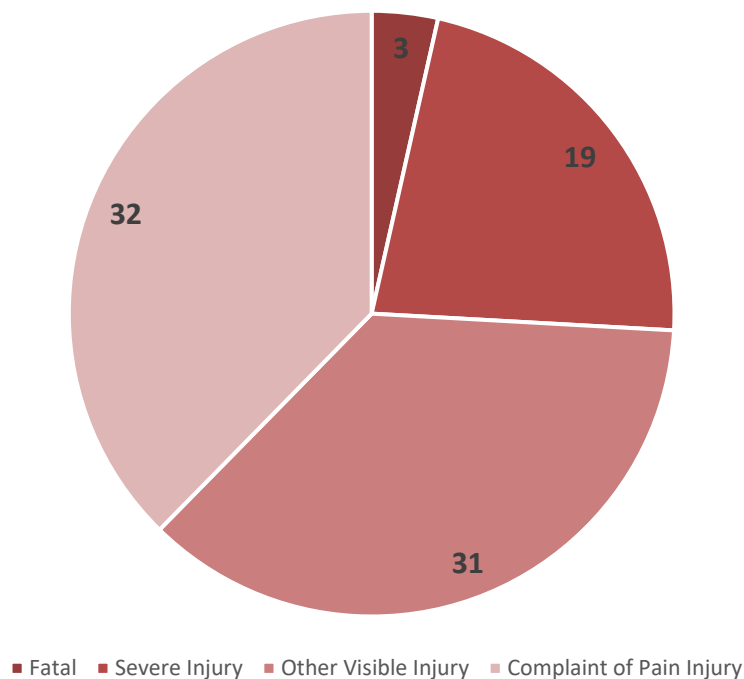
The number of annual crashes involving bicyclists and pedestrians and resulting in a fatality or injury are presented by severity in Table 4. Figure 7 presents the proportion of crashes by severity for the full five-year period. There were 62 bicyclist and pedestrian crashes resulting in a fatality or injury between 2014 and 2018. Of these, three crashes resulted in a fatality.

Table 4: Annual Bicyclist and Pedestrian Crashes by Severity, City of Millbrae, 2014-2018

| Vehicle Involvement | 2014 | 2015 | 2016 | 2017 | 2018 | Total | Percent |
|----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|
| Fatal | 1 | 0 | 2 | 0 | 0 | 3 | 3.5% |
| Injury (Severe) | 2 | 3 | 7 | 4 | 3 | 19 | 22.4% |
| Injury (Other Visible) | 3 | 4 | 7 | 9 | 8 | 31 | 36.5% |
| Injury (Complaint of Pain) | 7 | 9 | 10 | 5 | 1 | 32 | 37.6% |
| Total | 13 | 16 | 26 | 18 | 12 | 85 | 100% |

Source: TIMS, SWITRS, Kittelson, 2021.

Figure 7: Bicycle and Pedestrian Crashes by Severity, City of Millbrae, 2014-2018



Sources: TIMS, SWITRS, Kittelson, 2021.

NEEDS

Millbrae has several bicyclist and pedestrian destinations, including schools, parks, trails, commercial and employment centers, and transit stations and stops. Each has unique needs shaped by their surrounding physical environment and the groups they serve. In addition, there are several barriers for bicyclists and pedestrians. This section outlines the needs for bicyclists and pedestrians in the city. The needs discussed in this section inform the recommended bicyclist and pedestrian improvements in this active transportation plan.

SCHOOLS

A key aspect of a citywide active transportation network is providing safe and comfortable routes for children walking and biking to school. In addition to providing routes to and from neighborhood schools, it is important to create facilities throughout the city that accommodate less experienced and less assertive bicyclists. Children may not be as comfortable or attentive to their surroundings as adults. Therefore, children can be more vulnerable to safety issues. Facilities that accommodate and encourage walking and biking to school can improve children's familiarity with their community and can improve their overall health. Facilities that accommodate and encourage walking and biking to school include sidewalks, crosswalks, bulb-outs, low-stress bikeways, and traffic calming measures on surrounding neighborhood streets.

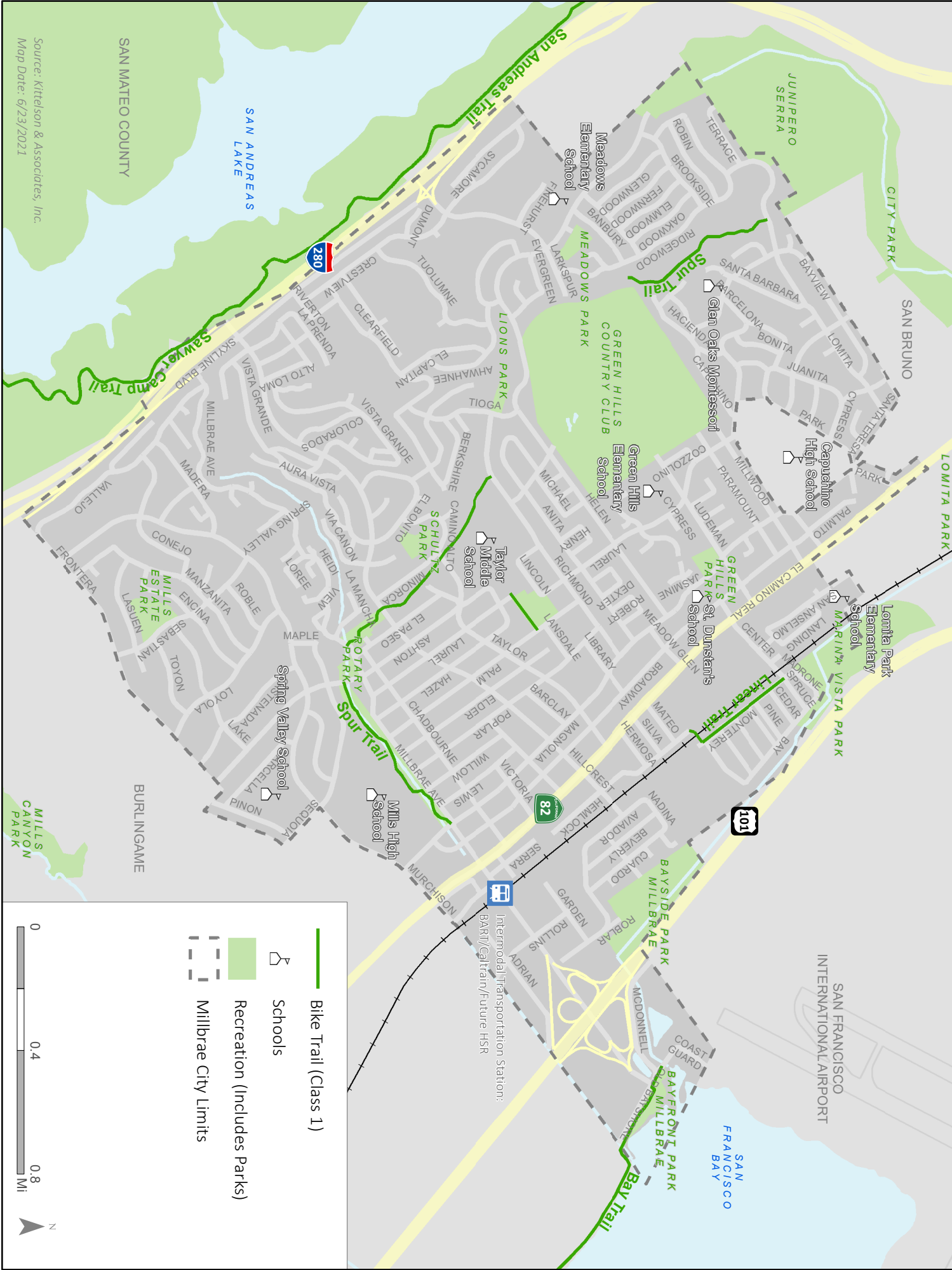
According to the 2010 U.S. Census, approximately 20 percent of Millbrae residents (4,300) are under 18 years of age. These children are served by the following nine public and private schools within the city limits:

- ▶ Millbrae Nursery School
- ▶ Glen Oaks Montessori
- ▶ Green Hills Elementary School
- ▶ Lomita Park Elementary School
- ▶ Meadows Elementary School
- ▶ Spring Valley Elementary School
- ▶ Taylor Middle School
- ▶ St. Dunstan's School
- ▶ Mills High School

In addition, Capuchino High School is nearby in the city of San Bruno and is mostly surrounded by Millbrae. Pedestrian access to Millbrae schools is currently accommodated by neighborhood streets, which typically provide sidewalks on both sides of the street and marked crosswalks at most major intersections. In addition, there are several high-visibility crosswalks near schools such as Green Hills Elementary School, Meadows Elementary School, Taylor Middle School, and Mills High School. Some schools are near major roadways where people must be especially attentive to other roadway users when crossing the street. Examples of schools near major roadways include Lomita Park Elementary School near El Camino Real and Mills High School near Millbrae Avenue.

Currently, there are dedicated bikeways to and from Mills High School, Taylor Middle School, and St. Dunstan's School. Additionally, the Spur Trail runs near Taylor Middle School and Mills High School. However, the remaining schools within the City have no nearby bike facilities and overall connectivity between the neighborhoods and schools is limited. Therefore, there is a general need for bicycle facilities serving schools throughout the city. Bicycling facilities are especially important in the western portion of the city where hilly streets can be difficult for students on bicycles to navigate. Hilly areas also can create safety concerns when bicyclists sharing the street with drivers must ride very slowly up a hill due to the grade. The location of schools in and adjacent to the City of Millbrae are shown in Figure 8.

Figure 7: Schools, Parks, and Trails



PARKS AND TRAILS

Developing an active transportation network that includes class I facilities, such as bike trails, creates connections for pedestrians and bicyclists to parks and other destinations. In addition to the off-street connectivity provided by class I facilities, trails and parks fulfill important health and recreation needs and should be served by bicycle and pedestrian facilities to and from these areas. This can be achieved by ensuring that there are routes available to parks and to access points along trails. It is important to note that these parks and recreational areas can also be used by children and other vulnerable groups, which may require additional amenities to increase people's comfort while walking and biking. The location of parks and trails in and adjacent to the City of Millbrae are shown in Figure 8.

SPUR TRAIL

The primary trail in Millbrae is the Spur Trail, which runs parallel to Millbrae Avenue between Magnolia Avenue and Ashton Avenue, and continues north to terminate at Richmond Drive with a gap between Ashton Avenue and Hillcrest Boulevard. This trail provides connectivity to Taylor Middle School, Mills High School, Rotary Park, and Schultz Park, with several access points along the trail. Bicyclists and pedestrians on the Spur Trail cross streets at Ashton Avenue, Hillcrest Boulevard, and Taylor Boulevard to continue on the path; Ashton Avenue and Hillcrest Boulevard lack bicyclist or pedestrian crossing facilities, while Taylor Boulevard has marked crosswalks. The major need for this trail is to link the disconnected portion between Ashton Avenue and Hillcrest Boulevard, which currently requires users to travel along neighborhood streets. Currently, there are no designated bikeways on streets that cross or run adjacent to the Spur Trail. However proposed facilities which would accommodate bicyclists to and from the Spur Trail include class III routes on Magnolia Avenue, Hillcrest Boulevard, Richmond Drive, and Palm Avenue.

BAY TRAIL

The Bay Trail is a class I trail that, when fully constructed, will follow the complete San Francisco Bay shoreline. Currently, the trail runs southeast from Bayfront Park to destinations along San Francisco Bay, but does not continue as a class I trail north around the San Francisco International Airport. The proposed Bay Trail will extend through Millbrae along Monterey Street and the Caltrain/BART railroad tracks to connect to existing portions of the trail to the north. Currently, Millbrae residents can access the Bay Trail via Millbrae Avenue and must cross US 101 and Old Bayshore Highway. Bicyclists can access the Bay Trail from the north using class II bicycle lanes along McDonnell Road; there are no designated bikeways on Millbrae Avenue leading to the trail. Pedestrians walking to the Bay Trail can use sidewalks along Millbrae Avenue. However, sidewalks are discontinuous and not provided along all portions of the interchange with US 101. In addition, marked crosswalks are not provided across all on- and off-ramps and crosswalks on Old Bayshore are fading and hard to see. Accommodating bicyclist and pedestrian access to the Bay Trail along Millbrae Avenue and across Old Bayshore Highway is an important need moving forward.

SAN ANDREAS TRAIL/SAWYER CAMP TRAIL

The San Andreas Trail and the Sawyer Camp Trail are two trails just beyond the city's southwestern border on the far side of I-280. These two trails provide connectivity to San Andreas Lake and open space to the west of Millbrae.

Bicyclists and pedestrians can access these trails from Millbrae via Larkspur Drive and Hillcrest Boulevard, which lead to two trail access points on the western side of I-280. East of I-280, pedestrians can utilize local neighborhood streets that have sidewalks and crosswalks. However, the ramp intersections at Larkspur Drive do not have marked crosswalks or sidewalks and include several uncontrolled free right turns. The intersections at Hillcrest Boulevard also have limited marked crosswalks. There are few bicycle facilities leading to these trails except for class II bicycle lanes on Skyline Boulevard between Larkspur Drive and Hillcrest Boulevard. In addition, bicyclists must navigate hilly streets to reach these trails. Accommodating bicyclist and pedestrian

access to the San Andreas and Sawyer Camp Trails from the east, including bicyclists and pedestrians crossing the I-280 on- and off-ramps, is a crucial need to connect residents with these regional trails.

Additionally, the connecting trail segment between the San Andreas Trail and the Sawyer Camp Trail between Larkspur Drive and Hillcrest Boulevard has been closed to bicyclists. This results in regionally commuting bicyclists needing to ride on Interstate 280 between Larkspur Drive and Skyline Boulevard at the north end of Millbrae and between Hillcrest Boulevard and Trousdale Drive at the south end of Millbrae.

NEIGHBORHOOD PARKS

Neighborhood parks are an important feature of any city and fulfill recreational needs as well as contribute to healthy lifestyles for all people. Safe, comfortable bicycle and pedestrian facilities to these parks enable and encourage Millbrae residents to visit and enjoy them regularly. Such facilities can consist of continuous sidewalks, marked crosswalks, and designated bicycle facilities on roads leading to parks.

As documented earlier in this section, Millbrae residents have access to several parks and facilities throughout the city: Bayfront Park, Bayside Park, Central Park, Green Hills Park, Junipero Serra Park, Lions Park, Marina Vista Park, Meadows Park, Mills Estate Park, Rotary Park, Schultz Park, and Spur Trail Park.

Sidewalks are generally present around Millbrae parks along with marked crosswalks at intersections around the parks. One notable exception is Bayfront Park, where pedestrian access is hindered by a lack of pedestrian facilities at the US 101 interchange at Millbrae Avenue. These shortcomings include a lack of sidewalks on Millbrae Avenue's northern side, uncontrolled free right turn on-ramps on the southern side, and uncontrolled on-ramps and no marked crosswalks on the northern side. Bicycle access within Millbrae parks is limited to the Spur Trail, which provides connectivity to Rotary Park and Schultz Park.

DESTINATIONS

DOWNTOWN

Downtown Millbrae is a center of employment, retail, and governmental/institutional uses, making it an important destination in the city. Downtown includes City Hall, Millbrae Library, the Millbrae History Museum, several private businesses, and a US Postal Service office. Several bus stops along El Camino Real are within downtown.

Currently, pedestrians walking to and within downtown are accommodated by a consistent sidewalk network and crosswalks, including ladder crosswalks and midblock crossings on Broadway. On-street parking, including diagonal parking on some segments of Broadway, provides a buffer between traffic and pedestrians on several streets. Improvements to the El Camino Real/Victoria Avenue intersection, completed in 2013, added additional amenities such as a street crossing signal across El Camino Real, a well-defined walking path, sidewalk enhancements, bus stop enhancements, and landscape enhancements. Recently, as part of the San Mateo County Crosswalk Safety Improvement Project, Caltrans installed five signal-controlled pedestrian crossings across El Camino Real. There are no designated bikeways supporting bicyclists traveling to or within downtown except for a class III route on El Camino Real.

Given the downtown area's importance as a destination in Millbrae, providing bicyclist and pedestrian connections to, from, and within the downtown area is key. This includes continuing to improve intersection crossings across major roadways and providing a network of bikeways to provide bike access to downtown.

EL CAMINO REAL

El Camino Real traverses Millbrae and passes adjacent to downtown. Retail and business establishments line both sides of the street. In addition to its retail and business attractions, El Camino serves an important transit purpose due to its numerous bus stops and its adjacency to Millbrae Intermodal Station. There are opportunities

to accommodate bicyclists and pedestrians who wish to safely travel to El Camino Real to access its retail and business amenities with facilities on or adjacent to the street. This includes safe facilities both for traveling along and crossing El Camino Real.

Currently, pedestrians on El Camino Real are supported by sidewalks along all segments. Marked crosswalks, including some high-visibility ladder crosswalks, are present at all major intersections. On-street parking provides a buffer between traffic and pedestrians. Recent projects such as the improvements to the El Camino Real/Victoria Avenue intersection and Caltrans' San Mateo County Crosswalk Safety Improvement Project have helped improve safety for pedestrians crossing El Camino Real. However, there are still opportunities to improve shortcomings in the local pedestrian environment. This includes addressing issues such as driveway crossings, long crossing distances at major intersections, and high vehicle volumes along the corridor. In addition, bicyclists traveling along El Camino Real benefit from its designation as a class III route, but improvements could address safety concerns for bicyclists that currently share the lane with cars and buses.

REGIONAL CONNECTIONS

The San Andreas Trail and Sawyer Camp Trail serve as regional bicycle and pedestrian facilities, connecting Millbrae to regional recreational destinations outside the city. In addition, once completed, the Bay Trail will follow the complete San Francisco Bay shoreline and will extend through Millbrae along Monterey Street and the Caltrain/BART railroad tracks to connect to portions of the trail to the north. Providing local facilities that connect to these bike trails can help improve residents' access to regional destinations.

C/CAG's Draft Countywide Bicycle and Pedestrian Plan lays out a vision for a countywide system of connected bicycle and pedestrian facilities. The plan highlights several key corridors in the county that serve as a Countywide Backbone Network. The following Backbone Network facilities are adjacent or within the City of Millbrae:

- ▶ Sawyer Camp Trail
- ▶ Bay Trail
- ▶ Murchison Drive to Skyline (proposed)
- ▶ El Camino Real (proposed)
- ▶ East Millbrae Avenue (proposed)
- ▶ California Drive (proposed)
- ▶ Aviator Avenue/Monterey Street/San Anselmo Avenue/San Antonio Avenue (proposed)

The County's key corridors present an opportunity to provide safe and comfortable local connections that can help improve regional connectivity.

TRANSIT

Providing pedestrian and bicyclist connections to transit stations and stops is an important step in improving transit accessibility, and convenient access to transit and is a key part of a citywide active transportation plan. Providing walking and biking facilities to and from transit helps bridge the first-mile/last-mile issue by providing door-to-door transit connections rather than stop-to-stop connections, and it can expand the reach of transit without the need for a car. Bicyclist strategies can include providing bikeways to stations and providing secure bike parking for short-term and long-term storage at stations. Pedestrian strategies include providing safe and comfortable sidewalks and crosswalks along commonly traveled routes to the station or bus stops and a comfortable pedestrian experience for anyone navigating the transit station.

Currently, Millbrae residents and employees use transit at higher rates than the county averages, which may be due to the presence of the Millbrae Intermodal Station and high frequency service along El Camino Real.

Providing better bicyclist and pedestrian connections to these facilities can help increase the mode share and enhance the feasibility of future transit expansion.

MILLBRAE INTERMODAL STATION

The Millbrae Intermodal Station provides access to BART and Caltrain service and is designated to be a future stop on the California High Speed Rail. It is also a regional transit hub for SamTrans bus service. Primary pedestrian and bicyclist access paths to the station are along El Camino Real and Millbrae Avenue, including crosswalks at the intersections of El Camino Real and Victoria Avenue, El Camino Real and Millbrae Avenue, and Millbrae Avenue and Rollins Road. Recent projects such as the improvements to the El Camino Real/Victoria Avenue intersection and Caltrans' San Mateo County Crosswalk Safety Improvement Project have provided new crosswalks and crossing signals for pedestrians crossing El Camino Real to access the station. Currently, the only designated route to the station for bicyclists consists of a class III route on El Camino Real. Once inside the station area, pedestrians and bicyclists must navigate vehicle parking and bus bays. Sidewalks are present in the station area along with marked crosswalks at some internal intersections.

There are opportunities to increase safety and comfort for bicyclists and pedestrians arriving via El Camino Real or Millbrae Avenue by addressing needs such as long crossing distances and high vehicle volumes at the intersection of El Camino Real and Millbrae Avenue. In addition, bicyclists could benefit from a dedicated bicycle facility. Along Millbrae Avenue, there are several gaps in the bicycle and pedestrian network connecting to the Millbrae Intermodal Station, including the lack of bicycle facilities and inconsistent sidewalks and crosswalks, especially at the US 101 interchange.

The City developed the Millbrae Station Area Specific Plan (adopted in 2016), which includes improvements such as an El Camino Real/Victoria Avenue pedestrian crossing enhancement and other roadway and intersection reconfigurations. Bicycle and pedestrian improvements around the Millbrae Intermodal Station described later in this active transportation plan were developed to be consistent with the improvements identified in the specific plan.

BUS STOPS

Bus service within Millbrae serve SamTrans Route ECR, which provides express service along El Camino Real with several bus stops in Millbrae. Route ECR provides connectivity to retail stores and other businesses along El Camino Real, in downtown, and in other areas. There are opportunities to address the first-mile/last-mile issue by including comfortable and safe sidewalks, crosswalks, and bikeways to aid access. However, pedestrian and bicycle facilities at each bus stop can also make the transit trip more practical and the wait more comfortable, which can encourage transit use. These amenities can include wide sidewalks, ample waiting areas, attractive landscaping, benches, shelters, and bike racks.

BARRIERS

There are several physical barriers to walking and biking in Millbrae. These barriers can hinder pedestrian and bicyclist access to several of the destinations mentioned above. It is important to address issues at these locations to support safe and comfortable bicycling and walking in the city.

EL CAMINO REAL

El Camino Real, which traverses Millbrae and passes adjacent to downtown, contains features that are barriers for bicyclists and pedestrians accessing destinations in downtown and along El Camino Real.

It may be difficult for some users to cross El Camino Real on foot due to the long crossing distances and high vehicle volumes at intersections. The corridor can also be difficult to navigate for bicyclists due to the presence of high volumes of cars and buses and a lack of dedicated bicycle facilities. Furthermore, the high concentration of bicyclist and pedestrian crashes on El Camino Real can discourage walking and biking due to

safety concerns. Improvements could be made to El Camino Real to reduce the frequency of interactions between bicyclists, cars, and buses and to increase safety at pedestrian crossings.

MILLBRAE AVENUE

Millbrae Avenue runs approximately east-west from I-280 to the San Francisco Bay. It can be a barrier to bicyclists and pedestrians wishing to access the Millbrae Intermodal Terminal, Bay Trail, Bayfront Park, and destinations along El Camino Real. The primary bicyclist and pedestrian access barrier along Millbrae Avenue is the US 101 interchange.

Currently, Millbrae Avenue lacks pedestrian facilities, especially between the Millbrae Intermodal Station and Old Bayshore Highway. There is no sidewalk or pedestrian crossings along the north side of the segment except along the segment fronting the Millbrae Intermodal Station. All four on-ramps at the interchange are free movements with high vehicle entry speeds, creating safety concerns for pedestrians crossing the on-ramps. No bicycle facilities currently exist along the corridor.

Caltrain/BART Tracks

The train tracks leading to the Millbrae Intermodal Station run parallel to and east of El Camino Real. The tracks form a barrier for pedestrians and bicyclists between northwestern neighborhoods, such as the Bayside Manor Subdivision and Marina Vista Subdivision, and destinations to the west, such as El Camino Real, downtown, and the Millbrae Intermodal Station. Currently, bicyclists and pedestrians can cross the Caltrain/BART tracks at three locations: the at-grade intersection of Center Street; the at-grade bicycle- and pedestrian-only crossing between Monterey Street and Hemlock Avenue; and the Hillcrest Boulevard tunnel open to drivers, pedestrians, and bicyclists. Each of these locations presents opportunities for improving safety for bicyclists and pedestrians, and additional multimodal crossings may be established to increase connectivity.

TOPOGRAPHY

The topography in the western residential neighborhoods consists of hills and ravines, which can be difficult for many bicyclists to navigate. This creates a barrier to destinations in the west such as the San Andreas Trail, Sawyer Camp Trail, parks, and schools. In addition, several bicyclist accidents have been recorded on the hilly section of Hillcrest Boulevard. The western portion of the city presents opportunities to enhance east-west bicyclist travel by providing designated bikeways in the east-west direction that bypass as many steep hills as practicable, thereby supporting bicyclist trips in the area.

GOALS AND ACTIONS

The City of Millbrae Active Transportation Plan envisions a network that is safe and comfortable and accommodates bicyclists and pedestrians of all ages and abilities. The plan's vision consists of a network that is complete and provides convenient bicyclist and pedestrian facilities to local and regional destinations and amenities. This chapter contains the City's goals and actions to achieve this vision.

GOALS

The goals outlined below support the achievement of this plan's vision and have been shaped by the existing conditions and needs analysis.

- ▶ **Provide a safe and comfortable active transportation network.** Providing safe and comfortable facilities is a key goal in planning an active transportation network since safety and comfort are crucial decision-making factors for potential bicyclists and pedestrians. Safety and comfort can be improved through means such as making physical improvements to existing facilities and constructing new facilities.
- ▶ **Promote accessibility for all ages and abilities.** It is important to create an active transportation network that serves people of all ages and abilities. Certain groups may need additional accommodations to overcome barriers to bicycling and walking. Accommodating people of all ages and abilities can be achieved by designing facilities that provide separation in space and time between drivers, bicyclists, and pedestrians.
- ▶ **Improve bicyclist and pedestrian connectivity to regional facilities.** Local facilities are essential for accommodating access to regional transportation facilities. Without safe and convenient connections to regional facilities, bicyclists and pedestrians may have difficulty making their complete trips.
- ▶ **Improve access to transit and increase transit mode share.** Bicyclist and pedestrian facilities to and at transit stops and stations are essential for accommodating and increasing transit use. These facilities help address the first-mile/last-mile issue by providing connections for people's full trips from origin to destination rather than solely between transit stops. Providing safe and convenient bicyclist and pedestrian facilities to transit can help encourage transit use by people that otherwise would not have taken transit.
- ▶ **Improve access to local destinations for Millbrae residents, employees, and visitors.** For many Millbrae residents, employees, and visitors, destinations are within bicycling or walking distance, but the route of travel is not safe or comfortable. In these cases, local destinations do not reach their full bicycling and walking potential. Creating safe and comfortable active transportation facilities can encourage residents, employees, and visitors to bike or walk for local trips to downtown, El Camino Real, and parks.
- ▶ **Increase bicyclist and pedestrian mode share in Millbrae.** The ideal outcome of planning an active transportation network is increasing the number of bicyclists and pedestrians in the city. This extends to increasing the number of bicyclists and pedestrians of all ages and abilities as well as increasing the range of trip types made by walking and biking.

ACTIONS

The City should implement the following key actions to reach the Active Transportation Plan's goals and achieve the vision of a safe and comfortable bicycle and pedestrian network for all ages and abilities.

- ▶ **Provide safe and comfortable bicycle routes and pedestrian connections to downtown Millbrae and El Camino Real.** Downtown Millbrae and El Camino Real have a concentration of destinations such as employment centers, commercial uses, and transit stops. Improving connectivity to these destinations can help users of all ages and abilities, including the city's youth and senior populations, take advantage of resources in these areas.

- ▶ **Provide safe and comfortable bicycle routes through residential neighborhoods in western Millbrae.** Several schools and parks are in western Millbrae's neighborhoods. However, the steep hills and ravines that characterize the area are barriers to children, seniors, or other less experienced or assertive bicyclists. The topography is a barrier to children bicycling or walking between school and home in western neighborhoods. Providing routes through western Millbrae that can accommodate different bicycling and walking comfort levels is a key to improving access to important destinations in this part of the city.
- ▶ **Expand active transportation connections to transit.** The City should focus on providing facilities for bicyclists and pedestrians to connect to the Millbrae Intermodal Station and bus stops along El Camino Real. Bridging the first-mile/last mile gap between these transit facilities and local destinations can help maintain and increase Millbrae's transit mode share.
- ▶ **Complete an end-to-end Class I path network.** The existing class I paths within the city, like the portions of the Spur Trail, provide a safe and comfortable facility for bicyclists and pedestrians. These paths provide a high level of separation from vehicles and form the backbone of Millbrae's active transportation network. Completing an end-to-end Class I path network including (but not limited to) the Spur Trail, unification of the Bay/Monterey Trail, and a full connection of the Sawyer/San Andreas trails. Completing this network can increase walking and biking convenience and provide for increased recreational opportunities, and allow more comfortable routes to more destinations, such as schools and parks in the western portion of the city and employment, commercial, and transit destinations in downtown and along El Camino Real.
- ▶ **Improve bicyclist and pedestrian access to regional facilities in the west.** The San Andreas Trail and Sawyer Camp Trail are regional facilities that provide connections to other recreational areas to the west. However, Millbrae residents must travel on local streets to reach these trails. Direct access to trail entrances is provided at Larkspur Drive and Hillcrest Boulevard directly to the west of I-280. The City should address the lack of designated bike routes to the trailheads as well as the lack of marked crosswalks and continuous sidewalks near freeway ramps.
- ▶ **Provide bicycle and pedestrian facilities on eastern Millbrae Avenue.** The City should improve existing facilities and provide new facilities for safely traversing Millbrae Avenue, especially at the US 101 interchange. The interchange can be a barrier to destinations such as the Bay Trail, Millbrae Intermodal Station, and El Camino Real. Currently, intersections at the interchange do not have bike facilities, controlled crosswalks, or complete sidewalk coverage.
- ▶ **Provide bicycle and pedestrian facilities across and along the El Camino Real corridor.** El Camino Real is an employment, commercial, and transit service destination. However, it is a barrier to other destinations in Millbrae. The City should expand upon recent improvements on El Camino Real to provide safer pedestrian crossings and to accommodate bicyclists traveling along the corridor.

RECOMMENDATIONS

The City of Millbrae has a strong base of facilities for bicyclists and pedestrians to provide a comfortable environment for people biking and walking in the city. By continuing to improve on these facilities, the City of Millbrae can enhance the biking and walking environment throughout the city. As highlighted in the Existing Conditions and Needs sections of this plan, key barriers to walking and biking within Millbrae include:

- ▶ Crossing El Camino Real
- ▶ Connecting and improving the walking and biking experience to and at the Bay Trail, the Millbrae Intermodal Station, and downtown Millbrae
- ▶ Connecting to the regional biking network

This section presents a variety of recommendations to improve the biking and walking facilities at key locations throughout the city with a focus on creating a safe, comfortable, and convenient biking and walking network.

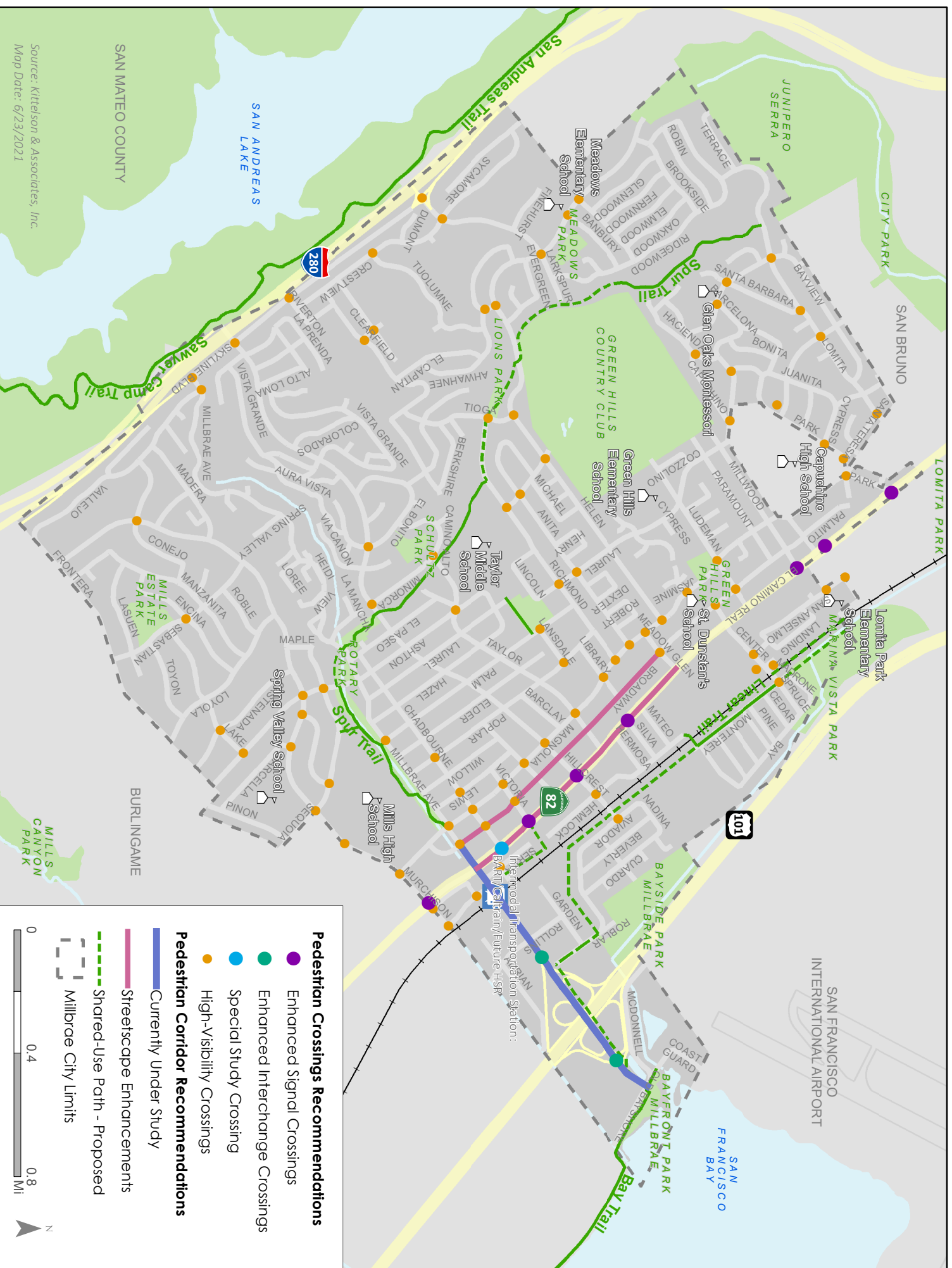
WALKING RECOMMENDATIONS

Several actions can create a better environment for walking. Such actions may include enhancing crosswalks to increase drivers' and pedestrians' visibility of one another and installing amenities along pedestrian routes to create more inviting places where people are walking. The following three categories comprise the specific recommendations to improve the walking environment:

- ▶ Intersection crossings
- ▶ Focus corridors
- ▶ Shared-use path connections

Figure 9 shows the locations of the improvements recommended throughout the city.

Figure 9: Recommended Pedestrian Improvements



INTERSECTION CROSSING RECOMMENDATIONS

Street intersections are the principal conflict points for pedestrians. As a result, improving pedestrian crossings to increase the predictability and visibility of pedestrians is a key principle for improving intersections. Intersections should be designed to provide visibility for all users and to create a consistent, predictable environment where the movements of people walking, biking, or driving are intuitive to other road users as they approach or enter the intersection. In addition to this over-arching approach to improving safety and comfort at intersections for people walking, the following more specific principles should be considered when implementing intersection crossing recommendations:

- ▶ Minimize the intersection footprint to be as compact as possible.
- ▶ Reduce pedestrian crossing distances and provide protected waiting areas for people walking using curb extensions, crossing islands, and medians.
- ▶ Shorten traffic signal cycle lengths and coordinating signals to reduce pedestrian wait times.
- ▶ Use high-visibility treatments such as additional signage or flashing beacons at unsignalized locations with higher pedestrian volume and/or higher vehicle speed.

Using these principles as guidance as well as the findings from the City's Traffic Calming study findings (2020), several locations were identified as key crossings at which to improve safety and connectivity for people crossing major roadways and interchanges and to improve connections between the Bay Trail, the Millbrae Intermodal Station, and the commercial corridors of the city. The following locations are recommended for enhanced intersection crossing treatments:

- ▶ Broadway and Meadow Glen Avenue
- ▶ El Camino Real & Chadbourne Avenue/Linden Avenue
- ▶ El Camino Real & Victoria Avenue
- ▶ El Camino Real & Hillcrest Boulevard
- ▶ El Camino Real & Silva Avenue
- ▶ El Camino Real & Millwood Drive
- ▶ El Camino Real & Santa Helena Avenue
- ▶ El Camino Real & Santa Inez Avenue
- ▶ El Camino Real & Murchison Avenue
- ▶ Millbrae Avenue & US 101 SB Ramps
- ▶ Millbrae Avenue & US 101 NB Ramps
- ▶ Park Boulevard and Magnolia Avenue

Several other intersections and potential pedestrian crossing locations were identified for high-visibility crossing improvements near parks, schools, and the commercial areas of the city. These locations would only entail striping and signage upgrades that could be integrated into future maintenance activities. Figure 9 presents these locations.

CORRIDOR RECOMMENDATIONS

Three corridors in the city are ideal locations for enhancing the public realm and walking experience, improving connectivity, and creating a vibrant walking and shopping environment. These corridors are Broadway and El Camino Real between Millbrae Avenue and Meadow Glen Avenue, and Millbrae Avenue.

Broadway and El Camino Real

The two commercial corridors of Broadway and El Camino Real represent the heart of Millbrae's downtown and commercial activity. Supporting these commercial areas with an improved walking environment encourages increased walking and provides for a more pleasant experience of downtown. These corridors should be prioritized for improvements that provide a strong sense of place and create a comfortable walking experience to the destinations along the corridor.

Additionally, as a response to the COVID-19 pandemic, outdoor dining platforms were added along the downtown corridor. While these platforms are temporary constructions, the City does see increasing needs for outdoor dining spaces for local businesses. Serving these needs along the downtown corridors will also be critical for maintaining the economic vitality of the downtown and create a more welcoming walking and biking environment.

Finally, Frontage Road paralleling El Camino Real between Taylor Boulevard and Chadbourne Avenue. Frontage Road provides access to the businesses on the southwest side of the El Camino Real as well as providing on-street parking opportunities for visitors to the El Camino Real corridor and downtown Millbrae. The current design of the access to Frontage Road results in intersections immediately adjacent to the El Camino Real intersections and introduces complex conflict points for vehicles turning on or off El Camino Real, turning or continuing straight along Frontage Road, or turning or continuing through on the crossing streets. These conflict points also increase potential conflicts for pedestrians and bicyclists, increasing the number of potential movements that could result in a conflict.

Recommended improvements are:

- ▶ Provide a buffer between the street and sidewalk, such as a planting strip, parking, or sidewalk dining.
- ▶ Construct wider than minimum sidewalks to ensure comfortable side-by-side or bi-directional travel on each side of the street.
- ▶ Install high-visibility crossings, bulb-outs to shorten pedestrian crossings, and raised crosswalks/intersections (where appropriate) to reinforce the understanding that the circulation network is for all users and all modes.
- ▶ Exploring the feasibility of reallocating space for permanent outdoor dining spaces. This could take the form of an extended pilot program of the existing temporary platforms with a successful pilot exploring the possibility of converting the dining spaces into expanded sidewalk/dining areas.
- ▶ Evaluating access changes to Frontage Road along the El Camino Real corridor to remove the adjacent intersections to El Camino Real to move access upstream and downstream of the El Camino Real intersections. This change would clarify potential conflict points for vehicles and reduce the number of potential conflicts for bicyclists and crossing pedestrians.

Millbrae Avenue

Millbrae Avenue between Broadway and Old Bayshore Highway has the potential to be a major walking link between key nodes within the city: downtown, the Millbrae Intermodal Station, future transit-oriented developments near the station, and Bayfront Park and the Bay Trail to the east. Adding sidewalk on both sides of the road and/or a wider shared-use path along the south side of the road between Rollins and Old Bayshore Avenue will improve the walking environment when combined with crossing improvements at the US 101 on-ramps and off-ramps.

With these improvements, the environment would invite more walking (and biking) connections between downtown, the commercial areas along Millbrae Avenue, Bayfront Park, and the Bay Trail. In addition, installing sidewalk where gaps exist along the north side of Millbrae Avenue between Rollins Avenue and Old Bayshore Avenue will make the corridor safer and more comfortable for people who are walking.

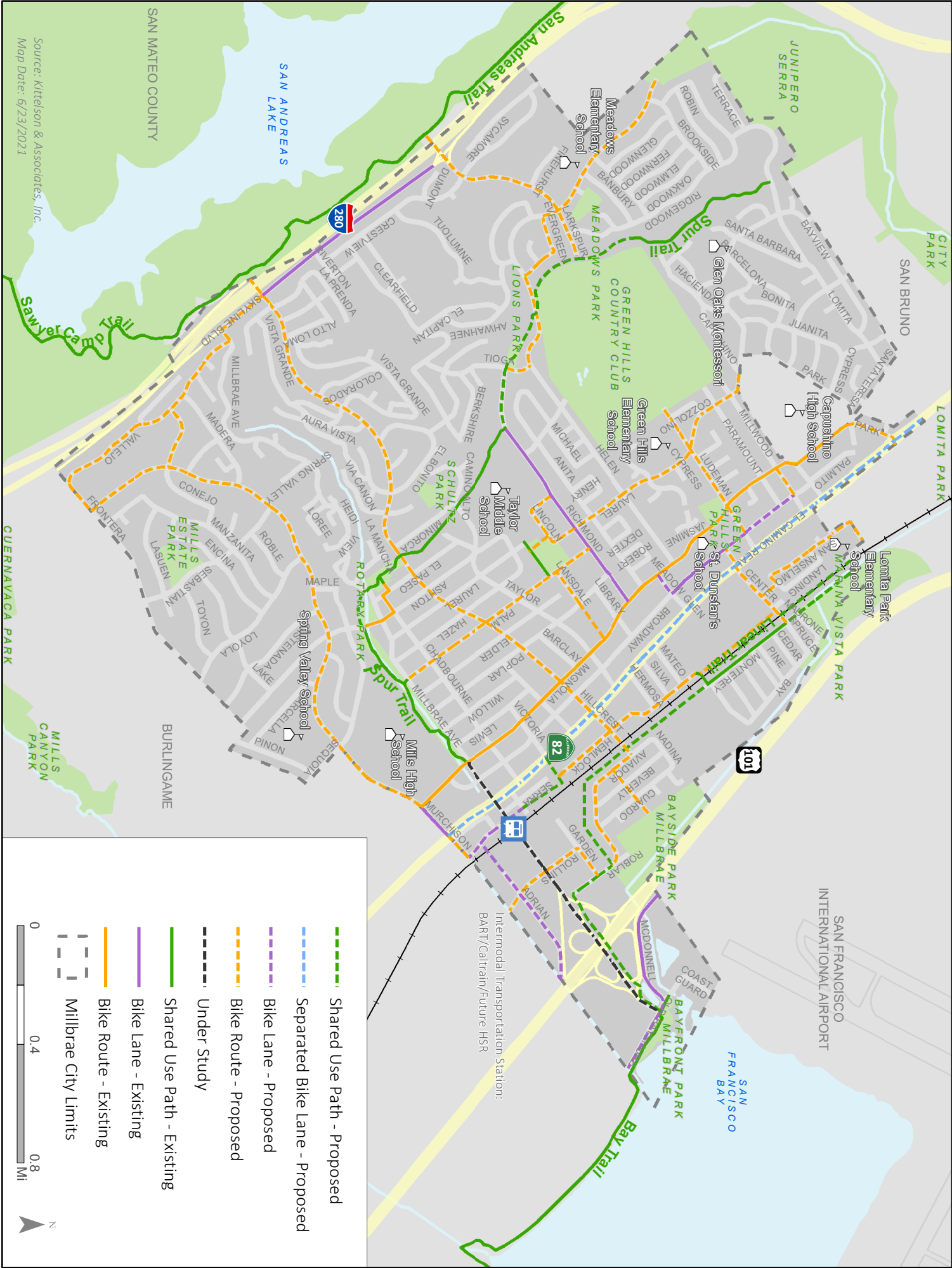
SHARED-USE PATH RECOMMENDATIONS

The Bay Trail, Spur Trail, Monterey Street Path, and Sawyer Camp Trail are key opportunities to improve recreational active transportation. Connecting these paths and providing easy access to the paths will provide low-stress walking and biking routes to destinations throughout the city and to broader regional destinations.

BIKING RECOMMENDATIONS

The Bicycle and Pedestrian Transportation Plan, adopted in 2009, is the starting point for developing recommendations for the bicycle network. This active transportation plan builds on past planning efforts and provides recommendations based on input from City staff, representatives of the Parks and Recreation Commission, and field review. Figure 10 presents the recommended bicycle network and improvements.

Figure 9: Recommended Bikeway Improvements



CONNECTING THE NETWORK FOR A RANGE OF COMFORT LEVELS

The recommended bicycle network establishes a set of bike routes to serve both experienced, assertive bicyclists as well as less-experienced or risk-averse bicyclists. This combination of facilities for experienced and less-experienced riders will help the City construct a bikeways network that connects neighborhoods and key destinations for bicyclists of all ages and abilities. Low-volume, low-speed roadways have been prioritized for bike routes throughout much of the city. This approach takes advantage of Millbrae's calm neighborhood streets to establish connections between schools, parks, and other destinations across the city. Connecting neighborhoods to schools and shopping centers through low-vehicle-speed routes helps facilitate commute and utilitarian bicycle trips to schools and businesses throughout the city. Such connections also create new opportunities and connections for recreational riding along on-street facilities and for access to the Spur Trail, Bay Trail, and Sawyer Camp Trail.

Intersection design for bicyclists is an important focal point for the development of the bikeway network. Designing bikeways with appropriate intersection treatments to reduce conflicts and increase user comfort is essential to developing a low-stress and safe network of bikeway facilities. Adequate sight distance should be maintained for all street crossings and driveway access points. The bikeway may also be shifted more closely to vehicle travel lanes at intersection approaches to provide clear sight lines for all users. Pavement color treatments help highlight conflict points on the approach to and through the intersection, and they further define the bikeway relative to the vehicle travel lanes.

Vehicle speed management is an important element of designing class III bicycle routes, where vehicles and bicyclists share a travel lane. Vehicle speed management can be achieved through physical traffic calming measures, traffic diversion, advisory signs, and striping, as well as education and enforcement programs aimed at managing vehicle speeds on bike routes.

KEY BIKEWAY CONCEPTS

Specific bikeway concepts were developed for the recommended network for the following areas:

- ▶ El Camino Real Corridor
- ▶ Spur Trail
- ▶ East-West Connections
- ▶ California Drive
- ▶ Along the Rail Line
- ▶ US 101 Crossing and Bay Trail

El Camino Real Corridor

El Camino Real has multiple lanes and carries traffic with high speeds. Two bikeway concepts have been developed to ensure comfortable routes for both experienced and novice bicyclists. A key proposed improvement is replacing the existing underutilized curbside parking along El Camino Real with a separated bike lane directly on El Camino Real. This would provide a higher-speed route, but it would require interactions with motor vehicles at multiple high-volume intersections. Parallel to El Camino Real, bike routes on Magnolia Avenue to the west and Hemlock Avenue/Monterey Street to the east have been identified to provide low-stress bikeways on low-volume and low-speed motor vehicle volume streets to provide safe and comfortable north/south routes for less experienced bicyclists. Special attention should be paid to ensuring adequate sight distance at intersections and driveway access points along Magnolia Avenue to help reduce vehicle/bicyclist conflicts.

Spur Trail

The Spur Trail represents a key opportunity for the City of Millbrae to invest in a high-quality shared-use path that would run through the core of the city. In the long term, Millbrae should seek to complete off-street connections for the Spur Trail using available right-of-way. In the short term, the city should focus efforts on improving access to the existing segments of the trail and improving connections to the path through on-street bikeways.

Monterey Street Path

The Monterey Street Path provides an important low-stress bikeway on the east side of the City. Investments in extending this path south to the Millbrae Intermodal Station and north towards San Bruno would help connect the east side of the City with key regional destinations. In the long term, Millbrae should seek to complete off-street connections for the Monterey Street Path using available right-of-way.

East-West Connections

Connecting the western side of the city via bikeways is challenging due to the hilly terrain. To facilitate the least stressful climbing route possible in the southwestern quadrant of the city, the Spur Trail and, secondarily, Murchison Drive are recommended as the primary east-west corridors. For the northwestern quadrant of the city, Helen Drive would provide connectivity to the rest of the city.

California Drive Connection

California Drive is the preferred route for travel to and from Burlingame. Improvements are recommended at the intersection of El Camino Real and Murchison Drive to provide better connections between California Drive and the overall recommended bikeway network in Millbrae to allow better connectivity between the two cities. California Drive is being realigned and extended to allow for new TOD development north of Millbrae Avenue between the rail line and El Camino Real. California Drive will be realigned to travel closer to the rail line and extend north up to Victoria Avenue where it will connect with El Camino Real.

Connections Along the Rail Line

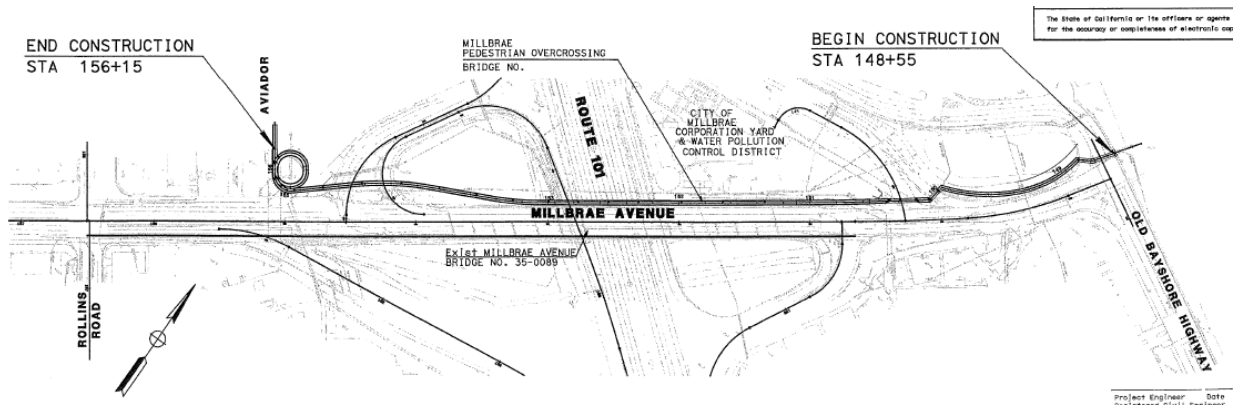
As redevelopment occurs on properties between El Camino Real and the railroad tracks, the city should seek opportunities to establish bicyclist and pedestrian connections to improve overall network connectivity along the west side of the rail line. Potential connections that have been identified include providing a connection between Serra Avenue and Hemlock Avenue, connecting between Hemlock Avenue and Center Street using the private alley parallel to the rail line, as well as looking for opportunities to improve or provide new railroad crossings to the eastern side of the rail line.

On the east side of the rail line, the recommended bikeway network focuses on improving connections to the Millbrae Intermodal Station to connect the station with routes along Aviator Avenue and utilizing the shared-use path paralleling Monterey Street.

US 101 Crossing and Bay Trail Connection

Prior engineering studies by the City of Millbrae indicated that it would be very difficult to retrofit the existing Millbrae Avenue structures crossing US 101 to provide improved bike crossings. However, improvements are under consideration as part of the city's ongoing safety study on East Millbrae Avenue. The preferred plan established in prior studies identified the construction of a new bicycle and pedestrian overpass immediately north of the existing Millbrae Avenue overpass, shown in Figure 11. If on-street facilities are deemed infeasible for East Millbrae Avenue, the city should seek funding for an overpass to help improve connections to the Bay Trail.

Figure 11: US 101 Bicycle and Pedestrian Overcrossing Concept



Source: City of Millbrae, 2017.

Millbrae Station Access Improvements

The City has recently funding through the Affordable Housing and Sustainable Communities grant program to provide increased walking and biking improvements to the Gateway at Millbrae Station affordable housing development. This consists of the previously mentioned improvements along Millbrae Avenue as well as additional walking and biking improvements throughout the City including an east-west bicycle connection along Adrian Road from the Millbrae city limits connecting to the access road to the Millbrae Intermodal Station under Millbrae Avenue. Additionally, the grant funds a low-stress bicycle north-south bicycle connection from the Millbrae Intermodal Station north along Aviator Avenue, Hemlock Avenue, and connecting to San Anselmo Avenue to the Millbrae city limits via the Monterey Linear Park shared-use path. The project also includes a short pedestrian gap closure project between Richmond Drive and Central Park along Lincoln Circle.

SUPPORTING RECOMMENDATIONS

In addition to the recommended networks for both pedestrians and bicyclists, programs aimed at education, encouragement, and enforcement can support increased walking and biking within the city. Key programs for the City of Millbrae to implement are identified below.

SAFE ROUTES TO SCHOOL AND SAFE ROUTES TO TRANSIT

Many people live within walking or biking distance from their school or a transit stop. The City should implement a citywide education and encouragement program to inform people about biking and walking routes. This program could be supplemented with targeted enforcement efforts to reduce bicyclists- and pedestrian-involved conflicts with vehicles along key biking and walking routes to transit or schools. Safe Routes to School and Safe Routes to Transit programs are opportunities to create fun and social activities for school children and transit riders while helping to improve their health and well-being.

BIKE PARKING

In support of the improvements with the bikeway network, the City should invest in more bike parking around schools and near key destinations to ensure people biking have a secure place to lock their bike. For locations where bicyclists are likely to leave their bike for an extended period, more secure bike parking such as bike lockers are recommended. For shorter-term parking locations, bike racks that allow for proper two-point locking are sufficient. Alongside the installation of bike parking at destinations, the City should consider an education program to encourage and educate bicyclists on proper locking of their bicycles. These programs help bicyclists recognize unsecure bike parking and can reduce the occurrence of bike theft.

WAYFINDING

A bicycle wayfinding program in the city would help bicyclists successfully navigate between key destinations, such as the Millbrae Intermodal Station, downtown, the Bay Trail, or the Sawyer Camp Trail. By providing direction to cyclists, the city would not only provide clear direction to access key destinations across the city with time or distance estimates, but wayfinding signs would also help make the bikeway network more apparent to current or potential cyclists. Wayfinding programs typically entail a map of the bike network and/or suggested bike routes, as well as signs and pavement markings providing clear direction for bicyclists.

REGIONAL COORDINATION

In addition to coordinating efforts to improve bikeways, the pedestrian environment, and walking and biking in Millbrae overall, the city should work with the surrounding jurisdictions and its regional partners to work towards a cohesive regional bikeway network to connect to San Bruno, Burlingame, and the greater region. This coordination can be both formal – through efforts like the San Mateo County Comprehensive Bicycle and Pedestrian Plan (2011) or the Grand Boulevard Initiative – or through informal discussion with neighboring jurisdictions to coordinate planning and project development for walking and biking projects and programs.

IMPLEMENTATION

Reaching the goals of the Active Transportation Plan for the City of Millbrae will require a persistent process of finding funding and investing in incremental improvements to the active transportation facilities and programs. While implementing each project or program recommended in this plan will help the City reach its active transportation vision, determining which projects are most critical in the near-term helps to spur overall implementation. As a result, this chapter seeks to develop the recommended improvements to better understand:

- ▶ estimated costs to implement the projects;
- ▶ potential funding sources for projects; and,
- ▶ priorities for near-term implementation.

COST ESTIMATES

Developing cost estimates for the projects contained within the plan's recommendations help guide the level of effort to implement a project and more accurately plan for future improvements. The cost estimates are "planning level" estimates that roughly estimate the construction cost magnitude based on typical costs. Additional costs for right-of-way, environmental studies, and other design studies may be required for individual projects on a case-by-case basis. As projects are moved forward through the project development process, more refined cost estimates will need to be developed to reflect current construction costs and as the unique characteristics of each project are analyzed more concretely during the design and construction phases. As a result, the plan may over- or underestimate the cost of various projects, but these costs should provide a strong basis for understanding the magnitude of implementing a project. Table 5 and Table 6 present estimated bicycle and pedestrian improvement costs, respectively.

TEMPORARY OR QUICK-BUILD IMPLEMENTATION

The planning level construction costs provided in the tables below reflect the construction of the project as a permanent installation with streetscape and landscaping improvements included, where relevant. The City may consider moving forward certain projects as temporary or quick-build projects. These improvements allow the City to more quickly implement improvements that improve walking and biking conditions while also providing an opportunity to conduct demonstrations of a new improvement type or conduct pilot studies to evaluate the effectiveness of a given improvement in the City. Temporary or quick-build projects can include:

- ▶ **short-term demonstration projects** as a proof of concept of the improvement(s) or to allow for an evaluation of potential impacts associated with an improvement without installing permanent infrastructure;
- ▶ **pilot projects** to provide a long-term evaluation of a new treatment or improvement type using lower-cost materials, signing, and striping that may be removed after the pilot is completed (if desired); and,
- ▶ **interim designs** that provide some or most of the benefits of the final permanent installation but use lower-cost, easy to install solutions that may not reflect the ultimate desired design or aesthetics for the location.

Temporary or quick-build implementation often makes use of easy-to-install and lower-cost materials quickly implement a new improvement. Examples of these materials include:

- ▶ using delineators, flex-posts, or temporary curbing with striping and paint to designate new curb extension areas without reconstructing existing curbs and ramps;
- ▶ using planters or delineators to provide separation from motor vehicles for a new bike facility where curb and landscaping will ultimately be installed; or,
- ▶ using lower-cost paving materials like asphalt with curbing to provide new pathways.

Table 5: Bicycle Improvement Cost Estimates

| Location | Improvement Type | Length (Miles) | Planning Level Cost |
|---|---------------------------|----------------|---------------------|
| El Camino Real from City Limits to City Limits | Separated Bike Lane | 1.7 | \$6,945,000 |
| Aviador Avenue | Low-Stress Bike Route | 0.5 | \$69,000 |
| Center Street | Low-Stress Bike Route | 0.3 | \$45,000 |
| Broadway | Bike Lane | 0.2 | \$103,000 |
| California Drive | Bike Lane | 0.2 | \$103,000 |
| California Drive Extension | Shared-Use Path | 0.2 | \$357,000 |
| Conejo Drive | Low-Stress Bike Route | 0.2 | \$24,000 |
| Evergreen Way | Low-Stress Bike Route | 0.2 | \$28,000 |
| Frontera Way / Vallejo Drive / Millbrae Avenue / Skyline Boulevard / Hillcrest Avenue | Low-Stress Bike Route | 0.9 | \$129,000 |
| Helen Drive | Low-Stress Bike Route | 0.5 | \$69,000 |
| Helen Drive / Tiago Drive | Low-Stress Bike Route | 0.3 | \$47,000 |
| Hemlock Avenue | Low-Stress Bike Route | 1.0 | \$143,000 |
| Hillcrest Avenue | Low-Stress Bike Route | 1.7 | \$240,000 |
| Lansdale Avenue | Low-Stress Bike Route | 0.2 | \$32,000 |
| Larkspur Drive | Low-Stress Bike Route | 0.6 | \$84,000 |
| Laurel Avenue / Barcelona Drive | Low-Stress Bike Route | 0.7 | \$91,000 |
| Lerida Avenue | Low-Stress Bike Route | 0.2 | \$21,000 |
| Lincoln Circle | Low-Stress Bike Route | 0.3 | \$40,000 |
| Ludeman Lane | Low-Stress Bike Route | 0.4 | \$56,000 |
| Magnolia Avenue / Park Place | Low-Stress Bike Route | 1.7 | \$237,000 |
| Meadow Glen Avenue | Bike Lane | 0.1 | \$51,000 |
| Millwood Drive | Low-Stress Bike Route | 0.1 | \$16,000 |
| Murchison Drive | Low-Stress Bike Route | 1.7 | \$240,000 |
| Old Bayshore Drive | Low-Stress Bike Route | 0.2 | \$28,000 |
| Palm Avenue | Low-Stress Bike Route | 0.6 | \$84,000 |
| Richmond Drive | Shared-Use Path | 0.2 | \$357,000 |
| Rollins Road / Camino Millennia | Low-Stress Bike Route | 0.3 | \$48,000 |
| San Anselmo Avenue / Santa Helena Avenue | Low-Stress Bike Route | 0.4 | \$55,000 |
| Spur Trail Access Connections at Palm Avenue and Mills High School | Access Connections | 0.1 | \$86,000 |
| Spur Trail Extension from Tioga Drive to Larkspur Drive | Shared-Use Path Extension | 0.4 | \$462,000 |

| Location | Improvement Type | Length (Miles) | Planning Level Cost |
|---|---------------------|----------------|----------------------|
| Monterey Shared Use Path Extension North | Shared-Use Path | 0.2 | \$357,000 |
| Monterey Shared Use Path Extension South | Shared-Use Path | 0.8 | \$1,026,000 |
| Millbrae Avenue Bikeway Improvements from Magnolia Avenue to Old Bayshore Highway | Separated Bike Lane | 2.2 | \$2,401,000 |
| Total | | 19.3 | \$ 14,074,000 |

Sources: Alameda County Transportation Commission Bicycle and Pedestrian Cost Calculator, Kittelson, 2021.

Table 6: Pedestrian Improvement Cost Estimates

| Location | Improvement Type | Length (Miles) / Locations | Planning Level Cost |
|---|--|----------------------------|---------------------|
| Broadway from Millbrae Avenue to Meadow Glen Avenue | Streetscape Improvements | 0.7 | \$4,508,000 |
| El Camino Real from Millbrae Avenue to Meadow Glen Avenue | Streetscape Improvements | 0.7 | \$4,508,000 |
| US 101 Bicycle and Pedestrian Overcrossing | Freeway Overcrossing | -- | \$6,500,000 |
| El Camino Real & Chadbourne Avenue | Multi-lane Uncontrolled Crosswalk Enhancements | 1 Intersection | \$1,258,000 |
| El Camino Real & Hillcrest Avenue | Signalized Intersection Improvements | 1 Intersection | \$227,000 |
| El Camino Real & Millwood Avenue | Signalized Intersection Improvements | 1 Intersection | \$227,000 |
| El Camino Real & Santa Helena Avenue | Multi-lane Uncontrolled Crosswalk Enhancements | 1 Intersection | \$294,000 |
| El Camino Real & Santa Inez Avenue | Signalized Intersection Improvements | 1 Intersection | \$227,000 |
| El Camino Real & Silva Avenue | Signalized Intersection Improvements | 1 Intersection | \$227,000 |
| El Camino Real & Victoria Avenue | Signalized Intersection Improvements | 1 Intersection | \$227,000 |
| El Camino Real & Murchison Avenue | Signalized Intersection Improvements | 1 Intersection | \$227,000 |
| Millbrae Avenue & US 101 Northbound and Southbound Ramps | Interchange Crossing Improvements | 2 Intersections | \$551,000 |
| Various Locations throughout the City | High-Visibility Crossing Striping | 86 Intersections | \$836,000 |
| Total | | 1.4 | \$19,817,000 |

Sources: Alameda County Transportation Commission Bicycle and Pedestrian Cost Calculator, Kittelson, 2021

CONCEPTUAL DESIGNS

Conceptual designs for several key projects to improve walking and biking in Millbrae have been developed to assist in moving walking and biking forward in the city as well as to assist in grant funding applications and project development. These concepts focus on key crossing and connections that could greatly enhance active transportation connectivity and help improve crossings of key barriers in the City.

EL CAMINO REAL CROSSING CONCEPTS

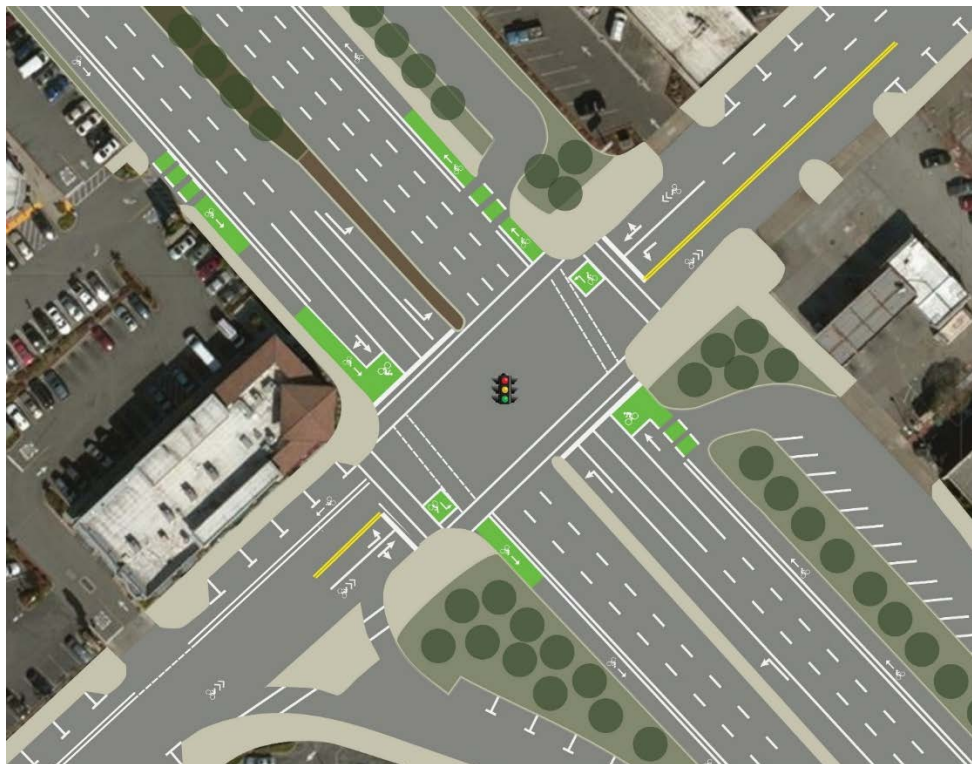
The crossings of El Camino Real represent a key barrier for bicyclists and pedestrians in Millbrae. The following concept designs highlight opportunities for improved bicycle and pedestrian crossings and safety at three example locations along El Camino Real. These cross-sections also illustrate how a protected cycle track with on-street parking removed could be added to provide a separated bikeway along El Camino Real. If in the future, if travel lanes could be reduced on El Camino Real, parking could be maintained while providing separated bikeways and transit loading islands.

El Camino Real & Murchison Avenue

The concept for this intersection, shown in Figure 12, focuses on improving safety for bicyclists making left turns from the conceptual southbound and northbound El Camino Real separated bike lane to connect with California Drive or Magnolia Avenue via Murchison Avenue. More assertive cyclists can choose to use the left-turn lane with motor vehicles, while allowing other cyclists to make two-stage left turns using the bike boxes. Intersection crossing markings have been added to indicate to motor vehicle drivers the presence of bicyclists and guide bicyclists through the intersection. From a pedestrian perspective, the frontage roads access points have been moved away from the intersection to clarify vehicle turn movements and reduce pedestrian crossing exposure through fewer and shorter crossing distances. Curb extensions surrounding nearby access points also increase the available sight distance to entering and exiting motor vehicles while also increasing bicyclist and pedestrian visibility.

The concept illustrates a separated bike lane concept that would require removal of parking along the corridor. A second alternative to reallocate one of the current vehicle lanes in each direction to retain parking and install a parking-protected separated bike lane is shown in Figure 15. The ultimate configuration for a bike facility and pedestrian improvements on El Camino Real will require coordination with Caltrans and project development consistent with the Caltrans process.

Figure 12. El Camino Real & Murchison Avenue Concept

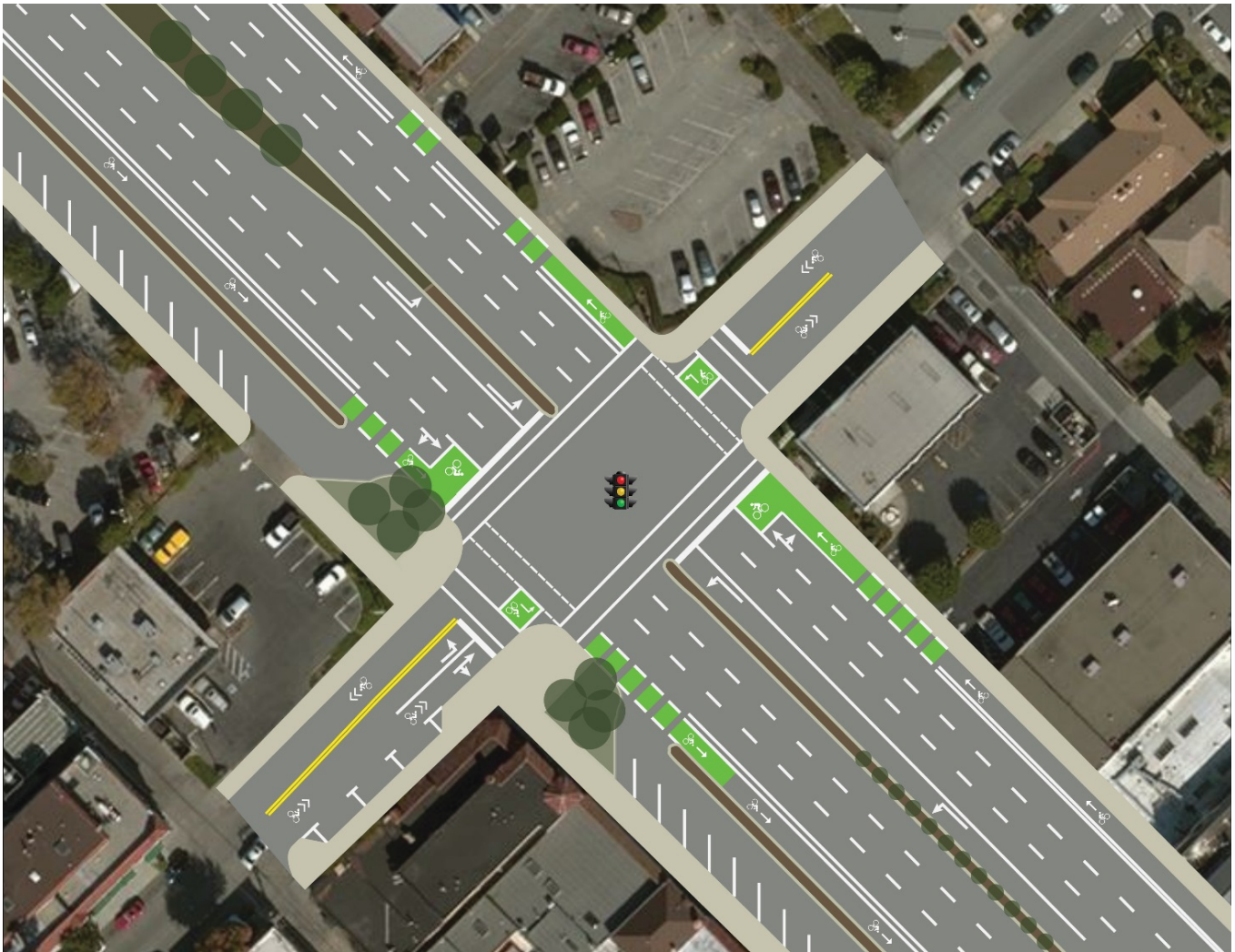


Source: Kittelson, 2021.

El Camino Real & Hillcrest Avenue

The Hillcrest Avenue concept, shown in Figure 13, is similar to the Murchison Avenue concept in that it seeks to increase predictability of movements for all users at the intersection and increase overall visibility. The frontage road access points have been connected directly to El Camino Real ahead of and just after the intersection to avoid conflicting movements from the existing side street exits/entrances. Following the Murchison Avenue approach, bicycle and pedestrian crossings have been improved by shortening crossing distances, providing two-stage turns via bike boxes, and providing tracking markings through the intersection. The concept illustrates a separated bike lane concept that would require removal of parking along the corridor. A second alternative to reallocate one of the current vehicle lanes in each direction to retain parking and install a parking-protected separated bike lane is shown in Figure 15. The ultimate configuration for a bike facility and pedestrian improvements on El Camino Real will require coordination with Caltrans and project development consistent with the Caltrans process.

Figure 13. El Camino Real & Hillcrest Avenue Concept



Source: Kittelson, 2021.

El Camino Real & Park Place/Santa Inez Avenue

The concept for the Park Place/Santa Inez Avenue intersection continues to emphasize the concepts used in the prior concept designs: shortened pedestrian crossings, tracking markings and two-stage turn bike boxes for bicyclists, and improved pavement markings to clarify user movements. Figure 14 shows how the Park Place approach to the intersection has been straightened to slow approaching vehicles into the intersection and provide improved sightlines. A curbed median has been provided to allow for a pedestrian refuge island while also preventing approaching or entering vehicles from drifting onto the wrong side of the road due to the skewed approach. Figure 15 demonstrates an additional concept has also been developed that illustrates an improved separated bike lane concept with parallel parking added along the corridor via the reduction of one vehicle through lane in each direction. The ultimate configuration for a bike facility and pedestrian improvements on El Camino Real will require coordination with Caltrans and project development consistent with the Caltrans process.

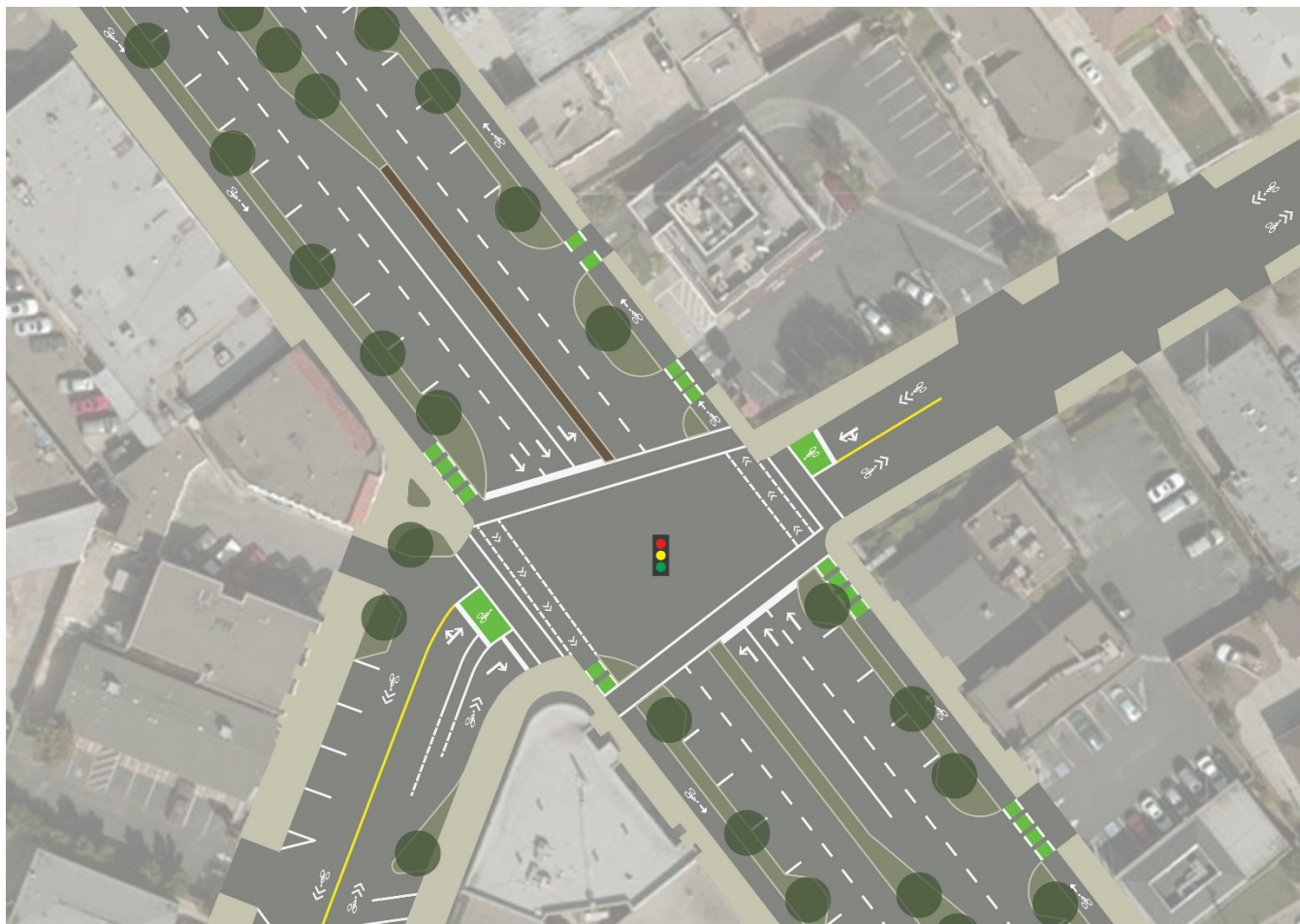
Figure 14. El Camino Real & Park Place/Santa Inez Avenue Concept – No Lane Reduction



Source: Kittelson, 2021.

If travel lanes could be reduced on this segment of El Camino Real, on-street parking could be maintained. The on-street parking would provide an additional buffer between vehicle traffic and the separated bike lane along the curb.

Figure 15: El Camino Real & Park Place/Santa Inez Avenue Concept – With Lane Reduction



Source: Kittelson, 2021.

El Camino Real & Chadbourne Avenue

The concept for the Chadbourne Avenue intersection shown in Figure 16 addresses the desire of pedestrians to cross El Camino Real after exiting the Millbrae Intermodal Station via Linden Avenue. The concept proposes installing a two-stage Pedestrian Hybrid Beacon installation that would allow pedestrians a protected crossing serving the bus stop north of Linden and pedestrians walking between downtown Millbrae and the Millbrae Intermodal Terminal. This project would require rebuilding the median island on El Camino Real near Chadbourne Avenue to provide a pedestrian refuge for the two-stage crossing, as well as extending the outer left-turn storage lane north to keep adequate storage for vehicles turning left at Millbrae Avenue. The concept illustrates a separated bike lane concept that would require removal of parking along the corridor. A second alternative to reallocate one of the current vehicle lanes in each direction to retain parking and install a parking-protected separated bike lane is shown in Figure 15. This project would require further study to understand design and operational impacts, as well as close coordination with Caltrans, which owns and maintains the El Camino Real right-of-way.

Figure 16. El Camino Real & Chadbourne Avenue Concept

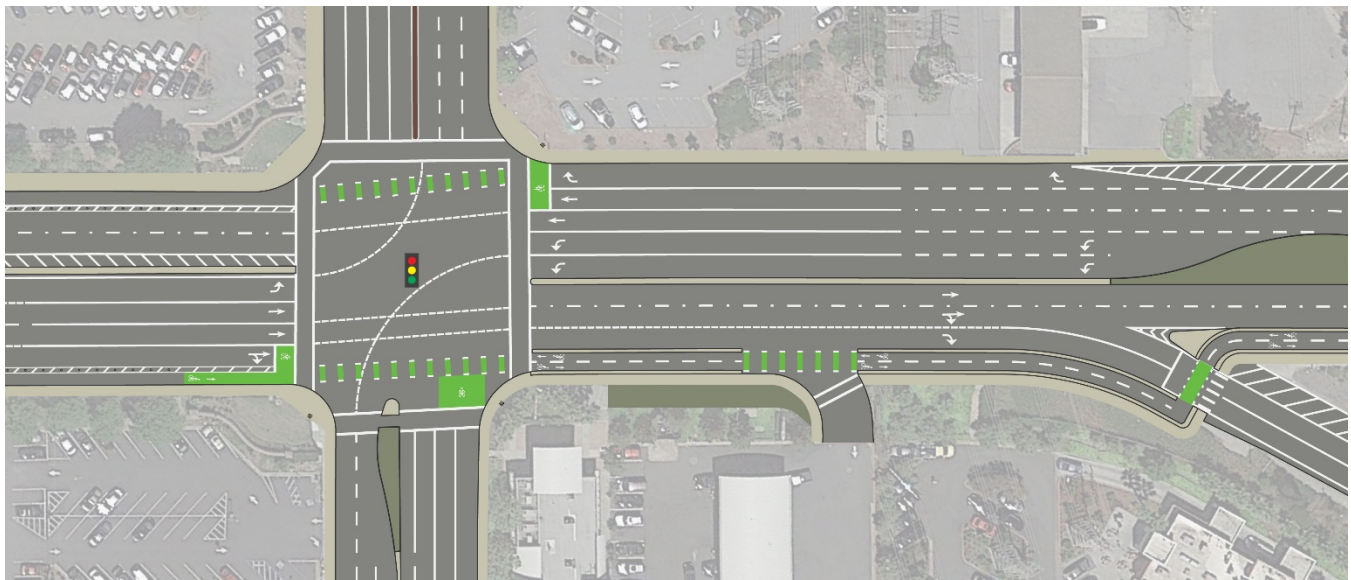


Source: Bottomley Urban Design, 2021.

EAST MILLBRAE AVENUE CONCEPT

Millbrae Avenue is a key roadway linking downtown Millbrae with the Intermodal Station and Bay Trail. Currently, bicycle and pedestrian facilities along the corridor are limited. With incoming transit-oriented development, the city has the opportunity to remake the corridor into a central bicycle and pedestrian corridor as shown in Figure 17. By removing one vehicle lane in each direction, buffered or flex-post separated bike lanes between El Camino Real and Rollins Avenue could be added to connect downtown Millbrae to BART. Continuing east, a two-way shared use path could be implemented to connect the Bay Trail to the BART station. Special consideration should be given to the interchange crossings to shorten crossing distances for people walking and biking as well as to manage vehicle speeds onto the ramp. Figure 17 shows the concept design for this long-range corridor vision as developed for the East Millbrae Avenue Systemic Safety Analysis Report. This project will require close coordination with Caltrans given the potential impacts to the ramp terminal intersections along Millbrae Avenue and connection to El Camino Real.

Figure 17. East Millbrae Avenue Concept



Source: Kittelson, 2021.

POTENTIAL FUNDING SOURCES

To implement the Millbrae Active Transportation Program, the city will need to identify additional funding sources beyond the city's general funds. Most funding for the improvements recommended in this plan are likely to come from federal, state, and regional grant programs. These grant programs are often competitive and will require the city to compete against other municipalities for funding. To help determine the most competitive grants, the most common federal, state, and regional grant funding programs have been summarized below.

FEDERAL FUNDING SOURCES

FHWA Transportation Investment Generating Economic Recovery Grants

The Transportation Investment Generating Economic Recovery Grants (TIGER) program provides federal grant funding for capital projects that have a significant impact at the national, regional, or metropolitan level. TIGER grant projects should improve infrastructure to a state or good repair, implement safety improvements, connect communities and people to jobs and services, or anchor economic revitalization and job growth in communities. TIGER grants are competitive at the national level.

STATE FUNDING SOURCES

Active Transportation Program

The California Active Transportation Program (ATP) consolidated multiple existing federal and state funding sources into a single program aimed at encouraging increased use of active transportation in the state. The program seeks to increase the proportion of active transportation trips, increase safety and mobility for non-motorized users, and provide a broad range of projects to benefit active transportation users. ATP call for project cycles are released biennially during even years, with funding adopted the following odd year.

Systemic Safety Analysis Report Program (SSARP)

The SSARP grant funding was established in 2016 to assist local agencies in performing safety analyses and preparing projects to pursue HSIP and other safety program grant applications. Jurisdictions can select their own focus for the safety analysis, provided it is consistent with the State Highway Safety Plan's goals. The first two rounds of funding were awarded in 2016 and 2017. Future funding rounds have not been announced at this time.

California Office of Traffic Safety (OTS) Grants

The California OTS provides grant funding to improve safety with a focus on planning, data records, education, enforcement, and encouragement efforts. Grants are typically released on an annual basis, with applications due in January.

Affordable Housing and Sustainable Communities (AHSC) Program

The AHSC grant program is administered by the California Strategic Growth Council and seeks to fund land-use, housing, transportation, and land preservation projects that support infill and compact development while also reducing greenhouse gas emissions. Projects eligible for AHSC funding must increase accessibility to affordable housing, employment centers, and key destinations through low-carbon transportation that reduce vehicle miles traveled. These projects may include transit-oriented development, integrated connectivity, or rural innovation projects.

REGIONAL FUNDING SOURCES

Regional Active Transportation Program

The state ATP program sets aside a share of the program's funding for regional distribution. The Metropolitan Transportation Commission (MTC) program functions in the same manner as the state ATP program, with projects competing for funding to make active transportation safer and more convenient. Projects that compete for the state ATP that are not selected can also compete at the regional level.

One Bay Area Grant (OBAG) Program

MTC's OBAG grant program provides funding for projects that invest in the region's Priority Development Areas or cities and counties that approve new housing construction and accept allocations through the Regional Housing Need Allocation (RHNA) process. OBAG grants are eligible for local street and road maintenance, streetscape enhancements, bicycle and pedestrian improvements, transportation planning, and Safe Routes to School projects.

Transportation Development Act (TDA) Article 3 Grants

TDA Article 3 grants provides annual funding for bicycle and pedestrian projects. Two percent of TDA funds in the county is used for TDA Article 3 and the City/County Association of Governments of San Mateo County (C/CAG) determines how to use the funds within San Mateo County.

San Mateo County Measure A Pedestrian and Bicycle Program

San Mateo County sets aside three percent of all sales tax revenue collected under Measure A specifically for projects dedicated to bicycle and pedestrian improvements. Funding for these projects includes bicycle and pedestrian overcrossings over busy highways.

Bicycle Facility Grant Program

The Bay Area Air Quality Management District (BAAQMD) is a competitive grant program to help expand the region's bicycle roadway network to reduce air pollution by facilitating mode shifts to clean forms of transportation. The grant program is open to public agencies within the BAAQMD jurisdiction. Eligible projects include bikeways as well as secure bike parking.

San Mateo County Bicycle Parking Reimbursement Program

San Mateo County offers a bicycle parking reimbursement program through Commute.org. The program provides funding for the purchase and installation of bicycle parking racks and lockers to encourage increased bicycling. Applicants will be reimbursed 50 percent of the total cost of purchasing and installing bicycle parking facilities up to \$500 per unit.