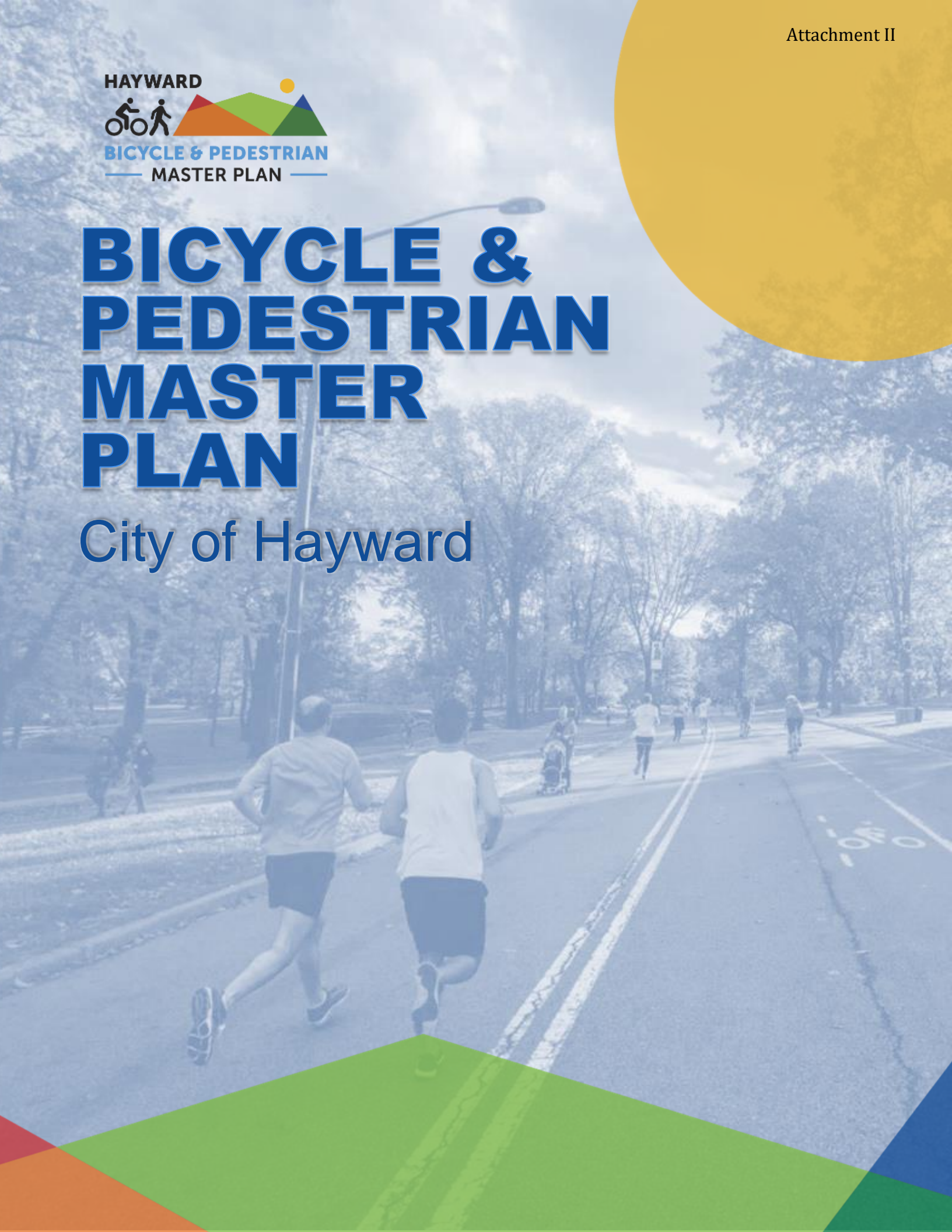




# BICYCLE & PEDESTRIAN MASTER PLAN

City of Hayward



# TABLE OF CONTENTS

<b>TABLE OF CONTENTS .....</b>	<b>2</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>6</b>
Introduction .....	6
Benefits of Biking and Walking .....	6
Plan Vision and Goals.....	8
Existing Conditions .....	10
Project Recommendations.....	11
Program and Policy Recommendations .....	16
Implementation Strategy.....	17
Plan Outreach and Community Engagement .....	18
<b>INTRODUCTION.....</b>	<b>20</b>
Purpose of the Plan .....	20
Benefits of and Barriers to Biking and Walking .....	20
Public Outreach/ Community Involvement Plan .....	23
<b>VISION AND GOALS .....</b>	<b>35</b>
Vision Statement.....	35
Goals.....	35
Performance Measures.....	36
<b>EXISTING CONDITIONS.....</b>	<b>38</b>
State of Biking and Walking in Hayward.....	38
Existing Bicycle/ Pedestrian Network .....	48
<b>PROJECT RECOMMENDATIONS.....</b>	<b>66</b>
Project Prioritization and Methodology .....	66
Bicycle Network Development .....	68
All Ages and Abilities Network .....	69
Project Recommendations.....	71
<b>PROGRAM AND POLICY RECOMMENDATIONS .....</b>	<b>80</b>
Infrastructure and Operations .....	83
Evaluation and Planning .....	95
Funding .....	96
Project Implementation .....	98
Education and Enforcement.....	101
<b>IMPLEMENTATION STRATEGY .....</b>	<b>104</b>
Cost Estimates.....	104
Near-Term Investments .....	106
Long-Term Investments .....	108
Funding Sources.....	109
<b>CONCLUSION .....</b>	<b>121</b>

## LIST OF FIGURES

Figure 1: City of Hayward .....	7
Figure 2: Prioritization Weights .....	11
Figure 3. Existing and Proposed Bicycle Network .....	13
Figure 4: Recommended Pedestrian Network .....	14
Figure 5: Proposed Transit Supportive Improvements .....	15
Figure 6. Public Engagement Process Summary .....	18
Figure 7. Public Engagement Process Summary .....	24
Figure 8. Example Screenshot of Project Website and Social Media Post .....	26
Figure 9. Online Wikimap .....	26
Figure 10. Heatmap Overview of All Input from Phase I Outreach .....	28
<b>Figure 11. Downtown Walkabout Example Community Input Map and Tour Photo .....</b>	<b>30</b>
Figure 12. Heatmap Overview of All Input from Phase III Outreach .....	33
Figure 13. Community Mode Share, Hayward Residents .....	39
Figure 14. Trip Purposes for All Transportation Modes .....	39
<b>Figure 15. Non-Work Trip Distances for All Transportation Modes .....</b>	<b>40</b>
Figure 16. Population and Walk/Bike Commute Mode Share by Race .....	41
Figure 17. Income and Walk/Bike Mode Share .....	41
<b>Figure 18. Vehicle Ownership and Walk/Bike Mode Share .....</b>	<b>42</b>
Figure 19. Gender and Walk/Bike Mode Share .....	42
<b>Figure 20. Disadvantaged Communities (Top 25<sup>th</sup> Percentile) and Opportunity Focus Areas (Top 40<sup>th</sup> Percentile) .....</b>	<b>44</b>
<b>Figure 21. AC Transit Bus Stops in Hayward – Top 20 Boardings/Alightings .....</b>	<b>46</b>
Figure 22. Mode Split for Access to BART Stations .....	47
Figure 23. Rendering of Class I Bikeway .....	48
Figure 24. Rendering of Class II Bikeway .....	49
Figure 25. Rendering of Class III Bikeway .....	49
Figure 26. Rendering of Class IV Bikeway .....	50
Figure 27. Existing Bike Network .....	51
Figure 28. Comfort Typology of Bicyclists .....	53
<b>Figure 29. Existing Level of Traffic Stress for All Streets .....</b>	<b>54</b>
Figure 30: Bicyclist Collisions, Hayward, 2012-2016 .....	57
Figure 31. Top Six Primary Collision Factors in Bicyclist Collisions .....	58
Figure 32. Pedestrian Collisions Hayward, 2012-2016 .....	60
Figure 33. Location of Pedestrian Collisions, Hayward, 2012-2016 .....	61
Figure 34. Bicycle and Pedestrian High Injury Corridors .....	62
Figure 35. Prioritization Factors and Weights .....	66
Figure 36. Bicycle and Pedestrian Prioritization Screening Map: Top 10 Roadway Miles .....	67
Figure 37. Network Framework Development Process .....	68
Figure 38. AASHTO Bikeway Facility Selection Chart .....	69
Figure 39. All Ages and Abilities Network .....	70
Figure 40. Existing and Recommended Bikeway Facilities .....	72
Figure 41: Bus Stop and Bicycle Facility Typologies Recommended .....	76
Figure 42: Proposed Pedestrian Network .....	77
Figure 43: Recommended Transit Supportive Improvements .....	78
Figure 44. Curb Ramp Design Specifications .....	87
Figure 45. Pedestrian Push Button Height Specifications .....	87
Figure 46. Section of Curb Ramp Compliance Checklist .....	95
Figure 47. How Communities Pay for On-Street Bicycle Infrastructure .....	96
Figure 48. Evolution of a Class IV Separated Bikeway .....	100

## LIST OF TABLES

Table 1. Performance Measures .....	9
Table 2. Summary of Recommendations for Policies, Programs, and Practices .....	16
Table 3. Costs for Recommended Improvements .....	17
Table 4. Existing Plans & Policy Summary .....	21
Table 5. Technical Advisory Committee Members and Organizations .....	25
Table 6. Top Barriers to Walking and Biking in Hayward .....	28
<b>Table 7. Performance Measures .....</b>	<b>36</b>
Table 8. Demographic Summary .....	38
Table 9. CalEnviroScreen Disadvantaged Communities Indicators .....	43
Table 10. Bicyclist Collisions Year over Year, Hayward, 2012 – 2016 .....	56
Table 11. Severity of Bicyclist Collisions, Hayward 2012 – 2016 .....	56
Table 12. Pedestrian Collisions Year over Year, Hayward, 2012-2016 .....	59
Table 13. Severity of Pedestrian Collisions, 2012-2016 .....	59
Table 14. Top 10 Bicycle High Injury Corridors .....	63
Table 15. Top 10 Pedestrian High Injury Corridors .....	63
Table 16: Pedestrian Network Recommendations .....	73
Table 17. Summary of Plan Recommendations for Pedestrian-related Policies, Programs, and Practices .....	80
Table 18. Recommended Bicycle Investments by Facility Type .....	104
Table 19. Recommended Citywide Corridor Pedestrian Investments .....	105
Table 20: Transit Facility Cost Estimates .....	105
Table 21. Near-Term Implementation Action Plan .....	106
Table 22. Long-term Implementation Action Plan .....	108
Table 23. Funding Sources and Applicability by Project Type .....	109

# Executive Summary



# EXECUTIVE SUMMARY

## INTRODUCTION

Residents and visitors of Hayward have long walked and biked as a means of travel and recreation. Still, walkers and bikers are vulnerable road users susceptible to safety risks, and work has to be done to ensure there is a network of quality bicycle and pedestrian facilities throughout Hayward. The City of Hayward's Bicycle and Pedestrian Master Plan (Plan) establishes the City's vision and comprehensive approach to improving walking and biking in Hayward.

The City of Hayward has promoted biking and walking throughout its history. The first bicycle plan was adopted in 1979 and the most recent update completed in 2007. Since then, the City has created various citywide and neighborhood specific plans to promote these modes of transportation. The Plan builds off of this work and is consistent with the City's General Plan and Complete Street policies, which emphasize a comprehensive, integrated, and connected network of transportation facilities and services for all modes of travel.

## BENEFITS OF BIKING AND WALKING

There are many benefits to biking and walking as a means of transportation, from improved health and well-being to the affordability and environmentally sustainable nature of both. Some of the benefits include:

- ▶ **Environmental Benefits:** Together, biking and walking allow for sustainable and affordable travel, and improve access to employment, recreation, school and other opportunities. Biking and walking also have the potential to reverse the impacts of global warming by reducing the greenhouse gas emissions from the transportation sector.
- ▶ **Public Health:** Promoting walking and biking as viable alternatives to driving can improve physical and emotional health and well-being. Walking and biking with frequency is associated with personal health benefits by providing an opportunity for individuals to incorporate physical activity into daily life. Walking and biking also have potential psychological health benefits, including treating anxiety and depression and improving cognitive functioning. Lastly, a decrease in vehicle use results in community health benefits, such as improved air quality, reduced noise pollution, and reduced greenhouse gas emissions.
- ▶ **First and Last Mile Connections:** Biking and walking also make important connections to transit more convenient, including to Bay Area Rapid Transit (BART) stations where parking availability can be limited and to local and regional Alameda-Contra Costa Transit (AC Transit) bus connections.



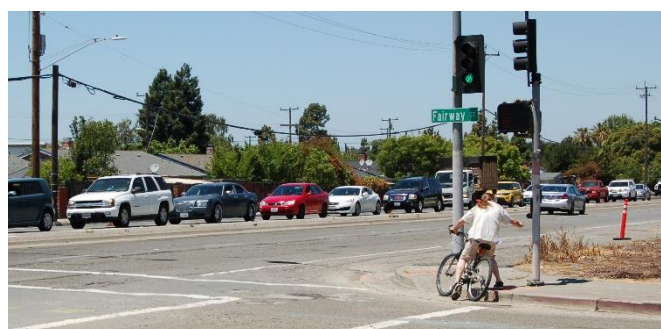
*Multi-use path crossing at Industrial Parkway.*

Source: Kittelson & Associates, Inc.



*Crosswalk with in-pavement illumination at Amador Street.*

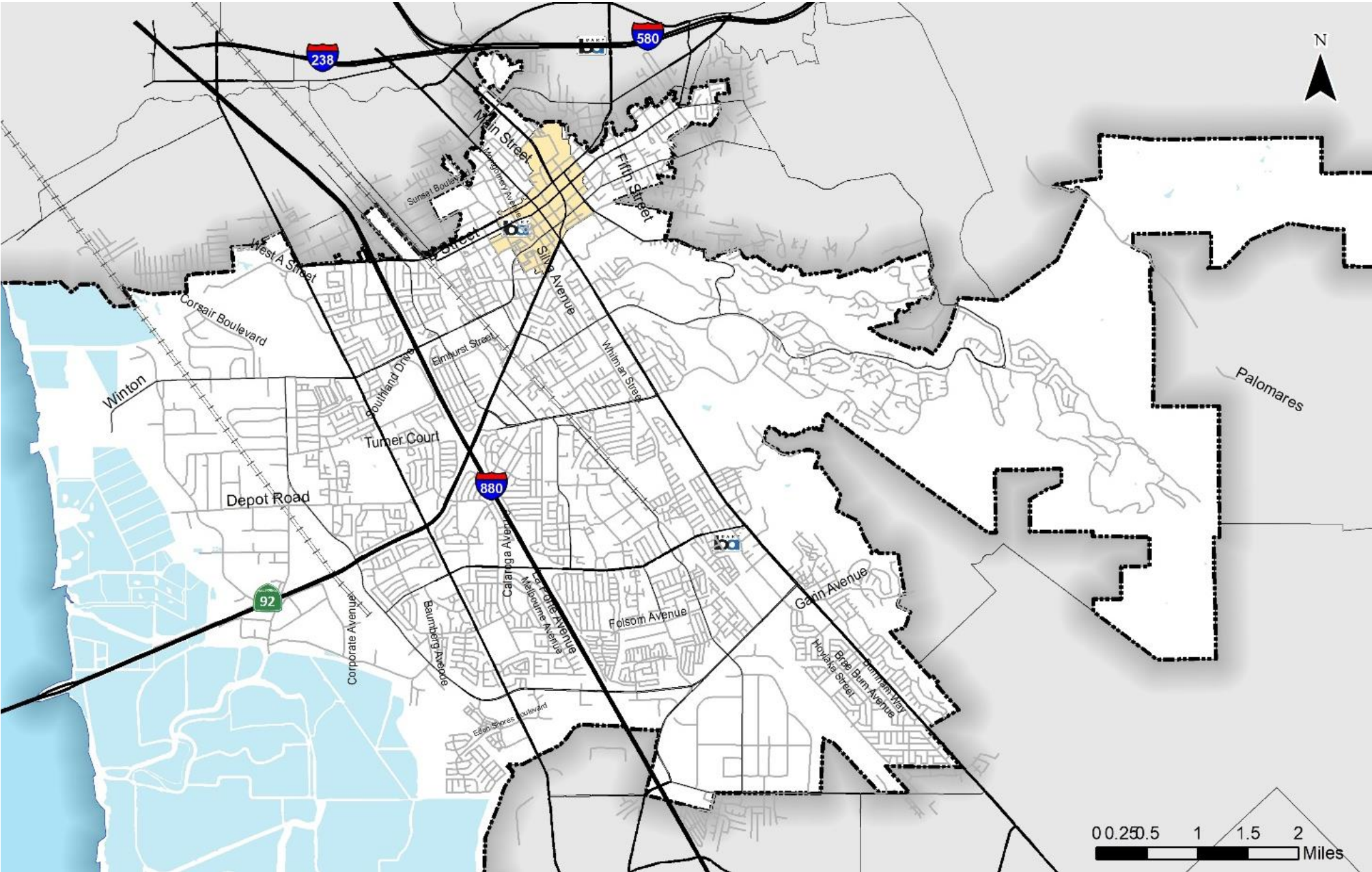
Source: Kittelson & Associates, Inc.



*Bicyclist crossing at Fairway Street and Mission Boulevard.*

Source: Kittelson & Associates, Inc.

Figure 1: City of Hayward



## PLAN VISION AND GOALS

The Plan is guided by the following vision:

**Vision:** The City of Hayward's transportation system provides a safe, comfortable, convenient, and connected walking and biking network for people of all ages and abilities and is supported by programs and policies that promote sustainable transportation and complete communities.

The Plan has four overarching goals that are related to this vision and guide the recommendations:

### Plan Goals:



#### **1** Safety

Increase the safety of people bicycling and walking in the city of Hayward by identifying projects that address the greatest safety needs and prioritizing safety for all modes.



#### **2** Complete Streets

Provide complete streets that balance the diverse needs of users of the public right-of-way.



#### **3** Access & Mobility

Create connected networks and a continuous system of streets and trails that enable people of all ages and abilities to walk and bike to meet their daily needs and incorporate physical activity into everyday activities.















#### **4** Funding & Implementation

Maintain sufficient funding to provide for existing and future transportation needs, including supporting programs and operation and maintenance.

Performance measures were created in order to measure the goals above and to provide an easy way to track progress for the life of the Plan. These measures are listed below.

**Table 1. Performance Measures**

GOAL	PERFORMANCE MEASURE	EXISTING	TARGET
 <b>Safety</b>	Average speed at specific locations measured annually*	<i>Varies by location</i>	
	Number of pedestrian/bicycle fatalities and severe injury collisions	3.5 fatal/severe injury bicycle collisions per year 9.4 fatal/severe injury pedestrian crashes per year	
 <b>Complete Streets</b>	Miles of new or replaced sidewalk*	<i>Not inventoried</i>	
	Miles of new or upgraded bike lanes*	Class 1: 3 lane miles Class 2: 51 lane miles Class 3: 68 lane miles	
	Number of new or enhanced crosswalks*	<i>Not inventoried</i>	
 <b>Access &amp; Mobility</b>	Walk and bike mode share	Walk commute share: 2.3% Bike commute share: 1.1%	
	Number of ADA improvements	<i>Not inventoried</i>	
 <b>Funding &amp; Implementation</b>	Percentage of network implementation	<i>N/A</i>	<b>Recommended network 100% complete by 2030</b>
	Percentage of funding provided by grants*	<i>N/A</i>	



DECREASE



INCREASE



MAINTAIN OR INCREASE

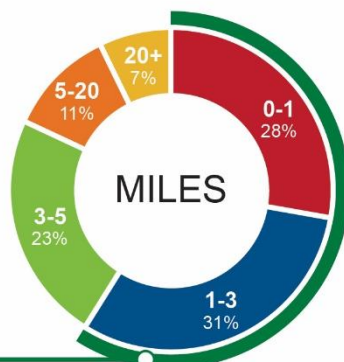
Source: Kittelson & Associates, Inc.

## EXISTING CONDITIONS

Existing conditions were assessed to better understand prevailing trends and challenges within the City. Key findings are as follows:

### NON-WORK TRIP DISTANCES IN HAYWARD

**59%**



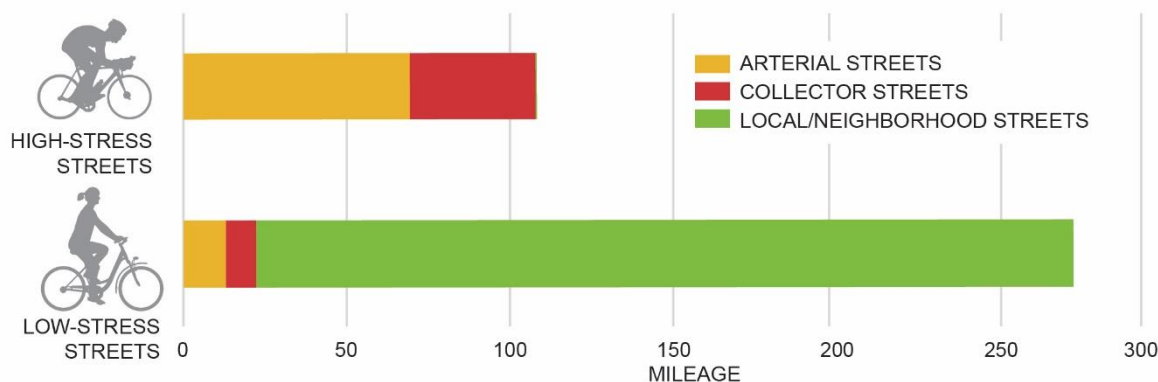
MAJORITY OF TRIPS IN HAYWARD ARE OF A WALKABLE OR BIKEABLE DISTANCE.

*A majority of trips within Hayward (59%) are 3 miles or less. These trips are within reasonable walking and biking distance. While some of these trips already are on foot or bike, the remainder present an opportunity for shifting travel mode.*



*Arterial roadways with 35 miles per hour or higher posted speed are associated with increased risk for pedestrian and bicycle crashes and injuries. Lower posted speed streets are less associated with these outcomes.*

### ROADWAY MILEAGE BY BICYCLE LEVEL OF TRAFFIC STRESS



*Arterial streets make up the majority of high-stress streets in Hayward. This plan identifies opportunities to improve biking conditions along these streets, which would unlock low-stress connectivity among local and neighborhood streets.*

Source: Toole Design Group; Kittelson & Associates, Inc.

## PROJECT RECOMMENDATIONS

To encourage the implementation of complete streets, bicycle, pedestrian, and transit supportive investments are recommended together and held in equal importance. The project recommendations are thus presented as a package, with concurrent improvements to support all three travel modes. The network development and prioritization were conducted with respect to biking and walking. Once the network recommendations and proposed projects were developed, transit infrastructure costs were incorporated to the project cost estimates as well.

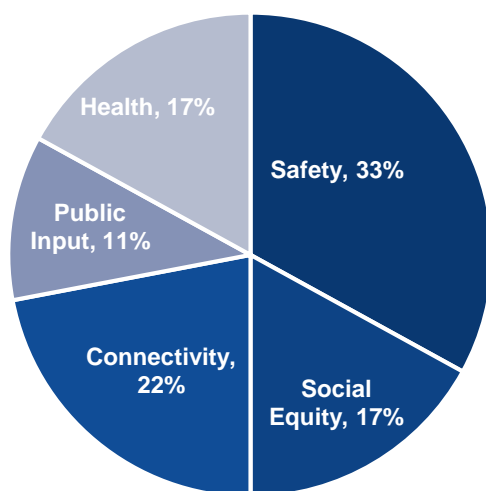
## PROJECT PRIORITIZATION AND METHODOLOGY

A prioritization framework was used to identify candidate pedestrian and bicycle project locations. The prioritization criteria were developed in cooperation with the Technical Advisory Committee and align with the Plan's goals.

These factors were given weights to emphasize safety and connectivity. The weights were used to calculate priority scores for all road segments in the city, grouped by pedestrian and bicycle prioritization. The details of the prioritization process and scoring are provided in Appendix A.

The prioritization factors and criteria are shown in Figure 2, along with their relative weights.

**Figure 2: Prioritization Weights**



Source: Kittelson & Associates, Inc.

## ALL AGES AND ABILITIES NETWORK

The Plan's vision includes creating a safe, comfortable bicycle network that can be enjoyed by all residents, commuters, and visitors. With this in mind, an all ages and abilities bicycle network was developed to provide bikeways that will allow the largest segment of the population to feel comfortable while biking and will support pedestrians with infrastructure that promotes safety, accessibility, and a pleasant walking environment. The all ages and abilities network concept conveys that the recommended bicycle and pedestrian network provides connectivity suitable for as much of the population as can be achieved through infrastructure solutions.

### Recommended Bicycle Network

With the implementation of this network, every resident in Hayward would have access to low-stress, comfortable bikeways that connect to major destinations throughout the city, along with connected sidewalks and frequent and appropriate crossing locations and designs. These facilities are also supported by connectivity and gap closure recommendations that may not meet the American Association of State Highway and Transportation Officials (AASHTO) criteria for all ages and abilities bikeways, but are important for other safety or local access purposes.

The existing and proposed bicycle network (Figure 3) illustrates the existing and proposed facility recommendations. Once the network was developed, the plan used the prioritization methodology to rank each project corridor. The full project list can be found in Appendix B. The recommended facilities include:

- ▶ 32 miles of Class I paths
- ▶ 35 miles of Class II bike lanes
- ▶ 18 miles of Class III bike routes
- ▶ 68 miles of Class IV separated bike lanes

### Recommended Pedestrian Network

The recommended pedestrian network was developed in tandem with the recommended bicycle network using a complete streets approach. A suite of pedestrian treatments is recommended to be implemented along project corridors, with different project assumptions based on roadway functional classification. In this way, when near-term or longer-term improvements are being identified, bicycle and pedestrian improvements can be planned for, designed and implemented together. The pedestrian improvements include high-visibility crosswalks, ADA curb ramps, curb extensions, midblock RRFBs and PHBs, and signal improvements. Figure 4 presents the recommended pedestrian network.

### Transit Infrastructure

Once the recommended bicycle and pedestrian networks were developed, right-of-way improvements that support and facilitate walking access to transit and bicycle safety in transit interactions were layered into the recommendations. These improvements generally include transit stop area improvements on the sidewalk and in the roadway and are organized and classified by transit corridor priority indicating the level of infrastructure recommended to provide pedestrian access and improve bicyclist safety. Incorporating all three elements together allows projects to be implemented as complete corridors rather than as separate projects by mode. Figure 5 presents the locations and cost levels of recommended transit infrastructure.

### Priority Intersections

In addition to the recommended bicycle and pedestrian network, there are intersection locations in the City that exhibit a relatively high pedestrian collision history relative to the rest of the network in terms of severity and frequency. These intersections should be considered for future pedestrian safety improvements and are presented with their 2012-2016 pedestrian collision history:

- **West Tennyson Road and Huntwood Avenue:** eight pedestrian collisions (including three severe injury collisions)
- **Jackson Street and Silva Avenue / Meek Avenue:** five pedestrian collisions (including one severe injury and one fatal collision)
- **Whipple Road and Dyer Street:** four pedestrian collisions (including two severe injury collisions)
- **Foothill Boulevard and City Center Drive:** two pedestrian collisions (including one fatal and one severe injury collision)

Figure 3. Existing and Proposed Bicycle Network

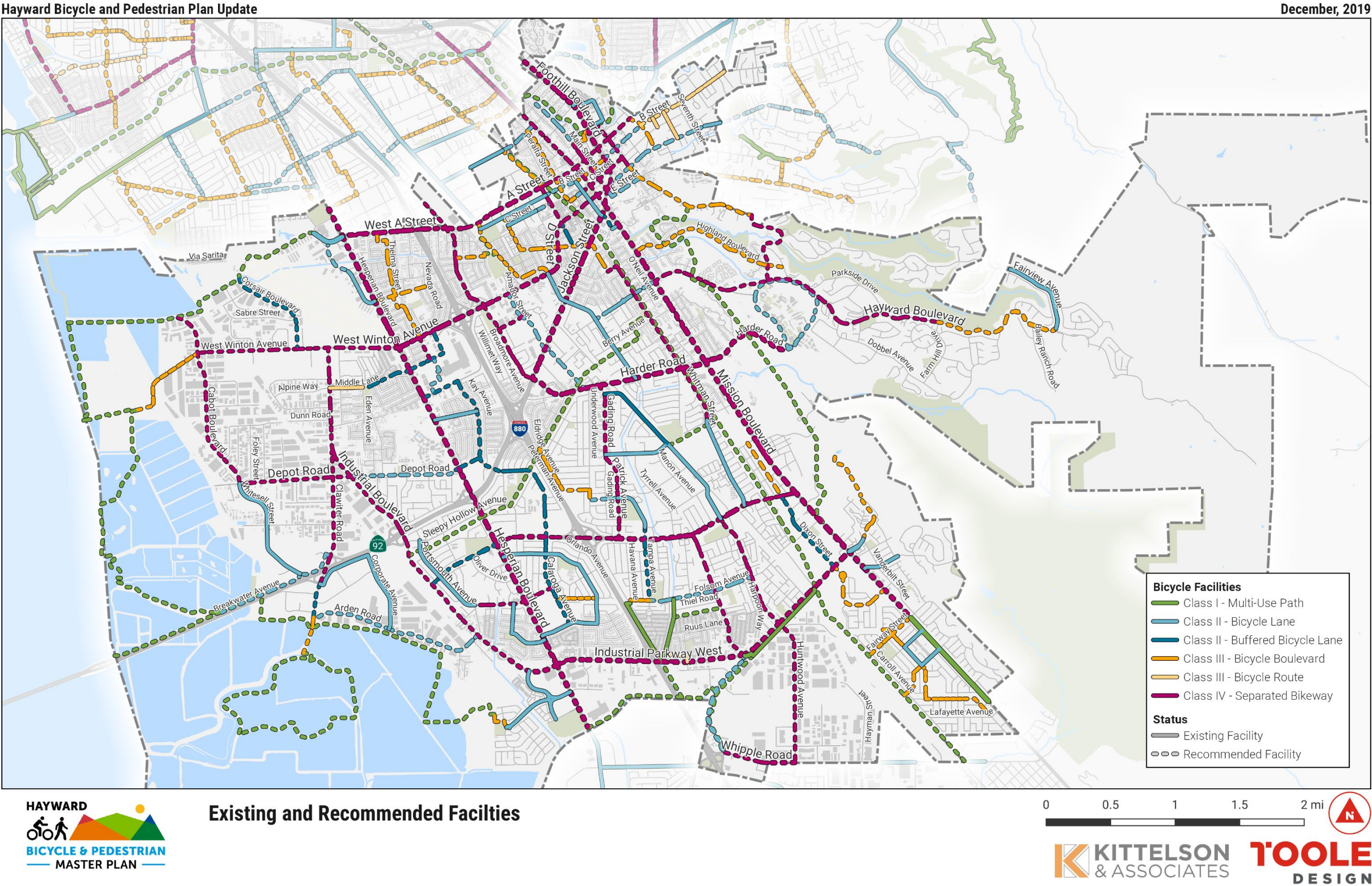


Figure 4: Recommended Pedestrian Network

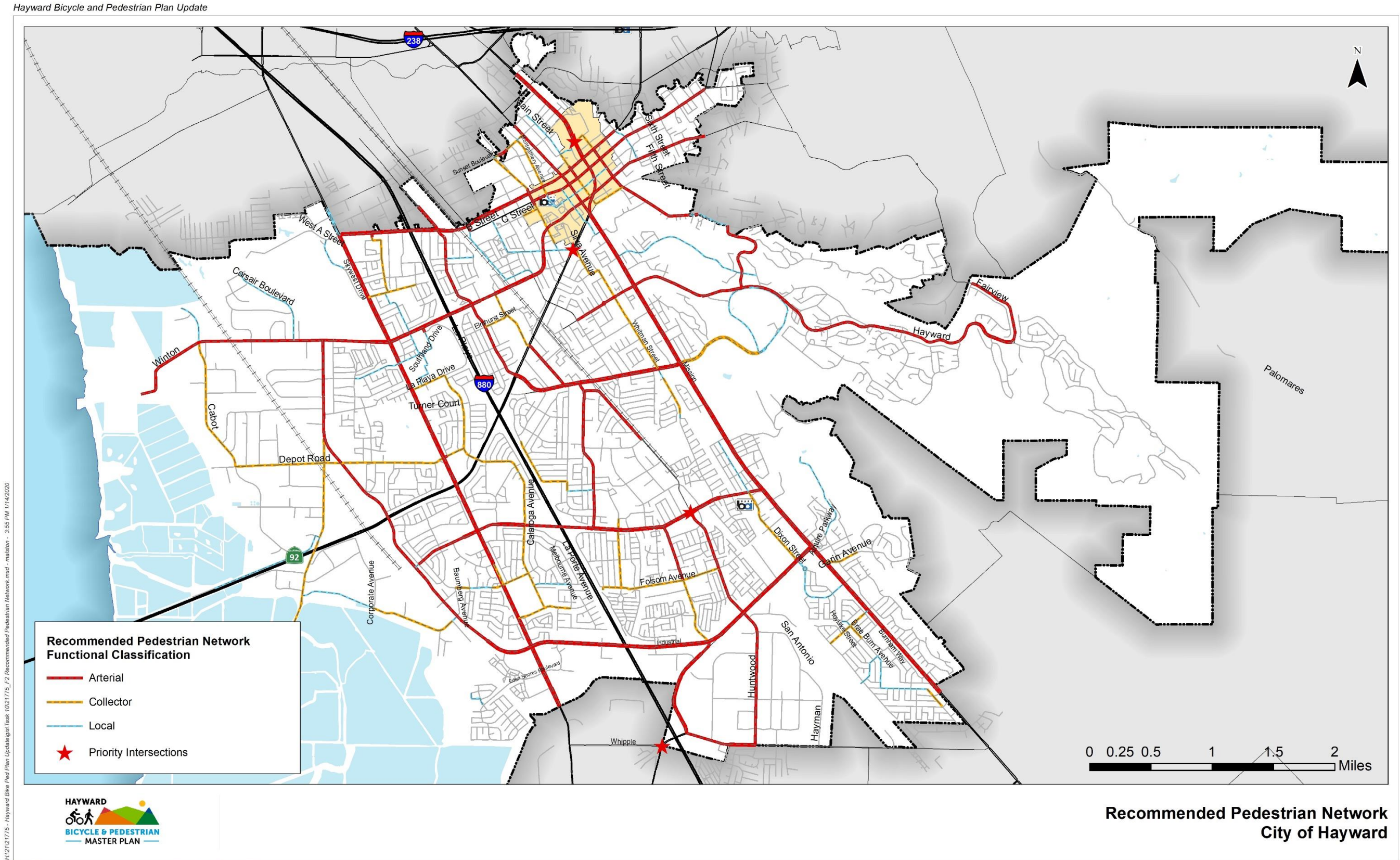
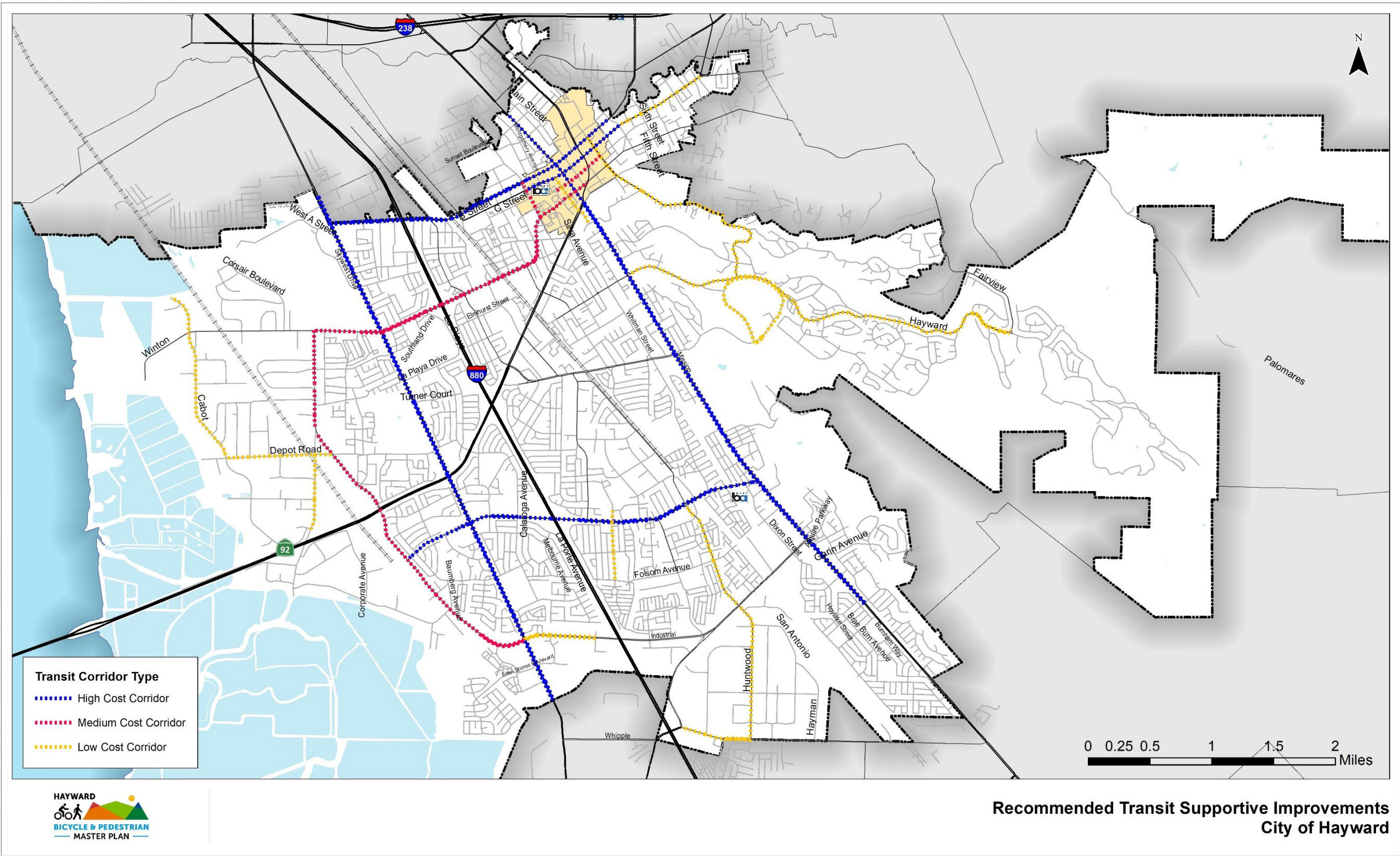


Figure 5: Proposed Transit Supportive Improvements

Hayward Bicycle and Pedestrian Plan Update



Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet

## PROGRAM AND POLICY RECOMMENDATIONS

As part of developing the Plan, the City has identified policies, programs, and practices to improve conditions for residents and visitors who walk and bike in Hayward. City staff from multiple departments including Public Works, Environmental Services, and Planning participated in an interview to assess how the City is implementing existing policies, programs, and practices.

City staff from multiple departments including Public Works, Environmental Services, and Planning were interviewed as part of the recommendations development. The interviews focused on five main categories of recommendations. City staff ranked the highest priorities, shown in Table 2, for inclusion in the Plan.

**Table 2. Summary of Recommendations for Policies, Programs, and Practices**

Category	Topic Area	Recommendations
Infrastructure and Operations	Attention to Crossings and Barriers	<ul style="list-style-type: none"> <li>Accommodating bicycles and pedestrians at freeway interchanges</li> </ul>
	Bike Parking Requirements	<ul style="list-style-type: none"> <li>Short-/long-term bicycle parking requirements and standards</li> </ul>
	Intersections and Interchanges	<ul style="list-style-type: none"> <li>Develop standards for Leading Pedestrian Interval (LPI) applications</li> <li>Develop standards for modifying signals for full accessibility</li> </ul>
	Crosswalks and Traffic Control Devices	<ul style="list-style-type: none"> <li>Design standards and applications for Pedestrian Hybrid Beacons (PHBs) and Rectangular Rapid Flashing Beacons (RRFPs)</li> <li>Develop a crosswalk installation policy and/or decision matrix including applications for midblock crossings</li> </ul>
	Design Guidance	<ul style="list-style-type: none"> <li>Develop and adopt bicycle and pedestrian design standards</li> </ul>
	Off-street Multi-Use Paths and Separated Facilities	<ul style="list-style-type: none"> <li>Develop language for implementing easements and private property paths</li> </ul>
Evaluation and Planning	Development Standards, Site Plan Review, and Traffic Impact Studies	<ul style="list-style-type: none"> <li>Develop an Americans with Disabilities Act review checklist</li> </ul>
	Strategies for Funding	<ul style="list-style-type: none"> <li>Develop a list of potential grant and alternative funding strategies</li> </ul>
	Staff	<ul style="list-style-type: none"> <li>Hire a dedicated Bicycle and Pedestrian staff person</li> </ul>
Project Implementation	Construction Zones	<ul style="list-style-type: none"> <li>Create guidance for accommodating bicyclists and pedestrians in construction zones</li> </ul>
	Rapid and Interim Facilities	<ul style="list-style-type: none"> <li>Develop strategies for rapid network implementation and interim design treatments</li> </ul>
	Safety and Education	<ul style="list-style-type: none"> <li>Coordinate with the Alameda County Safe Routes to School program and encourage all Hayward schools to participate</li> </ul>

## IMPLEMENTATION STRATEGY

The total cost of all the projects identified in the Plan is between approximately \$97-114 million. This cost estimate represents complete corridor costs including bicycle, pedestrian, and transit infrastructure improvements. These planing-level cost estimates include design costs but not right-of-way acquisition, as recommendations are tailored to what can reasonably be provided with existing rights cost provides an opportunity for the City to seek funding for implementation of the bikeway and pedestrian facility improvements as complete street projects that support multiple modes rather than as individual improvements.

The total cost for all bicycle facilities is \$25.9 to \$43.3 million; the total cost for pedestrian facilities is approximately \$61.2 million; and the total cost for all transit elements is approximately \$9.6 million. (All costs are presented in 2019 dollars). A range for the cost estimate for bicycle facilities is provided to account for potential low-cost and high-cost implementation scenarios for Class IV Separated Bikeways which will need to be determined on a corridor by corridor basis.

**Table 3. Costs for Recommended Improvements**

Component	Low End Estimate (\$Million)	High End Estimate (\$ Million)
Bicycle Network	\$25.9	\$43.3
Pedestrian Network	\$61.2	
Transit Supportive Facilities	\$9.6	
Total	\$96.7	\$114.1

Source: Toole Design Group, Kittelson, 2019.

Note: All costs presented in 2019 dollars.

The implementation strategy is broken down into near-term investments and long-term investments. To implement projects rapidly, the City's near-term investments should focus on closing gaps in the existing network and providing access to transit and schools within the next five years. These investments should be balanced with investments throughout Hayward. Long-term investments focus primarily on large arterial projects where additional time may be needed for design and construction.

A funding strategy is included in the Plan and summarizes possible funding sources available for bicycle and pedestrian projects, policies, and programs over the life of the Plan. Sources include federal, state, regional, and local programs.

Primary sources of funding for the plan include the following sources:

- ▶ Federal Programs
  - Congestion Management & Air Quality (CMAQ) Program, administered by FHWA
  - Surface Transportation Block Grant (STBG) Program, administered by FHWA
- ▶ State Programs
  - Active Transportation Grant, administered by Caltrans
  - Affordable Housing and Sustainable Communities (AHSC) Program, administered by the Strategic Growth Council
  - Transformative Climate Communities (TCC) Program, administered by the Strategic Growth Council
- ▶ Regional Programs
  - One Bay Area Grant (OBAG), administered by MTC
  - Transportation Development Act (TDA) Article 3, administered by MTC
  - Regional Measure 1, 2, 3, and future regional measures, administered by MTC

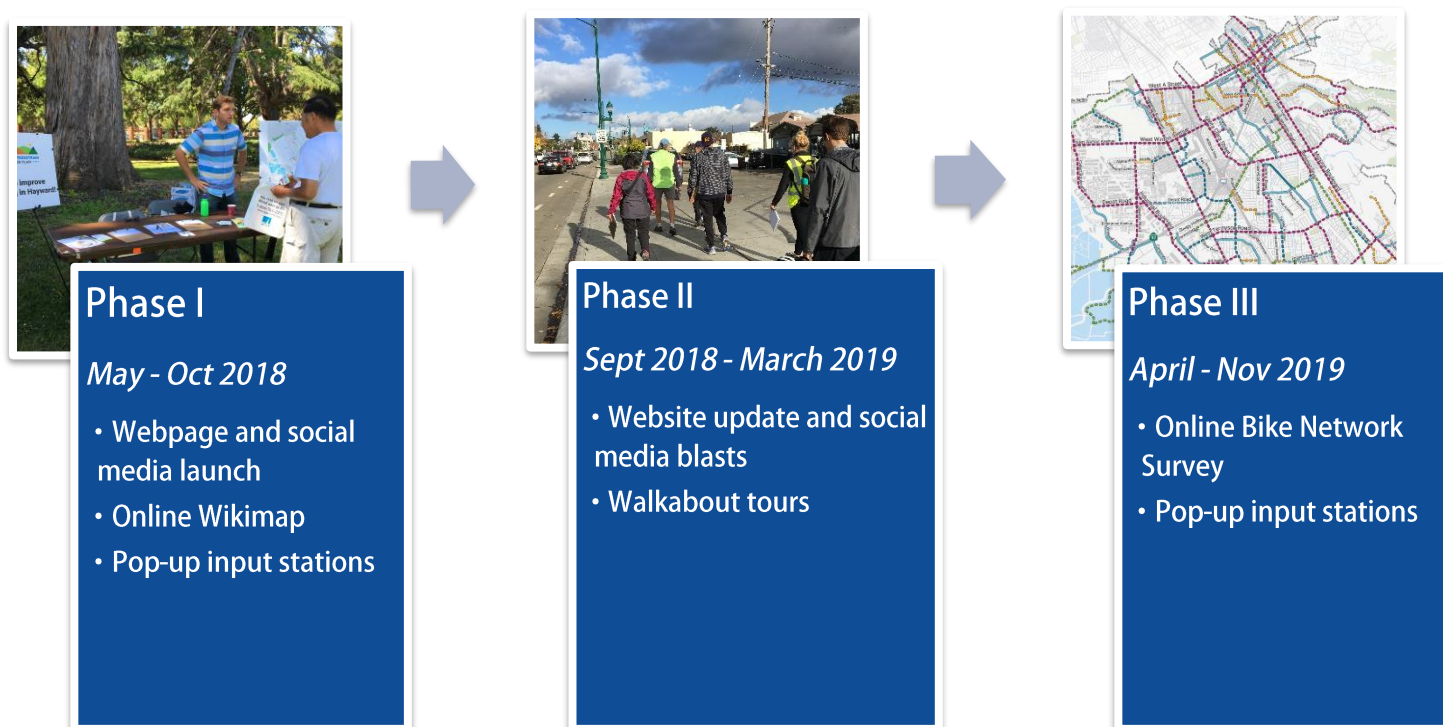
- Regional Active Transportation Program, administered by MTC
  - Measures B and BB
- ▶ Local Developer and transportation impact fees

## PLAN OUTREACH AND COMMUNITY ENGAGEMENT

The public engagement was completed in three phases, as shown in Figure 7 and was supplemented by a Technical Advisory Committee (TAC). The TAC, which met four times during plan development, included staff from Public Works, Traffic engineering, development Services, transit agencies, local advocacy groups, Hayward Unified School District, representatives from neighboring jurisdictions, Caltrans, and local business representatives.

- ▶ Phase I, conducted from May through October 2018, focused on increasing community awareness of the plan and soliciting initial feedback on existing conditions and the plan's priorities. This phase established the foundation for planning efforts and included a website launch, an online Wikimap for providing feedback, and pop-up stations at community events.
- ▶ Phase II, conducted from September 2018 through March 2019, solicited community input regarding recommended projects to be implemented. Activities included three community walkabouts as well as more online engagement.
- ▶ Phase III, conducted from April through November 2019, was used to gather community feedback on initial project recommendations. These recommendations included the draft bicycle and pedestrian networks as well as the list of project. This feedback was gathered online via a Wikimap and through pop-up community events.

**Figure 6. Public Engagement Process Summary**



# 01

## Introduction



# INTRODUCTION

---

The City of Hayward's Bicycle and Pedestrian Master Plan (Plan) establishes the City's vision and comprehensive approach to improving walking and biking in Hayward. The Plan is consistent with the City's General Plan and Complete Street policies, which emphasize a comprehensive, integrated, and connected network of transportation facilities and services for all modes of travel.

## PURPOSE OF THE PLAN

The Plan updates and replaces the City's 2007 Bicycle Master Plan. It includes both a bicycle and pedestrian emphasis and sets forth detailed goals and objectives that provide a universally accessible, safe, convenient, and integrated system that promotes walking and biking.

The Plan represents a comprehensive citywide effort that will be used to guide, prioritize, and implement a network of quality bicycle and pedestrian facilities to improve mobility, connectivity, public health, physical activity, and recreational opportunities. The Plan seeks to increase transportation options, reduce environmental impacts of the transportation system, and enhance the overall quality of life for Hayward residents, visitors, shoppers, and commuters.

## BENEFITS OF AND BARRIERS TO BIKING AND WALKING

Safe and convenient places for walking and biking are critical for vibrant, sustainable, and livable communities. Biking and walking bring the following benefits:

- ▶ **Environmental Benefits:** Together, biking and walking allow for sustainable and affordable travel, and improve access to employment, recreation, school and other opportunities. The current pace of global warming and sea level rise has the potential to make active transportation less comfortable, impact the available inhabitable land, and dramatically increase the cost of building and maintaining transportation infrastructure. Promotion of active transportation will play an important role in reversing these trends by promoting a reduction in greenhouse gas emissions from the transportation sector.
- ▶ **Public Health:** Promoting walking and biking as viable alternatives to driving can improve physical and emotional health and well-being. Walking and biking with frequency is associated with personal health benefits by providing an opportunity for individuals to incorporate physical activity into daily life. In order to achieve the recommended 30 to 60 minutes of physical activity per day, individuals are generally required to add leisure-time physical activity, including active transportation. Walking and biking also have potential psychological health benefits, including treating anxiety and depression and improving cognitive functioning and subjective well-being. Lastly, health benefits also result from a decrease in vehicle use. This includes improved air quality, reduced noise pollution, and reduced greenhouse gas emissions.
- ▶ **First and Last Mile Connections:** Biking and walking also make important connections to transit more convenient, including to BART stations where parking availability can be limited and to local and regional AC Transit bus connections.

There are also considerable barriers to biking and walking. A general typology of bicyclist types has been developed showing that 51% of the population is classified as "Interested but Concerned" with respect to riding.<sup>1</sup> Research has shown that there are barriers keeping these individuals from riding more, most notably including safe infrastructure. There may be other barriers, including inadequate end-of-trip facilities (secure long-term bike parking) or feeling uncomfortable on a bicycle (a need for bicycle education among youth and adults).

---

<sup>1</sup> "Types of Cyclists." *Jennifer Dill, Ph.D.*, 26 Mar. 2017, <https://jenniferdill.net/types-of-cyclists/>.

Similar safety and security barriers exist for walking. Land use patterns and road infrastructure play a big part in the perception of walking as a viable travel mode, and safe facilities are a prerequisite to encourage walking. As infill development continues in Hayward, higher levels of traffic and scarcity of parking may encourage walking, provided that the infrastructure is in place.

This section provides an overview of existing plans and documents relevant to the Plan. Table 4 lists relevant existing plans by the types of guidance and direction they can provide for the Plan. Additional detail on the plans and policies is summarized following the table, and further analysis can be found in Appendix C.

**Table 4. Existing Plans & Policy Summary**

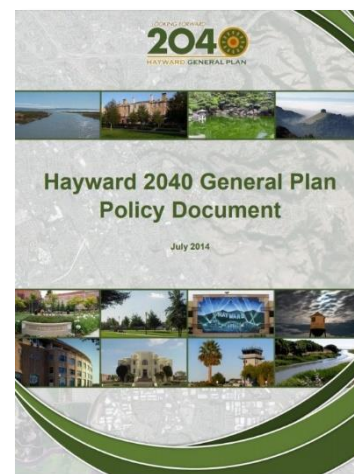
Plan	Bike Policies	Pedestrian Policies	Facility/ Network Maps	Design Guidelines	Street-Specific Design Concepts	Program Recommendations
Hayward 2040 General Plan	●	●	●			●
2007 Hayward Bicycle Master Plan	●		●			●
Hayward Complete Streets Resolution	●	●				
Hayward Design Guidelines	●	●		●		
Mission Boulevard Corridor Specific Plan	●	●		●	●	
Route 238 Corridor Improvement Project	●	●		●	●	
South Hayward BART Development, Design, and Access Plan	●	●	●	●	●	
Downtown Specific Plan	●	●	●		●	●
Neighborhood Plans (16)	●	●	●			●

## CITYWIDE PLANS AND POLICIES

### Hayward 2040 General Plan (2014)

<https://www.hayward2040generalplan.com/>

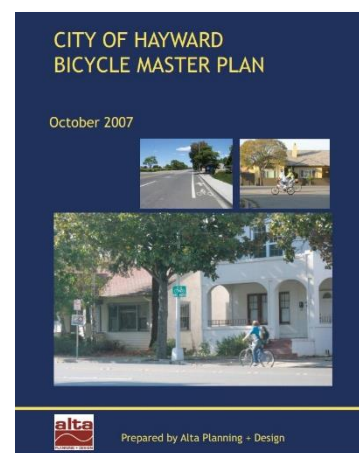
The Hayward 2040 General Plan provides a blueprint for the City's land use, growth and development, safety, and open space conservation in the coming decades. The Mobility Element of the plan is most applicable to the Bicycle & Pedestrian Master Plan. It presents goals for providing a connected multimodal transportation system; reducing impacts of regional travel; providing complete streets; building a transportation network that is safe and accessible; and decreasing vehicular travel, congestion, and parking demand through transportation demand management strategies.



### Hayward Bicycle Master Plan (2007)

<https://www.hayward-ca.gov/sites/default/files/Hayward%20Bicycle%20Master%20Plan%202007.pdf>

The 2007 Hayward Bicycle Master Plan (BMP) is an update of the 1997 Bicycle Master Plan. It provides long-term vision and direction for bicycle transportation and recreation in Hayward. According to the BMP, its purpose is to expand Hayward's bikeway network and close gaps in the existing network, integrate the city bicycle network into the regional network, develop an implementation strategy (i.e., provide cost estimates and potential funding sources) for proposed bicycle facilities, maximize funding sources, and enhance the quality of life in the city. This plan also inventories existing bike paths, bike lanes, and bike routes in the city (pre-2007) and provides a list of proposed bikeways, bicycle support facilities, and projects.



### Hayward Complete Streets Resolution (2013)

<https://www.hayward-ca.gov/your-government/city-council/complete-streets-strategic-initiative>

The City of Hayward adopted a Complete Streets Policy in 2013 with the vision of creating and maintaining a safe and efficient transportation system that promotes the health and mobility of residents and visitors, supporting better access to businesses and neighborhoods, and fostering new opportunities. The resolution details complete streets commitments, safe travel requirements, effects on policies and studies, and performance standards and evaluation.

## NEIGHBORHOOD AND SPECIFIC PLANS & POLICIES

### Mission Boulevard Corridor Specific Plan (2014)

<https://www.hayward-ca.gov/sites/default/files/documents/140128-MissionBlvdSpecificPlanEntireDocument.pdf>

The Mission Boulevard Corridor Specific Plan guides the redevelopment of Mission Boulevard into a vibrant commercial corridor with safe, desirable, and pedestrian-friendly neighborhoods. The Specific Plan ties into many of the strategies listed in the Land Use Element of the 2040 General Plan, and it relies heavily on form-based code to regulate redevelopment of the corridor.

### Route 238 Corridor Improvement Project (2015)

<http://cityofhayward-ca.gov/CITY-GOVERNMENT/BOARDS-COMMISSIONS-COMMITTEES/PLANNING-COMMISSION/pc/2012/pca030812-P01.pdf>

The Route 238 Corridor Improvement Project reconstructed curbs, gutters, drainage facilities, sidewalks, median islands and many pedestrian crossings to include accessible curb ramps. It also retrofitted streetlights and poles with LED lighting, relocated overhead utility lines underground along Mission Boulevard, replaced median concrete with landscaping and street trees, added downtown gateway enhancements, and upgraded traffic signals.

### South Hayward BART Development, Design, and Access Plan (2006)

<https://www.bart.gov/sites/default/files/docs/SouthHaywardDevelopDesignAccessPlanpartA.pdf>

BART adopted a Development, Design, and Access Plan for the South Hayward station to help facilitate efforts to redevelop the station area into a more vibrant and pedestrian-friendly mixed-use neighborhood with increased BART ridership. The Plan works towards achieving BART's transit-oriented development policy, station modal access hierarchy, and mode split goals. The Plan encompasses all land owned by BART, including surface parking lots, a bus intermodal facility, and undeveloped parcels.

### Downtown Specific Plan (2019)

<https://www.hayward-ca.gov/downtown-specific-plan>

The Downtown Specific Plan and Code (Plan or Specific Plan) provides a strategy to achieve the community's vision of a resilient, safe, attractive, and vibrant historic downtown by outlining an implementation plan, delineating an inclusive, multimodal circulation system, integrating public open spaces, and establishing new regulations that clearly establish downtown Hayward as the heart of the city and a destination for visitors and residents. The plan lays out strategies for achieving seven goals, three of which are directly applicable to the Bicycle & Pedestrian Master Plan – community design, travel demand management and parking, circulation, and infrastructure and public facilities. For each goal, there are strategies, objectives and recommendations.

## PUBLIC OUTREACH/ COMMUNITY INVOLVEMENT PLAN

As part of the Bicycle & Pedestrian Master Plan process, three phases of public engagement activities were conducted to gather input on various Plan components and report what was heard back to the community. The goal of outreach was to inform community members about the Plan, offer ways for individuals to comment on existing bicycle and pedestrian infrastructure, and allow community members to give feedback on where they would like new opportunities to walk or bike. The planned activities and events reached multiple audiences throughout Hayward, not just those who self-identify as bicyclists or pedestrians.

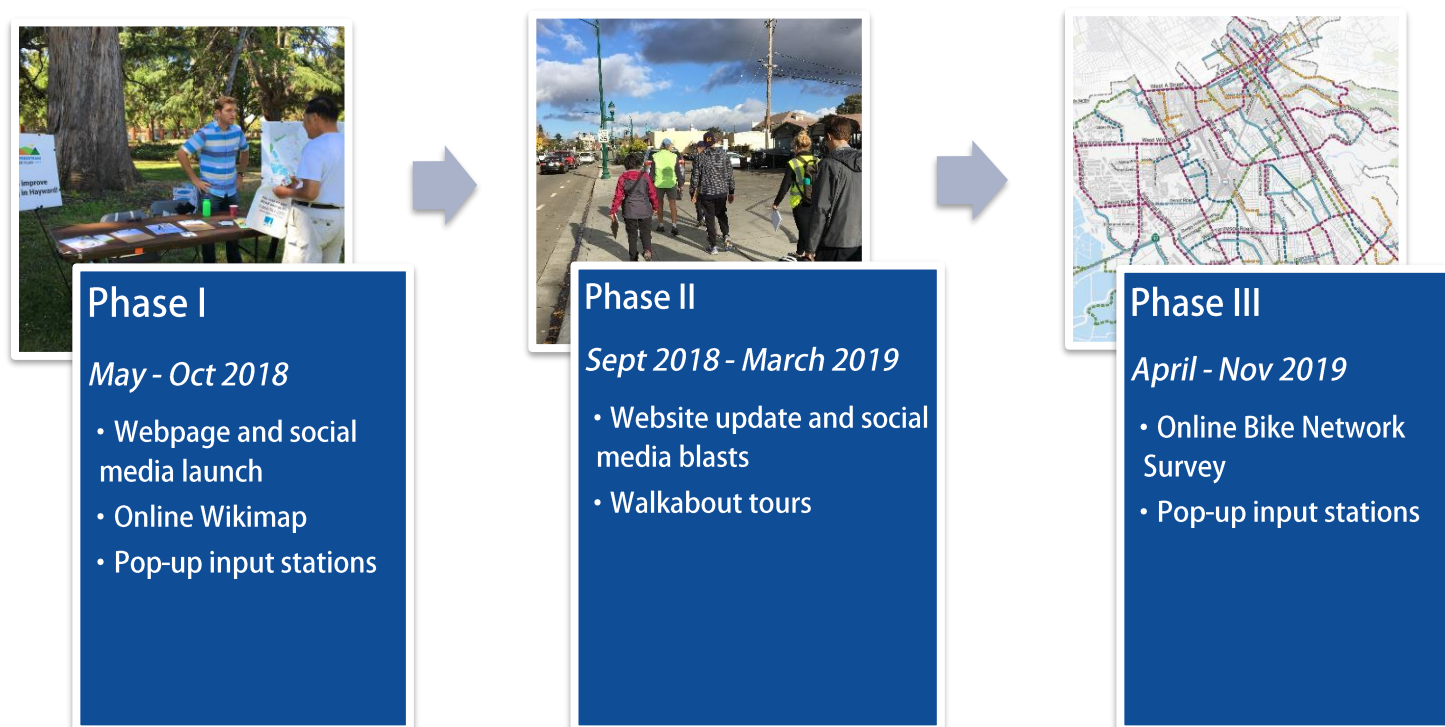
In general, the goals for the the Plan's public engagement strategy were:

- ▶ To inform the Hayward community about the Plan, planning process, and opportunities for involvement
- ▶ To identify and engage key stakeholders interested in, or potentially affected by, the proposed Plan policies, projects, and programs

- ▶ To solicit input on current biking and walking issues and opportunities in Hayward
- ▶ To identify community needs and priorities for enhancing biking and walking in Hayward
- ▶ To build momentum and support for the future implementation of bicycle and pedestrian projects
- ▶ To be equitable and balanced across the Hayward community

The public engagement was broken into three phases, as shown in Figure 7. The sections below detail the goals of each phase and what activities were conducted.

**Figure 7. Public Engagement Process Summary**



## TECHNICAL ADVISORY COMMITTEE

Community involvement also included the formation and regular meetings of a Technical Advisory Committee (TAC). The TAC included staff from Public Works, Traffic Engineering, Development Services, transit agencies, local advocacy groups, Hayward Unified School District, representatives from neighboring jurisdictions, Caltrans, and local business representatives. The City of Hayward extends a very special thanks to members of the TAC who are listed in Table 5. The TAC met four times throughout the planning process at key project milestones and helped staff to confirm feedback received from the greater community, develop preliminary recommendations, and advise on project work.

**Table 5. Technical Advisory Committee Members and Organizations**

Name	Organization
David Berman & Nathan Landau	AC Transit
Chris Marks	Alameda County Transportation Commission
Ruben Izon	Alameda County
Mariana Parreiras & Charlie Ream	BART
Susie Hufstader	Bike East Bay
Sergio Ruiz & Gregory Currey	Caltrans District 4
Jeremy Lochirco	City of Hayward Development Services
Suzanne Philis	City of Hayward Economic Development
Erik Pearson	City of Hayward Environmental Services
Gale Bleth	City of Hayward Police Department
Rodney Alfonso	City of Hayward Streets Division
Justina Victoriano	Community Resources for Independent Living (CRIL)
Karl Zabel & Larry Lepore	Hayward Area Recreation and Park District
Kim Hugget	Hayward Chamber of Commerce
Tim Cody	Hayward Unified School District
Reh-Lin Chen	City of San Leandro
Carmela Campbell	City of Union City
Ben Schweng	United Merchants Downtown Hayward

## PHASE I – ESTABLISHING THE FOUNDATION (MAY TO AUGUST 2018)

The first phase of public involvement focused on understanding the current experience of walking and biking in Hayward. Public engagement in this phase included developing online engagement resources (e.g., website and social media content), publishing a Hayward Stack article and an online Wikimap, and tabling at three city events.

### Website Launch and On-going Social Media Presence

A project website was created for the project and went live in May 2018. It provided community members with information about the project including existing conditions, why the Plan is being updated, the Plan schedule, and information on engagement opportunities. The website can be found at:

<https://www.hayward-ca.gov/content/bike-and-pedestrian-master-plan-update>.

In addition to the website, the content about the project and how to engage was created for Facebook and Twitter. The City posted content to Twitter on July 10<sup>th</sup> and July 14<sup>th</sup> and to Facebook on July 15<sup>th</sup>.

Figure 8. Example Screenshot of Project Website and Social Media Post

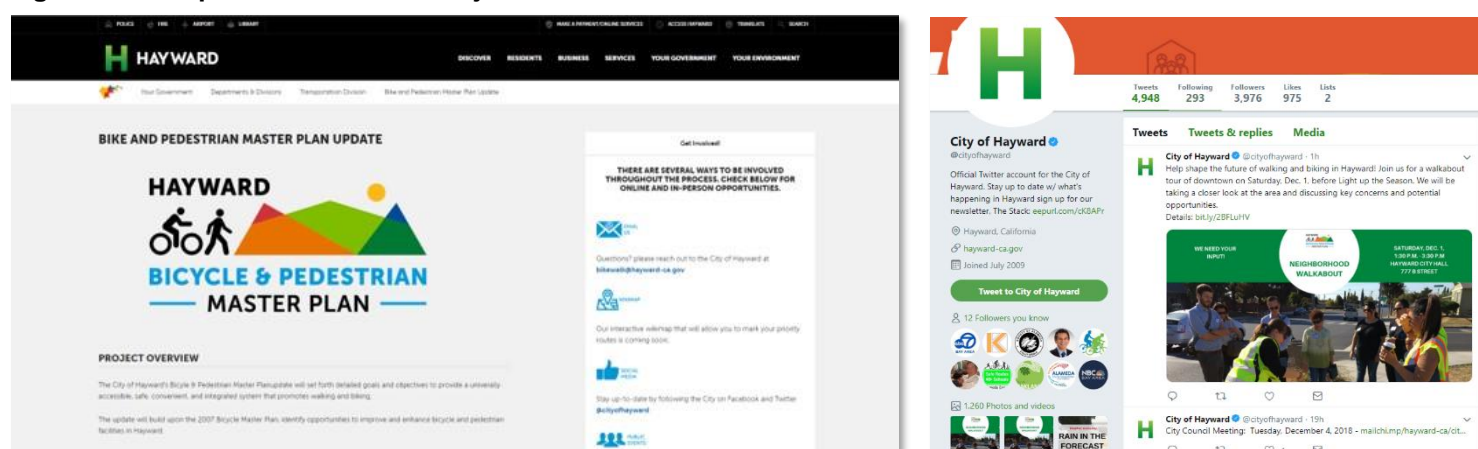
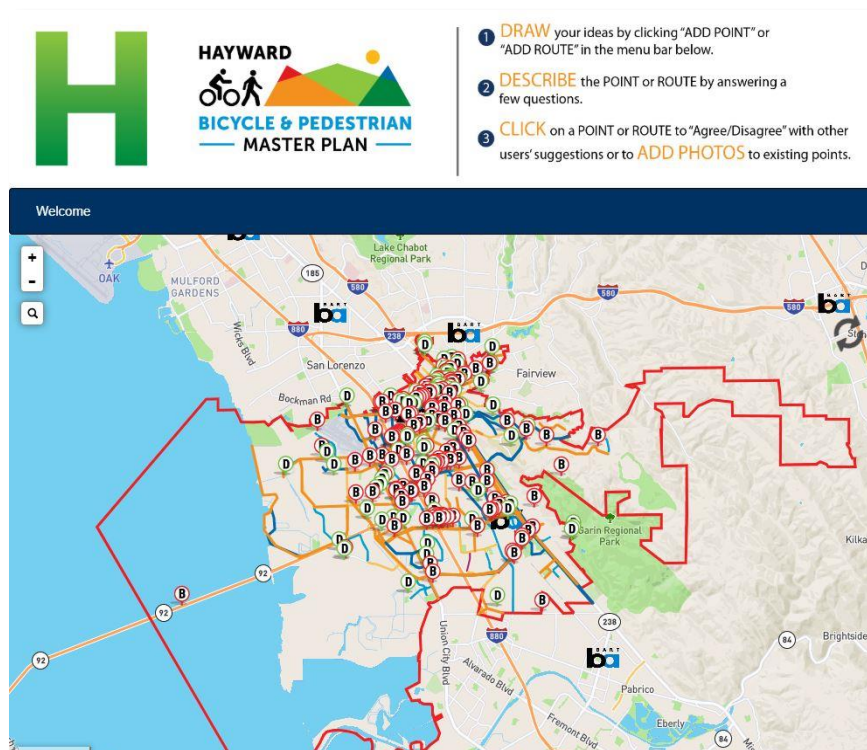


Figure 9. Online Wikimap



### Online Wikimap

The online interactive Wikimap was accessible to the public via the City's website between May and August 2018. Using the Wikimap, participants were able to give location-specific feedback on existing conditions for walking and biking in Hayward. Participating community members were asked to provide basic demographic information and to mark locations on the map based on how comfortable they felt while walking and biking. Participants could note routes that they liked, stressful routes, barriers to walking or biking, and specific areas that they liked or would like to walk or bike to. A screenshot of the Wikimap is shown in Figure 9.

## In-Person Pop-Up Stations

During Phase I, project staff attended three community events in Hayward where community members were asked to provide feedback on the existing walking and biking conditions in multiple locations across the city. Community members had the opportunity to write comments and mark up a map with stickers and markers to detail where they liked to walk or bike and where they felt uncomfortable walking or biking. These local events included:

- ▶ Downtown Hayward Street Party - June 21, 2018
- ▶ Summer Movies in the Plaza – June 29, 2018
- ▶ All American Festival - June 30, 2018



### Plan Community Engagement Events

Source: Kittelson, City of Hayward, 2019.

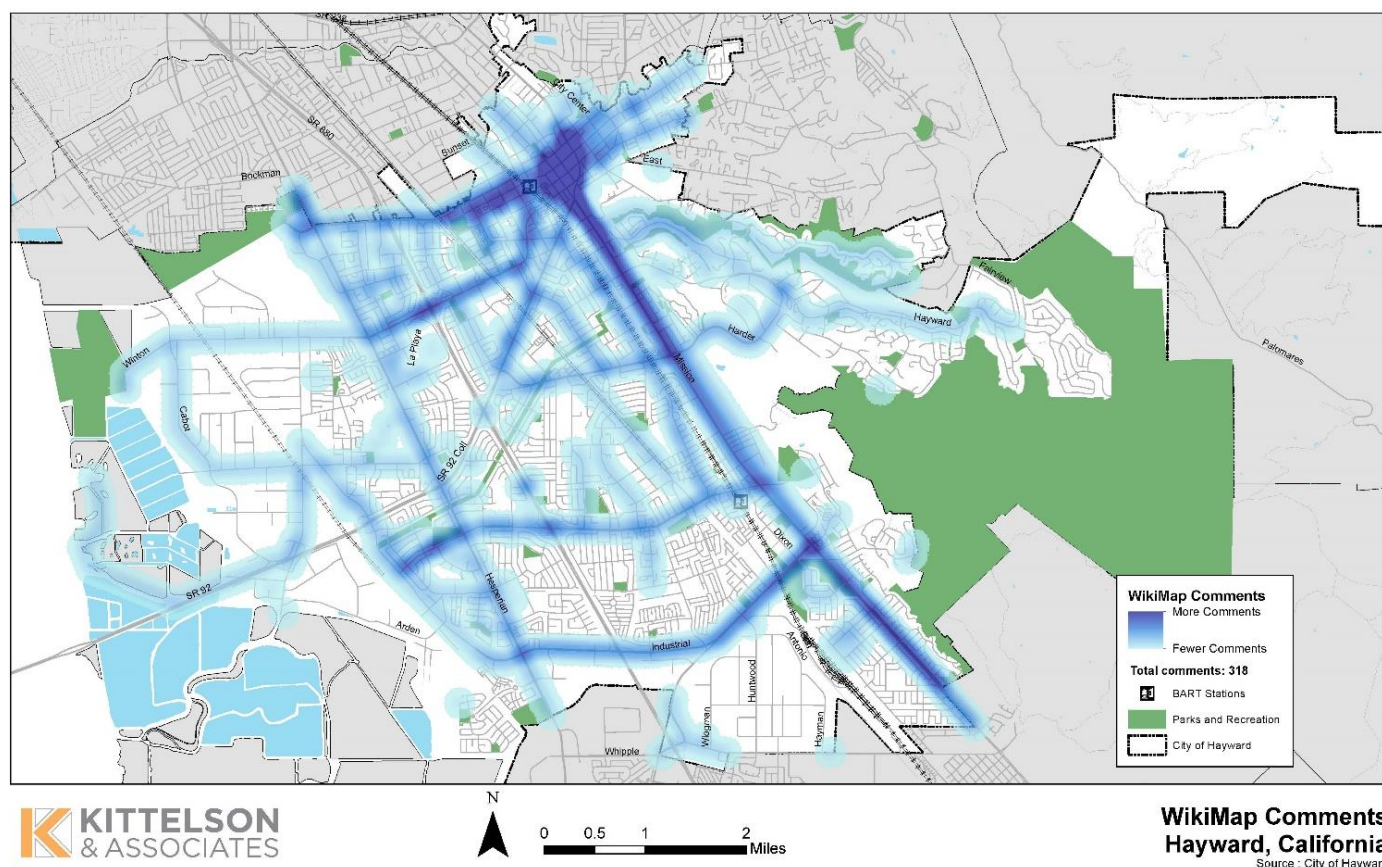
## Summary of Feedback from Phase I

Input from both the in-person and online feedback were layered to create a set of maps showing where participants wanted to focus bicycle and pedestrian improvements. In general, over 300 comments identified that the key corridors needing bicycle and/or pedestrian improvements were Mission Boulevard, A Street, Winton Avenue/D Street, Harder Road, Tennyson Road, and Industrial Parkway.

Input from the in-person events varied slightly from the online engagement and highlight an interest in new opportunities in downtown Hayward while improving comfort and safety along critical corridors like Industrial Parkway, Tennyson Road, Huntswood Avenue, and Santa Clara Street. Additionally, many participants discussed the Interstate 880 freeway interchanges as a major barrier to east/west access through Hayward. Regional bikeway connectivity was supported through improvements near the potential East Bay Greenway, the San Francisco Bay Trail, and to California State University East Bay. Pedestrian comfort and crossing improvements were identified primarily along downtown corridors and on Jackson Street.

Online input focused on major high vehicle traffic corridors including Mission Boulevard, A Street, Hesperian Boulevard, Winton Avenue, and D Street. A Street in particular was requested to include pedestrian improvements as this route provides access between BART, Downtown Hayward, and the Amtrak station. Similar to the in-person input, there was a heavy focus on downtown Hayward and Tennyson Road. Figure 10 shows a heatmap summary of the areas where community members felt improvements were needed (in-person and Wikimap feedback layered together on a single map).

Figure 10. Heatmap Overview of All Input from Phase I Outreach



Beyond location-specific feedback themes, participants were asked about key trends regarding potential barriers to biking and walking in Hayward, as well as what makes biking or walking stressful. Table 6 summarizes these trends, based on the feedback provided.

Table 6. Top Barriers to Walking and Biking in Hayward

	<b>What makes bike routes stressful?</b>	<ul style="list-style-type: none"> <li>No designated lanes</li> <li>Traffic is too fast</li> <li>Too much traffic</li> </ul>
	<b>What makes walking routes stressful?</b>	<ul style="list-style-type: none"> <li>Generally uncomfortable</li> <li>Traffic is too fast</li> <li>Not enough lighting</li> </ul>
	<b>What are barriers to biking?</b>	<ul style="list-style-type: none"> <li>High speed vehicles</li> <li>Heavy traffic</li> <li>Safety at intersections</li> </ul>
	<b>What are barriers to walking?</b>	<ul style="list-style-type: none"> <li>Safety at intersections</li> <li>High speed vehicles</li> <li>Highway or railroad Barriers</li> </ul>

Source: Kittelson & Associates, Inc.

In addition to the feedback shown Table 6, community members identified some areas where Hayward's bike and pedestrian networks fall short. These included:

- ▶ Lack of crosswalks and curb ramps
- ▶ Lack of lighting under bridges and at railroad crossings
- ▶ Lack of bicycle detection at intersections
- ▶ Lack of enforcements for cars parked in bike lanes
- ▶ Bike lanes are not continued through intersections

## PHASE II – INITIAL RECOMMENDATIONS (SEPTEMBER 2018 TO MARCH 2019)

Using public input from Phase I, multiple locations were selected for community walkabout tours. These tours offered opportunities for community members to interact with project staff and each other while experiencing the walking and biking environment in various areas of Hayward. The goal of the walkabouts was to identify priority projects within each neighborhood or area, which could then be integrated into the Plan's recommended project list.

The walkabouts were held at:

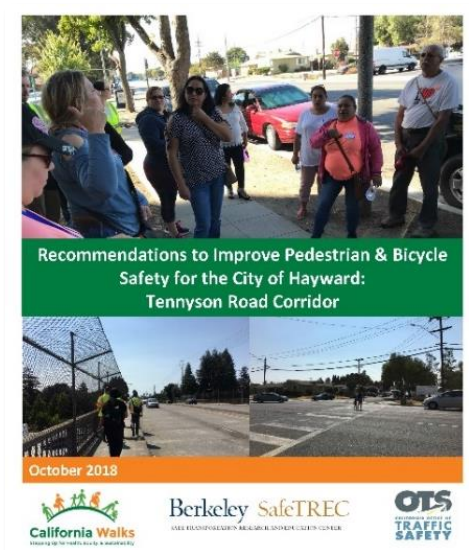
- ▶ Tennyson Corridor (September 21, 2018): Community Pedestrian & Bicycle Safety Training in partnership with CalWalks and UC Berkeley SafeTrec at the Weekes Community Center
- ▶ Downtown Hayward (December 1, 2018): Community walk from Hayward City Hall
- ▶ Hesperian Corridor (January 24, 2019): Community walk from Chabot College Community Event Center

### Summary of Feedback from Phase II

At the end of each walkabout tour, each group produced a map that highlighted major challenges or barriers and reported what they experienced back to the group. To help narrow down priorities, each group was asked to identify the top three things in the project area that they would like to see included in the final project recommendations. The main issues and needs identified at each walkabout are described below along with accompanying pictures..

Tennyson Corridor (25 participants):

- ▶ Streetscape and roadway improvements with enhanced pedestrian crossing treatments on Patrick Avenue
- ▶ Pedestrian-oriented street lighting on primary street and at crossings community-wide
- ▶ Low-stress bikeways to connect with BART and across the freeway on Tennyson Road



*Tennyson Road Community Pedestrian & Bicycle Safety Training Cover*  
Source: City of Hayward

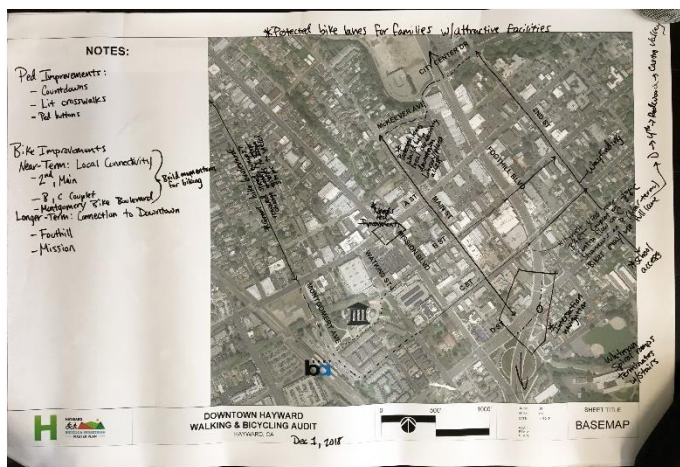


*Group tour of the road work.*  
Source: Kittelson & Associates, Inc.

#### Downtown Hayward (12 participants):

- ▶ Pedestrian improvements, such as signal heads with countdowns, well-lit crosswalks, and push buttons community-wide
- ▶ Near-term bikeway connectivity on 2nd Street/Main Street and B Street/C Street Couplet
- ▶ Long-term bikeway connections to downtown on Foothill Road and Mission Boulevard

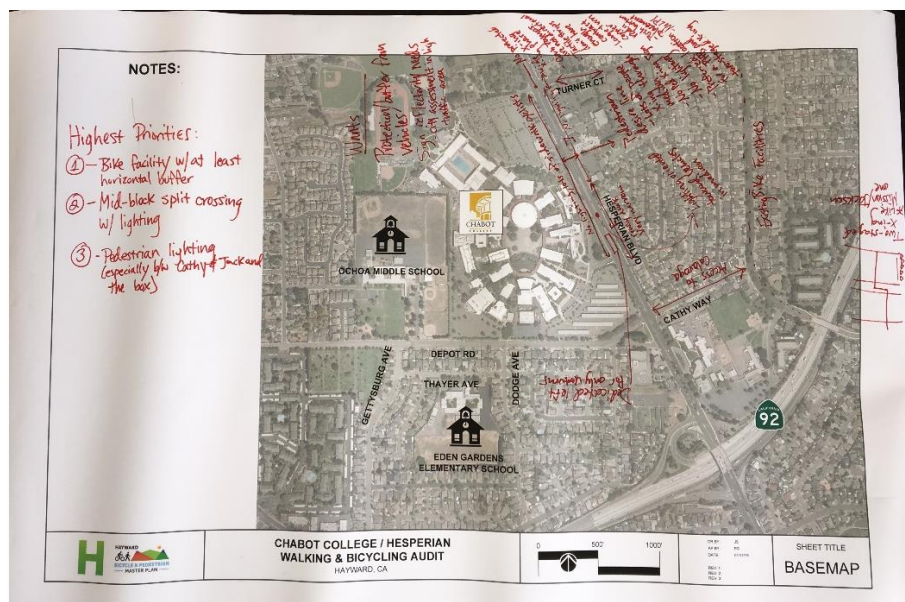
**Figure 11. Downtown Walkabout Example Community Input Map and Tour Photo**



Source: Kittelson, City of Hayward, 2019.

## Hesperian Corridor (11 participants):

- ▶ Bike facilities with raised buffers on Hesperian Boulevard
- ▶ Midblock, split phase Pedestrian Hybrid Beacon crossing with lighting in front of Chabot College
- ▶ Better pedestrian-scale lighting community-wide
- ▶ Dedicated bike facility to provide access to Chabot College, Anthony W. Ochoa Middle School, and Eden Gardens Elementary School on Depot Road
- ▶ Traffic calming and intersection improvements to improve safety and comfort near Eden Garden Elementary School



*Hesperian Boulevard Corridor Walkabout Example Community Input Map and Tour Photo*

Source: Kittelson & Associates, Inc.

The feedback from these walkabouts was compared with a previous bike network evaluation which measured collision rates, determined level of traffic stress, and reviewed other citywide priorities. More about these efforts can be found in the Existing Conditions, Bicycle Network Development, and Program and Policy Recommendations sections of this Plan. This comparison helped the project team create a draft walking and bicycle network to be evaluated in Phase III.

## PHASE III – PRIORITIZATION AND FINAL RECOMMENDATIONS (APRIL TO NOVEMBER 2019)

Public engagement for Phase III was designed to review the draft network and project list and to help identify which of the proposed facilities are the most important to prioritize. Phase III consisted of three components including an online interactive web map, pop-up input stations, and a Technical Advisory Committee meeting.

### Online Interactive Web Map

An online interactive Wikimap was accessible to the public via the City's website for the months of May and June 2019. The Wikimap showed the current and proposed bicycle network and allowed participants to comment on whether they felt that the network needed any additions or edits. About 50 participants provided input on where they want improvements prioritized.

### In-Person Pop-Up Input Stations

During Phase III, project staff attended two community events in Hayward where community members were able to comment on the proposed network and learn more about the implementation of the Plan. Participants were given three voting dots to indicate which proposed recommendations were most important to them. These local events are listed below, and photos from each event are provided in .

- ▶ Earth Day 36th Annual Clean-up (April 27, 2019)
- ▶ Bike to Work Day BART Energizer Stations: Downtown & South Hayward Stations (May 9, 2019)



*Photos from the Earth Day and Bike to Work Day Pop-Up Input Events*

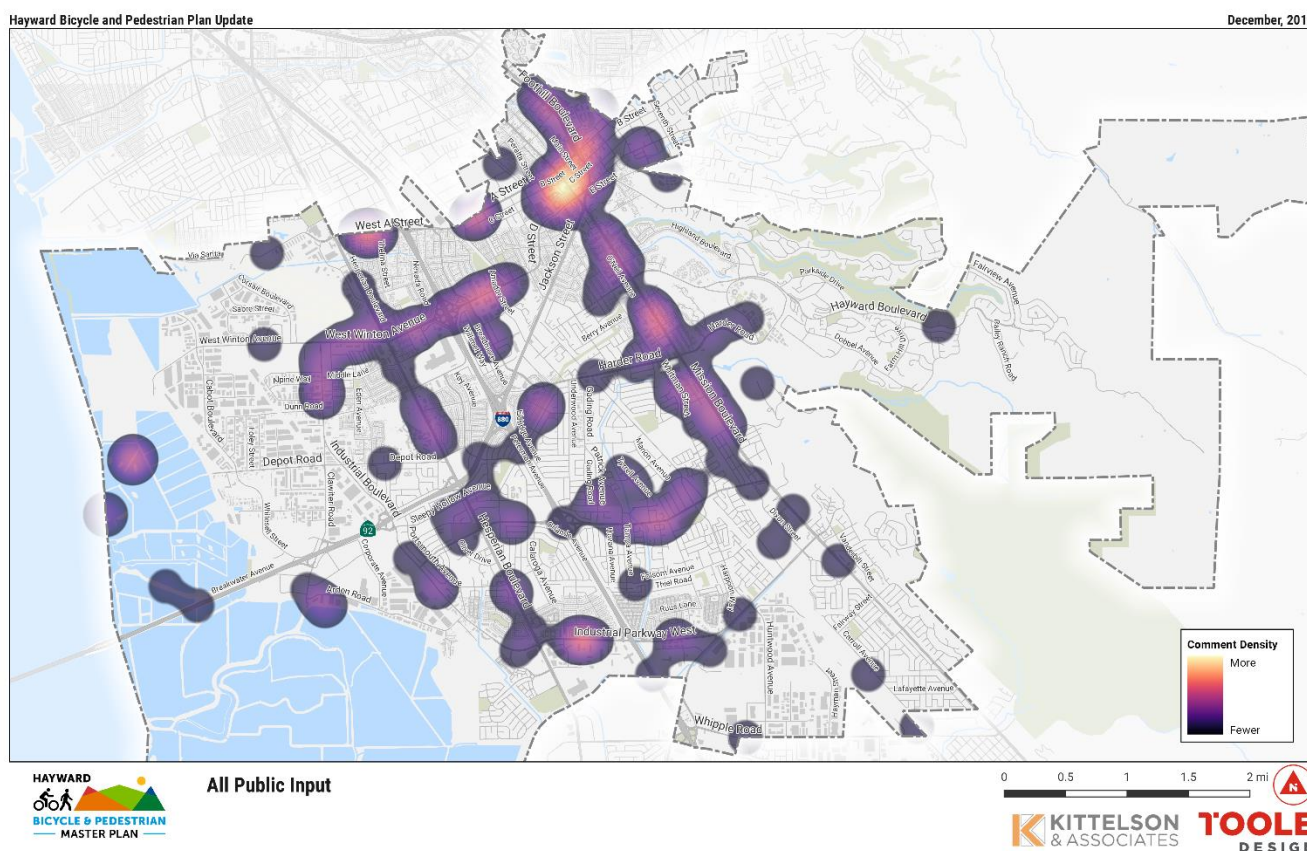
*Source: Kittelson & Associates, Inc.*

Input from both the online survey and in-person pop-up input stations were then layered on top of each other to assess citywide priorities shows which corridors the public would like to see prioritized for new bicycle and pedestrian improvements. These corridors are also below and presented in

Figure 12:

- ▶ Downtown Corridors
  - A, B, C, and D Streets
  - Main Street
  - 2nd Street
  - Foothill Boulevard
  - Mission Boulevard
- ▶ Winton Ave/D Street
- ▶ West A Street
- ▶ Whitman Street
- ▶ Hesperian Boulevard
- ▶ Industrial Parkway
- ▶ Industrial Boulevard
- ▶ Tennyson Road
- ▶ Patrick Avenue
- ▶ Harder Road
- ▶ San Francisco Bay Trail
- ▶ East Bay Greenway
- ▶ Eden Greenway & I-880 Bicycle/Pedestrian Crossing
- ▶ Clawiter Road
- ▶ San Lorenzo Creek Trail

**Figure 12. Heatmap Overview of All Input from Phase III Outreach**



## Plan Review (To be Updated After Public Review)

A draft Bicycle & Pedestrian Master Plan was released for public feedback. As appropriate, the feedback received over this period from the public and both the City of Hayward Council of Infrastructure Committee (CIC) and Council Sustainability Committee (CSC) was incorporated into the final Plan before submission to City Council for adoption.

# 02

## VISION AND GOALS



## VISION AND GOALS

This chapter presents the visions and goals developed to guide the City with improving active transportation. It also summarizes the performance measures that the City will use to track the progress of the Plan's implementation.

The city of hayward's transportation system provides a safe, comfortable, convenient, and connected walking and biking network for people of all ages and abilities and is supported by programs and policies that promote sustainable transportation and complete communities.

### VISION STATEMENT

The vision statement above is based on the following General Plan Guiding Principle and Complete Streets Strategy.

- ▶ **General Plan Guiding Principle 7:** Hayward residents, workers, and students should have access to an interconnected network of safe, affordable, dependable, and convenient transportation options.
- ▶ **Complete Streets Strategy** to build streets that are safe, comfortable, and convenient for travel for everyone, regardless of age or ability, including motorists, pedestrians, bicyclists, and public transportation riders.

### GOALS

The vision helped to provide the framework for the Plan's goals to improve walking and biking in Hayward. The goals are based on those identified in the 2040 General Plan and Complete Streets Strategic Initiative. The goals of this Plan are Safety, Complete Streets, Access & Mobility, and Funding & Implementation.

#### Plan Goals



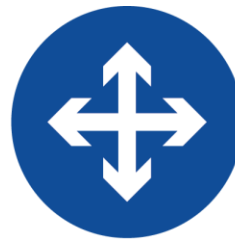
#### 1 Safety

Increase the safety of people bicycling and walking in the city of Hayward by identifying projects that address the greatest safety needs and prioritizing safety for all modes.



#### 2 Complete Streets

Provide complete streets that balance the diverse needs of users of the public right-of-way.



#### 3 Access & Mobility

Create connected networks and a continuous system of streets and trails that enable people of all ages and abilities to walk and bike to meet their daily needs and incorporate physical activity into everyday activities.



#### 4 Funding & Implementation
















Maintain sufficient funding to provide for existing and future transportation needs, including supporting programs and operation and maintenance.

## PERFORMANCE MEASURES

In order to measure the success of the goals listed above, performance measures and targets were developed to quantify each goal. These measures were developed and refined in consultation with the Plan's Technical Advisory Committee (TAC). Some of the performance measures were developed based on the City's Strategic Initiative, Two-Year Action Plan, and 2040 General Plan. These performance measures are intended to provide an easy way to track progress for the life of the Plan. These performance measures are listed in

Table 7.

Table 7. Performance Measures

GOAL	PROPOSED PERFORMANCE MEASURE	TARGET
 <b>Safety</b>	Average speed at specific locations measured annually*	
	Number of ped/bike fatalities and serious injury collisions	
 <b>Complete Streets</b>	Miles of new or replaced sidewalk*	
	Miles of new or upgraded bike lanes*	
	Number of new or enhanced crosswalks*	
 <b>Access &amp; Mobility</b>	Walk and bike mode share	
	Number of ADA improvements	
 <b>Funding &amp; Implementation</b>	Percentage of network implementation	<b>100% priority network complete by 2030</b>
	Percentage of funding provided by grants*	
 DECREASE  INCREASE  MAINTAIN OR INCREASE		

Notes:

\* indicates performance measure from the Complete Streets Strategic Initiative: <https://www.hayward-ca.gov/your-government/city-council/complete-streets-strategic-initiative>

# 03

## EXISTING CONDITIONS



## EXISTING CONDITIONS

This chapter discusses the state of biking and walking in Hayward, the existing bicycle and pedestrian network, and the analyses performed with respect to these networks. These findings helped to determine recommendations for programs and policies, bikeway and pedestrian facility improvements, and the overall creation of the Plan.

### STATE OF BIKING AND WALKING IN HAYWARD

To better plan for future walking and bicycle infrastructure and programs, it is important to understand who is currently being served by existing infrastructure and who could be better served by the Plan. Table 8 summarizes the key demographic trends related to walking and biking in Hayward. The following sections go into more detail on why these trends exist and the data behind them.

**Table 8. Demographic Summary**

 <b>WHO IS WALKING MORE</b> ↑	 <b>WHO IS BIKING MORE</b> ↑
<ul style="list-style-type: none"> <li>• Low-income workers</li> <li>• High school and college students</li> <li>• Young families and professionals aged 25 to 44</li> <li>• People slightly above the poverty line</li> <li>• People with one or two vehicles available at home</li> <li>• Women</li> <li>• Hispanic/Latinx residents</li> </ul>	<ul style="list-style-type: none"> <li>• Low-income and high-income workers</li> <li>• High school and college students</li> <li>• Young families and professionals</li> <li>• People below the poverty line</li> <li>• People with no vehicles available</li> <li>• Men</li> <li>• Hispanic/Latinx residents</li> <li>• People aged 65 and older</li> </ul>
<b>WHO IS WALKING LESS</b> ↓	<b>WHO IS BIKING LESS</b> ↓
<ul style="list-style-type: none"> <li>• High-income workers</li> <li>• Middle-aged families and established professionals aged 45 to 55</li> <li>• People with three or more vehicles available at home</li> <li>• People aged 65 years and older</li> <li>• Men</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate-income workers</li> <li>• Workers aged 45 to 55 years old</li> <li>• People with only one vehicle available at home</li> <li>• Women</li> <li>• Black or African American Residents</li> </ul>

As the table reveals, the prevailing groups of people walking and biking in Hayward are consistent with general trends. Vehicle ownership and income are negatively associated with walking, and families of the age with young children are more likely to drive. Hispanic/Latinx residents walk and bike more relative to other races and ethnicities.

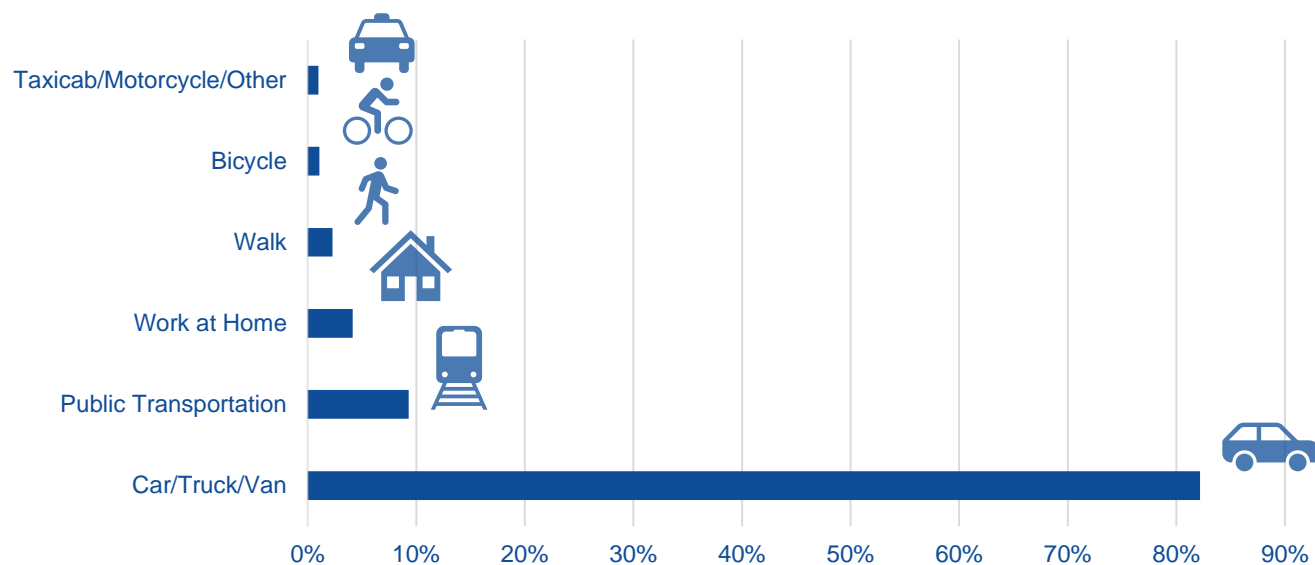
### SUMMARY OF COMMUTING DATA

Hayward is located in the heart of the San Francisco Bay Area in central Alameda County. It is a major suburban center with a growing downtown, and it is uniquely situated to provide access to major employment hubs in Oakland, San Francisco, Silicon Valley, and the Tri-Valley. Hayward is the third largest city in Alameda County, with a population of approximately 160,000 people.

Approximately 75,000 Hayward residents commute to work throughout the Bay Area, with most people commuting by car (82% of commuters). A much smaller proportion of residents take transit (9.3%), walk, or bike to work (2.3% and 1.1% respectively). Of the 9.3% who take transit to work, many may walk or bike to reach transit stops, as shown in Figure 13. Additionally, over 75% of Hayward residents commute outside of the city for work including 35% of residents who travel outside of Alameda County for work. Commute data provides an understanding of how people travel to and from work. However, the US Census only provides Journey to Work data for the primary mode of transportation, which would not

include information on other trips, such as walking or biking trips that connect with regional transit services. Additionally, work and work-related trips only account for 16% of all travel.

**Figure 13. Community Mode Share, Hayward Residents**

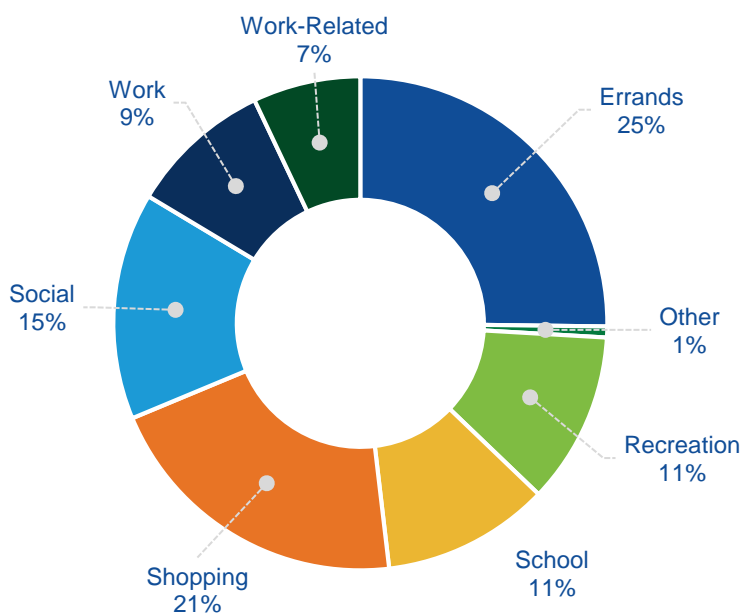


Source: US Census, ACS 2016 1 year estimates

## Non-Commute Trips

Hayward residents travel for many reasons other than work commutes. In fact, as shown in Figure 14, running errands and shopping account for almost half of all trips within Hayward. Recreational and social outings account for another quarter of all trips made within the city. Planning for better connections to key destinations for shopping, entertainment, and recreation areas may provide more opportunities to encourage people to walk or bike.

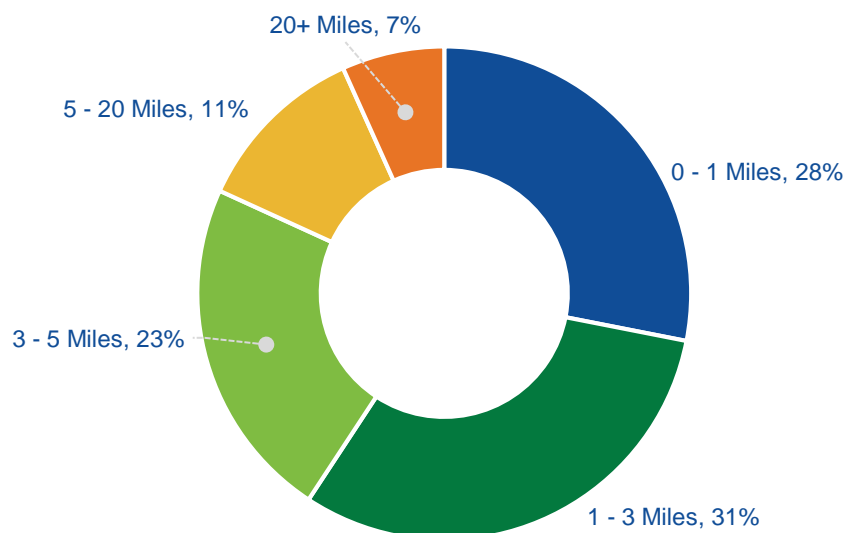
**Figure 14. Trip Purposes for All Transportation Modes**



Source: California Household Travel Survey, 2013

Almost 30% of all non-work trips made by Hayward residents are less than one mile in length. Short trips present an opportunity for walking or biking. Additionally, another 30% of all non-work trips that start or end within the city fall within the one to three-mile range which is a relatively accessible biking distance for many people, depending on a number of factors including age, ability, comfort level, equipment, weather, perception of safety, vehicle speeds and volumes, presence of bike facilities, and topography. Figure 15 shows the distribution of trip distances among non-work trips that start or end within the city.

**Figure 15. Non-Work Trip Distances for All Transportation Modes**



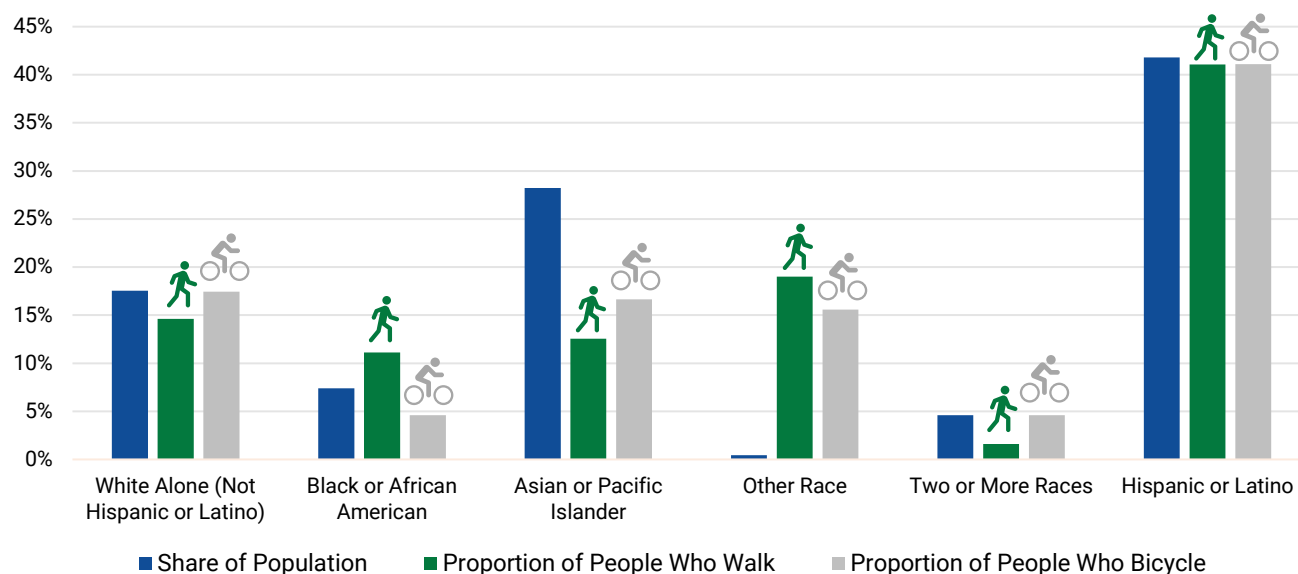
Source: California Household Travel Survey, 2013

## DEMOGRAPHICS

### Race & Ethnicity

As demonstrated by Hayward's Commitment for an Inclusive, Equitable, and Compassionate Community (CIECC), Hayward supports diverse and inclusive communities. Approximately 42% of Hayward's population is Latinx, 28% is Asian or Pacific Islander, 18% is White, 7% is Black, and 5% are of mixed race.

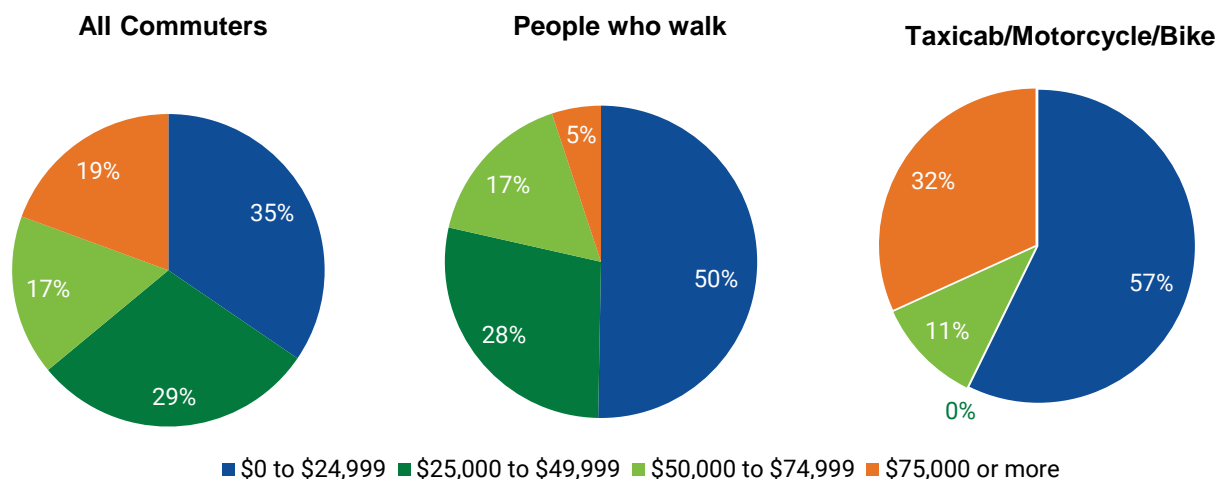
presents Hayward's population by racial groups, as well as biking and walk commute rates by race. Latinxs make up the largest proportion of the population and almost half of the proportion of users who walk or bike, at approximately 42%. Asian or Pacific Islanders make up the second highest proportion of the population but make disproportionately fewer walk or bike trips (approximately 27%) relative to their population share.

**Figure 16. Population and Walk/Bike Commute Mode Share by Race**

Source: US Census, ACS 2016: 1-year estimate

## INCOME & POVERTY STATUS

Approximately 35% of workers in Hayward earn an annual income of less than \$25,000 per year. More than half of walking and bicycle commuters have incomes below \$25,000 per year. Workers with annual incomes over \$75,000 make up about 20% of the population but approximately 32% of the bicycle commuter population. This means that people in both the highest and lowest annual income categories are more likely to bike to work. However, residents making over \$75,000 per year are far less likely to walk to work. Figure 17 shows all commuter income levels compared with those of just people who walk or bike.

**Figure 17. Income and Walk/Bike Mode Share**

Source: US Census, ACS 2016: 1-year estimates

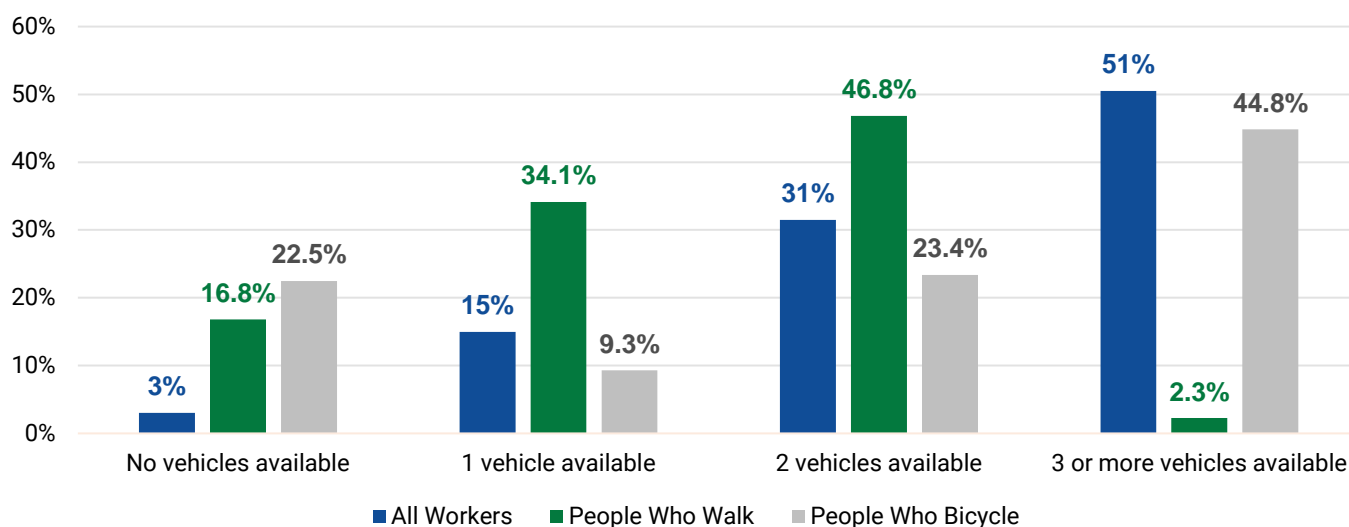
Many of Hayward's residents may need to walk or ride out of necessity, as a way to get to work. Poverty status is one indicator of need; the Census sets poverty thresholds based on family size (i.e., number of children). For a family of four, the poverty line is approximately \$25,000 annual income. Almost five percent of Hayward's population is below the poverty line while another six percent makes at or below 1.5 times the poverty threshold.

## VEHICLE OWNERSHIP

Over 80% of Hayward workers have two or more vehicles available at home. Almost half of people who walk to work own two or more vehicles. Interestingly, over 40% of people who bike to work own three or more vehicles, as shown in Figure 18.

The number of vehicles available to a household is not by itself a predictor of commute mode in Hayward.

**Figure 18. Vehicle Ownership and Walk/Bike Mode Share**

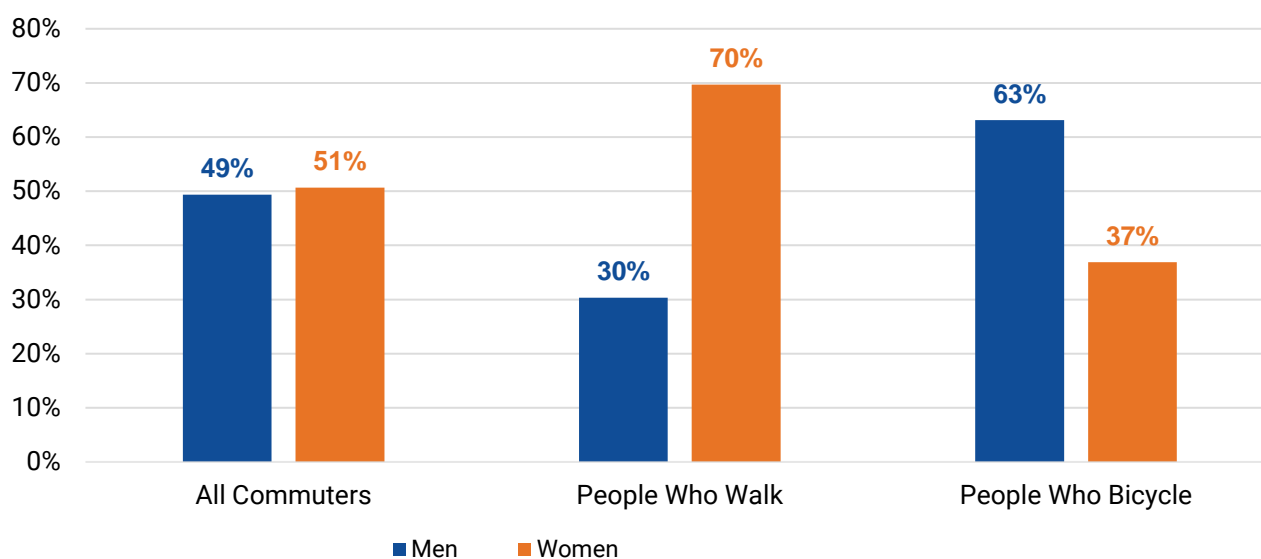


Source: US Census, ACS 2016: 1-year estimate

## Gender

Hayward has an almost 50/50 split of male and female commuters, as seen in Figure 19. However, consistent with national trends, men are more likely than women to bike to work. In contrast, the number of women that walk to work is twice the number of men that walk to work.

**Figure 19. Gender and Walk/Bike Mode Share**



Source: US Census, ACS 2016: 1-year estimates

## DISADVANTAGED NEIGHBORHOODS

Local neighborhood characteristics and equity issues were assessed using the Office of Environmental Health Hazard Assessment's (OEHHA) CalEnviroScreen tool. The CalEnviroScreen tool uses socioeconomic and environmental health data to map disadvantaged areas as determined by a number of indicators. Specifically, it uses pollution exposure, environmental effect, sensitive population, and socioeconomic indicators. Table 9 provides a summary of the pollution burden and population characteristics analyzed as part of the CalEnviroScreen tool.

**Table 9. CalEnviroScreen Disadvantaged Communities Indicators**

Pollution Burden	Population Characteristics
<b>EXPOSURE</b> <ul style="list-style-type: none"> <li>Ozone concentrations in air</li> <li>PM 2.5 concentrations in air</li> <li>Pesticide Use</li> <li>Diesel particulate matter emissions</li> <li>Drinking water contaminants</li> <li>Toxic releases from facilities</li> <li>Traffic density</li> </ul>	<b>SENSITIVE POPULATIONS</b> <ul style="list-style-type: none"> <li>Asthma emergency department visits</li> <li>Cardiovascular disease (emergency department visits for heart attacks)</li> <li>Low birth-weight infants</li> </ul>
<b>ENVIRONMENTAL EFFECTS</b> <ul style="list-style-type: none"> <li>Toxic cleanup sites</li> <li>Groundwater threats from leaking underground storage sites and cleanups</li> <li>Hazardous waste facilities and generators</li> <li>Impaired water bodies</li> <li>Solid waste sites and facilities</li> </ul>	<b>SOCIO-ECONOMIC FACTORS</b> <ul style="list-style-type: none"> <li>Educational attainment</li> <li>Housing burdened low income households</li> <li>Linguistic isolation</li> <li>Poverty</li> <li>Unemployment</li> </ul>

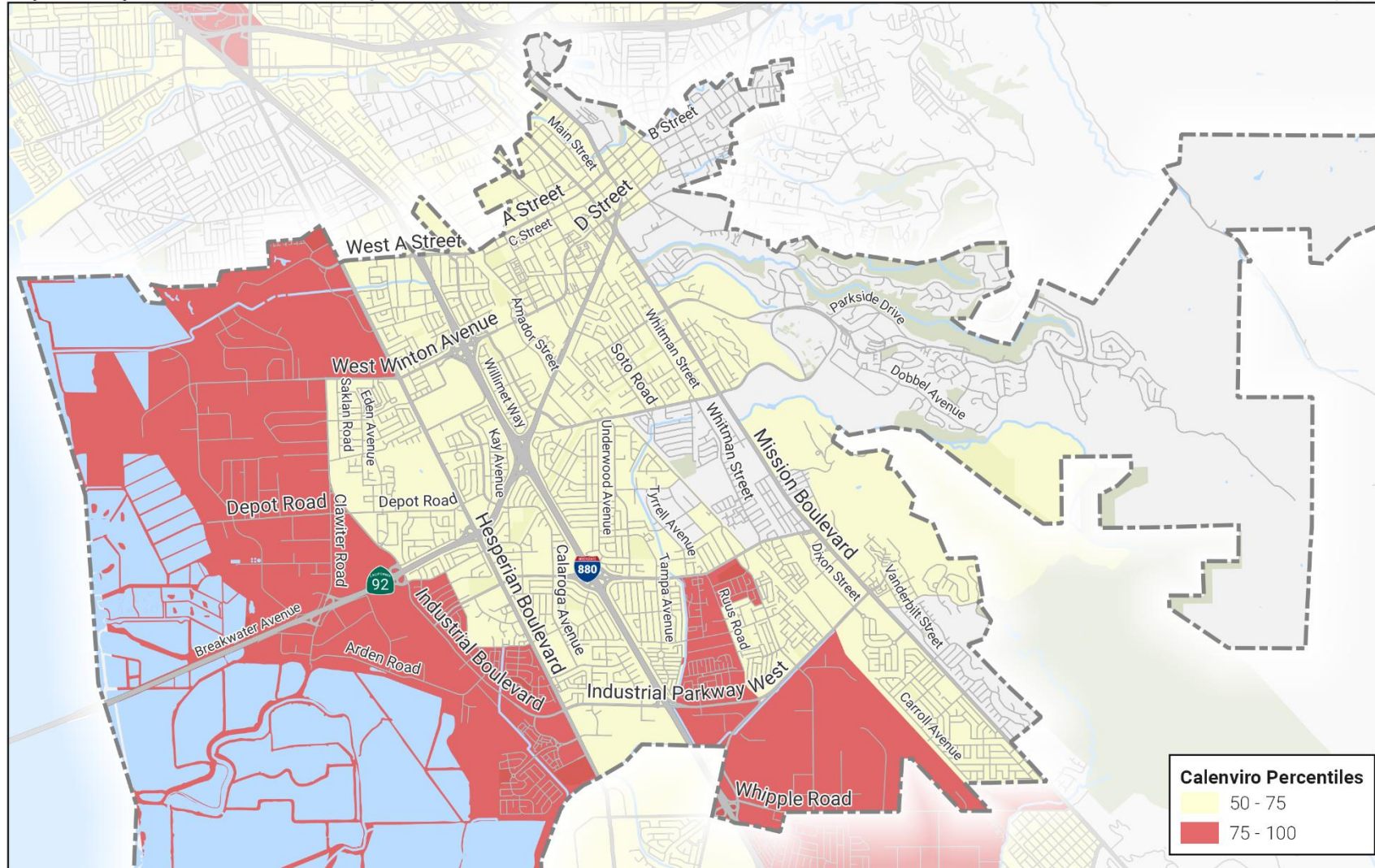
Source: CalEnviro Screen, California Office of Environmental Health Hazard Assessment

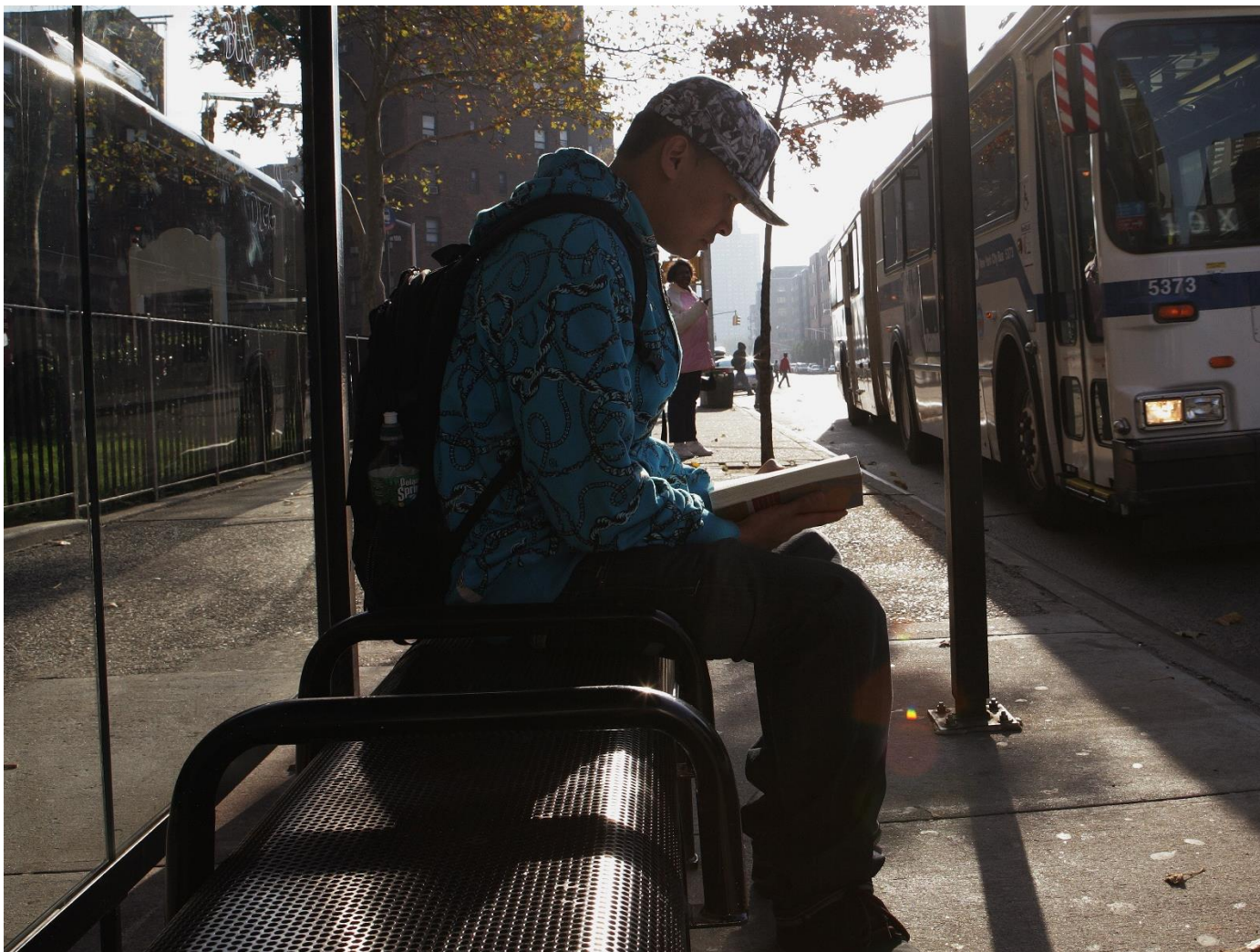
The CalEnviroScreen tool produces an overall score for each census tract and compares the results as percentiles across all of California. Communities within the top 25<sup>th</sup> percentile statewide are considered disadvantaged communities under the California Department of Transportation (Caltrans) Active Transportation Program grant guidelines. These areas within Hayward are located in the western and southern industrial portions of the city. Additional opportunity focus areas that do not meet the statewide definition but are still within the top 40<sup>th</sup> percentile are adjacent to many of the industrial areas and along major transportation corridors. Figure 20 shows the areas of Hayward that fall within the top 25<sup>th</sup> percentile as well as the 60<sup>th</sup>-100<sup>th</sup> percentile.

Figure 20. Disadvantaged Communities (Top 25<sup>th</sup> Percentile) and Opportunity Focus Areas (Top 40<sup>th</sup> Percentile)

## Hayward Bicycle and Pedestrian Plan Update

December, 2019



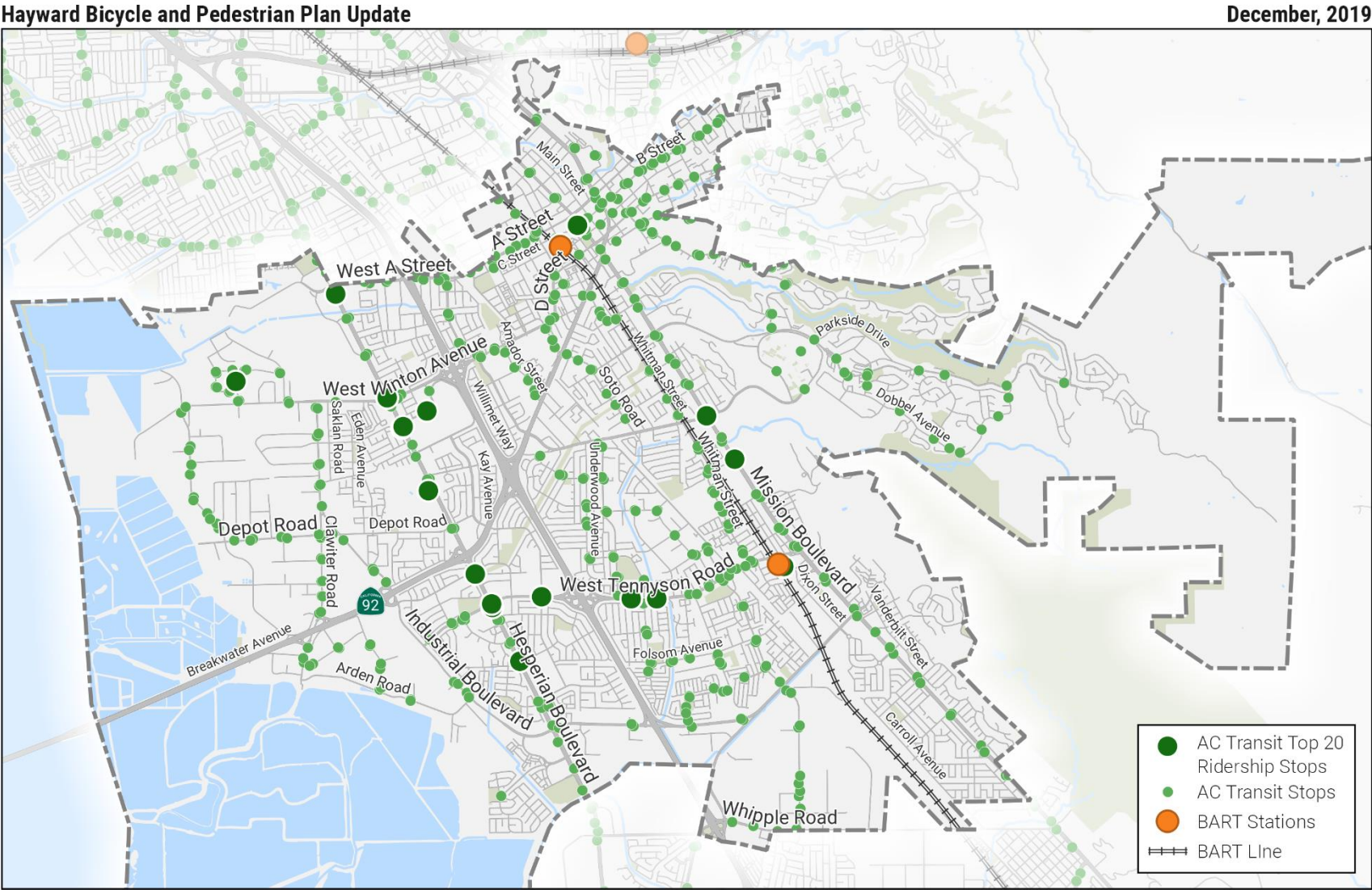


Source: Kittelson & Associates, Inc.

## TRANSIT ACCESS/ VEHICLE USE

The two largest transit providers in Hayward are BART (for rail service) and AC Transit (for bus service). Additionally, California State University East Bay operates a shuttle service that connects with the Hayward and Castro Valley BART stations and is provided for free or at a reduced cost for students and faculty. Figure 21 shows all AC Transit bus stops in Hayward and identifies the top 20 stops in terms of daily boardings/alightings. The highest ridership stops typically fall along major arterials within Hayward (e.g., Hesperian Boulevard, Tennyson Road, and Mission Boulevard) at large retail sites, employment centers, transportation hubs, or schools (e.g., Southland Mall, Chabot College, AC Transit Division 6 Facility, Hayward and South Hayward BART stations, and downtown Hayward). Most of these stops are not well connected to Hayward's existing network of bike lanes and signed bicycle routes.

Figure 21. AC Transit Bus Stops in Hayward – Top 20 Boardings/Alightings



Transit Service



KITTELSON & ASSOCIATES

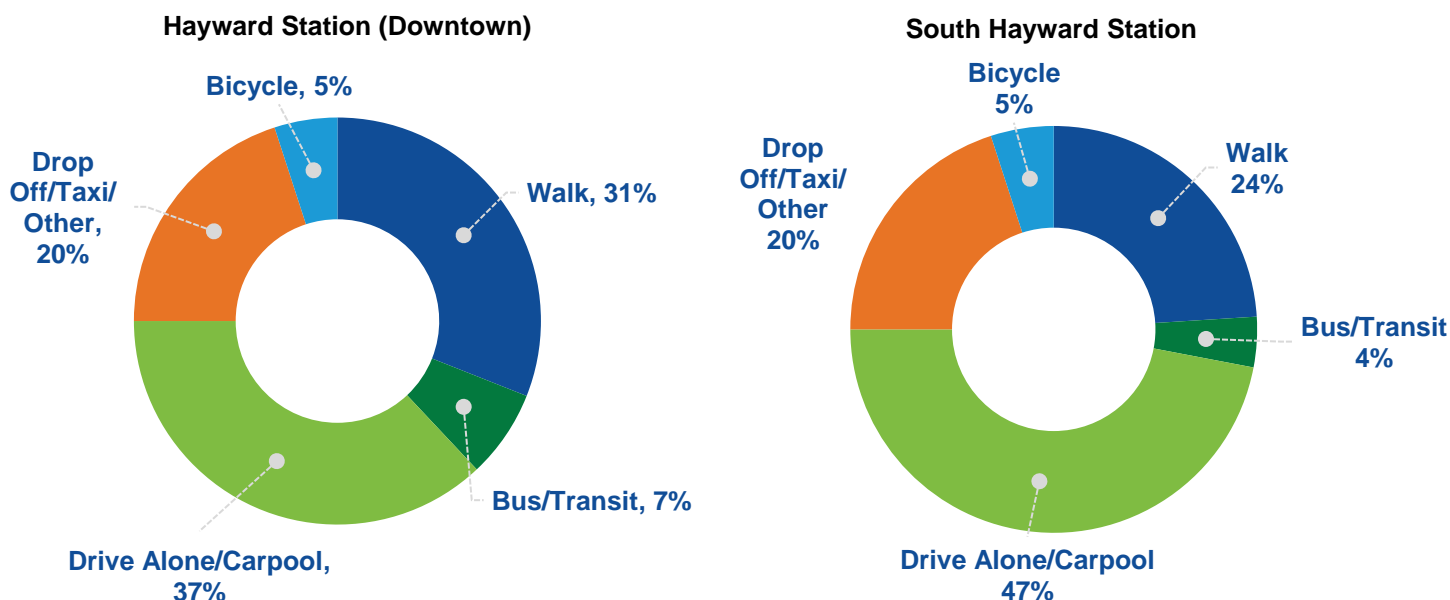
TOOLE DESIGN

d

Located in Hayward's downtown, the Hayward BART station serves about 5,600 daily riders. The South Hayward BART station serves almost 3,500 daily riders and is located in a primarily residential setting between the Tennyson-Alquire and Mission-Garin neighborhoods in the southeastern portion of the city. Figure 22 shows the makeup of the different transportation modes used to get to and from each BART station. Almost one-third of riders using the downtown Hayward BART station and a quarter of riders using the South Hayward station walk to access BART. A larger proportion of transit riders walk to BART at each Hayward station (24-31%) than bike to each (5%). A lower bicycle mode share to BART stations may be attributed to relatively disconnected or existing high-stress networks of bicycle facilities serving each station area and a low number of secure bicycle parking spaces at the stations. The Hayward BART station has 106 total bike parking spaces, of which only 26 are secure spaces (electronic or keyed lockers). The South Hayward BART station has 132 total bike parking spaces, of which 46 are secure spaces. Neither BART station has a dedicated bicycle station like those at the 19<sup>th</sup> Street station in downtown Oakland or the Downtown Berkeley station.

With almost 10% of residents using public transportation to get to work, there is an opportunity to encourage more people to walk or bike to transit. This can be accomplished by focusing on convenient, safe first-mile/last-mile connections to these stations and secure end-of-trip facilities.

**Figure 22. Mode Split for Access to BART Stations**



Source: Bart Station Profile Study, 2015

# EXISTING BICYCLE/ PEDESTRIAN NETWORK

## TYPES OF BIKEWAYS

Hayward's existing bikeway system consists of a network of bicycle paths, bicycle lanes, and bicycle routes, as shown in Figure 27

There are four types of bikeways as defined by Chapter 1000 of the Caltrans Highway Design Manual (2017):

- ▶ Bicycle Paths (Class I)
- ▶ Bicycle Lanes (Class II)
- ▶ Bicycle Routes (Class III)
- ▶ Separated Bikeways (Class IV)

Of these types, the first three have been implemented in Hayward, while the fourth type, separated bikeways, has not yet been implemented.

### Bicycle Path (Class I)

Bicycle paths provide a completely separate facility designed for the exclusive use of bicycles and pedestrians with minimal vehicle crossflows. Generally, bicycle paths serve corridors not served by streets or are parallel to roadways where right-of-way is available. Bicycle paths provide both recreational and high-speed commute routes for bicyclists with minimal conflicts with other road users. This class of bikeway exists on the southern section of Mission Boulevard in the southeastern portion of Hayward.

**Figure 23. Rendering of Class I Bikeway**

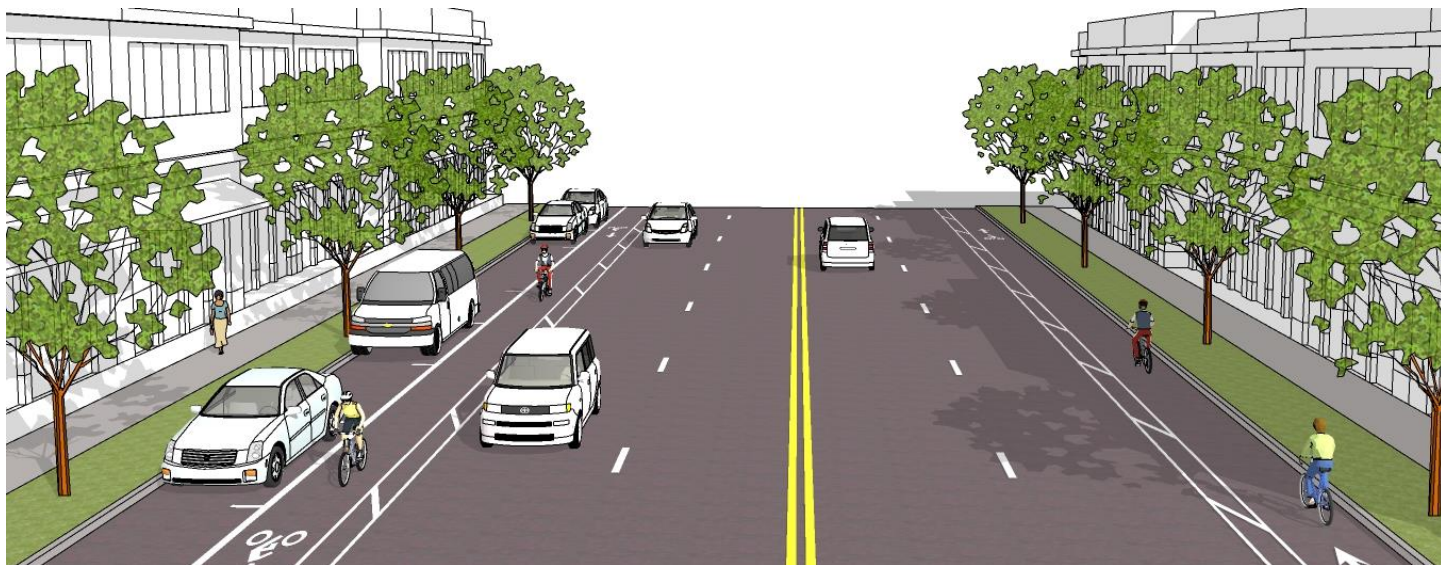


Source: Kittelson & Associates, Inc.

## Bicycle Lane (Class II)

Bicycle lanes are on-street bikeways that provide a designated right-of-way for the exclusive or semi-exclusive use of bicycles.

**Figure 24. Rendering of Class II Bikeway**



Source: Kittelson & Associates, Inc.

Through travel by motor vehicles or pedestrians is prohibited, but vehicle parking and crossflows by pedestrians and motorists are permitted. This class of bikeway exists along Harder Road up to Mission Boulevard.

## Bicycle Route (Class III)

Bicycle routes provide a right-of-way designated by signs or permanent markings and shared with motorists. Roadways designated as Class III bicycle routes should have sufficient width to accommodate motorists, bicyclists, and pedestrians. Shared lane markings ("sharrows") can be used to provide an additional alert to drivers of the shared roadway environments with bicyclists. This class of bikeway exists on Clawiter Road.

**Figure 25. Rendering of Class III Bikeway**

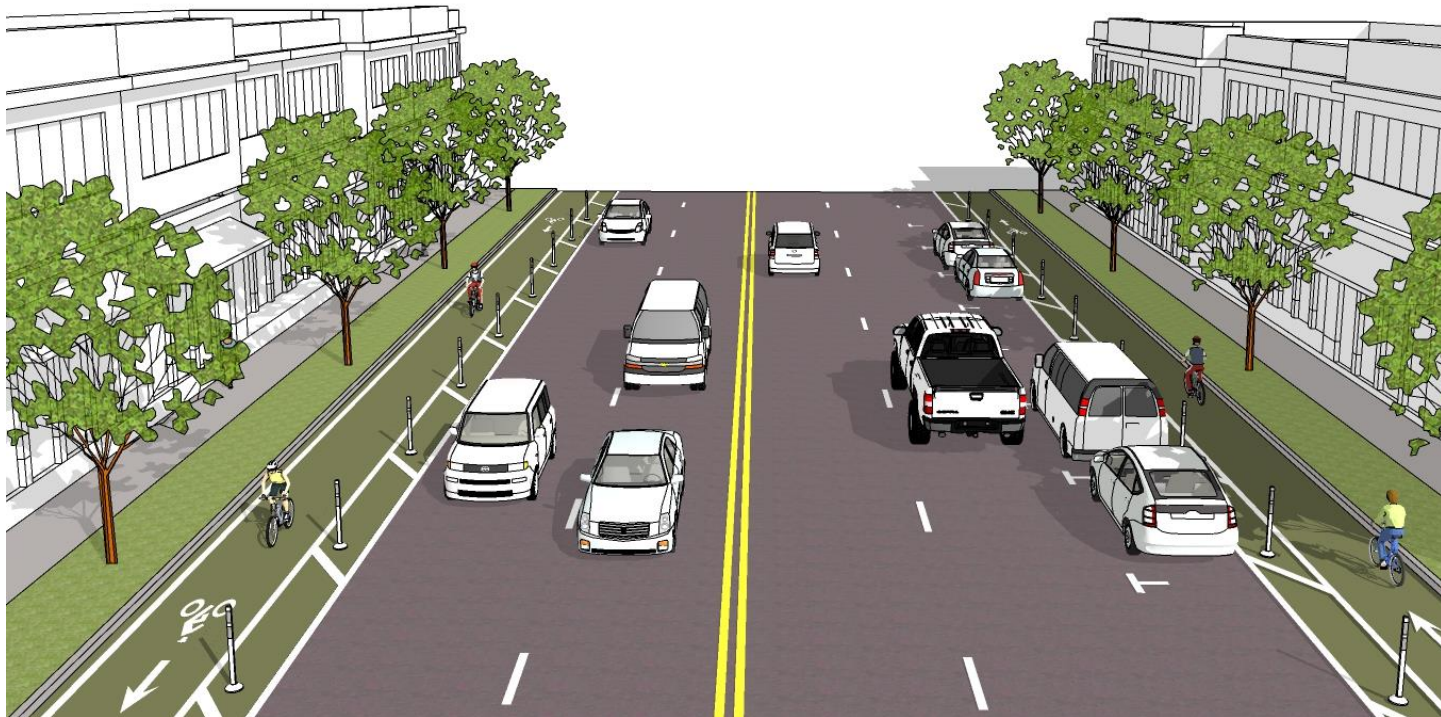


Source: Kittelson & Associates, Inc.

## Separated Bikeway (Class IV)

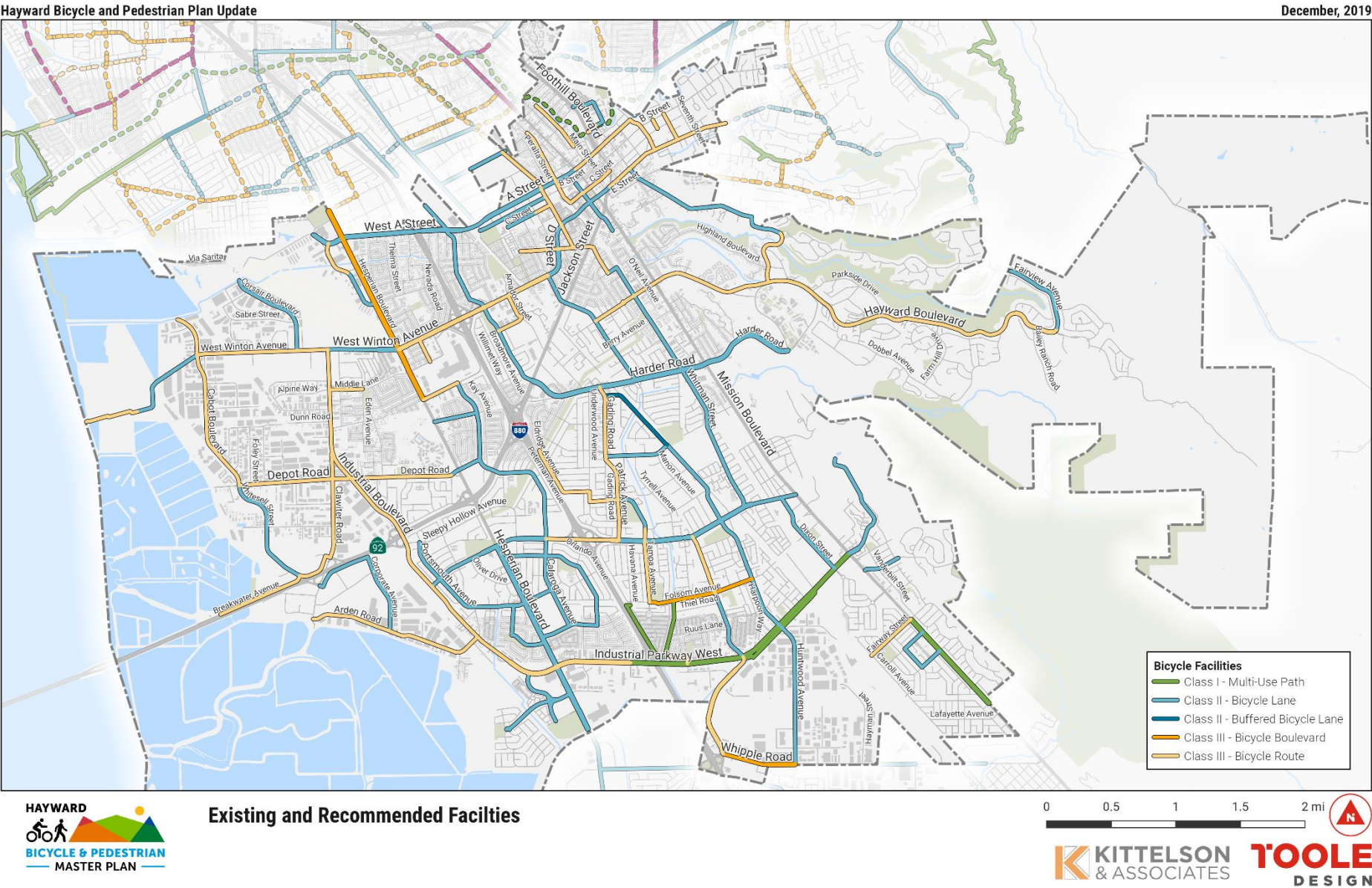
Separated bikeways provide a physical separation from vehicular traffic. This separation may include grade separation (i.e., provided at sidewalk level), flexible posts, planters or other inflexible physical barriers, or on-street parking. These bikeways provide some bicyclists a greater sense of comfort and security, especially in the context of high speed roadways. Separated facilities can provide one-way or two-way travel and may be located on either side of a one-way roadway. This class of bikeway has not yet been implemented in Hayward.

**Figure 26. Rendering of Class IV Bikeway**



Source: Kittelson & Associates, Inc.

Figure 27. Existing Bike Network



## OTHER SUPPORTING INFRASTRUCTURE

Other bicycle infrastructure is also essential to support biking as a viable mode of transportation. Some of these elements are discussed below.

### Bicycle Parking

Secure short-term and long-term bicycle parking are necessary to support biking. The amount of parking necessary generally relates to the land uses served. Short-term bicycle parking is adequate for retail land uses, for example, while long-term bike parking is more appropriate for residential and office land uses where people will be expected to park their bicycle for several hours or days at a time. New development provides an opportunity to ensure adequate provision of short- and long-term bicycle parking. Currently, the City's municipal code does not specify bicycle parking requirements associated with land uses. Section 10-2.406 City's Municipal Code requires bicycle parking only for land uses where more than 50 vehicle parking spaces are required. There is a credit system in place by which four bicycle spaces provided can provide credit for one vehicle parking space. Refer to Appendix D for more information on bicycle parking.



*Bike rack in Hayward, CA*

*Source: Kittelson & Associates, Inc*

### Bike Share

Bike sharing allows for flexible transportation options and can introduce biking to community members who previously lacked access to a bicycle. The City currently does not have any options for bike share.



*Miami Beach, FL bike share bikes*

*Source: Kittelson & Associates, Inc*

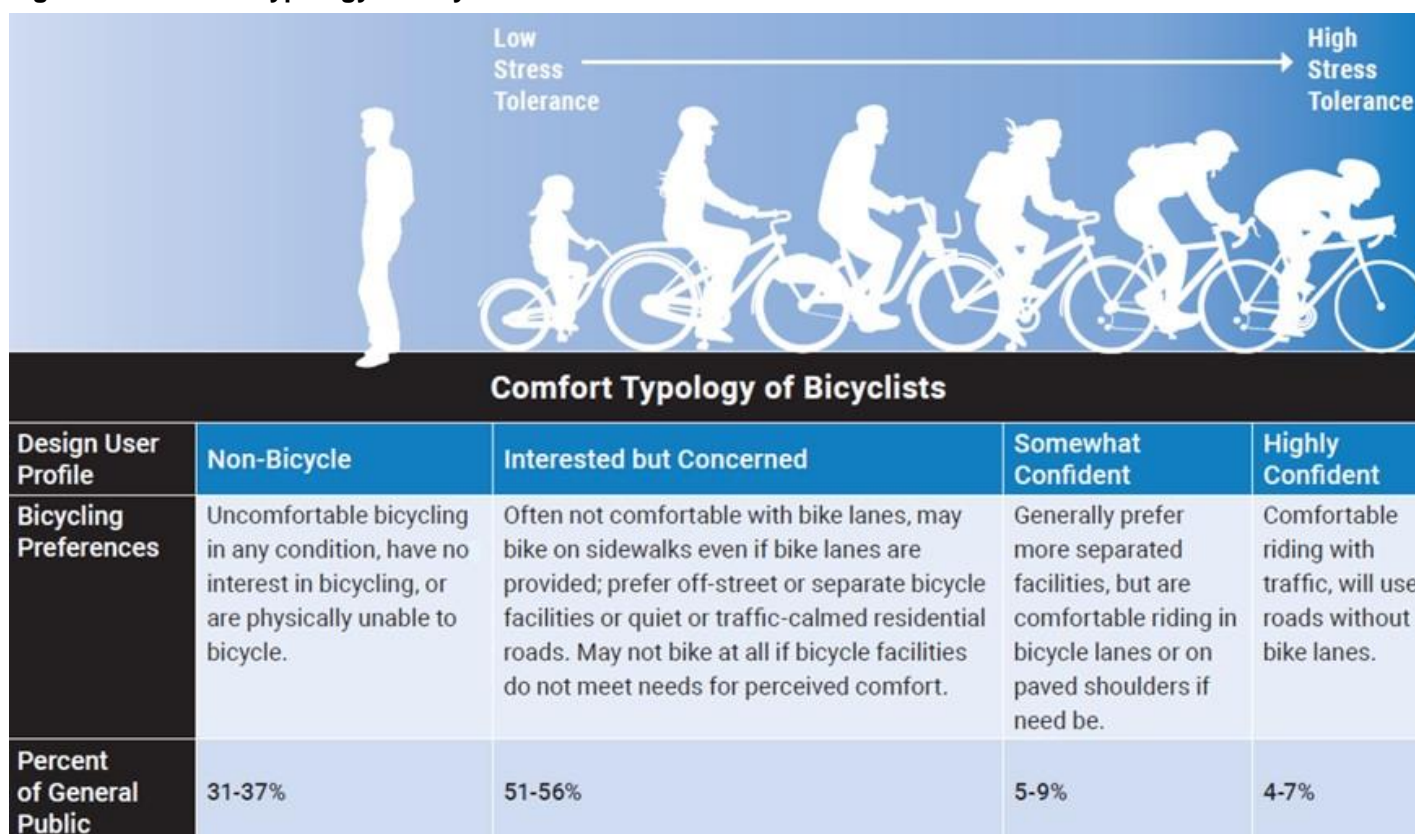
## LEVEL OF STRESS ANALYSIS

Level of Traffic Stress (LTS) is a measure given to a road segment or crossing indicating the traffic stress it imposes on bicyclists. It is based on the premise that a person's level of comfort on a bicycle increases with separation from vehicular traffic and is negatively impacted as traffic volumes and speeds increase.

When interpreting LTS analysis, it is important to consider the range of people who ride bikes. On one end of the bicyclist spectrum are people who are comfortable riding with traffic. These are highly confident bicyclists (e.g., adult regular bike commuters), and they are willing to ride on roads with little or no bicycle infrastructure. The other end of the bicyclist spectrum includes those who are not comfortable riding with or adjacent to traffic (e.g., children, the elderly, and non-regular adult bicyclists). They prefer off-street bicycle facilities or biking on low-speed, low-volume streets. They may not bike at all if bicycle facilities do not meet their comfort preferences.

The middle of the spectrum includes bicyclists who prefer separated facilities but are willing to ride with or adjacent to traffic if needed. Figure 28 provides additional information on different types of bicyclists and their preferences when biking. A full summary and methodology of the LTS Analysis conducted for this Plan can be found in Appendix C

**Figure 28. Comfort Typology of Bicyclists**

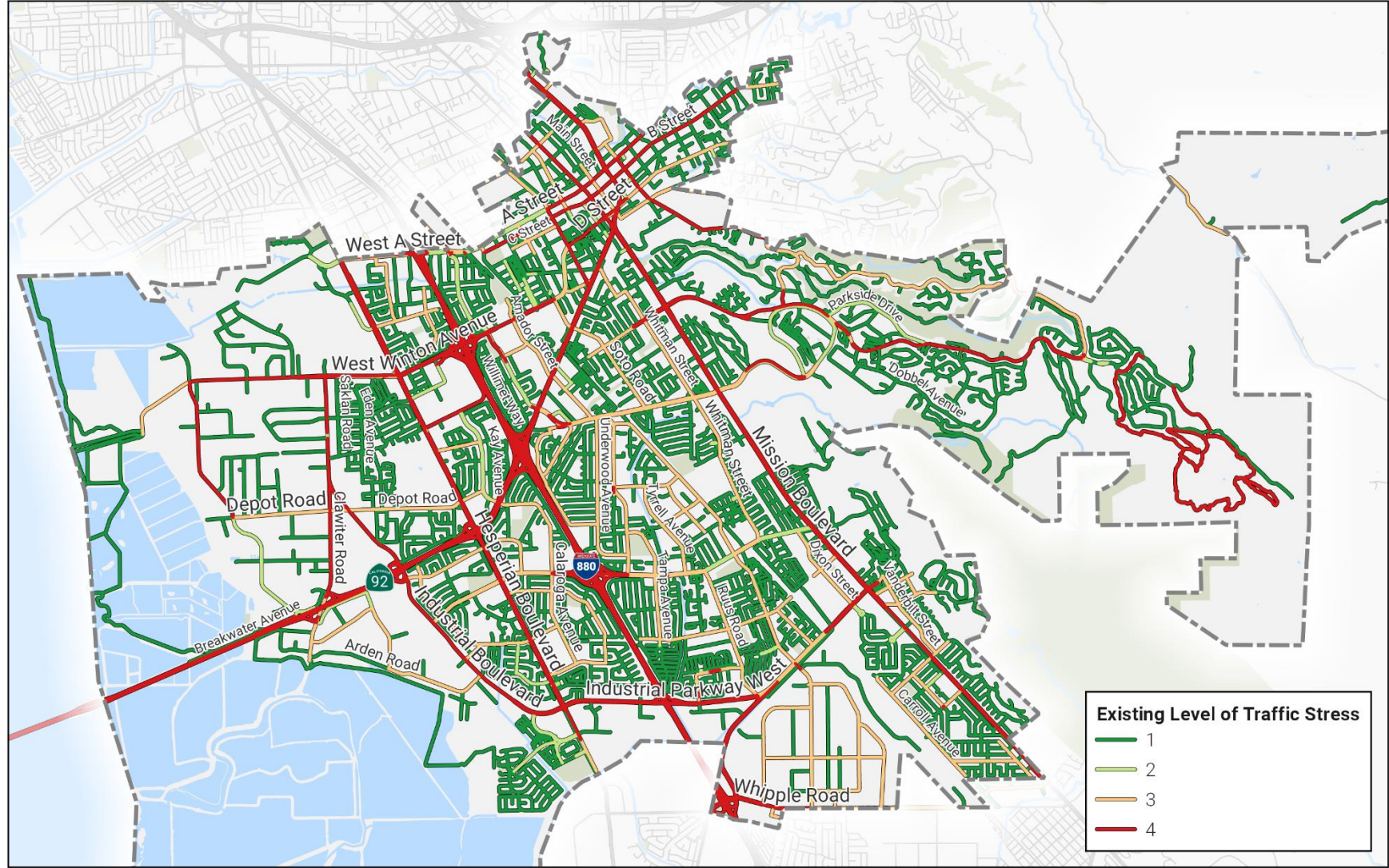


Source: Toole Design Group

Figure 29 displays the LTS results for all facilities within the city. The major arterial roadways in Hayward present the most stressful conditions to the average bicyclist. This is due to a lack of bicycle facilities on these roadways, with little separation from high-speed, high-volume traffic. However, it is also important to note that Hayward's street network is predominantly comprised of low-stress local streets, which can be used to support a citywide network by offering alternatives to using arterials, as necessary. The connections among those low-stress routes is key to promote biking among the interested but concerned riders.

Figure 29. Existing Level of Traffic Stress for All Streets

Hayward Bicycle and Pedestrian Plan Update December, 2019



**Level of Traffic Stress**



The LTS findings are useful in determining appropriate low-stress bicycle facilities and where these facilities should be located in the city. Hayward's extensive network of low-speed, low-volume local neighborhood streets already serves as a backbone for a low-stress biking network; however, these streets are currently isolated pockets throughout the city, separated by higher stress arterial and collector streets.

Enhancements to some of these low-stress streets coupled with separated bicycle facilities on targeted segments of higher speed and higher volume collectors and arterials would result in a connected low-stress bicycle network serving key destinations in the city. For example, a separated bicycle lane on Hesperian Boulevard from Sleepy Hollow Avenue to Cathy Way would help to provide a low-stress north-south connection between Hayward's Glen Eden and Mount Eden neighborhoods, each of which currently has a large network of low-stress local streets. This link would also serve as a low-stress connection over State Route 92, a major barrier to Hayward's street network, and provide access to Chabot College and Southgate Park.

## COLLISION ANALYSIS

Historical pedestrian and bicyclist collision data was analyzed to capture safety trends citywide. Analysis results are presented with descriptive findings summarizing the factors, severity, and temporal nature of collisions as well as spatial results which are used to identify high injury corridors.

These findings helped determine which areas to prioritize for bicycle and pedestrian safety improvements.

## Data and Approach

The analysis used the most recent complete five years of collision data (2012 to 2016), which included reported totals of 177 bicycle collisions and 292 pedestrian collisions. Collisions that occurred on freeways or freeway ramps were omitted from the data used for analysis, as these roadways grade-separated and under the jurisdiction of the Caltrans. Collisions that occurred at ramp terminal intersections and all other city roads were included in analysis.

## Roadway Data

Roadway data provided by the City of Hayward was used in order to associate roadway characteristics with spatial collision patterns. This data was supplemented with data from OpenStreetMap data. The roadway data included the following characteristics:

- ▶ Functional class;
- ▶ One-way or two-way designation;
- ▶ Bicycle infrastructure presence; and,
- ▶ Posted speed.

## Bicyclist Collisions

In the five-year period from 2012 to 2016, total bicyclist collisions maintained a steady trend between 30 and 40 collisions per year, as presented in Table 10. Five of the 177 reported bicyclist collisions were single party collisions, while the remaining 165 collisions involved two parties or more.

**Table 10. Bicyclist Collisions Year over Year, Hayward, 2012 – 2016**

Year	2012	2013	2014	2015	2016
<b>Reported Collision Count</b>	33	39	30	38	37

Source: SWITRS

Further analysis included identifying trends among the following attributes:

- ▶ **Collision severity:** The reporting officer's assessment of the most severe injury incurred.
- ▶ **Primary collision factors:** A road user's violation or movement associated with the collision. These categories represent an aggregation of California Vehicle Code violations.

## Collision Severity

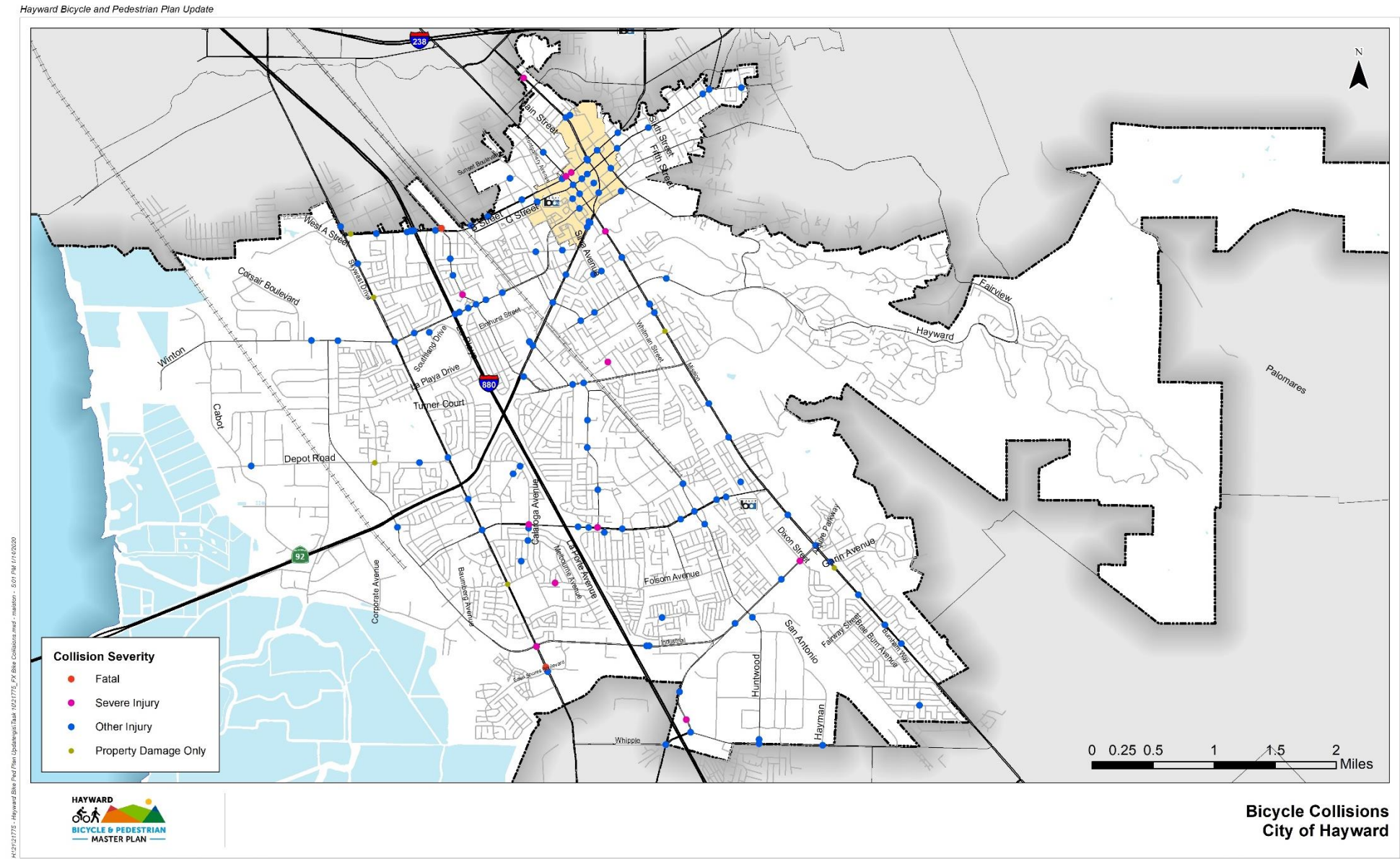
Among the 177 bicycle collisions, 15 collisions (8%) resulted in severe injury, and two collisions (1%) resulted in fatality. Table 11 presents collisions by severity level. Figure 30 presents a map of the reported collisions by severity.

**Table 11. Severity of Bicyclist Collisions, Hayward 2012 – 2016**

Collision Severity	Collision Count	Collision Share
Fatal	2	1%
Injury (Severe)	15	8%
Injury (Other)	147	83%
Property Damage Only (PDO)	13	7%
<b>Total</b>	<b>177</b>	<b>100%</b>

Source: SWITRS

Figure 30: Bicyclist Collisions, Hayward, 2012-2016



Source: BART; AC Transit; SWITRS

## Primary Collision Factors of Bicyclist Collisions

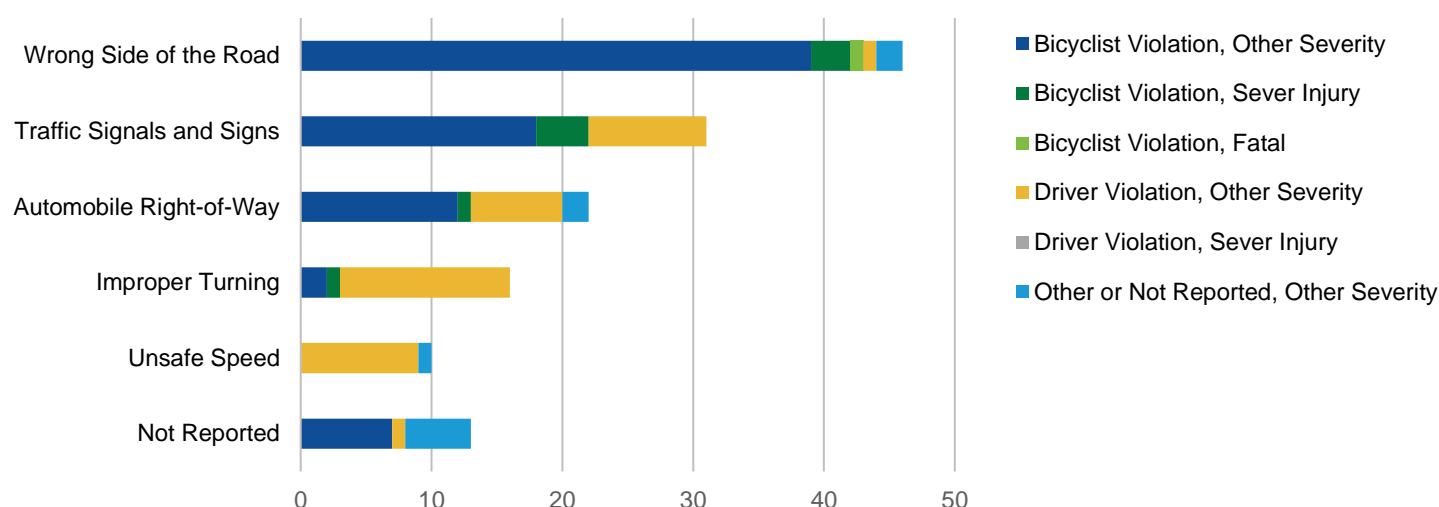
Figure 31 presents the six primary collision factors most commonly cited in bicyclist collisions. The most commonly reported primary collision factors among bicyclist collisions were:

- ▶ Wrong side of the road riding
- ▶ Traffic signals and signs
- ▶ Automobile right of way

The most common primary collision factors among collisions resulting in a fatal or severe injury were the following:

- ▶ Traffic signals and signs: 4 severe injury collisions
- ▶ Wrong side of the road: 1 fatal, 3 severe injury collisions
- ▶ Unsafe lane change: 1 fatal, 1 severe injury collision

**Figure 31. Top Six Primary Collision Factors in Bicyclist Collisions**



Source: Kittelson & Associates, Inc.

The top six primary collision factors are defined thusly:

- ▶ **Wrong Side of Road** refers to a collision in which a road user was on the wrong side of the road.
- ▶ **Traffic Signals and Signs** refers to a collision in which a road user failed to comply with a traffic control device (e.g., traffic signal, yield sign, or stop sign).
- ▶ **Automobile Right-of-Way** refers to a collision in which one road user failed to yield the right of way to another road user.
- ▶ **Improper Turning** refers to a collision in which a road user failed to account for a gap in traffic or failed to signal appropriately before turning.
- ▶ **Not Reported** refers to a collision in which a primary collision factor was not reported.
- ▶ **Unsafe Speed** refers to a collision in which a vehicle driver either exceeded the speed limit or drove too fast for given conditions in the reporting officer's assessment.

## Pedestrian Collisions

In the five-year period from 2012 to 2016, total pedestrian collisions maintained a steady trend, as shown in Table 12.

**Table 12. Pedestrian Collisions Year over Year, Hayward, 2012-2016**

Year	2012	2013	2014	2015	2016
Reported Collision Count	63	58	51	61	59

Source: SWITRS

Further analysis includes trends among the following attributes:

- ▶ Collision severity
- ▶ Pedestrian location and actions preceding collision

## Collision Severity

As illustrated in Table 13, between 2012 and 2016, there were 292 reported collisions involving pedestrians in Hayward in the five years of analyzed data, including 13 fatal collisions and 34 collisions resulting in a severe injury. Figure 32 presents a map of the reported collisions by severity level.

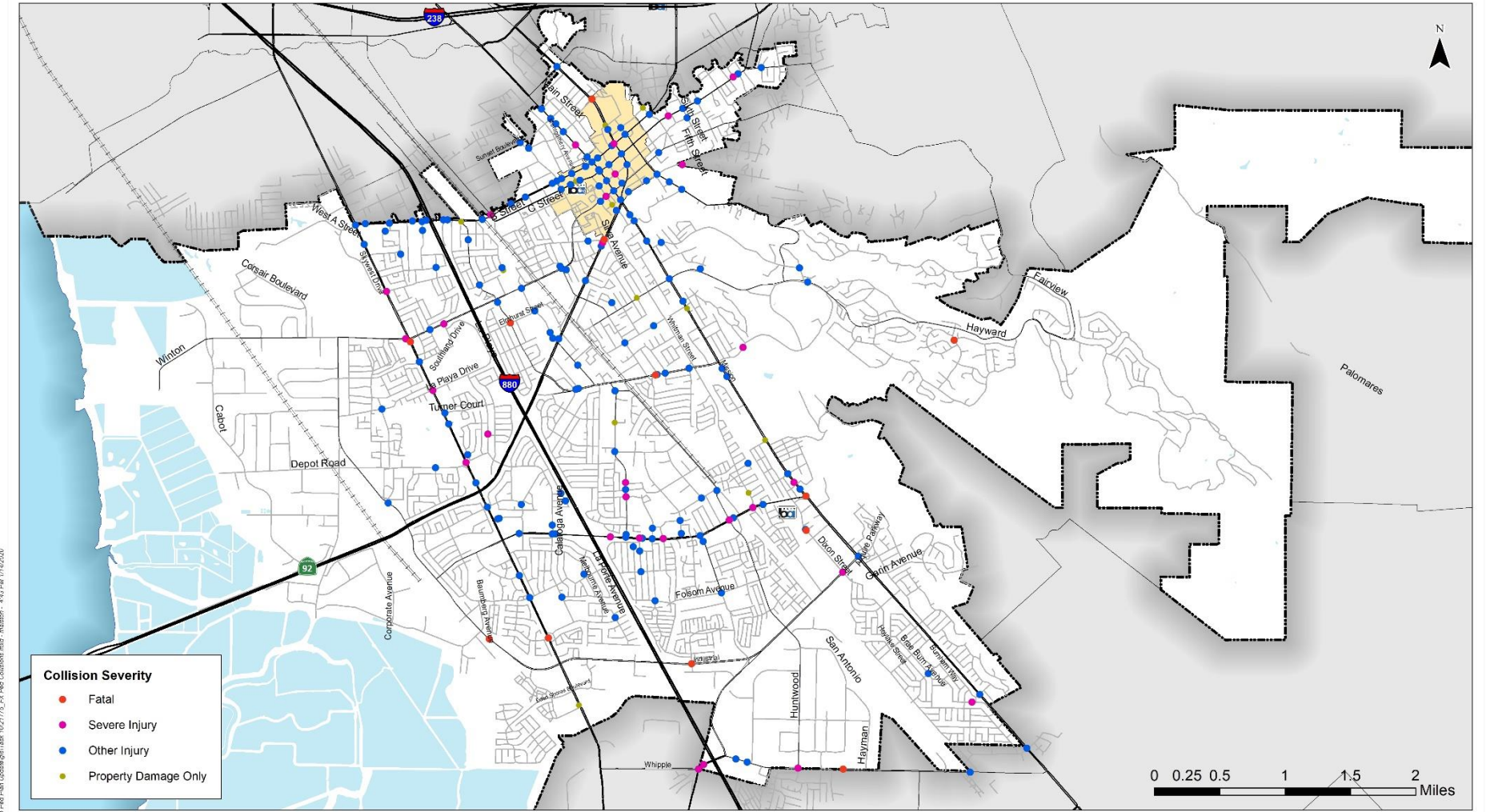
**Table 13. Severity of Pedestrian Collisions, 2012-2016**

Collision Severity	Collision Count	Collision Share
Fatal	13	4%
Injury (Severe)	34	12%
Injury (Other)	226	78%
PDO	19	7%
Total	292	100%

Source: SWITRS

Figure 32. Pedestrian Collisions Hayward, 2012-2016

Hayward Bicycle and Pedestrian Plan Update



Pedestrian Collisions  
City of Hayward

Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet

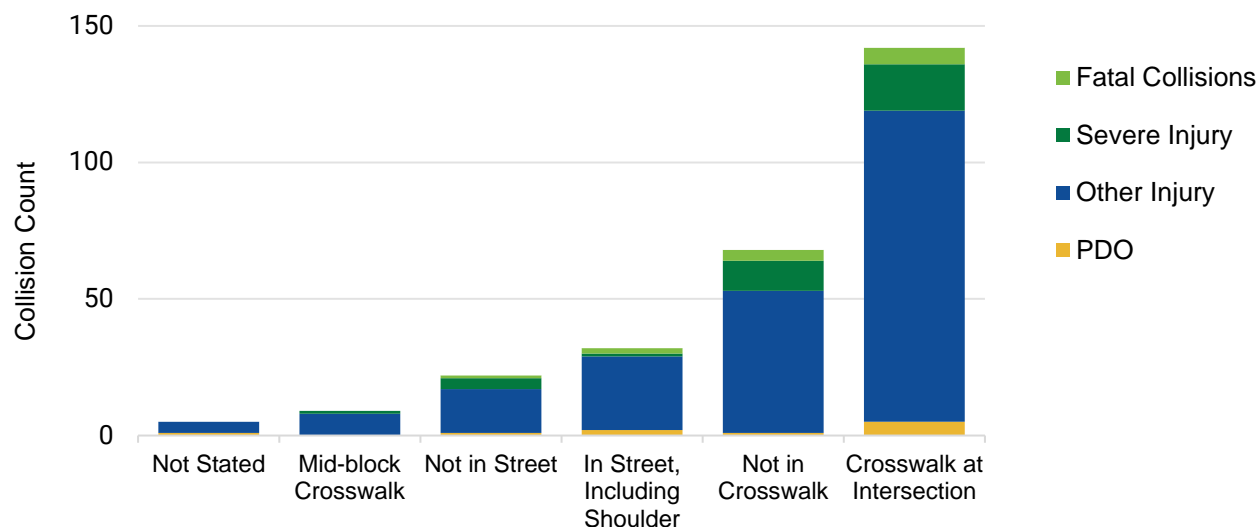
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## Pedestrian Collision Locations

Figure 33 presents pedestrian collisions by location and severity. The most common location for pedestrian collisions was on a crosswalk at an intersection, which accounted for 51% of collisions. 25% of pedestrian collisions occurred outside of a crosswalk. This trend indicates that there may be locations in Hayward where pedestrians' desire lines do not match existing infrastructure, and better infrastructure provision would improve safety outcomes for pedestrians.

**Figure 33. Location of Pedestrian Collisions, Hayward, 2012-2016**



Source: SWITRS

## HIGH INJURY CORRIDOR ANALYSIS

An analysis of the citywide roadway network was conducted to identify a set of “high injury corridors,” which constitute the worst performing street locations based on severity and frequency of collisions.

### Data and Approach

The analysis used the most recently available collision data, representing 2012 to 2016, and weighted collisions by reported severity, using weights based on the average societal cost of the outcomes (property damage, injuries, or death) established by Caltrans. The weights generally reflect an order of magnitude difference between the societal costs of fatal and severe injury collisions versus non-severe injury collisions. For more information on the screening process, refer to Appendix C.

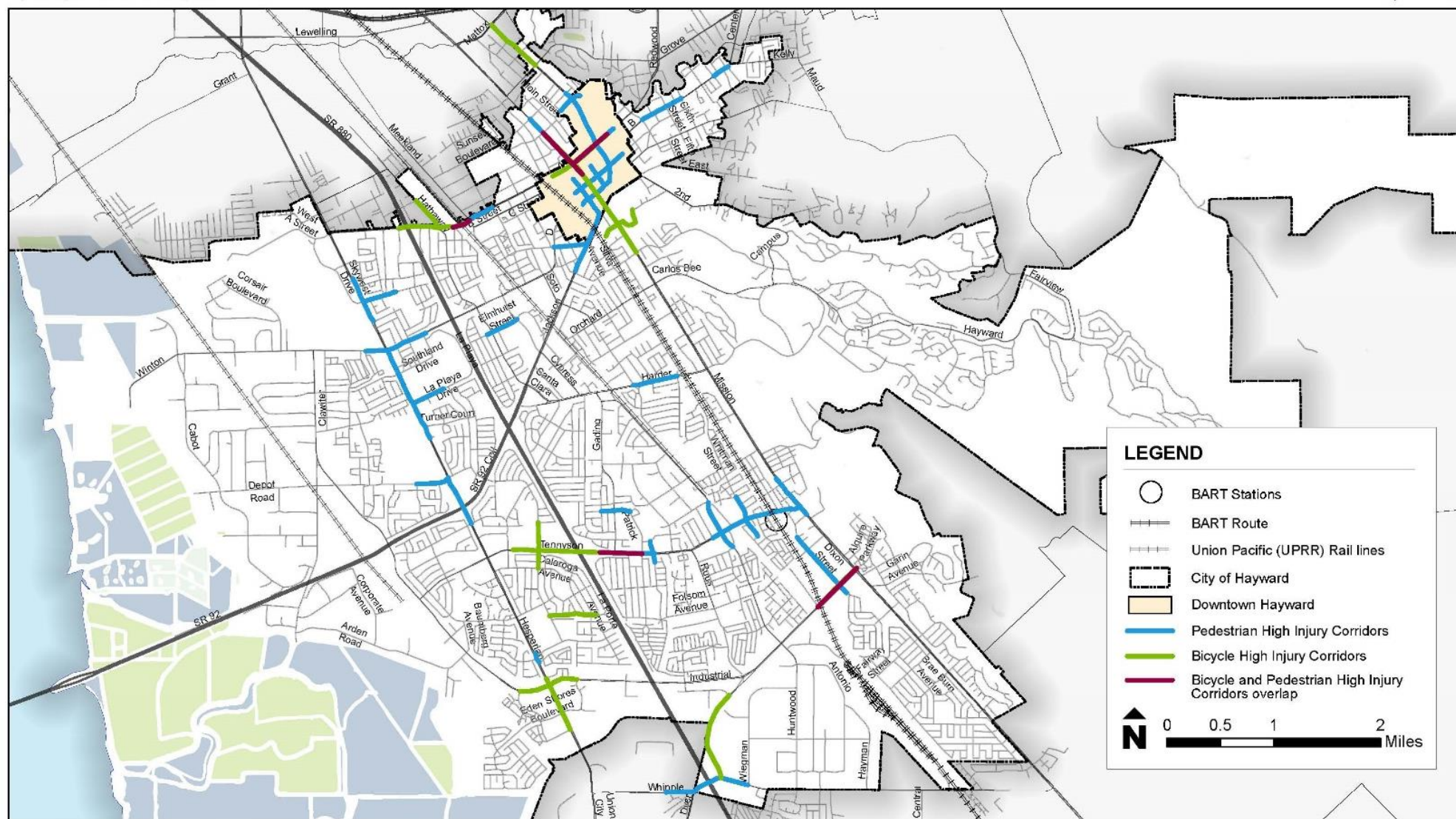
### Screening Results

The top 10 Bicycle and Pedestrian High Injury Corridors identified by the high injury corridor analysis are presented in Table 14 and Table 15, respectively. Figure 34 provides a map of the High Injury Corridors.

Figure 34. Bicycle and Pedestrian High Injury Corridors

Hayward Bicycle and Pedestrian Plan Update

September 2019



**KITTELSON**  
& ASSOCIATES

## Bicycle and Pedestrian High Injury Corridors Hayward, California

Source : 2012 – 2016 Statewide Integrated Traffic Reporting System Data , 2016 Caltrans Data and UC Berkeley TIMS

**Table 14. Top 10 Bicycle High Injury Corridors**

Roadway	From	To
<b>West Tennyson Road</b>	East of Sleepy Hollow Avenue South	Tampa Avenue
<b>A Street</b>	Montgomery Avenue	2 <sup>nd</sup> Street
<b>Hesperian Boulevard</b>	Technology Drive	Eden Park Place
<b>Calaroga Avenue</b>	Ashbury Lane	Bolero Avenue/ Miami Avenue
<b>Mission Boulevard</b>	Simon Street	Sycamore Avenue
<b>Industrial Parkway West</b>	Mission Boulevard	Pacific Street
<b>West A Street</b>	West of 880 Freeway	Meekland Avenue
<b>Industrial Boulevard/Industrial Parkway West</b>	Marina Drive	Hall Road
<b>Industrial Parkway Southwest</b>	Addison Way	Whipple Road/ 880 Freeway Intersection
<b>Fletcher Lane</b>	Dead-end west of Mission Boulevard	West of Janssen Court

**Table 15. Top 10 Pedestrian High Injury Corridors**

Roadway	From	To
<b>West Tennyson Road (Western Section)</b>	Just east of 880 Freeway Interchange	Dickens Avenue
<b>West Tennyson Road (Eastern Section)</b>	Manon Avenue	Leigid Court/railroad crossing
<b>Jackson Street</b>	Park Street	Watkins Street, just west of Mission/Foothill Boulevards
<b>Huntwood Avenue</b>	Harris Road/Leidig Court	Panjon Street/Lustig Court
<b>Meek Avenue</b>	Alice Street	Jackson Street
<b>Mission Boulevard</b>	Sunset Boulevard	B Street
<b>Whipple Road</b>	Just west of 880 Freeway interchange	Wiegman Road
<b>Foothill Boulevard</b>	Rex Road	Mission Boulevard/Jackson Street
<b>Hazel Avenue/City Center Drive</b>	Rio Vista Street	Valencia Place
<b>D Street</b>	Atherton Street	Foothill Boulevard

## EXISTING CONDITIONS SUMMARY

The existing conditions analysis presented in this chapter provide an overview of the relative level of biking and walking activity in Hayward, including who is typically walking and biking more frequently:

- ▶ Low-income workers, high schools and college students, young families and professionals, and Hispanic/Latinx residents are shown to walk and bike more relative to other groups within the City.
- ▶ High-income workers, people with no vehicles available at home, and men are shown to bike more relative to other Hayward residents.

Citywide LTS analysis shows that arterial and collector streets represent a relatively small share of City centerline miles relative to local streets, but arterials and collectors are overwhelmingly high-stress streets to ride on. A map of citywide LTS (Figure 29) illustrates the extent to which these major streets present barriers for people biking and walking, and can be addressed with the development of the proposed networks.

A citywide screening for high-injury locations also provides the intersections and roadway segments with the most extensive collision history, and where bicycle and pedestrian safety improvements will be critical to protect vulnerable users and promote walking and biking as viable travel modes.



*Neighborhood sidewalk in Hayward, CA*

Source: Kittelson & Associates, Inc .

# 04

# PROJECT RECOMMENDATIONS



# PROJECT RECOMMENDATIONS

This chapter discusses the overall bicycle and pedestrian network recommendations, as well as the prioritization framework and criteria used to develop them.

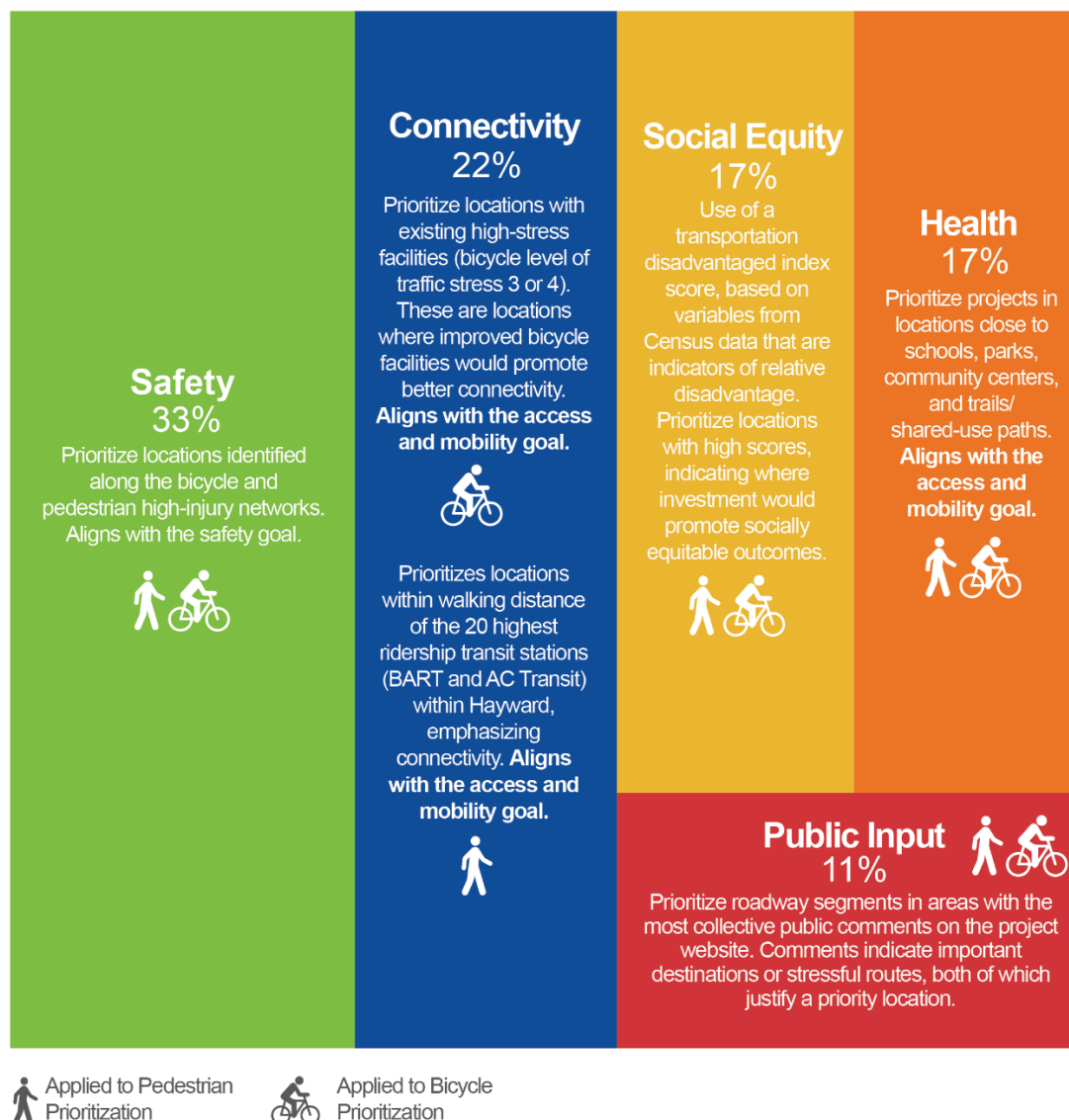
## PROJECT PRIORITIZATION AND METHODOLOGY

A prioritization framework was used to identify candidate pedestrian and bicycle project locations. The prioritization criteria were developed in cooperation with the TAC and align with the Plan's goals.

## FACTORS, EVALUATION CRITERIA, AND WEIGHTING

The evaluation methodology to develop the prioritization criteria was based on national best practices and input from the Plan's TAC. A detailed description of the methodology is included in the *Prioritization Framework* memo dated included in Appendix A. The prioritization factors and criteria are shown in Figure 35.

Figure 35. Prioritization Factors and Weights



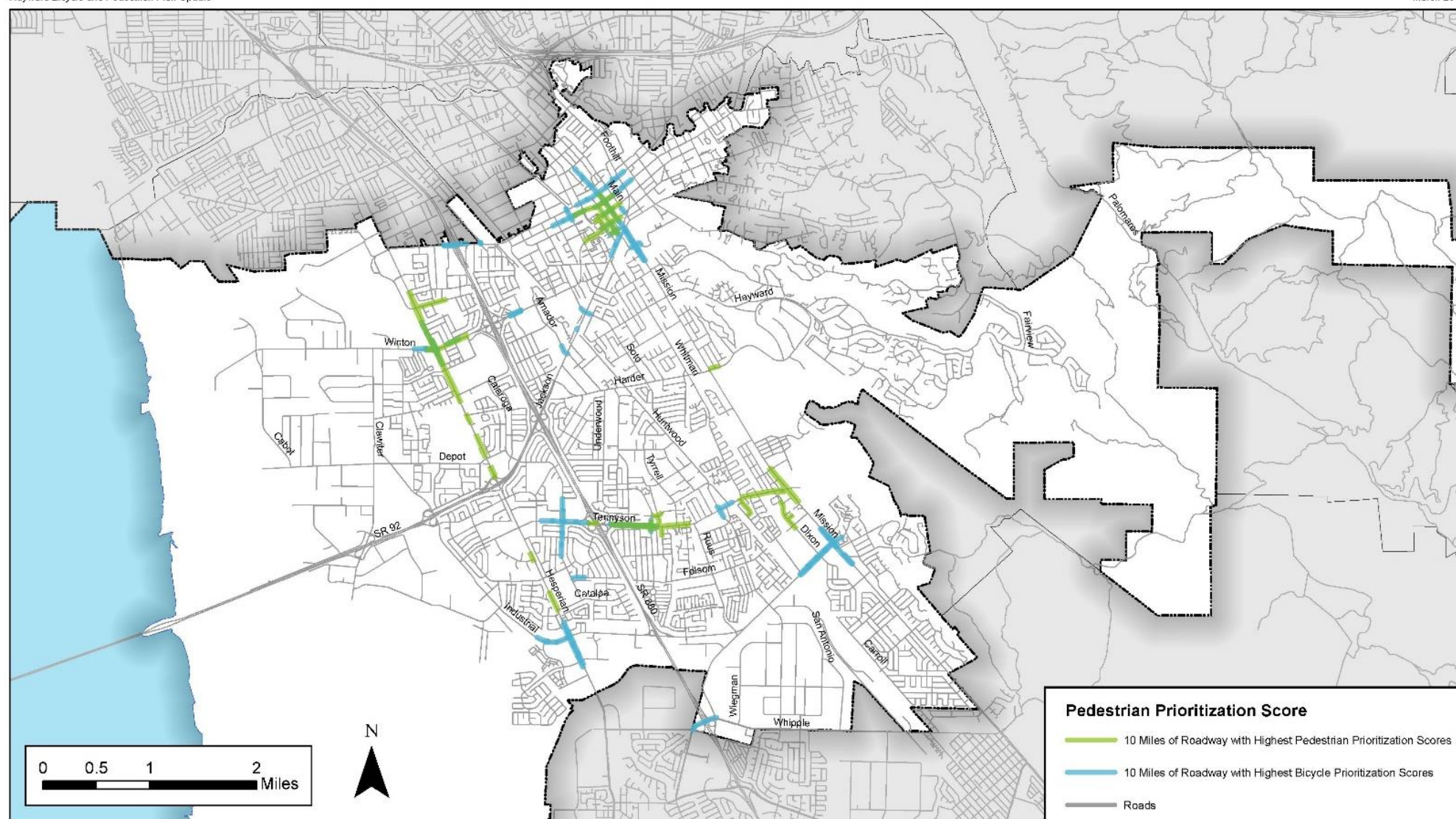
Source: Kittelson & Associates, Inc.

The factors were given the weights displayed to emphasize safety and connectivity. These weights were used to calculate priority scores for all road segments in the city, grouped by pedestrian and bicycle prioritization. Figure 36 shows the top 10 roadway miles with the highest pedestrian and bicycle prioritization scores.

**Figure 36. Bicycle and Pedestrian Prioritization Screening Map: Top 10 Roadway Miles**

Hayward Bicycle and Pedestrian Plan Update

March 2019


**KITTELSON**  
 & ASSOCIATES

### Bicycle and Pedestrian Prioritization Screening Map: Top 10 Roadway Miles Hayward, California

Source: 2012 – 2016 Statewide Integrated Traffic Reporting System Data, 2016 Caltrans Data, KAI Analysis

## BICYCLE NETWORK DEVELOPMENT

The ultimate goal of the Plan is to identify a connected, low-stress citywide bicycle network for people of all ages and abilities. The network was developed in three phases:

- ▶ Phase I: Network Framework
- ▶ Phase II: Network Evaluation
- ▶ Phase III: Network Refinement.

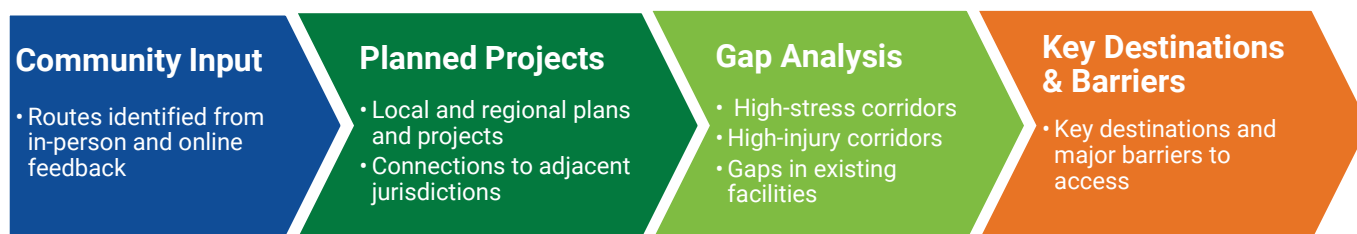
The following sections describe the process and outputs of each phase.

### PHASE I: NETWORK FRAMEWORK

Building a framework for the bicycle network begins by compiling a variety of sources - community feedback, projects that are already planned, a gap analysis, and an evaluation of key destinations and barriers as displayed in Figure 37.

Ultimately, the goal of a low-stress network is to expand Hayward's existing bikeway network so that more people feel comfortable and safe making trips via bike for commutes, errands, and recreation.

**Figure 37. Network Framework Development Process**



Each of these individual inputs were placed as layers into an online map, called the Network Framework map, to show the basic network structure for all corridors that would be included in Phase II.

## PHASE II: NETWORK EVALUATION

Once the Network Framework map was created, facility types were assigned to each segment within the proposed network. Facility selection was determined by roadway operational characteristics, facility feasibility, and an assessment of alternative routes – the following sections describe these steps. The results of this phase were a proposed bicycle network map with designated facility types and a proposed bicycle project list.

### Step 1: AASHTO Bikeway Selection Guide Screening

All corridors depicted on the proposed network framework were evaluated using the AASHTO *Guide for the Development of Bicycle Facilities 4<sup>th</sup> Edition* (Guide) to select initial low-stress bicycle facility recommendations. The Guide considers traffic volumes and prevailing vehicle speeds in determining appropriate facilities.

### Step 2: Implementation and Feasibility Screening

Once the appropriate facility was determined for each segment in the network through the AASHTO screening, the feasibility of constructing these facilities was determined by analyzing roadway space reallocations, lane eliminations or reassignments, signal adjustments, land-use context, and other operational changes needed to implement such facilities.

### Step 3: Alternative Route Assessment

After reviewing the draft implementation methods with the City, the project team evaluated alternative routes for draft recommendations that may be challenging to develop into all ages and abilities facilities. Potential parallel routes were identified that provide similar access to destinations and the preferred corridor.

### Step 4: City Review of Administrative Draft Network Facility Map & Project List

City staff and TAC members then provided input on the initial draft network and identified any proposed facility recommendations that may not be financially or politically infeasible.

## PHASE III: NETWORK REFINEMENT

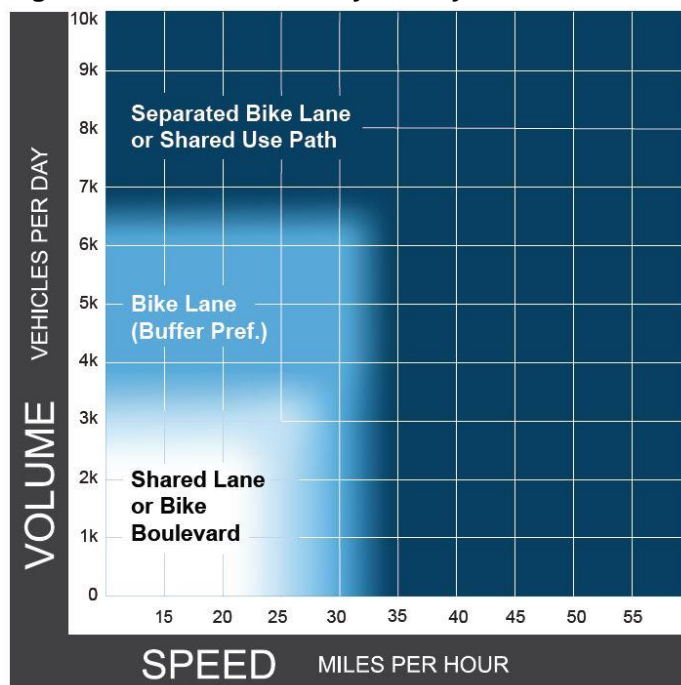
Based on feedback from City staff and TAC members, the project team refined the initial map and project list to create the draft network maps for public review. Project prioritization, implementation phasing, and cost estimates were developed once the unconstrained network was finalized.

## ALL AGES AND ABILITIES NETWORK

The vision for the Plan includes creating a safe, comfortable bicycle network that can be enjoyed by all residents, commuters, and visitors. Figure 39 illustrates this all ages and abilities bicycle network. This network meets the criteria from the AASHTO Guide to focus on providing bikeways that will allow the largest segment of the population to feel comfortable while biking.

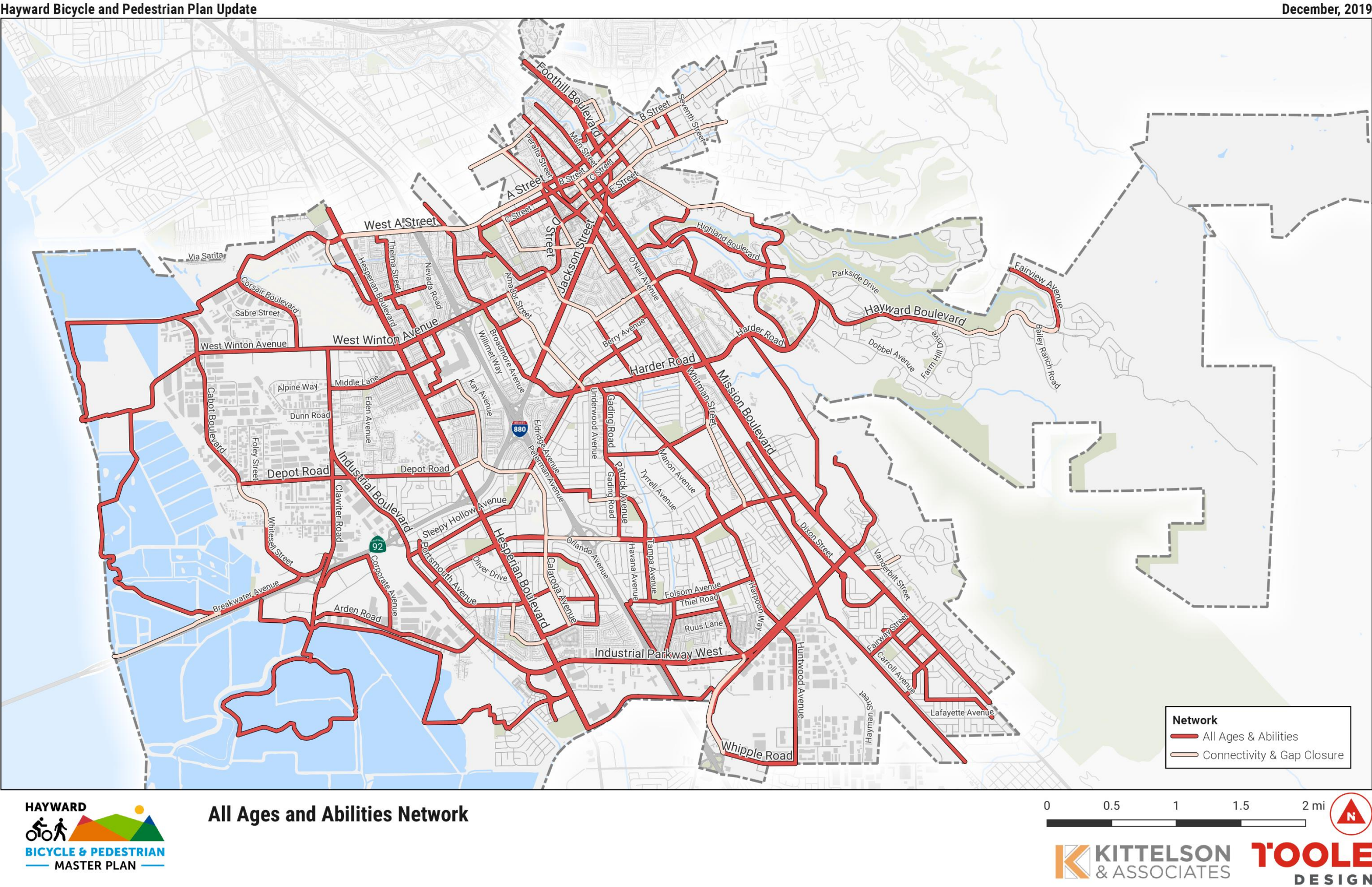
With the implementation of this network, every resident in Hayward will have access to low-stress, comfortable bikeways that connect to major destinations throughout the city. These facilities are also supported by connectivity and gap closure recommendations that may not meet the AASHTO criteria for all ages and abilities bikeways, but are important for other safety or local access purposes.

Figure 38. AASHTO Bikeway Facility Selection Chart



Source: AASHTO *Guide for the Development of Bicycle Facilities 4<sup>th</sup> Edition*

Figure 39. All Ages and Abilities Network



# PROJECT RECOMMENDATIONS

## BICYCLE NETWORK RECOMMENDATIONS

The bicycle network (see Figure 40) illustrates the existing and proposed facility recommendations. Once the network was developed, the project team used the prioritization methodology to rank each project corridor. The full project list can be found in Appendix B. In order to create a complete network, the City of Hayward will focus on the following implementation themes:

### Separated Bikeways

The network is fundamentally based on a select number of separated bikeways that create complete east-west or north-south connections across the city, such as Mission Boulevard, West Winton Avenue, A Street, Hesperian Boulevard, Tennyson Road, and Industrial Parkway. Separated bikeways can be implemented as one-way facilities on both sides of the street or as two-way facilities on one side of the street. These facilities are the most commonly preferred by Interested but Concerned cyclists on higher vehicle volume streets and/or where vehicle speeds are higher. With limited consistent access on local streets over major barriers, like Interstate 880 and railways, separated bikeways on major arterial streets provide the best opportunity for increasing east-west access.



*Example of separated bikeway in downtown Oakland, CA.*

*Source: Kittelson & Associates, Inc.*



*Class I Path at Industrial Parkway and Pacific Street in Hayward, CA*

*Source: Kittelson & Associates, Inc.*

### Trail Network Expansion

Hayward is fortunate to have a unique set of trail opportunities that can be connected across most of the city. For example, the San Francisco Bay Trail can be enhanced through improved connections from local neighborhoods. The Eden Greenway can be redeveloped for better bikeway travel at crossings and include a potential crossing over Interstate 880 to provide an off-street connection between east and west Hayward. The regional effort to develop the East Bay Greenway adjacent to the BART line in the Union Pacific Railroad corridor could provide connections from Fremont to downtown Oakland. Other regional efforts, like the San Lorenzo Creek Trail led by Alameda County, could tie into many of Hayward's existing and proposed on-street facilities.

### Neighborhood Bikeways

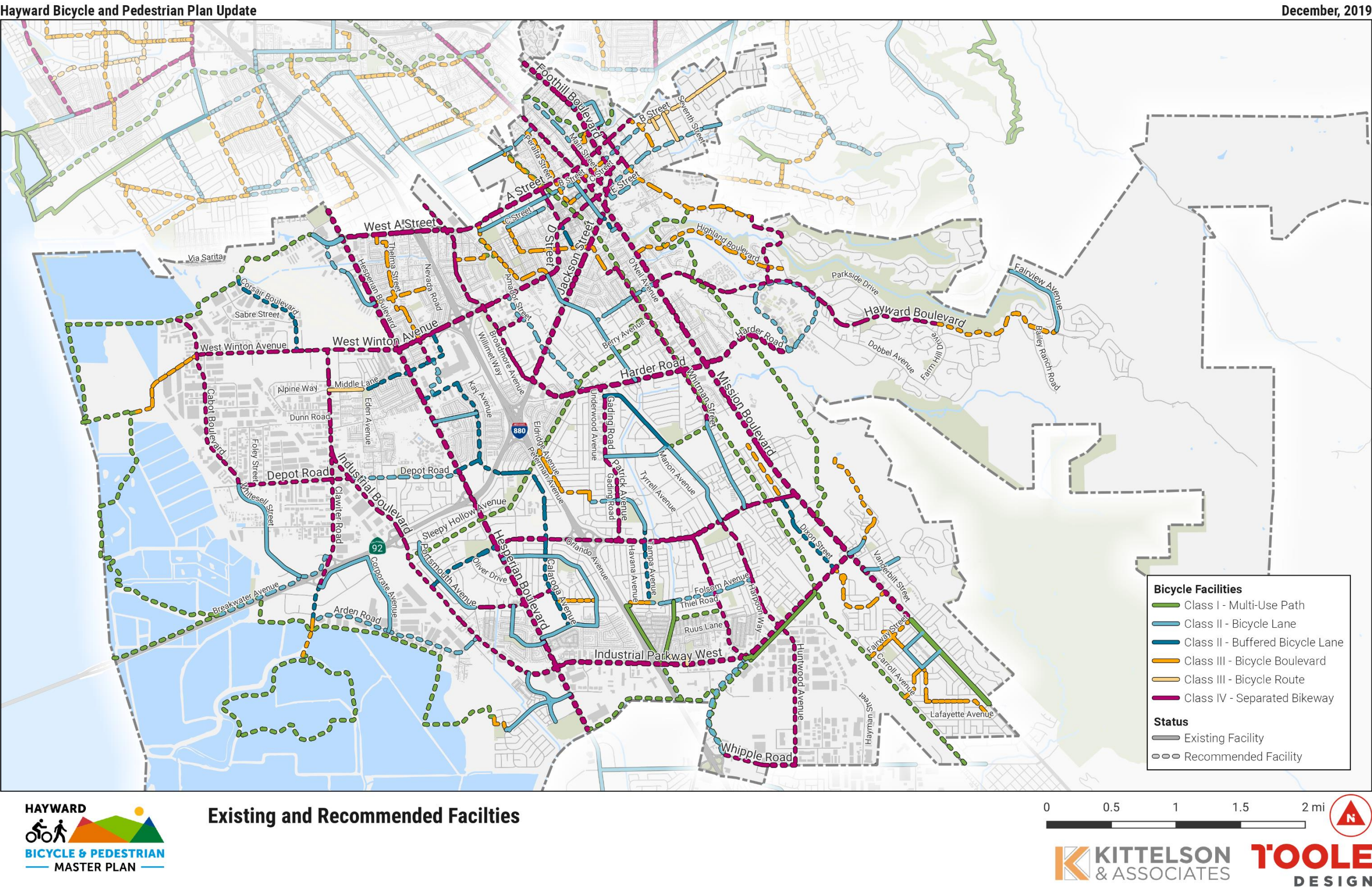
Connections to neighborhoods can be created by constructing bike boulevards, bike lanes, and buffered lanes on low vehicle volume and low speed streets. These locations often need less physical separation for bicyclists to feel comfortable navigating within neighborhoods. However, crossings of major arterials will require special attention to make connections more comfortable between neighborhoods. This is possible by continuing bike lanes through intersections, using proper detection at signalized crossings, installing Pedestrian Hybrid Beacons (PHBs) or Rectangular Rapid Flashing Beacons (RRFBs) to enhance unsignalized crossings, and constructing protected intersections that are designed for major intersecting bikeways. See Appendix D for more information on these treatments.



*Example of a neighborhood bikeway on Fairway Street in Hayward, CA*

*Source: Kittelson & Associates, Inc.*

Figure 40. Existing and Recommended Bikeway Facilities



## PEDESTRIAN NETWORK RECOMMENDATIONS

The pedestrian network was developed in tandem with the recommended bicycle network using a complete streets approach. A suite of pedestrian treatments is recommended to be implemented along project corridors that constitute the recommended all ages and abilities bicycle network. In this way, when near-term or longer-term improvements are being identified, bicycle and pedestrian improvements can be planned for, designed and implemented together.

Along the all ages and abilities network where improvements are proposed, pedestrian corridor recommendations were developed based on street typology for local/neighborhood, collector, and arterial streets. The recommendations vary depending on the street type but all include smaller intersection improvements such as additional ADA curb ramp improvements and high-visibility crosswalk treatments. A high-cost and low-cost improvement assumption was generated for each street type to account for varying levels of possible investments where the same order of magnitude of improvements may not be required or where pedestrian improvements were not identified during the project development and public engagement phase of the project.

Table 16 provides the recommended treatments to be implemented along project corridors, organized by roadway type and the scenario (high cost or low cost) for which they are recommended. For example, ADA curb ramps are recommended in the low-cost and high-cost scenarios for all roadway types, but signal improvements are only recommended along collector roads in the high-cost scenario (and in both scenarios for arterial roads). The approach reflects that more infrastructure is needed to support a safe and comfortable walking environment along higher-volume and higher-speed roadways.

**Table 16: Pedestrian Network Recommendations**

Recommended Improvements	Roadway Functional Class		
	Local/Neighborhood Street	Collector Street	Arterial Street
ADA Curb Ramps	Low Cost and High Cost Scenario	Low Cost and High Cost Scenario	Low Cost and High Cost Scenario
High-Visibility Crosswalks			
Midblock RRFBs	High Cost Scenario		
Curb extensions			
Signal Improvements	-	High Cost Scenario	
Midblock Pedestrian Hybrid Beacons	-	-	

Source: Kittelson & Associates, Inc.

The recommended treatments include the following:



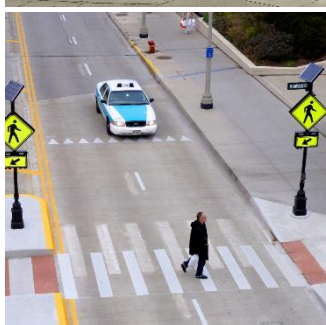
**ADA curb ramps:** ADA-accessible curb ramps provide a transition between the sidewalk and the roadway and make crossings accessible to pedestrians with assistive devices and pedestrians who are blind or have low vision. See more in the infrastructure recommendations section of the Plan and in Appendix D. They are assumed to be installed as directional curb ramps on all intersection corners.

*Image Source: Kittelson & Associates, Inc.*



**High-visibility crosswalks:** High-visibility crosswalks include markings that are parallel to a motor vehicle or bicycle's traveled way (referred to as *continental* markings). They are more visible to approaching road users relative to basic transverse markings. They are assumed to be installed on all marked crosswalks at every intersection on recommended corridors.

*Image Source: Kittelson & Associates, Inc.*



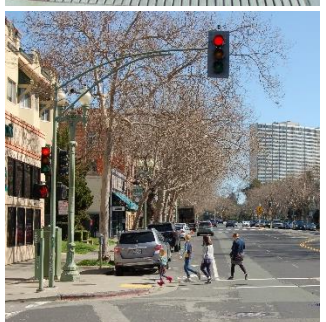
**Midblock rectangular rapid flashing beacons (RRFBs):** RRFBs provide a push-button activated warning light to drivers to promote yielding to help pedestrians cross. Where recommended, they are assumed to be installed midblock with an average frequency of two per mile.

*Image Source: FHWA*



**Curb extensions:** Curb extensions visually and physically narrow the roadway at intersection corners and other crossing locations. Where recommended, they are assumed to be installed at between 20% to 60% of intersections (more frequently along collectors than local roads, and more frequently along arterial than along collectors).

*Image Source: NACTO*



**Signal improvements:** Signal improvements can promote an improved pedestrian environment by allocating more time to crossing, providing leading pedestrian intervals, or altering signal phasing to separate pedestrian and vehicle conflicts in time. Where recommended, signal improvements were assumed to be implemented with an average frequency of approximately three intersections per mile.

*Image Source: Kittelson & Associates, Inc.*



**Midblock pedestrian hybrid beacons (PHBs):** PHBs are push-button activated traffic control devices that provide a red indication requiring drivers to stop. Where they are recommended, PHBs are assumed to be installed with an average frequency of one per mile.

*Image Source: Kittelson & Associates, Inc.*

For more information on these treatments, consult the infrastructure and operations section of the Plan and Appendix D: Engineering and Design Guidance Toolbox. Figure 42 presents the recommended pedestrian network, organized by functional class to designate the recommended suite of improvements at each location. In addition to the recommended network, there are intersections in the City with more frequent and severe crashes relative to the rest of the City's network. These intersections are listed below along with their pedestrian collision history from 2012 to 2016. These intersections should be considered for future pedestrian safety improvements:

- **West Tennyson Road and Huntwood Avenue:** eight pedestrian collisions (including three severe injury collisions)
- **Jackson Street and Silva Avenue / Meek Avenue:** five pedestrian collisions (including one severe injury and one fatal collision)
- **Whipple Road and Dyer Street:** four pedestrian collisions (including two severe injury collisions)
- **Foothill Boulevard and City Center Drive:** two pedestrian collisions (including one fatal and one severe injury collision)

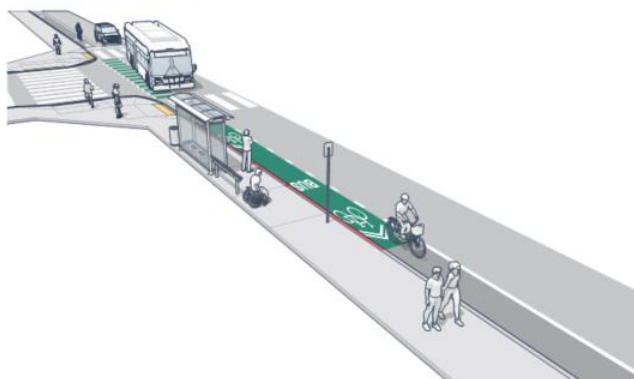
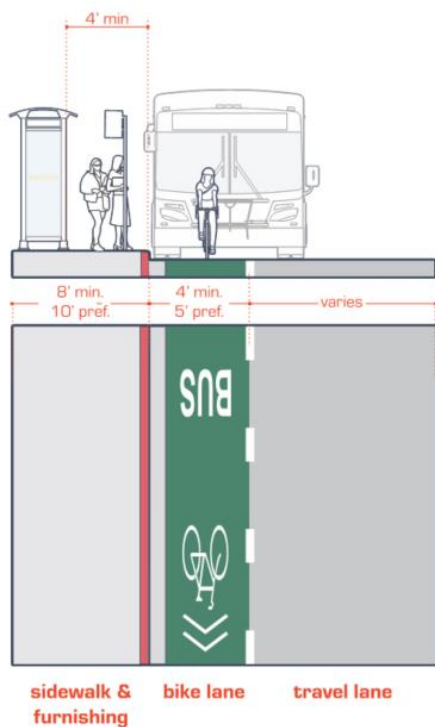
As opportunities arise, the identification of safety projects at these intersections can improve safety outcomes for pedestrians.

## TRANSIT SUPPORTIVE INFRASTRUCTURE

An essential part of complete streets design is infrastructure to support pedestrian connections to transit and bus stop designs that accommodate bikeway facilities. In collaboration with AC Transit, corridors with transit service were identified and sorted into high-, medium-, and low-cost corridors to identify recommended infrastructure. Based on the level of AC Transit priority and the recommended bikeway facility, bus stop typologies were identified from the AC Transit *Multimodal Corridor Design Guide*. Two bus stop typologies were applied to create recommended transit supportive infrastructure, presented in Figure 41. Typology 1 is preferred for Class II Bike Lane applications and low-cost Class IV Separated Bikeway applications where transit may mix with the bikeway at bus stops. Bus stop typology 2 is generally preferred where separate of transit and bicycle facilities is needed on higher frequency transit routes and where curb-separated Class IV facilities are desired. (Note that typology 2 may apply to both Class II and Class IV bike lanes). The improvements associated with these stop locations include a green thermoplastic paint for conflict areas and/or shared lanes, painted red curb, a transit shelter with benches, bike racks, restriping of high-visibility crosswalks, and pavement markings. The typology 2 improvements also include a floating bus boarding island, lean rail, and curb ramps with detectable warning surfaces.

**Figure 41: Bus Stop and Bicycle Facility Typologies Recommended****Typology 1**

Class II Bicycle Facility between the Curb and a General Traffic Lane

**A. Typology 1: Section View****Typology 2**

Class II Bicycle Facility between Curbside Parking Lane and General Traffic Lane

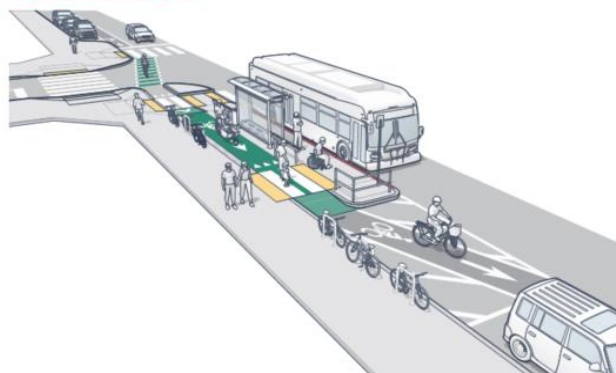
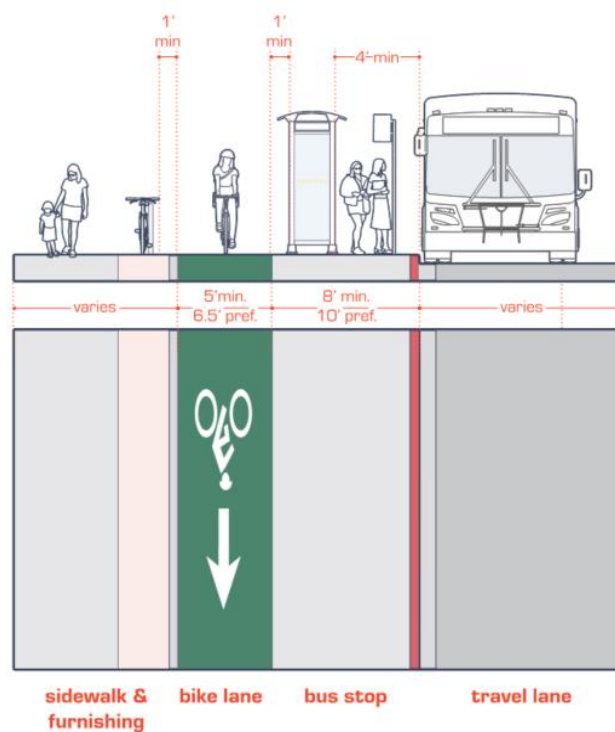
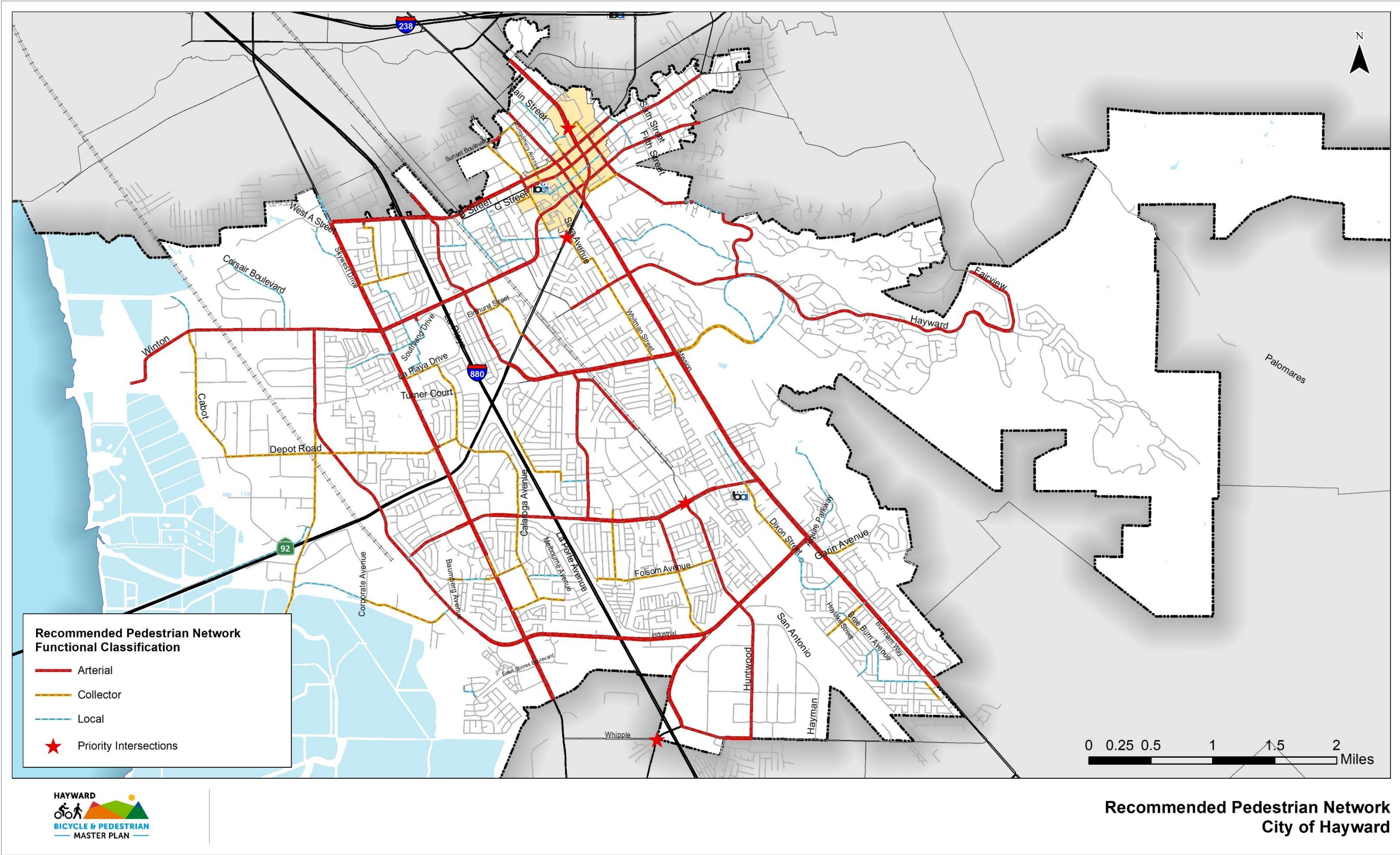
**B. Typology 2: Section View**

Image Source: AC Transit Multimodal Design Guide

Figure 42: Proposed Pedestrian Network

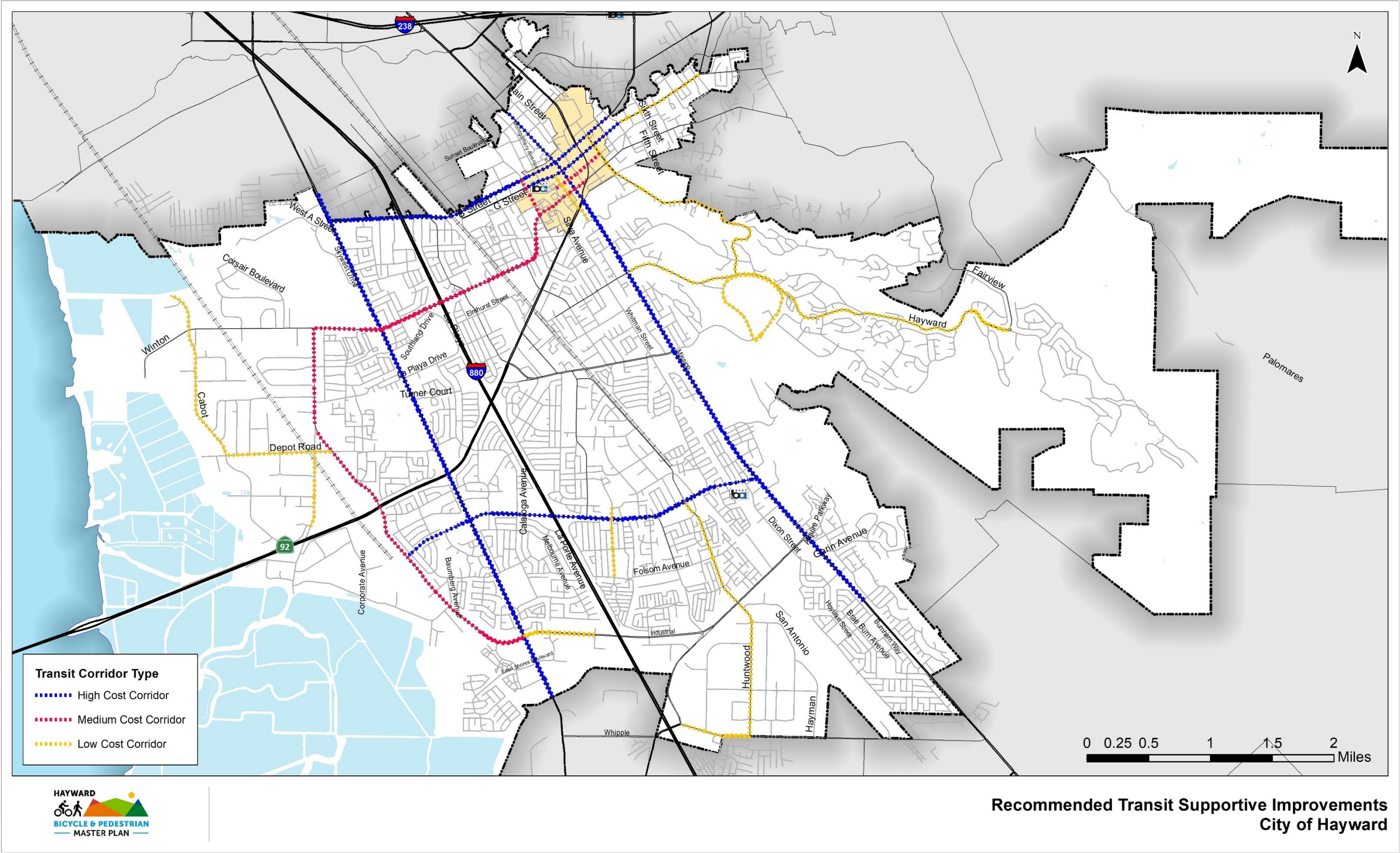
Hayward Bicycle and Pedestrian Plan Update



Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet

Figure 43: Recommended Transit Supportive Improvements

Hayward Bicycle and Pedestrian Plan Update



# 05

## PROGRAM AND POLICY RECOMMENDATIONS



# PROGRAM AND POLICY RECOMMENDATIONS

As part of this Plan, the City has identified policies, programs, and practices to improve conditions for residents and visitors who walk and bike in Hayward. On September 7, 2018, City staff from multiple departments, including Public Works, Environmental Services, and Planning, participated in an interview to assess how the City is implementing existing policies, programs, and practices.

City staff from multiple departments, including Public Works, Environmental Services, and Planning, participated in interviews as part of the recommendation development. The interviews focused on five main categories of recommendations:

- ▶ Infrastructure and Operations
- ▶ Evaluation and Planning
- ▶ Funding
- ▶ Project Implementation
- ▶ Education and Enforcement

Recommendations are presented in more detail after the table.

**Table 17. Summary of Plan Recommendations for Pedestrian-related Policies, Programs, and Practices**

Category	Topic Area	Recommendations
Infrastructure and Operations	Attention to Crossings and Barriers	<ul style="list-style-type: none"> <li>• Coordinate with Caltrans, Hayward Area Recreation District, Alameda County Flood Control, and other agencies to improve bicycle and pedestrian accommodations for bridges and underpasses</li> <li>• Develop controlled crossing design and standards</li> <li>• Accommodate bicycles and pedestrians at freeway interchanges</li> <li>• Coordinate early and often with Union Pacific Railroad to improve accommodations for bicycles and pedestrians at railroad crossings</li> </ul>
	Bike Parking Requirements	<ul style="list-style-type: none"> <li>• Develop bike corral guidance</li> <li>• Develop bike rack implementation program and map</li> <li>• Develop short-/long-term bicycle parking requirements and standards</li> </ul>
	Intersections and Interchanges	<ul style="list-style-type: none"> <li>• Add bike detection with signal modification and upgrades</li> <li>• Complete a citywide intersection study (Complete Streets Strategic Initiative Recommendation)</li> <li>• Develop signal timing standards and ensure consistent application for bicyclists</li> <li>• Develop standards for Leading Pedestrian Interval (LPI) applications</li> <li>• Develop standards for modifying signals for full accessibility</li> </ul>
	Crosswalks and Traffic Control Devices	<ul style="list-style-type: none"> <li>• Design standards and applications for Pedestrian Hybrid Beacons (PHBs) and Rectangular Rapid Flashing Beacons (RRFPs)</li> <li>• Develop a crosswalk installation policy and/or decision matrix including applications for midblock crossings</li> <li>• Inventory traffic control devices citywide</li> </ul>

Category	Topic Area	Recommendations
Infrastructure and Operations Cont.	Design Guidance	<ul style="list-style-type: none"> <li>• Develop ADA Design Guidance and improvement program</li> <li>• Apply principles for the Neighborhood Traffic Calming Program on all projects</li> <li>• Develop and adopt bicycle and pedestrian design standards</li> <li>• Develop landscape architecture and stormwater management design guidance</li> </ul>
	Off-street Multi-Use Paths and Separated Facilities	<ul style="list-style-type: none"> <li>• Develop language for implementing easements and private property paths</li> <li>• Collaborate with East Bay Regional Park District, Hayward Area Recreation District, Alameda County, Alameda CTC, and other adjacent jurisdictions to coordinate maintenance efforts for off-street and Class IV facilities</li> <li>• Require developments in the Hayward Foothills to comply with SD7 Foothill Trails requirements</li> </ul>
Evaluation and Planning	Collision Review and Reporting	<ul style="list-style-type: none"> <li>• Conduct periodic review of bicycle and pedestrian collisions and trends</li> <li>• Coordinate a regular safety audit program of collision locations</li> </ul>
	Bicycle and Pedestrian Volumes	<ul style="list-style-type: none"> <li>• Create a data collection strategy for collecting bicycle and pedestrian volumes citywide</li> </ul>
	Transit Coordination and Planning	<ul style="list-style-type: none"> <li>• Coordinate with AC Transit on ADA improvements near transit stops</li> <li>• Evaluate rapid transit implementation on key corridors in conjunction with AC Transit's planning efforts</li> </ul>
	Development Standards, Site Plan Review, and Traffic Impact Studies	<ul style="list-style-type: none"> <li>• Update street frontage standards and form-based codes to ensure pedestrian amenities are included</li> <li>• Develop an Americans with Disabilities Act review checklist</li> <li>• Require multimodal traffic counts as part of Traffic Impact Assessments</li> <li>• Update impact evaluation criteria for bicyclists and pedestrians including a multimodal level of service standard (Complete Streets Strategic Initiative recommendation)</li> <li>• Develop a façade improvement program and business improvement districts</li> <li>• Promote park once and walk strategies in high-pedestrian activity areas</li> </ul>
Funding	Strategies for Funding	<ul style="list-style-type: none"> <li>• Develop a list of potential grant and alternative funding strategies</li> <li>• Create a multimodal impact fee to fund bicycle and pedestrian improvements (SB 743 and Citywide Multimodal Improvement Study currently underway)</li> <li>• Calculate the VMT reduction potential of bicycle and pedestrian facilities and allow developers to reduce VMT impacts by implementing bicycle and pedestrian projects or including in multimodal impact fee</li> <li>• Add dedicated sidewalk funding to the Capital Improvement Program</li> <li>• Add priority complete streets projects to the Capital Improvement Program (Complete Streets Strategic Initiative recommendation)</li> </ul>
	Staff	<ul style="list-style-type: none"> <li>• Hire a dedicated bicycle and pedestrian staff person</li> </ul>

Category	Topic Area	Recommendations
Project Implementation	Construction Zones	<ul style="list-style-type: none"> <li>Create guidance for accommodating bicyclists and pedestrians in construction zones</li> </ul>
	Coordination with Other City Efforts	<ul style="list-style-type: none"> <li>Coordinate the implementation of on-street bicycle facilities and curb ramp replacement with the pavement repair program</li> <li>Form a Bicycle and Pedestrian Advisory Committee</li> <li>Promote existing City of Hayward public comment mechanisms and strategies</li> </ul>
	Intra- and Inter-Agency Coordination	<ul style="list-style-type: none"> <li>Coordinate and partner with advocacy groups, such as Bike East Bay</li> <li>Coordinate with the fire department on design treatments</li> <li>Partner with health agencies to promote the benefits of walking and biking</li> </ul>
	Rapid and Interim Facilities	<ul style="list-style-type: none"> <li>Develop strategies for rapid network implementation and interim design treatments</li> </ul>
Education and Enforcement	Supportive Amenities and Wayfinding	<ul style="list-style-type: none"> <li>Develop bikeshare and scootershare (micromobility) policy along with a framework for regulating operations</li> <li>Create a sidewalk riding ordinance to detail where it is allowed and an e-bike ordinance</li> <li>Promote a future citywide bike network and amenities map</li> <li>Install bicycle and pedestrian wayfinding</li> <li>Develop a Transportation Demand Management strategy to incorporate bicycle and pedestrian facilities or amenities</li> </ul>
	Safety and Education	<ul style="list-style-type: none"> <li>Coordinate with the Alameda County Safe Routes to School program and encourage all Hayward schools to participate</li> <li>Conduct school safety walking audits and site evaluations for all Hayward schools</li> <li>Conduct speed surveys in school zones and work to reduce speeds to less than or equal to 25 mph</li> <li>Develop a Vision Zero program to address safety education along High Injury Network corridors</li> </ul>
	Enforcement	<ul style="list-style-type: none"> <li>Encourage the Hayward Police Department to have officers attend bicycle safety courses, such as Bike East Bay's Urban Cycling 101, to promote empathy and understanding of cycling conditions</li> <li>Implement a bike ticket diversion program</li> </ul>

In summary, the priority recommendations related to policies, programs, and practices include:

► Infrastructure and Operations

- Accommodating bicycles and pedestrians at freeway interchanges
- Short- and long-term bicycle parking requirements and standards
- Develop standards for LPI applications
- Develop standards for modifying signals for full accessibility
- Design standards and applications for PHBs and RRFBs
- Develop a crosswalk installation policy and/or decision matrix, including applications for midblock crossings
- Develop and adopt bicycle and pedestrian design standards
- Develop language for implementing easements and private property paths
- Collaborate with East Bay Regional Park District, Hayward Area Recreation District, Alameda County, Alameda CTC, and other adjacent jurisdictions to coordinate maintenance efforts for off-street and Class IV facilities

- ▶ Evaluation and Planning
  - Develop an Americans with Disabilities Act review checklist
- ▶ Funding
  - Develop a list of potential grant and alternative funding strategies
  - Hire a dedicated bicycle and pedestrian staff person
- ▶ Project Implementation
  - Create guidance for accommodating bicyclists and pedestrians in construction zones
  - Develop strategies for rapid network implementation and interim design treatments
- ▶ Education and Enforcement
  - Coordinate with the Alameda County Safe Routes to School program and encourage all Hayward schools to participate
  - Implement a bike ticket diversion program

Each of these recommendations is discussed in further detail below in the sections that follow.

## INFRASTRUCTURE AND OPERATIONS

### ACCOMMODATING BICYCLES AND PEDESTRIANS AT INTERCHANGES

Interchanges are complex intersections which require special design considerations to ensure that pedestrians and bicyclists can move through the interchange safely. The following obstacles common to interchanges can create uncomfortable and unsafe environments for pedestrians and bicyclists:

- ▶ Crossings of free-flow motor vehicle movements,
- ▶ Exposure to higher-speed traffic,
- ▶ Weaving movements across a bicyclist's path of travel and other traffic,
- ▶ Designs which require unorthodox travel paths which may result in routing confusion,
- ▶ Multi-stage crossings or transitions which can increase travel time or delay,
- ▶ Long crossings which increase exposure, potentially trapping bicyclists where signal timing cannot accommodate bicyclists traveling on the roadway,
- ▶ Bicycle facilities with constrained widths adjacent to higher-speed traffic, and
- ▶ Requiring bicyclists to operate with pedestrians in crosswalks and other shared facilities.

Where interchanges must accommodate high volumes of vehicles and design features allow motorists' operating speeds to exceed 25 to 30 mph, only more experienced bicyclists may feel able or willing to navigate them in shared lanes or bicycle lanes. Crossings of uncontrolled high-speed ramps, merging, and weaving areas can present safety problems for people biking, resulting in people avoiding the intersection. In locations where alternative routes are not available or practical, these locations become major barriers that can discourage biking and walking.

A variety of crossing treatments can be used to enhance the comfort and safety of pedestrians and bicyclists at interchanges. Traffic signals with bicycle phases or timing to accommodate bicyclists, adjustments to signal phasing, pedestrian hybrid beacons, rectangular rapid flashing beacons, raised crosswalks, median refuge islands, advance yield/stop lines, and other pavement markings, such as extensions of bike lanes through intersections, can all be used at interchanges to improve crossings for pedestrians and bicyclists.



*Example of an interchange without bicycle infrastructure at Tennyson road and Interstate 880.*

*Source: Kittelson & Associates, Inc.*

## Key Design Principles:

- ▶ Minimize conflicts with motor vehicles to ensure pedestrians and bicyclists are safe. This includes provision of safe, protected queuing areas.
- ▶ Minimize delay to encourage traffic control compliance
- ▶ Provide clearly designated crossing areas to encourage predictable movements. Use multistage crossings where necessary.

## Recommendations

- ▶ Incorporate design guidance for pedestrian and bicycle accommodations as listed above at interchanges as part of the Bicycle and Pedestrian Master Plan Design Guide. Interchange crossings along Interstate 880 were cited as major barriers by the public during the community engagement phase of the Bicycle and Pedestrian Master Plan development. The Design Guide includes elements that can be included to improve safety at interchanges. Facility recommendations should include how to accommodate adequate low-stress bicycle facilities and ensure pedestrian crossing ramps are visible to on-coming drivers.
- ▶ Coordinate directly with Caltrans to implement and Alameda CTC to fund or manage interchange projects. This includes providing comments and review of plans and projects.

## Best Practice Examples and Resources

- ▶ Institute of Transportation Engineers, Recommended Design Guidelines to Accommodate Pedestrians and Bicycles at Interchanges, 2014
- ▶ Transportation Research Board, National Cooperative Highway Research Program (NCHRP) 07-25: *Guide for Pedestrian and Bicycle Safety at Alternative Intersections and Interchanges*, forthcoming.

## BICYCLE PARKING REQUIREMENTS

Bicycle parking enhances the usefulness of bicycle networks by providing locations for the secure storage of bicycles during a trip. It is an easy and low-cost way to enhance a bike network. Bicycle parking requires far less space than automobile parking-- in fact, 10 bicycles can typically park in the area needed for a single car.

Bicycle parking consists of a rack that supports the bicycle upright and provides a secure place for locking. Bicycle racks should be permanently affixed to the ground surface. Movable bicycle racks are only appropriate for temporary use, such as at community events or valet bike parking. Bicycle racks should provide two points of support for bicycles to prevent locked bicycles from falling over.

Bicycle rack footings can be mounted in soil, concrete, or asphalt, or mounted to stable surfaces using anchors. There are two primary categories of bike parking: short-term and long-term parking. Each has its own unique purpose and design considerations.

### Short-term Bike Parking

In general, short-term bike parking should be convenient and easy to use. It should be located as close to the destinations it is serving as possible. Short-term parking is typically provided in the street or in the furnishing zone, either as a series of single racks or corrals.

Short-term bike parking is designed to meet the needs of bicyclists making short visits (a few hours at most); therefore, it should be easy to see and self-explanatory. The use of objects (e.g., parking meters, fences, sign posts) as bicycle parking indicates a need for designated bike parking.

### Long-term Bike Parking

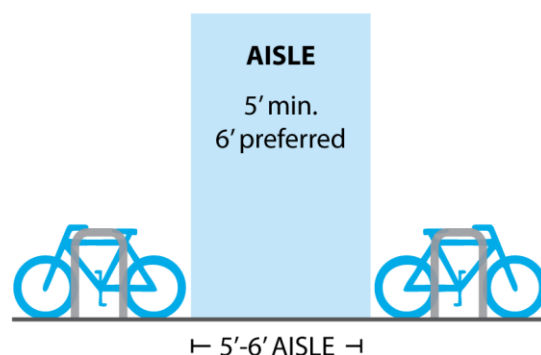
The most important characteristics of long-term bike parking are that it is secure and shelters bikes from the elements. Long-term parking will typically be used by bicyclists for all-day or overnight parking. Long-term bike parking is typically built for residents, employees, or transit users. There are variety of ways to provide long-term bike parking, including space in a secure and enclosed parking garage, bike lockers, or in a room with secured access.

### Recommendations

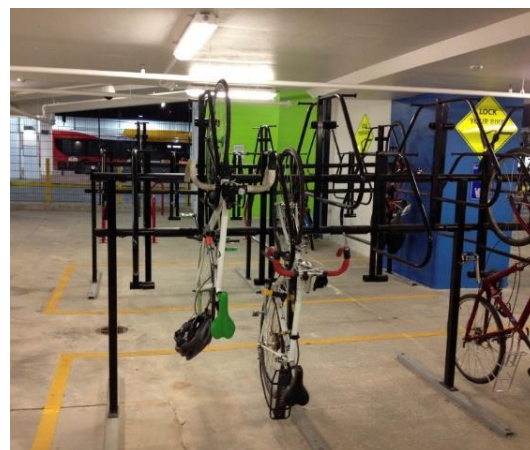
- ▶ Adopt a bicycle parking policy and implementation plan for short-term and long-term bicycle parking options. The policy should address both private development and public right-of-way:
- ▶ Considerations for Private Developments: The policy should require bicycle parking with new development and in certain locations throughout the city.
- ▶ Considerations for Public Right-of-Way: As part of the implementation plan, new locations should be located throughout the city, and a corresponding map for existing bicycle parking options should be developed. Dedicated funding for bicycle parking should be added to the Capital Improvement Program to implement a certain number of bike racks and corrals per year.



*Example of a bike corral in a parking space.  
Source: Kittelson & Associates, Inc.*



*Preferred double loaded bike rack spacing.  
Single tier/ Double loaded  
Source: Kittelson & Associates, Inc.*



*Example of bike parking in an enclosed parking garage  
Source: Kittelson & Associates, Inc.*

## Best Practice Examples and Resources

- ▶ Association of Pedestrian and Bicycle Professionals. Essentials of Bike Parking. 2015.

## LEADING PEDESTRIAN INTERVAL APPLICATION GUIDANCE

Leading pedestrian intervals (LPIs) give pedestrians a head start when crossing at a signalized intersection. LPIs can be easily programmed into existing signals to give pedestrians the WALK signal a minimum of three to seven seconds before motorists are allowed to proceed through the intersection. This extra time provides pedestrians with an opportunity to establish their presence in the crosswalk before motorists start turning and provides additional crossing time for those who need it. This head start can increase the percentage of motorists who yield the right-of-way to pedestrians and can minimize conflicts between pedestrians crossing a roadway and turning vehicles. LPIs may be less effective when used at intersections without right turn on red light restrictions.

In general, LPIs can be implemented at signalized intersections with medium to high pedestrian and turning vehicle volumes. Locations with high volumes of elderly populations or people with mobility impairments, high collision histories, and school crossings may also be appropriate locations for LPIs. Additional special circumstances include locations with low pedestrian demand where signals are semi- or fully-actuated and where short minimum green times result in motorists expecting a limited amount of time to enter a main road, thus resulting in conflicts with pedestrians when they are present.



*Example LPI with WALK signal during red signal phase.  
Source: Kittelson & Associates, Inc*

## Recommendations

- ▶ **Develop policy and guidance for implementing LPIs at signalized intersections.** The City does not currently have a consistent methodology for evaluating the application of LPI at signalized crossings throughout the city. This could also be included in a crosswalk policy for how to assess signalized intersection crossings enhancements. The City should then evaluate and inventory existing signalized intersections for installing LPIs, especially in the downtown area.

## Best Practice Examples and Resources

- ▶ NACTO, Urban Streets Design Guide.
- ▶ Transportation Research Board, NCHRP 15-63: Guidance to Improve Pedestrian and Bicycle Safety at Intersections (Under Development)

## GUIDANCE FOR MODIFYING SIGNALS FOR FULL ACCESSIBILITY

Accessible signals and intersections include accessible pedestrian signals and compliant curb ramps. Accessible pedestrian signals (APS) are devices that communicate information about pedestrian timing (e.g., WALK and DON'T WALK intervals) in nonvisual formats such as audible tones, verbal message, and/or vibrating or tactile surfaces. They help people with visual disabilities understand where pedestrian push buttons are located, where it is safe to cross the street, and when it is safe to cross the street. Section 504 of the Rehabilitation Act requires newly constructed and reconstructed public facilities to be accessible to all members of the public. APS should be installed wherever pedestrian signals are installed. Standards for APS signals and accessible curb ramps are defined by CalTrans and dictate where push buttons should be placed, including placement in relation to curb ramps and their maximum height above the sidewalk surface. Accessible curb ramps must follow specific width and slope requirements and have detectable warning strips.

### Recommendations

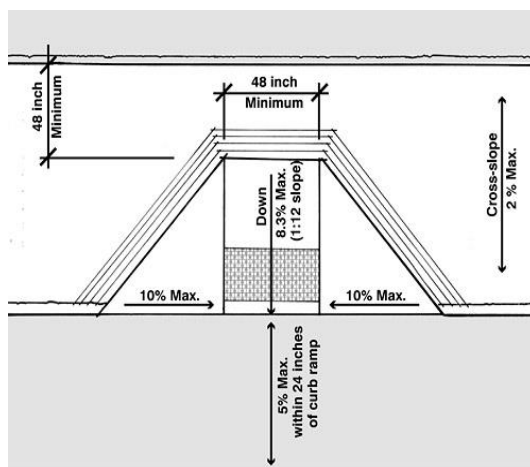
- ▶ Develop standards for modifying signals for full accessibility. Title II of the Americans with Disabilities Act (ADA) requires that state and local governments ensure that people with disabilities have access to pedestrian routes in the public right-of-way. This includes signalized street crossings. The City currently does not have standards to ensure that new and reconstructed intersections with pedestrian signals are modified for full accessibility. The City also does not have a formal process for modifying existing signals not slated for reconstruction for full accessibility. The City may wish to use the intersection prioritization tool developed by the National Cooperative Highway Research Program, in Appendix D of Accessible Pedestrian Signals: A Guide to Best Practices (2010) to help determine which intersections should be prioritized for accessibility modifications.

### Best Practice Examples and Resources

- ▶ California Department of Transportation. Permanent Pedestrian Facilities ADA Compliance Handbook. [http://www.dot.ca.gov/construction/docs/Permanent\\_Pedestrian\\_Facilities\\_ADA\\_Compliance\\_Handbook.pdf](http://www.dot.ca.gov/construction/docs/Permanent_Pedestrian_Facilities_ADA_Compliance_Handbook.pdf)
- ▶ Washington State Department of Transportation. Field Guide for Accessible Public Rights of Way. [http://www.wsdot.wa.gov/publications/fulltext/Roadside/ADA\\_Field\\_Guide.pdf](http://www.wsdot.wa.gov/publications/fulltext/Roadside/ADA_Field_Guide.pdf)
- ▶ National Academies of Sciences, Engineering, and Medicine. Accessible Pedestrian Signals: A Guide to Best Practices. <http://www.trb.org/Publications/Blurbs/164696.aspx>

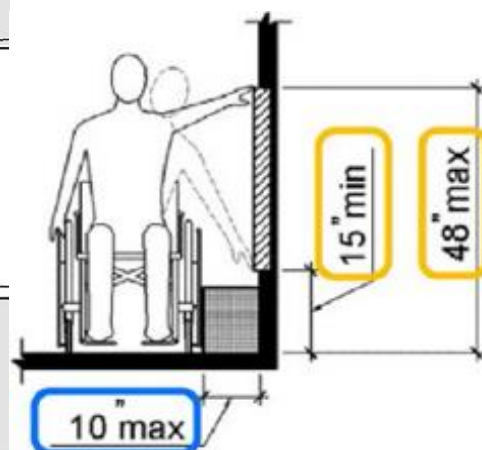


*Accessible pedestrian signal push button with informational sign.*  
Source: Montgomery County Department of General Services



**Figure 44. Curb Ramp Design Specifications.**

Source: SF Better Streets



**Figure 45. Pedestrian Push Button Height Specifications.**

Source: Caltrans

## DESIGN STANDARDS AND APPLICATIONS FOR PEDESTRIAN HYBRID BEACONS (PHBS) AND RECTANGULAR RAPID FLASHING BEACONS (RRFB)

At some uncontrolled crossings, particularly those with three or more lanes, it can be difficult to get drivers to yield to pedestrians and bicyclists attempting to cross the street. Vehicle speeds and poor pedestrian/bicyclist visibility combine to create conditions in which very few drivers are compelled to yield. Pedestrian- or bicyclist-activated beacons, including the Pedestrian Hybrid Beacon (PHB) and Rectangular Rapid Flashing Beacon (RRFB), are a type of hybrid signal intended to allow pedestrians and bicyclists to stop traffic to cross high-volume arterial streets. RRFBs have been known to increase the rate of drivers yielding to pedestrians and bicyclists, while PHBs require drivers to come to a complete stop like at a traditional signal. These types of signals may be used when a full traffic signal may not be appropriate or warranted, per the California Manual on Uniform Traffic Control Devices (CA-MUTCD).



*Pedestrian hybrid beacons provide better safety and comfort for pedestrians crossing, especially at high-volume and high-speed roadways*  
Source: Kittelson & Associates, Inc

While these types of devices are intended for pedestrians, they can be used for bicyclists as well, either by directing bicyclists to use the devices with signs or outfitting the signals with bicycle detection and bicycle signal heads. The provision of bicycle signal heads would require permission to experiment from the Federal Highway Administration (FHWA).

See Appendix D for more detail.

### Design Considerations:

- ▶ RRFBs are considerably less expensive to install than mast arm-mounted signals, such as PHBs. They can also be installed with solar power panels to eliminate the need for an external power source.
- ▶ RRFB and PHBs should be limited to locations with critical safety concerns and should not be installed in locations with sight distance constraints that limit the driver's ability to view pedestrians on the approach to the crosswalk.
- ▶ RRFBs and PHBs should be used in conjunction with advance stop bars and signs and high-visibility crosswalk markings.
- ▶ RRFBs and PHBs are usually implemented at high-volume pedestrian crossings, but may also be considered for priority bicycle route crossings or locations where bike facilities cross roads at mid-block locations.
- ▶ PHBs are typically installed on multilane roadways in urban and suburban environments with posted speeds of 25 to 40 mph and low to medium vehicle volumes.

### Recommendations

- ▶ **Adopt design standards and application guidance for traffic control devices such as PHBs and RRFBs.** As part of the Bicycle and Pedestrian Master Plan Design Guide, include and adopt standards for PHB and RRFB applications. The standards for applications can also be included in a custom crosswalk policy and decision matrix tool.

### Best Practice Examples and Resources

- ▶ Transportation Research Board, NCHRP 15-63: Guidance to Improve Pedestrian and Bicycle Safety at Intersections (Under Development)

## CROSSWALK INSTALLATION, REMOVAL, AND ENHANCEMENT POLICIES

Pedestrian crossings are an important part of the overall pedestrian network. They are a natural point of conflict with motor vehicles, and a high percentage of pedestrian collisions occur at intersection or midblock crossings. Furthermore, lack of appropriate crossings can deter some people from walking due to safety concerns or inconvenience.

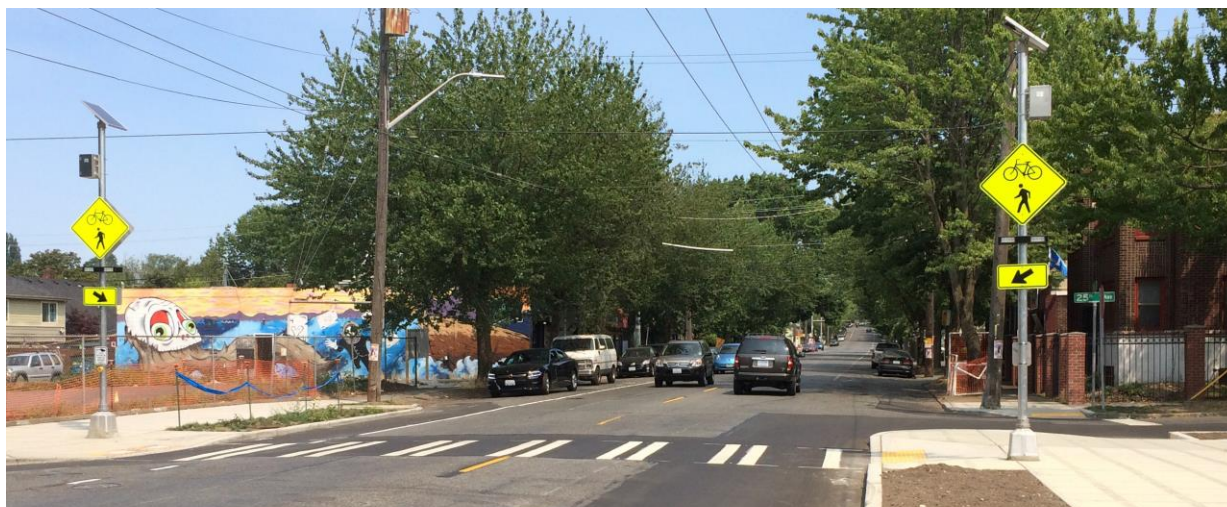
Provision of safe and comfortable crossings is especially important on multilane roads with moderate to high traffic volume and speeds. In such contexts, the needs of pedestrians are sometimes overlooked relative to motor vehicle flow. Establishing safe crossings on multilane streets results in a safer transportation system that also supports goals of pedestrian access and connectivity. The City does not have a formal crosswalk policy to determine where crosswalks should be marked or what crosswalk enhancement treatments should be applied

### Recommendations

- ▶ **Develop a pedestrian crosswalk policy and enhancement guidelines.** Guidelines that establish criteria for implementation (or removal) of crosswalks would provide a transparent and predictable process for where crosswalks can and should be installed, as well as the appropriate treatments for different street contexts. A significant body of research exists to support the development of criteria (see Resources below). The policy should also include guidance on how frequently spaced marked crossings, midblock crossings, or enhanced unsignalized crossings for different street typologies should be installed. A methodology for how to evaluate signalized crossing enhancements should also be included to identify applicability for treatments like RRFBs, PHBs, and LPI. See Appendix D for more details.

### Best Practice Examples and Resources

- ▶ City of Portland. Crosswalk Guidelines. <https://www.portlandoregon.gov/transportation/article/594882> (accessed April 5, 2019)
- ▶ City of Sacramento. Pedestrian Crossing Guidelines. 2014. <https://www.cityofsacramento.org/-/media/Corporate/Files/Public-Works/Publications/Transportation/Bicycle-Pedestrian/Ped-Safety.pdf?la=en>
- ▶ City of Oakland Pedestrian Master Plan, "Oakland Walks!" Crosswalk Policy and Selection Matrix (Appendix A2) <https://www.oaklandca.gov/resources/pedestrian-plan-update>
- ▶ FHWA. Safety Effects of Marked versus Unmarked Crosswalks: Executive Summary and Recommended Guidelines. 2002. <https://www.fhwa.dot.gov/publications/research/safety/04100/04100.pdf>
- ▶ FHWA. Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, 2017. [https://www.fhwa.dot.gov/innovation/everydaycounts/edc\\_4/guide\\_to\\_improve\\_uncontrolled\\_crossings.pdf](https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/guide_to_improve_uncontrolled_crossings.pdf)
- ▶ NCHRP Report 562: Improving Pedestrian Safety at Unsignalized Crossings. 2006. <https://nacto.org/wp-content/uploads/2010/08/NCHRP-562-Improving-Pedestrian-Safety-at-Unsignalized-Crossings.pdf>
- ▶ UC Berkeley Traffic Safety Center. Driver/Pedestrian Understanding and Behavior at Marked and Unmarked Crosswalks. 2007. <http://repositories.cdlib.org/its/tsc/UCB-TSC-RR-2007-4>



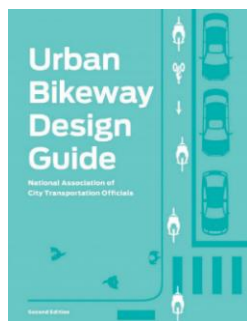
*Rectangular rapid flashing beacon at pedestrian and bicycle crossing in Seattle, WA*  
Source: Kittelson & Associates, Inc.

## DEVELOP AND ADOPT BICYCLE AND PEDESTRIAN DESIGN STANDARDS INCORPORATING NATIONAL BEST PRACTICE GUIDES

As part of the Bicycle and Pedestrian Master Plan, a Bicycle and Pedestrian Engineering and Design Guide was developed and should be adopted as part of the final Plan. It is included in Appendix D. The Design Guide includes recommendations from national best practice documents and customizes design standards to meet the needs of Hayward facilities. The Design Guide should be consulted for implementing any bicycle and pedestrian facilities in Hayward. Best practice design guides developed by outside sources should continually be referenced for updated information as newer versions are released and used in conjunction with the Hayward Bicycle and Pedestrian Design Guide.

### Bikeway Design Best Practice Resources

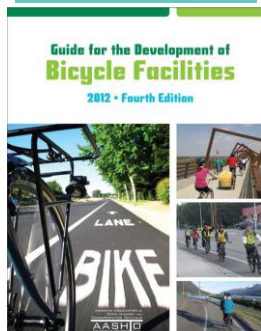
The following manuals provide detailed information on bicycle facility and roadway design and should be referenced early in the design process.



#### Urban Bikeway Design Guide

**National Association of City Transportation Officials (NACTO) | 2014**

NACTO is comprised of the transportation departments of many major and mid-sized US cities. This is an alternative to other available design guides from NACTO and contains more guidance on innovative bikeway designs than any other source. Guidelines found in the *Urban Bikeway Design Guide* sometimes provide additional bikeway design options than those found in the AASHTO guide (described below), although they are mostly in agreement. It may be viewed or downloaded for free at: <http://nacto.org>.

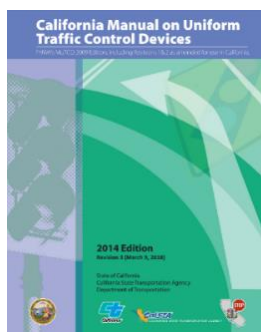


#### Guide for the Development of Bicycle Facilities

**AASHTO | 2012**

AASHTO is a nonprofit, nonpartisan body representing state transportation departments. AASHTO's *Guide for the Development of Bicycle Facilities* is a widely used bikeway planning and design tool. This guidebook was last published in 2012. It does not contain guidance on some bicycle facility types and treatments that are widely in use by transportation agencies such as protected bike lanes. A revision that will include the latest in bicycle facility design and contextual guidance is in process and anticipated to be published in 2019.

The 2012 version is available for purchase at: <http://transportation.org>.

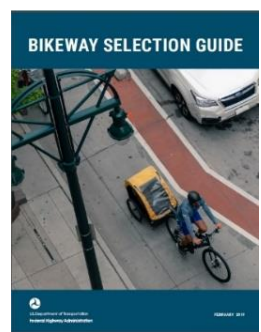


#### California Manual on Uniform Traffic Control Devices

**California Department of Transportation | 2018**

The CA-MUTCD defines the standards used by road managers in California to install and maintain traffic control devices on all public streets, highways, and bikeways. The CA-MUTCD was last published by the California Department of Transportation in 2018. It includes the 2014 edition with four rounds of revisions. Its main contributions to bikeway design are provision of signage and striping standards.

The CA-MUTCD is available for free download at: <https://dot.ca.gov/programs/traffic-operations/camutcd>

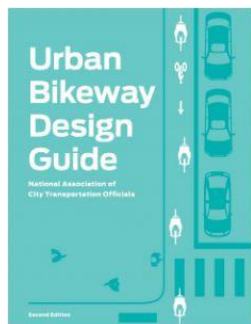


#### Bikeway Selection Guide

**FHWA | 2019**

The *Bikeway Selection Guide* provides guidance for selecting bicycle facilities based on existing roadway context and intended design users. It provides step-by-step information for planners and engineers seeking to implement the appropriate bikeway for a specific context. The *Bikeway Selection Guide* is available for free download at:

[https://safety.fhwa.dot.gov/ped\\_bike/tools\\_solve/docs/fhwasa18077.pdf](https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf)



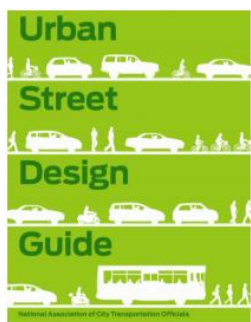
## Urban Bikeway Design Guide

National Association of City Transportation Officials (NACTO) | 2014

NACTO is comprised of the transportation departments of many major and mid-sized US cities. This is an alternative to other available design guides from NACTO and contains more guidance on innovative bikeway designs than any other source. Guidelines found in the *Urban Bikeway Design Guide* sometimes provide additional bikeway design options than those found in the AASHTO guide (described below), although they are mostly in agreement. It may be viewed or downloaded for free at: <http://nacto.org>.

## Pedestrian Design Best Practice Resources

The following manuals provide detailed information on pedestrian, transit access, and amenities/pedestrian zone design considerations and should be referenced early in the design process:



## Urban Street Design Guide

NACTO | 2013

NACTO is comprised of the transportation departments of many major and mid-sized US cities. NACTO members collaborated to create a shared best practice called the *Urban Street Design Guide*, first published in 2011. The guide provides a blueprint for designing 21st century streets, and unveils the toolbox and the tactics Cities use to make streets safer, more livable, and more economically vibrant. The guide includes many pedestrian-focused elements, such as interim design strategies and intersection design controls.

It may be viewed or downloaded for free at: <http://nacto.org>.



## Transit Street Design Guide

NACTO | 2016

The *Transit Street Design Guide* provides design guidance for the development of transit facilities on city streets, and for the design and engineering of city streets to prioritize transit, improve transit service quality, and support other goals related to transit. However, the guide does provide elements for considering pedestrian access to transit facilities and design considerations for transit stops which are directly related to the pedestrian realm.

It may be viewed or downloaded for free at: <http://nacto.org>.

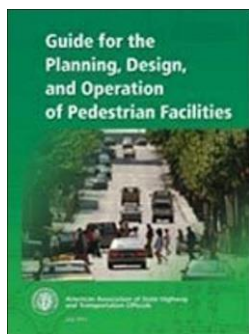


## Urban Street Stormwater Guide

NACTO | 2016

The *Urban Street Stormwater Guide* illustrates a vision of how cities can utilize one of their best assets—streets—to address resiliency and climate change while creating public spaces that are truly public and nurturing streets that deliver social and economic value, and while protecting resources and reconnecting natural ecological processes. The *Urban Street Stormwater Guide* provides Cities with national best practices for sustainable stormwater management in the public right-of-way, including core principles about the purpose of streets, strategies for building inter-departmental partnerships around sustainable infrastructure, technical design details for siting and building bioretention facilities, and a visual language for communicating the benefits of such projects.

It may be viewed or downloaded for free at: <http://nacto.org>.



## Guide for the Planning, Design, and Operation of Pedestrian Facilities

AASHTO | 2004

The purpose of this guide is to provide guidance on the planning, design, and operation of pedestrian facilities along streets and highways. Specifically, the guide focuses on identifying effective measures for accommodating pedestrians on public rights-of-way. Appropriate methods for accommodating pedestrians, which vary among roadway and facility types, are described in this guide. The first major update to the guide should be released in Fall 2019.

It may be viewed or downloaded for free at:

<https://store.transportation.org/Item/CollectionDetail?ID=131>

## Recommendations

- ▶ Adopt the Hayward Bicycle and Pedestrian Engineering and Design Guide as part of the final Bicycle and Pedestrian Master Plan. By adopting specific bicycle and pedestrian design guidance, the City will have standards to refer to when communicating required elements of projects with developers and stakeholders, and have a treatment toolbox to use when communicating with the public. Additionally, the City should incorporate best practice design guidance from newer versions as they are released. Active transportation design guidance is constantly evolving and improving. Almost every year, new detailed guidance is published to help Cities improve the walking and biking environment. This guidance is often published by CalTrans, FHWA, AASHTO, or NACTO. The City should stay up-to-date on the latest guidance and consider processes for integrating new guidance into its standards as the information becomes available.

## Best Practice Examples and Resources

- ▶ AC Transit Multimodal Corridor Design Guidelines, 2019. <http://www.actransit.org/ac-transit-multimodal-corridor-design-guidelines/>
- ▶ City of Fort Collins. Streetscape Standards. 2013. <http://www.fcgov.com/planning/pdf/streetscape-doc.pdf?1363368935>
- ▶ City of Seattle, [Streets Illustrated, Street Type Standards](#) (accessed June 5, 2018).
- ▶ City of San Diego Street Design Manual, March 2017. [https://www.sandiego.gov/sites/default/files/street\\_design\\_manual\\_march\\_2017-final.pdf](https://www.sandiego.gov/sites/default/files/street_design_manual_march_2017-final.pdf)
- ▶ NACTO Urban Street Design Guide. <http://nacto.org/publication/urban-street-design-guide/>
- ▶ CA MUTCD, Revision 4. 2014. <http://www.dot.ca.gov/trafficops/camutcd/>
- ▶ FHWA. [Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts](#), 2016.
- ▶ FHWA Safe Transportation for Every Pedestrian (STEP), 2018. [https://www.fhwa.dot.gov/innovation/everydaycounts/edc\\_4/step.cfm](https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/step.cfm)
- ▶ FHWA Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE). <http://www.pedbikesafe.org/pedsafe/>
- ▶ Crime Prevention Through Environmental Design (CPTED). <http://www.cpted.net/>
- ▶ NACTO Blueprint for Autonomous Urbanism. 2017. [https://nacto.org/wp-content/uploads/2017/11/BAU\\_Mod1\\_raster-sm.pdf](https://nacto.org/wp-content/uploads/2017/11/BAU_Mod1_raster-sm.pdf)

## EASEMENTS AND PRIVATE PROPERTY PATHS

Trails provide a low-stress, off-street facility for people who walk and bike. Trails in Hayward consist of dirt, unpaved facilities (such as those in the Hayward hills, like the Hayward Plunge Trail) and paved, Class I Multi-use Paths (such as the trail parallel to Industrial Parkway). While the Plan will include specific Class I Multi-use Path design guidance and a detailed map of where proposed trail recommendations are located, there is a larger need to highlight the role that smaller trails can provide in connecting communities. New development should include trail-oriented development principles to provide active transportation and greenway connections separate from motor vehicle access points.

As the future regional East Bay Greenway continues to take shape and jurisdictions work to connect Hayward to Oakland along the Union Pacific Railroad, new land-use opportunities will develop to create trail-oriented developments. These will

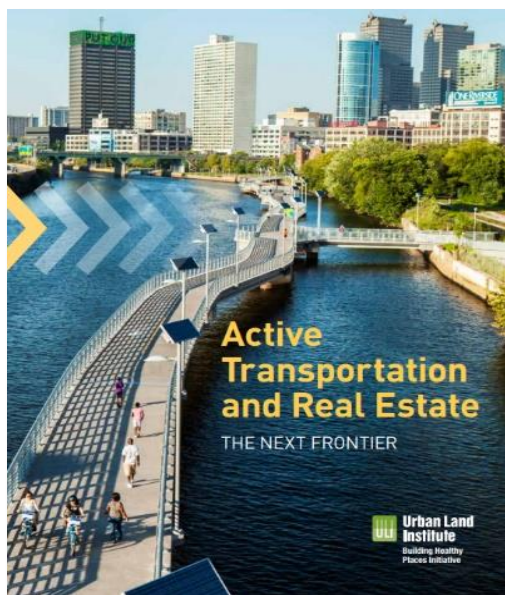
be great opportunities to provide housing and retail that centers on trails rather than around roadways while providing access to both Hayward BART stations and downtown. According to the Urban Land Institute, new trails can catalyze real estate development, encourage healthier lifestyles, increase property values, and maximize surrounding investments in active transportation facilities.

## Recommendations

- ▶ **Develop language for implementing easements and private property paths.** Future developments should identify how trails can be implemented as part of new projects to build connections with existing neighborhoods and across barriers. The City should consider how easements can be developed for use of paths on private property as part of the development review process. Future development sites, especially along Mission Boulevard, should be evaluated to include or contribute to new grade-separated crossings that better link communities over the BART tracks and to Mission Boulevard.

## Best Practice Examples and Resources

- ▶ FHWA Recreational Trails Program. [https://www.fhwa.dot.gov/environment/recreational\\_trails/guidance/manuals.cfm](https://www.fhwa.dot.gov/environment/recreational_trails/guidance/manuals.cfm)
- ▶ Rails to Trails Conservancy Trail-Building Toolbox. <https://www.railstotrails.org/build-trails/trail-building-toolbox/>
- ▶ Urban Land Institute: Active Transportation and Real Estate: The Next Frontier. Washington, D.C.: the Urban Land Institute, 2016. <https://americas.uli.org/research/centers-initiatives/building-healthy-places-initiative/active-transportation-real-estate/>



*Example of a Trail-Oriented Development Easement in Bethesda, Maryland*

*Source: ULI Active Transportation and Real Estate.*

## COLLABORATE WITH EAST BAY REGIONAL PARK DISTRICT AND OTHER ADJACENT JURISDICTIONS TO COORDINATE MAINTENANCE EFFORTS FOR OFF-STREET AND CLASS IV SEPARATED BIKEWAY FACILITIES

Facility maintenance is an important component of bikeway planning. Off-street and Class IV bike facilities can be more likely to accumulate debris in all seasons because car tires do not help to sweep them and because the physical barriers can limit nominal clearance that would otherwise be achieved by precipitation and wind.

While riding in these types of facilities, bicyclists may have limited opportunities to avoid obstacles such as debris, obstructions, slippery surfaces, and pavement damage because they are confined by physical barriers. This makes maintenance of off-street and Class IV bike facilities particularly important. Seasonal maintenance of these facilities may be especially important in the fall when leaves are falling, or after particularly bad windstorms. Tree roots growing under the pavement may also require maintenance to preserve a comfortably smooth pathway. When deciding which facilities to maintain first, priority should be given to bikeways that have the highest ridership and those that provide access to schools, business districts, major employers, major transit centers, and other important destinations.



*Example of a smaller street sweeper for separated bikeways and trails next to a standard size street sweeper.*

*Source: Jonathan Maus/ BikePortland*

Off-street trails in particular can be obstructed by large trash piles and other debris from other trail users and nearby homeless encampments. These hazards can significantly impact ridership and can go unaddressed for long periods of time if no agency conducts regular maintenance on the trails. Maintenance of off-street trails could be completed through a partnership between the City, Hayward Area Recreation and Parks District, and the East Bay Regional Park District.

Class IV bike lanes often cannot be swept in the same manner as other vehicular lanes and may (depending on facility width) require specialized (smaller) maintenance equipment. The maintenance of Class IV bike facilities could be improved by developing partnerships between surrounding communities; Alameda County Public Works Agency, and/or Alameda County Transportation Commission (Alameda CTC) could help facilitate maintenance of these facilities in conjunction with the Cities of San Leandro, Fremont, and Union City.

### Recommendations

- ▶ Collaborate with East Bay Regional Park District and other adjacent jurisdictions to coordinate maintenance efforts for off-street and Class IV facilities. Work with adjacent jurisdictions, Alameda County Public Works Agency, and the Alameda CTC to create a collaborative maintenance plan for separated bikeway facilities. This could include a cost-sharing strategy for purchasing smaller street sweepers that can be operated on a rotating basis. This would need to include establishing consistent minimum design standards to accommodate such vehicles. Additionally, work with the Alameda CTC, East Bay Regional Park District, and the Hayward Area Recreation and Park District to establish a funding stream and maintenance agreements for future off-street trail facilities.

### Best Practice Examples and Resources

- ▶ People for Bikes Tech Talk: The Best Street Sweepers for Clearing Protected Bike Lanes, 2014.  
<https://peopleforbikes.org/blog/tech-talk-the-best-street-sweepers-for-clearing-protected-bike-lanes/>
- ▶ The League of American Cyclists How Communities are Paying to Maintain Trails, Bike Lanes, and Sidewalks, 2014.  
[https://bikeleague.org/sites/default/files/AA\\_MaintenanceReport.pdf](https://bikeleague.org/sites/default/files/AA_MaintenanceReport.pdf)

# EVALUATION AND PLANNING

## AMERICANS WITH DISABILITIES ACT COMPLIANCE

Facilities in the public right-of-way are required to be accessible through [Section 504 of the Rehabilitation Act of 1973](#) and [Title II of the Americans with Disabilities Act](#). The Americans with Disabilities Act (ADA) requirements apply to permanent and temporary facilities, including routes, curb ramps, and other pedestrian features. Property owners, developers, landscape architects, architects, engineers, planners, and construction professionals in Hayward should all be familiar with, or have access to, ADA standards and guidelines. This will help ensure that facilities in the public right-of-way are accessible to people in Hayward of all ages and abilities. The list should include presence of facilities (e.g., curb ramps and accessible pedestrian signals); confirm whether sidewalks and other pedestrian routes and curb ramps meet surface material, slope, and width standards; and confirm whether pedestrian signals meet accessibility requirements.

**Figure 46. Section of Curb Ramp Compliance Checklist.**

(1) Minimum 4' wide pedestrian access route (PAR) maintained?	<input type="radio"/> Yes	<input type="radio"/> No		
(2) Landing meets min. 4'x4' and perpendicular grade break(s)?	<input type="radio"/> Yes	<input type="radio"/> No		
(3) Are landing(s) located at the top of each ramp and at change(s) in direction and at inverse grades?	<input type="radio"/> Yes	<input type="radio"/> No		
(4) Landing slopes (%):	<input type="text"/> (TH)	<input type="text"/> (TH)	<input type="text"/> (SS)	<input type="text"/> (SS)
(5) Ramp's running slope (%):	<input type="text"/> TH Initial	<input type="text"/> TH Secondary	<input type="text"/> SS Initial	<input type="text"/> SS Secondary
(6) Ramp's cross slope (%):	<input type="text"/> TH Initial	<input type="text"/> TH Secondary	<input type="text"/> SS Initial	<input type="text"/> SS Secondary
(7) Gutter flow line slope (%):	<input type="text"/> TH	<input type="text"/> SS		
(8) Gutter inslope (%):	<input type="text"/> TH	<input type="text"/> SS		
(9) Roadway cross slope (%):	<input type="text"/> TH	<input type="text"/> SS		
<div style="border: 1px solid black; padding: 2px; display: inline-block;">           TH = Trunk Highway            SS = Side Street         </div>				
(10) Do truncated domes cover the entire curb opening and are they properly oriented?	<input type="radio"/> Yes	<input type="radio"/> No		

Source: Minnesota Department of Transportation

## Recommendations

- ▶ **Develop an Americans with Disabilities Act Review Checklist.** The City should develop a checklist which can be used to ensure that all new projects are compliant with ADA standards. This list can also be used in conjunction with an inventory process to track progress towards updating existing facilities to meet the ADA standards. This list should be presented in an easy-to-read format so that City staff, contract professionals, and others can understand and use the checklist.

## Best Practice Examples and Resources

- ▶ [Institute for Human Centered Design. ADA Checklist for Existing Facilities.](https://www.adachecklist.org/doc/fullchecklist/ada-checklist.pdf) <https://www.adachecklist.org/doc/fullchecklist/ada-checklist.pdf>
- ▶ [Minnesota Department of Transportation. Curb ramp Compliance Checklist.](https://www.hennepin.us/-/media/hennepinus/residents/transportation/documents/MnDOT---Curb-Ramp---ADA-Compliance-Checklist.pdf?la=en&hash=D53B1B9C11B2F5E9CF98D36943D549C8202AD3AF) <https://www.hennepin.us/-/media/hennepinus/residents/transportation/documents/MnDOT---Curb-Ramp---ADA-Compliance-Checklist.pdf?la=en&hash=D53B1B9C11B2F5E9CF98D36943D549C8202AD3AF>
- ▶ [Minnesota Department of Transportation. Accessible Pedestrian Signal Checklist.](https://www.hennepin.us/-/media/hennepinus/residents/transportation/documents/MnDOT---Accessible-Pedestrian-Signals---ADA-Compliance-Checklist.pdf?la=en&hash=5D0EAF0672025CCF9A4C95072E8C9E8485A6B071) <https://www.hennepin.us/-/media/hennepinus/residents/transportation/documents/MnDOT---Accessible-Pedestrian-Signals---ADA-Compliance-Checklist.pdf?la=en&hash=5D0EAF0672025CCF9A4C95072E8C9E8485A6B071> and <https://www.hennepin.us/-/media/hennepinus/residents/transportation/documents/MnDOT--ADA-Compliance-Checklist-Powerpoint-Presentation.pdf?la=en&hash=20326970D851007222C71CECFADA162BD586E910>

## FUNDING

### DEVELOP A LIST OF POTENTIAL GRANT AND ALTERNATIVE FUNDING STRATEGIES

Active transportation projects can be funded in a variety of ways. Cities that have well established active transportation networks use a wide variety of funding sources. There is not one standard source which communities can draw from; funding should come from all different levels of government and the private sector.

Active transportation projects in Hayward are funded through a combination of ballot measure monies (Measure B and BB), the general fund, resurfacing projects, and grants. The City routinely uses local funds to provide matches for grant-funded projects. The Capital Improvement Program includes a Street Repair category that allots funding for ADA improvements to curb ramps. Staff seek Active Transportation Program grants and other State sources to fund smaller projects. Other potential funding sources could include gas taxes, local bond measures, and additional state and federal grant programs.

The State of California has a dedicated funding through SB 1 and grant funding sources like the Active Transportation, Sustainable Communities, and Urban Greening programs. Many of these sources can be reviewed for project applicability using the upcoming Alameda CTC's Countywide Active Transportation Plan. It also generates funding for pedestrian and bicycle projects through bond proceeds, general fund, local planning assistance grants, vehicle registration fees, vehicle transfer fees and a state gas tax. Federal funding sources include congestion mitigation and air quality improvement program, highway safety improvement program, surface transportation program, and transportation alternatives program.

**Figure 47. How Communities Pay for On-Street Bicycle Infrastructure**

Examples of Real-World Funding Sources for Protected Bikeways			
Federal	State	Local/Regional	Private
<ul style="list-style-type: none"> <li>• Congestion Mitigation and Air Quality (CMAQ) Improvement Program</li> <li>• Highway Safety Program (HSIP)</li> <li>• Surface Transportation Program (STP)</li> <li>• Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program</li> <li>• Transportation Alternatives Program (formerly Transportation Enhancements)</li> </ul>	<ul style="list-style-type: none"> <li>• State Bicycle and pedestrian grant</li> <li>• State multi-modal fund</li> <li>• State Safe Routes to School funds</li> </ul>	<ul style="list-style-type: none"> <li>• Business Improvement District funds</li> <li>• General Obligation Bonds</li> <li>• Local Capital Improvement Programs</li> <li>• Regional Bike Program fund</li> <li>• Tax Increment Financing (TIF)</li> <li>• Transportation Fund for Clean Air (Bay Area, California)</li> <li>• Unspecified city funds</li> <li>• Voter-approved sales taxes or other levies</li> </ul>	<ul style="list-style-type: none"> <li>• Developers</li> <li>• Hospitals</li> <li>• Philanthropy</li> <li>• Universities</li> </ul>

Source: League of American Bicyclists

## Recommendations

- ▶ **Develop a List of Potential Grant and Alternative Funding Strategies.** Dedicate a share of the Capital Improvement Program and General Fund money for stand-alone bicycle and pedestrian infrastructure projects, and establish annual funding minimums or targets for bicycle and pedestrian facility improvements. Although grant funding is increasingly limited, the City should continue to apply for local, state, and federal grants to support bicycle and pedestrian network improvements and programming. Utilize the extensive list of funding grant funding sources provide by the Alameda CTC in the Countywide Active Transportation Plan (due out for public review in 2019).

## Best Practice Examples and Resources

- ▶ Alameda County Transportation Commission Countywide Active Transportation Plan (Under Development). <https://www.alamedactc.org/planning/countywide-bicycle-and-pedestrian-plans/>
- ▶ Funding Navigation for California Communities. <https://www.fundingresource.org/active-transportation/>
- ▶ City of Pasadena Department of Transportation. California Office of Traffic Safety Grant for the Safer Streets Pasadena – School Area Safety Program.
- ▶ Advocacy Advance. Highway Safety Improvement Program. <https://safety.fhwa.dot.gov/hsip/resources/fhwasa15012/>
- ▶ League of American Bicyclists
- ▶ California Office of Traffic Safety. Pedestrian and Bicycle Safety Grants. <https://www.ots.ca.gov/grants/pedestrian-and-bicycle-safety/>

## PEDESTRIAN AND BICYCLE COORDINATOR

A pedestrian and bicycle coordinator can be a valuable asset to communities striving to increase biking and walking in their communities. A person in this role could help coordinate efforts between different departments to ensure that the City is able to take advantage of every opportunity to improve bicycle and pedestrian infrastructure. Bicycle and pedestrian coordinators can help Cities use resources more efficiently and ensure that there is at least one designated person on staff who remains up-to-date and aware of upcoming opportunities.

A pedestrian and bicycle coordinator can facilitate the following key tasks:

- ▶ Manage implementation and updates for the City's active transportation plan
- ▶ Provide technical support to Cities during project planning, scoping, and design phases
- ▶ Track city and county benefits of plan implementation and trends in bicycle and pedestrian commuting through the use of census data, travel surveys, and volunteer-led bicycle and pedestrian counts
- ▶ Evaluate and prioritize potential projects for funding
- ▶ Apply for and manage grants
- ▶ Coordinate City active transportation programs
- ▶ Disperse best practices knowledge to other City departments

## Recommendations

- ▶ **Identify funds and hire a pedestrian and bicycle coordinator.** The 2014 Hayward Pedestrian Safety Assessment recommended assigning an existing staff person as a bicycle and pedestrian coordinator. However, current best practices suggest that one full-time staff person should be hired to meet the guidance of one pedestrian/bicycle coordinator per 100,000 population.

## PROJECT IMPLEMENTATION

### Accommodating Bicyclists and Pedestrians in Construction Zones

Pedestrian and bicyclist safety are important concerns in and around construction zones in Hayward. Construction zones and other traffic control changes which require temporary lane or sidewalk closures, or detours should be designed to accommodate pedestrian and bicycle travel. Specific accommodations for pedestrians and bicyclists are needed because these populations travel at slower speeds than motor vehicles and are more exposed to the physical impacts of construction zones.

Characteristics of construction zones that can affect these vulnerable road users more than motorists include lack of through-access; excessive noise, dirt, construction material storage, and fumes; and physical lack of protection from construction activities and debris.

Accommodations for pedestrians should integrate ADA standards and ensure that the same level of accessibility and detectability that was present under existing conditions is provided in the temporary accommodation. Similarly, bicycle construction zone accommodations should strive to maintain the same level of separation between bicyclists and other road users as was present under existing conditions. Key aspects of proper accommodations for pedestrians and bicyclists include the use of signs in advance of work zones to provide proper warning about changes in conditions, and accommodations that minimize out of direction travel.



*Example of pedestrian construction zone accommodations in downtown Hayward.*

*Source: Kittelson & Associates, Inc.*

### Recommendations

- ▶ **Develop a Pedestrian and Bicycle Construction Zone Accommodations Guide.** Guidelines that establish clear criteria and standards for pedestrian and bicycle construction zone accommodations would provide a useful resource for developers, construction managers, and their employees. Cities across the country are increasingly providing these guidelines to ensure that pedestrians and bicyclists are protected and accommodated to the same extent that a vehicle would be. The guide will serve as an opportunity for the City to define standards and ensure that those working in the city clearly understand local and state guidance for construction zones. The guide is included in Appendix E.

## Best Practice Examples and Resources

- ▶ Portland Bureau of Transportation, Traffic Design Manual, Volume 2: Temporary Traffic Control, 2017.  
<https://content.govdelivery.com/accounts/ORPORTLAND/bulletins/1b5312b>
- ▶ Seattle Department of Transportation, Traffic Control Manual for In-Street Work, 2018.  
[https://www.seattle.gov/Documents/Departments/SDOT/About/DocumentLibrary/TrafficControlManual/2018\\_Traffic\\_Control\\_Manual.pdf](https://www.seattle.gov/Documents/Departments/SDOT/About/DocumentLibrary/TrafficControlManual/2018_Traffic_Control_Manual.pdf)
- ▶ Vermont Agency of Transportation, Vermont Bicycle and Pedestrian Work Zone Traffic Control Guide, 2018.  
<http://vtrans.vermont.gov/sites/aot/files/documents/VTrans%20PedBike%20WZ%20Guide%20-%20July%202018.pdf>
- ▶ California Department of Transportation, California Manual on Uniform Traffic Control Devices, 2014, revision 4.  
California Department of Transportation, Temporary Pedestrian Facilities Handbook, 2014.  
[http://www.dot.ca.gov/hq/construc/safety/Temporary\\_Pedestrian\\_Facilities\\_Handbook.pdf](http://www.dot.ca.gov/hq/construc/safety/Temporary_Pedestrian_Facilities_Handbook.pdf)
- ▶ Rapid Network Implementation and Repaving Strategies

## Rapid Network Implementation Projects

Rapid network implementation projects can take many forms, but the primary goal is to build out a low-stress bikeway network using lower cost installation options. These types of programs have been implemented through non-profits, led by Cities, or are being implemented as part of repaving strategies. Even facilities such as Class IV Separated Bikeways can be implemented rapidly with parking protected bikeways or striping and bollards, depending on context. The graphic in Figure 48 shows how Class IV facilities evolve over time starting with low cost materials and ending with full concrete separation over time. This provides jurisdictions with the rapid implementation opportunity for more miles of bikeway while locating funding for more permanent streetscape design elements over time.

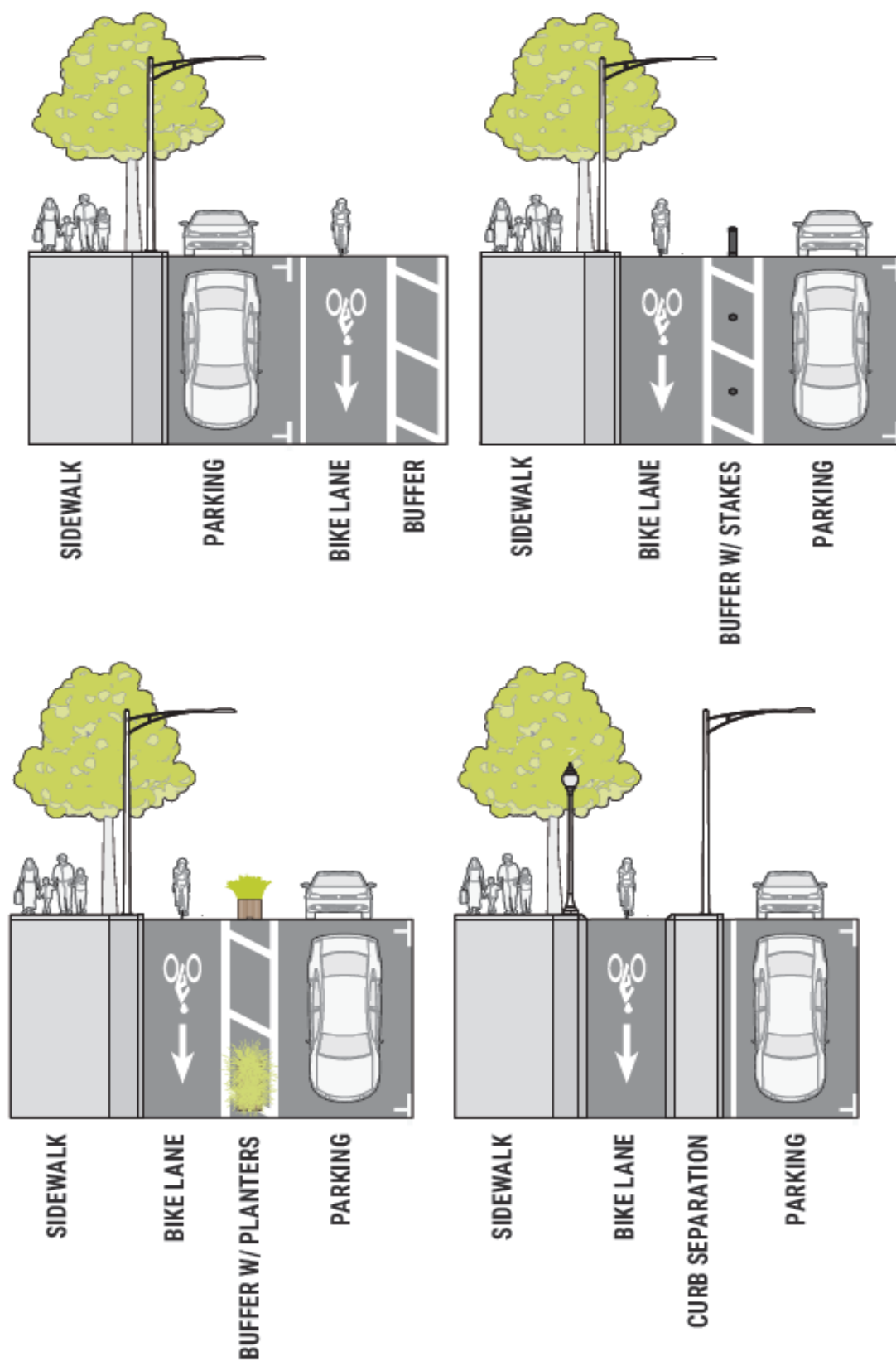
## Recommendations

- ▶ **Develop strategies for rapid network implementation and interim design treatments.** Use the All Ages and Abilities bikeway recommendations developed as part of the Plan to evaluate which facilities can be implemented with primarily signing and striping to create a simplified citywide connected bicycle network. The Engineering & Design Guidance (included as Appendix D) also provides strategies for temporary facility implementation. Identify a funding source or apply for grant funding with the network as a complete or partial package of low-cost facilities. By grouping projects together, the City has a greater opportunity to be awarded funding by closing gaps and cost-effective projects, especially in identified disadvantaged communities.

## Best Practice Examples and Resources

- ▶ City of Bellevue, WA Rapid Implementation Program. <https://transportation.bellevuewa.gov/planning/pedestrian-and-bicycle-planning/pedestrian-bicycle-implementation-initiative/rapid-implementation-plan>
- ▶ People for Bikes Quick Builds for Better Streets. [https://b.3cdn.net/bikes/675cdae66d727f8833\\_kzm6ikutu.pdf](https://b.3cdn.net/bikes/675cdae66d727f8833_kzm6ikutu.pdf)
- ▶ City of San Jose Better BikewaySJ. <https://nacto.org/wp-content/uploads/2018/07/Better-Bikeway-San-Jose.pdf>
- ▶ People for Bikes Big Jump Project. <https://peopleforbikes.org/placesforbikes/the-big-jump-project/>
- ▶ Bike Houston Build 50 Challenge. <https://bikehouston.org/2018/04/20/the-build-50-challenge/>
- ▶ City of Oakland 2019 Three-Year Paving Plan. <https://www.oaklandca.gov/projects/2019-paving-plan>

Figure 48. Evolution of a Class IV Separated Bikeway



## EDUCATION AND ENFORCEMENT

### COORDINATE WITH THE ALAMEDA COUNTY SAFE ROUTES TO SCHOOL PROGRAM AND ENCOURAGE ALL HAYWARD SCHOOLS TO PARTICIPATE

The Alameda County Safe Routes to Schools Program promotes and teaches safe walking, biking, carpooling and transit use as viable, safe modes of transportation for students and families to travel to/from school. The program is administered by Alameda CTC. Over 200 public elementary, middle, and high schools in the county are currently enrolled in the program. In 2016, the Commission adopted a set of goals that refocused the program on activities that effect behavior change, increase mode shift, and reinforce the program's commitment to increased safety.

To enroll, schools must submit a simple form available on the Alameda County Safe Routes to Schools website at [alamedacountysr2s.org](http://alamedacountysr2s.org). In addition, program staff works closely with local jurisdiction staff to coordinate and leverage local Safe Routes resources, and leadership from Alameda CTC has made implementation of SR2S easier for jurisdictions that would otherwise not be able to provide such programming.



### Recommendations

- ▶ **Coordinate with the Alameda County Safe Routes to School and encourage all Hayward schools to participate.** The Alameda County Safe Routes to School Program is available to all schools throughout the county. Many Hayward schools already participate in the programmatic elements while fewer have had individual site assessments conducted. The City should continue to encourage schools to participate in the program and provide or augment resources. City staff should also take an active role in assisting with programmatic elements and conducting site audits for all Hayward schools.

### Best Practice Examples and Resources

- ▶ Alameda County Safe Routes to School. <http://alamedacountysr2s.org/>
- ▶ Safe Routes to School National Partnership. <https://www.saferoutespartnership.org/>

## IMPLEMENT A BIKE TICKET DIVERSION PROGRAM

Bike East Bay, in partnership with the California Bicycle Coalition, helped pass the Bicycle Traffic School bill (AB 902) in 2015. This allows people ticketed for a vehicle code violation while biking in California to attend a class and have the fine reduced or removed. In order to participate in the program, cities must opt-in to the program and local law enforcement must approve the materials in order for programs to be officially sanctioned. However, the League of American Bicyclists does have certified instructors and materials to help establish formal programs.

### Recommendations

- ▶ **Implement a bike ticket diversion program.** Work with Bike East Bay and other advocacy organizations to create a formal Bicycle Traffic School and Ticket Diversion Program. These types of programs can even be designed to reduce traffic fines.

### Best Practice Examples and Resources

- ▶ Alameda County Safe Routes to School. <http://alamedacountysr2s.org/>
- ▶ Safe Routes to School National Partnership. <https://www.saferoutespartnership.org/>

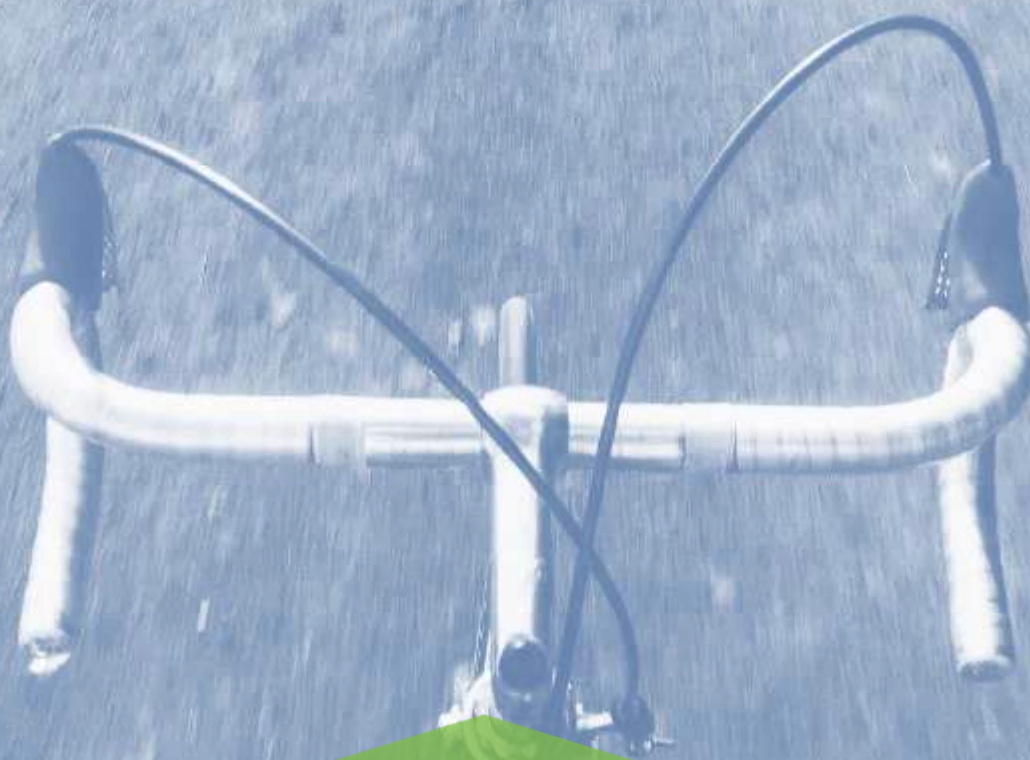


*Example of bicyclist receiving a citation.*

Source: Bike East Bay

# 06

## IMPLEMENTATION STRATEGY



# IMPLEMENTATION STRATEGY

The Plan's infrastructure and programmatic recommendations provide strategies and actions to assist Hayward in becoming a world-class biking and walking city. Based on financial realities, implementation of the proposed bicycle network and programs will occur over time, dependent on available funding sources. This chapter provides an overview of potential costs, prioritizes projects based on implementation timelines, and identifies funding sources to move investments forward.

## COST ESTIMATES

The total cost of all the projects identified in the Plan is between approximately \$171-220 million. This cost estimate represents complete corridor costs including bicycle, pedestrian, and transit infrastructure improvements. This cost provides an opportunity for the City to seek funding for implementation of the bikeway and pedestrian facility improvements as complete street projects that support multiple modes rather than as individual improvements. Costs for the individual corridors can be found in the full project list in Appendix A. Once the corridors and project lists were identified and organized based on proposed bicycle facility types, per-mile pedestrian and transit cost assumptions were layered in.

The planning-level cost estimates can vary greatly depending on the type of facility, existing conditions, right-of-way acquisition, and desired aesthetic improvements such as landscaping or hardscaping. The City will need to develop detailed estimates during the preliminary engineering stage (PS&E) to calculate more exact project costs due to varying costs of obtaining right-of-way, construction, drainage, grading, or other unforeseen considerations. The methodology and assumptions used for estimating project costs are detailed in Appendix F.

Cost estimates for the support programs are not provided as the costs to implement these programs can vary greatly. The City should outline the necessary element of each program and establish a cost prior to implementing the programs.

## TOTAL BICYCLE FACILITY COSTS

The total planning-level costs for recommended facilities are presented in Table 18. A range for the cost estimates is provided to account for potential low-cost and high-cost implementation scenarios for Class IV Separated Bikeways that will need to be determined on a corridor by corridor basis.

**Table 18. Recommended Bicycle Investments by Facility Type**

Facility Type	Approximate Cost of Proposed Projects
Class I Multi-Use Path	\$13,245,156
Class II Bicycle Lanes (without buffer)	\$663,796
Class II Bicycle Lanes (with buffer)	\$550,304
Class III Bike Routes (signing and striping only)	\$6,552
Class III Bike Boulevards (signing, striping, and traffic calming)	\$709,365
Class IV Separated Bike Lanes	
• Low-cost (signing, striping, and temporary vertical barriers)	\$6,634,320
• High-cost (Concrete and landscape barriers)	\$24,069,155
<b>Total Cost for All Bicycle Facilities</b>	<b>\$21.8 million - \$43.3 million</b>

Source: Kittelson and Associates, Inc.

## TOTAL PEDESTRIAN FACILITY COSTS

To encourage the implementation of complete streets, pedestrian and bicycle investments are equally important and should be implemented concurrently for cost and implementation efficiency. Therefore, the cost estimate methodology includes an assumed set of pedestrian improvements per mile by street typology (local, collector, or arterial roadway) for both signalized and unsignalized crossing improvements. Sidewalk gap improvements will need to be determined on a project by project basis. Each corridor was assessed for the level of potential investment needed based on feedback from community engagement and existing conditions review.

The total cost of pedestrian investments citywide is presented in Table 19, and individual costs by corridor are located in the project list in Appendix A.

**Table 19. Recommended Citywide Corridor Pedestrian Investments**

Facility Type	Approximate Cost
<b>Total Cost for All Corridor Pedestrian Investments</b>	<b>\$61,191,000</b>

## TOTAL TRANSIT FACILITY COSTS

Transit improvement assumptions for this project were developed in conjunction with AC Transit. Per-mile high-, medium-, and low-cost improvement assumptions were generated for project segments running along AC Transit bus routes. Each transit cost assumption was generated to account for bus stop and stop area designs that promote pedestrian access and bicyclist safety.

The facilities identified as high-cost corridors include those for which future bus rapid transit (BRT) implementation has been identified. The medium-cost corridors include improvements that can net marginal gains for transit service (e.g., boarding islands or transit signal priority). Lastly, the low-cost corridors are assumed to include modifications like bus relocation or improvement or roadway restriping. Table 20 provides a per-mile cost range for each type of corridor as well as a total cost range to implement all of the assumed transit improvements as part of a complete streets package. sde

**Table 20: Transit Facility Cost Estimates**

Facility Type	Facilities Identified	Improvements Assumed	Approximate Cost
<b>High-Cost Transit Corridors</b>	Hesperian Boulevard Mission Boulevard A Street B Street Tennyson Boulevard	Bus stop typology 1 treatments (see Figure 41 page 76) at 1/3-mile stop spacing	\$786,000 per mile
<b>Medium-Cost Transit Corridors</b>	C Street Winton Avenue/D Street Clawiter Road/Industrial Boulevard Grand Street	Alternating bus stop typology 1 and 2 bus stop treatments (see Figure 41 on page 76) at 1,000-foot spacing	\$380,000 - \$1.3 million per mile
<b>Low-Cost Transit Corridors</b>	<i>Several corridors</i>	Typically bus stop typology 1 bus stop treatments (see Figure 41 on page 76) at 1,000-foot spacing	\$380,000 per mile
<b>Total Cost for All Transit Corridors</b>	-	-	<b>\$9.6 million</b>

Source: Toole Design Group, AC Transit, Kittelson & Associates, Inc.

Transit improvements should be reassessed prior to implementation or release of potential bids to confirm the exact number of treatments. The costs presented here are designed to help give a conservative estimate of potential pedestrian and transit improvements costs on a large scale.

## NEAR-TERM INVESTMENTS

To implement projects rapidly, the City's near-term investments should focus on closing gaps in the existing network and providing access to transit and schools within the next five years. These investments should be balanced with investments throughout Hayward. The near-term implementation action plan does not include many of the more complex or controversial corridors that would take longer to implement. Individual corridor projects may not provide easy and convenient access to priority destinations; therefore, to build-out smaller portions of a connected and comfortable citywide network, localized micro-network "packages" of projects are proposed to provide transformative connections to multiple areas of the city.

However, it is also important to begin assessing more difficult corridors in the near-term so that projects can be implemented in the long-term. All near-term implementation projects are selected from the highest citywide priority projects but may include portions of other corridors to complete the connected network.

To accomplish this, the near-term action plan investments (see Table 21) are generally divided into two categories:

1. Projects that can be implement through repaving and/or signing/stripping changes as a package of connected projects. These projects primarily include bike lanes, buffered bike lanes, bicycle boulevards, and low-cost one-way separated bikeways that do not involve many signal changes.
2. Studies to address more complex projects that may require additional planning, engineering, feasibility, environmental, and outreach components beyond the scope of the Plan prior to implementing a specific project. These types of projects often involve large corridor studies or new trail opportunities.

**Table 21. Near-Term Implementation Action Plan**

Project/Package	Corridor(s)	Corridor Prioritization Score(s)	Project ID Segment(s)	Cost*	Potential Funding Source
<b>Rapid Implementation Network Projects</b>					
<b>Downtown Micro-Network Project Package</b>	Winton Avenue/ D Street	67	105 (C-G)	\$604,098	Measure BB, BART Measure RR Local Assistance Grants, OBAG
	Main Street	62	158 (A, B)	\$63,125	
	B Street	66	102 (B-F)	\$47,394	
	C Street	63	103 (B)	\$5,889	
	Grand Street	69	151 (A, B)	\$47,080	
<b>West Side Micro-Network Project Package</b>	Depot Road/Cathy Way	54	113 (A-C)	\$142,355	Caltrans ATP Grant, Measure BB, OBAG
	Clawiter Road (Winton Avenue to Industrial Boulevard)	36	131 (F)	\$81,312	
	Industrial Boulevard	49	116 (A)	\$299,379	
<b>Central Hayward Spine Micro-Network Project Package</b>	Amador Street/Cypress Avenue	61	142 (A- C)	\$43,790	Caltrans ATP Grant, Measure BB, OBAG
	Gading Road/Patrick Avenue	55	143 (A)	\$125,664	
	Harder Road	45	112 (A)	\$411,936	
	Hunstwood Avenue	53	149 (A, B, D)	\$257,848	
<b>South Hayward Crosstown Connector</b>	Tennyson Road	72	115 (A-D)	\$1,486,035 (High-cost Class IV)	Measure BB, BART Measure RR Local Assistance Grants, OBAG

Project/Package	Corridor(s)	Corridor Prioritization Score(s)	Project ID Segment(s)	Cost*	Potential Funding Source
Studies					
<b>E 14<sup>th</sup> St/Mission Boulevard and Fremont Boulevard Multimodal Corridor Study</b>	Mission Boulevard	68	165 (A-C)	On-going Alameda CTC Study	Measure BB
<b>Castro Valley Local Area Traffic Circulation Improvements</b>	Foothill Boulevard	69	183 (A)	On-going Alameda CTC Study	Measure BB
<b>Eden Greenway Connectivity Feasibility Study</b>	Eden Greenway Path	100	178 (A-F)	\$300,000 (Planning & Preliminary Concepts)	Caltrans Sustainable Communities Grant, Caltrans ATP Grant
<b>South Hayward Trail Expansion Feasibility Study</b>	Ward Creek Trail Extension	100	147 (A), 190 (A), 191 (A)	\$150,000 (Planning & Preliminary Concepts)	Caltrans Sustainable Communities Grant, Caltrans ATP Grant
	Ruus Park Access Pathway	100	193 (A)		
	Ruus Park Access Pathway Extension	100	194 (A)		
	Industrial Parkway Trail Extension	100	192 (A)		
<b>Hesperian Boulevard Complete Streets Study</b>	Hesperian Boulevard	60	140 (A-C)	\$300,000 (Planning & Preliminary Concepts)	Measure BB, Caltrans Sustainable Communities Grant

Source: Kittelson & Associates, Inc.

*\*Note: Costs may represent rapid implementation bikeway costs that focus primarily on signing and striping. Additional pedestrian corridor improvements could be included but would need to be factored into the cost on top of those shown in this table. Costs do not include right-of-way acquisition.*

## LONG-TERM INVESTMENTS

Long-term investments focus primarily on large arterial projects where additional time may be needed for design and construction. Additionally, studies included in the near-term investments list should be implemented during the long-term to complete build-out of the high priority network. Some lower priority projects are included to fill logical gaps in connectivity between the other identified projects. These projects should be implemented within five to ten years from the adoption of the Plan.

**Table 22. Long-term Implementation Action Plan**

Project	Corridor(s)	Corridor Prioritization Score(s)	Project ID Segment(s)	Cost*	Potential Funding Source
<b>Mission Boulevard</b>	Mission Boulevard	68	165 (A-C)	\$4,040,990	Measure BB
<b>Foothill Boulevard</b>	Foothill Boulevard	69	183 (A)	\$858,176	Measure BB
<b>Eden Greenway Path</b>	Eden Greenway Path	100	178 (A-F)	\$1,010,352 + Grade Separated + At-Grade Crossing Costs	Caltrans ATP Grant, Urban Greening Grant
<b>South Hayward Trails</b>	Ward Creek Trail Extension	100	147 (A), 190 (A), 191 (A)	\$1,342,092 + Grade Separated + At-Grade Crossing Costs	Caltrans ATP Grant, Urban Greening Grant
	Ruus Park Access Pathway	100	193 (A)		
	Ruus Park Access Pathway Extension	100	194 (A)		
	Industrial Parkway Trail Extension	100	192 (A)		
<b>Hesperian Boulevard</b>	Hesperian Boulevard	60	140 (A-C)	\$3,429,047	Measure BB, OBAG, Caltrans ATP
<b>East Bay Greenway</b>	East Bay Greenway	100	182 (A, B)	\$4,986,576	Measure BB, Caltrans ATP, Urban Green Grant
<b>West A Street/A Street</b>	West A Street/A Street	75	101 (A-D)	\$1,459,143	Measure BB, Caltrans ATP, OBAG
<b>San Francisco Bay Trail</b>	San Francisco Bay Trail	100	175 (A-C)	\$2,333,820	Measure BB, Caltrans ATP, Urban Green Grant
<b>Industrial Parkway West</b>	Industrial Parkway West	68	117 (A, B, D)	\$1,992,680	Measure BB, OBAG
<b>Santa Clara Street</b>	Santa Clara Street/Hathaway Avenue	38	141 (A, B)	\$211,680	Measure BB, OBAG
<b>Eden Landing Road/Clawiter Road</b>	Eden Landing Road/Clawiter Road	36	131 (A-E)	\$147,163	Measure BB, OBAG
<b>Arden Road</b>	Arden Road/Baumberg Avenue	35	133 (A)	\$63,420	Measure BB, OBAG

Source: Kittelson & Associates, Inc.

*\*Note: Costs represent bikeway costs only and include high-cost Class IV implementation option for major arterials with concrete buffers with landscaping. Additional pedestrian corridor improvements could be included but would need to be factored into the costs on top of those shown in this table. Costs do not include right-of-way acquisition.*

## FUNDING SOURCES

Below is a summary of possible funding sources available for bicycle and pedestrian projects, policies, and programs over the life of the Plan. Table 23 identifies potential project applicability by funding source. After the table, the sources are described in more detail. Sources include federal, state, regional, and local programs.

**Table 23. Funding Sources and Applicability by Project Type**

	Primary (P) or Accessory (A) Focus	Off-street Bicycle Facilities (Class I)	On-street Bicycle Facilities (Class II, III, IV)	Bike Parking	Transit-supportive and Access Improvements	Traffic Calming	Roundabouts	Pedestrian Crossing Enhancements (PHBs, RRFBs, ADA-curb Ramps, etc.)	Low Impact Design and Stormwater Infrastructure	Complete Streets and Corridor Planning Studies	Programs Implementation	Maintenance and Operations	Agency
Federal Programs													
Better Utilizing Investments to Leverage Development (BUILD) Grant (Formerly TIGER)	A	●	●		●		●	●	●				US DOT
Congestion Management & Air Quality (CMAQ)	P	●	●	●	●	●	●	●	●		●		FHWA
Surface Transportation Block Grant (STBG) Program	P	●	●		●		●	●				●	FHWA
Land and Water Conservation Fund (LWCF)	P	●							●				NPS
Rivers, Trails, and Conservation Assistance Program	P	●							●		●		NPS
State Programs													
Active Transportation Program (ATP) Grant	P	●	●	●	●	●	●	●	●	●	●		Caltrans
Sustainable Communities Grant	P									●			Caltrans
Strategic Partnerships Grant	P									●			Caltrans
Adaptation Planning Grant	P									●			Caltrans
State Highway Operation and Protection Program (SHOPP)	A		●									●	Caltrans
Highways Safety Improvement Program (HSIP) Grant	P		●					●				●	Caltrans
Systemic Safety Analysis Report Program (SSARP)	P									●			Caltrans
Transit and Intercity Rail Capital Program (TIRCP)	A			●	●								CTC
State Transportation Improvement Program (STIP)	A		●		●		●						CTC

	Primary (P) or Accessory (A) Focus	Off-street Bicycle Facilities (Class I)	On-street Bicycle Facilities (Class II, III, IV)	Bike Parking	Transit-supportive and Access Improvements	Traffic Calming	Roundabouts	Pedestrian Crossing Enhancements (PHBs, RRFBs, ADA-curb Ramps, etc.)	Low Impact Design and Stormwater Infrastructure	Complete Streets and Corridor Planning Studies	Programs Implementation	Maintenance and Operations	Agency
Trade Corridor Enhancement Program (TCEP )	A	●	●		●			●					CTC
State-Local Partnership Program (LPP)	P		●		●			●				●	CTC
Office of Traffic Safety Grants	P										●		OTS
Recreational Trails Program (RTP)	P	●											CA Department of Parks and Recreation
Affordable Housing and Sustainable Communities (AHSC) Program	P	●	●	●	●	●	●	●	●		●		CA Strategic Growth Council
Transformative Climate Communities (TCC) Program	P	●	●	●	●	●	●	●	●	●			CA Strategic Growth Council
Environmental Enhancement and Mitigation (EEM) Grant Program	A	●							●				CA Natural Resources Agency
Urban Greening Grant Program	P	●	●			●			●				CA Natural Resources Agency
Environmental Justice (EJ) Small Grants Program	A										●		CA Environmental Protection Agency
Stormwater Management Program	A	●	●						●				State Water Resources Control Board
Regional Programs													
OBAG	P	●	●	●	●	●	●	●	●	●	●	●	MTC
TDA Article 3	P	●	●	●	●	●	●	●	●	●	●		MTC
Regional Measure 1, 2, 3, and Future Regional Measures	A	●	●	●	●		●						MTC
Regional Active Transportation Program	P	●	●	●	●	●	●	●	●	●	●		MTC
Transportation Fund for Clean Air (TFCA)	P	●	●	●	●						●		BAAQMD
Bicycle Rack Voucher Program	P			●									BAAQMD
Measure WW Urban Creek Grant	P	●							●				EBRPD
Measure FF	P	●							●				EBRPD

	Primary (P) or Accessory (A) Focus	Off-street Bicycle Facilities (Class I)	On-street Bicycle Facilities (Class II, III, IV)	Bike Parking	Transit-supportive and Access Improvements	Traffic Calming	Roundabouts	Pedestrian Crossing Enhancements (PHBs, RRFBs, ADA-curb Ramps, etc.)	Low Impact Design and Stormwater Infrastructure	Complete Streets and Corridor Planning Studies	Programs Implementation	Maintenance and Operations	Agency
Local BART Sales Tax	A				●								BART
Measure RR	P	●	●	●	●								BART
Alameda CTC													
Measure B	P	●	●	●	●	●	●	●	●	●	●	●	ACTC
Measure BB	P	●	●	●	●	●	●	●	●	●	●	●	ACTC
Lifeline Transportation Program (LTP)	P				●					●			ACTC
Vehicle Registration Fees	P	●	●	●	●	●	●	●				●	Local Jurisdictions
Local Programs													
Developer Fees/ Transportation Impact Fees		p					Varies per jurisdiction and specific impact fee programs.					Local Jurisdictions	

## FEDERAL SOURCES

### Better Utilizing Investments to Leverage Development (BUILD) Grant

*Managing Agency: United States Department of Transportation*

The Better Utilizing Investments to Leverage Development, or BUILD Transportation Discretionary Grant program, provides a unique opportunity for the United States Department of Transportation to invest in road, rail, transit and port projects that promise to achieve national objectives. Previously known as Transportation Investment Generating Economic Recovery, or TIGER Discretionary Grants, Congress has dedicated nearly \$5.6 billion for nine rounds of National Infrastructure Investments to fund projects that have a significant local or regional impact. The eligibility requirements of BUILD allow project sponsors at the State and local levels to obtain funding for multimodal, multi-jurisdictional projects that are more difficult to support through traditional transportation department (DOT) programs. BUILD can fund port and freight rail projects, for example, which play a critical role in our ability to move freight, but have limited sources of Federal funds.

## **Congestion Management & Air Quality (CMAQ)**

*Managing Agency: Federal Highway Administration*

The Congestion Mitigation and Air Quality Improvement (CMAQ) program provides a flexible funding source for State and local governments to fund transportation projects and programs to help meet the requirements of the Clean Air Act (CAA) and its amendments. CMAQ money supports transportation projects that reduce mobile source emissions in areas designated by the U.S. Environmental Protection Agency (EPA) to be in nonattainment or maintenance of the national ambient air quality standards. Since its beginning in 1992, the CMAQ program has provided more than \$30 billion for over 29,000 transportation-related emission reduction projects for State DOTs, metropolitan planning organizations (MPOs), and other sponsors across the country. All CMAQ projects must come from a transportation plan and Transportation Improvement Program. The Federal share for most CMAQ-eligible projects is 80 percent, but certain safety projects that include an air quality or congestion relief component (e.g., carpool/vanpool projects), may have a Federal share of 100 percent.

## **Surface Transportation Block Grant (STBG) Program**

*Managing Agency: Federal Highway Administration*

The Fixing America's Surface Transportation (FAST) Act converts the long-standing Surface Transportation Program (STP) into the Surface Transportation Block Grant Program (STBG) acknowledging that this program has the most flexible eligibilities among all Federal-aid highway programs and aligning the program's name with how the FHWA has historically administered it. The STBG promotes flexibility in State and local transportation decisions and provides flexible funding to best address State and local transportation needs. STBG funding may be used for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.

## **Land and Water Conservation Fund (LWCF)**

*Managing Agency: National Park Service*

The LWCF provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities. Over its first 49 years (1965 - 2014), LWCF has provided more than \$16.7 billion to acquire new Federal recreation lands as grants to State and local governments. Projects can include acquisition of open space, development of small city and neighborhood parks, and construction of trails or greenways.

## **Rivers, Trails, and Conservation Assistance Program**

*Managing Agency: National Park Service*

The National Park Service Rivers, Trails, and Conservation Assistance program supports community-led natural resource conservation and outdoor recreation projects across the nation. The National Park Service helps community groups, nonprofits, tribes, and state and local governments to design trails and parks, conserve and improve access to rivers, protect special places, and create recreation opportunities.

## **State Programs**

### **Active Transportation Program (ATP) Grants**

*Managing Agency: California Department of Transportation (Caltrans)*

The Active Transportation Program consolidates existing federal and state transportation programs, including the Transportation Alternatives Program (TAP), Bicycle Transportation Account (BTA), and State Safe Routes to School (SR2S), into a single program with a focus to make California a national leader in active transportation. The ATP administered by the Division of Local Assistance, Office of State Programs. The purpose of the ATP is to encourage increased use of active modes of transportation by increasing the proportion of trips accomplished by biking and walking, increasing safety of non-motorized users, reduce greenhouse gases, enhance public health, and ensure that disadvantaged communities full share in the benefits of the program.

## **Sustainable Communities Grants**

*Managing Agency: California Department of Transportation (Caltrans)*

The Sustainable Transportation Planning Grant Program was created to support the California Department of Transportation's (Caltrans) Mission: Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability. The California Legislature passed, and Governor Edmund G. Brown Jr. signed into law, Senate Bill (SB) 1, the Road Repair and Accountability Act of 2017, a transportation funding bill that will provide a reliable source of funds to maintain and integrate the State's multi-modal transportation system. Eligible planning projects must have a transportation nexus ideally demonstrating that planning projects directly benefit the multi-modal transportation system. Sustainable Communities Grants will also improve public health, social equity, environmental justice, the environment, and provide other important community benefits.

## **Strategic Partnerships Grants**

*Managing Agency: California Department of Transportation (Caltrans)*

Strategic Partnerships are intended to fund planning projects that address needs on the State highway system, while the transit component will address multimodal planning projects that focus on transit. A smaller amount of funds is dedicated to Strategic Partnership – Transit allocations to better integrate transit into the overall transportation system. Strategic Partnerships are funded through California Senate Bill (SB) 1 and are allocated in conjunction with Sustainable Communities grants.

## **Adaptation Planning Grants**

*Managing Agency: California Department of Transportation (Caltrans)*

Climate change adaptation aims to anticipate and prepare for climate change impacts to reduce the damage from climate change and extreme weather events. Adaptation is distinct from, but complements, climate change mitigation, which aims to reduce GHG emissions. This funding is intended to advance adaptation planning on California's transportation infrastructure, including but not limited to roads, railways, bikeways, trails, bridges, ports, and airports. Adaptation efforts will enhance the resiliency of the transportation system to help protect against climate impacts. The overarching goal of this grant program is to support planning actions at local and regional levels that advance climate change adaptation efforts on the transportation system, especially efforts that serve the communities most vulnerable to climate change impacts. Strategic Partnerships are funded through California Senate Bill (SB) 1 under the Public Transportation Account (PTA).

## **State Highway Operation and Protection Program (SHOPP)**

*Managing Agency: California Department of Transportation (Caltrans)*

The 2018 State Highway Operation and Protection Program (SHOPP) is the State Highway System's "fix-it-first" program that funds the repair and preservation, emergency repairs, safety improvements, and some highway operational improvements on the State Highway System (SHS). By continuously repairing and rehabilitating the SHS, the SHOPP protects the enormous investment that has been made over many decades to create and manage the approximately 50,000 lane-mile SHS. The SHS includes statutorily designated state-owned roads, highways (including the Interstate system) and bridges (including associated bicycle and pedestrian facilities) and their supporting infrastructure such as culverts, transportation management systems (TMS), safety roadside rest areas, and maintenance stations. Revenues for the SHOPP are generated by federal and state gas taxes and are fiscally constrained by the State Transportation Improvement Program Fund Estimate that is produced by Caltrans and adopted by the California Transportation Commission.

## **Highway Safety Improvement Program (HSIP) Grant**

*Managing Agency: California Department of Transportation (Caltrans)*

The Highway Safety Improvement Program (HSIP) is one of the core federal-aid programs in the federal surface transportation act, Fixing America's Surface Transportation Act (FAST), and is administered by Caltrans. The purpose of the HSIP program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned public roads and roads on tribal land. Example safety projects include, but are not limited to: crosswalk markings, rapid flashing beacons, curb extensions, speed feedback signs, guard rails, pedestrian refuge islands, slurry seal, and other pavement markings.

## **Systemic Safety Analysis Report Program (SSARP)**

*Managing Agency: California Department of Transportation (Caltrans)*

The state-funded Systemic Safety Analysis Report Program (SSARP) was established in 2016. The state funding for the SSARP program is made available by exchanging the local Highway Safety Improvement Program (HSIP) federal funds for State Highway Account (SHA) funds. The intent of this program is to assist local agencies in performing a collision analysis, identifying safety issues on their roadway networks, and developing a list of systemic low-cost countermeasures that can be used to prepare future HSIP and other safety program applications.

## **Transit and Intercity Rail Capital Program (TIRCP)**

*Managing Agency: California Transportation Commission*

The Transit and Intercity Rail Capital Program (TIRCP) was created by Senate Bill (SB) 862 and modified by Senate Bill 9 to provide grants from the Greenhouse Gas Reduction Fund to fund transformative capital improvements that will modernize California's intercity, commuter, and urban rail systems, and bus and ferry transit systems to reduce emissions of greenhouse gases by reducing congestion and vehicle miles traveled throughout California. The primary program objectives include reducing greenhouse gas emissions, expanding and improving rail service to increase ridership, integrate the rail service of the state's various rail operations (including integration with the high-speed rail system), and improving safety. Caltrans, in collaboration with CalSTA, are responsible for administering this program.

## **State Transportation Improvement Program (STIP)**

*Managing Agency: California Transportation Commission*

The State Transportation Improvement Program (STIP) is the biennial five-year plan adopted by the California Transportation Commission for future allocations of certain state transportation funds for state highway improvements, intercity rail, and regional highway and transit improvements. State law requires the Commission to update the STIP biennially, in even-numbered years, with each new STIP adding two new years to prior programming commitments. CTC staff recommendations are based on the combined programming capacity for the Public Transportation Account (PTA) and State Highway Account (SHA) as identified in the Fund Estimate adopted by the CTC. The Commission's adopted STIP may include only projects that have been nominated by a regional agency in its regional transportation improvement program (RTIP) or by Caltrans in its interregional transportation improvement program (ITIP).

## **Trade Corridor Enhancement Program (TCEP)**

*Managing Agency: California Transportation Commission*

The objective of the Trade Corridor Enhancement Program is to fund infrastructure improvements on federally designated Trade Corridors of National and Regional Significance, on the Primary Freight Network, as identified in the California Freight Mobility Plan, and along other corridors that have a high volume of freight movement as determined by the Commission. The Trade Corridor Enhancement Program will also support the goals of the National Highway Freight Program, the California Freight Mobility Plan, and the guiding principles in the California Sustainable Freight Action Plan.

## **State-Local Partnership Program (LPP)**

*Managing Agency: California Transportation Commission*

The Road Repair and Accountability Act of 2017 (Senate Bill 1) created the Local Partnership Program, which is modeled closely after the Proposition 1B State Local Partnership Program. The purpose of this program is to provide local and regional transportation agencies that have passed sales tax measures, developer fees, or other imposed transportation fees with a continuous appropriation of \$200 million annually from the Road Maintenance and Rehabilitation Account to fund road maintenance and rehabilitation, sound walls, and other transportation improvement projects. Consistent with the intent behind Senate Bill 1, the Commission intends this program to balance the need to direct increased revenue to the state's highest transportation needs while fairly distributing the economic impact of increased funding. The Local Partnership Program provides funding to local and regional agencies to improve aging infrastructure, road conditions, active transportation, and health and safety benefits.

## **Office of Traffic Safety (OTS) Grants**

*Managing Agency: Office of Traffic Safety*

The California Office of Traffic Safety (OTS) strives to eliminate traffic deaths and injuries. It does this by making available grants to local and state public agencies for programs that help them enforce traffic laws, educate the public in traffic safety, and provide varied and effective means of reducing fatalities, injuries and economic losses from collisions.

## **Recreational Trails Program (RTP) Program**

*Managing Agency: California Department of Park and Recreation*

The Recreational Trails Program (RTP) provides funds annually for recreational trails and trails-related projects. The RTP is administered at the federal level by the Federal Highway Administration (FHWA). It is administered at the state level by the California Department of Parks and Recreation (DPR) and the Department of Transportation (Caltrans) Active Transportation Program (ATP). Eligible non-motorized projects include acquisition of easements and fee simple title to property for recreational trails and recreational trail corridors; and, development, or rehabilitation of trails, trailside, and trailhead facilities. The program requires a 12% match. FHWA must approve project recommendations before California State Parks can execute grant contracts. Prior to forwarding these projects to FHWA, each must comply with the National Historical Preservation Act of 1966 (Section 106), National Environmental Policy Act (NEPA), and be listed on the State Transportation Improvement Plan (STIP).

## **Affordable Housing and Sustainable Communities (AHSC) Program**

*Managing Agency: California Strategic Growth Council*

The purpose of the AHSC Program is to reduce greenhouse gas (GHG) emissions through projects that implement land-use, housing, transportation, and agricultural land preservation practices to support infill and compact development, and that support related and coordinated public policy objectives. The AHSC program includes transportation focuses related to reducing air pollution, improving conditions in disadvantaged communities, supporting or improving public health, improving connectivity and accessibility to jobs, increasing options for mobility, and increasing transit ridership. Funding for the AHSC Program is provided from the Greenhouse Gas Reduction Fund (GGRF), an account established to receive Cap-and-Trade auction proceeds.

## **Transformative Climate Communities (TCC) Program**

*Managing Agency: California Strategic Growth Council*

The Transformative Climate Communities Program was established by Assembly Bill (AB) 2722 to fund the development and implementation of neighborhood-level transformative climate community plans that include multiple, coordinated greenhouse gas emissions reduction projects that provide local economic, environmental, and health benefits to disadvantaged communities. The TCC Program is also an opportunity to realize the State's vision of Vibrant Communities and Landscapes<sup>3</sup>, demonstrating how meaningful community engagement coupled with strategic investments in transportation, housing, food, energy, natural resources, and waste can reduce GHG emissions and other pollution, while also advancing social and health equity and enhancing economic opportunity and community resilience. The TCC Program funds both implementation and planning grants. While the program can fund a variety of projects, transportation-related projects can include, but are not limited to: developing active transportation and public transit projects; support transit ridership programs and transit passes for low-income riders; expand first/last mile connections, build safe and accessible biking and walking routes, and encourage education and planning activities to promote increased use of active modes of transportation.

## **Environmental Enhancement and Mitigation (EEM) Grant Program**

*Managing Agency: California Natural Resources Agency*

This program authorizes the California state legislature to allocate up to \$7 million each fiscal year from the Highway Users Tax Account. EEM projects must contribute to mitigation of the environmental effects of transportation facilities. The EEM Program does not generally fund commute-related trails or similar bicycle/pedestrian infrastructure. However, it does fund recreational and nature trails as part of stormwater management or green infrastructure projects.

## Urban Greening Grant Program

*Managing Agency: California Natural Resources Agency*

As part of the California State Senate Bill (SB) 859, the California Natural Resources Agency's Urban Greening Program was created and is funded by the Greenhouse Gas Reduction Fund (GGRF) to support the development of green infrastructure projects that reduce GHG emissions and provide multiple benefits. In 2017, approximately \$26 million was allocated from the GGRF to the Urban Greening Program. Projects should be focused in disadvantaged communities to maximize economic, environmental, and public benefits. The Urban Greening Program will fund projects that reduce greenhouse gases by sequestering carbon, decreasing energy consumption and reducing vehicle miles traveled, while also transforming the built environment into places that are more sustainable, enjoyable, and effective in creating healthy and vibrant communities. These projects will establish and enhance parks and open space, using natural solutions to improving air and water quality and reducing energy consumption, and creating more walkable and bike-able trails.

## Environmental Justice (EJ) Small Grants Program

*Managing Agency: California Environmental Protection Agency*

The Environmental Justice (EJ) Small Grants Program offers funding opportunities to assist eligible non-profit community organizations and federally-recognized Tribal governments to address environmental justice issues in areas disproportionately affected by environmental pollution and hazards. The EJ Small Grants are awarded on a competitive basis with a maximum amount \$50,000 per grant. EJ Small Grants can be used for a variety of environmental purposes but can also be used to augment community engagement, health, trainings, and programmatic opportunities in underserved communities.

## Stormwater Management Program

*Managing Agency: State Water Resources Control Board*

The Storm Water Grant Program (SWGP) is intended to promote the beneficial use of storm water and dry weather runoff in California by providing financial assistance to eligible applicants for projects that provide multiple benefits while improving water quality. Under California Prop 1, the state authorized \$7.545 billion in general obligation bonds for water projects including surface and groundwater storage, ecosystem and watershed protection and restoration, and drinking water protection. Funds can be made available for multi-benefit storm water management projects which may include, but shall not be limited to: green infrastructure, rainwater and storm water capture projects and storm water treatment facilities. The program can also fund Stormwater Resource Plans and project-specific planning projects. Transportation-related projects funded by the program include green streets, urban runoff enhancements, greenbelts, stormwater capture systems, and permeable pavement projects.

## Regional Programs

### One Bay Area Grants (OBAG)

*Managing Agency: Metropolitan Transportation Commission*

MTC's One Bay Area Grant program (OBAG) is a funding approach that aligns the Commission's investments with support for focused growth. Established in 2012, OBAG taps federal funds to maintain MTC's commitments to regional transportation priorities while also advancing the Bay Area's land-use and housing goals. OBAG includes both a regional program and a county program that both targets project investments in Priority Development Areas (PDAs) and rewards cities and counties that approve new housing construction and accept allocations through the Regional Housing Need Allocation (RHNA) process. Cities and counties can use these OBAG funds to invest in local street and road maintenance, streetscape enhancements, bicycle and pedestrian improvements, transportation planning, and Safe Routes to School projects. The most recent OBAG funding cycle (OBAG 2) is project to fund approximately \$800 million in projects from 2017/2018 through 2021/2022.

## **Transportation Development Act (TDA) Article 3**

*Managing Agency: Metropolitan Transportation Commission*

The Transportation Development Act Article 3, or TDA 3, provides funding annually for bicycle and pedestrian projects. Two percent of TDA funds collected in the county is used for TDA 3. MTC allows each county to determine how to use funds in their county. Some counties competitively select projects while other counties distribute the funds to jurisdictions based on population. Each county coordinates a consolidated annual request for projects to be funded in the county.

## **Regional Measure 1, 2, 3, and Future Regional Measures**

*Managing Agency: Metropolitan Transportation Commission*

To help solve the Bay Area's growing congestion problems, MTC worked with the state Legislature to authorize a series of ballot measure that would finance a comprehensive suite of highway and transit improvements through an increase tolls on the region's seven state-owned toll bridges. In the most recent Regional Measure (RM 3), toll revenues will be used to finance a \$4.45 billion slate of highway and transit improvements in the toll bridge corridors and their approach routes. Active transportation projects may be included as accessory parts to larger infrastructure projects.

## **Regional Active Transportation Program**

*Managing Agency: Metropolitan Transportation Commission*

While the California Department of Transportation (Caltrans) administers statewide Active Transportation Program grants, MTC is allocated a portion of the funds to administer a regional component. MTC provides a regional supplemental application in addition to the statewide application to apply for the competitive program funds.

## **Transportation Fund for Clean Air (TFCA)**

*Managing Agency: Bay Area Air Quality Management District*

In 1991, the California State Legislature authorized the Air District to impose a \$4 surcharge on cars and trucks registered within its jurisdiction to be used to provide grant funding to eligible projects that reduce on-road motor vehicle emissions. The Air District allocates these funds to its Transportation Fund for Clean Air Program, which in turn provides funding to qualifying trip-reduction and alternative-fuel vehicle-based projects, including plug-in electric vehicles. Sixty percent of TFCA funds are awarded by the Air District to eligible programs and projects through a grant program known as the Regional Fund, through various Air District sponsored programs and projects including Spare the Air, and through certain alternative-fuel vehicle-based and bicycle facility programs. The remaining 40 percent of TFCA funds are passed through to the County Program Manager Fund and are awarded by the Congestion Management Agencies of the nine counties to TFCA-eligible projects located within those counties. Qualifying active transportation projects generally include the construction of new bicycle ways and the installation of new bike parking facilities, e.g., lockers and racks.

## **Bicycle Rack Voucher Program (BRVP)**

*Managing Agency: Bay Area Air Quality Management District*

This program aims to reduce air pollution in the Bay Area by supporting clean, alternative modes of transportation. As of 2016, Bicycle Rack Vouchers may be awarded in the amount of up to \$60 per bicycle parking space created. Funding is normally limited to a maximum of \$15,000 per applicant per year in Voucher awards. Only new bicycle rack(s) that are deployed in locations that have not previously been funded by and are not currently under consideration for funding by the Air District are eligible for funding through the BRVP.

## **Measure WW Urban Creek Grant**

*Managing Agency: East Bay Regional Park District*

Measure WW was approved by voters in Alameda and Contra Costa counties in November 2008. The measure extended Measure AA, approved in 1988, to help the Park District meet the increasing demand to preserve open space for recreation and wildlife habitat. The program seeks to fund projects that provide multiple benefits including improving environmental quality, addressing climate change through a reduction of greenhouse gas emissions and adaptation, conserving natural resources, and improving public health and public access. Ideally, capital projects will provide lands and projects that benefit urban streams within the East Bay Regional Park District jurisdiction (Alameda and Contra Costa counties). Types of capital projects that are eligible include both acquisition of land (fee title or permanent easements) and development of specific projects (including habitat restoration, erosion repair and public access).

## Measure FF

*Managing Agency: East Bay Regional Park District*

On June 5, 2018, the East Bay Regional Park District Board of Directors voted unanimously to place Measure FF on the November 2018 ballot. Measure FF will continue existing, voter-approved funding for Regional Parks in western Alameda and Contra Costa counties – without increasing taxes. Measure FF will continue funding for regional park services including wildfire prevention, public safety, maintaining or improving visitor use facilities, public access, and trails (including closing gaps in the Bay Trail), and restoring and enhancing natural areas/habitat, including sensitive redwoods, urban creeks, marshlands, grasslands, and hillsides.

## Local BART Sales Tax

*Managing Agency: Bay Area Rapid Transit District*

One of BART's primary funding mechanisms is a local sales tax collected across its service area. Bonds are secured through BART's sales tax revenue, consisting of 75% of revenue from a 0.5-cent sales tax collected in the three-county service area, with the remaining 25% distributed to the Metropolitan Transportation Commission (MTC). BART implements projects on agency-owned properties to improve safety and access for all modes to its stations.

## Measure RR

*Managing Agency: Bay Area Rapid Transit District*

The elected BART Board of Directors voted unanimously to put forward a \$3.5 billion general obligation measure on the November 2016 ballot that was approved by voters. The funds will help replace and maintain much of BART's assets that are reaching their useful life. Additionally, approximately \$135 million will be spent to expand opportunities to safely access stations. This includes improving active transportation access for all users including seniors and people with disabilities, primarily located on BART-owned properties. Local agencies can work with BART to identify opportunities for access improvements to local stations.

## Measure B

*Managing Agency: Alameda County Transportation Commission*

In 2000, nearly 82 percent of Alameda County voters approved Measure B, the half-cent transportation sales tax. Alameda CTC administers Measure B funds to deliver essential transportation improvements and services. The Alameda County 20-year Transportation Expenditure Plan guides the expenditures of more than \$1.4 billion in county transportation funds generated through the continuation of the sales tax over the next 20 years. The expenditure plan was developed to serve major regional transportation needs in Alameda County and to address congestion in every major commute corridor in the county. Regional priorities are to expand mass transit, improve highway infrastructure, improve local streets and roads, improve bicycle and pedestrian safety, and expand special transportation for seniors and people with disabilities. Funds are allocated through direct local distributions, discretionary programs, and to individual capital projects.

## Measure BB

*Managing Agency: Alameda County Transportation Commission*

Alameda County voters approved the 2014 Transportation Expenditure Plan (2014 TEP) as part of Measure BB in November 2014. Measure BB authorized the augmentation and continuation of the voter-approved 2000 Measure B sales tax with a second half-cent sales tax through the end of the 2000 Measure B collection period, i.e. March 31, 2022, followed by a one-cent sales tax authorizes from April 1, 2022 through March 31, 2045.

## Lifeline Transportation Program (LTP)

*Managing Agency: Alameda County Transportation Commission*

Alameda CTC, as the CMA, is responsible for soliciting and prioritizing projects in Alameda County for the Lifeline Transportation Program (LTP). The LTP provides funds for transportation projects that serve low-income communities using a mixture of state and federal fund sources (included under State and Regional Funding Programs since the LTP is approved at the State and Regional levels). The current program is made up of multiple fund sources including the State Transit Account, federal Job Access Reverse Commute and State Proposition 1B funds.

## Local Programs

### Vehicle Registration Fees

*Managing Agency: Alameda County Cities and County*

The Measure F Alameda County Vehicle Registration Fee (VRF) Program was approved by the voters in November 2010, with 63 percent of the vote. The fee will generate about \$11 million per year by a \$10 per year vehicle registration fee. The collection of the \$10 per year vehicle registration fee started in May 2011. The goal of the VRF program is to sustain the County's transportation network and reduce traffic congestion and vehicle-related pollution. The program includes four categories of projects including local road improvement and repairs, transit congestion relief projects, local transportation technology, and pedestrian and bicyclist access and safety program. Alameda CTC distributes an equitable share of the funds among the four planning areas of the county to fund additional projects identified by local jurisdictions.

### Developer Fees and/or Transportation Impact Fees

*Managing Agency: Alameda County Cities and County, if available*

Local or area-wide transportation impact fees can be developed so that a developer would pay into a fund that would be used to plan and implement transportation mitigation measures. Multimodal projects can be included for funding under these fee programs to enhance bicycle and pedestrian safety and connectivity. The nexus is often made that vehicle trip reductions can be supported through multimodal projects. For example, the Downtown Dublin Traffic Impact Fee includes multimodal projects.



*Gateway Treatment (signage) and High Visibility Pedestrian Crossing Treatment in Hayward, CA*

*Source: Kittelson & Associates, Inc.*

# 07

## CONCLUSION



## CONCLUSION

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Walking and biking allows residents and visitors of Hayward to travel throughout the city in a way that promotes sustainable, healthy, and vibrant communities. The Plan promotes these transportation systems, and establishes the City's vision and comprehensive approach to improving walking and biking in Hayward. The goal is a universally accessible, safe, convenient, and integrated system that promotes walking and biking as a convenient alternative to motor vehicles for residents, visitors, shoppers, and commuters.

The Plan's performance measures allow for the ongoing tracking of progress towards implementation of the following four goals:



**1** Safety



**2** Complete Streets



**3** Access & Mobility



**4** Funding & Implementation

The Plan provides for both near-term and long-term investment infrastructure solutions to support the Plan's vision and goals, as well as programmatic, education, and enforcement recommendations. Leveraging the revenue sources will help to realize solutions. Together, these components create a comprehensive approach that will guide, prioritize, and implement a network of quality bicycle and pedestrian facilities to improve mobility, connectivity, and public health throughout Hayward.

# **Appendix A**

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## Bike Network Project List



# **Appendix B**

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## Existing Conditions Memo



# **Appendix C**

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## Prioritization Framework



# **Appendix D**

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## Design Guide



## **Appendix E**

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### Bike and Ped Construction Zone Design Guide



# **Appendix F**

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## Cost Estimate Methodology

