San Mateo Bicycle Master Plan

APRIL 2020 FINAL

CITY OF SAN MATEO CALIFORNIA

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Acknowledgments

City Council

Joe Goethals, *Mayor*
Eric Rodriguez, *Deputy Mayor*
Rick Bonilla
Amourence Lee
Diane Papan
Maureen Freschet *(former Councilmember)*

Sustainability & Infrastructure Commission

Rafael Reyes, *Chair*
Susan Rowinski
Greg St. Clair
Cliff Robbins
Jacqueline Nunez

City Staff

Brad Underwood, *Public Works Director*
Matthew Zucca, *Deputy Director*
Sue-Ellen Atkinson, *Principal Transportation Planner*
Nicolette Chan, *Assistant Transportation Planner*
Henry Choi, *Associate Engineer*

Technical Advisory Group

Jay Yu, *Engineering Manager*
Bethany Lopez, *Senior Engineer*
Matthew Earnshaw, *Police Department*
Roscoe Mata, *Community Development Department*
Julia Klein, *Community Development Department*
Andrea Chow, *City Manager's Office*
Kevin Kobayashi, *Parks and Recreation Department*
Melinda Martin, *Fire Department*

Citizen Advisory Group

Ben Toy
Carol Steinfeld
Dan Provence
Elaine Salinger
Fritz Knochenhauer
Linda Bogue
Mark Eliot
Monika Lee
Nicklas Johnson
Panah Stauffer
Randy Heen
Rich Neve
Michael Ragan

Consultant Team

Toole Design

Brooke DuBose, *AICP*
Megan Wooley-Ousdahl, *AICP*
Jessica Zdeb, *AICP*
Joel Shaffer, *EIT*
Michael Hintze, *AICP*
Adam Wood, *AICP*
Brian Almdale
Belinda Judelman
Laura Krull

Parisi Transportation Consulting

Andrew Lee, *PE, TE*
Patrick Golier

David J Powers

Amie Ashton

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Contents

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Executive Summary

San Mateo is at an exciting inflection point as it celebrates its 125th anniversary. The city is growing, adding new residents and business each year. The City is mindful of this new growth and is actively planning for a thriving San Mateo through efforts such as the General Plan 2040 and this bicycle and mobility master plan.

To maintain the high quality of life that makes San Mateo a desirable place to live, work, and play, San Mateo's transportation network must adapt to and complement the community's interests and ongoing land use changes. San Mateans have expressed a strong interest in making bicycling and other forms of micromobility (e.g., bikeshare and electric scooters) safer, more convenient, and more connected throughout the city. Residents and visitors want to be comfortable bicycling and using other active modes as they travel throughout San Mateo.

The 2020 San Mateo Bicycle Master Plan (Plan) is the culmination of over a year of robust community engagement, existing conditions and data analysis, and planning and design work. This Plan is an update of the City's 2011 Bicycle Master Plan and serves as a blueprint for expanding and improving the San Mateo bicycle and mobility network in the coming years.

Plan goals include:

Connectivity.

Seamless bicycle connectivity to major destinations throughout the city

Equity.

Equitable infrastructure investments that prioritize underserved communities

Safety and comfort.

Safe and comfortable riding for people of all ages and abilities

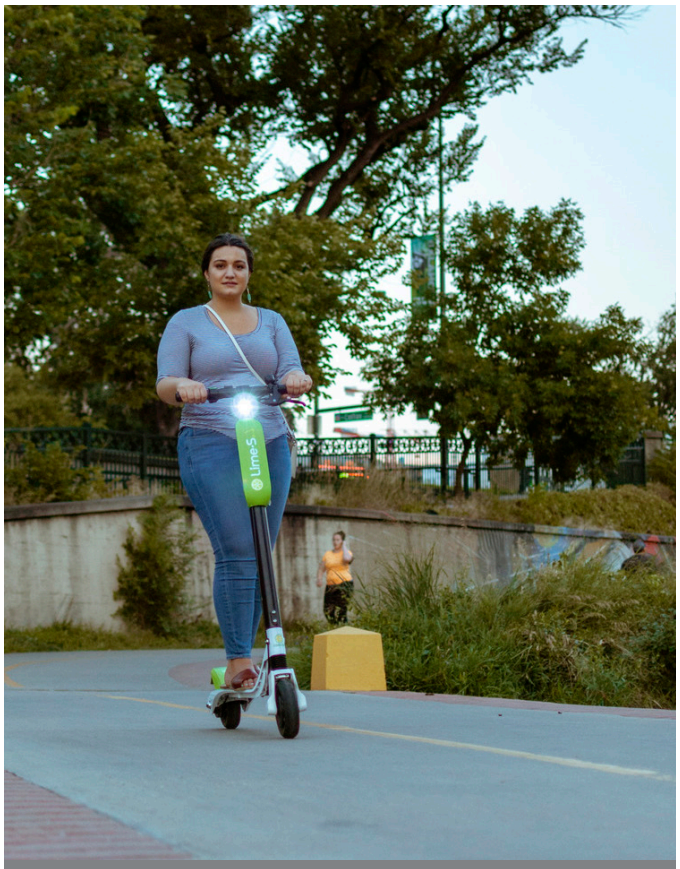
Ridership.

A significant mode shift from driving to bicycling and other forms of micromobility for trips around town

Community.

Creation of a robust active transportation community in San Mateo

The Plan provides a shared vision for bicycle and micromobility transportation priorities and a comprehensive framework for implementation. It identifies a priority infrastructure network for citywide projects, emphasizing local, short trips to key destinations like schools and parks, connectivity within and between neighborhoods, and connections to transit. The Plan also includes policy and programmatic recommendations that support proposed network infrastructure as well as a prioritized project list, planning-level cost estimates, and a list of potential funding sources. This implementation strategy will help the City turn today's vision of a safe, connected, and comprehensive bicycle and micromobility network into tomorrow's reality.



ES.1. This Plan also serves users of micromobility such as e-scooters.

1 Introduction

San Mateo is currently home to approximately 56 miles of bikeways. Many of these facilities were constructed since the adoption of the initial Bicycle Master Plan in 2011. While the City has made much progress expanding its mobility network since the 2011 Plan, there is a desire to build on that base network and provide facilities that are more attractive and feel safer to a larger portion of the population. To develop this enhanced network, the City of San Mateo has taken the significant step of expanding upon its 2011 work with the 2020 San Mateo Bicycle Master Plan (Plan).

The purpose of the Plan is to build upon the existing mobility network with visionary infrastructure projects and supporting programs that promote bicycling and use of personal mobility devices as alternatives to driving in San Mateo. Key goals in the development of this Plan include:

- Seamless connectivity to major destinations, including schools, parks, train stations, and commercial areas;
- Safety and comfort for people of all ages and abilities;
- Equitable investments that prioritize bicycle and micromobility network development in historically underinvested communities;
- Development of a network and support programs that result in a significant shift to bicycling and using micromobility for commuting and short trips around town; and
- Fostering a robust active transportation community.

The update of the Bicycle Master Plan is occurring simultaneously with the comprehensive update of the city's General Plan. The General Plan 2040 will include a vision, provide a policy framework for how the city should grow and identify the implementing actions to enhance quality of life for the community. The General Plan update is a multi-year community engagement and planning effort which includes an update of the Circulation Element and setting goals for the city's multi-modal circulation network.

The Bicycle Master Plan is intended to inform community discussions regarding the city's multi-modal circulation network during the General Plan update effort. As the two plan updates are occurring in tandem, the recommendations of the two plans are informing one another and strengthening the City's commitment to the development of a safe, comfortable, and connected mobility network.

In addition to developing the Bicycle Master Plan, the City is taking immediate action to improving bicycling and using micromobility by building high comfort facilities such as the city's first bicycle boulevard on 28th Avenue in the Hillsdale neighborhood. The bicycle boulevard will connect to the Hillsdale Caltrain station and will include traffic calming treatments to create a low-stress facility.

Plan at a Glance

This Bicycle Master Plan is organized into six chapters and eight appendices (Table 1.1).

Table 1.1: Chapters and Appendices of the 2020 San Mateo Bicycle Master Plan

Chapter	Name	Focus
Chapter 1	Introduction	Introduces the Plan including background and the planning process
Chapter 2	Goals and Objectives	Discusses goals and objectives
Chapter 3	Existing Bicycle Network	Summarizes existing bicycling conditions in San Mateo
Chapter 4	Proposed Bicycle Network	Presents and describes the proposed bicycle network
Chapter 5	Support Programs and Policies	Provides recommendations for programs that support bicycling
Chapter 6	Implementation and Funding	Describes Plan implementation and funding strategies
Appendix	**Name**	**Focus**
Appendix A	Public Outreach Overview	Includes an overview of community engagement conducted over the course of the planning process
Appendix B	Goals, Plans, and Policies Review	Provides an overview of local, regional, and state plans and policies related to bicycling
Appendix C	Existing Conditions Report	Details existing conditions in San Mateo
Appendix D	Data Analysis Report	Reports on data analysis conducted as a part of the planning process
Appendix E	Proposed Bicycle Network Project List and Cost Estimates	Provides a full list of the Proposed Bicycle network projects with cost estimates
Appendix F	Wayfinding Guidance	Outlines supplemental wayfinding guidance for bicyclists and users of micromobility
Appendix G	Funding Sources	Lists potential funding sources to implement proposed projects and programs
Appendix H	Caltrans Active Transportation Program Requirements	Outlines Caltrans Active Transportation Plan (ATP) project scoring criteria

Building the Momentum

It is an exciting time for San Mateo. There are several major development and transportation projects underway, including the continued redevelopment of the Bay Meadows neighborhood into a higher density residential and commercial area and the Caltrain grade separation project which will enhance east-west connectivity in the city.

While beneficial to the community as a whole, San Mateo's rapid growth has had some unintended consequences. As more people live and work in San Mateo, the roadways have gotten busier and more congested with vehicular traffic. Trips around town by car are taking longer to make, so it's important to provide residents with attractive and safe transportation options outside of their vehicles. To this end, and to preserve residents' quality of life and promote sustainability, San Mateo has committed to enhancing its mobility network and creating a strong active transportation culture within the city.

Opportunities & Challenges

Currently, San Mateo has several good north-south on-street facilities connecting downtown with surrounding neighborhoods. It is also home to a portion of the popular Bay Trail, which runs along its shoreline from the Coyote Point Recreational Area to Mariners Point. The Bay Trail is truly the only facility in the existing network that is well-suited for people of all ages and skill levels due to its separation from vehicular traffic. Other existing facilities, such as bike lanes along major arterials with high traffic volumes and speeds, can be stressful for even the most confident riders.

San Mateo has many enthusiastic recreational riders, who enjoy riding along the Bay Trail or in the hills to the west of the city; however, few people bike for utilitarian purposes such as commuting for work or school or running errands. According to the 2012-2016 Five-Year Estimates of the American Community Survey, only 1.4% of San Mateans use a bike to commute (see Appendix C: Existing Conditions Report).

San Mateo's roadway network is a dense grid in the downtown area, but further from the center the city has a traditional suburban form with disconnected local residential streets and wide, higher speed arterial streets. San Mateo's arterials serve as crosstown connections and provide freeway access, but for many people, this makes bicycling and using micromobility difficult. Major arterial roadways such as Alameda de las Pulgas, El Camino Real, and Hillsdale Boulevard accommodate high vehicle volumes and speeds, and lack continuous facilities. Where facilities are present, bike lane markings frequently end in advance of intersections, driveways, and interchanges which can create a stressful bicycling environment. The City of San Mateo is dedicated to resolving these challenges. The City has already made great strides in implementing the bicycle network from its 2011 Plan, and is committed to further strengthening its mobility network by:

- Identifying lower-stress facilities along low speed streets;
- Providing bicyclists and micromobility users with additional protection on roads with high vehicle speeds and volumes through the construction of buffered bike lanes or physically separated bike lanes;
- Developing better east-west connections throughout the city and across barriers such as highways 101 and 92, El Camino Real, and the Caltrain railroad tracks;
- Building more connectivity between off-street paths like the Bay Trail and on-street facilities;
- Enhancing facilities through conflict areas such as intersections and interchanges; and
- Increasing connectivity to major destinations throughout the city.

This Plan incorporates each of these elements and provides a blueprint for expanding the mobility network that is accessible and comfortable for all users.

Planning Process

This Plan is the culmination of over a year of community engagement and data-driven analysis of existing conditions and needs. The planning process and the Plan recommendations were informed by existing conditions data and a variety of stakeholders, including input from community members, City staff, and several advisory groups. There were four rounds of community engagement which corresponded to key milestones in the Plan's development. For more details about the community engagement process, see Appendix A: Public Outreach Overview.

Common Themes of Outreach

There were several themes that emerged during the engagement process (Table 1.2). This input, paired with data-driven analysis of existing conditions and areas that may have the potential for high bicycle and micromobility demand, formed the basis of Plan's Proposed Bicycle Network and supporting plans and policies.

Table 1.2: Themes from the Plan's four phases of community engagement

Safety and Comfort	• The existing mobility network is uncomfortable for most residents, many who self-identify as "Interested but Concerned" or "Somewhat Confident" bicyclists. • The most popular routes are off-street or located on streets with low-speed, low-volume traffic. • Recommendations for separated bike lanes are popular. • Support for projects that address areas with a history of bicycle collisions.
Connectivity	• The existing network is not well-connected to destinations, and facilities are not continuous throughout the city. • Barriers such as freeways and the Caltrain tracks result in circuitous and/or stressful routes to ride on. • There is special interest in facilities that serve Caltrain stations, parks, and schools.
Ease of Use	• The existing network is confusing to navigate because it is disconnected and few wayfinding signs exist to guide bicyclists and micromobility users.
Overall	• Expanded mobility infrastructure and support facilities (e.g., bike racks) are needed. • Additional awareness and education are needed between drivers and bicyclists. • There is support for bicycle facilities and other alternatives to driving given San Mateo's recent rapid growth.

Project Kick-Off

The City held the first round of engagement in December 2018 at the San Mateo Public Library, which served as a project kick-off workshop with the community. During this workshop, the City and consultant team sought input on what it is like to bicycle and use micromobility in San Mateo today, and what this bicycling should be like in the future (Figure 1.1). In addition to the workshop, a table was provided in the library's lobby to provide passersby with information on the Plan and encourage them to attend the workshop. Approximately 40 participants attended the kick-off event.

Community Bike Tour

The City held the second round of engagement in March 2019. This event featured a bike tour of the city with the goal to gather input on existing and desired bicycling conditions in the city, further publicize the Plan, and provide residents with first-hand experience riding in San Mateo's existing bicycle network (Figure 1.2). The bike tour also included a temporary separated bike lane demonstration that helped community members better understand different types of bicycle facilities and treatments. Approximately 40 participants went on the bike tour, including council members and the mayor.

Figure 1.1: Participants at the Project Kick-off meeting provide input on where they would like new facilities in San Mateo.

Summer Pop-Up Events

The project team held the third – and largest – round of outreach in June and July 2019 (Figure 1.4). City staff and the project team hosted six pop-up events at the following locations:

- College of San Mateo Farmers Market
- Central Park Music Series
- Martin Luther King Community Center
- Hillsdale Caltrain station
- Seal Point Park
- July 4th in Central Park

During the events, City staff and the project team sought input on the bicycle network. In all, over 250 people provided input during this phase of outreach.

Public Draft Plan Review

The Draft Plan Open House was held on December 7, 2019. During the Open House, participants were invited to share their input on the prioritized network, draft support programs and policies, and overall draft Plan.

Participants were also invited to share why they are most excited about the Plan (see Figure 1.3).

Figure 1.2: Safety briefing before Community Bike Tour in March.

Figure 1.3: Participants shared why they are most excited about this Plan.

Online Outreach

In order to maximize the Plan's publicity, the project team developed online outreach elements. Primarily, the City hosted a project-specific page on its website. The project page provided an overview of the project purpose and schedule, informed community members of upcoming outreach events, and included a section for the public to sign up for email notifications and leave comments for project staff. Furthermore, the consultant team developed an online interactive map, called a "Wikimap", which was linked on the website during the initial portion of the project (November 2018 to March 2019) to collect site-specific information on where participants experience bike-related issues, where they typically ride a bike, and where they would like to ride a bike in the future.

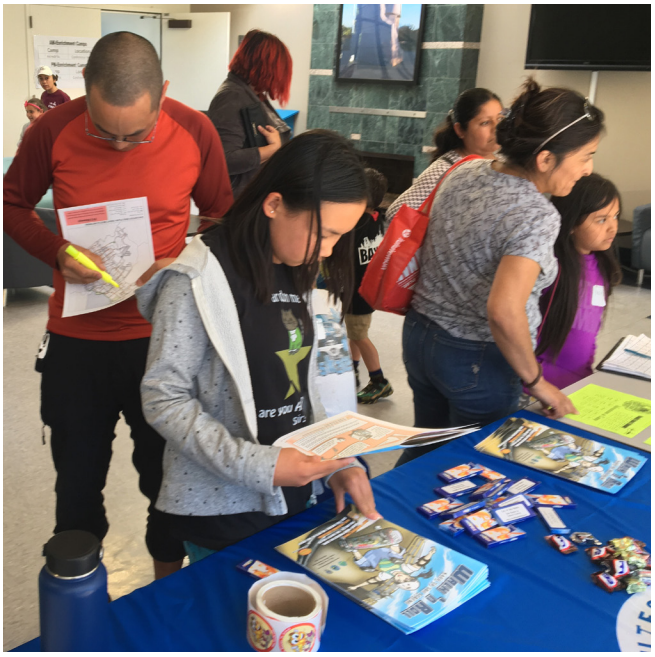


Figure 1.4: Project team tabling at the Martin Luther King Community Center in North Central San Mateo as part of the summer pop-up events.

Advisory Groups

Citizen Advisory Group

In addition to input from community members, the development of the Plan was also guided by strategic input from several stakeholder groups. The Citizen Advisory Group (CAG) was comprised of residents from neighborhoods throughout San Mateo and representatives from local organizations. The project team was intentional in its selection of CAG members to ensure representation from all neighborhoods in the city. The CAG provided feedback to ensure that recommendations made as part of the Bicycle Master Plan coincide with the differing needs of San Mateo's diverse neighborhoods, businesses, and community groups. The CAG met four times over the course of the project, coinciding with each of the outreach events outlined previously.

Technical Advisory Group

The Technical Advisory Group (TAG) included key representatives from City of San Mateo departments, including Public Works, Community Development, Police, Fire, and Parks and Recreation. TAG feedback ensured that the Plan corresponds with and supports other City-led efforts and services. Like the CAG, the TAG met four times throughout the project.

Sustainability & Infrastructure Commission

The Sustainability and Infrastructure Commission (SIC) is a city commission that advises City Council on policies and programs related to environmental sustainability, transportation, and infrastructure. SIC input ensured that the Bicycle Master Plan works towards the same sustainability and environmental goals as other city efforts. The project team attended five SIC meetings over the course of the project.

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2 Goals & Objectives

The goals of this Plan are a reflection of San Mateo's values and priorities and guide the infrastructure and programmatic recommendations of this Plan. The goals of the Plan are:

CONNECTIVITY

SAFETY & COMFORT

COMMUNITY

EQUITY

RIDERSHIP

The goals and objectives were developed collaboratively by the community, stakeholder groups, and City staff. They also build upon the goals and objectives from the 2011 San Mateo Bicycle Master Plan.

Moving forward, the goals and objectives will be used to measure the City's progress towards implementation of the Plan over time. Refer to Appendix B: Goals, Plans, and Policies Review for a detailed summary of how the goals and objectives relate to other City goals and plans.

Goals & Objectives

Goal 1: Connectivity

Develop a low-stress, comfortable bicycle and mobility network suitable for people of all ages and abilities.

Objectives

- Build and maintain a dense, continuous, context-sensitive, and low-stress[1] network of on- and off-street facilities that seamlessly connect to destinations throughout San Mateo.
- Ensure that plentiful, high-quality support facilities (e.g., bicycle parking) that complement the bicycle and micromobility network are installed at key community and transit destinations as well as commercial and residential developments.
- Connect facilities in San Mateo to existing and planned facilities in adjacent communities.
- Identify and pursue reliable sources of funding to implement proposed projects.

Metrics

The following metrics will be used by the City to measure progress on the Connectivity goal.

Metric	Target
Miles of new or upgraded facilities with a Level of Traffic Stress rating of 1 or 2	5 miles per year*
Number of support facility projects installed	3 projects per year*
Number of new projects connecting to key destinations such as schools, parks, and transit	2 projects per year*
Pursuit of annual ATP funding	2 ATP applications per year

** These targets may be revised based on funding availability and City staff capacity.*

1 "Low-stress" is defined as a network that serves bicyclists of all ages and abilities. Low-stress bikeways are comfortable for people who classify themselves as "Interested but Concerned" bicyclists. Using the Level of Traffic Stress (LTS) methodology described in Chapter 3: Existing Bicycle Network, low-stress facilities have an LTS score of 1 or 2.

Goal 2: Safety & Comfort

Improve safety and increase the level of comfort and security for people bicycling or using bikeways.

Objectives

- Install low-stress facilities and treatments that reduce conflicts between bicyclists and other roadways users including drivers, pedestrians, and users of micromobility systems[2] (e.g., people on e-scooters).
- Create an easily-navigable network that is intuitive for bicyclists and users of micromobility to use and understand.
- Provide safe, direct bicycle and micromobility connections across barriers, including: intersections, freeways, and the Caltrain tracks.
- Ensure facilities are comfortable to use through increased lighting and regularly-scheduled maintenance.
- Focus on programming that educates and encourages people to bicycle and use micromobility and builds confidence.

Metrics

The following metrics will be used by the City to measure progress on the Safety and Comfort goal.

Metric	Target
Number of fatal and injury bicycle crashes	Using 2018 data as baseline, reduce the number of fatal and injury bicycle crashes by 20% two years after
Funding allocated to wayfinding and navigation projects	$25,000 allocated annually to wayfinding and navigation projects
Number of intersection improvements or barrier-crossing-enhancement projects completed	3 projects per year
Roadway maintenance funding allocated for bicycle infrastructure (e.g., street sweeping, lighting, etc.)	5% of annual roadway maintenance budget allocated specifically for bicycle infrastructure maintenance
Bicycle and micromobility education events conducted or supported annually	_

2 For additional information on micromobility see Appendix B: Goals, Plan, and Policies Review.

Goal 3: Community

Foster a bicycle- and micromobility-friendly community outlook.

Objectives

- Implement programs, initiatives, and support infrastructure that promote understanding between road users and educate all road users (i.e., pedestrians, bicyclists, users of micromobility, and drivers) about the rules of the road and how to safely travel to their destinations.
- Support community initiatives that encourage bicycling and micromobility use and help make these viable transportation options and enjoyable parts of daily life.
- Create a safe and well-connected bicycle and mobility network that fosters a community where people choose to bike or use micromobility instead of driving by default.
- Promote active transportation network improvements as a means of improving community livability.

Metrics

The following metrics will be used by the City to measure progress on the Community goal.

Metric	Target
Creation of annual or biannual state of bicycling and micromobility report.	–
Number of education programs and encouragement activities targeting all roadway users conducted or supported annually.	–
League of American Bicyclists rating	Increase rating from Bronze to Gold within 5 years of Plan adoption

Goal 4: Equity

Create a comfortable bicycle and micromobility network that connects to all neighborhoods throughout San Mateo and serves people of all ages, abilities, and socioeconomic statuses.

Objective

- Prioritize network connections to historically underserved populations and neighborhoods (i.e., communities of color, non-English speakers, and socioeconomically disadvantaged households).
- Implement inclusive bicycling and micromobility programs, initiatives, and outreach.
- Identify opportunities to increase access to bicycling and micromobility use among traditionally underserved communities, such as through bike light or helmet giveaways or low-income discount programs for micromobility programs.

Metrics

The following metrics will be used by the City to measure progress on the Equity goal.

Metric	Target
Percentage of historically underserved households within ¼ mile of a low-stress (i.e., LTS 1 or 2) facility	50% within 2 years of Plan adoption, 100% within 5 years of adoption
Number of programs or activities targeting underserved populations conducted or supported	–

Goal 5: Ridership

Increase the use of bicycles and other forms of active transportation for all trip purposes.

Objective

- Reduce dependency on driving, especially for short trips around town, by creating a comfortable environment for bicycling and micromobility use.
- Support Safe Routes to School and other related efforts to encourage more students to bike, roll, or walk to school.

Metrics

The following metrics will be used by the City to measure progress on the Ridership goal.

Metric	Target
Percent change of trips made by bicycle or micromobility device[3]	25% increase within 5 years of Plan adoption, 50% increase within 10 years of Plan adoption
Percentage of Caltrain riders accessing Caltrain stations by bike, based on Caltrain surveys	10% within 5 years of Plan adoption, 20% within 10 years of Plan adoption
Percent change in share of commute trips made by bicycling	25% increase in bicycle commuting within 5 years of Plan adoption, 50% increase in bike commuting within 10 years of adoption
Percent change in students walking and bicycling to school	25% increase within 5 years of Plan adoption, 50% increase within 10 years of adoption

3 One of the best ways to measure the percent change of trips made by bicycle is to conduct regular bicycle counts. In the medium to long-term, the City of San Mateo can conduct annual bicycle counts for the purpose of measuring this metric. In the short-term, the City can build upon existing count data from San Mateo County or new developments. The City, or in partnership with another organization, could also organize volunteers to conduct the counts. More information about how to do this can be found through the National Pedestrian and Bicycle Demonstration Project: http://bikepeddocumentation.org/index.php

3 Existing Bicycle Network

An assessment of current bicycling and micro-mobility conditions provides a basis to develop recommendations for the proposed bicycle network. This chapter presents an assessment of existing facilities; bicycle collision trends; and bicycling conditions, as assessed via network, connectivity, and potential demand analyses. These analyses help assess how well the existing network serves bicyclists and users of micromobility devices (e.g., bikeshare and electric scooters). For more information on these analyses, refer to Appendix C: Existing Conditions Report and Appendix D: Data Analysis Report.

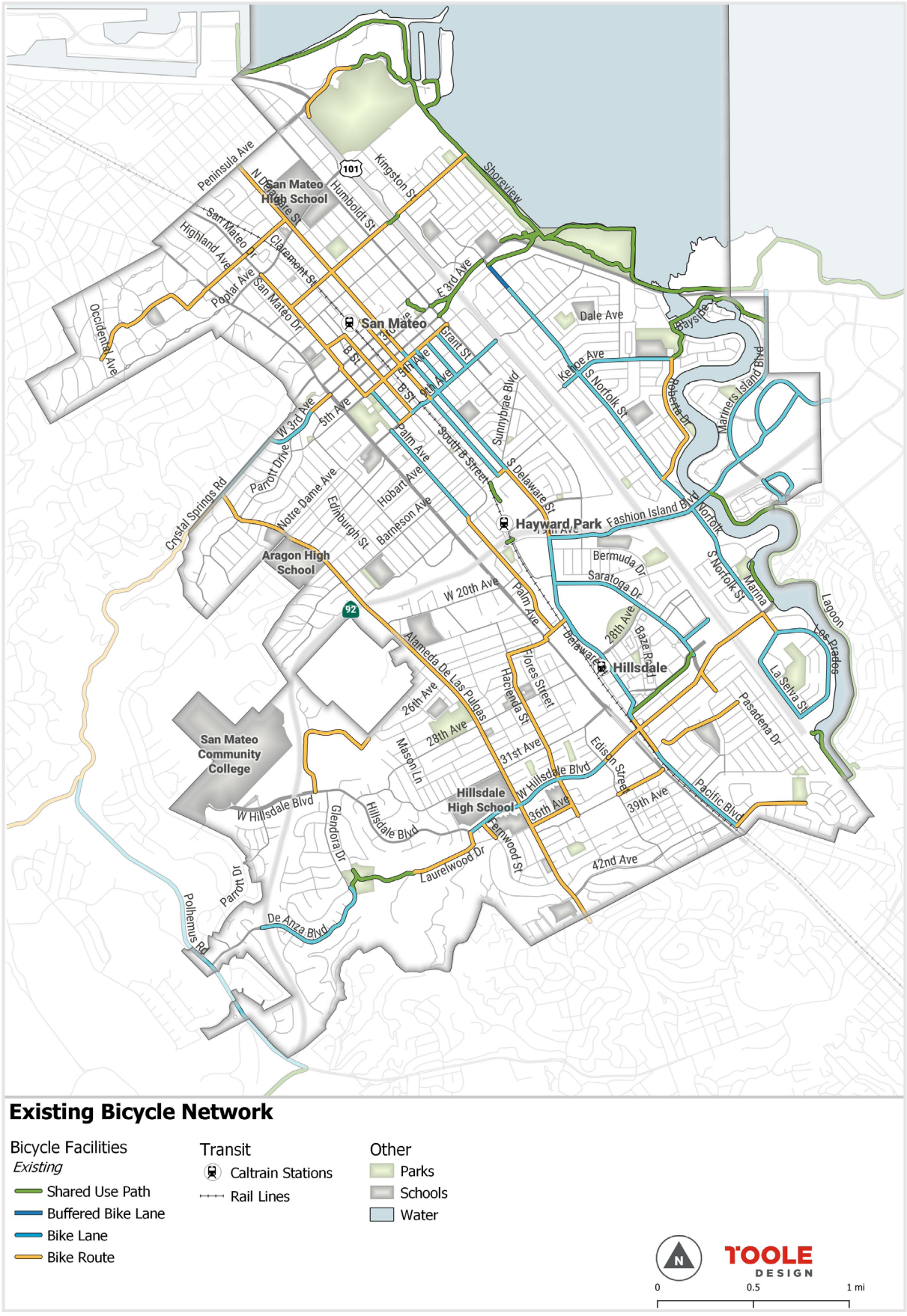
In addition to physical existing conditions, San Mateo has several adopted plans and policies that influence the City's transportation investments and priorities. These policies and other supportive programs are summarized in Chapter 5: Support Programs and Policies. For more information about San Mateo's bicycle-related plans and policies, refer to Appendix B: Goals, Plans, and Policies Review.

Existing Bicycle Network

Land Use and Character

Comprising 16 square miles, San Mateo is located in northeastern San Mateo County, on the west side of the San Francisco Bay. San Mateo has a dense and vibrant downtown core surrounded by mostly residential neighborhoods (see Figure 3.1). This, in conjunction with its mostly grid-like street network, makes San Mateo well-positioned for active transportation. However, the city's overall land use and workforce patterns have resulted in primarily auto-centric development and transportation patterns. Auto-centric development, which often does not focus on well-designed bicycle and pedestrian connections between land uses (such as residential and commercial), has resulted in few existing facilities that are comfortable for bicyclists and other micromobility users of all ages and abilities.

Figure 3.1: Existing Bikeways in San Mateo



San Mateo's mild temperatures and generally dry weather make for an optimal climate for bicycling and micromobility. The city's topography is relatively flat, which can make bicycling to school or work, or to run errands, more attractive and very feasible. The city is also adjacent to regional bikeways such as the bike lane along Cañada Road. However, some of the bordering geography and roadway network makes intra-city and -county bicycling difficult. Highways 101, 92, and 82 divide parts of the city and do not include crossings suitable for bicyclists of all ages and abilities. Currently, two planning processes are underway which are aiming to address intra-county walking and biking – the San Mateo County Comprehensive Bicycle and Pedestrian Plan led by the City/County Association of Governments (C/CAG) of San Mateo County and the Unincorporated San Mateo County Active Transportation Plan led by the San Mateo County Office of Sustainability.

Existing Bikeways

The City of San Mateo's existing bicycle network includes approximately 56 miles of bike lanes, bike routes, and shared use paths (see Table 3.1). Some bikeways, such as the regional San Francisco Bay Trail, are a pleasure for all to use. Other bikeways, such as bike lanes and bike routes along major arterials with high traffic volumes and speeds, provide access for some, but can be stressful for most bicyclists and micromobility users.

A map of the existing network is illustrated in Figure 3.1. For a more detailed assessment of San Mateo's existing bikeways, including a discussion of facility best practices, and other types of bikeways present in the city, such as intersection treatments and pavement markings, refer to Appendix C: Existing Conditions Report.

Table 3.1: Length of Existing Facilities

Facility Type	Existing Mileage (approximate)
Shared-Use Path (Class I)	15.6
Separated Bike Lane (Class IV)	0
Buffered Bike Lane (Class II)	0.1
Bike Lane (Class II)	20.7
Bicycle Boulevard (Class III)	0
Bike Route (Class III)	19.6
Total	**56 miles**

Currently, existing bikeways are sprinkled throughout San Mateo, but do not provide a fully connected network. Most bikeways, especially the shared use paths, are located east of Highway 101. The City's network offers multiple choices for north-south connections, such as Delaware Street/Pacific Boulevard, Norfolk Street, Palm Avenue, and Alameda De Las Pulgas. However, the city has few east-west connections. The longest continuous bikeway is located on Hillsdale Boulevard, which mainly consists of bike routes and bike lanes. Most bikeways are located on main roads, and a few branch onto slower streets within neighborhoods.

Throughout the city, bike lanes frequently end in advance of intersections, driveways, and interchanges. These points are where bicyclists and motorists are most likely to come into conflict, and as such where bicyclists encounter the highest levels of stress. Providing safe and comfortable transitions through intersections and at driveways and interchanges is an important part of creating a comfortable bicycle network.

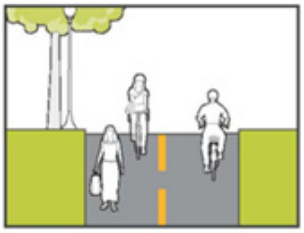
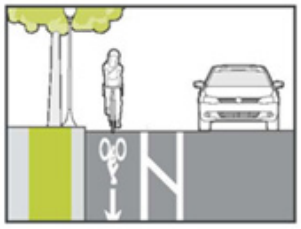
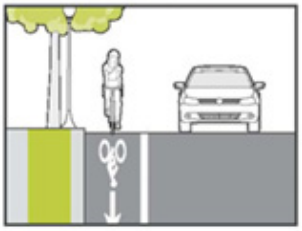
Most schools are not directly served by existing bikeways with the exception of San Mateo High School, Hillsdale High School, and Sunnybrae Elementary School. In regards to transit, Hayward Park Station is not directly served by a bikeway, but the San Mateo and Hillsdale Stations are each served by at least one bikeway.

By implementing this Plan, the City of San Mateo can enhance the existing network and create a low-stress bicycle network that can serve people of all ages and abilities, create stronger connections to community destinations, and better link neighborhoods

throughout the city. Chapter 4: Proposed Bicycle Network provides details about the recommended bicycle network and treatment changes.

The existing bicycle network in San Mateo consists of the bikeways and supportive treatments discussed below. The existing bikeways are presented in order of level of comfort, as measured by level of separation between motor vehicles and bicyclists, with the most comfortable bikeways listed first (Table 3.2).

Table 3.2: Existing Bicycle Facility Types in San Mateo

Facility Type	Facility Description
Shared Use Path 	• Bicyclists ride on off-road pathways designed for both bicyclists and pedestrians • Low-stress facility type with the least interaction between bicyclists and vehicles (compared to other facility types) • Caltrans classification: Class I • **Examples in San Mateo:** San Francisco Bay Trail, Foster City Levee Pedway/Bikeway, and Pacific Boulevard
Buffered Bike Lane 	• Bicyclists ride adjacent to vehicular traffic in a designated bicycle lane; the bicycle lane is augmented with a striped buffer area that neither vehicles nor bicyclists should use • Because the buffer provides additional horizontal separation between vehicles and bicyclists, buffered bike lanes are appropriate for roadways with medium vehicle speeds (i.e., 25-30 mph) and medium vehicle volumes (i.e., 3,000-6,000 vehicles per day) • Caltrans classification: Class II • **Example in San Mateo:** Norfolk Street south of 3rd Avenue
Bike Lane 	• Bicyclists ride adjacent to vehicular traffic in a designated lane • In order to be low-stress, bike lanes must only be installed on roadways with medium-to-low vehicle speeds (i.e., less than 30 mph) and vehicle volumes (i.e., less than 6,000 vehicles per day) • Caltrans classification: Class II • **Examples in San Mateo:** Crystal Springs Road, Fashion Island Boulevard, Saratoga Avenue, and 1st Avenue
Bike Route 	• Bicyclists share the lane with vehicular traffic • Bicycle signage and pavement markings may be included to increase driver awareness of bicyclists and aid bicyclists with navigation • To remain low-stress, bike routes must only be applied on corridors with low vehicular traffic speeds (i.e., less than 25 mph) and volumes (i.e., less than 3,000 vehicles per day) • Caltrans classification: Class III • **Examples in San Mateo:** Alameda de las Pulgas, Hillsdale Boulevard, and Monte Diablo Avenue

Bicyclist and Pedestrian Bridges

Two bicycle and pedestrian bridges are located in the City of San Mateo; both provide a protected, separate facility for bicyclists and pedestrians from motor vehicle traffic.

The 3rd Avenue Bicyclist and Pedestrian Bridge, from S Humboldt Street to S Norfolk Street, is a grade-separated bridge that runs between the east- and west-bound 3rd Avenue travel lanes. While the bridge provides a protected way for bicyclists and pedestrians to navigate this area, smoother transitions are needed for bicyclists and pedestrians who are trying to get on and off the bridge (see Figure 3.2).

Another bicyclist and pedestrian bridge spans Highway 101 and connects eastern Monte Diablo Avenue to western Monte Diablo Avenue. This overcrossing provides a low-stress connection over Highway 101, which creates a barrier to comfortable east-west bicyclist and pedestrian connections in San Mateo. The Monte Diablo Avenue bridge would benefit from additional signage to guide bicyclists to the bridge.

Figure 3.2: Beginning and end of the 3rd Avenue Pedestrian and Bicycle Bridge at S Humboldt Street

Spot Treatments

In addition to linear bikeways, spot improvements and provisions are important to accommodate or encourage bicycling. Examples include bicycle detection at traffic signals, shared lane markings, wayfinding signage, and parking and storage facilities.

In addition to both public and private bicycle parking, the City of San Mateo also has examples of other bicycle facilities including painted conflict area markings, painted bicycle lanes, and a bike box.

Painted Conflict Area Markings

Painted conflict area markings are designed to improve visibility, alert all roadway users of expected behaviors, and reduce bicyclists' conflicts with turning motor vehicles. They can be either solid or dashed lines. Per the Manual on Traffic Control Devices (MUTCD), conflict area markings must be used in tandem with Class II bike lanes or Class IV separated bike lanes.

Painted conflict area markings are located on Crystal Springs Road (see Figure 3.3), Norfolk Street, and El Camino Real at the intersection of the California 92 on-ramps and off-ramps. The markings on El Camino Real were installed by Caltrans who owns and maintains El Camino Real.

Painted Bicycle Lanes

In general, painted bicycle lanes are recommended for conflict areas and other areas where improving visibility of bicyclists by motorists is needed. The City has recently installed green painted bicycle lanes along portions of Crystal Springs Road.

Bike Box

A bike box provides dedicated space between the crosswalk and motor vehicle stop line where bicyclists can wait during the red light at signalized intersections. The bike box allows a bicyclist to take a position in front of motor vehicles at the intersection, which improves visibility and motorist awareness, and allows bicyclists to "claim the lane," if desired. Bike boxes aid bicyclists in making left turning maneuvers at the intersection and provide more queuing space for multiple bicyclists than is provided by a typical bike lane. A bike box is located at the intersection of southbound S Norfolk Street and Fashion Island Boulevard (see Figure 3.4).

Figure 3.3: Painted conflict area markings on Crystal Springs Road

Figure 3.4: Bike box at Norfolk Street and Fashion Island Boulevard

Collision Analysis

Improving safety for people bicycling is one of the explicit goals of this Plan. The first step to reducing collisions is understanding the environment in which they occur. Not only is safety and the reduction of bicycle collisions a public health issue, addressing safety concerns is also an important way to encourage more people to ride a bicycle.

To better understand San Mateo's current collision environment, a bicycle-involved collision analysis was conducted as part of the bicycle master planning process. The analysis included a review of police-reported collision data from the City of San Mateo for a five-year period (from 2013 to 2017)[4]. Out of the 205 collisions included in the analysis, there were no fatalities, 184 collisions involving injuries, and 21 property damage-only incidents. This section includes a summary of the analysis and presents an assessment of the geographic distribution and primary collision factors related to bicycle-involved collisions. For a more detailed description of the methodology and results of the analysis refer to Appendix D: Data Analysis Report.

Primary Collision Factors

Primary collision factors define the main cause of collision, as recorded by the reporting officer. In San Mateo, the top six collision factors account for over 70 percent of the bicycle collisions (see Table 3.3).

Geographic Distribution

Geographically, bicycle collisions are not evenly distributed throughout San Mateo. As shown in Figure 3.5, San Mateo has four collision hotspots which include:

- **San Mateo High School**. Collisions near San Mateo High School are concentrated along Poplar Avenue and near the intersection of East Poplar Avenue and Delaware Street.
- **Downtown San Mateo**. Downtown has a high number of collisions, with most bicycle collisions occurring on existing Class III bike routes.
- **Between Hillsdale and Hayward Park Caltrain Stations.** Collisions between Hayward Park and Hillsdale Caltrain stations occur along El Camino Real and at 25th Avenue.
- **Junction between Highway 101 and Hillsdale Boulevard.** Many collisions occur along Hillsdale Boulevard leading up to, and crossing, Highway 101.

Understanding collision factors and trends will allow the City to identify and prioritize investments that can have the greatest impact on improving safety for bicyclists and other roadway users.

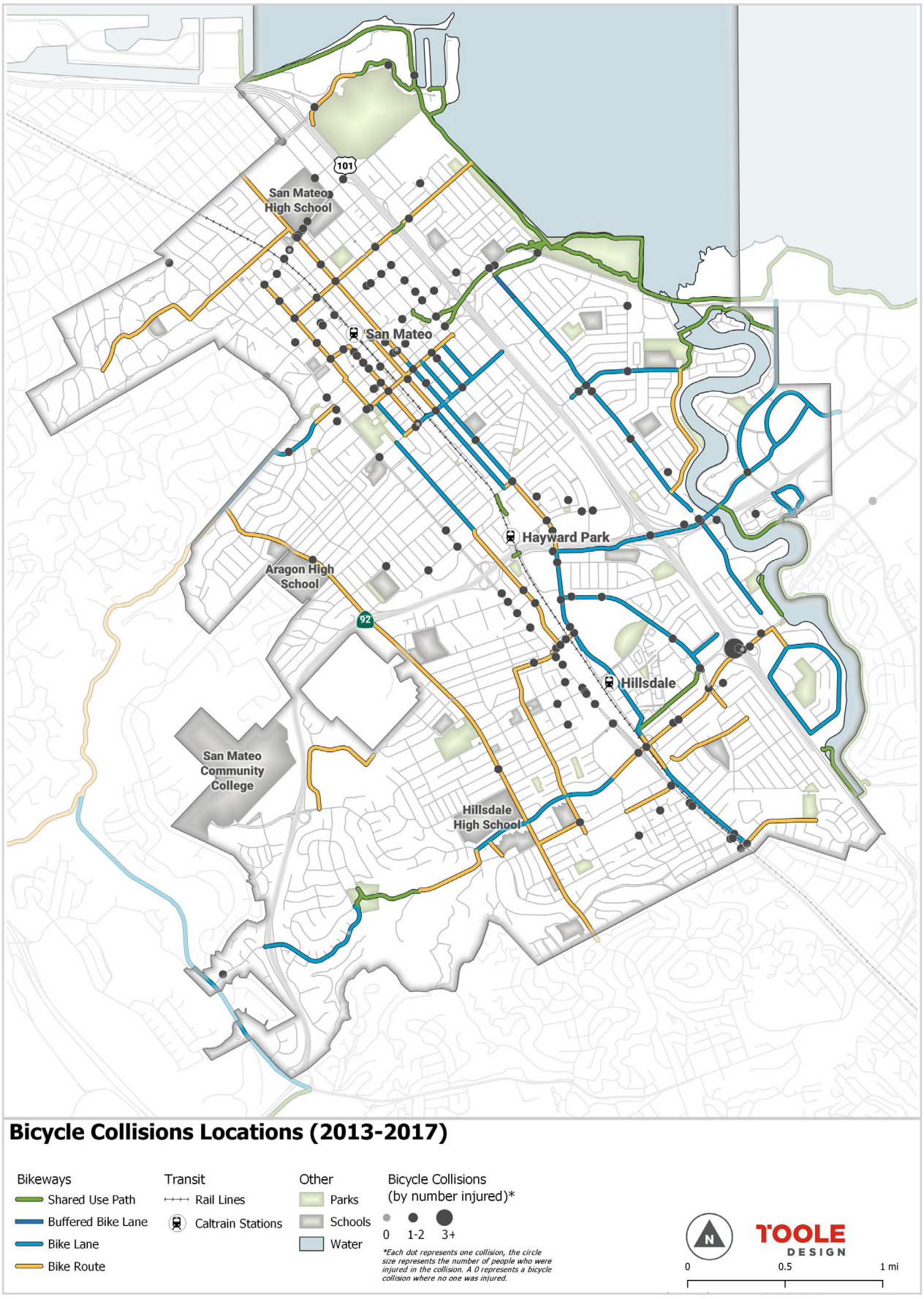
Regarding Figure 3.5, the dots on the map represent the locations of crashes involving a bicyclist from 2013-2017. Dot size corresponds with the number of people injured in a crash.

Table 3.3: Primary Collision Factors

Primary Collision Factor	Number of Collisions
Automobile Right of Way Violation	34
Other Hazardous Movement	29
Improper Turning	24
Wrong Side of Road	23
Traffic Signals and Signs	21
Unsafe Speed	19
All Other Crashes	55
Total	**205**

4 Typically, collision data is pulled from the University of California-Berkeley's Safe Transportation Research and Education Center which maintains the Transportation Injury Mapping System (TIMS); however, San Mateo collision data was unavailable from TIMS for 2013, 2015, and 2016.

Figure 3.5: Distribution of San Mateo Bicycle Collisions (2013-2017)



Network and Demand Analyses

Before recommending and prioritizing network improvements it is important to develop an in-depth understanding of the existing bicycle network. This is achieved through the completion of a bicycle network analysis (BNA) and a potential demand analysis. These different analyses highlight three key characteristics of the existing network:

- The level of connectivity between existing bikeways.
- Whether there are networks of bikeways that are suitable for people of all ages and abilities.
- Whether bikeways are located in areas with a high potential demand for bicycling or micromobility.

These analyses are conducted based on the premise that San Mateo's bicycle network should be comfortable for the greatest share of riders and that it should encourage more people to ride. The analysis results will be used to identify major barriers to bicycling in San Mateo, develop the proposed bicycle network, and prioritize the bicycle project list. This section provides an overview of the BNA and potential demand analysis; for a more detailed discussion of the methodology and results of these analyses, refer to Appendix D: Data Analysis Report.

Bicycle Network Analysis

The Bicycle Network Analysis (BNA) is a data-driven process used to identify areas in San Mateo that are not currently well-served by a connected network of low-stress, comfortable bikeways.

The BNA is a two-step process:

1. Level of Traffic Stress analysis –The Level of Traffic Stress analysis categorizes streets according to a perceived level of stress for bicyclists.
2. Connectivity analysis – The connectivity analysis identifies how connected areas of the city are with low-stress bikeways.

Level of Traffic Stress Analysis

As a first step in conducting a Level of Traffic Stress (LTS) analysis, an LTS rating is given to both on- and off-street bikeways to indicate their perceived level of stress. This analysis is based on the premise that a person's level of comfort while bicycling increases as separation from vehicular traffic increases, and traffic volume and speed decrease.

Most people in the U.S.—between 50 and 60 percent—have little tolerance for interacting with motor vehicle traffic while bicycling unless volumes and speeds are very low. This group of riders is referred to as "interested but concerned," reflecting both their interest in bicycling for transportation as well as concerns about safety and comfort when interacting with motor vehicle traffic.

The low-stress bicycle network is intended to correspond with what is comfortable for "interested but concerned" riders and is therefore useful for identifying appropriate bikeways that are comfortable for people of all ages and abilities. Chapter 4: Proposed Bicycle Network provides additional information on the comfort typology of bicyclists.

The LTS analysis is the industry standard for assessing the level of comfort of bicycle networks. The methodology for this analysis uses characteristics of the roadway such as:

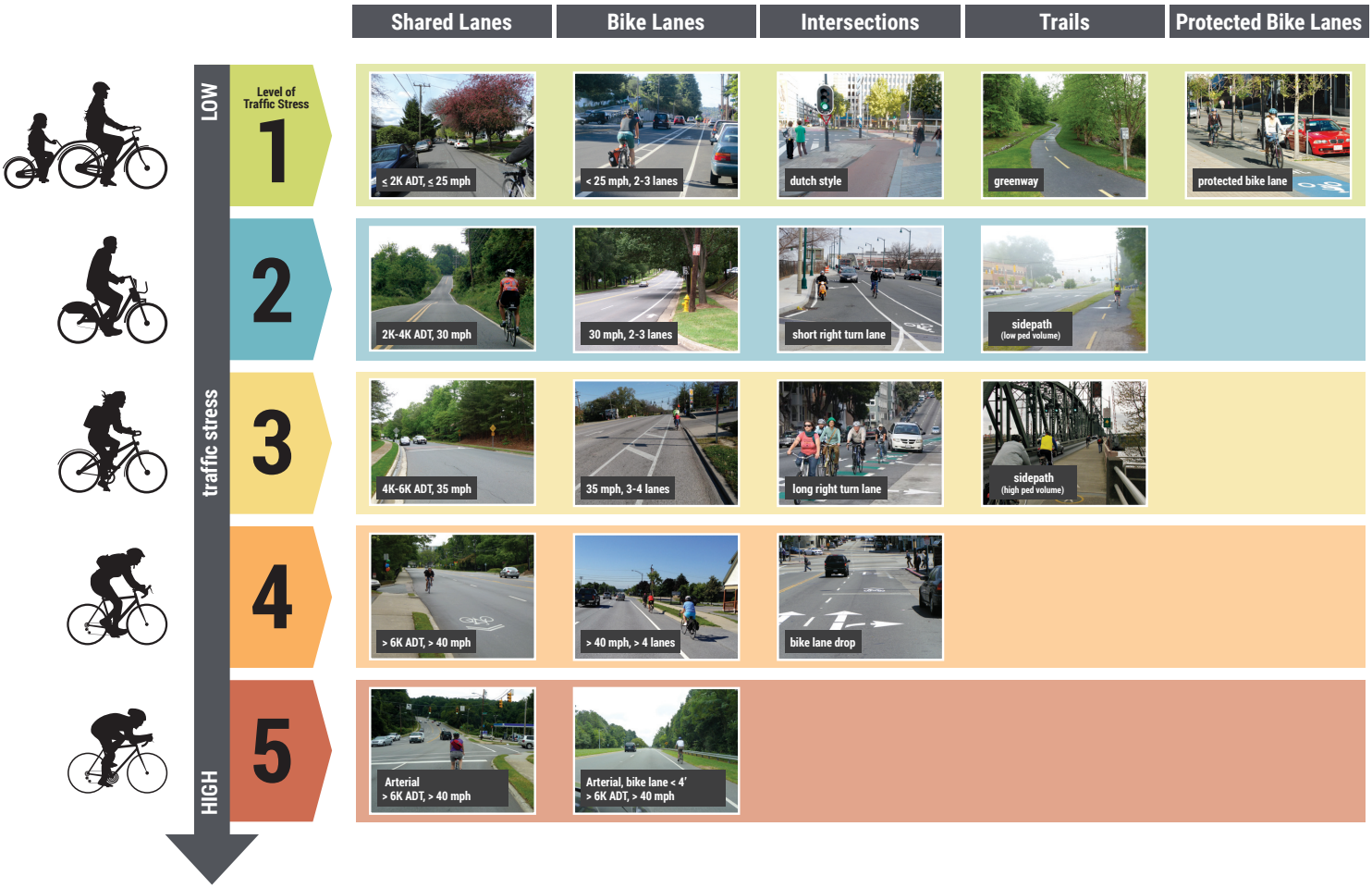
- Traffic speed and volume
- Presence of on-street vehicular parking
- Type of bikeway

The level of stress at intersections is also included in the analysis because a high-stress crossing can be a barrier to an otherwise low-stress segment. The analysis assesses a variety of intersection characteristics; in general, wide, high speed streets create high-stress barriers when there is no intersection control. This analysis was performed based on the city's existing street and bicycle network conditions in December 2018.

LTS scores typically range from one to four. For this Plan, streets were grouped into two categories: low stress (LTS 1 and LTS 2) and high stress (LTS 3 and LTS 4). Figure 3.6 shows examples of the different types of bikeways that correspond to each LTS score.

- **Low-stress streets** describe bikeways where users experience minimal or no traffic stress. These facilities are suitable for most adults and families.
- **High-stress streets** describe bikeways with moderate to high traffic stress. These bikeways are generally uncomfortable or unappealing to most bicyclists, but they may be suitable for experienced and confident bicyclists.

Figure 3.6: Typology of Bicyclists and Level of Traffic Stress Scores



Results

While a slight majority of streets in San Mateo are designated as low-stress (59 percent), most of these are neighborhood streets without an existing bikeway (see Figure 3.7). These neighborhood streets typically have low-speed, low-volume vehicular traffic, but they often do not provide bicycle connectivity to adjacent neighborhoods and/or require crossing large, high-stress barriers to connect with other areas of the city.

The remaining 41 percent of streets are rated as high-stress for bicyclists – these streets include many frequently used by bicyclists. Thirty percent of the high-stress network is comprised of streets with existing bikeways, but these bikeways do not provide adequate separation from vehicular traffic. A lack of separation creates a network that is not comfortable for bicyclists of all ages and abilities. For example, Alameda de las Pulgas is designated as a Class III bike route (i.e., no dedicated space for bicyclists); however, it is a high-stress environment due to the vehicle volumes and posted speed.

The LTS results also indicate that most people would not feel comfortable bicycling beyond the limits of

their immediate neighborhood because it is either:

- Surrounded by high-stress streets, or
- Separated from nearby neighborhoods by a high-stress crossing of a major street.

Many key destinations including the Hillsdale Shopping Center, Aragon High School, San Mateo Central Park, and all three Caltrain stations are located on high-stress streets.

Connectivity Analysis

The Bicycle Network Analysis (BNA) is a tool used to measure and score how well bicycle networks connect people with the places they want to go. The BNA score builds upon the Level of Traffic Stress analysis to measure how well the low-stress bike network connects to key destinations. The analysis highlights the importance of a continuous network, rather than a patchwork of bike lanes, trails, and shared use paths. The analysis evaluates the connectivity of census blocks to other census blocks within a standard biking distance.[5] For a more detailed discussion of the methodology, refer to Appendix D: Data Analysis Report.

Results

San Mateo has many areas with low-connectivity due to the presence of major barriers, such as Highway 101, State Route 92, arterials such as El Camino Real, collector roads, the Seal Slough, the Caltrain tracks, and others (see Figure 3.8). For example, Borel Square at the junction of 92 and El Camino Real has very low connectivity because the freeway and the arterial roadway separate the shopping center from the low-stress bicycle network. This highlights the close link between the LTS analysis and the BNA because areas with low connectivity often have high-stress streets surrounding the census blocks.

Street networks also influence connectivity, and areas within the city that have a traditional street grid have more permeability in the network and are inherently better connected (for example, the area south of 4th Avenue and Delaware Street, and north of 10th Avenue and Delaware Street). Areas of low or high connectivity throughout San Mateo are unevenly distributed (see Table 3.4).

Table 3.4: Areas with High and Low Bicycle Network Connectivity in San Mateo

Area	Description
Areas with high connectivity	
San Mateo Park neighborhood	Mainly local, low-stress bikeways with few high-stress barriers
Mariners Point	Well-connected to the trail network with a low-stress crossing over the Seal Slough; important recreational destination with good internal connectivity
Areas with low connectivity	
Borel Square, office complex adjacent to Peninsula Temple Beth El, and existing Concar Drive shopping center	Limited crossings of Highway 101 and SR 92
Hillsdale Shopping Center and San Mateo Medical Center	Limited crossings of the Caltrain tracks and Highway 101

5 A standard, acceptable biking distance is 1.67 miles which corresponds to the distance an average rider would travel in ten minutes biking at an average speed (10 miles per hour).

Figure 3.7: Level of Bicycle Traffic Stress – Street Network

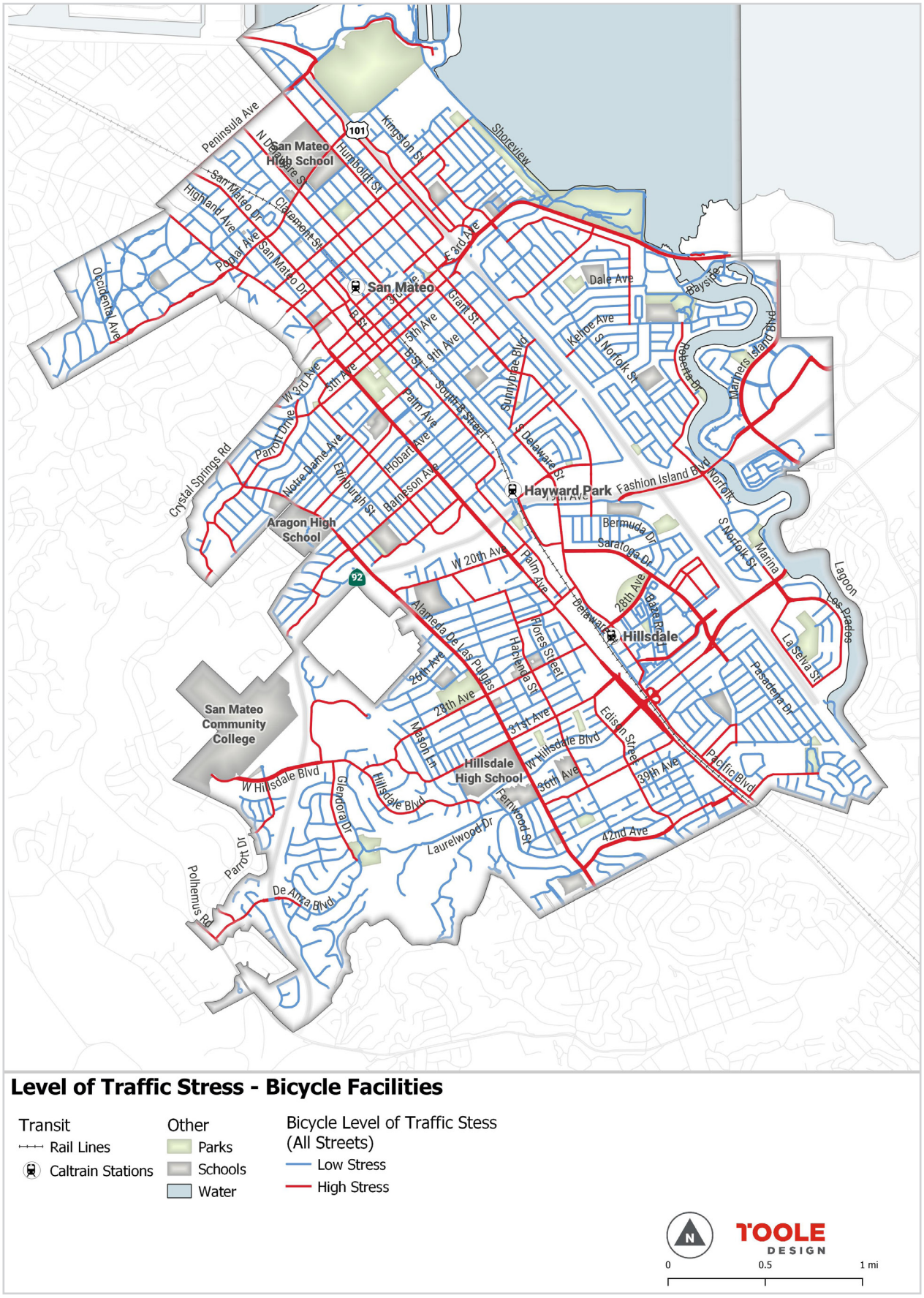
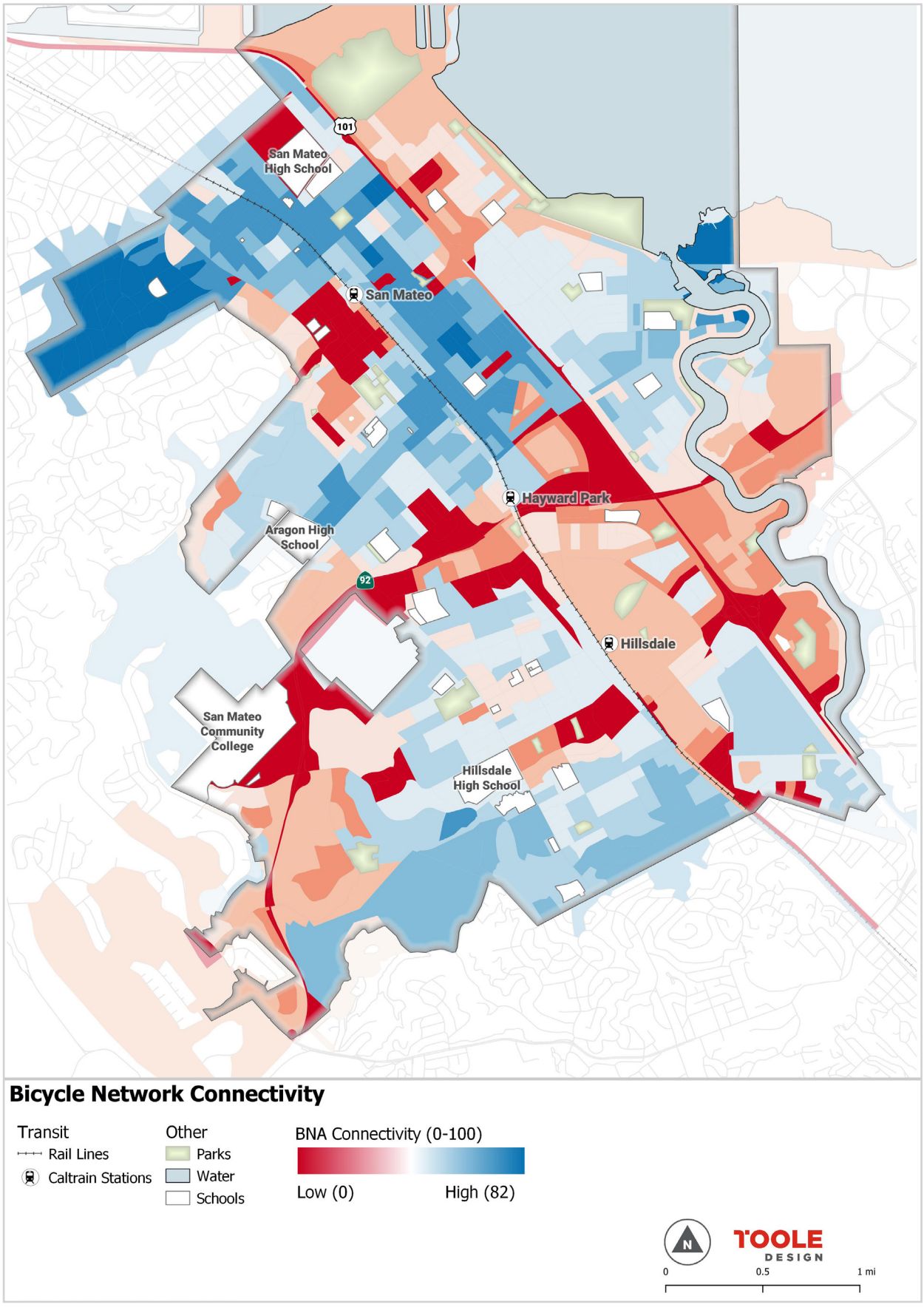


Figure 3.8: Bicycle Network Connectivity



Potential Demand Analysis

A Potential Demand Analysis is used to determine areas in the city where there may be high demand for people to bicycle. The analysis uses key factors based on development patterns and demographic factors to identify patterns and areas with high potential for bicycle demand. The analysis is not meant to be predictive of actual bicycle activity.

A potential demand score is calculated by weighing the following key factors at the census block geography:

- Intersection density
- Population density
- Transit access
- Job density
- Percent of households below the poverty line
- Population under 18 density

The analysis is based on a number of assumptions and professional judgment, and results in a composite score of these assumptions. For more details about the analysis methodology, refer to Appendix D: Data Analysis Report.

Results

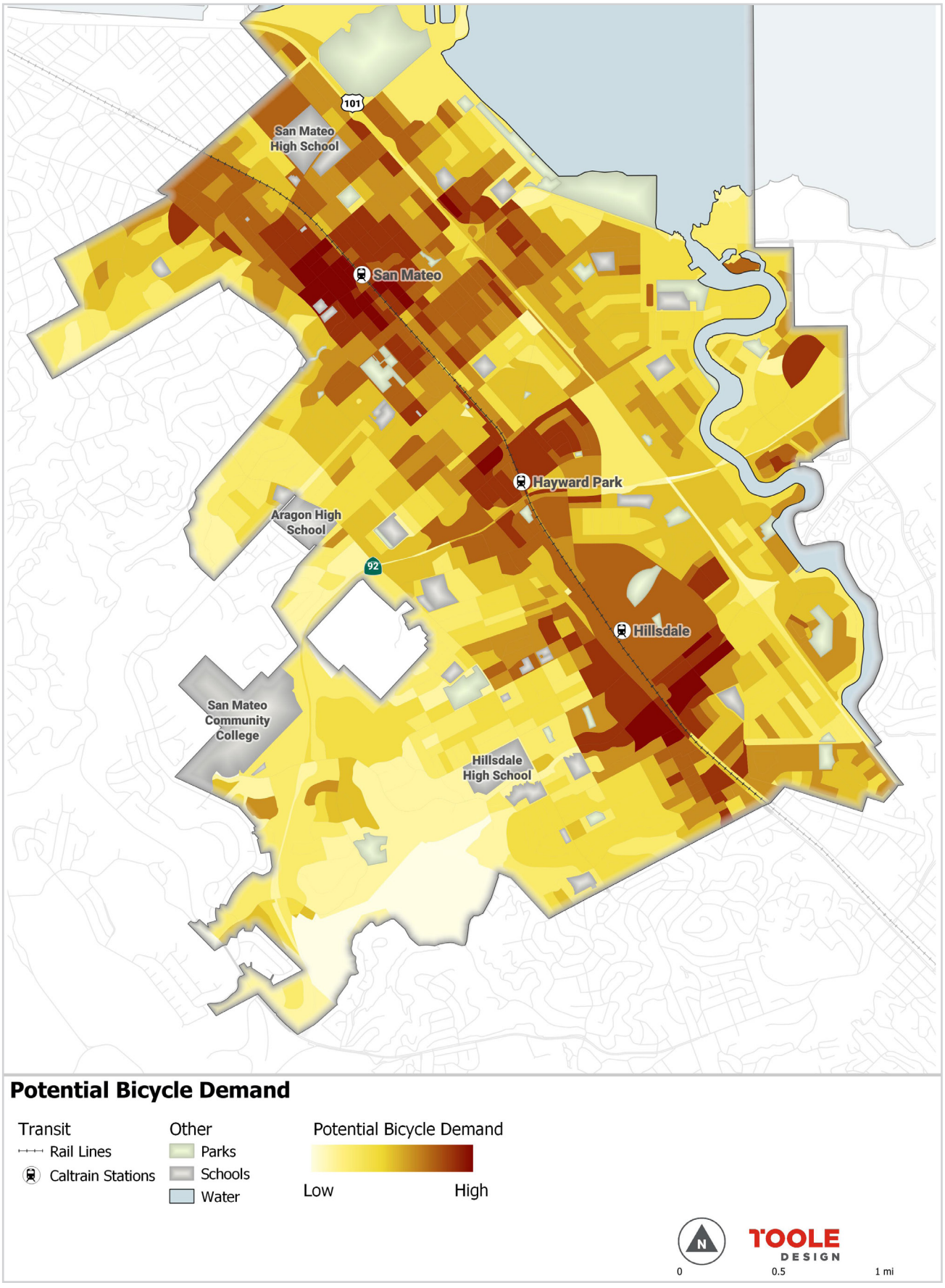
The high-demand areas for bicycling are illustrated in Figure 3.9 and include three general areas:

- Downtown San Mateo
- Hillsdale Caltrain station
- Hayward Park Caltrain station

There is variation in how the Potential Demand factors are distributed throughout San Mateo per the following:

- **Intersection density.** Since most of the San Mateo street network is based on a grid pattern there is a high intersection density throughout the city.
- **Population density.** Population levels are highest in north San Mateo and near Downtown. With some peaks, population density is otherwise fairly level in the area south of SR 92.
- **Transit access.** San Mateo has three transit stations which are spaced approximately 1 mile apart through the center of the city.
- **Job density.** Generally, employment locations are located along SR 92 and El Camino Real. High employment density areas are located around Downtown, at the Bridgepointe Shopping Center, San Mateo Community College, and the Hillsdale Shopping Center.
- **Percent of households below the poverty line.** There are a high percentage of households living below the poverty line in north San Mateo and near the Hillsdale and Hayward Park Caltrain stations.
- **Population below 18 density.** The locations with high populations under 18 are concentrated near schools. The highest concentrations are in the neighborhoods within a half mile of San Mateo High School.

Figure 3.9: Potential Bicycling Demand



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4 Proposed Bicycle Network

In this chapter, the proposed network is referred to as the "proposed bicycle network"; however, in addition to bicyclists, the network is also intended to serve people who use micromobility devices such as scooters, skateboards, and new emerging technologies.

The term **"bikeway"** is also used to mean a facility that serves users of micromobility devices.

Creating a Network for All

The primary purpose of this Plan is to identify a future bicycle network for San Mateo that creates a safe, connected, and viable transportation choice for all members of the San Mateo community. The proposed bicycle network presented in this chapter builds upon the assets of the existing network to create an experience that is comfortable for everyone interested in bicycling and using micromobility.

Creating an All Ages and Abilities Network

Research indicates that a large portion of the American population is interested in bicycling for utilitarian trips. However, they do not currently ride because they feel unsafe while bicycling and have other means of transport. Several studies have shown that most people feel safer and more comfortable riding on streets with low traffic volumes and low

vehicle speeds, or on higher speed and higher volume streets with increased separation and protection from vehicle traffic. In fact, approximately half of the population has little tolerance for interacting with vehicles unless vehicle speeds and volumes are very low (Figure 4.1). This classification of potential riders is referred to as "Interested but Concerned," reflecting both their interest in bicycling for transportation as well as their safety concerns when interacting with vehicular traffic. For more information about the different types of bicyclists, see Chapter 3.

These "Interested but Concerned" bicyclists represent the largest potential for mode shift away from private vehicles in San Mateo. As such, the proposed network is designed for Interested but Concerned bicyclists as reflected in the proposed bicycle network recommendations.

Other classifications of the population include those who are "Not Interested or Able" (approximately one-third of the population), those who are "Somewhat Confident" riding with vehicular traffic and currently ride certain segments of the existing network (approximately 10 percent of the population), and those who are "Highly Confident" riding with traffic and the entirety of the roadway network (approximately five percent of the population).

Figure 4.1: Classifications of Bicyclists[6]

Comfort Typology of Bicyclists

Design User Profile	Non-Bicyclist	Interested but Concerned	Somewhat Confident	Highly Confident
Bicycling Preferences	Uncomfortable bicycling in any condition, have no interest in bicycling, or are physically unable to bicycle.	Often not comfortable with bike lanes, may bike on sidewalks even if bike lanes are provided; prefer off-street or separate bicycle facilities or quiet or traffic-calmed residential roads. May not bike at all if bicycle facilities do not meet needs for perceived comfort.	Generally prefer more separated facilities, but are comfortable riding in bicycle lanes or on paved shoulders if need be.	Comfortable riding with traffic, will use roads without bike lanes.
Percent of General Public	31-37%	51-56%	5-9%	4-7%

6 Source: Dill, J. McNeil, N. "Revisiting the Four Types of Cyclists: Findings from a National Survey" Transportation Research Board 95th Annual Meeting, 2016. Note that children and elderly have not been surveyed as a separate category but are understood to have a very low tolerance of roadway stress.

What We're Aiming For

Throughout the process to develop this Plan, the San Mateo community shared what was most important for the new bicycle network to focus on, and these interests are listed in Table 4.1. The proposed bicycle network seeks to address these interests by providing a comfortable, connected bicycle network throughout San Mateo.

Table 4.1: Focus of the Proposed Bicycle Network

Focus		How this is incorporated into the proposed bicycle network
✓	Make bicycling in San Mateo an enjoyable, comfortable, and low-stress experience for anyone interested in riding a bike or using micromobility.	• The proposed bicycle network works to achieve an all ages and abilities network by applying low-stress bicycle network planning principles outlined in the previous section
✓	Improve north-south connections into and out of Downtown San Mateo.	• The proposed network upgrades several existing north-south bicycle corridors and adds several new bicycle corridors to the citywide network • For example, existing bike lanes on Delaware Street are upgraded to buffered bike lanes in the proposed network, and a traffic-calmed bicycle boulevard is proposed for Railroad Avenue which currently does not have any bicycle facilities
✓	Enhance connectivity to major destinations throughout the city, namely Caltrain stations, schools, parks, and commercial areas.	• The proposed network upgrades several existing north-south bicycle corridors and adds several new bicycle corridors to the citywide network • All public schools, parks, and commercial areas are served by at least one facility in the new network • Connectivity to transit stops, schools, parks, and commercial areas were also scoring criteria when the project prioritization was completed, ensuring that proposed infrastructure in the vicinity of these destinations received higher scores than projects not serving these destinations
✓	Address bicycle collisions when developing the network.	• Bicycle collisions were analyzed as part of Existing Conditions and taken into account during development of the proposed network • Collision history was also a scoring criterion when the project prioritization was completed, ensuring that proposed infrastructure in areas with histories of bicycle collisions received higher scores than projects in areas without collision histories
✓	Close gaps between existing facilities.	• Gaps in the existing network were identified and closed during the development of the proposed network
✓	Ensure low-stress connections over barriers like highways 101 and 92, El Camino Real, and the Caltrain tracks.	• Existing crossings over these barriers were enhanced and several new crossings proposed for additional connectivity in the new network
✓	Include recommendations for support facilities (e.g., bike racks) and programs in addition to infrastructure recommendations.	• Chapter 5 outlines various support programs that should be implemented in conjunction with the proposed bicycle network

Proposed Bicycle Network

All residents and visitors in San Mateo should feel safe and comfortable when bicycling and using micromobility throughout the city. This Plan expands upon the existing bikeway system to create a bicycle network designed for bicyclists of all ages and abilities. The proposed bicycle network is made of low-stress facilities that connect people to where they want to go and are attractive for anyone who needs or wants to ride a bike in San Mateo.

The *AASHTO Guide for the Development of Bicycle Facilities' Facility Section Chart* was used to determine appropriate facility recommendations in the proposed bicycle network (Figure 4.2). To maintain a comfortable, all ages and abilities network, roadways with higher traffic speeds and volumes require additional horizontal and vertical separation between vehicular traffic and bicyclists than low-speed, low-volume roadways. Therefore, shared use paths and separated bike lanes are most appropriate for roadways with high vehicle speeds and volumes; standard and buffered bike lanes are most appropriate for roadways with medium vehicle speeds and volumes; and bicycle boulevards and bike routes are most appropriate for low-speed and low-volume roadways.

This method of bicycle networking planning results in a consistently low-stress bicycle network. While the level of stress is consistent, facility recommendations for a particular corridor may or may not be consistent, depending on whether corridor conditions, including motor vehicle speeds and volume change.

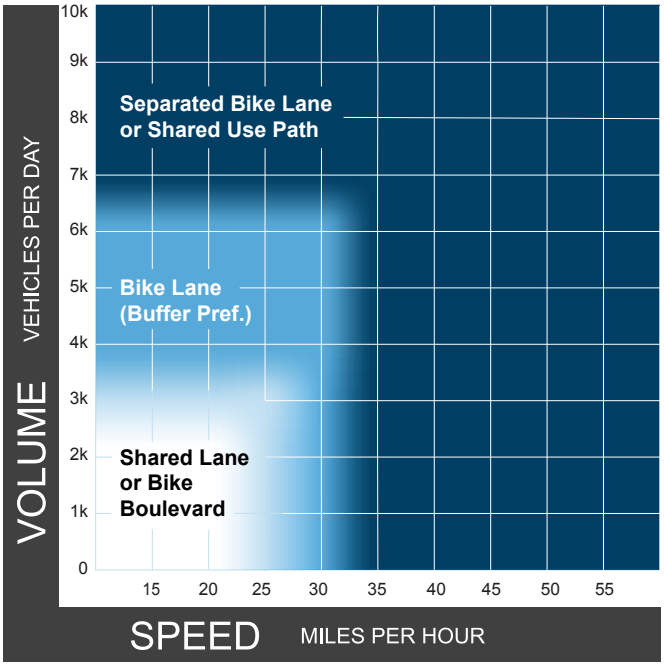


Figure 4.2: AASHTO bikeway selection chart

The proposed bicycle network map (Figure 4.3) was developed based on community and City staff input, site visits, evaluations of existing conditions, and best practices in bicycle network planning and design. The proposed all ages and abilities network aims to separate bicyclists from fast-moving and high volumes of motor vehicle traffic. The proposed network creates a low-stress environment suitable for "interested but concerned" bicyclists while remaining feasible for the City to implement. The complete project list for the proposed bicycle network can be found in Appendix E: Proposed Bicycle Network Project List and Cost Estimates.

In total, the proposed bicycle network includes approximately 101 miles of facilities to create a dense low-stress network serving major destinations throughout the city (see Table 4.2). The proposed mileage totals in Table 4.1 include proposed new facilities on streets that currently have no bikeways, plus proposed upgrades to existing bikeways (e.g., from a bike route to a bike lane).

Table 4.2: Proposed Bicycle Network Mileage Totals by Facility Type

Facility Type	Existing Mileage	Proposed Mileage
Shared-Use Path (Class I)	15.6	18.5
Separated Bike Lane (Class IV)	0	9.3
Buffered Bike Lane (Class II)	0.1	5.3
Bike Lane (Class II)	20.7	25.4
Bicycle Boulevard (Class III)	0	37
Bicycle Route (Class III)	19.6	5.8
Total	**56**	**101.2**

Figure 3.10: The proposed bicycle network serves people who use forms of micromobility to get around, such as scooters.

Figure 4.3: Proposed Bicycle Network

Proposed Bicycle Network

Bicycle Facilities

Existing
- Shared Use Path
- Buffered Bike Lane
- Bike Lane
- Bike Route

Proposed
- Shared Use Path
- Separated Bike Lane
- Buffered Bike Lane
- Bike Lane
- Bicycle Boulevard
- Bike Route

Other
- Caltrain Stations
- Rail Lines
- Parks
- Schools
- Water
- Intersection Treatments
  Requiring further study

NOTE

*City will implement a bikeway on either 39th or 42nd Ave (from Edison St to Pacific Blvd) pending further analysis of each alignment.

May Require Further Study

N

0 0.5 1 mi

Created by DoIT/GIS, June 2021

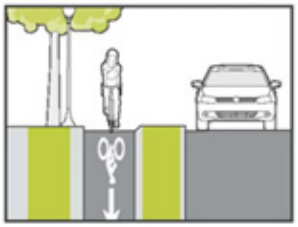
The recommended facilities included in the proposed bicycle network are as follows. These bikeways are listed in order of separation; those providing the most separation from vehicular traffic are at the top and those providing the least separation are at the bottom.

- Shared use paths (Class I)
- Separated bike lanes (Class IV)
- Buffered bike lanes (Class II)
- Standard bike lanes (Class II)
- Bicycle boulevards (Class III)
- Bike routes (Class III)

Currently, there are no separated bike lanes or bicycle boulevards in the city, as of the writing of this Plan. (The City will soon be installing a bicycle boulevard on 28th Avenue that connects to the Hillsdale Caltrain station).

For additional information on existing facility types, see Chapter 3: Existing Bicycle Network. Descriptions of separated bike lanes and bicycle boulevards are provided in Table 4.3.

Table 4.3: Recommended Bikeway Types without Existing Mileage in San Mateo

Facility Type	Facility Description
Separated Bike Lane 	• Bicyclists ride in a designated lane separated from vehicular traffic by a buffer with vertical protection (e.g., flexible posts, planters, parked vehicles, curbs, etc.) • Separated bike lanes provide a low-stress facility, even on roadways with high vehicle speeds (i.e., greater than 30 mph) and volumes (i.e., greater than 6,000 vehicles per day) • The more robust the buffer's vertical and horizontal separation, the more comfortable the separated bike lane is for bicyclists • Caltrans classification: Class IV
Bicycle Boulevard 	• Bicyclists share lanes with vehicular traffic; however, bicycle boulevards include traffic calming treatments and are solely implemented on low-speed (i.e., ,less than 25 mph) and low-volume (i.e., less than 3,000 vehicles per day) streets to ensure they are low-stress facilities • Caltrans classification: Class III

Intersection Treatments

Intersections are often one of the most challenging and high-stress parts of the bicycle network to navigate for both bicyclists and pedestrians. As in many communities, in San Mateo, existing bike lanes frequently end before the intersection (i.e., bike lane striping does not continue all the way to the stop bar) and are not carried through to the other side, causing confusion and stress for bicyclists as well as drivers. In addition, signalized intersections do not always detect bicyclists or require bicyclists to wait extended periods of time to cross. Unsignalized crossings can also be challenging to navigate and may require long waiting times for a gap in vehicular traffic to cross.

Spot treatments that enhance safety and comfort at intersections can significantly improve the riding experience throughout the network (Figure 4.4). These improvements can also enhance the comfort and safety of the pedestrian environment, making it more enjoyable and less stressful for people to walk in San Mateo. Intersection spot treatments may include signal improvements, geometric changes, or supplementary pavement markings. While spot improvements may be completed as opportunities arise (e.g., as part of a routine resurfacing or street improvement project), the City should strive to complete a series of improvements to intersections as low-stress corridors in the proposed bicycle network are implemented. This coordinated approach will enable bicyclists to travel along continuous low-stress routes.

In the proposed bicycle network (Figure 4.3), seven intersections were identified as "requiring further study," due to complex configurations necessitating additional analysis before bicycle design recommendations can be finalized. These intersections are complicated due to offset intersection geometries, the presence of freeway on- and off-ramps, and missing bicycle or pedestrian infrastructure. Intersection recommended for further study and enhancement are listed in Table 4.4. On the proposed bicycle network map, these intersections are identified by circles.

Figure 4.4: High-Visibility intersection pavement markings on Lakeshore Avenue in Oakland

Table 4.4: Intersections Recommended for Improvements

Facility Type	Proposed Mileage (approximate)	Existing Mileage (approximate)
1	Notre Dame Avenue/ 9th Avenue/El Camino Real	Bikeway recommendations along Notre Dame Avenue and 9th Avenue are offset from one another, creating a dogleg intersection that will require bicycle infrastructure treatments along the short segment of El Camino Real connecting the two streets.
2	Barneson Avenue/ 15th Avenue/El Camino Real	Bicycle boulevard recommendations along Barneson Avenue and 15th Avenue are offset from one another, creating a dogleg intersection that will require bicycle infrastructure treatments along the short segment of El Camino Real connecting the two streets.
3	25th Avenue/El Camino Real	25th Avenue has an S-curve where it intersects El Camino Real, resulting in a skewed intersection with a non-standard geometry. A bike lane is proposed along 25th Avenue through this intersection.
4	19th Avenue/Delaware Street	This is a complicated intersection because it includes ramps on and off of SR 92, resulting in a six-leg intersection with numerous potential high-speed conflict points between bicyclists and drivers. Separated bike lanes are proposed along 19th Avenue and Delaware Street.
5	Franklin Parkway/ Baze Road/Curtiss Street	Bicycle boulevard recommendations on Baze Road and Curtiss Street must transition to a shared use path along Franklin Parkway to connect to one another. This may necessitate widening the existing shared use path and/or adding a new midblock crossing along Franklin Parkway.
6	Franklin Parkway/ Saratoga Drive	This intersection currently does not have a designated bicycle or pedestrian crossing across its southern leg. A new crossing must be installed across the southern leg to facilitate convenient bicycle travel along the existing shared use path along Franklin Parkway.
7	Fashion Island Boulevard/ Norfolk Street	This intersection includes high-speed right turn slip lanes in its northwest and northeast corners which must be reconfigured to accommodate the proposed separated bike lane along Fashion Island Boulevard.

Bicycle Retrofit Projects

Proposed facilities can be implemented as low-cost retrofit projects. For instance, bike lanes and buffered bike lanes can be installed during regularly scheduled street resurfacing projects since they only require additional lane striping. Separated bike lanes may be installed over time, starting as low-cost interim installations and eventually evolving into higher cost, permanent installations (Figure 4.5). That is, a separated bike lane may initially use inexpensive materials like flex posts and striping to create a buffer providing vertical separation and protection from vehicles. Eventually, once additional funds are secured, a more permanent treatment using materials like planters, curbs, or landscaping in the buffer may be installed. A phased implementation approach, where "pilot" projects transition to permanent protected bike lanes is a good way to quickly install a protected bikeway initially, followed by additional analysis and design with permanent materials.

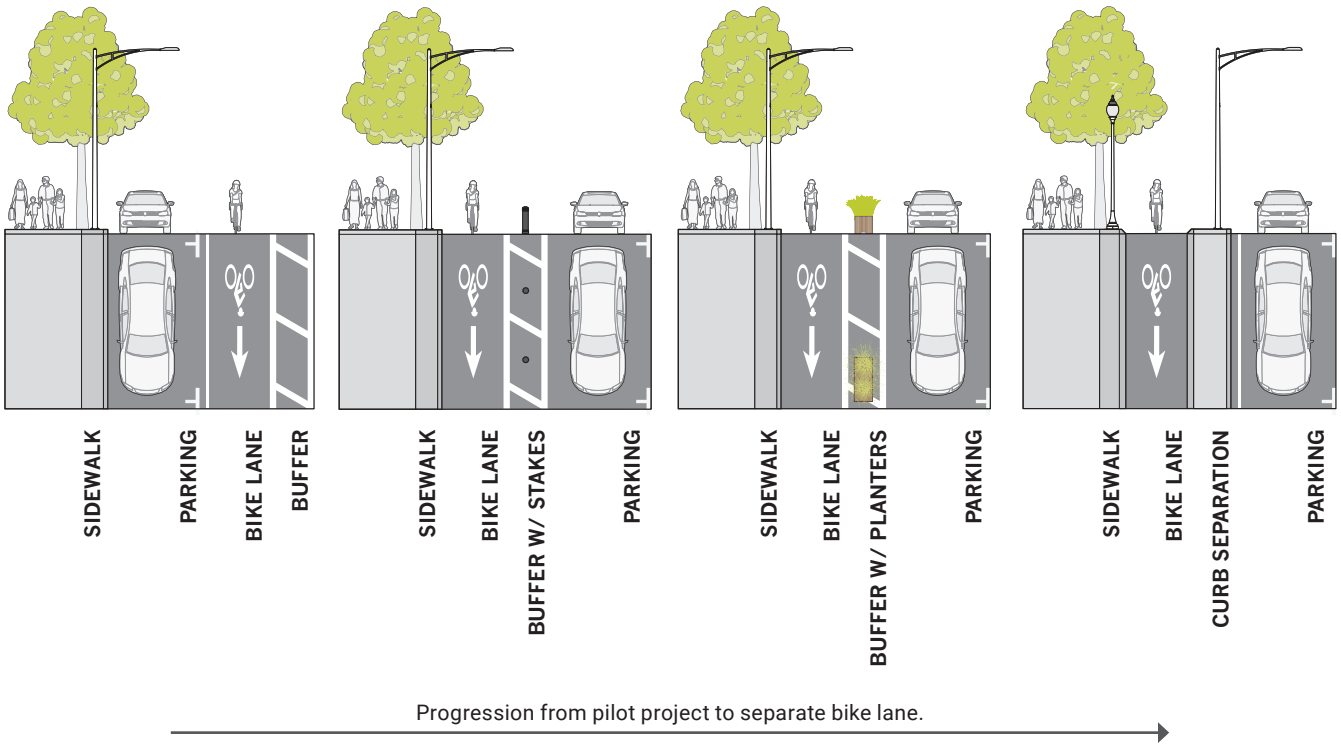


Figure 4.5: Evolution of a separated bike lane from a low-cost initial installation to a permanent installation

Bicycle Boulevards

Bicycle boulevards are a critical component of this proposed bicycle network, comprising approximately 36.5 miles (or 36 percent) of proposed facilities. On a bicycle boulevard, bicyclists share lanes with vehicular traffic, and bicycle boulevards include traffic calming treatments to make them more comfortable for all bicyclists, including "Interested but Concerned" riders. Bicycle boulevards are only implemented on low-speed and low-volume streets so that they remain low-stress facilities. The City is implementing its first bicycle boulevard on 28th Street to connect to the Hillsdale Caltrain station.

In some areas of the proposed network, bicycle boulevards provide alternative routes to those along arterial roadways and can be implemented in the short term. If a roadway with a proposed bicycle boulevard is just above AASHTO Bike Guide speed and volume thresholds to be considered an all ages and abilities facility, traffic calming measures will be implemented to ensure speeds and volumes are reduced to appropriate levels.

Traffic calming measures vary depending on context; however, treatments include vertical deflection such as speed humps and raised crosswalks and horizontal deflection such as chicanes and neighborhood traffic circles (Figure 4.6). Traffic diversion through partial and complete street closures is another method to calm traffic and reduce speeds, although this is a more politically-charged measure that may be more difficult to implement since it has the potential to shift traffic burden from one residential street to another. Regardless of the treatment applied, streets with bicycle boulevards should be engineered for a target speed of 20 miles per hour to create a comfortable riding environment for bicyclists to share the road with automobiles, and a safer environment for adjacent residents and pedestrians.

Figure 4.6: Neighborhood bicycle boulevard with traffic calming and bicycle pavement markings on Webster Street in Oakland

Longer-Term Projects

Most of the projects proposed in this Plan are short- to medium-term projects that are prime for implementation within five to 10 years. However, other recommendations may take a longer time frame to implement, due to constraints like project cost, land acquisition, community and political will, or other factors. The following projects fall into this "longer-term" category. The City is interested in pursuing these projects when feasible:

- Constructing a new Caltrain tracks undercrossing for bicyclists and pedestrians at 39th Avenue
- Constructing new overcrossings for bicyclists and pedestrians along SR-92 at O-Farrell Street and US-101 at Hillsdale Avenue and Sunnybrae Boulevard
- Retrofitting existing overcrossings along SR-92 and US-101 to accommodate recommended bicycle facilities
- Installing bicycle improvements along El Camino Real (SR-82) as a part of the Grand Boulevard Initiative
- Upgrading existing bikeways to add additional horizontal separation and vertical protection from vehicles
- Coordinating additional multimodal projects that increase connectivity across and along the Caltrain tracks as part of Caltrain's Business Plan implementation and grade separation efforts for the remaining at-grade railroad crossings in San Mateo

Figure 4.7: The proposed bicycle network serves users of all ages.

5 Support Programs and Policies

The implementation of programs and policies in conjunction with a well-designed network can help San Mateo develop a strong active transportation culture and increase ridership among a variety of demographics. Programs and policies are also key components of improving roadway safety and comfort and ensuring that new infrastructure is well-planned and equitably distributed.

Chapter 5 provides a set of support programs and policies the City can use to meet Plan goals. Section 5.1 summarizes the City's existing bicycling-related programs and provides recommendations for additional programs and Section 5.2 lists policies that will help support the implementation of the bicycle projects and programs discussed throughout the Plan.

Support Programs

Bicycle and micromobility-related programming is an important component of a welcoming, bicycle-friendly community. Bicycle and micromobility-related programs can also help San Mateo achieve all five of the Plan's goals. A useful way to evaluate and recommend bicycle and micromobility support programs in a community is to consider whether they address the six Es of a bicycle-friendly community (see Figure 5.1). The City already has several engineering, encouragement, education, enforcement, and evaluation programs, however, there are many areas where the City could strengthen its efforts to further support bicycling and micromobility in the community. This chapter summarizes existing and recommended bicycle- and micromobility-related programming using the six Es as a framework.

The Six Es of a Bicycle- and Micromobility- Friendly Community

- **Engineering:** Creates safe, comfortable, and convenient places to ride and park
- **Encouragement:** Creates a strong bike culture that welcomes and celebrates bicycling
- **Education:** Gives people of all ages and ability levels the skills and confidence to ride
- **Enforcement:** Ensures safe roads for all users
- **Evaluation and Planning:** Plans for bicycling as a safe and viable transportation option and strives for improvement by evaluating programs and facilities
- **Equity:** Ensures that bicycle and micromobility programs and facilities are accessible to all community members, especially those who are most vulnerable or who have been traditionally left out of planning and implementation decisions

Adapted from the League of American Bicyclists' five aspects of a Bicycle Community.

KEY:

CONNECTIVITY | SAFETY & COMFORT | COMMUNITY | EQUITY | RIDERSHIP

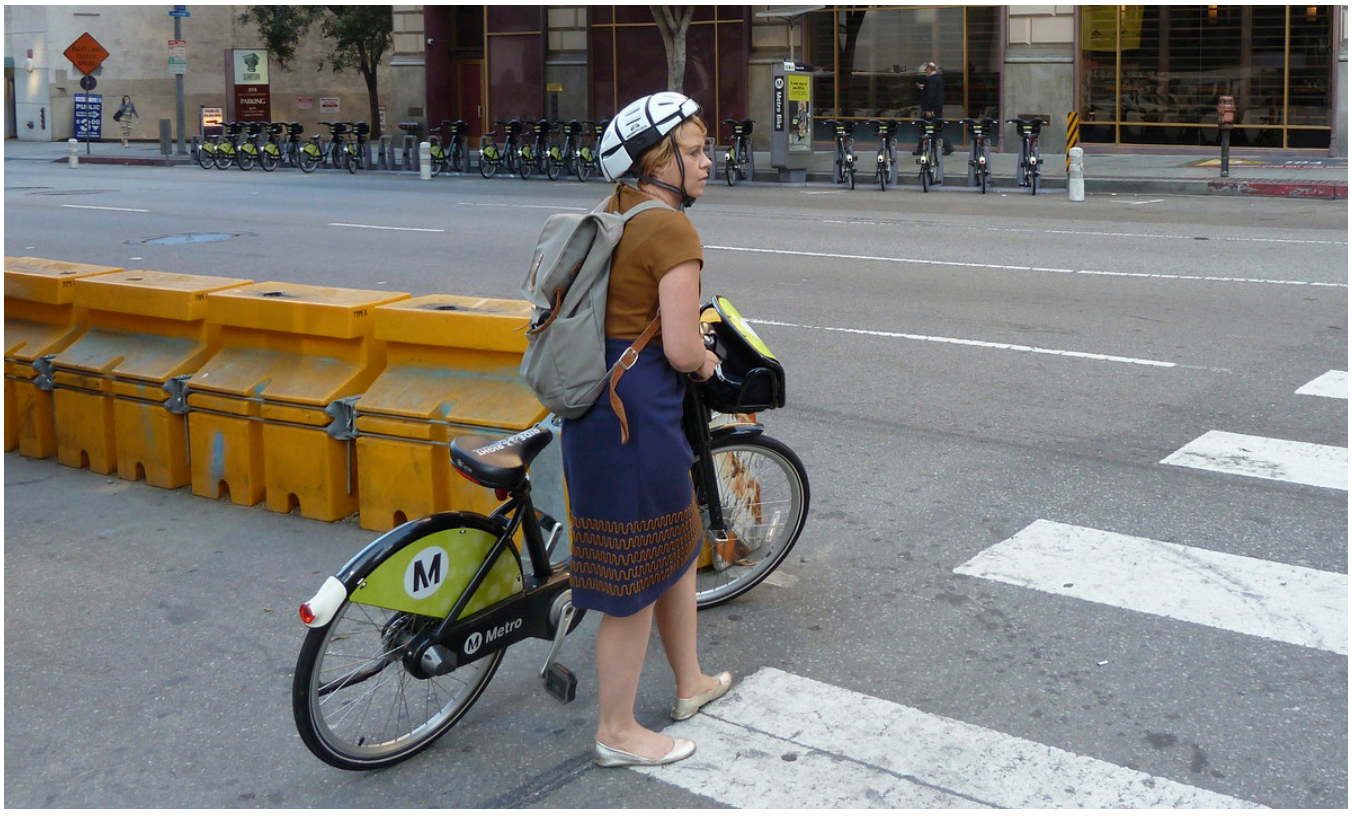


Figure 4.8: Support programs encourage people to bicycle for their daily trips and helps them do so.

Engineering

In addition to building new facilities, there are several programmatic efforts the City can undertake to support and maintain its active transportation infrastructure. Table 5.1 lists the existing programs and recommended actions to enhance infrastructure development in San Mateo. The programs listed below can help San Mateo achieve the Plan's ridership, safety and comfort, and connectivity goals.

Table 5.1: Engineering Support Programs

Support Program	Description	Learn More	Plan Goal(s)
Existing			
Neighborhood Traffic Management Program	This program addresses many aspects of traffic management and establishes a consistent policy for traffic calming at a neighborhood scale.	https://www.cityofsanmateo.org/2122/Neighborhood-Traffic-Management-Program	
Hillsdale Station Integration Plan	This plan provides wayfinding and signage guidance for the neighborhoods around the Hillsdale Caltrain Station.	Contact City staff for more information	
Pavement Management Program	This program uses a computerized application to help decision-makers to evaluate and prioritize the maintenance of pavement infrastructure.	https://www.cityofsanmateo.org/2129/Pavement-Management-Program	
Assessment of bicycle-related issues	Bicycle-related issues at intersections are reviewed by the City on a case-by-case basis.	Contact City staff for more information	
Traffic Signal Master Plan	The City is in the process of developing a plan to help prioritize funding for traffic signal and signal communications infrastructure improvements.	Contact City staff for more information	
City Capital Improvement Projects (CIP) Program	The City includes bikeway projects in the CIP, but they are not often prioritized for funding because they can be eligible for grant funding.	https://cmo.smcgov.org/five-year-capital-improvement-plan	
City Sign Inventory and Replacement Program	The City is working to inventory traffic signs and analyze them for retro-reflectivity. This effort includes the creation of sign replacement program.	Contact City staff for more information	

Support Program	Description	Learn More	Plan Goal(s)
Recommended			
Develop and implement a citywide bicycle and micromobility wayfinding strategy	Build upon the existing guidance provided in the Hillsdale Station Integration Plan. Develop and apply comprehensive wayfinding guidance throughout the city. Refer to Appendix F: Wayfinding Guidance for more detailed information.	https://nacto.org/publication/urban-bikeway-design-guide/bikeway-signing-marking/bike-route-wayfinding-signage-and-markings-system/	
Incorporate context-sensitive lighting	When implementing projects, install context-sensitive street lighting as a part of bikeways to improve visibility of the bikeway and bicyclists at night.	Contact San Mateo Public Works Department for more information.	
Facilitate safe bicycle travel around public and private construction zones	Develop clear guidelines to ensure that bicyclists are provided with safe accommodations around public and private construction zones.	https://www.portlandoregon.gov/citycode/article/595633	
Coordinate the implementation of bicycle facilities with the City's paving program	Coordinating the installation of bicycle facilities with the City's paving program will allow the City to deliver bicycle enhancements cost effectively and improve roadway conditions.	https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/	
Incorporate bike detection at intersections	Continue and expand San Mateo Public Works Department's efforts to include signal detection of bicyclists at intersections.	https://nacto.org/publication/urban-bikeway-design-guide/bicycle-signals/signal-detection-and-actuation/	
Develop a systematic approach to maintaining bicycle facilities	Develop a clear process for identifying and addressing bicycle facility maintenance needs.	https://www.portlandoregon.gov/transportation/44597 https://www.fcgov.com/bicycling/pdf/2014BicycleMasterPlan_adopted_final.pdf	
Identify gaps and needed improvements in the bicycle network	Assess the bicycle network to identify gaps in the network and needed improvements to, and within, key activity centers and community areas.	https://peopleforbikes.org/placesforbikes/bicycle-network-analysis/	

Encouragement

Encouragement helps create a strong and fun active transportation culture and can lead to increases in the bicycle and micromobility mode share. Table 5.2 lists the existing programs and recommended actions to increase the promotion of bicycling and using micromobility in San Mateo. The programs listed below can help San Mateo achieve the Plan's ridership, safety and comfort, and community goals.

Table 5.2: Encouragement Support Programs

Support Program	Description	Learn More	Plan Goal(s)
Existing			
Bike to Work Day	The City celebrates Bike to Work Day on an annual basis.	Contact City staff for more information	
Safe Routes to School	Local safe routes have been identified for some elementary and middle schools.	https://www.cityofsanmateo.org/2933/Safe-Routes-to-School	
Bicycle helmet giveaways	The San Mateo Police Department coordinates free helmet giveaways through the Police Activities League on an ad-hoc basis.	Contact City staff for more information	
Recommended			
Develop a Safe Routes for Seniors Program	Identify and develop a Safe Routes for Seniors education and encouragement program.	https://americawalks.org/create-a-safe-routes-for-seniors-program/	
Promote existing bikeways	Develop online and print communication materials to promote San Mateo's existing bikeways and highlight routes for bicycling to key destinations.	https://www.fcgov.com/bicycling/	
Celebrate active transportation	Host at least one annual active transportation-focused event, such as an Open Streets-type event or bicycle tour of existing facilities to show members of the public that the City supports bicycling.	https://bikesiliconvalley.org/event/city-of-san-mateo-community-bike-tour/ https://openstreetsproject.org/open-streets-toolkit/getting-started/	

Support Program	Description	Learn More	Plan Goal(s)
Support encouragement programs	Support programs that encourage and promote bicycle and micromobility travel, such as bike valet at public and private events or discounts for biking to City destinations.	https://www.cabq.gov/planning/documents/Chapter5RecommendedPrograms.pdf	
Develop and encourage active transportation incentive programs	Develop a City employee incentive program for using active transportation to work and develop an encouragement program to encourage non-City employees to bike, roll, and walk to work (or Caltrain stations). These efforts could include mobile bike repair or coupons for businesses.	https://momentummag.com/build-bike-friendly-business/ https://bikeleague.org/business	
Explore congestion relief and Safe Routes to School projects	Work with local school districts and schools to coordinate bell times to reduce vehicle congestion and conflicts at school pick-up and drop-off to encourage safe bicycling options.	Contact City staff for more information	

Education

There are several educational programming tasks the City can undertake to support safe bicycling and micromobility use in San Mateo. Table 5.3 lists the existing programs and recommended actions to enhance active transportation education among people of all ages. The programs listed below can help San Mateo achieve the Plan's ridership, safety and comfort, and community goals.

Table 5.3: Education Support Programs

Support Program	Description	Learn More	Plan Goal(s)
Existing			
Bicycle webpage	There is brief text about bike routes and using a bike with public transit on the City's website.	https://www.cityofsanmateo.org/2125/Parking-and-Transportation	
Bicycle education events	The City's Public Works department hosts an annual bike rodeo.	https://www.cityofsanmateo.org/3736/Bike-Rodeo	

Support Program	Description	Learn More	Plan Goal(s)
Recommended			
Establish child and adult education programs	Identify and implement education programs for children and adults that build bicyclists' confidence and knowledge around bicycling and its benefits. This could be done in coordination with the Parks and Recreation Department or local schools and could include a family 'learn to bike' class.	https://www.portlandoregon.gov/transportation/article/565224	
Establish Safe Routes to School funding	Establish a stable funding source for Safe Routes to School programming.	https://www.metro.net/projects/srts/fund-your-program/	
Implement and promote demonstration projects	Implement short-term, high-visibility bicycle demonstration or 'pop-up' projects to serve as models that can be applied throughout the city. This can be used to highlight new facility designs and show the public how to safely navigate the facility before it is implemented. Include information about how to use new bicycle facilities on the City's website and in communications campaigns, including how to drive around new types of bicycle facilities.	https://transportation.bellevuewa.gov/UserFiles/Servers/Server_4779004/File/Transportation/Publications/PBII_Demo%20Bikeway%20Brochure_20180205.pdf	
Provide safety education program for users of all modes	Provide safety education programs or communications campaigns for people driving, bicycling, walking, and using micromobility devices that encourage safe travel behaviors.	http://www.pedbikeinfo.org/resources	
Create a robust bicycling webpage	Develop and maintain a content-rich mobility webpage(s) on the City's website and communicate how to reach City destinations by bike, on foot, or on micromobility devices. Include information on micromobility options, including user instructions, helpful tips, and information on any fees or costs.	https://www.metro.net/riding/go-bike/	

Enforcement

There are several programmatic efforts the City can undertake to support safe bicycling/micromobility use and driving behaviors in San Mateo. Table 5.4 lists the existing programs and recommended actions to enhance enforcement of bicycle-specific traffic violations and improve safety for users of all travel modes. The programs listed below can help San Mateo achieve the Plan's ridership and safety and comfort goals.

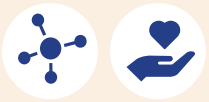
Table 5.4: Enforcement Support Programs

Support Program	Description	Learn More	Plan Goal(s)
Existing			
Bicycle patrols	Occasional bike patrols conducted by the San Mateo Police Department of bicycling/driving behavior and parking behavior.	Contact San Mateo Police Department for more information	
Bicycle-related enforcement	Bicycle-oriented enforcement activities are conducted when grant funding is available.	Contact San Mateo Police Department for more information	
Spot enforcement	San Mateo Police Department occasionally conducts heightened enforcements at specific locations.	Contact San Mateo Police Department for more information	
Recommended			
Encourage safe travel behavior	Develop and implement an enforcement program to encourage safe travel behavior and to reduce aggressive and/or negligent behavior among drivers, bicyclists, and pedestrians. Explore options to use incentives or rewards rather than fines.	https://www.noozhawk.com/article/santa_barbara_police_operation_targets_bicycle_pedestrian_safety	
Target most dangerous behaviors	Focus enforcement activities around behaviors that are clearly demonstrated to be factors that contribute to crashes and loss of life.	See Bicycle Safety, in Chapter 3.	
Reduce bicycle-specific violations	Enforce vehicles maintaining safe passing distance from bicyclists and not driving or parking in bikeways.	http://www.pedbikeinfo.org/resources/resources_details.cfm?id=4912	
Conduct high-visibility enforcement	Continue to hold focused/pop-up enforcement at locations with high potential for collisions to raise awareness about safety and encourage behavior change.	https://www.nhtsa.gov/enforcement-justice-services/high-visibility-enforcement-hve-toolkit	

Evaluation and Planning

San Mateo uses several evaluation and planning approaches to support bicycling and micromobility use in San Mateo. Table 5.5 lists the existing programs and recommended actions to enhance all aspects of bicycling locally. The programs listed below can help San Mateo achieve the Plan's ridership, safety and comfort, connectivity, and community goals.

Table 5.5: Evaluation and Planning Support Programs

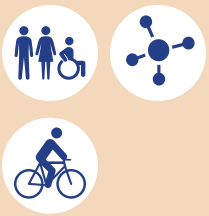
Support Program	Description	Learn More	Plan Goal(s)
Existing			
Speed data	The City collects speed data and speed limit evaluations every five years.	Contact City staff for more information	
Inventory Existing Bikeways	The City maintains a GIS inventory of existing bikeways.	Contact City staff for more information	
Count data	The City conducts bicycle counts on an ad hoc basis.	Contact City staff for more information	
Collision data	Bicycle-related collision analyses conducted on an ad hoc basis.	Contact City staff for more information	
Bicycle and Pedestrian Advisory Committee	The Sustainability and Infrastructure Committee serves as Bicycle and Pedestrian Advisory Committee (BPAC).	https://www.cityofsanmateo.org/3910/Sustainability-Infrastructure	
Recommended			
Develop systemic collision analysis	Use a systemic approach for reviewing bicyclist-involved collision data and associated roadway characteristics.	https://safety.fhwa.dot.gov/systemic/	
Participate in a count program	Participate in the County's bicycle count program. Annually, conduct bicycle rack counts at schools.	https://www.smcsustainability.org/livable-communities/active-transportation/	
Establish a Bicycle and Pedestrian Advisory Committee	Establish a bicycle and pedestrian committee that includes City staff, members of the public, and representatives from local active transportation organizations.	http://bikeleague.org/sites/default/files/bpac_best_practices%28web%29.pdf https://www.half-moon-bay.ca.us/390/BicyclePedestrian-Advisory-Committee-BPA	

Support Program	Description	Learn More	Plan Goal(s)
Use development projects to further active transportation	Continue to require the construction of pedestrian and bicycle facilities and amenities, where warranted, as a condition of approval of new development and major redevelopment projects.	http://uli.org/wp-content/uploads/ULI-Documents/Active-Transportation-and-Real-Estate-The-Next-Frontier.pdf https://www.refbc.com/sites/default/files/HUB%20Not%20Just%20Bike%20Racks%20Report%20FINAL.pdf	
Support micromobility	Explore opportunities for shared mobility services in San Mateo to reduce the reliance on driving for short trips. Develop a plan to support micromobility users with dedicated space, such as protected bike lanes, and dedicated parking areas on-street or in pedestrian amenity zones for e-scooters and other micromobility devices.	https://sharedusemobilitycenter.org/wp-content/uploads/2017/10/SUMC_TWINCITIES_Web_Final.pdf https://ops.fhwa.dot.gov/publications/fhwahop16022/fhwahop16022.pdf	
Develop partnerships to support active transportation	Explore partnerships with private and public organizations (e.g., the County of San Mateo Health Department) to fund incentive programs, events, programs, and infrastructure projects that support multimodal transportation. Create an ongoing partnership between the City, San Mateo Police Department and school districts to promote walking and bicycling to school.	https://www.calbike.org/about_us/who_we_are/local_partners/	
Evaluate bikeway projects	Measure and report the effects and benefits of bikeway projects (both permanent and demonstration projects) by performing before and after studies (e.g., crash rates, effect on motor vehicle speed, increase in bicycle traffic, etc.).	https://nacto.org/wp-content/uploads/2015/04/bicycle_facility_evaluation_ddot.pdf https://www.cambridgema.gov/CDD/Projects/transportation/cambridgestreetbicyclesafetydemonstrationproject	
Provide updates on status of Plan implementation	Provide annual updates to the City Council and the Sustainability and Infrastructure Commission on the status of implementing the Bicycle Master Plan projects and programs.	Contact San Mateo Public Works Department for more information	

Equity

There are several programmatic efforts the City can undertake to support the equitable distribution of bicycling and micromobility infrastructure and programs in San Mateo. Table 5.6 lists the existing programs and recommended actions to enhance equity in the city. The programs listed below can help San Mateo achieve the Plan's ridership, equity, connectivity, and community goals.

Table 5.6: Equity Support Programs

Support Program	Description	Learn More	Plan Goal(s)
Existing			
Government service education for ESL community	The ESL City Government Academy offers a unique English as a Second Language (ESL) City Government Academy. The Academy is designed to expand participants' awareness of local government, City services, and increase civic engagement, leadership, and volunteering.	https://www.cityofsanmateo.org/3887/ESL-City-Government-Academy	
Equity-focused shared mobility policy	The City requires Shared Mobility Permit holders to include equity programs in their applications and programs.	https://www.cityofsanmateo.org/4097/Shared-Mobility-Permit-Program	
Recommended			
Improve multimodal access for vulnerable communities	Assess non-motorized access to destinations specifically for low-income and transit-dependent community members.	http://www.pedbikeinfo.org/cms/downloads/PBIC_WhitePaper_Equity.pdf	
Reduce active transportation barriers for older adults	Work with older adults to identify and address barriers to increased walking, bicycling, and transit use.	https://www.nadtc.org/about/transportation-aging-disability/unique-issues-related-to-older-adults-and-transportation/	
Conduct appropriate public involvement	Adjust public involvement practices to prioritize outreach to historically-underserved populations and modify outreach methods to the needs of these populations (e.g., time of day, location, childcare provided, language services, etc.).	https://d3n8a8pro7vhmx.cloudfront.net/durhamnis/pages/592/attachments/original/1543332399/Draft_Equitable_Engagement_Blueprint_%2818%29_11.06.pdf?1543332399	
Identify funding	Identify grant funding opportunities for programs to increase access to bicycles and equipment for historically underserved populations.	https://catsip.berkeley.edu/resources/funding-opportunities	

Policies

Policies are key ingredients in a comprehensive bicycle and mobility plan because they shape the physical environment and can establish programs that encourage people to bike and use micromobility more frequently. This section presents the priority policy recommendations for the 2020 San Mateo Bicycle Master Plan. The policies relate to both the planning and design of facilities and can help support the programs discussed in Section 5.1.

Some of the recommendations listed below may require changes to existing practices while others may require changes to City codes and may necessitate City Council approval. The recommendations below were developed after reviewing the existing plans and policies that influence bicycle and micromobility planning in San Mateo, as well as a peer city policy and practice review. For a more detailed overview of the City's existing plans and policies, and a review of peer city bicycle planning best practices, refer to Appendix B: Goals, Plans, and Policies Review.

Priority Policies

Planning and Design

1. Adopt the position that, in both planning and design, the bikeway network should serve all ages and abilities. This entails building a more comfortable and connected bicycle network by installing separated facilities, improving intersections, and integrating bikes with transit.
2. Adopt NACTO's Urban Bikeway Design Guide[7] and Don't Give Up at the Intersection[8] as supplements to existing design guidance.
3. When implementing projects, consider and incorporate lighting into bikeway design.
4. Measure and report the effects and benefits of bikeway projects (both permanent and demonstration projects) by performing before and after studies (e.g., crash rates, effect on motor vehicle speed, increase in bicycle traffic, etc.).

Funding and Implementation

1. Dedicate a share of the Capital Improvement Program and General Fund money for stand-alone bicycle infrastructure projects and establish annual funding minimums or targets for bicycle facility improvements.
2. Seek opportunities for rapid implementation of quick-win, low-stress bikeway projects on key connections within the bikeway network.[9]

7 NACTO's Urban Bikeway Design Guide: https://nacto.org/publication/urban-bikeway-design-guide/

8 NACTO's Don't Give Up at the Intersection: https://nacto.org/publication/urban-bikeway-design-guide/dont-give-up-at-the-intersection/

9 These "quick-win" projects could include marking bike lanes on streets with excess pavement width, performing road diets as part of resurfacing projects, and developing bike boulevards on low-stress neighborhood streets. The City should set a goal of implementing at least five miles of low-stress bikeways per year. Initially, these projects could be pilot projects that use lower-cost materials.

6 Implementation and Funding

The infrastructure and program recommendations in Chapters 4 and 5 provide strategies and actions that will support San Mateo in becoming a safer and more comfortable place for people of all ages and abilities to use bicycles and personal mobility devices. This chapter provides an overview of the prioritization metrics and methodology used to weigh infrastructure project recommendations to determine which should happen in the short- and long-term. This chapter also summarizes the strategy for implementing these projects as well as support programs. Additionally, this chapter discusses funding strategies for implementing project and program recommendations.

Project Prioritization

Realistically, San Mateo has limited financial resources, so it is not possible to implement all the recommended infrastructure projects immediately. While all these projects play an important role in a safe and connected citywide mobility network, certain projects may provide greater benefits than others. Prioritization criteria were used to score all recommended projects that comprise the proposed network; see Table 6.1 for the prioritization criteria.

Prioritization criteria were drafted based on the Plan's goals and objectives, i.e., connectivity, safety and comfort, equity, and ridership. Prioritization enables projects to be categorized into high-, medium- and lower-priority projects.

Prioritization criteria were applied to each project in the proposed network, and this resulted in a score for each project, out of 40 possible points. However, no project received full points in each category; therefore, the maximum score is 35 points.

The projects were scored as follows:

- High Priority (24-35 points)
- Medium-High Priority (19-24 points)
- Medium-Low Priority (16-19 points)
- Low Priority (0-16 points)

Projects with scores falling in the high-priority

Table 6.1: Project Prioritization Scoring Criteria

Factor	Criteria	Measure	
Connectivity		**Highest Number of Points Possible**	**14**
Destinations Served	Parks, Libraries, and Community/Senior Centers[10]	1/4 mile	2
		1/2 mile	1
	Transit Stops	1/2 mile from a Caltrain station	2
		½ to 1 mile from a Caltrain station	1
		500 feet from a bus stop with a frequency of 15 minutes	1
	Schools	1/4 mile	2
		1/2 mile	1
	Commercial Area	1/4 mile	2
		1/2 mile	1
	Bicycle Network Analysis	Within a census track with a low BNA score	3
		Within a census track with a medium BNA score	2
		Within a census track with a high BNA score	1
	All ages and abilities (AAA) facility	Proposed AAA facility that connects with existing AAA facility	2
		Non-AAA facility that connects to existing facility	1
Safety & Comfort		**Highest Number of Points Possible**	**10**
	Level of Traffic Stress	LTS 3 or LTS 4 for streets and intersections	6
		LTS 2 for streets and intersections	4
	Collision History[11]	High concentration – Segment that had a severe crash	4
		Medium concentration – Segment had a non-severe crash	2
Equity		**Highest Number of Points Possible**	**8**
	CalEnviroScreen	Within a census track in the 60-100th percentile	8
		Within a census track in the 50-60th percentile	5

10 Network distance was used to calculate this measure, rather than straight line buffers.

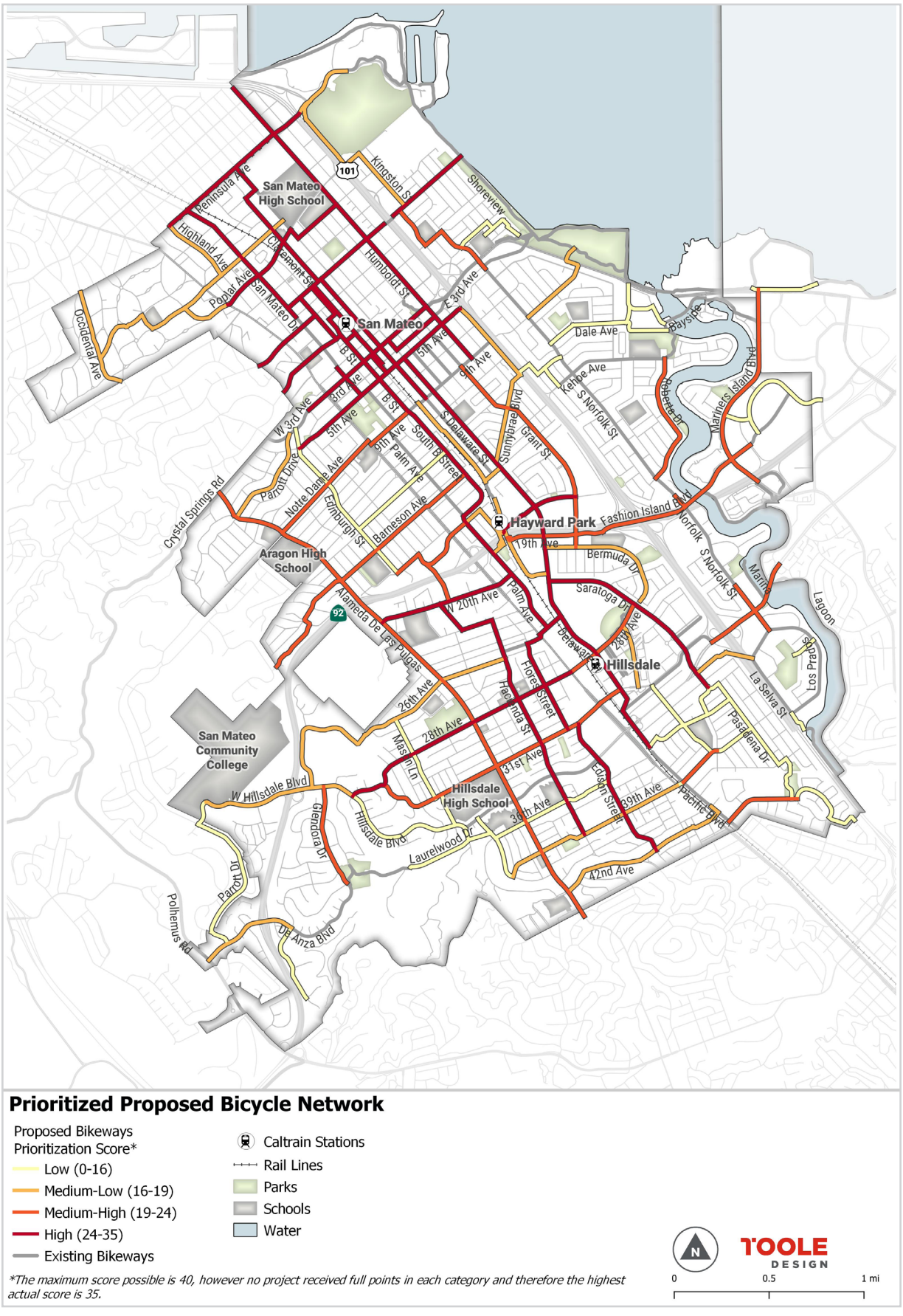
11 A weighted crash total of bicycle crashes that occurred between 2013 and 2017 along each project was calculated. Crashes were weighted based on the severity of the most severe injury resulting from the crash: fatal and serious injury crashes at 4 points, all other injury crashes at 2 points.

Factor	Criteria	Measure	
Ridership		**Highest Number of Points Possible**	**8**
	Potential Bicycle Demand	Within a census block with a high potential demand score	3
		Within a census block with a low potential demand score	2
	Build Your Own Bikeways Public Outreach Activity	Located on a route with a high frequency of highlighting	5
		Located on a route with a medium frequency of highlighting	3
		Located on a route with a low frequency of highlighting	1
		Total Points Possible	**40**

category should be prioritized for implementation and should be considered first when funding or grant opportunities are made available. Projects with scores in the medium-high to medium-low priority categories should be incorporated into plans for future funding cycles and/or grant opportunities, and addressed as part of ongoing maintenance or other improvements. See Figure 6.1 for a map of the prioritized projects, and Table 6.3 for a list of the high-, medium-, and low-priority projects.

While these projects have been prioritized, the City of San Mateo should remain nimble and opportunistic when implementing the recommendations. Opportunities may arise to implement lower-priority projects in the short-term while the implementation of some higher-priority projects may be delayed for various reasons. While flexibility is key, this prioritization strategy offers a way for decision makers and City staff to have a thoughtful and intentional path forward for implementation.

Figure 6.1: Prioritized Proposed Bicycle and Mobility Network



Implementation Strategy

An implementation strategy will assist the City in building out the identified projects and focusing financial and staff resources. This chapter describes a clear, concise implementation strategy that the City can use to build upon the momentum of this planning effort and to get projects on the ground quickly. The strategy includes:

- Rapid implementation strategies, including a Rapid Implementation Network map
- Planning-level cost estimates per unit length for recommended facilities; and
- Next step: Conceptual engineering designs

Rapid Implementation

The City recognizes the importance of constructing a well-connected, low-stress mobility network in the short term to provide safe, enjoyable facilities for people of all ages and abilities to use bikes, scooters, and other emerging technology devices. So that the City can begin the steps towards project implementation immediately after Plan adoption, this chapter includes a Rapid Implementation Network and rapid implementation strategies.

Rapid Implementation Network

The Rapid Implementation Network (see Figure 6.2) includes projects that can be implemented in the short-term (i.e., less than five years) using rapid implementation strategies. The Rapid Implementation Network is a mix of projects that are:

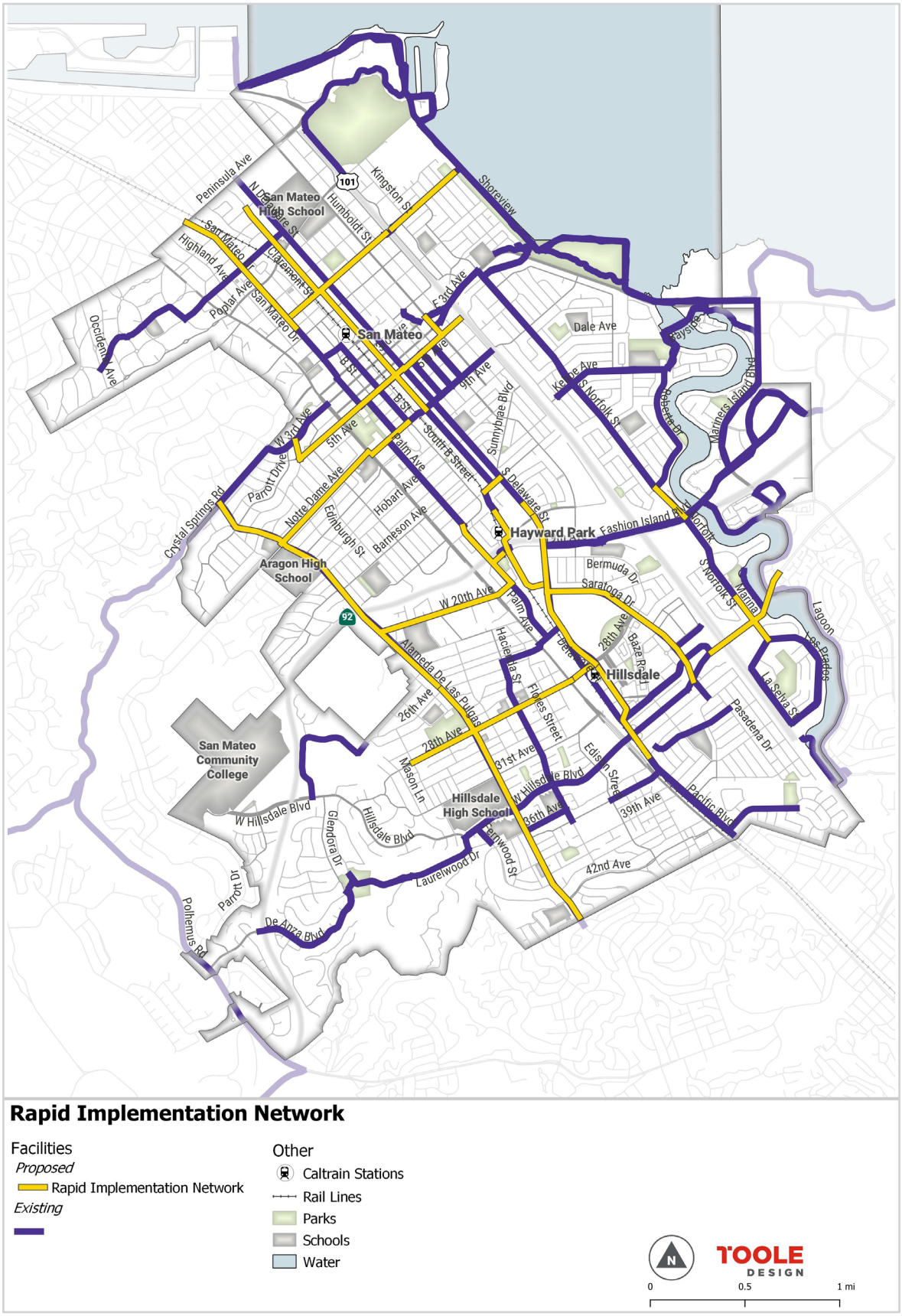
- High-priority and aimed at encouraging "interested but concerned" bicyclists to ride in San Mateo
- "Low-hanging fruit," or can be implemented in the short-term with available staff and/or funding resources
- Easily implemented through signage and striping, or using paint to mark the new bikeways
- Connected to existing low-stress bikeways.

Rapid Implementation Strategies

Rapid implementation is an approach that focuses resources (such as City staff's and advocates' time and energy, community engagement, and funding) to deliver a full network of high-comfort facilities very quickly. This strategy has already been implemented by many cities in the U.S., including San Jose. Rapid implementation is an effective way to install bikeway projects for several reasons:

- "Good" is the focus of rapid implementation as opposed to "perfect." Quick-build designs focus on implementing flexible pilot projects that can be adjusted and optimized once the network is built out and operating.
- Rapid implementation projects are constructed from temporary, low-cost materials, such as paint, flexible delineators, thermoplastic, planters, and other materials. This means they are flexible "pilot" projects that allow for significant changes to be made after they are constructed.
- Rapid implementation projects are installed quickly which gives the community an opportunity to test new projects before they are permanent. Often, the materials used are temporary and low-cost, so the City can quickly make changes in response to community feedback.
- Quick-build networks provide a fast "proof of concept" instead of waiting for results as projects are slowly constructed. These quick-build projects can have a faster impact on citywide metrics like bicycle ridership and perceived safety.

Figure 6.2: Rapid Implementation Network



Below are strategies for constructing rapid implementation, or "quick-build," projects.

People Power

Description		Strategies
Political Ownership	The most successful quick-build projects have political champions. These champions provide clear direction to City staff and inform businesses and the public that projects are moving forward.	• Nurture champions amongst City Council and Sustainability and Infrastructure Commission members, City staff, and the community. • Ask the Council to pass a resolution and/or provide a directive to the Public Works Department to construct the Rapid Implementation Network.
The Team	The Public Works Department and Transportation Planning Team will be a champion for rapid implementation of the network.	• The Team will be responsible for ensuring buy-in and engagement from City officials and the community, coordinating with colleagues for budgeting and procurement, providing direction to the design team (in-house or external), and providing regular lines of communication to the San Mateo community. • Establish a system for City staff and agency partners (e.g., SamTrans, Police and Fire Departments, etc.) to efficiently review and provide comments on project designs. The goal is one collaborative team of designers, operators, and other stakeholders.
Community Engagement	During quick-build projects, installation occurs in the middle of community engagement, which focuses on design options and education as opposed to what facility to install or whether or not to install it.	• Develop a community engagement and equity plan with clear messaging that applies to all quick-build projects. • Create a webpage on the City's website to share information about the quick-build projects with the community. • Continue to engage with the community after installation through educational events that help people understand how to use the new bikeways. • Once a project is installed, actively evaluate the project to determine if it is working for the community and for users of all ages and abilities. Then, make changes as needed.

Implementation Ideas

Description		Strategies
Use Every Opportunity	San Mateo should take advantage of quick-build opportunities by establishing an implementation process that can quickly activate when an opportunity arises.	• Develop a project list and prioritize the projects. – Completed as a part of this Plan • Create an implementation map based on project prioritization analysis, heatmaps from community outreach, and paving schedules that construct multiple, connected quick build projects simultaneously. This results in design and outreach efficiencies and greater improvements to bike connectivity and convenience once constructed. – Completed as a part of this Plan • Post the implementation map on the City's quick-build project webpage and keep the webpage updated with timeline and funding information. • Match prioritized and/or quick-build projects with the City's paving schedule.
Consistent Funding	Quick-build projects require reliable local funding to ensure rapid implementation of individual projects and the successful build-out of networks. Most state and federal grants are designed around one-time capital projects and longer timeframes, which are not generally compatible with quick-build schedules.	• Earmark City funding for quick-build projects, such as the General Fund, Measure A, the Transportation Improvement Fee, etc. • Use low-cost and/or temporary materials that do not require large budgets to construct quick-build projects (e.g., flexible delineators, thermoplastic, planters, etc).
Contracting	Quick-build projects are rarely compatible with full bid cycles. San Mateo should plan to have the Public Works Department install the projects, or have an on-call contractor to install quick-build projects.	• Establish an on-call contract with an external contractor or identify Public Works installation crews. • Develop City standard details and specifications for design consistency and efficiency (e.g., bike lane extensions, bike lane buffers, etc.).

Maintenance and Monitoring

Description		Strategies
Planning for Maintenance	Quick-build projects must be maintained if San Mateans are to consistently use them. Maintenance activities such as replacing damaged flexible delineators, restriping worn pavement markings, and clearing facilities of trash and debris are critical to maintain the comfort and attractiveness of these facilities.	• Incorporate maintenance of quick-build projects into existing Public Works maintenance operations (e.g., weekly street sweeping) and budgets. • Invest in additional maintenance personnel and equipment, as needed.
Measurement	It is important to measure the effects of quick-build projects to make adjustments as needed and to show their success.	• Prior to implementation, collect data (such as bicycle, scooter, pedestrian, and vehicle volumes, speeds, travel time, etc) and collect data after implementation to aid in evaluation. • At the start of a quick-build project, establish goals, objectives, and metrics to determine a project's level of success. Goals, objectives, and metrics can be standardized across all quick build projects, if desired.

Cost Estimates

Planning-level cost estimates were developed for each of the recommended bikeway types based on assumptions about the materials needed, such as the quantity of pavement markings, signage, and/or modifications needed to the existing civil infrastructure (e.g., curbs, drainage) during installation.

Table 6.2 includes the estimates for project cost per mile. These estimates include the cost of construction, engineering, full PS&E (plans, specs, and estimates), environmental, and contingency costs. The full cost estimates for each proposed project are included in Table 6.3.

Table 6.2: Planning-Level Per-Mile Unit Cost Estimates

Bikeway Type	Project Cost Per Mile
Shared Use Path (Class I)	**$1,550,000**
Separated Bike Lane (Class IV) – Level 2 (two-way bikeways with cast in place curb and landscaped buffer)	**$1,750,000**
Separated Bike Lane (Class IV) - Level 1 (one-way bikeways with flexible delineators and striped buffer)	**$400,000**
Buffered Bike Lane (Class II)	**$140,000**
Standard Bike Lane (Class II)	**$88,000**
Bicycle Boulevard (Class III)	**$310,000**
Bike Route (Class III)	**$38,000**

Table 6.3: Prioritized Project List with Cost Estimates

Project Number	Street	Northern/ Western Limit	Southern/ Eastern Limit	Proposed Facility	Prioritization Score	Cost Estimate
High Priority Projects						
2	Peninsula Av	Highland Av	San Mateo Dr	Bike Lane	High	$330,000 (Level 1 separated bike lanes) $1,410,000 (Level 2 separated bike lanes)
	Peninsula Av	San Mateo Dr	Bayshore Bl	Separated BL		
3	Humboldt St	City Limit	Poplar Av	Bike Blvd	High	$320,000
	Humboldt St	Poplar Av	9th Av	Bike Lane		
5	San Mateo Dr	City Limit	Catalpa St	Bike Lane	High	$70,000
6	Poplar Av	El Camino Real	Delaware St	Bike Lane	High	$130,000
	Delaware St	Poplar Av	Indian Av	Bike Lane		
	Indian Av	Delaware St	Humboldt St	Bike Blvd		
7	Delaware St	Peninsula Av	State St	Bike Lane	High	$480,000
	State St	Delaware St	Claremont St	Bike Blvd		
	Claremont St	State St	9th Av	Bike Blvd		
8	Monte Diablo Av	San Mateo Dr	US-101	Bike Blvd	High	$360,000
	Monte Diablo Av	US-101	Bay Trail	Bike Blvd		
9	Tilton Av	City Limit	Ellsworth Av	Bike Lane	High	$30,000
12	Railroad Av (East)	Monte Diablo Av	4th Av	Bike Blvd	High	$290,000
	Railroad Av (West)	3rd Av	4th Av	Bike Blvd		
	Railroad Av (West)	4th Av	5th Av	Shared-Use Path		
	4th Av	Railroad Av (West)	Railroad Av (East)	Bike Lane		
13	Baywood Av	City Limit	El Camino Real	Bike Blvd	High	$310,000
	Baldwin Av	El Camino Real	San Mateo Dr	Bike Blvd		
	Ellsworth Av	Monte Diablo Av	Baldwin Av	Bike Blvd		
	Railroad Av (West)	Monte Diablo Av	B St	Bike Blvd		
	B St	Railroad Av (West)	Baldwin Av	Bike Blvd		
	Baldwin Av	San Mateo Dr	B St	Bike Lane		
	1st Av	B St	Railroad Av (East)	Bike Lane		
14	B St	Baldwin Av	5th Av	Separated BL	High	$260,000 (Level 1 separated bike lanes) $680,000 (Level 2 separated bike lanes)
	B St	5th Av	16th Av	Buffered BL		
	South Bl	16th Av	Palm Av	Buffered BL		
15	3rd Av	Dartmouth Rd	El Camino Real	Bike Lane	High	$430,000 (Level 1 separated bike lanes) $1,830,000 (Level 2 separated bike lanes)
	3rd Av	El Camino Real	Humboldt St	Separated BL		
	Delaware St	3rd Av	4th Av	Separated BL		
	4th Av	Delaware St	Humboldt St	Separated BL		

Project Number	Street	Northern/ Western Limit	Southern/ Eastern Limit	Proposed Facility	Prioritization Score	Cost Estimate
16	5th Av	Virginia Av	Delaware St	Bike Lane	High	$190,000
	5th Av	Delaware St	Amphlett Bl	Bike Blvd		
	San Mateo Dr	2nd Av	5th Av	Bike Route		
26	20th Av	Alameda de las Pulgas	El Camino Real	Bike Lane	High	$90,000
	20th Av	El Camino Real	Palm Av	Bike Blvd		
27	Palm Av	South Bl	25th Av	Bike Lane	High	$90,000
	25th Av	Flores St	Delaware St	Bike Lane		
28	Isabelle Av	20th Av	22nd Av	Bike Blvd	High	$490,000
	22nd Av	Isabelle Av	Hacienda St	Bike Blvd		
	Hacienda St	22nd Av	39th Av	Bike Blvd		
45	Flores St	25th Av	31st Av	Bike Blvd	High	$410,000
	Edison St	31st Av	42nd Av	Bike Blvd		
46	31st Av	Hillsdale Bl	28th Av	Bike Blvd	High	$430,000 (Level 1 separated bike lanes) $530,000 (Level 2 separated bike lanes)
	28th Av	31st Av	Mason Ln	Bike Blvd		
	28th Av	Mason Ln	Edison St	Bike Blvd		
	28th Av	Edison St	El Camino Real	Separated BL		
55	Delaware St	5th Av	Concar Dr	Buffered BL	High	$640,000 (Level 1 separated bike lanes) $1,820,000 (Level 2 separated bike lanes)
	Delaware St	Concar Dr	28th Av	Separated BL		
	Delaware St	28th Av	Pacific Bl	Bike Blvd		
	Pacific Bl	Delaware St	Otay Av	Buffered BL		
56	Saratoga Dr	Delaware St	Hillsdale Bl	Separated BL	High	$410,000 (Level 1 separated bike lanes) $1,720,000 (Level 2 separated bike lanes)
	Saratoga Dr	Hillsdale Bl	Santa Clara Wy	Buffered BL		
58	Concar Dr	Pacific Bl	Delaware St	Shared-Use Path	High	$430,000 (Level 1 separated bike lanes) $740,000 (Level 2 separated bike lanes)
	Concar Dr	Delaware St	Grant St	Separated BL		
Medium-High Priority Projects						
10	Kingston St	Monte Diablo Av	Cypress Av	Bike Blvd	Med-High	$200,000 (Level 1 separated bike lanes) $250,000 (Level 2 separated bike lanes)
	Cypress Av	Kingston St	Norfolk St	Bike Blvd		
	Norfolk St	Cypress Av	Dolan Av	Bike Blvd		
	Norfolk St	Dolan Av	3rd Av	Bike Lane		
	Norfolk St	3rd Av	San Mateo Creek Path	Separated BL		
19	SR-92 Overcrossing	Bovet Rd	O'Farrell St	Shared-Use Path	Med-High	$250,000
	O'Farrell St	SR-92 Overcrossing	20th Av	Bike Blvd		
20	Borel Av	Edinburgh St	Bovet Rd	Bike Blvd	Med-High	$170,000 (Level 1 separated bike lanes) $560,000 (Level 2 separated bike lanes)
	Bovet Rd	Borel Av	El Camino Real	Separated BL		
	17th Av	El Camino Real	Palm Av	Bike Lane		

Project Number	Street	Northern/ Western Limit	Southern/ Eastern Limit	Proposed Facility	Prioritization Score	Cost Estimate
23	Murphy Dr	City Limit	Ashwood Dr	Bike Blvd	Med-High	$470,000
	Ashwood Dr	Barneson Av	Murphy Dr	Bike Blvd		
	Barneson Av	Ashwood Dr	B St	Bike Blvd		
24	Notre Dame Av	Alameda de las Pulgas	El Camino Real	Bike Blvd	Med-High	$230,000
	9th Av	El Camino Real	B St	Bike Lane		
25	Alameda de las Pulgas	Crystal Springs Rd	26th Av	Bike Lane	Med-High	$340,000
	Alameda de las Pulgas	26th Av	City Limit	Buffered BL		
33	Glendora Dr	Hillsdale Bl	Cedarwood Dr	Bike Blvd	Med-High	$130,000
	Glendora Dr	Cedarwood Dr	Cherrywood Dr	Bike Lane		
40	39th Av	Pacific Bl	Orinda Dr	Bike Blvd	Med-High	$80,000
42	Laurie Meadows Dr	Pacific Bl	Woodbridge Ci	Buffered BL	Med-High	$60,000
47	28th Av	El Camino Real	Delaware St	Shared-Use Path	Med-High	$260,000
48	28th Av	Delaware St	Kyne St	Bike Lane	Med-High	$90,000
	28th Av	Kyne St	Saratoga Dr	Bike Blvd		
49	31st Av	28th Av	Delaware St	Bike Blvd	Med-High	$460,000
53	Hillsdale Bl	Franklin Pk	City Limit	Separated BL	Med-High	$220,000 (Level 1 separated bike lanes) $980,000 (Level 2 separated bike lanes)
54	Norfolk St	Ciro Av	La Selva St	Buffered BL	Med-High	$40,000
60	19th Av	Pacific Bl	Fashion Island Bl	Separated BL	Med-High	$610,000 (Level 1 separated bike lanes) $2,610,000 (Level 2 separated bike lanes)
	Fashion Island Bl	19th Av	Baker Wy	Separated BL		
	Norfolk St	Parkside Plaza Midblock Xing	Fashion Island Bl	Buffered BL		
61	Mariners Island Bl	3rd Av	Fashion Island Bl	Separated BL	Med-High	$670,000 (Level 1 separated bike lanes) $1,990,000 (Level 2 separated bike lanes)
	Mariners Island Bl	Fashion Island Bl	Winward Wy	Shared-Use Path		
63	Grant St	9th Av	Concar Dr	Bike Blvd	Med-High	$400,000 (Level 1 separated bike lanes) $770,000 (Level 2 separated bike lanes)
	Grant St	Concar Dr	Bermuda Dr	Separated BL		
67	Roberta Dr	Kehoe Av	Norfolk St	Bike Blvd	Med-High	$220,000
Medium-Low Priority Projects						
1	Occidental Av	City Limit	City Limit	Bike Blvd	Med-Low	$790,000
	Clark Dr	Occidental Av	Crescent Av	Bike Blvd		
	Crescent Av	Clark Dr	Bellevue Av	Bike Blvd		
	Bellevue Av	Crescent Av	Delaware St	Bike Blvd		
	Highland Av	City Limit	Bellevue Av	Bike Blvd		
	Hurlingham Av	Bellevue Av	Poplar Av	Bike Blvd		
	Poplar Av	Hurlingham Av	El Camino Real	Bike Blvd		

Project Number	Street	Northern/ Western Limit	Southern/ Eastern Limit	Proposed Facility	Prioritization Score	Cost Estimate
4	Coyote Point Dr	Airport Bl	Bay Trail	Bike Lane	Med-Low	$950,000
	Peninsula Av	Bayshore Bl	Airport Blvd	Shared-Use Path		
	Bayshore Bl	Peninsula Av	Poplar Av	Shared-Use Path		
	Poplar Av	Bayshore Bl	Kingston St	Bike Blvd		
	Kingston St	Poplar Av	Monte Diablo Av	Bike Blvd		
17	Parrott Dr	Alameda de las Pulgas	3rd Av	Bike Blvd	Med-Low	$170,000
21	17th Av	Palm Av	Leslie St	Bike Blvd	Med-Low	$710,000
	Leslie St	17th Av	19th Av	Bike Blvd		
	19th Av	Palm Av	Leslie St	Bike Blvd		
	Hayward Park Connector	Existing Path	Concar Dr	Shared-Use Path		
	Pacific Bl	Concar Dr	Delaware St	Bike Blvd		
	Railroad Av	9th Av	16th Av	Bike Blvd		
31	Perimeter Rd	CSM Dr	Hillsdale Bl	Separated BL	Med-Low	$330,000 (Level 1 separated bike lanes) $1,430,000 (Level 2 separated bike lanes)
	Hillsdale Bl	Perimeter Rd	31st Av	Separated BL		
32	De Anza Bl	Polhemus Rd	SR-92	Separated BL	Med-Low	$160,000 (Level 1 separated bike lanes) $670,000 (Level 2 separated bike lanes)
	De Anza Bl	SR-92	Parkwood Dr	Bike Lane		
34	Campus Dr	Hillsdale Bl	26th Av	Bike Lane	Med-Low	$330,000
	26th Av	Campus Dr	Hacienda St	Bike Blvd		
38	39th Av	Fernwood St	El Camino Real	Bike Blvd	Med-Low	$320,000
43	42nd Av	Alameda de las Pulgas	Olympic Av	Bike Blvd	Med-Low	$240,000
44	42nd Av	Olympic Av	Pacific Bl	Separated BL	Med-Low	$70,000 (Level 1 separated bike lanes) $280,000 (Level 2 separated bike lanes)
	Pacific Bl	Vista Av	42nd Av	Bike Lane		
51	Hillsdale Bl Spur	Saratoga Dr	US-101	Bike Blvd	Med-Low	$270,000
	US-101 Overcrossing	Hillsdale Bl Spur	La Selva St	Shared-Use Path		
57	Baze Rd	28th Av	Franklin Pk	Bike Blvd	Med-Low	$100,000
59	Bermuda Dr	Delaware St	Saratoga Dr	Bike Blvd	Med-Low	$230,000
64	16th Av	Railroad Av	Delaware St	Bike Blvd	Med-Low	$330,000
	Sunnybrae Bl	Delaware St	Amphlett Bl	Bike Blvd		
	Amphlett Bl	5th Av	Sunnybrae Bl	Bike Blvd		
68	Newbridge Av	Norfolk St	J Hart Clinton Dr	Bike Blvd	Med-Low	$360,000
	J Hart Clinton Dr	Seal Point Park	Newbridge Av	Shared-Use Path		
Low Priority Projects						
11	2nd Av	Norfolk St	Quebec St	Bike Blvd	Low	$150,000
	Quebec St	2nd Av	Dolan Av	Bike Blvd		
	Dolan Av	ROW Limit	Ryder St	Bike Blvd		
	Ryder St	Dolan Av	Bay Trail	Bike Blvd		

Project Number	Street	Northern/ Western Limit	Southern/ Eastern Limit	Proposed Facility	Prioritization Score	Cost Estimate
18	Virginia Av	3rd Av	Edinburgh St	Bike Blvd	Low	$300,000
	Edinburgh St	Virginia Av	Borel Av	Bike Blvd		
22	Hobart Av	Edinburgh St	B St	Bike Blvd	Low	$190,000
29	Parkwood Dr	De Anza Bl	Broadview Ct	Bike Blvd	Low	$130,000
30	Parrott Dr	CSM Dr	De Anza Bl	Bike Blvd	Low	$280,000
	CSM Dr	Parrott Dr	Perimeter Rd	Bike Lane		
35	Hillsdale Bl	31st Av	Hillsdale Pl	Bike Lane	Low	$80,000
36	Mason Ln	26th Av	31st Av	Bike Blvd	Low	$200,000
	Del Monte St	31st Av	Hillsdale Bl	Bike Blvd		
	Laurel Creek Dr	Hillsdale Bl	Laurelwood Dr	Bike Blvd		
37	Laurelwood Dr	Tenderfoot Trail	Fernwood St	Bike Blvd	Low	$470,000
	Fernwood St	Hillsdale Bl	39th Av	Bike Blvd		
	36th Av	Fernwood St	Edison St	Bike Blvd		
39	Caltrain Crossing	El Camino Real	Pacific Bl	Shared-Use Path	Low	$60,000
41	Otay Av	Pacific Bl	San Miguel Wy	Bike Blvd	Low	$1,090,000
	San Miguel Wy	Otay Av	Pasadena Dr	Bike Blvd		
	Curtiss St	Franklin Pk	39th Av	Bike Blvd		
	Santa Clara Wy	Orinda Dr	Pasadena Dr	Bike Blvd		
	Orinda Dr	Santa Clara Wy	San Miguel Wy	Bike Blvd		
	Pasadena Dr	Santa Clara Wy	40th Av	Bike Blvd		
	40th Av	Pasadena Dr	Casanova Dr	Bike Blvd		
	Casanova Dr	40th Av	Casanova Park	Bike Blvd		
	39th Av	Orinda Dr	Pasadena Dr	Bike Blvd		
	Casanova Park Connector	Casanova Dr	Laurie Meadows Dr	Shared-Use Path		
	Woodbridge Ci	Laurie Meadows Dr	Seagate Dr	Bike Blvd		
	Seagate Dr	Woodbridge Ci	City Limit	Bike Blvd		
50	La Selva St	Los Prados St	City Limit	Bike Blvd	Low	$30,000

Project Number	Street	Northern/ Western Limit	Southern/ Eastern Limit	Proposed Facility	Prioritization Score	Cost Estimate
52	Bahia St	Los Prados Park	Los Prados St	Bike Blvd	Low	$40,000
62	Armada Wy	Mariners Island Bl	Bridgepointe Ci	Bike Lane	Low	$100,000
	Bridgepointe Ci	Bridgepointe Pk	Chess Dr	Buffered BL		
	Chess Dr	Bridgepointe Pk	City Limit	Buffered BL		
65	US-101 Overcrossing	Amphlett Bl	Norton St	Shared-Use Path	Low	$120,000
66	Norton St	US-101 Overcrossing	Royal Av	Bike Blvd	Low	$110,000
	Royal Av	Norton St	Norfolk St	Bike Blvd		
	Cobb St	Royal Av	Kehoe Av	Bike Blvd		
69	Dale Av	Norfolk St	Wastewater Treatment Path	Bike Blvd	Low	$860,000
	Detroit Dr	J Hart Clinton Dr	John Lee Dog Park	Bike Blvd		
	Wastewater Treatment Path	Detroit Dr	John Lee Dog Park	Shared-Use Path		
70	3rd Av	Mariners Island Bl	Bay Trail	Shared-Use Path	Low	$520,000
Total Cost of Recommended Network (Level 1 Separated Bike Lanes)						$21,200,000
Total Cost of Recommended Network (Level 2 Separated Bike Lanes)						$33,700,000

Projects that require the construction of new bicycle and pedestrian-only undercrossings/overcrossings will require more detailed cost estimates that include the material and construction costs of the undercrossing or overcrossing. The project cost listed in Table 6.3 includes the cost of bikeway treatments applied to existing roadway, not the materials required in undercrossing and overcrossing construction.

Concept Designs

As a next step, planning level concept designs will be developed for certain high, or medium-high, priority projects in areas where construction of the facility may be complicated due to limited available street right-of-way, complex lane or roadway geometries, the junction of multiple bikeway recommendations, and/or other factors. The community will be invited to provide input on the designs prior to implementation of each project through the standard project outreach effort. The conceptual engineering designs will provide detail for projects that will help the City be more competitive for grant funding and in developing partnerships to implement these projects.

Funding Strategy

Cities can fund bicycle projects and programs in a variety of ways, and funding may come from all different levels of government, the private sector, and non-profits. Historically, the City of San Mateo has relied on grant funding or paving projects for implementation of the existing on-street bicycle network.

San Mateo County provides funding for active transportation projects via motor vehicle registration fees, bond measures, Article 3 of the Transportation Development Act, and the Transportation Fund for Clean Air. The County also distributes funds for Safe Routes to School projects.

To implement the proposed network and recommended support programs, the City of San Mateo may wish to establish a dedicated funding source by increasing the proportion of Capital Improvement Program (CIP) funds dedicated to bicycle projects; leveraging new development to build out the network and support facilities, including sources such as the Transportation Improvement Fee; or seeking grant funding or partnerships/funding from private entities. General funds and CIP funds can be used to leverage regional, state, and federal funding. Repaving also presents an opportunity to implement and update bikeways, intersection improvements, and end-of-trip facilities in a cost-effective manner.

Refer to Appendix G: Funding Sources for a summary of local, county, regional, state, and federal funding sources applicable to bicycle network projects and programs in San Mateo. Refer to Appendix H: Caltrans ATP Project Scoring Criteria for additional information on project scoring when applying to Caltrans grants.

Even dogs enjoy getting around San Mateo by bicycle. Bicyclists and their pets participating in the Community Bike Tour in March 2019.

2020 SAN MATEO BICYCLE MASTER PLAN