



City of Alameda

Active Transportation Plan



November 2022 | FINAL DRAFT

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

The City of Alameda must continue its efforts to build and maintain safe and connected bicycle and pedestrian networks in order to meet the Alameda community's need to expand and improve transportation options, reduce fatalities and serious injuries on the City's roadways, and address climate change. This Active Transportation Plan (Plan) outlines infrastructure improvements and programs to be accomplished by 2030 to make Alameda a city where people of all ages, abilities, and backgrounds can safely, conveniently, and comfortably walk, bike and roll (using wheelchairs, mobility scooters, and micro-mobility devices) to their destinations and to transit. In so doing, the Plan is designed to improve public health and safety, reduce greenhouse gas emissions from motor vehicles, and enhance the quality of life in Alameda.

The Plan builds upon and updates the City's 2009 Pedestrian Plan and 2010 Bicycle Plan to include the most current best practices for increasing safety and supporting active transportation. The Plan also addresses current local needs as articulated by diverse voices in the community that participated throughout the Plan preparation over the course of several years and many in-person and virtual meetings. The Plan was also shaped by the valuable input of the Active Transportation Plan Community Advisory Group, several advisory boards, and the City's Transportation Commission.

Active transportation refers to all active modes of transportation including walking and bicycling, as well as using wheelchairs and mobility scooters, push and electric scooters, electric bikes, skateboards, and new and evolving shared mobility options, like bike share.

Alameda's Active Transportation Plan is organized as follows:

Chapter 1: Introduction provides an overview of the adopted City policies and the extensive community engagement that provided the foundation for this Plan.

Chapter 2: Vision and Goals introduces a vision for the future of active transportation in Alameda and five goals for active transportation.

Chapter 3: Existing Conditions provides an overview of existing travel patterns and facilities, community perceptions, and opportunities for improvement.

Chapter 4: Pedestrian Design Strategy describes where, how, and what types of pedestrian infrastructure improvements are selected and used.

Chapter 5: Bicycle Network describes a broad Bicycle Vision Network necessary to achieve Plan vision and goals.

Chapter 6: Trails Network and Water Crossings describes improvements necessary to support high-quality bicycle and pedestrian access to and from Oakland, and access to and along the waterfront.

Chapter 7: Programs describes 30 programs needed over the next eight years to support and encourage safe and comfortable walking and biking.

Chapter 8: 2030 Infrastructure Plan outlines 32 capital improvement projects needed over the next eight years to support meeting the vision and goals of this and other city plans. The chapter also describes the performance metrics necessary to track and measure effectiveness and includes the plan for the future of the Slow Streets program, started during the pandemic.

Seven appendices provide supporting data for the improvements and programs outlined in the Plan.



CHAPTER 1: INTRODUCTION

PURPOSE

Alameda is a thriving, family-friendly community with an excellent physical setting and waterfront environment to support walking, rolling, and bicycling as preferred modes of transportation for many of the daily trips that people take to work, school, the store, local businesses districts, and to our recreational and waterfront public amenities. With its human-scale, relatively small size (10 square miles), tree-lined streets, flat topography, conveniently located shopping districts, and primarily 25 mile-per-hour speed limits, Alameda is the ideal community for walking and bicycling.

Partly due to these physical advantages and amenities, 63% of all trips in Alameda are three miles or less in distance, which is a feasible bike ride for many people. Thirty-one percent (31%) of all trips are less than a mile in distance, an easy walk for many people.

Despite most trips being short distance, most people are driving. Seventy percent (70%) of all trips are made in a car. Only 4% of all trips are made on a bicycle and 21% of all trips are made on foot.¹

Alameda's flat topography and island geography also makes it extremely vulnerable to the impacts of climate change. As documented in the City's Climate Action and Resiliency Plan, the threat of sea level rise and other climate impacts in Alameda is existential, and the City must take action to address these threats. Approximately 70% of climate warming greenhouse gas emissions generated in Alameda come from a reliance on the automobile for daily trips.²

Despite Alameda's near ubiquitous 25-mile-per-hour speed limits and "small town" character, many Alamedans don't feel safe walking and bicycling. Over half of Alameda residents, according to a 2019 statistically significant survey³, say that they would drive less and walk or ride a bicycle more if they felt safer doing so. Statistics show that over the last 10 years (2012-2021), on average approximately seven people were killed or severely injured each year while walking or biking in Alameda.

This Active Transportation Plan aims to change these statistics. It is designed to make those shorter trips easier, more convenient, safer, and more comfortable by foot and bike so that more people will choose active transportation when making those trips instead of using a car. In so doing, this Plan will make Alameda and its residents healthier physically and mentally, reduce greenhouse gases to help address the climate crises, and make the City's streets safer for everyone, whether they are running errands or walking or biking to school. Ultimately, the purpose of this Plan is to improve the quality of life in Alameda for everyone, including children, older adults, people with disabilities, and future generations of Alamedans.

AN ACTION PLAN

The Active Transportation Plan is essentially an action plan. It does not propose new City policy. The Plan implements existing, adopted City policy to create robust transportation choices, reduce greenhouse gas

¹ National Household Travel Survey, 2017.

² *Alameda Climate Action and Resiliency Plan*, 2019.

³ 2019 City of Alameda statistically significant survey of adult residents (16+), described in Chapter 3.

emissions, and reduce fatalities and serious injuries on City streets.⁴ Examples of the existing policy foundation that this Plan will help implement include:

Climate Change

"Reduce greenhouse gas (GHG) emissions to 50 percent below 2005 levels by 2030 and achieve net zero GHG emissions as soon as possible. Alameda will achieve these targets by completing current actions and implementing new actions focused on transportation, building management, waste management, and carbon sequestration." (Climate Action and Resiliency Plan (CARP) Goal, Page 5)

"For Alameda to achieve its greenhouse gas emission reduction goals, Alameda must transform its transportation system to give residents convenient and safe, climate-friendly transportation choices and alternatives to the single occupant vehicle." (General Plan, Page 80)

"Reduce greenhouse gas emissions from transportation by improving the local roadway network to support all mobility choices while specifically encouraging walking and bicycling and prioritizing improvements that both reduce greenhouse gas emissions and support General Plan policies that facilitate transit-oriented housing opportunities, pedestrian friendly business districts, and improved transportation choices." (General Plan Policy CC-07, Conservation and Climate Action Element)

Active Transportation Infrastructure

"Develop a well-connected, low-stress, and uncluttered network of pedestrian and bicycle facilities that are comfortable and well-designed for people of all ages and abilities. Seamlessly link the network with Alameda's key destinations such as schools, designated commercial corridors, grocery stores, parks and transit stops." (General Plan Policy ME-14, Mobility Element)

"Build additional bike lanes...by adding more dedicated and protected bike lanes and making pedestrian/bicycle improvements that increase safety, make it easier for people to use these modes, and connect residential neighborhoods with commercial centers and workplaces." (CARP Action T-2)

"Prioritize low-stress biking infrastructure such as separated bicycle lanes, bicycle boulevards and bike trails, which is comfortable for the majority of the community...and...Provide separated bicycle lanes instead of unprotected, standard bicycle lanes, unless not feasible..." (General Plan Action ME-14(h), Mobility Element)

"Support the completion of a continuous shoreline Bay Trail along the entire perimeter of the City of Alameda." (General Plan Policy OS-9, Parks and Open Space Element)

Safety and Equity

"People of all ages and abilities can travel safely using any mode, and traffic deaths and serious injuries are eliminated by 2035." (Vision Zero Action Plan vision statement)

Alameda's Vision Zero Policy (adopted in 2019) establishes safety as the highest priority in all transportation plans, projects, and decisions with the goal of eliminating fatalities and serious injuries on Alameda streets.

"Prioritize the transportation improvements needed to serve the most vulnerable communities, including youth, seniors, those with limited mobility, those with limited income, and historically underserved communities." (General Plan Policy ME-3, Mobility Element)

⁴ For more information about all of the plans and policies reviewed in developing this Plan, see Appendix A. Plans and Policies Review.

A COMMUNITY PLAN

The actions and improvements included in this Plan were identified, shaped, and prioritized with help and direction from the Alameda community. This is the community’s plan.

The planning process included three major public engagement efforts:

- **Phase 1 (2019): Existing Conditions.** The planning process began with an intensive public engagement period to listen to the community’s needs and desires for improvements to the existing walking and biking environment. Experts also conducted a statistically significant survey to determine community attitudes about walking and biking.
- **Phase 2 (2020): Draft Recommendations.** The community provided input on draft recommendations for pedestrian and bicycle projects, programs, policies, and priorities that were developed, in part, based on the previous community engagement phase. The outreach efforts were extensive despite restrictions from the COVID-19 pandemic.
- **Phase 3 (2022): Draft Active Transportation Plan.** After the draft recommendations were updated to reflect community feedback and compiled into the full draft Plan, Alameda community members reviewed and provided their thoughts on the draft. This input was then incorporated into the Final Plan.

In all, over these three phases, the City engaged with the community at a total of 50 public events and meetings, and local organization meetings. Some key elements of the engagement phases were:

- » Over 150 attendees of all ages at the initial 2019 community open house;
- » Over 2,100 public comments on existing walking and biking conditions via interactive online maps;
- » Over 1,000 responses to 9 online surveys;⁵
- » Over 550 public comments on the recommended bicycle network, via an interactive online map;
- » 97,000 engagement emails sent in phases 2 & 3;⁶
- » 10 workshops and events with traditionally underrepresented groups, including people of color, high school students, lower-income residents, seniors, and un-housed populations;
- » 8 workshops with business associations;
- » 10 virtual open houses and listening sessions;
- » 6 Transportation Commission public workshops;
- » 2 workshops with the Commission on Persons with Disabilities;
- » 2 workshops with the Recreation and Parks Commission;



⁵ Does not include the separate statistically significant survey.

⁶ The City obtained an email subscription management system after the first phase of outreach, so does not have statistics for the first phase.

- » 3 workshops with the Social Services and Human Relations Board;
- » 1 presentation to the Planning Board; and
- » 3 Community Advisory Group meetings. The group included 11 community members representing renters, older adults, high school students, transit riders, people with disabilities, parents of school-aged children, walking and bicycling advocates, and members of the Latinx and Asian-American communities.

Appendix B. Summaries of Community Survey and Public Engagement provides additional details on the public engagement activities.

During the Plan development, in March 2020, the COVID-19 pandemic began. While it paused the Plan development as staff focused on pandemic response, it also provided the community, City policy makers, and staff with new insights about how and when people make trips and the different purposes and uses for public spaces and rights of way. Alameda pivoted quickly to try new ways to use these spaces, including the Slow Streets program to expand spaces for safe bicycling and walking and the Commercial Streets program that closed half a block of Alameda Avenue to automobiles to allow more room for people walking, outdoor dining, and community gathering space.



CHAPTER 2: VISION AND GOALS

VISION

The bicycle and pedestrian improvements and programs included in this Alameda Active Transportation Plan are intended to help the people of Alameda reach a vision of what Alameda can be:

Alameda will be a city where people of all ages, abilities, income levels, and backgrounds can safely, conveniently, and comfortably walk, bike, and roll (using wheelchairs, mobility scooters and micro-mobility devices) to their destinations and to transit. As a result, Alameda will be a healthier and safer place to live, work, and recreate; Alameda will have reduced its greenhouse gas emissions; and the quality of life in Alameda will be enhanced for everyone.

To achieve this ambitious vision, the Alameda community, its elected officials, its appointed advisory boards and commissions, and its staff will need to continuously strive to achieve five primary goals in all decision making and actions:

GOALS



Safety

Increase the safety of all people using active transportation.

Safety is critical to success. People must be safe walking or riding a bicycle in Alameda. Parents must feel safe allowing their children to walk or ride to schools and parks. Seniors and other vulnerable residents must be safe walking or rolling to bus stops, the store, or for their health and recreation. Safety must be the primary objective for all improvements and investments.



Equity

Prioritize active transportation investments in underserved communities and actively engage underrepresented groups in the planning process.

To achieve the vision, everyone must have access to safe and convenient bicycle and pedestrian facilities. Investment and improvement decisions must prioritize the needs of those communities that have historically been underserved or underrepresented. Decisions must be made in partnership with those most in need, not just with those who have resources and time to advocate.

Connectivity and Comfort

Develop a well-connected network of active transportation facilities that are comfortable and convenient for people of all ages and abilities.



Today, the public roadway provides great connectivity and relative comfort for people driving their automobiles, but these same roadways are generally less comfortable and connected for people walking and bicycling. Although Alameda has an excellent network of sidewalks, pedestrians are often confronted by difficult and uncomfortable crossings of busy streets. Crossing the Estuary to Oakland by walking or bicycling is extremely uncomfortable. Bicycle facilities are not always continuous, have uncomfortable crossings at busy streets, and don't form a connected network across the city. Success requires that the Alameda community and its decision makers continuously work to increase connectivity and comfort so that the bicycling and walking networks are as comfortable and connected as the automobile network. Walking and biking also enhance connections to the transit network as key first/last mile connections.

Community

Promote and inspire safe and fun walking, bicycling, and rolling to foster a strong culture of walking and bicycling.



Bicycling, walking, and rolling builds community and can be the most enjoyable way to get around. Neighbors meet neighbors walking (including using wheelchairs and mobility devices) and bicycling. Kids make friends while bicycling and walking to school. New forms of "micro-mobility" are expanding the options. Electric bicycles make longer bike trips easier. Electric scooters are a convenient and fun way to travel for some. To achieve success, the City must promote, inspire, and support a culture of walking, bicycling, and rolling.

Mode Shift

Increase percentage of walking and bicycling trips.



To achieve the vision of a safer, and more climate-friendly community, the City's actions must promote mode shift away from driving. Seventy percent (70%) of all trips are completed in an automobile. Only 25% are completed by walking or bicycling. Decisions and investments must work to change these numbers by increasing walking and biking and promoting better connections to transit, all while reducing driving.



CHAPTER 3: EXISTING CONDITIONS

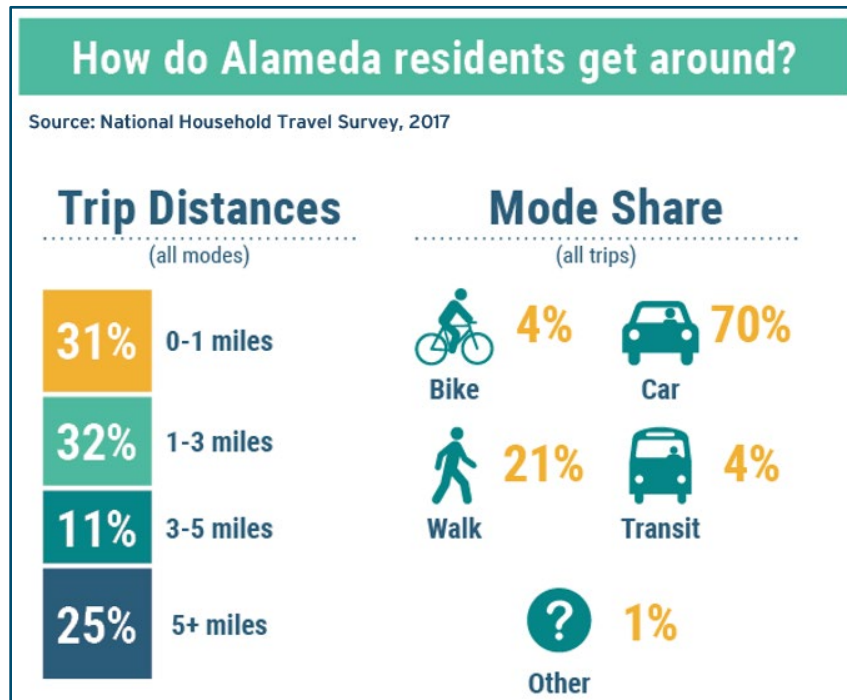
Understanding how well Alameda’s active transportation network operates today is an important first step in determining what can be done to improve the network for the future. This chapter provides an overview of how Alamedans use and perceive the active transportation network and how they would like it to be; the existing pedestrian, bicycle and trail facilities on the ground; and data-driven assessments of the stress levels and safety of our streets.

For an in-depth review of the existing conditions, see *Appendix C. Existing Conditions Report*.



TRAVEL PATTERNS

The most recent comprehensive data on travel patterns, from 2017 (pictured below), shows that only 4% and 21% of all trips in Alameda are by bike and foot, respectively, though some of the 4% of trips by transit likely include walking or biking. However, one third of all trips are less than one mile, an easy walking distance for most, and another third are one to three miles, an easy biking distance for most.



Tallies conducted by the Countywide Safe Routes to Schools program in Alameda in 2017 and 2018 found that, on average, about **one third of students walk to school and 8% bike**, higher than other districts in the county. These percentages vary, with the highest reported biking rate of 25% at Lincoln Middle School.

COMMUNITY PERCEPTIONS AND BEHAVIORS

In late 2019, the City worked with EMC Research to conduct a statistically significant survey to gather data on how people travel around Alameda, their concerns about existing walking and bicycling conditions, their transportation challenges, and the types of changes Alamedans want to see in the future, including an assessment of level of comfort crossing the street or riding a bicycle under different conditions. It was a rigorous, representative survey with responses from over 1,000 randomly selected Alamedans age 16 or older. Key findings from this survey are included below, and the full survey, including methodology, can be found in *Appendix B. Summaries of Community Survey and Public Engagement*.

- » **75%** of Alameda residents use active transportation at least a few times a month when traveling within the city, and **32%** do the same when leaving the island.
 - Within Alameda, nearly **70%** of residents walk, almost **40%** ride a bike, and **3%** scooter at least a few times a month.
- » While most residents believe Alameda is a great place to walk and bike, over **80%** of City residents think Alameda should do more to make it safer to walk across busy streets, and over **70%** think Alameda should do more to make it safer for people to bicycle.
- » More than half of residents (**55%**) believe they would drive less if biking and walking in Alameda were safer.
- » Two thirds (**66%**) say they have car trips they could replace with walking or biking.
- » Over half (**56%**) of Alameda residents regularly take trips by bike, while nearly all (**92%**) regularly take trips by walking.
- » **70%** of residents indicate children in their household walk at least a few times a month. Over half of school-aged children ride a bike a few times a month and **8%** ride a scooter, both of which are higher rates than adults.
- » Bike lanes, especially buffered and separated bike lanes, dramatically increase Alamedans' comfort with biking on streets with faster, busier traffic.
- » Introducing painted crosswalks greatly improves how safe Alamedans feel crossing streets without stop signs or other controls and reducing crossing distances across larger streets helps further improve comfort levels.

EXISTING FACILITIES

PEDESTRIAN

The City of Alameda has a well-connected pedestrian network, with sidewalks on both sides of most streets, short connector walkways through some blocks, and marked pedestrian crosswalks at many locations. Shared use paths and off-street walkways supplement this network, increasing connectivity and providing access along the waterfronts.

In addition to on- and off-street pedestrian infrastructure, crossing treatments at intersections and midblock



High-visibility crosswalks on Central Avenue

locations are essential for maintaining the continuity, comfort, and safety of the overall pedestrian network, since crossings are often the most stressful movement for people walking, and where most pedestrian collisions occur. The City uses a range of traffic control treatments to facilitate crossings. As of November 2022, there are 90 traffic signals in the City and 23 Rectangular Rapid Flashing Beacons (RRFBs). For more details about the many types of pedestrian facilities in Alameda, see *Appendix C. Existing Conditions Report*. Alameda has over 200 miles of sidewalks and 26 miles of shared use paths (Table 1). The existing pedestrian network is shown in Figure 1.

Table 1. Existing Pedestrian Facility Mileage

Pedestrian Facility Type	Existing Length (miles)
Sidewalks	200*
Shared Use Path	26
Off-street Walkway (paved)	8
Off-street Walkway (unpaved)	4
Total	238

*Existing and planned for construction between 2020-2024

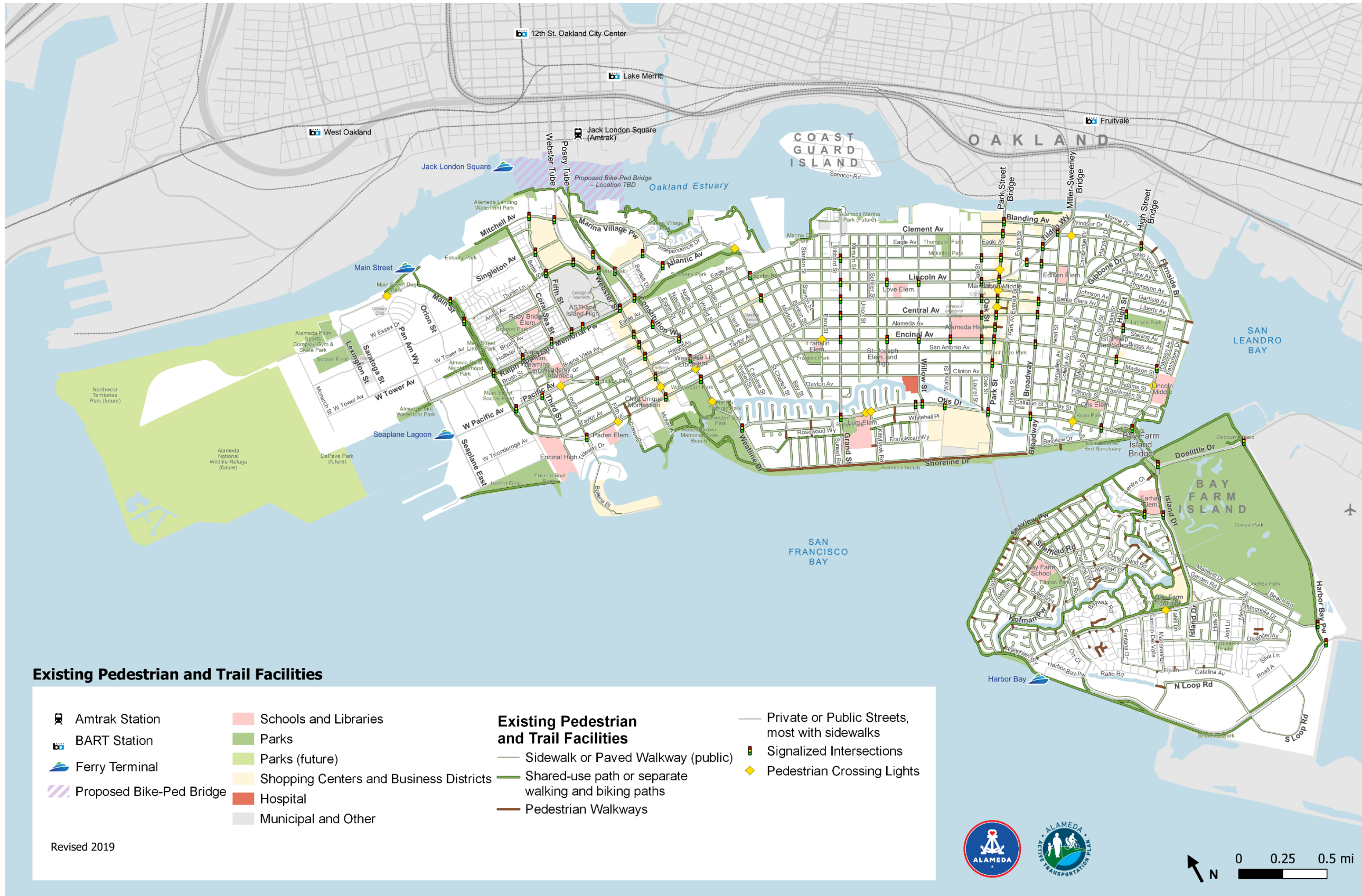


Figure 1. Existing Pedestrian and Trail Facilities

BICYCLE

Alameda has a strong bicycling culture, many people and families who bike, and a well-established existing bicycle network upon which to build. Many schools are connected to residential areas by bicycle facilities, and large numbers of students ride their bicycles to school, especially in higher income, lower density neighborhoods.

The City of Alameda’s existing bicycle network includes a mix of shared use paths, separated bike lanes, bike lanes (standard and buffered), and bike routes (shared lanes with only signage and painted sharrows). Some facilities, such as the Cross Alameda Trail through Jean Sweeney Open Space Park, are easy and comfortable for most people to use. Other facilities, such as shared lanes and standard bike lanes along major streets, only serve those people willing to ride in and adjacent to high-speed, high-volume vehicular traffic.

The City was an early adopter in the use of “low-stress” bikeway facilities, which are bikeways that are more comfortable for people bicycling because they are either physically separated from traffic or exist on low-speed, low-volume streets. In 2009, the City installed separated bike lanes with concrete curb protection along Fernside Boulevard connecting the Bay Farm Bicycle Bridge to Lincoln Middle School, and, in 2015, separated bike lanes were installed along Shore Line Drive. These were some of the first separated bike lanes in the Bay Area.



Two-way separated bike lane on Shore Line Drive

More recently, best practices nationwide have started to address the challenges and stresses of bicycling through intersections. Alameda installed a new, safer intersection at Otis Drive and Grand Street in 2021: the City’s first “protected” intersection.

Reflecting these many investments and the City’s strong bicycling culture, in 2021, the City was awarded the silver-level for a Bicycle Friendly Community by the League of American Bicyclists, advancing Alameda to silver from the bronze-level award first given to the City in 2012.



Having ample and easily accessible bike parking and other support facilities can encourage riders to make more trips by bicycle. Alameda has over 650 bicycle racks, most clustered around the city’s main commercial districts, and secure, inexpensive bicycle lockers that can park 122 bikes throughout the city, including at all ferry terminals. In 2021, the City’s first in-street bicycle parking corrals (six total) were installed along Park Street and Webster Street.

The City of Alameda’s existing bicycle network includes approximately 65 miles of bikeways, including new bikeways that are funded and will be built through 2024. Table 2 provides an overview of the existing bikeway mileage in Alameda, and Figure 2 maps these facilities. These facility types are described in Chapter 5.

Table 2. Mileage of Existing Bikeways (Including Bikeways to be Constructed through 2024)

Bikeway Type	Existing Length (miles)	Low-Stress
Shared Use Path	26	✓
Separated Bike Lane	7	✓
Neighborhood Greenway	0	✓
Buffered Bike Lane	3	
Bike Lane	18	
Bike Route	11	
Total	65	

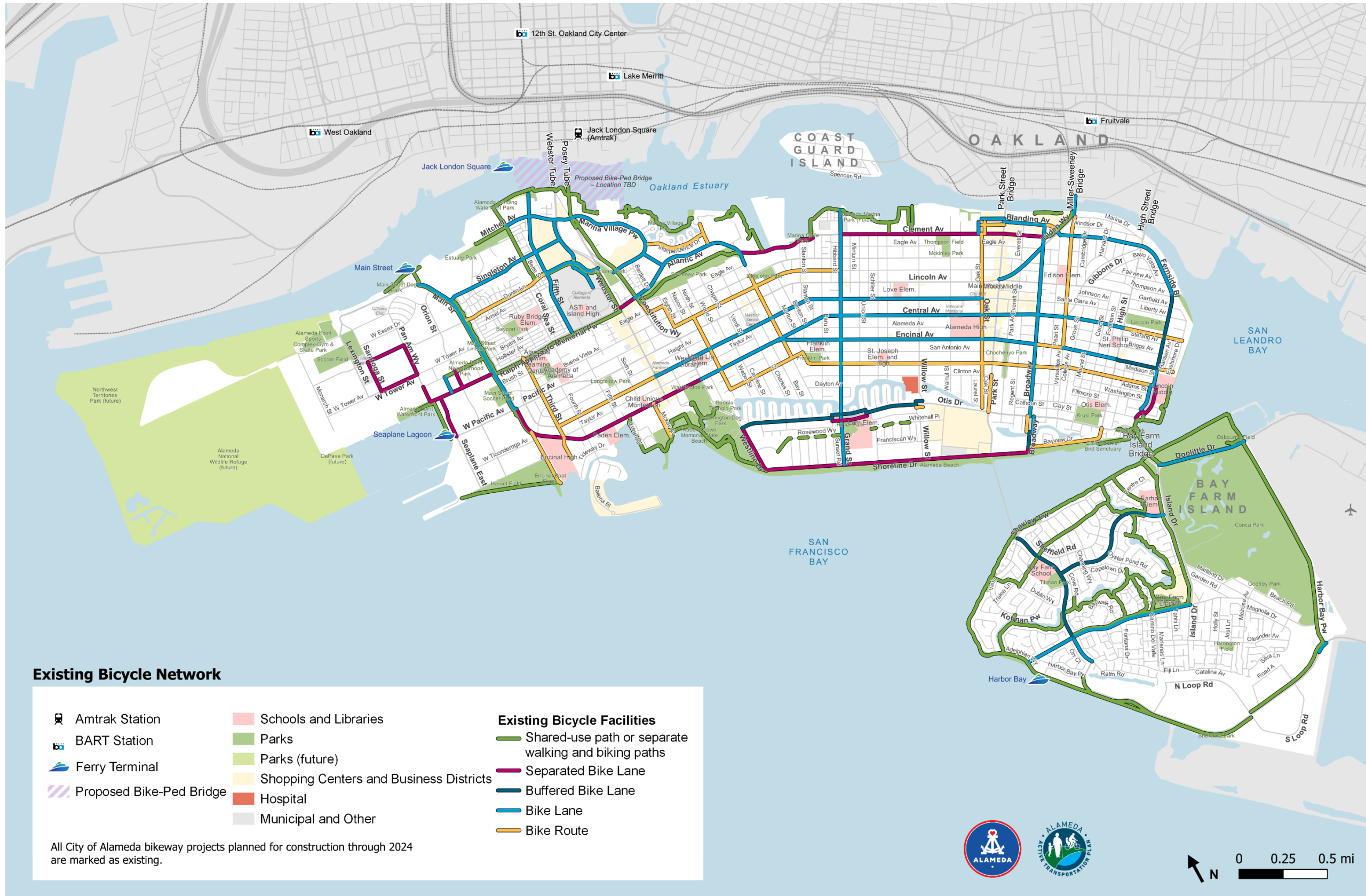


Figure 2. Existing Bicycle Network

SLOW STREETS



In early 2020, Alameda, along with many cities around the nation, implemented a new type of facility, called “Slow Streets,” to facilitate physical distancing during the COVID-19 pandemic. By placing barricades and “no through traffic” signs at select intersections on local streets that were already bicycle routes, automobile traffic was reduced and more space was added for the community to safely walk, run, bike, scooter, and roll for exercise and transportation. Over a one-and-a-half-year period, 4.7 miles of streets became Slow Streets in Alameda. These Slow Streets have remained in place since then, as places with less and calmer traffic that are still used for bicycling and walking. The next steps for Slow Streets are described as part of the 2030 Infrastructure Plan in Chapter 8.

NETWORK STRESS ANALYSES

Community input clearly demonstrates the need for more comfortable biking and walking facilities throughout the city to encourage active travel and increase safety. To better understand existing conditions and where to target improvements, a data-driven analysis of the stress levels of Alameda’s streets was conducted for both active transportation networks. This Level of Traffic Stress (LTS) analysis quantifies the level of traffic discomfort a bicyclist or pedestrian experiences on any given road.⁷

BICYCLE

The Bicycle Level of Traffic Stress (BLTS) helps identify the areas of the city that are not currently served by a low-stress and comfortable bicycle network. It analyzes stressfulness for people riding bicycles based on street characteristics, including the street width, traffic speed and volume, and the presence of parking. Roads are rated on a scale of 1 (low stress) to 4 (high stress).

The analysis is based on the perspective of an “Interested but Concerned” person bicycling. Most people in the United States (50-60%) have little tolerance for interacting with motor vehicle traffic while bicycling unless volumes and speeds are low. This has proven to also hold true in Alameda, based on the statistically significant survey conducted in Alameda in 2019 (described earlier in this chapter) which found that 46% of Alamedans fall into the “Interested but Concerned” category (Table 3). While interested in biking, this group of people will generally avoid riding on higher stress streets.

Table 3. Bicycle Comfort Typology of Alamedans

	Not Interested or Able	Interested but Concerned	Somewhat Confident	Highly Confident
Percent of Alamedans	22%	46%	26%	7%

⁷ All network analyses were completed in 2019 and may not reflect the impact of any of the facilities that have been built since completing the analyses.

The key takeaways from the BLTS analysis of Alameda streets are listed below.

- » **High-stress major roadways** – Nearly 60% of Alameda’s major roadways (called “arterial streets”) are classified as high-stress (BLTS 3 or 4). Arterials provide important north-south and east-west connections through the city but bicycling on these streets is uncomfortable for the majority of bicyclists. While most local streets are low-stress (BLTS 1 or 2), many people cannot reach destinations using only low-stress bikeways because of the barriers presented by arterials.
- » **Low-stress parallel shared use paths** – Some of Alameda’s high-stress streets, such as Ralph Appezato Memorial Parkway and Island Drive, have parallel shared use paths which provide low-stress alternatives to bicycling on, and walking near, the high-stress arterials. While the shared use paths themselves are low stress, the connections to the paths from adjacent streets may still be stressful for people walking and biking.
- » **Poor low-stress access to commercial areas** – All commercial and shopping areas in Alameda are primarily served by streets rated high-stress for bicyclists. Webster Street and Park Street, the City’s two main commercial areas, have the highest stress rating of BLTS 4.
- » **No low-stress access to Oakland** – All bridges connecting the City of Alameda to the City of Oakland are high stress, and the shared use path in the Posey Tube is extremely narrow and uncomfortable for people walking and bicycling.

PEDESTRIAN

The Pedestrian Level of Traffic Stress (PLTS) is a similar analysis to the BLTS, but with a focus on comfort associated with walking adjacent to traffic and when crossing a street. The PLTS for Alameda focused on intersections and mid-block crossings where marked crosswalks are present since Alameda has only a handful of sidewalk gaps. The analysis found that crossings of busy streets with multiple lanes of traffic and travel speeds faster than 25 mph, are higher stress. This data is supported both by the community feedback received throughout all phases of engagement, and the statistically significant community survey, reflecting the critical importance of making intersections safer and more comfortable for people walking.

For more information on the Level of Traffic Stress analyses for bicyclists and pedestrians, including maps with the LTS ratings, see *Appendix D. Level of Traffic Stress and Trip Potential Analysis*.

EQUITY PRIORITY AREAS

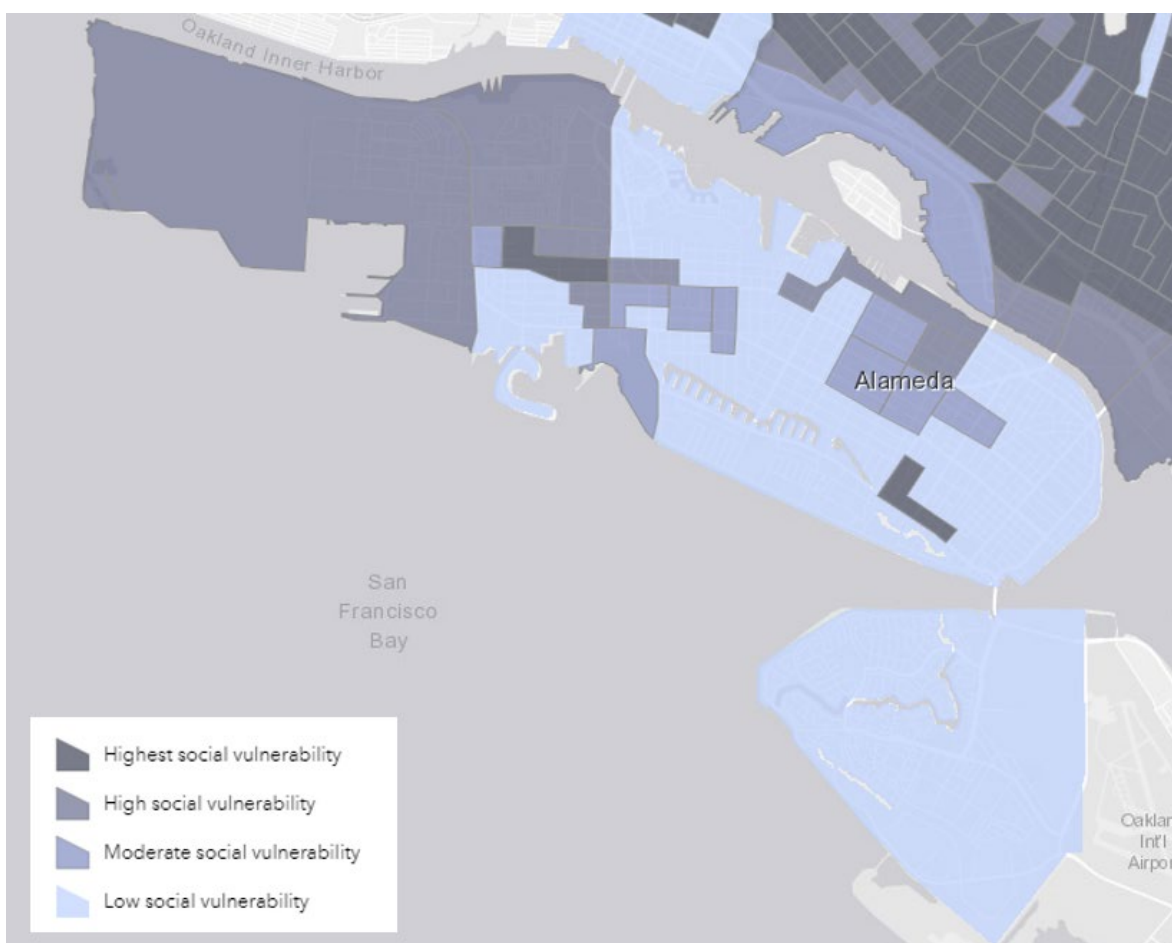
Alameda is home to a racially and socioeconomically diverse population as well as communities that have been impacted disproportionately by pollution, a lack of transportation resources, and vulnerability to sea level rise. To understand which areas of the city are and will be most impacted, the Climate Action and Resiliency Plan (CARP) developed a “Social Vulnerability Assessment,” based on ten indicators of social vulnerability from census household data. Vulnerable populations include the transit-dependent, children, elderly, disabled, and very-low income. The assessment identified neighborhoods with the highest concentrations of households with socioeconomic characteristics that make them more vulnerable to the impacts of climate hazards.

Using this comprehensive analysis, the City compared the results of the Bicycle and Pedestrian Level of Traffic Stress analyses (described previously) with the areas in Alameda that were found to have the highest levels of

social vulnerability. The key findings of this analysis, performed in early 2020 and which can be found in *Appendix C. Existing Conditions Report*, include:

- » No difference between the proportions of high-stress pedestrian crossings in the high/highest areas of social vulnerability compared to other areas.
- » 33% of streets are considered high stress for bicyclists in the high/highest areas of social vulnerability, compared to only 18% of streets in areas not identified as high/highest areas of social vulnerability.

In early 2022, the City transitioned to using a new, regularly updated tool to identify socially vulnerable areas, now referred to as “equity priority areas.” Prepared and updated by the San Francisco Bay Conservation and Development Commission (BCDC), the Community Vulnerability Map⁸, pictured below, shows similar geographies to the CARP analysis. In Alameda, equity priority areas are considered to be those categorized as “high” and “highest” social vulnerability. These equity priority areas were used in the prioritization of pedestrian and bicycle capital projects (described in Chapter 8).



BCDC Community Vulnerability Map

⁸ <https://bcdc.maps.arcgis.com/apps/webappviewer/index.html?id=526ca82e85eb403489de768498f605f3>

SAFETY

Safety is the highest priority for all transportation plans, projects, and decisions, per the City’s adopted Vision Zero Action Plan. In developing the Action Plan, the City conducted an extensive safety analysis of all injury crashes over a ten-year period. This Active Transportation Plan relies on the bicycling and walking findings of that analysis (*Appendix E. Detailed Crash Analysis Report*) to understand the safety needs of pedestrians and bicyclists.

People walking, rolling, and biking are among the most vulnerable road users in Alameda. Between 2009 and 2018, 2,229 people were injured or killed in collisions on streets in Alameda.

- » People walking or biking are involved in 39% of crashes and 62% of life-changing injury crashes, despite comprising only 25% of trips taken in Alameda.
- » In 55% of pedestrian crashes, the driver failed to yield to pedestrian (either at a marked or unmarked crosswalk).
- » In 20% of pedestrian crashes, a pedestrian failed to yield right of way to a driver.
- » Bicycle crashes are linked to a range of behaviors; however, improper yielding (by drivers or bicyclists) and improper turning were the most frequently cited traffic violations, associated with 27% and 14% of bicycle crashes, respectively.
- » The top two behaviors associated with crashes resulting in death or a life-altering injury were failure to yield to pedestrians and traveling at unsafe speeds.

Pedestrians and bicyclists make up ...

25% of all Alameda trips

And are involved in ...

39% of Alameda's crashes

62% of Alameda's severe crashes

SPEED

Vehicle speed was a top factor in crashes and has a large impact on traffic safety in Alameda for all modes. Speeding is also a frequently cited concern of people walking and biking and has increased since the start of the pandemic in 2020. Speed impacts the ability of road users to avoid a crash and higher speeds increase victim injury severity. The impacts are especially significant for crashes between motor vehicles and pedestrians or bicyclists, especially seniors. Dropping vehicle speeds from 30 to 20 miles per hour, for example, reduces the risk of serious injuries and fatalities by more than half.

STREET DESIGN

Safely designed streets is a core tenet of Vision Zero. While it is important for all road users to travel safely and follow the law, Alameda’s streets must also be designed to minimize the chances of an error causing a life-changing injury or death. Traffic enforcement can change behavior in the very short-term, while street design can provide permanent solutions.

HIGH INJURY CORRIDORS

The City’s Vision Zero Action Plan analyzed crash data to identify street segments that are High Injury Corridors for all travel modes, and also by individual mode, including pedestrian and bicycle. The High Injury Corridor maps show streets with the highest crash densities and weight crashes by severity. Crashes that resulted in a fatal or life-altering injury receive a higher weight than other injury crashes. Three tiers are mapped, with Tier 1 indicating

the streets with the greatest frequency and severity of crashes, as shown in Figures 3 and 4, for pedestrians and bicycles, respectively.

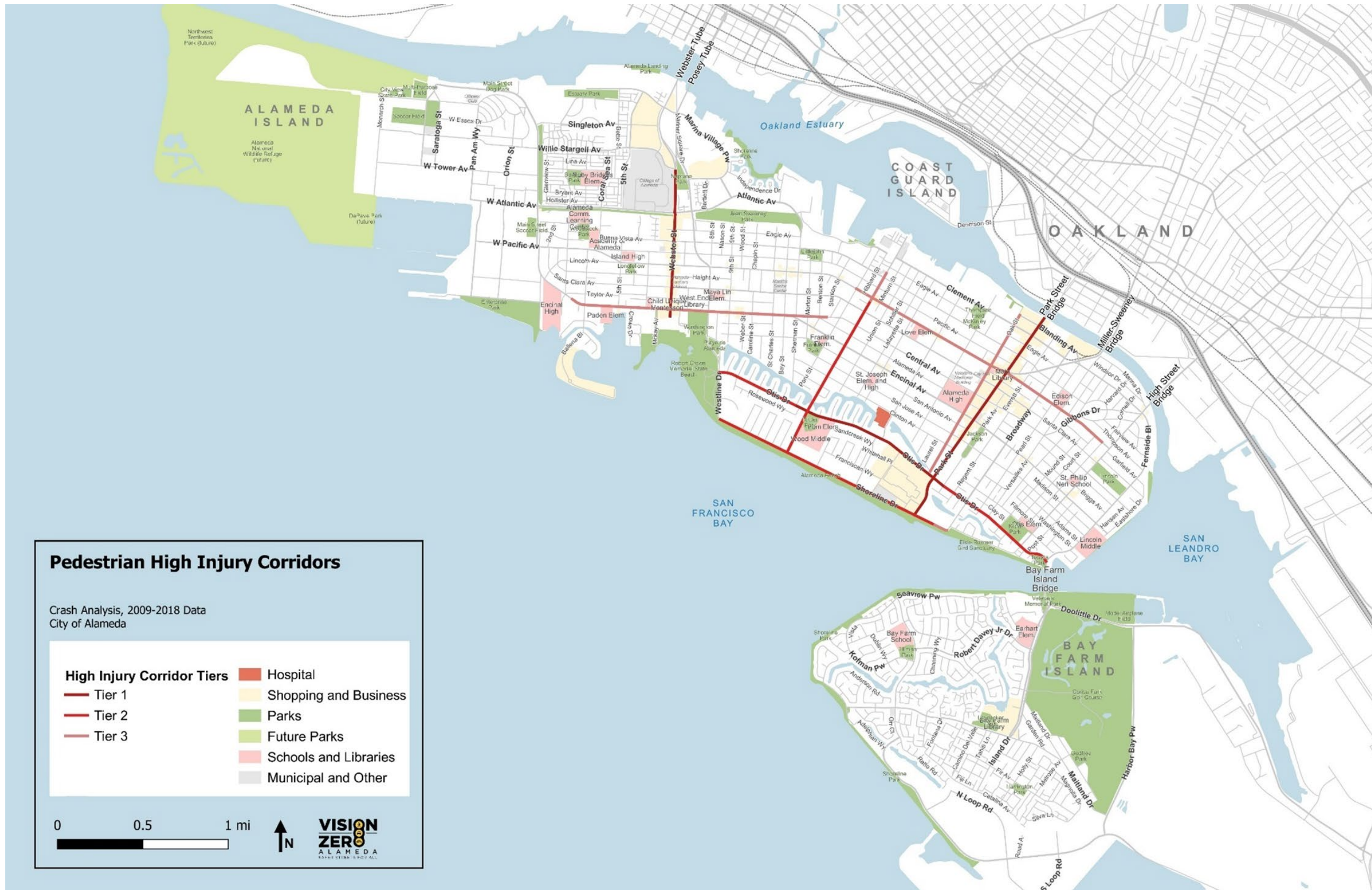


Figure 3. Pedestrian High Injury Corridors

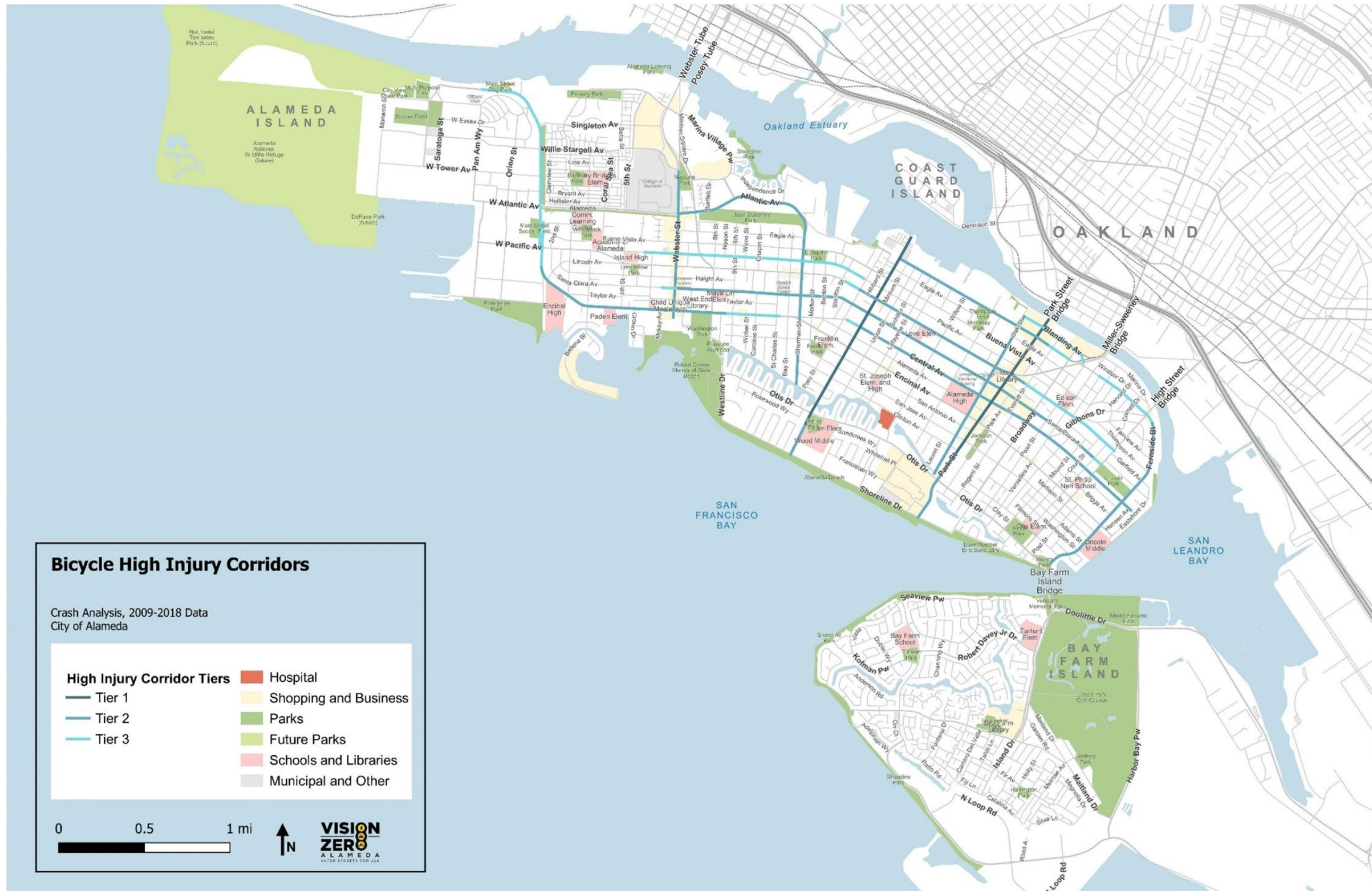


Figure 4. Bicycle High Injury Corridors

OPPORTUNITIES FOR IMPROVEMENT

Alameda’s active transportation network, while successful in some ways, can use improvement. The existing pedestrian network is extensive and covers much of Alameda, but there is a need to make walking and rolling more comfortable, attractive, convenient, and safer for the community. The existing bicycle network covers parts of the city and includes some high-comfort (low-stress) bikeways, but there are significant deficiencies that make traveling by bicycle challenging and discourage its common use by the majority of Alamedans.

Key opportunities for active transportation improvements include:

- Ensuring that busy streets do not create barriers to bicycling, walking, or rolling, by making them safer to cross, including for people with disabilities;
- Improving sidewalk and shared use trail maintenance and making trail upgrades;
- Closing gaps in the existing bicycle network and ensuring the network provides direct connections to popular destinations including schools;
- Upgrading existing facilities and adding new facilities to create a low-stress, connected and comfortable bikeway network that serves people of all ages and abilities;
- Improving north-south bikeway connectivity; and
- Adding and improving pedestrian and bicycle crossings of the estuary.

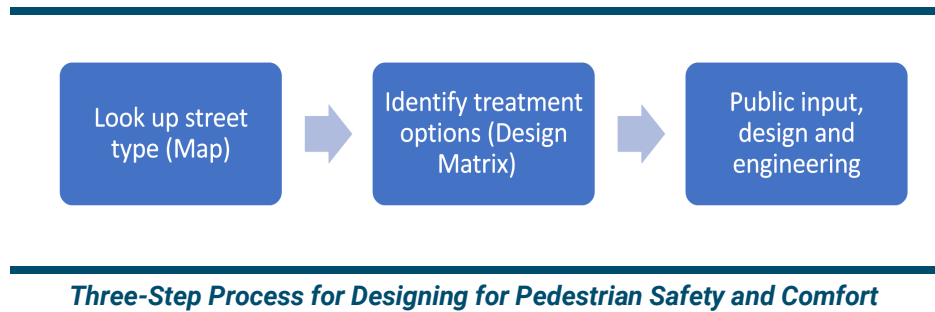


CHAPTER 4: PEDESTRIAN DESIGN STRATEGY

Every street in Alameda needs to be safe and comfortable for pedestrians. Over 80% of Alamedans believe more needs to be done to make it safer to walk in Alameda.⁹ This Plan includes a set of streets to be improved and maintenance programs to be enhanced (described in Chapters 7 and 8) to make Alameda’s streets safer and more comfortable for people, whether they’re walking to and from school, a bus stop, or their parked car.

DESIGNING FOR PEDESTRIANS

This Plan establishes a three-step process that the City will use to guide decisions on how to design intersection and corridor improvements, including those implemented as part of the pavement resurfacing program and other street maintenance programs.



Five Pedestrian Street Types

Neighborhood Street: Residential streets with low volumes of motor vehicle traffic

Neighborhood Connector: Cross-town routes with higher motor vehicle volumes

Business Main Street: Retail and services-oriented streets that accommodate high pedestrian volumes

Business Commercial Street: Streets that serve business parks or shopping centers

Gateway Streets: Streets that move people on and off the island using all modes

1. STREET TYPE

The first step is to determine the street type for pedestrians. Not every street in Alameda serves the same purpose and the pedestrian improvements that are appropriate may differ based on the street type. This Plan classifies every street in Alameda by its pedestrian characteristics and purpose. The Pedestrian Street Types map (Figure 5) classifies each street by one of five pedestrian street types. These types are fully described in Table 4, showing that within each street type, the streets have common physical characteristics and design goals. (While similar and somewhat overlapping, these pedestrian street types are distinct from the Street Classifications in the City’s General Plan, which were developed for all transportation modes.)

⁹ 2019 City of Alameda statistically significant survey of adult residents (16+), described in Chapter 3.

2. DESIGN MATRIX

Next, the Pedestrian Design Matrix (Table 5) defines for each street type specific design treatments that may be appropriate to implement along the street and at intersections. As noted in the overlays section, streets near schools, transit stops and terminals, parks and other community destinations may receive additional safety and comfort treatments. The matrix reflects national best practices and federal guidelines for improving pedestrian safety.¹⁰ Descriptions and photos of many of these treatments can be found in *Appendix F. Pedestrian and Bicycle Facility Types*. While these treatments are pedestrian-focused, they also benefit people using transit and bicycling.

3. PROJECT DESIGN

The final step is to design the pedestrian improvement project for the street. The City will select the most appropriate treatments from the many permitted treatments listed for the street type in the Design Matrix, while also considering site specific physical conditions, community input, engineering considerations, and available financial resources, in developing the final project design.

CITYWIDE MAINTENANCE

Maintaining smooth sidewalk and walkway surfaces, along with safe, visible, and functioning street crossings, ensures that the extensive pedestrian network in Alameda is comfortable, safe, and usable. It is imperative for the City to continue investing in and improving upon the City's maintenance programs for pedestrian facilities, as well as filling in gaps in the sidewalk network. Chapters 7 and 8 include programs and specific capital projects to address these maintenance, crossing and sidewalk gap needs. Specific sidewalk and curb ramp maintenance needs will be assessed in 2022 and 2023 through a citywide Americans with Disabilities Act (ADA) Self-Evaluation project, and a Transition Plan will be developed to address them.

¹⁰ Treatments reflect guidance presented in the Federal Highway Administration's *Guide for Selecting Countermeasures at Uncontrolled Pedestrian Crossing Locations* (2018) and the Transportation Research Board's National Cooperative Research Program's *Guidance to Improve Pedestrian and Bicycle Safety at Intersections*.

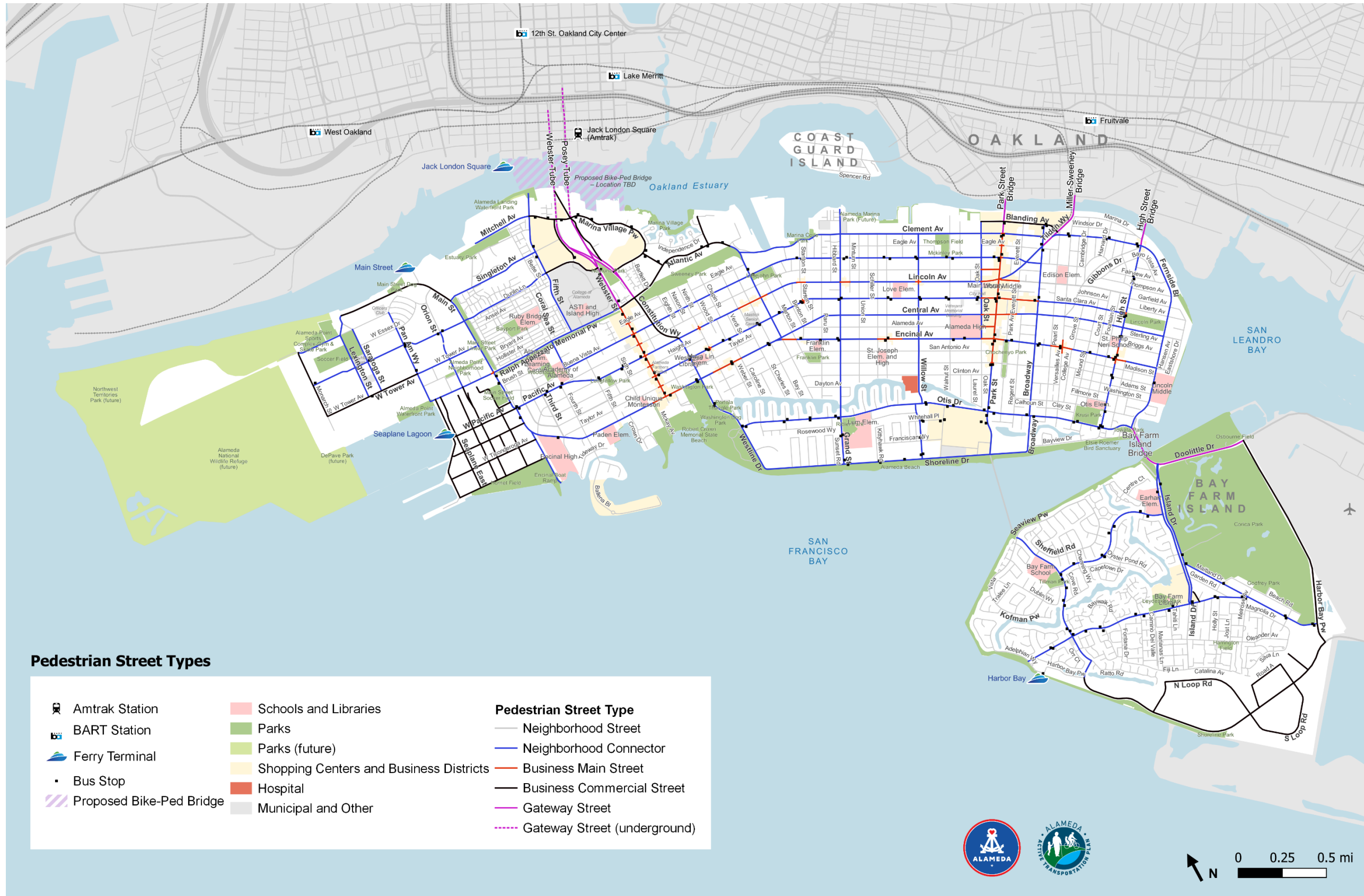







Figure 5. Pedestrian Street Types

Table 4. Pedestrian Street Types

Street Type	Definition	Current Conditions (Typical)	Design Goals	Example Streets	Photo Example
<p>Neighborhood Street</p>	<p>Neighborhood Streets serve residential areas with low volumes of motor vehicle traffic. Walking and socializing are common along these streets. Designs for these streets should focus on encouraging slow speeds, pedestrian safety, a consistent street tree canopy, and direct routes to nearby parks, transit, and schools.</p>	<ul style="list-style-type: none"> » Two travel lanes without centerline » Residential land use » Relatively low motor vehicle speeds and volumes » Low to medium pedestrian activity » No transit presence » Crossings have a stop bar for vehicles and curb ramps, but are typically not marked 	<ul style="list-style-type: none"> » Continuous sidewalks » Street trees/planter strips » Crossings with ADA-compliant curb ramps » Safety enhancements at major street crossings » Design speeds =< 20 mph 	<ul style="list-style-type: none"> » Peach Street » Pacific Avenue » Verdemar Drive » Bryant Avenue 	 <p>Peach Street</p>
<p>Neighborhood Connector</p>	<p>Neighborhood Connectors serve primarily residential areas, though some neighborhood-serving commercial uses may also be located along them. They are typically cross-town routes with higher motor vehicle volumes, but also have a strong need to safely accommodate and encourage pedestrian activity because of their residential and commercial uses. These streets often have bus stops and are key routes in the transit network. They provide continuous walking routes and connections to other parts of the city. Designs for these streets should emphasize pedestrian safety, safe and frequent crossings, clear routes to key destinations and landscaped sidewalk buffers.</p>	<ul style="list-style-type: none"> » At least two travel lanes » May have long block lengths » Medium to high motor vehicle volumes » Motor vehicle speeds may be faster than on Neighborhood Streets » Often have transit service, including major transit routes » Marked crosswalks are frequently spaced and ADA-compliant 	<ul style="list-style-type: none"> » Wider sidewalks » Bus shelters and benches » Sidewalk buffer with street trees » Green infrastructure » Crossings have high visibility striping with curb extensions » Traffic signals or flashing beacons are frequently spaced 	<ul style="list-style-type: none"> » Shore Line Drive (Westline Drive to Willow Street) » Encinal Avenue (Willow Street to Oak Street) » Willie Stargell Avenue (Fifth Street to Monarch Street) » Robert Davey Jr. Drive 	 <p>Shore Line Drive</p>
<p>Business Main Street</p>	<p>Business Main Streets serve commercial areas with small and medium-sized businesses. These streets are designed to accommodate significant volumes of pedestrians and foster social interaction. They may include institutional uses. Designs for these streets should create or enhance a safe, inviting, and enjoyable pedestrian experience and provide flexible spaces for outdoor dining and support the commercial character of the street.</p>	<ul style="list-style-type: none"> » Shorter block lengths » At least two travel lanes » Signalized crossings throughout » High pedestrian, bicyclist and motor vehicle activity » Often major transit routes » Buildings close to the street » Crossings have curb ramps, are striped, and have crossing signals 	<ul style="list-style-type: none"> » Wider sidewalks » Enhanced streetscape with amenities » Crossings have high visibility markings, curb extensions » ADA-compliant crossing signals that turn green for pedestrians on every signal cycle during high-usage times 	<ul style="list-style-type: none"> » Park Street (San Jose Avenue to Blanding Avenue) » Webster Street (Central Avenue to Ralph Appezato Memorial Parkway) 	 <p>Webster Street (at Lincoln Avenue)</p>

Street Type	Definition	Current Conditions (Typical)	Design Goals	Example Streets	Photo Example
Business Commercial Street	Business Commercial Streets serve shopping centers, business parks and/or industrial areas. While there may be fewer pedestrians in these locations, these streets may also serve as through-routes to adjacent uses, such as transit or shopping. Design for these streets should focus on safely accommodating pedestrians and providing greater separation from traffic.	<ul style="list-style-type: none"> » At least three travel lanes (in most cases) » Low pedestrian volumes » Buildings generally set back from the curb » Longer block lengths » Dominated by motor vehicle traffic » Sidewalk buffer » May have transit » May have truck traffic » Crossings are marked with ADA-compliant curb ramps 	<ul style="list-style-type: none"> » Continuous sidewalks across driveways » Transit service, if present, has comfortable amenities, like bus shelters and benches » Crossings are ADA-compliant with high visibility markings and actuated pedestrian signals 	<ul style="list-style-type: none"> » Harbor Bay Parkway, Main Street (Navy Way to Singleton Avenue) » Atlantic Avenue (Webster Street to Wind River Way) 	 <p>Harbor Bay Parkway</p>
Gateway Street	Alameda’s access points are classified as gateways. The primary purpose of Gateway Streets is to move people on and off the island using all modes. These facilities serve high vehicle volumes and provide access to freeways on the mainland. Gateway streets should be considered for transit priority and fully separated bicycle and pedestrian facilities.	<ul style="list-style-type: none"> » Two travel lanes in each direction » Hardened median » May have transit » High visibility crossings » Pedestrian crossing signals » May have sidewalk buffer 	<ul style="list-style-type: none"> » Fully separated pedestrian (and bicycle) facilities » Pedestrian wayfinding » Frequent transit service » Bus benches and shelters » High visibility crosswalks » Curb extensions 	<ul style="list-style-type: none"> » Constitution Way (to Atlantic Street) » Tilden Way (to Blanding Street) » High Street (to Fernside Boulevard) 	 <p>Tilden Way near Miller-Sweeney Bridge</p>
Overlays					
Transit	The Transit Overlay includes all streets with existing transit service, except for bus routes that only serve schools. This layer is meant to reflect AC Transit bus service at the time of capital project planning. The design of streets in the Transit Overlay should provide easy access to transit for all potential users, including people with disabilities, and support efficient transit operations.				
School	The School Overlay includes all streets within 600 feet of a public or private school (K-12). Designs for these streets should prioritize pedestrian safety and comfort considering the specific needs and characteristics of child pedestrians while maintaining the multimodal characteristics of the street.				
Community Destinations	The Community Destinations Overlay includes the perimeter streets of the city plus those streets within one block of public recreation areas and institutions, including parks, libraries, hospitals, senior centers, and colleges. Designs for these streets should prioritize pedestrian safety and comfort considering the specific needs and characteristics of pedestrians who are children or older adults, while maintaining the multimodal characteristics of the street.				
Truck	The Truck Overlay includes truck routes, which are streets designed to accommodate truck traffic. The routes are defined and mapped in the City’s General Plan. These streets may have wider travel lanes and larger turn radii.				

Note: Volume estimates reflect conditions relative to other street types.

Table 5. Pedestrian Design Matrix

Design Treatments ⁿ	Street Types					Overlays				Implementation Feasibility ⁺	FHWA Proven Safety Countermeasure [§]
	Neighborhood Street	Neighborhood Connector	Business Main Street	Business Commercial Street	Gateway	School	Transit	Community Destinations	Truck	III = High; II = Medium; I = Low; ° = Low-cost, rapid implementation option available	
Key: <input checked="" type="checkbox"/> = Permitted; <input type="checkbox"/> = May be appropriate to use, based upon further review, if permitted in overlay or street type, or if other treatments are not effective; - = Not recommended or not appropriate for street type											
Crossing Treatments											
Curb extension	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	III°	✓
Median refuge island ¹	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	III°	✓
In-street pedestrian crossing sign (paddle sign) ²	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	I	✓
Mid-block crossing	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	III°	✓
Pedestrian Hybrid Beacon (PHB) ³	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	III	✓
Rectangular Rapid Flashing Beacon (RRFB) ³	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	II	✓
High-visibility crosswalk marking (i.e., ladder- or continental-style markings)	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	I	✓
Raised crossing ⁴	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	II	✓
Crosswalk visibility enhancements (advance yield lines, pedestrian yield sign)	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	I	✓
Truck apron	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	II°	
Parking prohibition (red curb) near intersection (“Daylighting”)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	I°	✓
Daylighting with vertical elements to discourage parking	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	I°	✓
Pedestrian signal and leading pedestrian interval ⁵	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	II/III°	✓
Pedestrian scramble	-	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	III°	✓
Modern Roundabout	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	III	✓
Corridor Treatments											
Street lighting	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	III	✓
Sidewalks	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	III	
Vertical traffic calming (e.g., speed humps and cushions)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-	-	-	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	-	II	
Horizontal traffic calming ²	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-	-	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	-	II°	
Neighborhood traffic circle ²	<input checked="" type="checkbox"/>	-	-	-	-	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	-	II°	✓

Design Treatments ⁿ	Street Types					Overlays				Implementation Feasibility ⁺	FHWA Proven Safety Countermeasure [§]
	Neighborhood Street	Neighborhood Connector	Business Main Street	Business Commercial Street	Gateway	School	Transit	Community Destinations	Truck	III = High; II = Medium; I = Low; ° = Low-cost, rapid implementation option available	
Key: <input checked="" type="checkbox"/> = Permitted; <input type="checkbox"/> = May be appropriate to use, based upon further review, if permitted in overlay or street type, or if other treatments are not effective; - = Not recommended or not appropriate for street type											
Lower speed limits (20 mph or 15 mph)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-	-	-	<input checked="" type="checkbox"/>	-	-	-	II	
Road diet (4 lanes to 3 or 2)	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	III°	✓
Partial traffic diverters (limiting through and left turns) ⁶	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	-	<input type="checkbox"/>	-	<input type="checkbox"/>	-	II°	
Streetscape Improvements											
Trees/planter strip	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	I/III	
Green infrastructure (e.g., bio-retention areas)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	III	
Bus stop amenities (e.g., benches and shelters) ⁷	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	II	
Bus bulb-outs	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	III°	
Street furniture (e.g., benches, art, water fountains and recycling bins)	-	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	I/II	
Pedestrian-scale lighting	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	III	✓
Above-ground planters and potted plants	-	-	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	-	I	
Sidewalk seating and dining	-	-	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	-	I	
Parklets	-	-	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	-	II	
Decorative/painted intersections and crosswalks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	I	
Pedestrian-oriented wayfinding	-	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	I	
Pedestrian plazas and closed streets	-	-	<input checked="" type="checkbox"/>	-	-	<input type="checkbox"/>	-	-	-	II°	

Notes

ⁿ See Appendix F. Pedestrian and Bicycle Facility Types for more information on some of the treatments listed in this table.

⁺ Tiers of implementation feasibility are defined by timeframe, financial cost, and impact to right-of-way.

[§] Federal Highway Administration (FHWA) Proven Safety Countermeasures are treatments that have been scientifically studied and evaluated to offer safety benefits for road users.

¹ Preferable on streets with operating speeds of at least 30 mph unless in a school or community destination overlay.

² Mostly applicable on streets with posted speeds 25 mph or less. “Horizontal traffic calming” includes treatments such as neckdowns that create a yield condition or chicanes that force automobiles to slow speeds for a winding path of travel.

³ In general, PHBs are reserved for crossings with three or more travel lanes and roadways with 30+ mph posted speeds or higher motor vehicle volumes (9,000+ ADT) and RRFBs are used on one- or two-lane crossings typically with lower motor vehicle volumes and/or 35 mph posted speeds or less. RRFBs should be supplemented with a median crossing island on streets with four or more total travel lanes. Near schools, high-visibility crosswalks can be accompanied by RRFBs and multi-lane (3 or more travel lanes) crossings can be treated with PHBs instead of RRFBs.

⁴ Applicable on streets with posted speeds 30mph or less, ADT 9,000 or less, and less than four lanes.

⁵ Leading pedestrian intervals are recommended at signalized intersections with high pedestrian volumes and high conflicting turning vehicle volumes; pedestrian signals should be applied per CA-MUTCD standards.

⁶ Any possible traffic diversion would be evaluated prior to construction.

⁷ Transit stop improvements are only applicable along transit routes. Prioritize bus shelters at bus stops with the highest ridership.

Sources: Federal Highway Association. *Field Guide for Selecting Countermeasures at Uncontrolled Pedestrian Crossing Locations*. 2018. Transportation Research Board. *NCHRP 15-63: Guidance to Improve Pedestrian and Bicycle Safety at Intersections*. 2020.

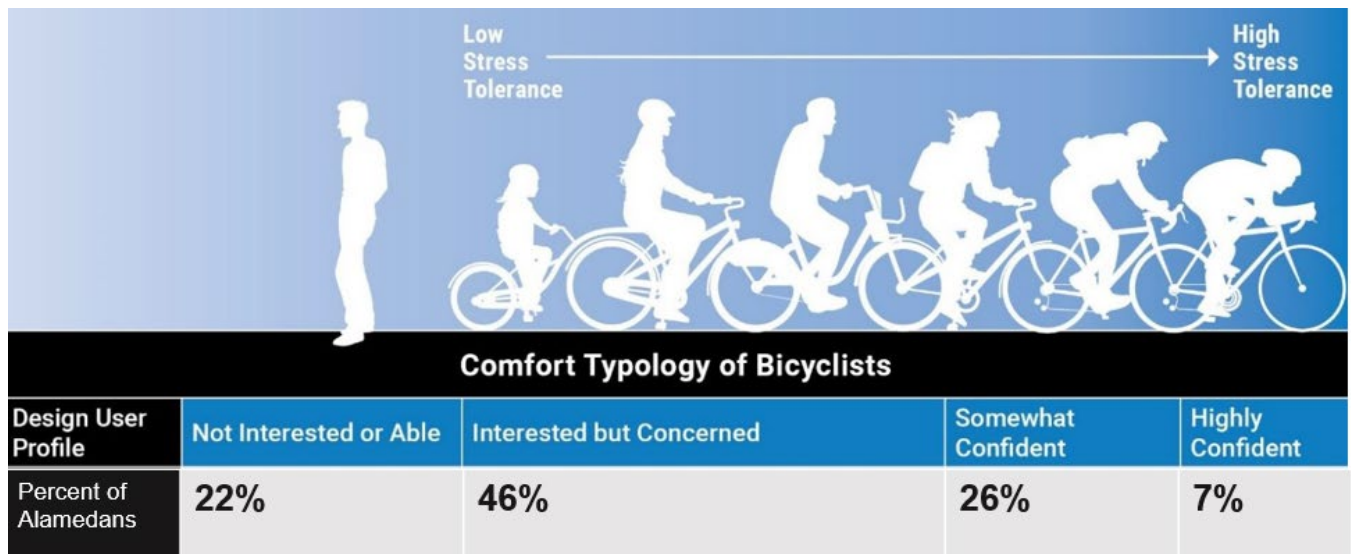


CHAPTER 5: BICYCLE NETWORK

The Bicycle Vision Network will create a comprehensive and connected network that is safe, comfortable, and enticing for people of all ages and abilities. The network, built upon the assets of the existing network, is designed to provide more direct and comfortable bicycling routes to schools, to improve north-south connectivity, and to create a bikeway network that is comfortable for a greater diversity of people than ride today.

WHO ARE WE PLANNING FOR?

The Plan’s Bicycle Vision Network is designed for people of all ages and abilities, not just for those who are already riding their bicycles regularly. While many factors contribute to whether people choose to ride a bicycle for trips like commuting to work or school or running errands, one of the biggest considerations is safety and comfort. Alameda’s statistically significant survey, discussed in Chapter 3, found that nearly half (46%) of city residents would bike more if there were more facilities where they felt safer and more comfortable (as shown in graphic below). This group of people, often called “Interested but Concerned,” prefers low-traffic, low-speed streets or separate paths or other facilities that provide protection or physical separation from fast-moving traffic. The other half of Alamedans are either very comfortable with standard bike lanes (33%) or not at all interested in biking (22%). By increasing the miles of low-stress and protected facilities which will serve a largely untapped group of willing riders, Alameda has a much greater chance of increasing the total number of people biking for more of their trips.



BICYCLE VISION NETWORK

The Bicycle Vision Network is a continuous and connected network of bikeways, including a subset of connected low-stress bikeways. When the Plan’s Bicycle Vision Network is complete, Alameda will have more than doubled the cumulative length of its bikeway network. Perhaps more importantly, Alameda will have shifted its network towards one that is comfortable and safe for people of all ages and abilities by increasing the percentage of low-

stress bikeways from its current 51% of the network to 74%. The Vision Network is a long-term planning tool and will be completed over many years. See Chapter 8 for a list of projects the Plan aims to construct by 2030.

A total of 68 miles of new or upgraded bikeways and trails are proposed, as shown in Table 6 and Figure 6. Upon completion of the network, the City will exceed the Climate Action and Resiliency Plan goal to add 10.4 new miles of previously unplanned bikeways that are of a type expected to shift bicycling behavior.

Table 6. Existing and Proposed Bikeway Mileage°

Bikeway Type from Lowest to Highest Stress	Existing Length (Miles)	Proposed Length (Miles)	Total Length (Miles)*	Low-Stress
Shared use paths (and parallel, separated biking and walking paths)	26	15	41	✓
Separated Bike Lane	7	18	25	✓
Neighborhood Greenway	0	18	18	✓
Buffered Bicycle Lane	3	5	6	varies ⁿ
Bicycle Lane	18	7	17	
Bicycle Route	11	3	5	
Type TBD	0	2	2	
Total	65	68	114	

[°]Existing mileage includes all bikeways planned to be built by 2024.

^{*}Total mileage values do not always reflect the sum of “existing” plus “proposed” because some existing bikeways will be upgraded to different types of bikeways.

ⁿBuffered bicycle lanes can be low-stress on low-volume, low-speed streets.

The Bicycle Vision Network was developed by reviewing the existing bicycle network, the unbuilt recommendations from the 2010 Bicycle Master Plan and equity priority areas, plus a review of community feedback, and network and facility selection best practices, including the Federal Highway Administration’s Bikeway Selection Guide (2019) and the forthcoming American Association of State Highway and Transportation Officials’ Guide for the Development of Bicycle Facilities.

LOW STRESS BIKEWAY VISION NETWORK

The Bikeway Vision Network includes 84 miles of connected low stress facilities, which people of all ages and abilities can use to comfortably and safely get around Alameda. These facilities, which include shared use paths, separated bike lanes, and neighborhood greenways, are also shown on their own map, Figure 7: Low Stress Bikeway Vision Network.

CROSSING IMPROVEMENTS

While the network is focused on determining the appropriate bikeway type for each street, comfortable roadway crossings are key to developing a safe and well-connected bicycle network and are particularly important in creating an all ages and abilities network. Crossing treatments may include protected intersections, neighborhood traffic circles, bicycle signals, rectangular rapid flashing beacons, bike boxes, and left-turn boxes. Many of these treatments are described in *Appendix F. Pedestrian and Bicycle Facility Types*. All designs for new and upgraded bikeways will include safe and well-designed crossings, especially of major streets.

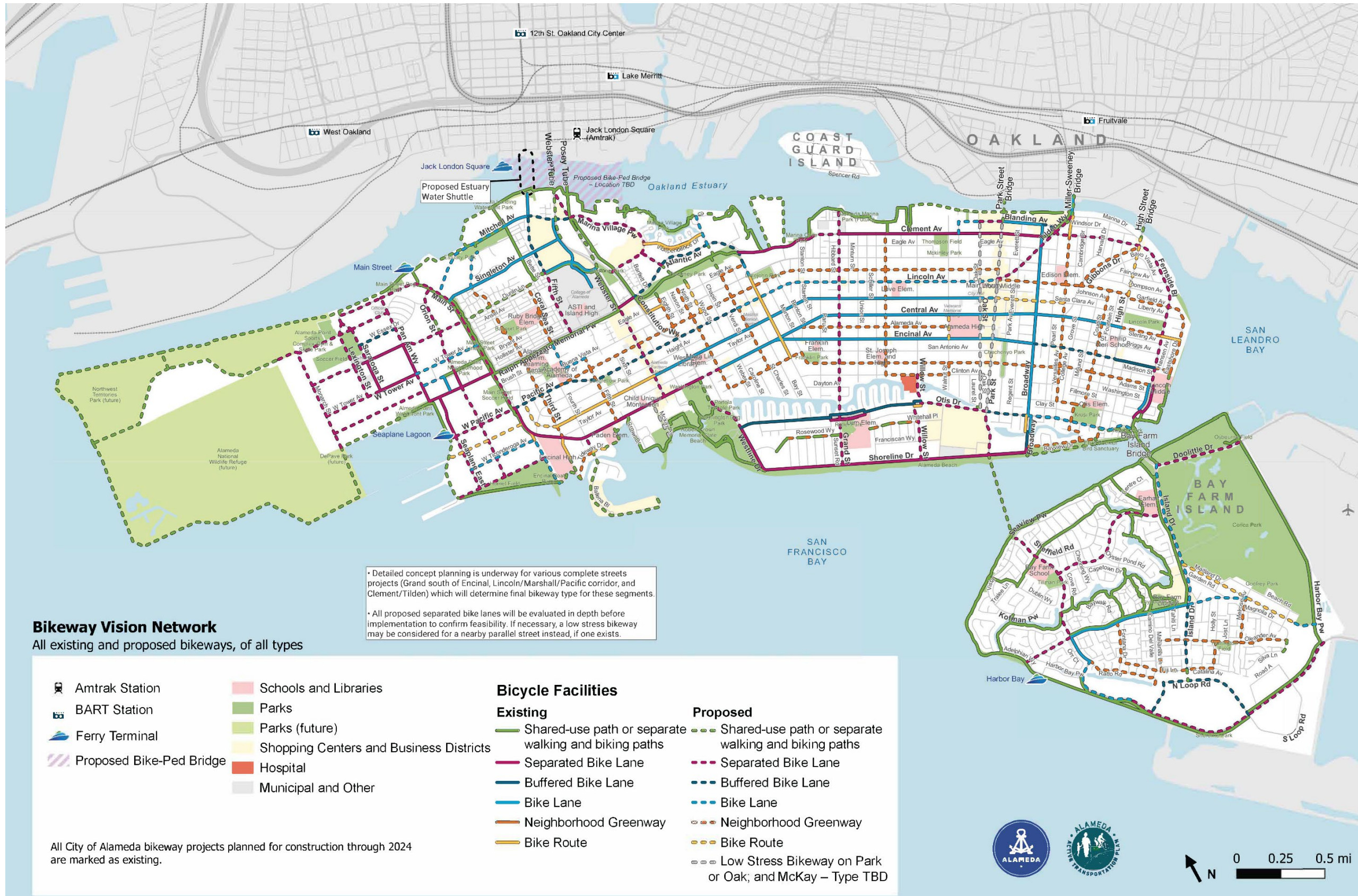


Figure 6. Bikeway Vision Network

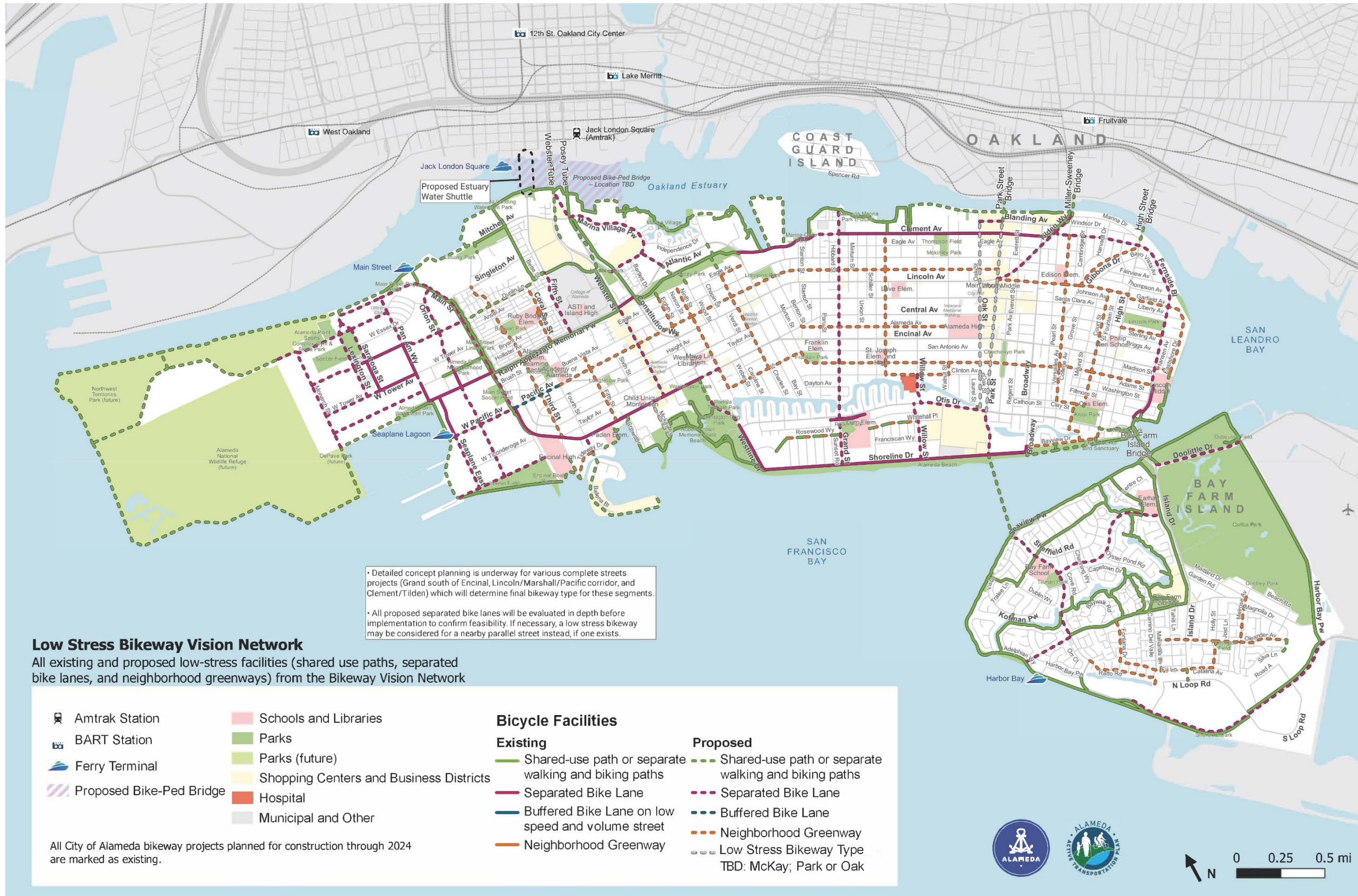


Figure 7. Low-Stress Bikeway Vision Network

DESCRIPTIONS OF BIKEWAY TYPES

The six bikeway types that make up the recommended Bicycle Vision Network, and their stress level, are described in Table 7, below. While most of these bikeway types exist in Alameda today, the recommended network introduces a new-to-Alameda, low-stress bikeway type: the Neighborhood Greenway. The 18 proposed miles of Neighborhood Greenways are critical for creating a connected, low-stress network in Alameda.

INTRODUCING: NEIGHBORHOOD GREENWAYS

Neighborhood Greenways, sometimes called bicycle boulevards or neighborhood bike routes, are streets designed to give priority to people walking and bicycling, and to allow bicyclists and motorists to safely share the road on low-volume, low-speed, local streets. Used in cities across the country, these comfortable, low-stress bikeways additionally improve walking safety and calm traffic.



Treatments are much more extensive than on bicycle routes, which only have painted shared lane markings and signage. Key goals are described below.

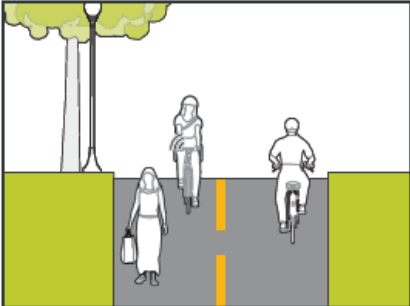
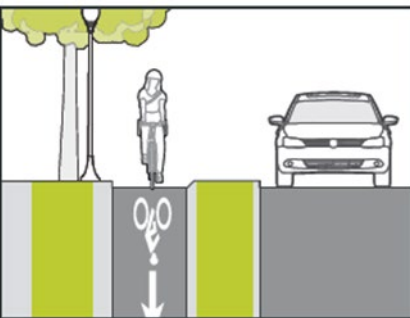

» **Achieve and Maintain Low Vehicle Volumes and Speeds**

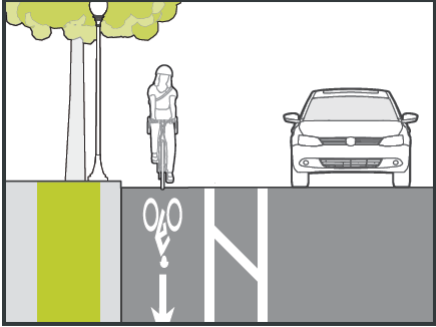
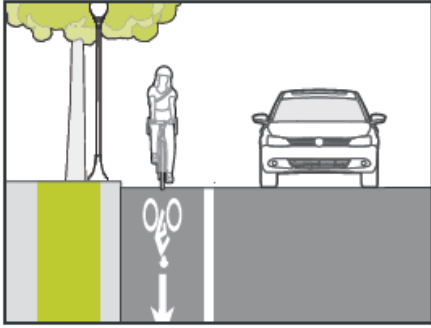

Neighborhood Greenway streets are only considered low stress when the traffic volumes and speeds are low enough that people biking feel comfortable sharing the roadway space with cars. This Plan sets targets of average daily traffic of 1,500 vehicles or less, with less than 50 cars in the peak direction at peak hour, and a vehicular travel speed of 20 mph for Neighborhood Greenways. Traffic calming measures to reach these targets will be chosen based on the specific need of each street, and could include speed cushions, neighborhood traffic circles, traffic reduction treatments like partial diverters or turn restrictions, pavement markings, and wayfinding signs to designate the route. Reducing traffic speeds and volumes increases safety for all roadway users and improves neighborhood livability.

» **Make Street Crossings Safer and More Comfortable**

Neighborhood Greenways also include treatments to improve crossings, especially at busy intersections. Intersection treatments may include high-visibility crosswalk markings, raised crosswalks, or Rectangular Rapid Flashing Beacons to make it easier and safer for people bicycling and walking to cross a busy street.

Table 7. Existing and Proposed Bicycle Facility Types in Alameda

Bicycle Facility Type	Description
<p data-bbox="253 426 529 464">Shared Use Path</p> 	<ul style="list-style-type: none"> » Off-street pathway designed for use by bicyclists, pedestrians and other active transportation users. » <i>Variation:</i> Parallel but separated biking and walking paths » <i>Stress level:</i> Low. Has the least potential number of interactions between bicyclists and vehicles, compared to other facility types » <i>Caltrans classification:</i> Class I » Examples in Alameda: Bette Street path, Bay Farm Island shoreline trails
<p data-bbox="220 940 561 978">Separated Bike Lane</p> 	<ul style="list-style-type: none"> » Designated lane or lanes for bicycles (and other active transportation devices with comparable speeds, such as electric scooters) separated from vehicular traffic and the sidewalk by a vertical element (e.g., flexible posts, planters, parked vehicles, curbs, etc.) The more robust the buffer's vertical and horizontal separation, the more comfortable the separated bike lane is for bicyclists » City policy is to provide separated bicycle lanes instead of standard bicycle lanes unless infeasible. (<i>General Plan</i>) » <i>Variations:</i> Can be one-way, on each side of the street, or two-way, on one side of the street. » <i>Stress level:</i> Low, even on roadways with high vehicle speeds and volumes » <i>Caltrans classification:</i> Class IV » Examples in Alameda: Shore Line Drive, Fernside Drive, Clement Avenue
<p data-bbox="188 1465 591 1503">Neighborhood Greenway</p> 	<ul style="list-style-type: none"> » Bicyclists share travel lanes with vehicular traffic on low-volume, low-speed streets. Treatments may include traffic calming (like speed cushions), traffic reduction treatments (like partial diverters or turn restrictions), pavement markings (like sharrows) and wayfinding signs to designate the route. » <i>Stress level:</i> Low » <i>Caltrans classification:</i> Class IIIB » Examples in Alameda: None yet, but this Plan recommends 18 miles of future Neighborhood Greenways

Bicycle Facility Type	Description
<p data-bbox="224 310 561 352">Buffered Bike Lanes</p> 	<ul style="list-style-type: none"> » Bicyclists ride next to vehicular traffic in a lane designated by paint only, with a striped buffer area between the bicyclist and travel lane that neither vehicles nor bicyclists should use. » <i>Stress level:</i> Medium. Can be considered lower stress for most adults, if installed on roadways with vehicle speeds of 30 mph or less and lower traffic volumes. However, stress level can increase with adjacency to on-street parking. » <i>Caltrans classification:</i> Class IIB » Examples in Alameda: portions of Robert Davey Jr. Drive, Fernside Drive, and Willie Stargell Avenue
<p data-bbox="310 800 475 842">Bike Lane</p> 	<ul style="list-style-type: none"> » Bicyclists ride adjacent to vehicular traffic in a lane designated by a painted line only. » <i>Stress level:</i> Medium to High. Stress level can increase with adjacency to on-street parking. » <i>Caltrans classification:</i> Class II » Examples in Alameda: Central Avenue, Broadway, Mecartney Road
<p data-bbox="302 1289 483 1331">Bike Route</p> 	<ul style="list-style-type: none"> » Bicyclists share travel lanes with vehicular traffic. Bicycle route signage and optional pavement markings (e.g., sharrows) are typically included to increase driver awareness of bicyclists and aid bicyclists with navigation » <i>Stress level:</i> Medium to High, depending on amount and speed of vehicle traffic. Stress level can increase with adjacency to on-street parking. » <i>Caltrans classification:</i> Class III » Examples in Alameda: Oak Street, Pacific Avenue, Versailles Avenue



CHAPTER 6: TRAILS NETWORK AND WATER CROSSINGS

An island community with an extensive waterfront and lagoons, Alameda has a large, invaluable, and growing network of trails and walkways for people to get around town and to recreate using active transportation. The Plan’s proposed new trails and upgrades to existing trails will provide stronger connections to local and regional destinations, including schools and parks, and will:

- » Complete the Cross Alameda Trail and Bay Trail;
- » Install new trails to complete gaps in existing networks;
- » Maintain and upgrade existing trails to be more comfortable and usable; and
- » Improve trail crossings of roadways to make them safer.

Being an island community also requires people walking and biking to cross waterways to leave the island, or traverse between the main island and Bay Farm. This Plan will:

- » Identify upgrades needed on existing bridges to make them easier to access, safer and more comfortable to use;
- » Pursue new crossing options in the west end of the island; and
- » Explore the feasibility of a second bicycle/pedestrian bridge between the main island and Bay Farm.

Being at sea level, Alameda will need to design new water crossings and shoreline trails to accommodate future sea level rise, and existing trails may need to be modified as the City implements shoreline protection measures to prepare for the future. Maintaining or expanding bicycling and walking waterfront trails and access should be a high priority for any shoreline protection project.

TRAILS NETWORK

Alameda’s extensive trail system includes trails where people walking and bicycling share the trail (called “shared use paths”), parallel but separate walking and bicycling paths, and narrow pedestrian walkways which typically serve as a connector between streets or provide access to the waterfront. These trails can be paved or unpaved, or even made of wood, and sometimes include short bridge connectors.

This Plan proposes 15 miles of new or upgraded trails, almost all of which will improve access to and along the waterfront. The Trails and Water Crossings Vision Network, a long-term planning tool, is shown in Figure 8.

Table 8. Existing and Proposed Trail Mileage

Type of Facility	Existing Length (Miles)	Proposed Length (Miles)	Total Length (Miles)
Shared use path (or separate bicycle and walking paths)	26	15	41
Off-street Walkway (paved)	8	0	8
Off-street Walkway (unpaved)	4	0	4
Total	38	15	53

For the list of proposed trail segments and more information about them, see *Appendix G. Active Transportation Project Prioritization*.

MAINTENANCE AND UPGRADES

Alameda's existing trail network is in need of maintenance and upgrades. Many of Alameda's trails have damage due to their age, tree root uplift and a lack of regular resurfacing. For instance, miles of trail on Bay Farm Island are in need of repair, such as along Island Drive. In addition to this, many of the City's shared use trails are narrow and not built to meet current levels of demand. A safe trail system also requires safe and consistent crossing treatments at roadways. As part of this Plan, the City conducted a limited inventory of existing trail conditions which will serve as the starting point for developing a trail maintenance and upgrade project to improve the safety and comfort of Alameda's existing trails. For the many trails that are privately maintained, the City will advocate for their owners to provide regular maintenance and make upgrades.

BAY TRAIL AND CROSS ALAMEDA TRAIL

Alameda has two major trail systems – the San Francisco Bay Trail and the Cross Alameda Trail – which are made up of a variety of low-stress walking and bicycling facility types, including trails, sidewalks, and separated bike lanes.

The Bay Trail is a regional asset, planned and coordinated by the Metropolitan Transportation Commission, that when complete, will connect cities around the Bay Area. In Alameda, approximately 17 miles of the Bay Trail route are existing, with another 11 miles needed to complete the portion of the Bay Trail planned for Alameda, as shown in Figure 9. This Plan recommends a significant re-routing of the current adopted Bay Trail route in Alameda to match recent waterfront development opportunities and a new regional focus on the trail being as close to the waterfront as possible, even if that means the facility may not be feasible for many years. In situations where shared use paths are not deemed feasible even in the long-term, on-street bikeways are proposed with adjacent sidewalks. In several cases (near Central Avenue and Fernside Boulevard), the only on-street bikeway facility type that is feasible on the street closest to the water is a Neighborhood Greenway, which is not a permitted Bay Trail bikeway type. If this policy were to change, the City would request that the alignment locations be adjusted to be closer to the water.

The Cross Alameda Trail, first conceived in 1991, is a continuous, low-stress four-mile corridor between the Seaplane Lagoon Ferry Terminal to the west and the Miller-Sweeny Bridge to the east. Over 70% of this trail is complete as of late 2022, with full completion expected by 2025. The trail significantly improves east-west connectivity throughout the city and provides sustainable connections to transit, schools, and commercial areas.



Cross Alameda Trail along West Atlantic Avenue

WATER CROSSINGS

Of Alameda's five bridges and two estuary tubes, only one facility, the Bay Farm Island Bicycle Bridge, includes adequate space for bicycling and walking separated from vehicles. To encourage sustainable travel on and off the island for work, school, transit, entertainment, or exercise, more options are needed to cross the estuary safely and comfortably by foot or bike.

CREATE NEW WEST END CROSSINGS

West of Park Street, the only estuary crossing option for walking or biking between Alameda and Oakland is along the two-way, three-foot pathway in the Posey Tube. Few people, understandably, use this option. Several projects are being planned that would bridge this gap in the west end, benefiting not just Alameda, but the region.

- » The **Oakland-Alameda Bicycle/Pedestrian Bridge**, first recommended in a 2009 study, has been estimated to serve 35,000-42,000 trips per week¹¹, by creating a comfortable, safe, and enjoyable connection between Alameda, Jack London Square, Downtown Oakland, BART, and Amtrak. While this regional long-term project will ultimately require leadership and resources from county, regional, and state agencies, in 2022 the City is leading a \$1.55 million planning study to move the project forward by further defining bridge alignment and landing options. Once an alignment is selected, the City will request that it become the Bay Trail route for this estuary crossing.
- » A **water shuttle** between Alameda and Oakland is the near-term option for a sustainable estuary crossing in the west end. A first step will be a pilot water shuttle service, partially funded with private funds.
- » The **Webster Tube Path**, while not an adequate crossing solution, will be a new four-foot path, similar to the Posey Tube path, in the Webster Tube. The project is led by Caltrans as part of a larger set of

¹¹ Estuary Crossing Study: Detailed feasibility and travel demand analysis. January 2021. Found here: www.alamedaca.gov/bridge.

improvements connecting the Posey Tube to Interstate 880, called the Oakland Alameda Access Project, and is expected to be completed in 2027.



Rendering of the proposed Oakland-Alameda Bicycle/Pedestrian Bridge

UPGRADE AND EXPAND EAST END CROSSINGS

- » The **Miller-Sweeney Bridge** (Fruitvale Bridge), owned and operated by Alameda County, is one of the three existing bridges connecting Alameda and Oakland. The City will advocate for high-quality, low-stress bicycling and walking facilities here, either through a retrofit or replacement of the bridge, or the re-use of the Fruitvale Railroad bridge corridor. Of the three bridges, this is the City's highest priority for improvements because it connects Alameda to the Fruitvale BART station.
- » The **Park Street and High Street Bridges**, also owned by the County, should also have low-stress biking and walking facilities such as shared use paths. Of these two bridges, the City will focus on advocating for upgraded facilities on the Park Street Bridge, given its relatively more direct connection to Downtown Oakland.
- » The **Bay Farm Island Bicycle Bridge** is a key link between the main island and Bay Farm Island and is heavily used by middle and high school students. Trail upgrades and safety enhancements are needed on the access routes on either side of the bridge.
- » The **Wooden Bridge**, running underneath the Bay Farm Island auto bridge, connects the Bicycle Bridge to the Bay Farm Island community. While it will ultimately be replaced as part of the Bay Farm Island Flood Protection and Coastal Resilience project, maintenance of the wooden surface is needed in the near term.
- » The **Shoreline to Seaview Bridge**, newly proposed in the 2021 General Plan, will connect the base of Park Street to Bay Farm Island near Seaview Parkway, providing a more direct route between the centers of Bay Farm Island and the main island. A first step is to study the feasibility of this new concept.



Figure 8. Trails and Water Crossings Vision Network



Figure 9. Bay Trail Route



CHAPTER 7: PROGRAMS

Achieving the Active Transportation Plan vision and implementing the citywide General Plan and Climate Action and Resiliency Plan goals will require both physical improvements to Alameda’s infrastructure as well as programs to support and encourage active transportation and create a thriving culture of walking, rolling, and biking.

Table 9 lists the 30 priority programs necessary to support active transportation in Alameda for the next eight years. These programs support and supplement the capital projects described in the next chapter, and they support all five Plan goals: Safety, Equity, Connectivity and Comfort, Community, and Mode Shift.

Each program listed below includes a relative cost and timeframe for implementation. The programs are grouped by timeframe, and the numbering does not imply priority. Programs are divided into three timeframes:

- » Near-term: Top priority for implementation between 2023 and 2025
- » Medium-term: Implementation between 2026 and 2030
- » Ongoing: These efforts are underway and expected to continue into the future

Costs are displayed in relative terms as follows:

- » **\$**: Relatively inexpensive actions that can likely be completed using existing staff and resources
- » **\$\$**: Somewhat expensive actions that may require hiring additional staff or contractors and/or purchasing additional equipment or services
- » **\$\$\$**: Relatively expensive actions, such as infrastructure improvements requiring extensive design and construction resources



Table 9. Recommended Programs

Program	Goals	Cost	Timeframe
Near-Term Programs			
P.1. Regularly provide free or discounted bicycle repairs and maintenance via a local non-profit, such as the BikeMobile, and/or through partnerships with local bike shops.	Equity, Safety, Mode Shift	\$\$	Near-term
P.2. Support and promote local, regional and state electric bike rebate programs for bike ownership, with higher rebates for people with low-incomes, and concurrently develop and distribute materials that educate the community on the benefits of electric and cargo bikes.	Equity, Community, Mode Shift	\$	Near-term
P.3. Develop Neighborhood Greenway program implementation guidance, a design toolkit, design standards and a regular monitoring program, to achieve and maintain volume and speed targets using volume management and traffic calming tools.	Connectivity and Comfort, Safety, Mode Shift	\$	Near-term
P.4. Update existing City design guidelines for bicycling and walking facilities to reflect best practices and the range of new types of infrastructure; include guidance on integrating maintenance considerations during project development, planning, and design phases for bicycle and pedestrian projects.	Connectivity and Comfort, Safety, Mode Shift	\$	Near-term
P.5. Develop a data-driven school crossing guard policy that provides guidance on where to locate crossing guards and, in partnership with other public agencies, adequately fund the program.	Connectivity and Comfort, Safety, Mode Shift	\$\$	Near-term
P.6. Develop and implement a regular maintenance schedule for shared-use trails and bikeway infrastructure, including striping, separated bike lane barriers, bike parking, and bike repair stations.	Connectivity and Comfort, Safety, Mode Shift	\$\$	Near-term
P.7. Install additional bike parking throughout Alameda, including in-street bike corrals and parking that accommodates bicycles of different sizes, including longer wheelbase cargo and childrens' bikes.	Community, Mode Shift	\$\$	Near-term
P.8. Develop signage and educational materials about securely locking bikes to reduce theft and promote bicycle registration services such as Bike Index to aid in bicycle recovery. Disseminate materials via community partners and public-facing City agencies, social media and web sites.	Community, Mode Shift	\$	Near-term
P.9. Further develop the performance measures for bicycling and walking (found in Table 11) as part of a transportation-wide performance measure development project, including by establishing a regular bicycle and pedestrian count program.	Mode Shift	\$\$	Near-term

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Program	Goals	Cost	Timeframe
P.10. Evaluate current bikeshare (standard and electric), scooter share, and other micro-mobility options, and establish programs and policies for their operations in Alameda. Include adaptive bicycles and discounts for low-income residents.	Community, Mode Shift, Equity	\$\$	Near-term
P.11. Revise the Bicycle Chapter in Alameda’s municipal code to reflect current laws and practices, support safe bicycling in Alameda, eliminate bicycle registration requirement and discourage motorists from parking or idling in bike lanes.	Community, Safety	\$	Near-term
P.12. Increase training opportunities for Public Works and Transportation Planning staff directly involved in the planning and design of bicycle and pedestrian facilities on best practices for infrastructure design, implementation, and maintenance.	Connectivity and Comfort, Safety, Mode Shift	\$	Near-term
Medium-Term Programs			
P.13. Develop strategies to assist and incentivize property owners to repair their sidewalks across the City, to expand upon the City’s existing maintenance program addressing sidewalks damaged by city street trees.	Connectivity and Comfort, Safety, Mode Shift	\$	Medium-term
P.14. Where needed, install infrastructure such as benches, shelters, safe pedestrian crossings, shade trees and lighting along bus transit lines, prioritizing high-frequency bus corridors, equity priority areas, and stops near senior centers and schools.	Connectivity and Comfort, Safety, Mode Shift	\$\$	Medium-term
P.15. Partner with other organizations to provide free or low-cost bike gear for low-income and unhoused residents, including children, to support safe riding practices; include high-quality locks, lights, and helmets.	Equity, Safety, Mode Shift	\$\$	Medium-term
P.16. Identify priority intersections for traffic signal video detection of bicyclists and implement.	Connectivity and Comfort, Safety, Mode Shift	\$\$\$	Medium-term
P.17. Investigate opportunities to create pedestrian-only spaces for outdoor dining and community gathering for special events or longer term.	Community	\$	Medium-term
P.18. Develop and implement program guidelines for asphalt art, to be placed at painted bulb-outs, in-street bike parking corrals, intersections, and other locations to be determined.	Community	\$	Medium-term
P.19. Develop and implement a citywide wayfinding signage program, including trail systems.	Community, Mode Shift	\$\$	Medium-term

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Program	Goals	Cost	Timeframe
P.20. Expand the number of free-standing bike repair stations, focusing on equity priority communities and locations that will have lower rates of vandalism.	Community, Mode Shift	\$\$	Medium-term
P.21. Continue partnering with Bike Walk Alameda on development of the printed walking and biking map of Alameda and create an online bicycling map.	Community, Mode Shift	\$\$	Medium-term
P.22. Continue to support the community-wide celebration of the annual Bike to Wherever Day and encourage a wider focus on all trips; develop events to promote walking.	Community, Mode Shift	\$	Ongoing/ Medium-term
P.23. Encourage and support partner organizations to develop temporary street closure programs, such as Sunday Streets, to provide safe and fun places for people to walk, bike, roll, and gather, such as on Shore Line Drive, Harbor Bay Parkway, or Ferry Point.	Community, Mode Shift	\$\$	Medium-term
Ongoing Programs			
P.24. Regularly engage underrepresented groups and equity priority communities through listening sessions and other engagement efforts, and incorporate their input into project and program selection, design, funding, and implementation recommendations.	Equity, Community	\$\$	Ongoing
P.25. Continue to collaborate with and promote the Alameda County Safe Routes to Schools (SR2S) programs and events that encourage safe walking/biking to school, including International Walk and Roll to School Day, and Bike to School Day.	Safety, Community, Mode Shift	\$	Ongoing
P.26. Partner with the Countywide SR2S Program, local schools, and community organizations to continue the annual Bike Festival.	Community, Mode Shift	\$\$	Ongoing
P.27. Continue to support bicycle safety education classes and workshops held in Alameda, to promote knowledge of safe riding techniques.	Community, Mode Shift	\$\$	Ongoing
P.28. Document the impacts of pedestrian and bicycle capital projects and programs on safety and mode shift, including by conducting before-and-after studies of projects using a consistent methodology.	All	\$\$	Ongoing
P.29. Implement a regular sweeping schedule for bicycle/pedestrian facilities, including for standard and separated bike lanes, bicycle and pedestrian paths, and walkways.	Connectivity and Comfort, Safety, Mode Shift	\$\$	Ongoing
P.30. Continue implementing the <i>Signalized Intersection Access Equity</i> policy and communicate about implementation status.	Connectivity and Comfort, Mode Shift	\$	Ongoing



CHAPTER 8: 2030 INFRASTRUCTURE PLAN

To achieve the Plan’s vision and goals, the City and the community of Alameda must commit themselves and their available resources to quickly making changes to the City’s transportation infrastructure and facilities to support active transportation. This chapter identifies an ambitious set of capital improvement project priorities for the next eight years (2023-2030), that in tandem with the programs presented in Chapter 7, will do that. Recognizing the key link between active transportation and greenhouse gas emission reductions, the 2030 timeline coincides with the City’s 2030 targets for greenhouse gas reductions established by the Climate Action and Resiliency Plan.

2030 INFRASTRUCTURE PLAN

The 2030 Infrastructure Plan is a set of 32 projects designed to achieve the Plan’s five goals of: 1) Safety, 2) Equity, 3) Mode Shift, 4) Connectivity and Comfort, and 5) Community. The projects, except for those led by other public agencies, were selected based on a rigorous project evaluation and prioritization process. Each proposed bikeway project and each public street segment (used by pedestrians) were scored on safety, demand, and equity criteria. Almost every project and street segment that ranked “high” through this evaluation has been included in the 2030 Infrastructure Plan. Programmatic projects, such as trail and sidewalk maintenance, were also qualitatively evaluated and included. The prioritization process and results are described in detail in *Appendix G. Active Transportation Project Prioritization*. Table 10 shows the full list of projects, most of which include both bicycle and pedestrian improvements. The table lists the projects roughly in the order in which they will be completed, and the numbering does not infer priority. Projects that will be fully completed by other entities (numbered 28-32) are grouped at the end of the list.

2030 LOW-STRESS BACKBONE NETWORK

The 2030 Infrastructure Plan also includes building a Low-Stress Backbone Network, which is mapped in Figure 10 and made up of the projects with a check mark in the final column of Table 10. This network is a subset of the existing and proposed low-stress facilities in the Low Stress Bikeway Vision Network (Figure 7 in Chapter 5) that will create an essential “backbone” of a complete, connected bicycle network. It is designed to allow people of all ages and abilities to get to key destinations, including schools, parks, transit, bridges, shops, and jobs. Alameda’s newly added bicycle (and pedestrian) facility type, the Neighborhood Greenway, is integral to building the network.

Table 10. 2030 Infrastructure Plan

	Project	Phasing (& partners)	Pedestrian Project	Bicycle Project	Trail Project	2030 Low-Stress Backbone Network
1	Central Avenue Safety Project (Pacific Ave to Sherman St) <i>Pedestrian crossing improvements on full corridor, separated bike lanes and bike lanes</i>	Completed by 2024	✓	✓		✓
2	Grand Street Safety Project (Shore Line Dr to Clement Ave) <i>Pedestrian safety improvements and separated bike lanes</i>	South of Encinal: Completed by 2024 North of Encinal: Completed by 2030	✓	✓		✓
3	Clement Avenue: Cross Alameda Trail Gap Closures (Ohlone to Tilden Way to Miller-Sweeney Bridge) <i>Pedestrian safety and ADA improvements, separated bike lanes and shared use paths</i>	Completed by 2025 (City and development partners)	✓	✓	✓	✓
4	Park Street and/or Oak Street Corridor (Full extents) <i>Initial Phase: Develop comprehensive transportation study of the two corridors, with community and business input, to determine pedestrian safety improvements and select Park or Oak for a low-stress bicycle facility. Build improvements using lower-cost, quick-build materials.</i> <i>Final Phase: Implement long-term plan, with permanent materials.</i>	Initial Phase: Completed by 2026 Final Phase: Completed plans by 2030, for future construction post-2030	✓	✓		✓

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	Project	Phasing (& partners)	Pedestrian Project	Bicycle Project	Trail Project	2030 Low-Stress Backbone Network
5	<p>Webster Street (Atlantic Ave to Central Ave) <i>Initial Phase: Develop comprehensive transportation study, with community and business input; design and build lower-cost pedestrian safety improvements and bicycle lanes (standard and buffered).</i></p> <p><i>Final Phase: Implement long term plan, with separated bike lanes and pedestrian safety improvements, with permanent materials.</i></p>	<p>Initial Phase: Completed by 2025</p> <p>Final Phase: Completed plans by 2030, for construction post-2030</p>	✓	✓		✓
6	<p>Trail maintenance and upgrades (Main island and Bay Farm trails, including along Island Drive and shoreline trails) <i>Inventory shared-use trail needs and ownership, prioritize locations for improvements, and maintain and upgrade</i></p>	Ongoing			✓	
7	<p>Sidewalk gaps completion (Various) <i>Inventory sidewalk gaps and complete key gaps, as funding allows</i></p>	Ongoing	✓			
8	<p>Oakland-Alameda Bicycle-Pedestrian Bridge (West Alameda to Oakland)</p>	<p>Completed Project Initiation Document (PID) and identification of Lead Agency for all future phases by 2024</p> <p>Construction by others post-2030</p>	✓	✓	✓ (Bay Trail)	
9	<p>Estuary Water Shuttle Operations (West Alameda to Oakland)</p>	Launch pilot service by 2024 (City, WETA and development partners)	✓	✓		

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	Project	Phasing (& partners)	Pedestrian Project	Bicycle Project	Trail Project	2030 Low-Stress Backbone Network
10	Bay Farm Bike Bridge Access Upgrades <i>Identify and construct set of improvements within 1000 feet of both sides of bridge to improve path conditions, crossings, and connections to streets. Prioritize Wooden Bridge surface improvements.</i>	Completed by 2026	✓	✓	✓ (Bay Trail)	✓
11	Pacific Avenue (Marshall Way to Park St) <i>Neighborhood Greenway, including transition of the Slow Street portion in near term</i>	Completed by 2024	✓	✓		✓
12	San Antonio Avenue/San Jose Avenue/Morton St (Ninth to Fernside) <i>Neighborhood Greenway, including transition of the Slow Street portion on San Jose/Morton in near term</i>	Completed by 2024	✓	✓		✓
13	Versailles (Fernside to Calhoun), Calhoun (Versailles to Mound), Mound (Calhoun to Waterton), Waterton (Mound to Court), Court (Waterton to Bayview) <i>Neighborhood Greenway, including transition of the Slow Street portion on Versailles Ave in near term</i>	Completed by 2024	✓	✓		✓
14	Third Street <i>(Central Ave to Ralph Appezato Memorial Parkway) Neighborhood Greenway</i>	Completed by 2025	✓	✓		✓
15	Eighth Street <i>(Jean Sweeney Park to Pacific Ave) Neighborhood Greenway</i>	Completed by 2025	✓	✓		✓
16	Ninth Street <i>(Pacific Ave to San Antonio) Neighborhood Greenway</i>	Completed by 2025	✓	✓		✓
17	Chestnut Street <i>(Clement Ave to San Jose Ave) Neighborhood Greenway</i>	Completed by 2025	✓	✓		✓

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	Project	Phasing (& partners)	Pedestrian Project	Bicycle Project	Trail Project	2030 Low-Stress Backbone Network
18	Lincoln Avenue/Garfield Avenue (Park to Fernside) <i>Neighborhood Greenway</i>	Completed by 2025	✓	✓		✓
19	Bayview Drive (Broadway to Otis Dr) <i>Neighborhood Greenway</i>	Completed by 2025	✓	✓		✓
20	Fifth Street (Ralph Appezzato Memorial Parkway to Stargell Ave) <i>Separated bike lanes</i>	Completed by 2026		✓		✓
21	Lincoln/Marshall/Pacific Corridor Improvements (Main St to Broadway) <i>Pedestrian safety and crossing improvements; mix of buffered and standard bike lanes and Neighborhood Greenways</i>	Completed by 2030	✓	✓		✓ (portion)
22	Willie Stargell Avenue Safety Improvements (Main St to Fifth St) <i>Shared use path, speed reduction treatments, pedestrian crossing improvements</i>	Completed by 2030	✓	✓	✓	✓
23	Fernside Boulevard (Tilden to San Jose) <i>Separated bike lane and pedestrian safety improvements</i>	Completed by 2030	✓	✓	✓ (Bay Trail)	✓
24	Safe Routes to School Access Improvements (Various) <i>Complete improvements recommended in School Site Assessments.</i>	Ongoing/Completed by 2030	✓	✓		
25	Eighth Street/Westline Drive (Otis Dr to Central Ave) <i>Plan bicycle and pedestrian improvements; secure funding.</i>	Plans completed and funding secured by 2030		✓	✓	
26	Neptune Park Path (Webster St to Constitution Way) <i>Shared use path</i>	Completed by 2030	✓	✓	✓	

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	Project	Phasing (& partners)	Pedestrian Project	Bicycle Project	Trail Project	2030 Low-Stress Backbone Network
27	Alameda Point Street Rebuilds (All streets within Site A and West Midway areas, and segments of Pan Am Way, Saratoga St, West Tower Ave, and West Redline to new Veterans Affairs (VA) facility and Northwest Territories) <i>Sidewalks, pedestrian safety improvements and separated bike lanes</i>	Completed in phases by 2030 (by City, development partners, and VA)	✓	✓		
28	Miller-Sweeney Bridge <i>Initial Phase: Add bicycle lanes (standard) to bridge</i> <i>Final Phase: Collaborate with County to select long-term option for adding shared use path or protected bicycle lanes.</i>	Initial Phase: Completed by 2023 (by Alameda County) Final Phase: Long term option selected by 2030 for construction post-2030.	✓	✓	✓ (Bay Trail)	
29	Encinal Avenue Resurfacing and Road Diet (Sherman St to Broadway) <i>Pedestrian safety improvements and bike lanes (standard)</i>	Completed by 2023 (by Caltrans)	✓	✓		
30	Broadway/Otis Drive/Doolittle Drive Resurfacing and Improvements (State Route 61) <i>Pedestrian safety and crossing improvements, bike lanes (standard), and separated bike lanes</i>	Completed by 2026 (by Caltrans)	✓	✓		
31	Oakland Alameda Access Project <i>Upgrades to existing paths to and within Webster and Posey Tubes</i>	Completed by 2027 (by Caltrans)	✓	✓	✓	
32	Northern Waterfront Bay Trail Gap Closures (At Wind River, Encinal Terminals, Alameda Marina and Boatworks) <i>Shared use paths</i>	Completed by 2030 (by property owners)			✓ (Bay Trail)	

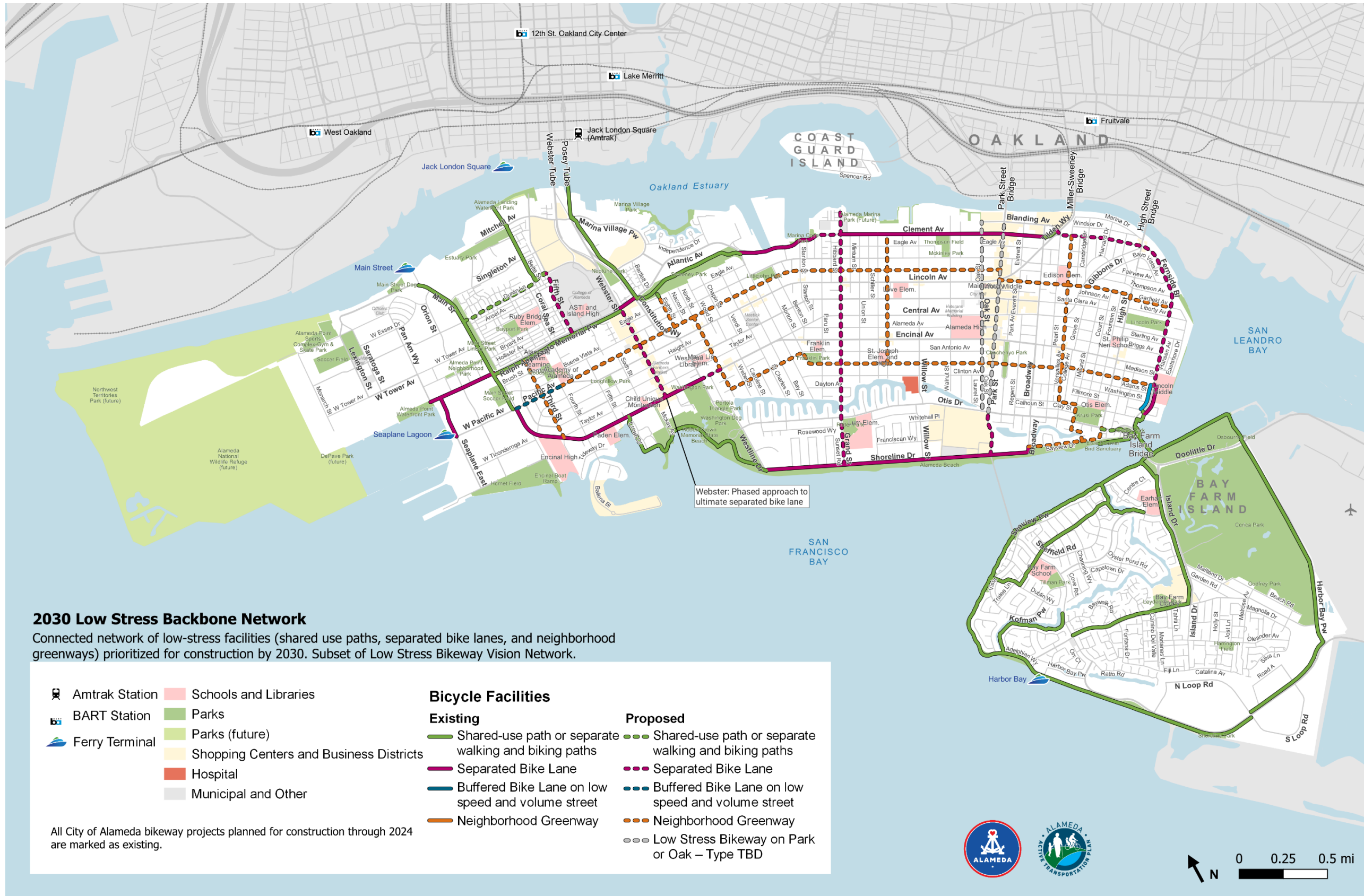


Figure 10. 2030 Low Stress Backbone Network

SLOW STREETS TO NEIGHBORHOOD GREENWAYS

In late 2021, the City Council considered the Slow Streets evaluation and staff recommendations and voted to continue the program until the Active Transportation Plan provided direction on the future of the program and these actions were implemented.

Pacific Avenue, San Jose Avenue, and Versailles Avenue, all current Slow Streets, are proposed in this Plan to become Neighborhood Greenways, which are traffic-calmed bicycle- and pedestrian-priority streets where vehicles are allowed but volumes and speeds are kept low. These three streets will be transitioned in the near term (by 2024) from Slow Streets to Neighborhood Greenways, using lower-cost infrastructure that can be built quickly. At that point, the temporary barricades will be removed.

The two remaining Slow Streets are not proposed to be upgraded to Neighborhood Greenways or another bikeway type in the near future, and will therefore be removed shortly after this Plan is adopted:

- » *Santa Clara Avenue*. This street will continue to be a bicycle route, marked with “sharrow” stencils, as it was before 2020. It is not recommended as a Neighborhood Greenway since the Slow Streets section closely parallels Central Avenue, which will have separated bike lanes and other safety interventions making it a low stress facility. Also, it is not currently, nor proposed to be, a low stress facility east of Webster Street.
- » *Orion Street*. This street segment will have speed humps added, as has been previously planned. The Orion Slow Street is not recommended as a Neighborhood Greenway because it is only one block long, and in the future will be part of a longer corridor of separated bike lanes along Orion Street, as new development occurs.

See Chapter 5 for more details about Neighborhood Greenways.

FUNDING AND CITY RESOURCES

The 2030 Infrastructure Plan represents a major commitment of resources by a variety of agencies and partners, including the City of Alameda. The City currently funds, either fully or partially, many active transportation projects and programs each year with local transportation sales tax funding from Alameda County’s Measure BB. Completion of the 2030 Plan will also require partnerships with federal, state, and regional transportation agencies that fund and construct active transportation projects, as well as with local property owners and development partners that construct projects on private property and the adjacent public rights of way. Some projects, such as the Encinal Avenue project (Project #29), will be completely funded and constructed by another public agency (in this case, Caltrans). Other projects, such as the Northern Waterfront Bay Trail Gap Closures (Project #32), will be funded and constructed by a property owner developing the adjacent private lands. Many projects, such as the Central Avenue Safety Project (Project #1), are funded by federal and state sources with a City of Alameda “local match” contribution, and the project is managed and constructed by the City.

Aside from funding, a significant limiting factor on how many projects can be constructed in Alameda in any one year is the capacity of the existing staff and the community to:

- » Secure project funding;
- » Develop and come to agreement on a project design;

- » Develop the necessary construction documents, which can require extensive review by funding agencies; and
- » Hire and manage the construction contractors.

Each of these steps is time intensive, especially for larger projects. With the cooperation and support of the Alameda community, the projects in the 2030 Plan can be completed with existing staff resources. However, if over the course of the eight-year period, new active transportation projects are prioritized for implementation, it will likely be necessary to remove a project from the 2030 Infrastructure Plan. In the event that it becomes apparent that staff resources are not adequate, the City Council may consider additional staff resources during the annual budget process.

MONITORING AND EVALUATION

Performance measures will be used to track the effectiveness of the various projects, programs, and investments presented in this Plan in meeting the Plan goals. Quantifiable data, while limited for bicycling and walking, is needed to knowledgably evaluate effectiveness. Staff will report on the performance measures and progress on implementing the 2030 projects and programs annually. This annual review can inform the need for any adjustments to the 2030 Plan during the eight-year period, which can be made when the City adopts and updates its budget. Further, this Plan will be updated in five years, at which time further adjustments may be made in response to the evaluation findings.

The performance measures in Table 11, grouped by the Plan goals, represent measurable data that is reasonably easy to collect and regularly available, to track progress on investments and their benefits. Where there are existing, reliable sources, baseline data is included, targets have been set, and target years noted, based on the established frequency of the data collection. In 2023, the City will assess the baseline data for those performance measures marked “TBD” and determine appropriate targets, as part of a broader effort to develop performance measure for all transportation modes.

Table 11. Active Transportation Plan Performance Measures

Goal	Performance Measures	Baseline	Target	Data Source(s) and Frequency
Safety	Increase the safety of all people using active transportation			
	Number of people walking and bicycling involved in crashes that resulted in an injury°	2021 (3-year average): » Walking: 36 » Bicycling: 22	By 2030 (3-year average): Stable, or decreasing, as the number of people walking and bicycling increases.	Police Department Reports (Annual)

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Goal	Performance Measures	Baseline	Target	Data Source(s) and Frequency
Equity	Prioritize active transportation investments in underserved communities and actively engage underrepresented groups in the planning process			
	Percent of active transportation improvement projects installed in equity priority communities	TBD	TBD	City data (Annual)
	Percent of programming and education in equity priority communities	TBD	TBD	City data (Annual)
Connectivity and Comfort	Develop a well-connected network of active transportation facilities that are comfortable and convenient for people of all ages and abilities			
	Number of intersections with pedestrian crossing improvements or upgrades	TBD	TBD	City data (Annual)
	Miles of all bikeways	2022: 65	By 2030: <i>[coming]</i>	City data (Annual)
	Miles of low-stress bikeways	2022: <i>[coming]</i>	By 2030: <i>[coming]</i>	City data (Annual)
Community	Promote and inspire safe and fun walking, bicycling and rolling to foster a strong culture of walking and bicycling			
	Number of schools with active Safe Routes to Schools programs	2022: » 19 (public) » 2 (private)	By 2030: All public and private	City and County data (Annual)
	Number of 5th grade classes that receive bicycle safety education	2022: 4	By 2030: All	City and County data (Annual)
	Number of new or upgraded bicycle parking facilities	TBD	TBD	City data (Annual)
	Number of encouragement or educational events or campaigns held to support walking and bicycling	TBD	TBD	City and County data (Annual)

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Goal	Performance Measures	Baseline	Target	Data Source(s) and Frequency
Mode Shift	Increase percentage of walking and bicycling trips			
	Percent of school-aged children who walk or bicycle to school, at least some of the time	2019: » Walk: 48% » Bicycle: 31%	By 2026: » Walk: 60% » Bicycle: 40%	Alameda City Community Survey (Every 5 years, with Plan update)
	Number of people walking and bicycling at established count sites and at recently completed capital project locations	TBD	TBD	City and County count collection (Every 2 years) Project counts (As implemented)
	Percent of people walking and bicycling to transit	TBD	TBD	AC Transit and WETA surveys (Varies)
	Percent of bicycling and walking trips to work, and percent of drive alone trips to work	2021 (3-year average) » Walking = 2.6% » Bicycling = [coming] » Driving alone = 54.5%	By 2030 (3-year average) » Walking = 4% » Bicycling = [coming] » Driving alone = Stable or decreasing	American Community Survey (Annual)
	Percent of frequent utilitarian and recreational bicyclists	2019: 56%	By 2026: 65%	Alameda City Community Survey (Every 5 years, with Plan update)
	Percent of frequent utilitarian walkers	2019: 57%	By 2026: 65%	Alameda City Community Survey (Every 5 years, with Plan update)

° Performance measure from *Alameda Vision Zero Action Plan*