

2020 PEDESTRIAN PLAN

CITY OF BERKELEY



ACKNOWLEDGMENTS

Efforts from the following organizations made the Berkeley Pedestrian Plan possible:

- Mayor/City Council
- Transportation Commission
- Pedestrian Subcommittee of the Transportation Commission
- Interagency Staff Working Group
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EXECUTIVE SUMMARY



Walking is a core transportation mode in Berkeley. Everyone travels by foot or with an assistive device, ranging from a short portion of a trip to the entire length of a journey. Improving walking in Berkeley means improving networks within neighborhoods, providing linkages to local destinations and transit, and providing opportunities for play and exercise. Whether walking to the bus stop or playing on the sidewalk, residents, visitors, students, commuters, and families bring Berkeley's pedestrian network to life.

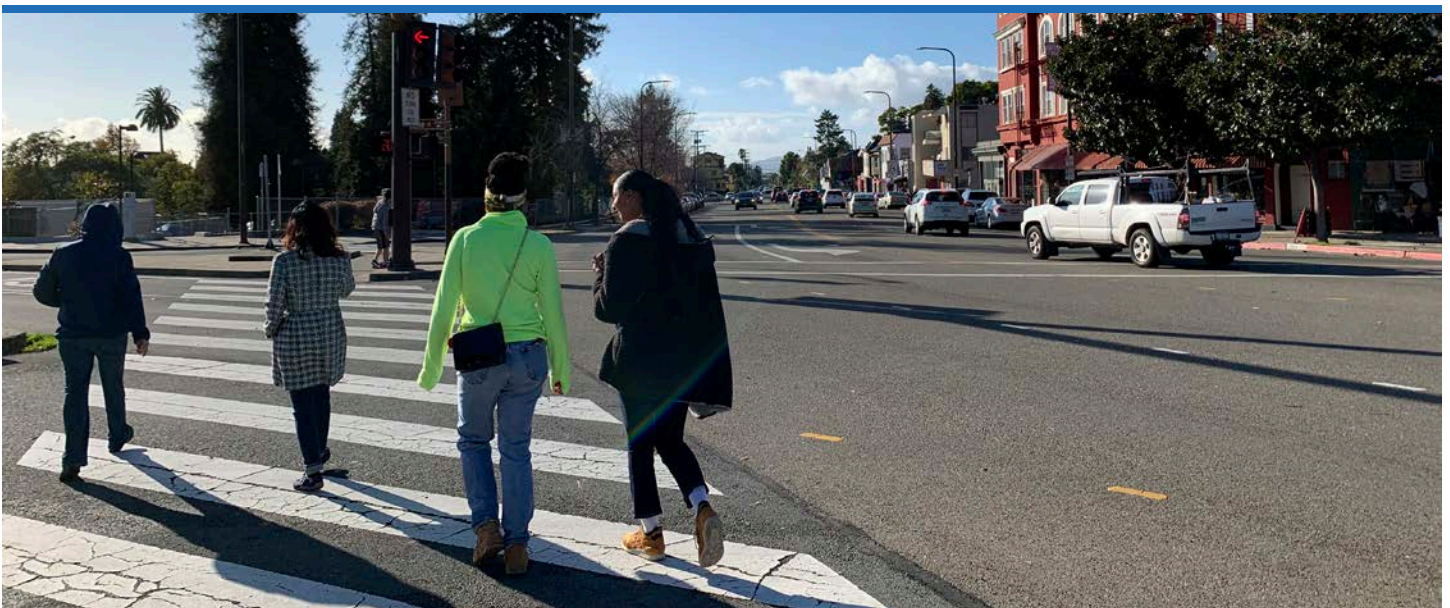
Improving walkability makes Berkeley safer, more inclusive, and more connected. As the most accessible and affordable form of transportation, walking lies at the core of an equitable mobility network and a healthy place. Safe and comfortable access to pedestrian infrastructure makes reaching Berkeley's many destinations more feasible for every individual. In addition to enhancing Berkeley's quality of life, improving walking will help the City to achieve its Vision Zero Policy goal of zero traffic deaths and severe injuries.

The Berkeley Pedestrian Plan Update (Plan) is a critical component of the City's efforts to meet diverse travel needs and improve mobility for everyone who is walking and traveling with an assistive device in Berkeley. In this Plan, we refer to "walking" as any person traveling on foot or with an

assistive device. This Plan identifies and addresses critical gaps and needs, while offering opportunities to improve experiences of walking in Berkeley. Key corridors and projects are identified with cost estimates and potential funding sources. The vision, goals, and priorities of this Plan align with other City planning efforts already underway, ensuring that recommended mobility improvements are both appropriate and coordinated.

How This Plan is Organized

The Plan outlines a citywide vision and a set of goals that guide recommendations for how to invest resources that will improve walking ([Chapter 1](#)). An existing conditions analysis identifies critical gaps and needs within the City's network of sidewalks, paths, and stairs ([Chapter 2](#)). Projects, programs, and policies that fill these gaps and that meet these needs are prioritized to align with planning efforts and current projects and to advance the City's overarching goals to improve safety, equity, and health ([Chapter 3](#)). An estimate of costs to implement this Plan's recommended projects, programs, and policies are provided, alongside a list of funding and revenue sources ([Chapter 4](#)). The Plan's appendices ([Chapter 5](#)) detail the specific components of this Plan, including public engagement, engineering and design guidance, and technical analysis methodologies.



PLAN CONTEXT

The Plan builds upon Berkeley's first Pedestrian Plan, adopted in 2010. The 2010 Pedestrian Plan set six principles for creating a more pedestrian-oriented City:

- Accessibility
- Environmental Sustainability
- Equity
- Personal and Community Safety
- Health and Well-Being
- Community Cohesion and Vitality

This Plan builds upon these principles and now aligns with the City's most recent efforts to improve mobility in Berkeley, like Vision Zero. This Plan will complement the following planning efforts that are currently underway or already completed in Berkeley:

- General Plan (2003)
- Pedestrian Charter Principles (2004)
- Climate Action Plan (2009)
- Pedestrian Plan (2010)
- Resilience Strategy (2016)
- Berkeley Strategic Transportation Plan (BeST) (2016)
- Berkeley bicycle Plan (2017)
- 2018-19 Strategic Plan (2018)
- Vision Zero Action Plan (2020)

WHAT WE HEARD ABOUT WALKING IN BERKELEY

Community engagement was a critical component of creating this Plan. Participants shared comments, stories, experiences, impressions, concerns, and ideas that shaped the findings and recommendations of this Plan. Coupled with quantitative data collection and analysis, input from community members provided the basis of a holistic approach to identifying projects, programs, and policies to improve walking in Berkeley. In this Plan, both in-person events and online engagement tools were used to hear from community members. Community engagement materials were translated into Spanish, and in-person events were located in settings and locations all across the city to reach different population groups. Engagement also included working with disability rights advocates and ADA staff inside the city to incorporate the needs of people who roll into this plan.

In-person events were held in conjunction with other local events, like farmer's markets and holiday festivals, between June and August 2018. More than 500 total comments were received at these events. Comments ranged from describing challenges at specific locations to expressing general concerns throughout Berkeley to providing innovative ideas intended to spark pedestrian activity and enhance safety for people walking.



Meeting with community members at the Fourth of July party at the Berkeley Marina in 2018.

Comments from community members highlighted several key themes:

- **Accessibility concerns** on broken, deteriorating, or blocked sidewalks
- **Unsafe or uncomfortable crossing conditions**, including crossings where lighting is poor, where collisions have occurred, where vehicle speeds are too high, and where pedestrian crossing times are too short
- **Lacking pedestrian-oriented or pedestrian-only spaces**, like plazas and walking paths, and **pedestrian amenities**, like street trees and seating
- **Confusing or unsafe roadway design** for pedestrians to navigate
- **Insufficient or low-quality pedestrian connections to access transit stations**
- **Feelings of insecurity** on isolated paths or on missing or narrow sidewalks
- **Unsafe driver behavior** at pedestrian crossings

Open houses provided another in-person opportunity to hear from community members. The first open house was held on December 1, 2018 at the Frances Albrier Community Center, and the second was held on December 7, 2019 at Ed Roberts Campus. Together, more than 60 people attended the open houses to comment, identify priorities, and speak with staff regarding how to improve walking in Berkeley based on their own experiences, observations, and knowledge. Open houses were also an opportunity for the project team to share the Plan's technical approach and recommendations with community members.

Comments from open house attendees highlighted several key themes.

- Crossing certain streets is **perceived as dangerous** or risky. This can be improved by slowing vehicle speeds and making pedestrians more visible at such locations.
- Drivers should adhere to traffic laws, and enforcement of those laws should be done in a way that minimizes or **eliminates potential for bias**.
- **Improving human-scale lighting** is needed at crosswalks to increase both comfort for people crossing the street and visibility of people walking to drivers.

- Providing ample and automatic **time for people to cross the street** is preferable to relying on buttons that pedestrians have to push to cross the street.
- Maintaining a high degree of **sidewalk quality** and reducing the prevalence of cracked sidewalks is a priority across Berkeley.

A **project website**, which was linked to the City's online presence, augmented in-person outreach activities. Here, community members read a project overview, viewed the schedule with a calendar of outreach events, and engaged with a "WikiMap," which allowed individuals to identify their current walking routes and suggest improvements to the pedestrian network. Respondents provided the most WikiMap feedback in the following locations:

- Downtown Berkeley, South Berkeley, and Westbrae neighborhoods
- UC Berkeley campus
- In the vicinity of all three Berkeley BART stations
- Commercial corridors including Shattuck Avenue, University Avenue, and Adeline Street



Soliciting public feedback on the Berkeley Pedestrian Plan at the Fourth of July Party at Adventure Playground on July 4th, 2018.

An **online survey** linked on the project website invited community members to provide more detailed information on their current walking habits and decisions. In total, more than 400 people completed the survey, with an additional 200 people completing only select portions of the survey.

Each City Council District in Berkeley was represented and **Figure ES-1** shows the percentage of respondents from each. The survey was developed to help answer the following key questions. The input obtained was used to guide the development of the Plan.

- 1. Travel Trends:** What kinds of trips do you make by walking, how often are these trips made, and how far do you walk?
- 2. Key Destinations:** Where do you walk and where would you like to walk?
- 3. Attitudes:** What factors do you consider when choosing whether to walk? What factors discourage you or your children from walking?
- 4. Priorities:** What types of projects and programs should the City of Berkeley prioritize? Where should investments be prioritized?
- 5. Demographics:** Who is walking and how can the City of Berkeley better serve their needs?

The survey responses revealed that:

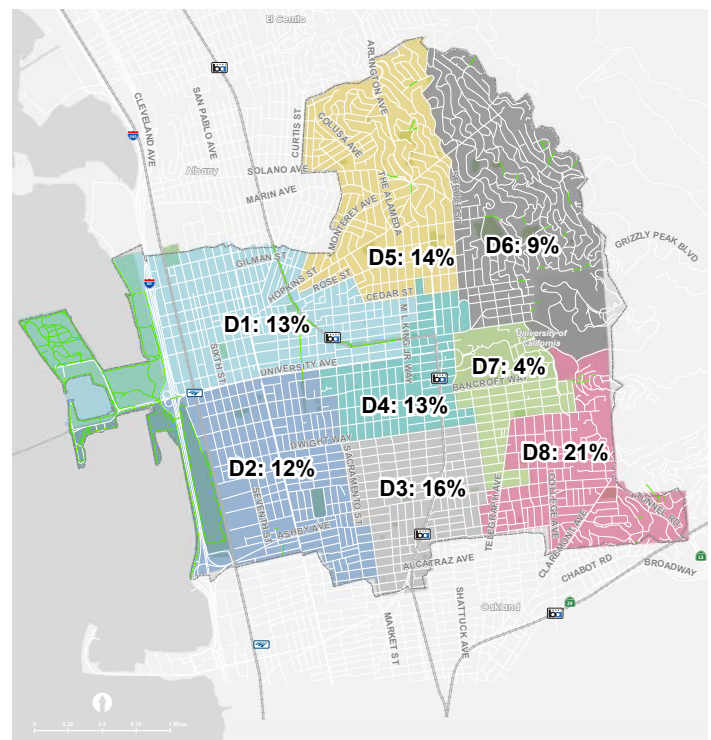
- A majority of respondents **walk at least once a week** to work or school or for other trips, indicating the importance of a connected and safe pedestrian network in Berkeley.
- Many walking trips are combined with another mode of transportation, especially when **used to access public transit**.
- Many respondents expressed that they do not walk or let their children walk to school because of **traffic safety concerns and perceived walking distances**.
- When considering walking to key destinations, respondents indicated that **safety and connectivity were critical to deciding when to walk rather than using another mode of transportation**.

Survey respondents were able to choose multiple types of pedestrian projects that they wanted the City to prioritize. Overall, 60 percent of survey respondents want to see projects implemented that address pedestrian collisions, and almost half (45 percent) of survey respondents want to see projects implemented that provide access to key destinations such as schools, transit, parks, and libraries along or across busy streets.

The Plan also includes feedback from **stakeholder engagement** through the Transportation Commission and its Pedestrian Subcommittee, and an Interagency Staff Working Group that consisted of representatives of various City departments, UC Berkeley, the Alameda-Contra Costa Transit District (AC Transit), and Lawrence Berkeley National Lab shuttle service. Meetings with stakeholders provided opportunities to share the Plan’s findings and recommendations and hear insight from diverse stakeholders’ perspectives. Their comments and feedback shaped the technical analysis and informed the findings and recommendations presented in this Plan.

Input gathered through community engagement and outreach processes has been incorporated into each element of this Plan, and the community’s voice is ever-present in this Plan. A public engagement summary is included in **Appendix A: Public Engagement Summary**.

FIGURE ES-1: PERCENTAGE OF SURVEY RESPONDENTS BY BERKELEY COUNCIL DISTRICT

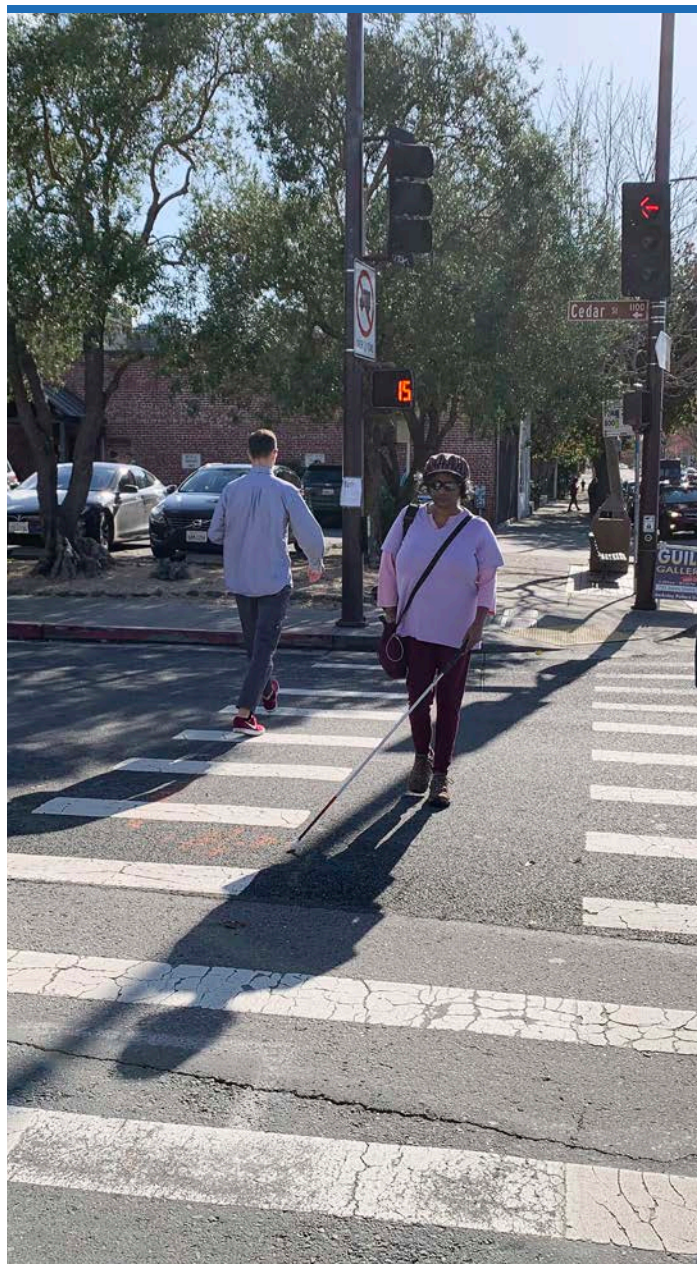


VISION & GOALS

The Plan's vision sets a course for improving walking in Berkeley:

Berkeley is a model walkable city where traveling on foot or with an assistive device is safe, comfortable, and convenient for people of all races, ethnicities, incomes, ages and abilities.

Adapted from the 2010 Pedestrian Plan, the vision was updated to reflect the City of Berkeley's renewed commitment to shaping an inclusive and equitable city through mobility.



The vision also sets the framework for the Plan's goals and performance measures to improve travel on foot. The goals of this Plan are to:

Goal: Increase SAFETY & COMFORT for People Walking

Berkeley is one of the more walkable cities in the state of California, and indeed, many residents, workers, and visitors do feel comfortable walking in the City. While Berkeley has the highest number of pedestrian collisions compared to cities in California with similar population sizes, it has a low number compared to these cities when the high amount of walking in Berkeley is taken into account. In fact, Berkeley has the highest rate of commute trips by walking of any city in California with a population of at least 20,000, and the second highest rate among medium sized cities in the country, according to the US Census American Community Survey.

Goal: Increase EQUITY and Transportation Choices for All

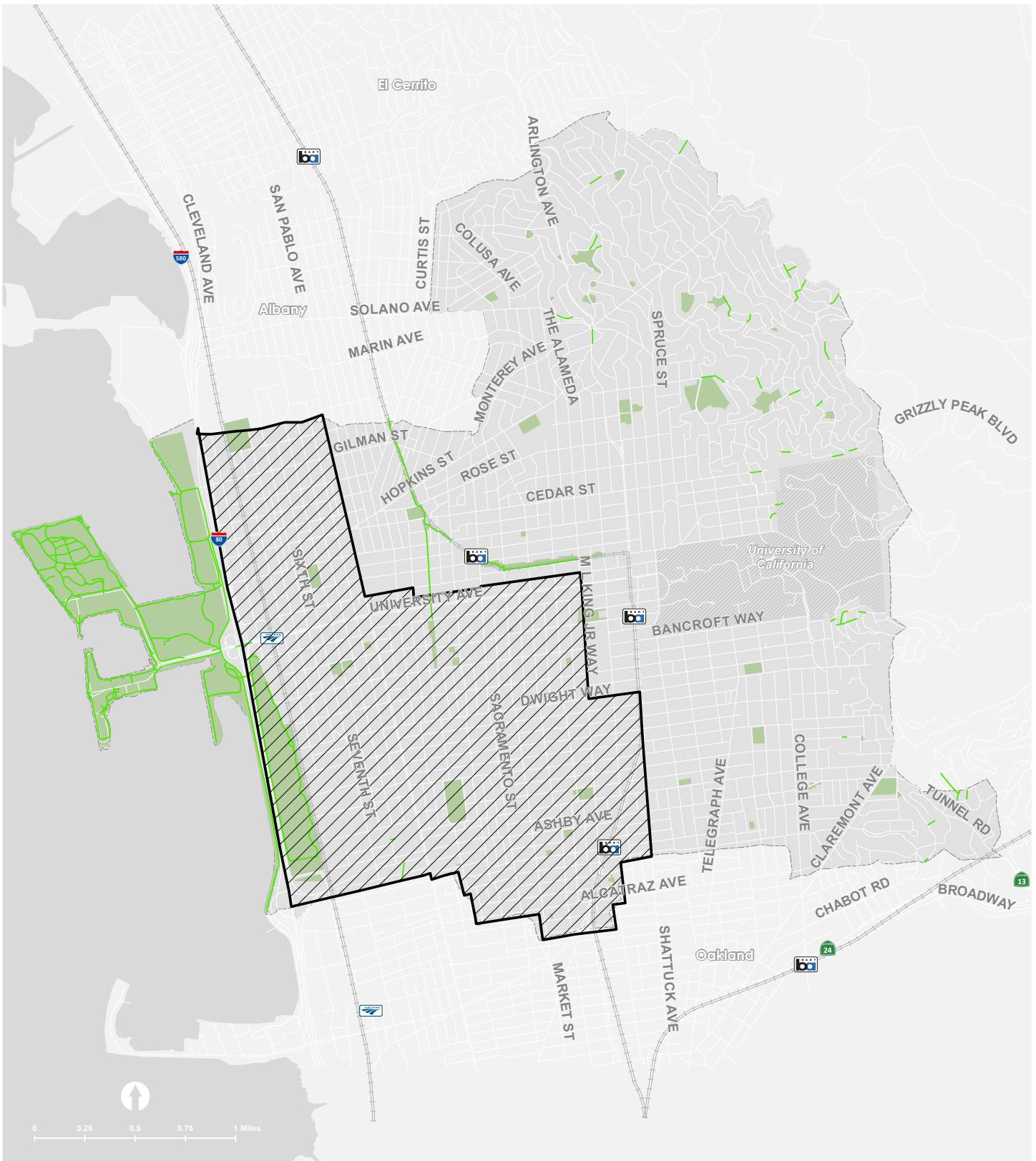
Equity means ensuring that residents of historically underserved neighborhoods of Berkeley have input in the development of the Plan, and proposing a distribution of benefits that recognizes and addresses underinvestment in these historically underserved areas of the City. **Figure ES-2** shows an outline of the historically underserved areas of Berkeley.

Goal: Improve PUBLIC HEALTH & ENVIRONMENTAL SUSTAINABILITY






Walking has a positive impact on individuals' health and the environment. Increased walking is linked to reduced obesity and decreased mortality from various chronic diseases.

Chapter 1 explores what these three goals are, why these goals were chosen, and what performance measures are in place to measure progress toward achieving these goals.

FIGURE ES-2: HISTORICALLY UNDERSERVED AREAS OF BERKELEY



 Historically Underserved Areas of Berkeley

-  Amtrak Station
-  BART Station
-  Railroad
-  Parks/Recreation
-  Berkeley City Boundary

EXISTING CONDITIONS / NEEDS ANALYSIS

Understanding the current quality and conditions of pedestrian infrastructure in Berkeley is foundational to making the most appropriate and necessary recommendations. This analysis connects the everyday experiences of walking and traveling throughout Berkeley’s pedestrian network to data analysis included in this Plan and provides the holistic understanding of pedestrian infrastructure that is necessary for identifying its needs and gaps. The existing conditions/needs analysis is comprised of:

- An inventory of current infrastructure
- A measurement of pedestrian demand
- An assessment of pedestrian safety

The **infrastructure inventory** focuses on walkability, land use, sidewalks, and crossings and identifies pedestrian facilities, infrastructure conditions, and additional pedestrian amenities throughout Berkeley.

The purpose of estimating **pedestrian demand** in Berkeley is to better understand where pedestrians are and where they are going. This informs which improvement projects and programs to recommend. The pedestrian demand analysis identified four key intersections with the highest pedestrian volumes. Each of these intersections is located in Berkeley’s downtown core, near the Downtown Berkeley BART station:

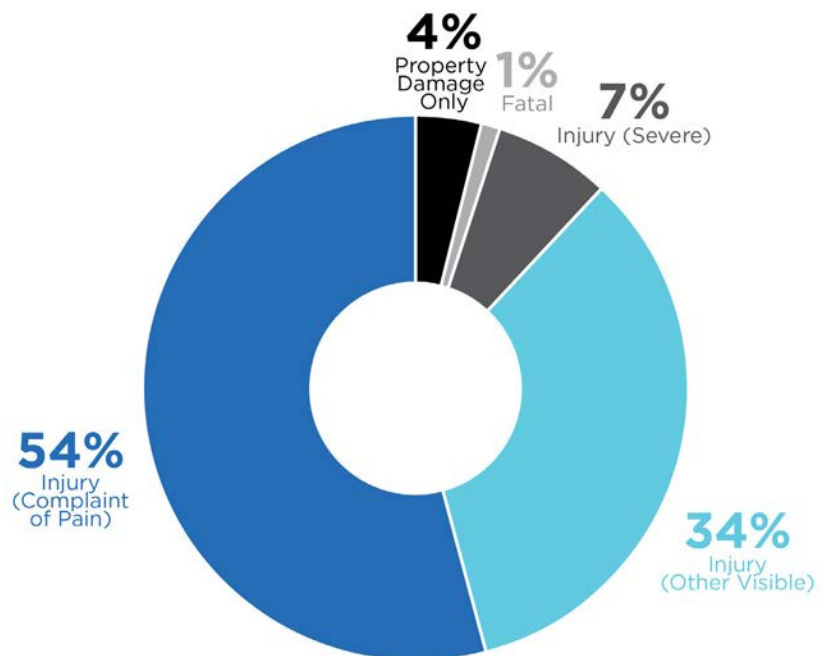
- Shattuck East at Addison Street
- Shattuck West at Addison Street
- Shattuck Avenue at Center Street
- Shattuck Avenue at Allston Way

Measuring **pedestrian safety** through collision data is critical to both understanding and improving safety when walking in Berkeley. Pedestrian safety efforts presented in this Plan are consistent with the City’s Vision Zero Action Plan, adopted in March 2020.

Vision Zero is a movement started in Sweden in 1997, which has since been adopted by many countries and cities throughout the world, that seeks to eliminate all traffic fatalities and severe injuries. Consistent with the Vision Zero philosophy, the Berkeley Vision Zero program uses a data-driven approach in developing engineering strategies to redesign the streets to achieve zero traffic fatalities and severe injuries in the City by 2028. This Plan works toward accomplishing this Vision Zero goal by aligning tools and metrics for analyzing collisions involving pedestrians.

Improving pedestrian safety is a key priority of this Plan. In keeping with this priority, collisions involving pedestrians are analyzed along with several safety metrics, including collision factors, the locations of pedestrian collisions, the severity of collisions, the demographics of pedestrians, and driver actions preceding collision. As shown in **Figure ES-3**, of the 1,071 total collisions involving pedestrians in Berkeley between 2008 and 2017, 10 were fatal (1 percent) and 79 led to a severe injury (7 percent). The collisions resulting in a fatality or severe injury were given additional weight when prioritizing improvements. The high-injury streets, where the most severe pedestrian collisions occur in Berkeley, are shown in **Figure ES-4**.

FIGURE ES-3: COLLISIONS IN BERKELEY INVOLVING PEDESTRIANS AND VEHICLES, 2008-2017



Source: SWITRS 2008-2017

FIGURE ES-4: HIGH-INJURY STREETS IN BERKELEY



Fatal and Severe Injury Collisions, 2008-2017

- Fatal
- Severe Injury
- High Injury Streets

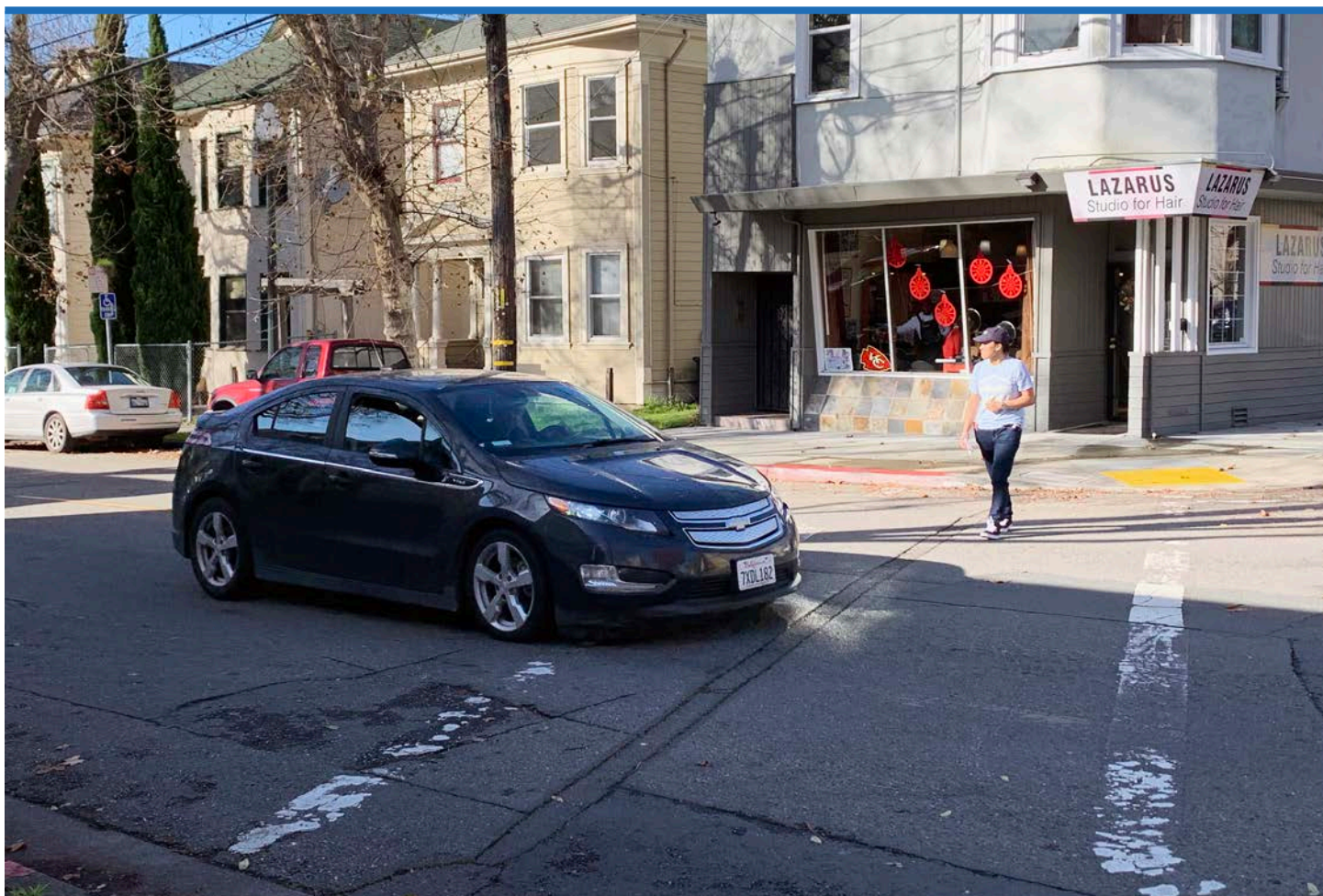
- Amtrak Station
- BART Station
- Railroad
- Sidewalk Presence
- Multi-Use Trails/Stairways
- Parks/Recreation
- Berkeley City Boundary

RECOMMENDATIONS

Actionable projects, programs, and policies recommended in this Plan respond to the findings from the existing conditions and needs analysis. These recommendations also align with the goals and vision of this Plan and build upon the City's ongoing planning efforts.

Several factors, including equity, concentration of severe crashes, and proximity to key pedestrian destinations were used to identify capital projects on ten priority street segments (**Figure ES-5**):






- **San Pablo Avenue** from University Avenue to Dwight Way
- **Martin Luther King Jr. Way** from Hearst Avenue to Dwight Way
- **Ashby Avenue** from San Pablo Avenue to Shattuck Avenue
- **Adeline Street** from Ashby Avenue to Berkeley City Limits
- **University Avenue** from San Pablo Avenue to Oxford Street
- **Shattuck Avenue** from Adeline Street to Berkeley City Limits
- **Martin Luther King Jr. Way** from Dwight Way to Adeline Street
- **Alcatraz Avenue** from Sacramento Street to Adeline Street
- **Cedar Street** from Sixth Street to Stannage Street
- **Sacramento Street** from Dwight Way to Berkeley City Limits



This pedestrian crossing at Alcatraz Avenue and King Street has faded crosswalk markings and worn pavement, which may make crossing the street more challenging.

FIGURE ES-5: PRIORITIZED HIGH-INJURY STREETS



- Prioritized High-Injury Streets
-  Amtrak Station
-  BART Station
-  Railroad
-  Parks/Recreation
-  Berkeley City Boundary

In addition to these projects on the ten priority street segments, implementing key identified programs and policies throughout Berkeley will help meet pedestrian needs and fill existing gaps.

The programs and policies fit within the following three themes:

- Reducing conflicts between pedestrians and vehicles
- Making pedestrians more visible on the street
- Upgrading and adding enhanced crosswalks

Within each area are specific priority topics that together create a comprehensive approach to improving Berkeley's pedestrian network and an action plan of policies, programs, and practices. Some recommendations will be addressed through this Plan, while others inform and support the City's Vision Zero Action Plan and other ongoing efforts.

Categories of recommended improvements are shown in callout boxes and augment the four priority areas by providing additional means and methods for improving the experience of walking in Berkeley.



INFRASTRUCTURE AND OPERATIONS

STREET DESIGN

PEDESTRIAN CROSSINGS

SPEED MANAGEMENT AND TRAFFIC CALMING

ACCESSIBILITY

EVALUATION AND PLANNING

PEDESTRIAN VOLUMES

PEDESTRIAN SAFETY

PROJECT IMPLEMENTATION

FUNDING

INTRA- AND INTER-AGENCY COORDINATION

EDUCATION AND ENFORCEMENT

SAFETY EDUCATION

EQUITABLE ENFORCEMENT

Recommended projects, programs, and policies are described in greater detail in [Chapter 3](#).

1

PEDESTRIAN PLAN

VISION & GOALS



The vision, goals, and performance measures described in this section led the Plan’s development and will guide how it is implemented. The core principles of the vision, goals, and performance measures reach beyond this Plan, building collectively on the City’s goals and priorities to improve mobility in Berkeley.

- The **vision** provides an overarching direction and long-term vision for walking within the City of Berkeley.
- The **goals** provide guidance on how to reach the vision and make clear connections to other City goals.
- Each goal includes **performance measures** to assess progress toward achieving the goals.

Developing the vision, goals, and performance measures in this section required aligning the Plan with existing goals and priorities in other City documents. The documents listed below inform the Plan’s vision, goals, and performance measures:

- [General Plan \(2003\)](#)
- [Pedestrian Charter Principles \(2004\)](#)
- [Climate Action Plan \(2009\)](#)
- [Pedestrian Plan \(2010\)](#)
- [Resilience Strategy \(2016\)](#)
- [Berkeley Strategic Transportation Plan \(BeST\) \(2016\)](#)
- [Berkeley Bicycle Plan \(2017\)](#)
- [2018-19 Strategic Plan \(2018\)](#)
- [Vision Zero Action Plan \(2020\)](#)

VISION

The Berkeley Pedestrian Plan Update’s vision provides the foundation for improving walking in Berkeley:

Berkeley is a model walkable city where traveling on foot or with an assistive device is safe, comfortable, and convenient for people of all races, ethnicities, incomes, ages and abilities.

The Plan envisions Berkeley as a walkable city where all people choose to walk to school, to shop, to the bus stop, to work, and just for the sheer pleasure of it. This vision sets the framework for the Plan’s goals and performance measures. It also guides the development of the policies, actions, and prioritization criteria, which are described in [Chapter 3](#).

VISION ZERO

Vision Zero is a data-driven strategy to eliminate all traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility for all. Berkeley Vision Zero is, first and foremost, an engineering strategy that aims to design and build our streets to eliminate all severe and fatal traffic injuries. City Council approved Berkeley’s Vision Zero Action Plan in March 2020.

GOALS

The Plan’s goals provide direction for achieving the vision. These goals are:

- Increase **safety and comfort** for people walking
- Increase **equity** and transportation choices for all
- Improve **public health and environmental sustainability**

Like the vision, the goals are aligned with other City goals and efforts, such as the goals established in the Berkeley Strategic Transportation Plan (BeST). For example, the first goal of BeST is to increase mobility and access for all mode choices. This Plan is specifically focused on achieving this goal for people walking.

The Plan’s goals are described in greater detail on the following pages.



Goal: Increase **SAFETY & COMFORT** for People Walking

Berkeley is one of the more walkable cities in the state of California, and indeed, many residents, workers, and visitors do feel comfortable walking in the City. While Berkeley has the highest number of pedestrian collisions compared to cities in California with similar population sizes, it has a low number compared to these cities when the high amount of walking in Berkeley is taken into account. In fact, Berkeley has the highest rate of commute trips by walking of any city in California with a population of at least 20,000, and the second highest rate among medium sized cities in the country, according to the US Census American Community Survey.

Increasing safety means lowering the number of pedestrian collisions and decreasing collision risk for pedestrians. Increasing comfort will naturally occur as a result of increasing safety, since areas with lower collision risk typically feel more comfortable. Streets with high numbers of injuries and fatalities reported on them, known as high-injury streets, are targeted in this goal.

Meeting this goal will protect the City’s most vulnerable users, move toward the City’s Vision Zero Policy goal of zero traffic deaths and severe injuries by 2028 and encourage other people to consider walking for transportation or recreation.

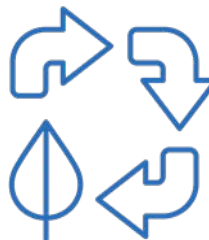


Goal: Increase **EQUITY** and Transportation Choices for All

Equity means ensuring that residents of historically underserved neighborhoods of Berkeley have input in the development of the Plan, and proposing a distribution of benefits that recognizes and addresses underinvestment in these historically underserved areas of the City.

To achieve this goal, the Plan sought broad and diverse feedback from a wide array of voices through an inclusive public engagement process. In terms of outcomes, walking is the most accessible and affordable form of transportation and recreation and is at the core of an equitable transportation system.

Achieving equity means Berkeley will be walkable and accessible for everyone, regardless of race, ethnicity, class, income, age, ability, sexual orientation, and/or gender expression/identity.



Goal: Improve **PUBLIC HEALTH & ENVIRONMENTAL SUSTAINABILITY**

Walking has a positive impact on individuals’ health and the environment. Increased walking is linked to reduced obesity and decreased mortality from various chronic diseases.

Additionally, increasing the number of people choosing to walk for transportation has the potential to: replace vehicle trips, reduce consumption of fossil fuels, and contribute to environmental sustainability goals.


PERFORMANCE MEASURES

Within each goal in the Plan is a set of performance measures and strategies to track the progress of reaching the goal. In this Plan, performance measures set a benchmark and track progress towards goals over time. The performance measures in the Plan will be used with three purposes:


- Assess walking conditions
- Align decisions with community goals
- Track progress toward the goals

Improvements and project recommendations to advance progress toward achieving this Plan's goals are described in [Chapter 3](#).

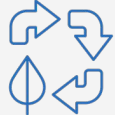
Goal: Increase SAFETY & COMFORT for People Walking

Goal	Performance Measures	Strategy
 Safety & Comfort	Reducing pedestrian fatalities and severe injuries to zero by 2028	Safety treatments implemented on high-injury streets
	Speed reduction on high-injury streets	100 percent of high-injury streets subjected to speed studies by 2025 Traffic calming measures installed on 100 percent of high-injury streets by 2028

Goal: Increase EQUITY and Transportation Choices for All

Goal	Performance Measures	Strategy
 Equity	Pedestrian improvements completed in Berkeley's historically underserved areas (as shown in Figure 13)	70 percent of pedestrian-related investments made within historically underserved areas by 2028
	ADA improvements completed citywide	Implementation of ADA Transition Plan by 2040

Goal: Improve PUBLIC HEALTH & ENVIRONMENTAL SUSTAINABILITY

Goal	Performance Measures	Strategy
 Health & Environmental Sustainability	Increase in amount of walking	Maintain Berkeley's position as California's top-ranked city for walking commute rate

2

EXISTING WALKING

CONDITIONS



This chapter examines current conditions for people walking to identify deficiencies and gaps. The Plan's goals and performance measures are informed by the data evaluated through this process. Experiences, stories, impressions, and input gathered from the Plan's community and stakeholder engagement process have also informed improvements and recommendations.

This chapter is organized into the following sections:

- **Progress Summary.** This section summarizes the progress made on implementing the 34 high-priority projects that were identified in the 2010 Pedestrian Plan.
- **Infrastructure Inventory.** This section describes Berkeley's existing pedestrian network, including a discussion of land use and walkability, sidewalks, crossings, and other facilities and amenities.
- **Pedestrian Demand.** This section summarizes key findings from the pedestrian demand model analysis to show expected pedestrian volumes within Berkeley.
- **Pedestrian Safety.** This section describes Berkeley's recent history of pedestrian safety and evaluates severe injuries and fatalities caused by collisions. The analysis reviews collisions that occurred between 2008 and 2017 from police reports to determine intersection and street segment locations with a high number of severe pedestrian injuries and fatalities. These locations make up Berkeley's high-injury streets, which are listed in this section.



2. Existing Walking Conditions

PROGRESS SUMMARY

PROGRESS ON IMPLEMENTING THE 2010 PEDESTRIAN PLAN

The 2010 Berkeley Pedestrian Plan established three goals:

1. Plan, build and maintain pedestrian-supportive infrastructure
2. Provide universally safe and equal access
3. Develop pedestrian-supportive encouragement and enforcement programs

Using these goals as a framework, the 2010 Plan established 34 high-priority pedestrian projects. Ten years later, how much progress has the City made on completing these projects?

CASE STUDY: THE ALAMEDA/HOPKINS STREET

The intersection at The Alameda and Hopkins Street was a high-priority pedestrian project. There were three pedestrian collisions between 2012 and 2016, and a Berkeleyside article reported five pedestrian collisions and one bicycle collision between 2005 and 2010¹.

In 2016, the City of Berkeley made intersection changes to improve safety for pedestrians and bicyclists. Barriers and refuge islands shorten the distance for pedestrians crossing the street and force right-turning vehicles to slow down. Bike lanes between the barriers and the curb allow bicyclists to benefit, as well. The intersection is now the first protected intersection in Berkeley.

Collisions occurring after the project was completed may be carefully considered by the City to further improve this intersection. Refinements continue to be made at the intersection, and this is an example of the City working to make walking safer in Berkeley.

PRIORITY PROJECT IMPLEMENTATION

Berkeley has used a variety of funding sources to implement the high-priority pedestrian projects.

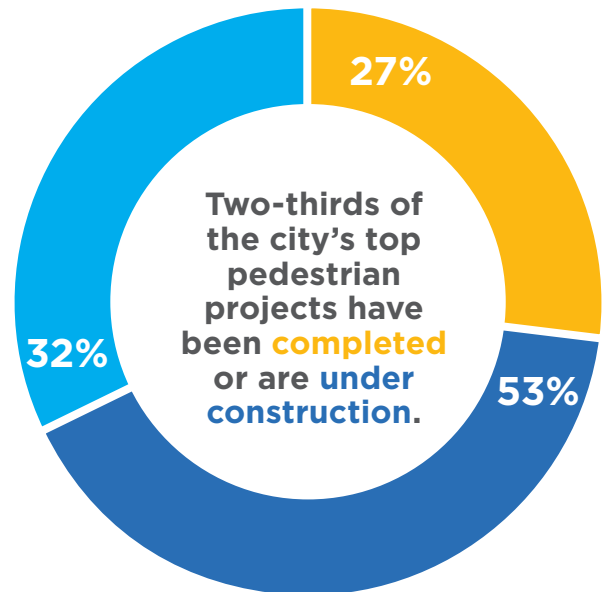
- The Caltrans Active Transportation Program, created in 2013, funds pedestrian, bicycle, and Safe Routes to School projects.
- Alameda County Transportation Commission discretionary grants fund local street infrastructure projects that include pedestrian improvements.
- Federal grants awarded by the Metropolitan Transportation Commission fund large transportation projects that include pedestrian improvements.

¹ <https://www.berkeleyside.com/2017/06/22/berkeley-makes-safety-improvements-alameda-hopkins-intersection>



Protected intersection at The Alameda and Hopkins Street

FIGURE 1: 2010 PEDESTRIAN PLAN PROJECT STATUS



34 High-Priority Projects

9 Completed Projects

14 Projects Underway

11 Projects to be Built

FIGURE 2: 2010 PEDESTRIAN PLAN PROJECT STATUS



High Priority Projects

- Completed Projects
- Projects Underway
- Projects to be Built

- Amtrak Station
- BART Station
- Railroad
- Parks/Recreation
- Berkeley City Boundary

**2010 PEDESTRIAN PLAN
PROJECT STATUS**

CITY OF BERKELEY



More information on projects can be found [here](#).

2. Existing Walking Conditions

INFRASTRUCTURE INVENTORY

This section documents the current quality and conditions of pedestrian infrastructure in Berkeley. The infrastructure inventory connects the everyday experiences of walking and traveling in Berkeley with this Plan’s data analysis, providing the holistic understanding of pedestrian infrastructure necessary to identifying its needs and gaps. This inventory is organized in the following sections:

- **Walkability and land use**, which also highlights the location of schools and parks in Berkeley
- **Sidewalks**, including the path, stair, and trail network
- **Crossings**, such as intersections with traffic signals and marked crosswalks

Walkability and Land Use

Being able to walk to a destination reaps numerous benefits for individuals and the broader community. Walking is part of a healthy lifestyle, and more people walking makes a neighborhood a safer place to be. Walkable communities are a boost to businesses, property values, and overall economic vitality. Walking to destinations does not produce any carbon emissions. **Figure 3** shows pedestrian destinations in Berkeley.

Downtown Berkeley is a major employment node and destination in the city and the region. It is home to mixed-use spaces, major commercial arteries, higher-density housing, a major research university, and Berkeley High School.

Single-family housing is the predominant land use in Berkeley. Higher-density housing types are found in Downtown Berkeley, around the UC Berkeley campus, near the Amtrak Capitol Corridor Station in West Berkeley, and in mixed-use development projects along commercial streets, particularly along Shattuck Avenue north and south of Downtown and along University and San Pablo Avenues.

Commercial corridors follow several of Berkeley’s major arterial streets. The majority of Berkeley’s commercial land outside of Downtown follows Shattuck Avenue, Adeline Street, Telegraph Avenue, San Pablo Avenue, University Avenue, and Solano Avenue. There are also about a dozen neighborhood commercial centers throughout Berkeley.

Two designated mixed-use zones in West Berkeley are transitioning from commercial and industrial uses into spaces that incorporate more housing and live-work spaces. These zones are not easily accessible on foot from Berkeley’s three BART stations. However, part of one of these zones is located near the Amtrak Capito Corridor station with service to Silicon Valley, and the other zone is located near San Pablo Avenue bus routes to downtown Oakland.

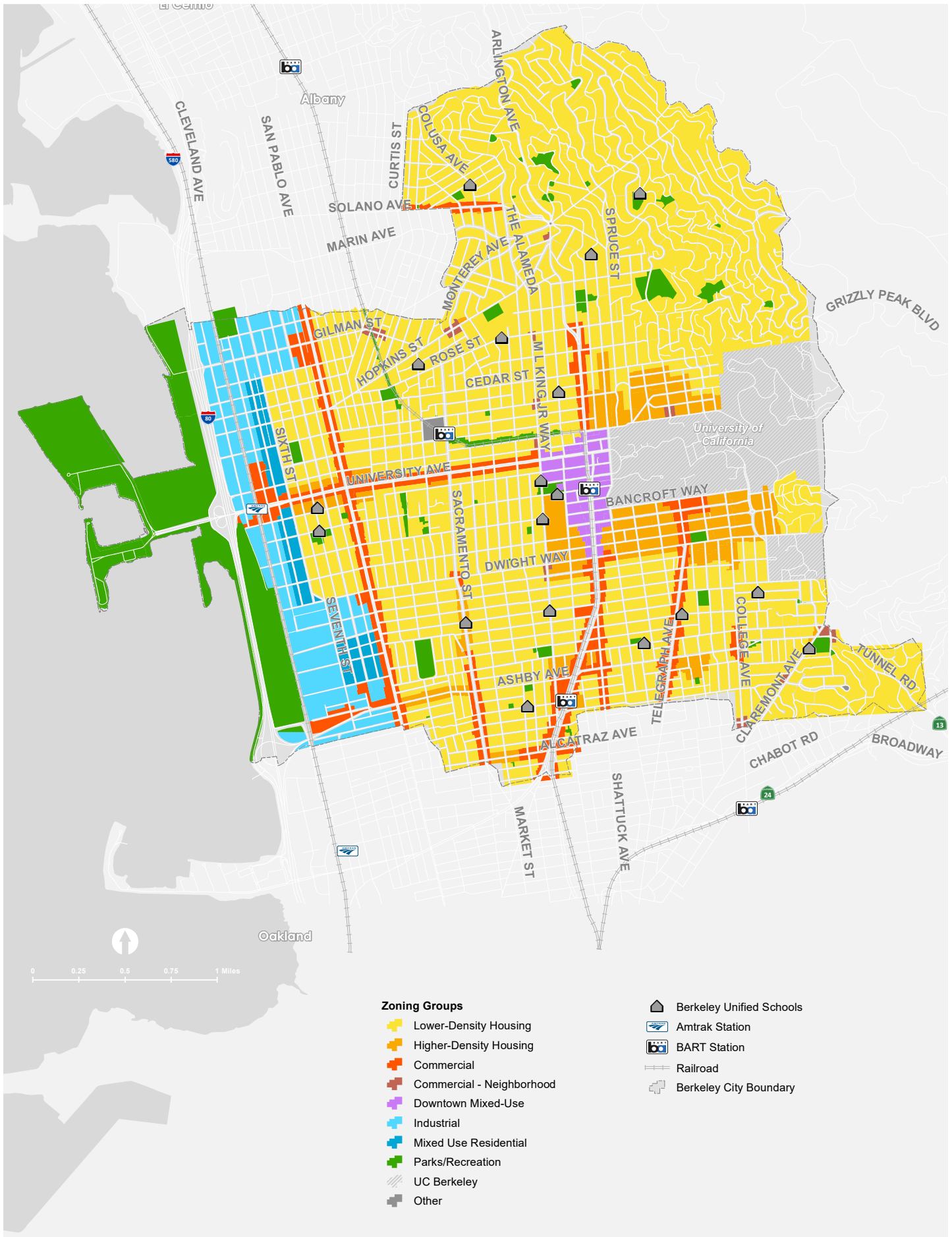
Each of the three BART stations are surrounded by a different mix of land uses. The Ashby BART station serves a diverse array of commercial, institutional, and housing land uses. Community destinations, such as the Berkeley Bowl supermarket, the Ed Roberts Campus, and nearby senior living facilities. Farmers’ markets and the Ashby Flea Market are events held near the station. The Downtown Berkeley BART station provides convenient access to the central business district and UC Berkeley campus. The North Berkeley BART station is surrounded by low-density housing.

Berkeley’s public schools are located in different land use areas based on grade level. Berkeley High School is located downtown, and the three middle schools are on Telegraph Avenue, Sacramento Street, and Rose Street. The elementary schools are spread across Berkeley but are generally found in lower-density residential neighborhoods.

Pedestrians walking along Shattuck Avenue at Virginia Street just north of Downtown Berkeley. Photo: Amanda Leahy, Kittelson



FIGURE 3: PEDESTRIAN DESTINATIONS AND LAND USES IN BERKELEY



2. Existing Walking Conditions

WHAT ABOUT SIDEWALK QUALITY?

At various public involvement events in Berkeley, we heard a common refrain about sidewalks: there are numerous places around Berkeley where broken or uneven sidewalks become difficult or impossible to navigate. While Berkeley's sidewalk network may have very few gaps, the sidewalk quality in some places can be similar to having no sidewalk at all. Uneven or broken sidewalks can be a hazard for anyone, and they are a critical issue for people with wheelchairs, people using canes or walkers, or people who have other mobility or balance challenges.

Sidewalks

Berkeley has a well-connected sidewalk network, but a few areas in the City warrant further discussion.² **Figure 4** shows sidewalks, pedestrian paths, and shared-use paths in Berkeley.

SIDEWALK COVERAGE

Figure 4 shows that the majority of roads in Berkeley have sidewalks that are five feet or wider. When roads from the UC Berkeley campus and I-80 overpasses and interchanges are removed from the data, only 10.5 percent of Berkeley's road miles do not have sidewalks. Not all sidewalks are equal, however, as 17.4 percent of Berkeley's road miles either have no sidewalk or have sidewalks less than five feet in width.

NORTH BERKELEY HILLS

The North Berkeley Hills in the northeast part of town have narrow or non-existent sidewalks on many roads. Given the topography and constrained right-of-way, adding sidewalks likely is not an option on many of these streets. Instead, pedestrians can access a series of east-west paths and stairs throughout the neighborhood.

CLAREMONT

The Claremont neighborhood, east of Claremont Avenue, has narrow sidewalks (less than five feet in width) and sidewalk gaps. Pedestrian paths provide connectivity around the neighborhood. Like the North Berkeley Hills, this part of town is located on the side of a hill, which constrains right-of-way and makes adding sidewalks a challenge.

NORTHWEST BERKELEY

Northwest Berkeley, a more auto-oriented part of Berkeley due to its proximity to I-80 (and the Eastshore Highway before it), has industrial, commercial, and residential uses west of San Pablo Avenue, and primarily residential uses with some commercial nodes east of San Pablo Avenue. There are several sidewalk gaps west of San Pablo Avenue, especially on north-south streets, and the City added sidewalks at a half-dozen different locations in Northwest Berkeley in summer 2019, which helped fill the gaps around Gilman Street.

² The areas discussed in this section were selected based on land use and geography and do not represent neighborhood boundaries.

DOWNTOWN BERKELEY

As shown in the Pedestrian Destinations map, Downtown Berkeley is a local and regional destination. This area of town is observed to have some of the widest sidewalks in Berkeley, but, as shown in **Figure 4**, much of the existing sidewalk data in this part of Berkeley does not include widths. Sidewalk clear-widths can vary substantially on the same block, due to sidewalk bulbouts, BART station entrances, bus stops, and street furniture such as benches.

I-80 AND THE SAN FRANCISCO BAY TRAIL

Access to the San Francisco Bay Trail and the Berkeley Marina is limited for pedestrians. At the I-80 interchange at Ashby Avenue, no pedestrian access is provided. At the I-80 interchange at University Avenue, a stairway up to the University Avenue bridge crosses I-80, but it is in a dark and secluded area. Additionally, no at-grade sidewalk leads to the base of this stairway. The sidewalk on the south side of the University Avenue bridge over I-80 leads to a crossing of the exit from I-80 westbound which includes a slip lane and lacks marked sidewalks, crosswalks, and wheelchair ramps. Of the 10 pedestrians killed in collisions with vehicles in Berkeley over the 10-year period studied, one was located on the University Avenue overpass.³ A pedestrian and bicycle bridge over I-80 is located about a block to the south of this interchange.

³ <https://www.berkeleyaside.com/2013/07/15/hit-and-run-kills-pedestrian-on-university-ave-overpass>

I-80/GILMAN STREET INTERCHANGE

The third interchange, at I-80 and Gilman Street, has a continuous sidewalk on the north side of Gilman Street, but a pedestrian must navigate highway on- and off-ramps. Future construction here will improve pedestrian access, but the short-term impact will likely further limit pedestrian access to the San Francisco Bay Trail.⁴

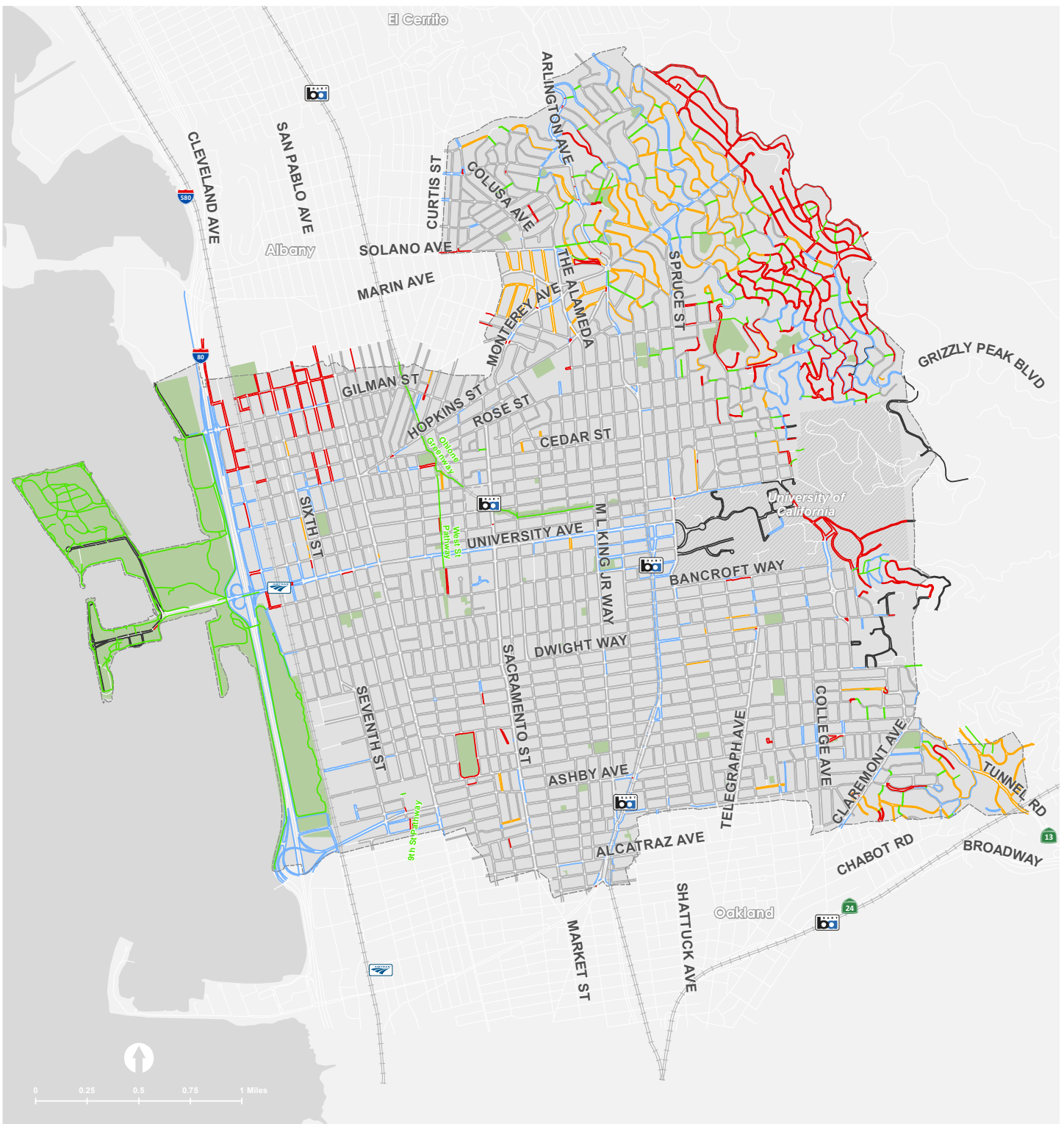
⁴ https://www.alamedactc.org/files/managed/Document/21172/1381000_I-80_Gilman_Interchange.pdf














Covert Path provides a connection between Keith Avenue, Cragmont Avenue, and Keeler Avenue in the North Berkeley Hills. Photo: Amanda Leahy, Kittelson.

2. Existing Walking Conditions

FIGURE 4: EXISTING SIDEWALK COVERAGE IN BERKELEY



-  Amtrak Station
-  BART Station
-  Railroad
-  Sidewalks 5 feet or wider
-  Sidewalks < 5 feet wide
-  Multi-Use Trails/Stairways
-  Sidewalk Presence Width Unknown
-  No Sidewalk
-  No Data Available
-  Parks/Recreation
-  Berkeley City Boundary

Crossings

Street crossings are essential for being able to walk from place to place. Each crossing, whether located on an arterial or local street, needs to provide a level of comfort and safety for the pedestrian to reach their destination. A network of well-marked and signalized crossings can help meet this goal.

Figure 5 shows all marked crosswalks and signalized intersections in Berkeley.

Broadly speaking, Berkeley's larger, arterial streets have marked crosswalks located at regular frequencies. While not every arterial intersection has a marked crossing on all sides, there is likely a marked crossing at a nearby intersection.

The highest concentration of signalized intersections in Berkeley is in Downtown and just south of the UC Berkeley campus. These intersections generally have marked crosswalks on most or all sides of the intersection. Outside of these areas, intersections where the two intersecting streets are not perpendicular tend to have fewer marked crossings.

There are notable places in Berkeley where marked crossings are not present. Berkeley Way is an east-west road between University Avenue and the Ohlone Greenway that must be crossed for people trying to connect between these two major pedestrian destinations. However, there are few marked crosswalks on Berkeley Way.

There are several primarily-residential neighborhoods where marked crossings are lacking. These include an area bounded by Allston Street, Sacramento Street, Russell Street, and San Pablo Avenue in West Berkeley, and an area bounded by the Ohlone Greenway, Sacramento Street, Hopkins Street, and Martin Luther King Jr Way. Additionally, there are few marked crossings in the Berkeley Hills.

In general, flashing don't-walk signs at signalized pedestrian crossings are calibrated for someone to be able to cross the road who is walking at a speed of 3.5 feet per second. Many people, primarily younger and older people, and those with a disability, or walking with an assistive device, walk at slower speeds and may be at higher risk of being involved in a collision with a vehicle inside a marked crosswalk after the flashing don't-walk phase has ended. Persons using wheelchairs or other mobility devices may not be able to cross an intersection at this speed either, and those who can cross at this speed could still have issues navigating on or off the curb. These are also issues for street crossings with rectangular rapid flashing beacons and pedestrian hybrid beacons.

Table 1 examines existing marked crossings on six major streets in Berkeley. Of these chosen streets, Ashby Avenue (a state highway) has the highest average distance between crossings and has the longest single distance between two marked pedestrian crossings. This analysis does not differentiate between crossings with or without traffic control devices, such as traffic signals or stop signs. **Figure 5** shows the locations of marked crossings in Berkeley.



A pedestrian crosses Hearst Avenue at a marked crosswalk. This crossing has a rapid flashing beacon and a median island. Photo: Amanda Leahy, Kittelson

CONCERNS ABOUT CROSSINGS

Several key themes emerged across several community events. First, many people reported that vehicles do not always stop at unsignalized crossings to **yield the right-of-way** to pedestrians. Streets that were mentioned several times include Sacramento Street and Martin Luther King Jr. Way. People also reported that traffic circles can feel difficult to navigate as drivers often **encroach on pedestrian crossings** as they maneuver through intersections with traffic circles. A few intersections where **right-turning vehicles** were particularly challenging for pedestrians include: Telegraph Avenue and Parker Street, Sacramento Street and Dwight Way, and Gilman Street and I-80 Interchange.

TABLE 1: CROSSING FREQUENCY ON MAJOR ROADS IN BERKELEY

Street	Street Length	Marked Crossing Locations	Longest Distance Between Crossings	Average length Between Crossings
Ashby Avenue	2.6 Miles	25	875 Feet	560 Feet
Dwight Way	2.9 Miles	31	730 Feet	490 Feet
Martin Luther King Jr Way	2.4 Miles	29	620 Feet	430 Feet
Sacramento Street	2.3 Miles	27	760 Feet	455 Feet
San Pablo Avenue	2.3 Miles	32	625 Feet	380 Feet
University Avenue	1.8 Miles	23	690 Feet	400 Feet

For each major road, the longest distances between crossings are located at:

- Ashby Avenue between Pine Avenue and Claremont Avenue (875 feet)
- Dwight Way between Fulton Street and Ellsworth Street (730 feet)
- Martin Luther King Jr. Way between Channing Way and Bancroft Way (620 feet)
- Sacramento Street between Rose Street and Cedar Street (760 feet)
- San Pablo Avenue between Gilman Street and Harrison Street (625 feet)
- University Avenue between San Pablo Avenue and Curtis Street (690 feet)

FIGURE 5: MARKED CROSSINGS IN BERKELEY



- Signalized Intersections
- Multiuse
- Marked Crosswalks
- Amtrak Station
- BART Station
- Railroad
- Major Streets
- Parks/Recreation
- Berkeley City Boundary

2. Existing Walking Conditions

Other Facilities and Amenities

PATHS AND STAIRS

There are about 136 public paths and stairways in Berkeley. They are used for recreation and neighborhood connections to public transit, and can be critical for evacuations in emergency situations. For the past 20 years, the Berkeley Path Wanderers Association, an all-volunteer non-profit organization operating under Berkeley Partners for Parks, has been maintaining the paths and raising awareness to eventually complete the path network. Their work significantly contributed to this inventory.

SHARED USE PATHS

There are four shared-use paths in Berkeley: the Ohlone Greenway, the West Street Path, the Aquatic Park Path, and the San Francisco Bay Trail. Two paths – the Ohlone Greenway and the West Street Path – are located close to Downtown Berkeley and provide connections between housing and amenities. The Ohlone Greenway runs from just northwest of Downtown Berkeley along the BART right-of-way both where the BART line is below and above ground. The West Street Pathway is a north-south route that extends from Strawberry Creek Park to the Ohlone Greenway just south of Cedar Rose Park.

The other two paths serve primarily recreational purposes. The Aquatic Park Path is a two-mile loop around a lagoon in Southwest Berkeley. The San Francisco Bay Trail runs along the Bay at Berkeley’s western edge. With only two access points, at Gilman Street and at a bicycle/pedestrian bridge just south of University Avenue, it is not well connected to the rest of Berkeley’s pedestrian network.

AMENITIES

While sidewalks, paths, and crossings provide the means to reach a destination on foot, the amenities along the way also matter. Trees can provide shade from the sun and protection from the rain; however, a tree root system can lead to sidewalks or paved paths buckling. For longer walks or older people, benches can be vital to ensure that it is possible to reach a destination on foot. Drinking fountains and public restrooms provide an additional level of comfort. Wayfinding signage can help ensure that people can find their way to a local destination. The presence of these facilities and amenities helps encourage more people to walk by making the walking journey more comfortable and enjoyable.

IMPROVING AMENITIES

When we asked how walking in Berkeley could be improved, several common requests about improved amenities emerged. The most common were **more benches and more green spaces** for pedestrians to use and enjoy. People also noted that **streetlights were lacking or in poor condition** and should be improved for nighttime walking. In addition, we also heard people ask for more public restrooms, more even sidewalks, and wider sidewalks for people with mobility devices and people pushing strollers.



The Ohlone Greenway provides connections between Downtown Berkeley, the North Berkeley BART station, and Northwest Berkeley.
Photo: Amanda Leahy, Kittelson

PEDESTRIAN DEMAND

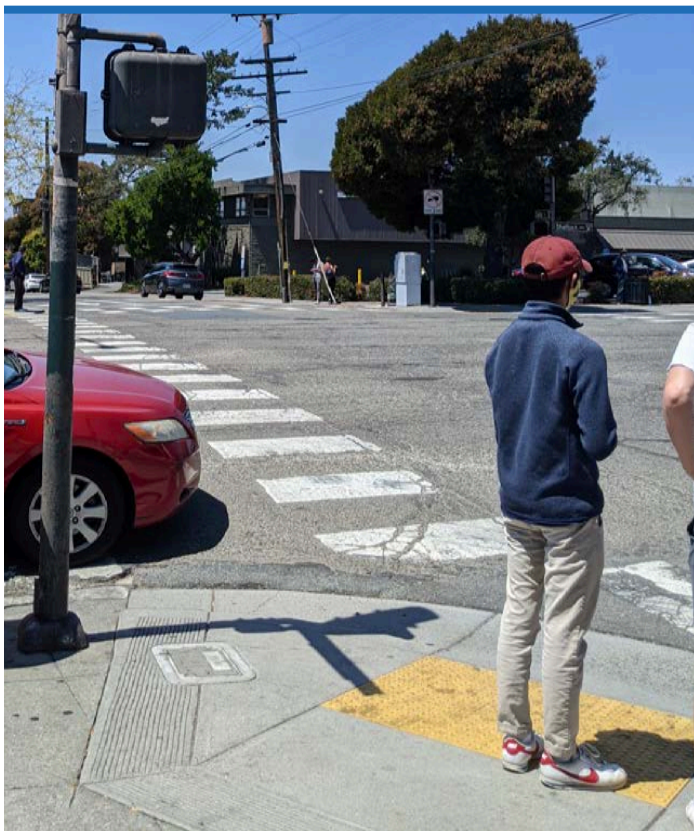
The purpose of estimating pedestrian demand in Berkeley is to better understand where pedestrians are going. This informs which improvement projects and programs to recommend. The information from the pedestrian demand analysis was used in the prioritization process because this analysis identifies locations that should be top priorities for pedestrian improvements, based on the number of people walking in those locations now.

It is important to note that these model outcomes reflect estimated volumes for where pedestrians are in Berkeley.

Process

The analysis applies a methodology⁵ to estimate weekly pedestrian crossing volumes at intersections using publicly accessible data as shown in **Figure 6**.

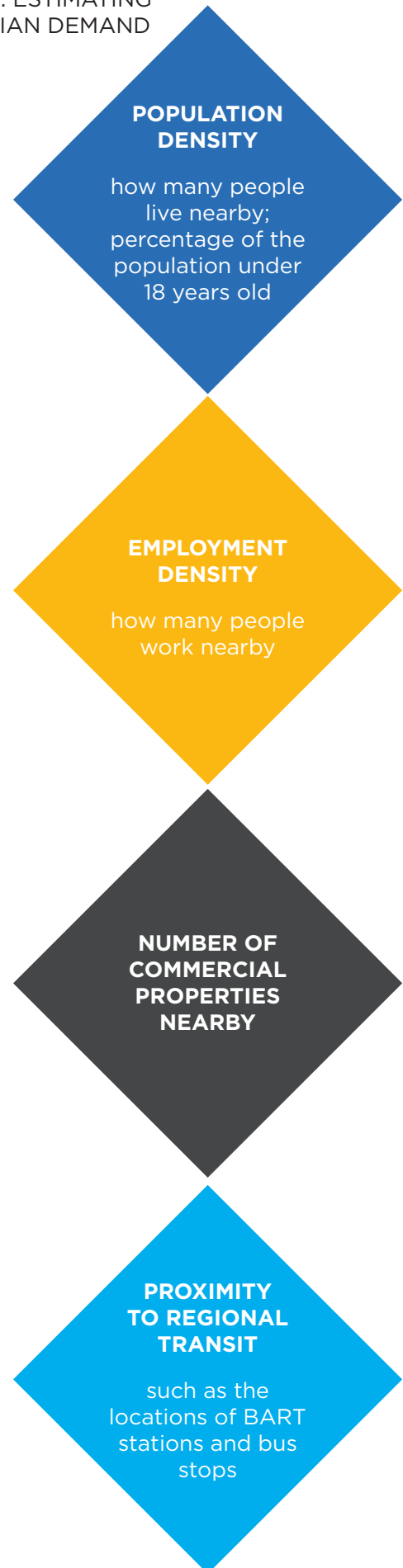
The estimated pedestrian volumes were also assigned to segments of streets. Additional information about the methodology can be found in **Appendix C: Technical Analysis Methodologies**.



5 Developed by: Schneider, R., Arnold, L., & Ragland, D. (2009). Pilot model for estimating pedestrian intersection crossing volumes. Transportation Research Record: Journal of the Transportation Research Board, (2140), 13-26. Available online at <https://cloudfront.escholarship.org/dist/prd/content/qt3nr8h66j/qt3nr8h66j.pdf>

2. Existing Walking Conditions

FIGURE 6: ESTIMATING PEDESTRIAN DEMAND



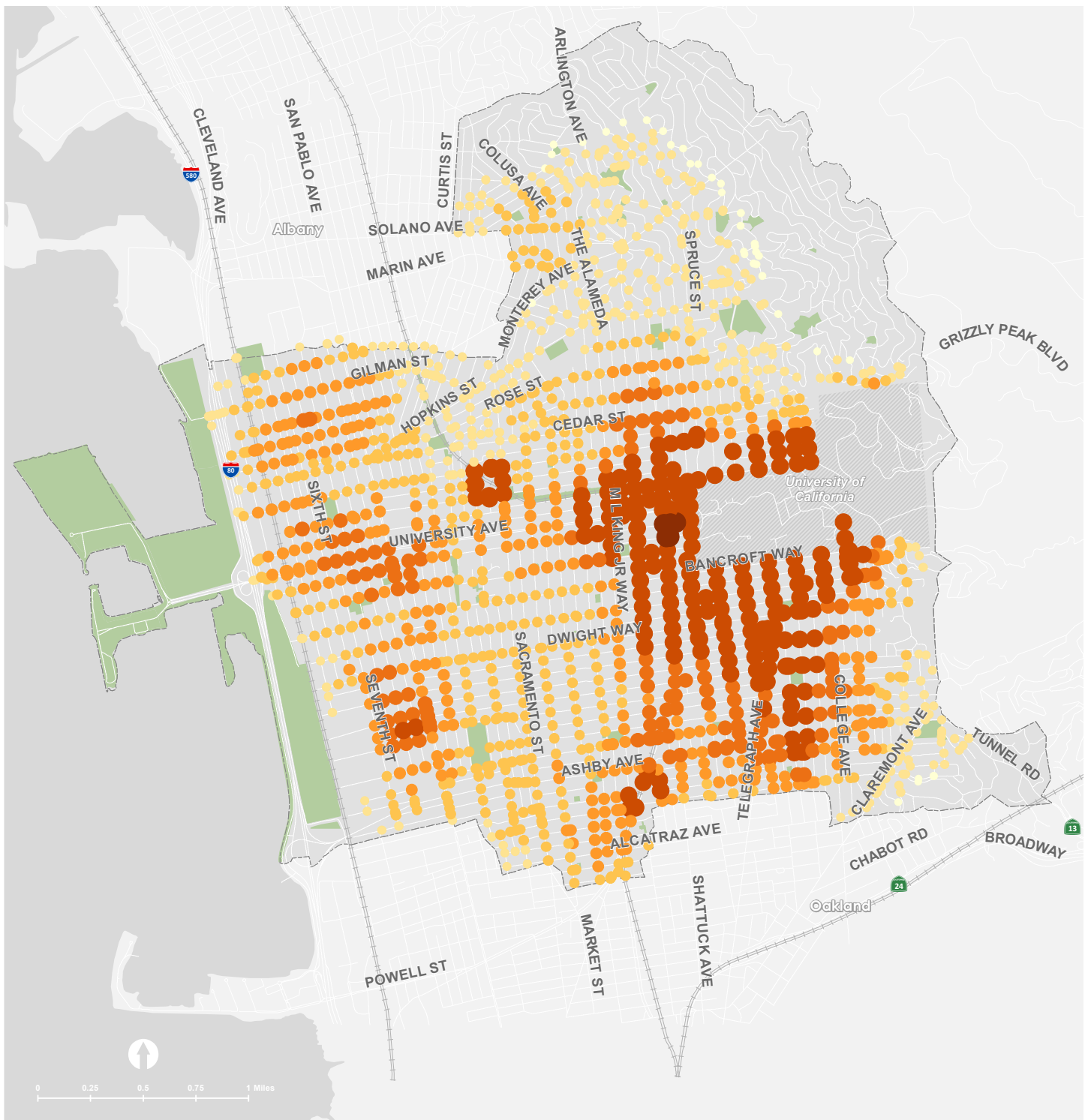
Results

The pedestrian demand estimates indicate that the intersections with the highest weekly pedestrian volumes are clustered around the perimeter of the UC Berkeley campus, in Downtown Berkeley, and around the North Berkeley and Ashby BART stations. The top 20 intersections with the highest estimated pedestrian volumes are shown in **Table 2**. **Figure 7** illustrates the pedestrian volume estimates at intersections and along street segments, respectively.

TABLE 2: TOP 20 HIGHEST INTERSECTIONS FOR WEEKLY PEDESTRIAN DEMAND ESTIMATES

Intersection Ranking	Street 1	Street 2	Estimated Weekly Pedestrian Volume
1	Shattuck East	Addison St	107,250
2	Shattuck West	Addison St	105,050
3	Shattuck Ave	Center St	103,000
4	Shattuck Ave	Allston Way	95,550
5	Adeline St	Woolsey St	70,300
6	Adeline St	Essex St	69,600
7	Woolsey St	Martin Luther King Jr Way	69,550
8	Emerson St	Adeline St	69,350
9	Tremont St	Essex St	68,400
10	Prince St	Martin Luther King Jr Way	68,300
11	Tremont St	Prince St	68,250
12	Sacramento St	Delaware St	64,550
13	Short St	Delaware St	64,150
14	Delaware St	Acton St	62,950
15	Bowditch St	Bancroft Way	62,200
16	Sacramento St	Francisco St	61,750
17	Francisco St	Acton St	60,850
18	Virginia St	Sacramento St	59,700
19	Short St	Virginia St	59,600
20	Acton St	Virginia St	59,250

FIGURE 7: ESTIMATED PEDESTRIAN VOLUMES AT INTERSECTIONS



Estimated Weekly Pedestrian Volumes

- 0 - 250
- 251 - 5,000
- 5,001 - 10,000
- 10,001 - 15,000
- 15,001 - 20,000
- 20,001 - 100,000
- > 100,000

- +— Railroad
- Parks/Recreation
- Berkeley City Boundary

2. Existing Walking Conditions

PEDESTRIAN SAFETY

Pedestrian safety efforts presented in this Plan support the Berkeley Vision Zero Policy, adopted in March 2018, and are consistent with the Berkeley Vision Zero Action Plan adopted in March 2020. Vision Zero is a movement started in Sweden in 1997, which has since been adopted by many countries and cities throughout the world, that seeks to eliminate all traffic fatalities and severe injuries. Consistent with the Vision Zero philosophy, the Berkeley Vision Zero program uses a data-driven approach in developing engineering strategies to redesign the streets to achieve zero traffic fatalities and severe injuries in the City by 2028.

This section addresses pedestrian safety through the following analysis topics:

- **Pedestrian collisions** to provide an overview of the collision history in Berkeley
- **Collision factors and characteristics** that include contributing factors to collisions, time of day when collisions occurred, and pedestrian characteristics
- **High Injury Streets** to identify where the vast majority of severe collisions in Berkeley have occurred

Pedestrian Collisions

This analysis examines the reported collisions involving a pedestrian in Berkeley. The Statewide Integrated Traffic Records System (SWITRS) database from the California Highway Patrol reports the following outcomes for pedestrian-involved collisions, listed from most to least severe:

- **Fatal:** A pedestrian fatality from a collision
- **Injury (Severe):** Life-threatening or otherwise major injury to a pedestrian. This category is defined by SWITRS to include all collisions resulting in a broken bone or laceration. It therefore does include some injuries that the general public would not consider severe.
- **Injury (Other Visible):** Visible, non-major pedestrian injury
- **Injury (Complaint of Pain):** No visible injury, but the pedestrian complains of pain
- **Property Damage Only (PDO):** No injuries from a collision

The SWITRS database reported 1,071 collisions involving a pedestrian from 2008 to 2017 – the 10 most recent years with complete data. The majority of collisions took place at or within 250 feet of an intersection. Collisions involving pedestrians on Interstate 80 were excluded from this analysis.

The California Office of Traffic Safety collects collision data for each city and county in California and ranks cities of similar sizes (based on population) along collision parameters. The most recent year of data is from 2015, when Berkeley had 119,997 residents. Of the 57 cities with 100,000 to 250,000 residents, Berkeley was:

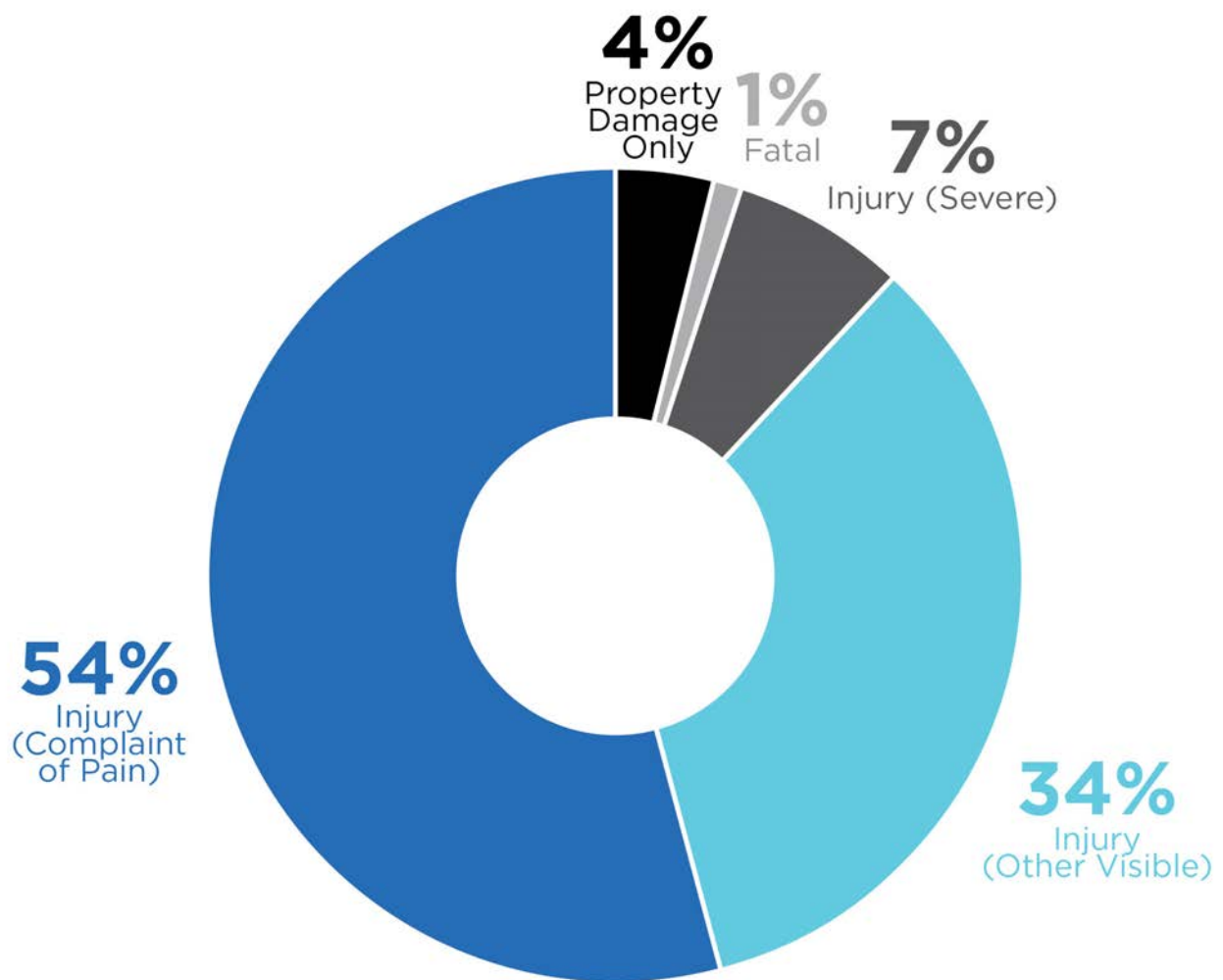
- **First** in total collisions involving pedestrians (116 collisions)
- **First** in total collisions involving bicyclists (173 collisions)
- **Second** in total collisions involving pedestrians over the age of 65 (18 collisions)
- **Eighth** in total collisions that were speed related (218 collisions)

These rankings must be held within the context of Berkeley's very high levels of walking and its density compared to other similarly-sized California cities. Berkeley has the highest rate of commute trips by walking of any city in California with a population of at least 20,000, and the second highest rate among medium sized cities in the country, according to the US Census American Community Survey. However, these rankings also prompt urgency to further analyze and reduce pedestrian collisions through this Plan's recommendations and other pedestrian safety efforts, consistent with Vision Zero.

TABLE 3: FATAL PEDESTRIAN COLLISIONS IN BERKELEY, 2008-2017

Collision Location	Collision Date
Warring Street/Derby Street Intersection	2/27/2009
Adeline Street/Harmon Street Intersection	4/29/2009
Adeline Street/Harmon Street Intersection	3/10/2010
San Pablo Avenue/Gilman Street Intersection	10/23/2010
Gilman Street and Frontage Road	11/26/2011
Tulare Avenue/Marin Avenue Intersection	1/30/2012
University Avenue on Overpass over Interstate 80	7/15/2013
Sacramento Street/Bancroft Way Intersection	4/4/2014
University Avenue Between Shattuck Avenue and Milvia Street	9/27/2016
Monterey Avenue/Hopkins Street Intersection	4/15/2017

FIGURE 8: PEDESTRIAN COLLISIONS IN BERKELEY, 2008-2017 USING SWITRS INJURY COLLISION TYPES



Source: SWITRS 2008-2017

COLLISION HISTORY

Pedestrian-involved collisions reported in the SWITRS collision database include collision outcomes, ranging from fatalities and injuries to property damage only. Notably, reported injuries from collision are simply a police officer’s account at the time of the collision; a reported injury could become more severe or chronic over time, which cannot be captured in an officer’s point-in-time report. Collision records are updated if a person dies of complications from the collision.

This section provides an overview of the key findings from the SWITRS collision data analysis. The complete set of findings can be found in **Appendix C: Technical Analysis Methodologies**. The key findings are:

- **Of the 1,071 total collisions involving pedestrians in Berkeley between 2008 and 2017, 10 were fatal and 79 led to a severe injury.** These totals represent collisions that were reported to the police and likely undercount the number of actual collisions involving a pedestrian in Berkeley.
- **31 (3%) of the total collisions took place along a street segment (more than 250 feet away from an intersection).** However, three of the ten fatal collisions (30%) took place along a street segment: these included two collisions on University Avenue and one on Gilman Street.

- **The majority of pedestrian collisions in Berkeley occurred at intersections.** The intersections in Berkeley with the highest number of collisions were generally located around downtown, south of the UC Berkeley campus, and along major arterials, such as Ashby Avenue, San Pablo Avenue, Shattuck Avenue, and University Avenue. Five intersections in Berkeley have had 10 or more reported pedestrian collisions between 2008 and 2017. Three of the 10 fatal pedestrian collisions occurred at an intersection that had at least eight reported pedestrian collisions during the study period.
- **The streets with the most pedestrian collisions are generally larger, arterial streets with high vehicle volumes and streets that run through downtown or close to the UC Berkeley campus** (see **Table 4**). Shattuck Avenue, which meets both of these criteria, had 122 pedestrian collisions between 2008 and 2017. Ashby Avenue and San Pablo Avenue, both of which are state highways, had 88 pedestrian-involved collisions each during this time period. These numbers are especially high considering that Ashby and San Pablo Avenue do not have high pedestrian volumes.

TABLE 4: STREETS BY TOTAL NUMBER OF PEDESTRIAN COLLISIONS, 2008-2017*

Street	Number of Collisions
Shattuck Avenue	122
Ashby Avenue	88
San Pablo Avenue	88
Martin Luther King Jr Way	76
University Avenue	74
Bancroft Way	65
Sacramento Street	56
Telegraph Avenue	56
Channing Way	52
Hearst Avenue	51
College Avenue	48
Adeline Street	42
Addison Street	40
Milvia Street	36
Dwight Way	35

Source: SWITRS 2008-2017

*Intersection collisions are tallied for both streets at the intersection.

Collision Factors and Characteristics

Many factors are involved in any collision. When a collision is reported, police respond to the incident and try to identify what caused the collision. Using the information available to them, they attempt to determine the actions of each party prior to the collision and the pedestrian location in the roadway at the moment that the pedestrian was struck. Other information is recorded to document the collision, like time of day, day of week, month, street lighting conditions, and pedestrian characteristics. This data is later compiled into the SWITRS collision database.

This section synthesizes the key findings from analyzing all reported collision factors and characteristics. Greater detail and data visualizations of collision factors and characteristics can be found in **Appendix C: Technical Analysis Methodologies**.

SWITRS provides several data points for each collision, including collision factor, pedestrian action, and driver action. The primary collision factor is reporting officer's best judgment as to the primary contributing factor to the collision. This element represents an officer's opinion and is used to examine collision trends.

Definitions of these collision factors are below:

- **Violation of the Pedestrian Right of Way:** Driver fails to yield to the pedestrian who has the right of way and then collides with the pedestrian.
- **Pedestrian Violation:** Pedestrian fails to yield the right-of-way to a vehicle.

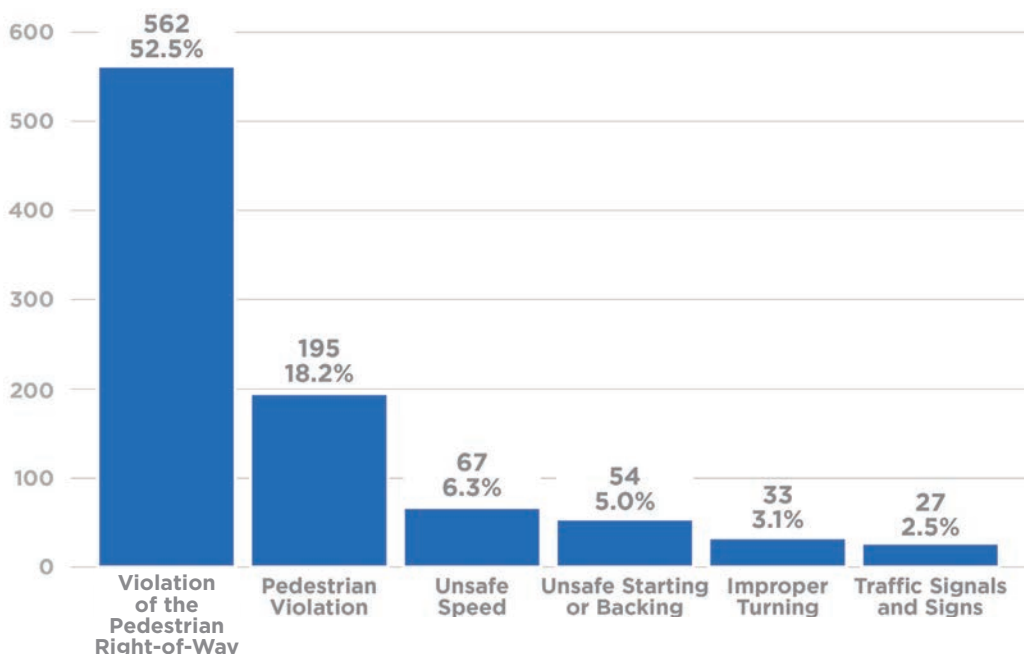
- **Unsafe Speed:** Driver travels above the posted speed limit or at an unsafe speed for conditions.
- **Unsafe Starting or Backing:** Driver backs up a vehicle or enters traffic from a stopped or parked position that results in a collision.
- **Improper Turning:** Driver makes an illegal or unsafe turn movement that results in a collision.
- **Traffic Signals and Signs:** Driver fails to stop at a stop sign or obey or notice a traffic signal, resulting in a collision.

The following collision factors emerged from the data:

- **The majority of pedestrian collisions in Berkeley occurred when a driver failed to yield the right of way to a pedestrian.** Of the 10 fatal collisions, six pedestrian violations were the collision factor for three collisions: six pedestrians were crossing in a crosswalk at an intersection, two were in the road, one was crossing not at a crosswalk, and one was crossing at a mid-block crosswalk.
- **Drivers were more than two times likelier to be making a left turn prior to colliding with a pedestrian than making a right turn.** Prior to the collision, the majority of drivers were either proceeding straight or making a left turn.

Appendix C: Technical Analysis Methodologies shows the top six primary collision factors identified in pedestrian collisions in Berkeley from 2008 to 2017, the top five driver actions from more than a dozen reported actions, and more details from the findings.

FIGURE 9: PRIMARY COLLISION FACTOR FOR PEDESTRIAN COLLISIONS IN BERKELEY, 2008-2017



2. Existing Walking Conditions

COLLISION OCCURRENCE

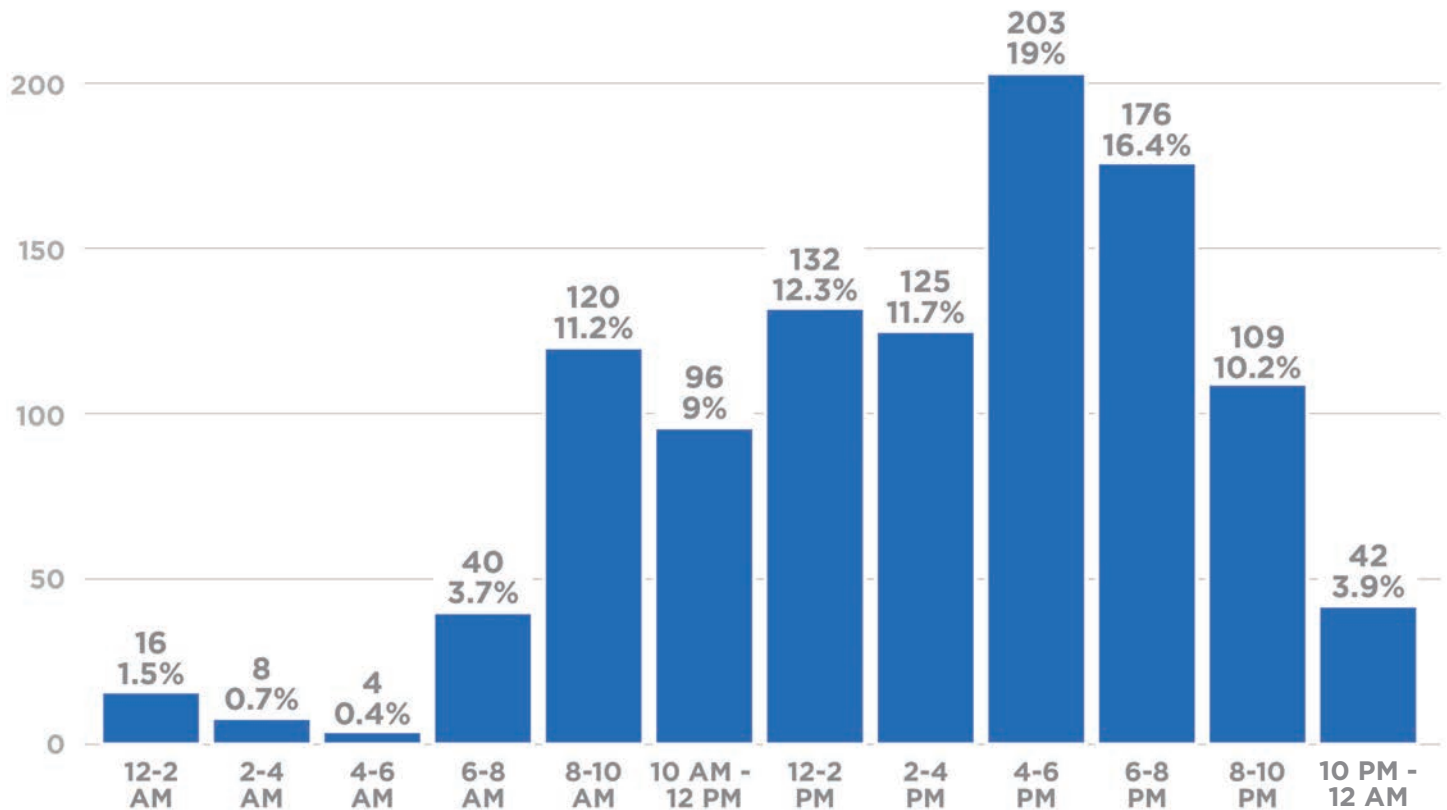
The reported time of day, weekday, month, and streetlight conditions of collisions were used to analyze when collisions occur. Key findings from this analysis are described below:

- **Pedestrian collisions are more likely to take place in the afternoon and early evening than in the morning.** More than 35 percent of reported collisions in Berkeley between 2008 and 2017 took place between 4pm and 8pm, which captures the afternoon/evening rush hour. The morning rush hour has fewer collisions - only 15 percent took place between 6am and 10am. Of the 10 fatal pedestrian collisions, seven took place between the hours of 6:30 PM and midnight (see **Figure 10**).
- **Nearly two-thirds of Berkeley’s reported pedestrian collisions took place during the daylight hours, while seven of the 10 fatal pedestrian collisions took place at night.**

- **The most collisions take place on Tuesdays, Wednesdays, and Thursdays, with fewer collisions on Mondays and Fridays.** This corresponds with the days where most people are at work and are commuting at the same peak periods, increasing their exposure to other commuters and possibly collisions. Of the 10 fatal pedestrian collisions, two occurred on a Monday, one occurred on a Tuesday, two occurred on a Wednesday, two occurred on a Friday, and three occurred on a Saturday.
- **There is a clear drop off in pedestrian collisions during June, July, and August.** This could be due to two factors. First, these summer months have longer daylight hours, which improve visibility for pedestrians and drivers. Second, UC Berkeley runs many fewer summer classes during these months compared with the standard school year, so the number of people in Berkeley decreases.

Graphs and tables provide greater detail and context of these key findings in **Appendix C: Technical Analysis Methodologies**.

FIGURE 10: PEDESTRIAN COLLISIONS BY TIME OF DAY



PEDESTRIAN CHARACTERISTICS

This section describes trends of the age, race, and gender of the pedestrians involved in collisions with vehicles based on data in the SWITRS collision report. This analysis uses American Community Survey (ACS) 2012-2016 5-Year Estimates to capture demographic information for the city's population. According to Census rules, people should be counted at a residence if they live there most of the time or stay there more than any other place they might live or stay. This means that college students should be counted at their college address, and college students are included in this analysis. Key findings emerged when analyzing this data:

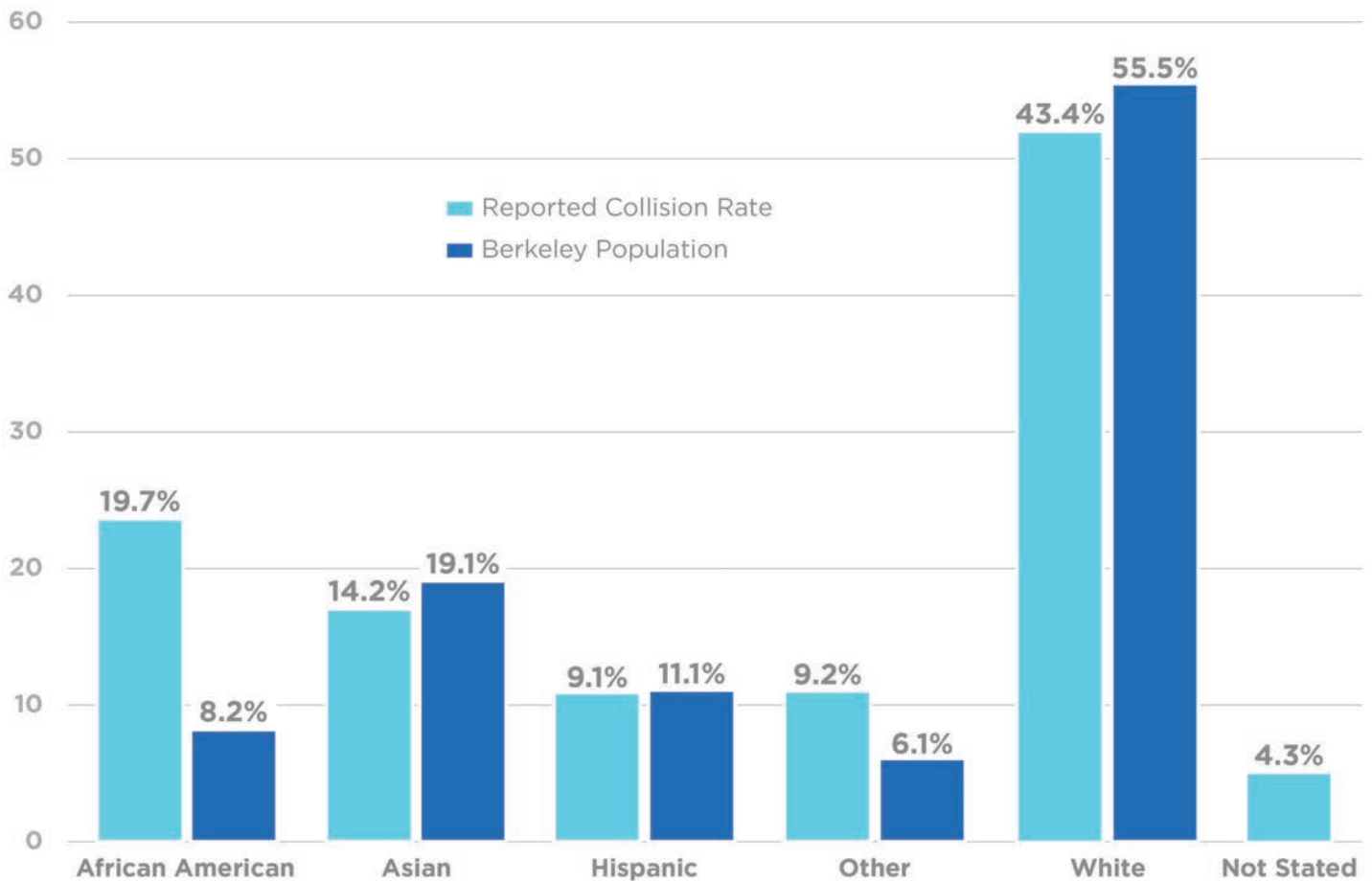
- **Berkeley residents between the ages of 45 and 64 represent 20 percent of Berkeley's population, but they accounted for 27 percent of pedestrians in collisions in Berkeley between 2008 and 2017.** Conversely, children under 15 years of age accounted for 10 percent of Berkeley's population, and seven percent of pedestrians involved in collisions. The ages of the pedestrians struck by vehicles and killed in Berkeley from 2008 to 2017 range from five to 98.

- **African Americans are overrepresented in pedestrian collisions.** Over eight percent of residents are African American, but nearly 20 percent of pedestrians involved in collisions in Berkeley from 2008 to 2017 were African American (see **Figure 11**). Of the 10 fatal pedestrian collisions, four were White, three were African American, one was Other, and two were Not Stated.

- **From 2008 to 2017, 54 percent of reported pedestrian collisions involved a female pedestrian.** Of the 10 fatal pedestrian collisions, seven pedestrians were male, two were female, and one did not have a gender reported.

More detail supporting these findings, including graphs summarizing data, are described in **Appendix C: Technical Analysis Methodologies**.

FIGURE 11: PEDESTRIAN COLLISIONS BY RACE/ETHNICITY



High Injury Streets

When analyzing collision data and trends, identifying High Injury Streets became a critical method for connecting the most severe collisions in Berkeley with the locations where they occurred. The core concept and a list of High Injury Streets are presented in this section, and the full methodology is provided in **Appendix C: Technical Analysis Methodologies**.

The High Injury Streets capture the locations where high densities of fatal and severe injury collisions occurred. In total, High Injury Streets have a higher incidence of fatal and severe injury collisions compared to other streets where collisions occurred. High Injury Streets and their respective number of reported fatal and severe collisions are shown in **Table 5**.

The High Injury Streets make up only 14 percent of Berkeley’s street miles, but account for 93 percent of pedestrian fatalities and severe injuries. Berkeley’s High Injury Streets are shown in **Figure 12** along with the location of the most severe pedestrian collisions between 2008 and 2017.

Of the 89 most severe pedestrian collisions in Berkeley from 2008 to 2017, 80 collisions (90 percent) occurred on a High Injury Street. All fatal pedestrian collisions from 2008 to 2017 are located on a High Injury Street. San Pablo Avenue and Ashby Avenue, the two state highways that run through Berkeley, are second and third for streets in Berkeley with the highest number of fatal or severe pedestrian injury collisions, behind Shattuck Avenue. Their numbers are especially high considering that Ashby and San Pablo Avenue have relatively low pedestrian volumes compared to Shattuck.

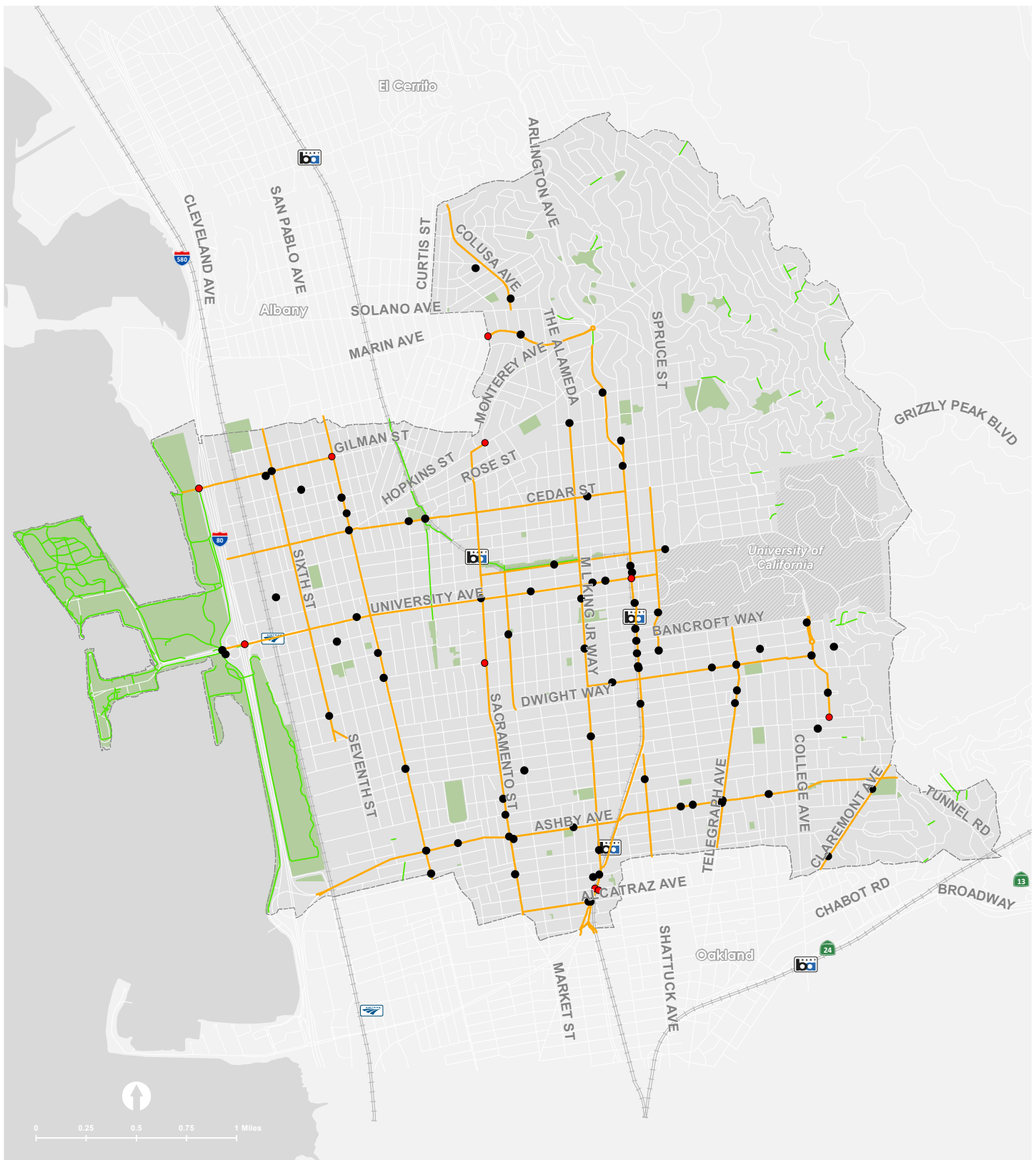
TABLE 5: LOCATION OF FATAL OR SEVERE PEDESTRIAN INJURY COLLISIONS ON HIGH INJURY STREET IN BERKELEY, 2008-2017

Collision Location	Number of Fatal or Severe Collisions
Shattuck Avenue	12
Ashby Avenue	10
San Pablo Avenue	9
University Avenue	9
Sacramento Street	7
Adeline Street	5
Martin Luther King Jr Way	5
Telegraph Avenue	5
Cedar Street	4
Gilman Street	4
Haste Street	4



This pedestrian crossing at Sacramento Street and 66th Street includes a median refuge island, allowing pedestrians to cross two lanes of traffic at a time.

FIGURE 12: HIGH INJURY STREETS IN BERKELEY



Fatal and Severe Injury Collisions, 2008-2017

- Fatal
- Severe Injury
- High Injury Streets

- Amtrak Station
- BART Station
- Railroad
- Sidewalk Presence
- Multi-Use Trails/Stairways
- Parks/Recreation
- Berkeley City Boundary

2. Existing Walking Conditions

3

IMPROVEMENTS &

RECOMMENDATIONS



This chapter describes the recommended projects, policies, programs, and practices that are intended to fill the gaps identified in [Chapter 2](#). Guided by the Plan’s vision and goals, the recommendations and improvements are prioritized using a set of criteria and a framework that is detailed in this chapter.

PRIORITIZATION FRAMEWORK

In order to prioritize projects for improving walking conditions in Berkeley, factors consistent with existing City policies and public feedback received can be applied and weighted relative to each other. The prioritization framework presented in this section was used to identify the ten highest-priority locations for pedestrian improvements in Berkeley. The prioritization framework follows a methodology¹ recommended by the National Cooperative Highway

Research Program of the Transportation Research Board. The full methodology and framework with maps for individual criteria are shown in **Appendix C: Technical Analysis Methodologies**.

The prioritization factors and criteria are summarized in **Table 6**. These were applied to the High Injury Streets listed in [Chapter 2](#) to determine the priority segments.

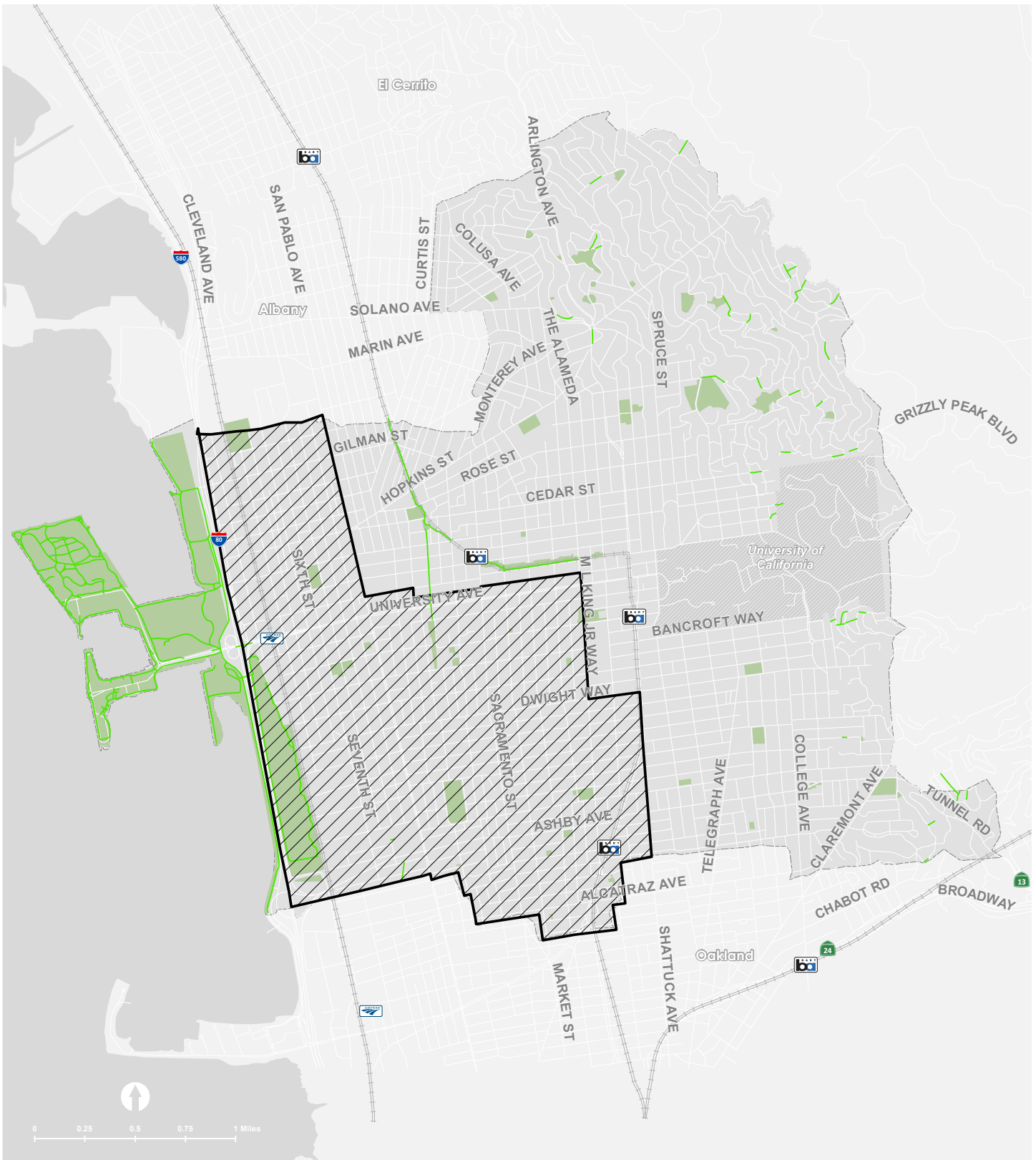
Figure 14 is a visual representation of the outcome of the prioritization process. Each High Injury Street was scored in relation to all the streets analyzed to determine the 10 highest priority street segments. The 10 highest scoring street segments are shown. A high score represents the greatest priority in improving walkability.


TABLE 6: PRIORITIZATION FACTORS AND CRITERIA

FACTOR	CRITERIA	WEIGHT	NOTES
Safety	Concentration of fatal and severe collisions	30%	Captures locations with a high concentration of pedestrian fatalities, injuries, and collisions, as noted City priority.
Equity	Locations in historically underserved neighborhoods (shown in Figure 13)	30%	Uses historic redlining maps with adjustments based on most recent (2010) Census data, current property values, and locations of community centers serving historically redlined neighborhoods.
Connectivity	Pedestrian Demand: Land uses attracting most pedestrian trips including BART and Amtrak stations (High Demand Intersections)	13.5%	Uses pedestrian demand estimates to identify where pedestrians are walking. Top 30% of intersections are used, with each top 10% intersection group by demand receiving a different weight.
	Transit Access: Proximity to major bus lines	6.5%	Uses distance of 0.25-mile from major AC Transit routes as defined in the AC Transit Major Corridors Study completed in 2016.
Existing Plan	Unbuilt projects from 2010 Pedestrian Plan	20%	Recognizes existing work from the 2010 Berkeley Pedestrian Plan.

¹ The prioritization methodology comes from the Transportation Research Board’s National Cooperative Highway Research Program (NCHRP) Report 803: ActiveTrans Priority Tool.

FIGURE 13: HISTORICALLY UNDERSERVED AREAS OF BERKELEY



 Historically Underserved Areas of Berkeley






-  Amtrak Station
-  BART Station
-  Railroad
-  Parks/Recreation
-  Berkeley City Boundary

FIGURE 14: MAP OF PRIORITY STREETS



3. Improvements & Recommendations

PROJECT RECOMMENDATIONS

After applying the weights and criteria from the prioritization framework and analyzing Berkeley’s existing walking conditions, two categories of recommendations emerged: **priority projects** and **citywide programs**. Priority projects are improvements and countermeasures identified for the top ten high-injury street segments identified during the prioritization process. Citywide programs are improvements that can be applied systematically throughout Berkeley’s pedestrian network.

Both priority projects and citywide programs are intended to reduce pedestrian collisions and increase safety and comfort for those walking.

Recommended pedestrian safety treatments for each priority street segment are shown in this chapter.

Priority street segments are important to identify for the purpose of project implementation; however, this does not mean that streets not listed in **Table 7** will not be improved for people walking. The analysis provided in this report may direct future investments in street segments to improve walking conditions.



The Martin Luther King Jr. Way and Dwight Way intersection.

TABLE 7: PRIORITY STREET SEGMENTS

SEGMENT	EXTENTS
Adeline Street	Ashby to Southern City Limits
Alcatraz Avenue	Sacramento to Adeline
Ashby Avenue	San Pablo to Shattuck
Cedar Street	Sixth to Stannage
Martin Luther King Jr Way (North)	Hearst to Dwight
Martin Luther King Jr Way (South)	Dwight to Adeline
Sacramento Street	Dwight to Southern City Limits
San Pablo Avenue	University To Dwight
Shattuck Avenue	Adeline to Southern City Limits
University Avenue	San Pablo to Oxford

PROPOSED INTERSECTION AND CROSSING TREATMENTS

The following list indicates the range of treatments that were identified for intersections and midblock crossings along the ten selected street segments. Each treatment has a representative icon for use on the project maps. The description following each icon provides detail as to what these treatments do and how they are intended to be used.



Restrict right turns on red to prevent right-turning vehicles from conflicting with crossing pedestrians.



Improve sightlines at intersections by providing red curb in advance of crosswalks to increase visibility of pedestrians and cross traffic.



A **STOP sign** indicates to drivers to stop at an intersection, increasing the likelihood that drivers will see and stop for pedestrians.



Stripe high-visibility crosswalks to increase conspicuity of pedestrian crossing locations.



Reduce number of through lanes to reduce the pedestrian crossing distance and traffic speeds and to simplify and clarify vehicle movements at the intersection.



Remove right-turn lanes to reduce intersection footprint and minimize vehicular conflicts with pedestrians.



Narrow vehicle lanes to provide space for pedestrian infrastructure and reduce pedestrian crossing distance and vehicle speeds.



Install advance yield markings and corresponding signage to indicate where drivers are to yield to pedestrians in advance of the crosswalk such that the vehicle of the yielding driver does not block the view of the pedestrian from the adjacent lane.



A **rectangular rapid flashing beacon (RRFB)** uses push button activated flashing lights to make motorists aware of crossing pedestrians and increase yielding behavior.



Consolidate driveways to reduce conflicts and pedestrian exposure to vehicles at or near intersections corners.



Curb extensions (aka “bulb-outs”) are widened sidewalks at crossings, shortening the crossing distance for pedestrians and slowing down turning traffic. Temporary curb extensions using striping and a vertical feature (such as bollards) quickly create safer crossing conditions.



Median refuges provide pedestrians the opportunity to cross in two stages, reducing pedestrian exposure to traffic and simplifying crossings. A temporary median refuge island can be constructed using low-cost and quick-build materials.



A **pedestrian hybrid beacon (PHB)** is a traffic device that assists pedestrians to cross the street by providing a hybrid between a traffic signal and a flashing beacon. Installing a full traffic signal is an alternative to this device that can also be considered as funding allows.



A **hardened centerline** creates physical separation between travel directions, guides motorists, and reduces their turning speed.



A **raised crossing** provides vertical deflection to slow drivers and increase yielding for crossing pedestrians.



Widen sidewalk at bus stops (aka “bus bulbs”) to improve transit operations and pedestrian

conditions.



[Realign intersection](#) to reduce conflicts and increase safety for all users by straightening skewed intersections or other geometric changes.



[All-way pedestrian crossing](#) (aka “pedestrian scramble”) stops all vehicular movement at a signalized intersection to allow all pedestrians to cross in the same phase (including diagonally).

UNIVERSAL TREATMENTS ON EACH STREET SEGMENT

In addition, there are several treatments that should be universally applied when specific conditions are met.

[A leading pedestrian interval \(LPI\)](#) gives pedestrians a 3-7 second head start to increase their visibility in the crosswalk. LPIs will be programmed into all signalized intersections along the 10 priority segments.

[Overhead lighting of crosswalks](#) increases nighttime visibility of crossing pedestrians. Lighting will be added at every intersection corner or side of a midblock crosswalk where lighting is not yet provided.

[Advance yield markings](#) and corresponding signage will be added at all uncontrolled (unsignalized or lacking a stop sign) intersection crosswalks on multi-lane streets.

[Protected left-turn phasing](#) will be added to reduce left-turning conflicts between vehicles and pedestrians. This includes traffic lane realignments to add left-turn pockets where needed.

[Stop bars at signalized intersections](#) will be added for all approaches if not already installed.

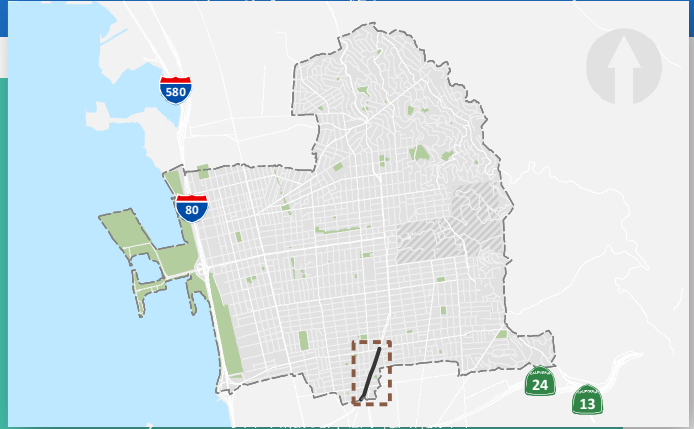
Each street segment summarized on the following pages has two cost estimates - a low estimate and a high estimate - based on a summation of all recommended safety treatments along a segment. These planning level cost estimates have been rounded to the nearest \$5,000. **Appendix E: Cost Estimates** provides the spreadsheet calculations for the cost estimates organized by segment.

Adeline Street

Ashby Avenue to Southern City Limits

SEGMENT CHARACTERISTICS

- Adeline Street is classified as a Major Street. The cross-section varies along the segment and includes two lanes in each direction north of Martin Luther King Jr. Way/Woolsey Street, and three lanes in each direction south of Martin Luther King Jr. Way/Woolsey Street. Adeline Street is divided by a median and includes turn lanes at the signalized intersections.
- There are diagonal parking bays along Adeline Street between Fairview Street and the southern intersection with Martin Luther King Jr. Way.
- The posted speed limit on this segment is 25 mph.
- This street segment includes Class II bike lanes between Martin Luther King, Jr. Way/Woolsey Street and Ashby Avenue.
- The 0.6-mile segment includes 10 intersections—4 signalized and 6 unsignalized intersections, with one mid-block crossing at the Ed Roberts Campus.



PEDESTRIAN COLLISIONS, 2008–2017

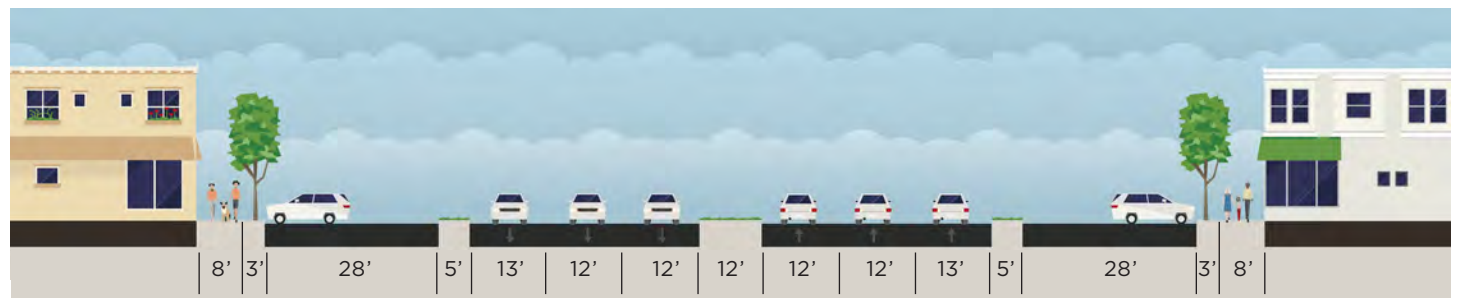
	Daylight	Dawn/Dusk/Night
Crossing in Crosswalk at Intersection	12 	11
Crossing in Crosswalk not at intersection	0	1
Crossing not in Crosswalk	5 	3
In Road, Including Shoulder	1 	2
Not In Road	1 	0
Not Stated	1 	0



Adeline Street at Alcatraz Avenue. Large intersections expose pedestrians to vehicle traffic.

Severe Injury Collisions ■ Other Injury Collisions ■ Fatal Injury Collisions ■

EXISTING CROSS-SECTION Adeline Street, Ashby Avenue to Southern City Limits



Adeline Street Proposed Intersection Improvements

OBSERVATIONS

- Several skewed intersections along the segment create complicated intersection geometries and undesirable walking conditions.
- Street frontage along the corridor includes parking lots with access at intersections.
- Median refuge islands along the corridor make uncontrolled crossings safer. And where they exist, rectangular rapid flashing beacons help promote motor vehicle yielding to pedestrians.

ADELINE CORRIDOR SPECIFIC PLAN

The Adeline Corridor Specific Plan is a long-range plan for the Adeline Corridor to promote transit-oriented development and safe access for users of all modes of transportation. The planning process began in 2015 and the community was involved heavily.

The Specific Plan's study area starts on Shattuck Avenue from Dwight Way to Adeline Street, continuing on Adeline from Shattuck until the southern City limits.

The Pedestrian Plan recommendations for Adeline Street incorporate the recommended design features identified in the Specific Plan, such as reducing the number of lanes. The Specific Plan notes that "detailed design of pedestrian and bicycle treatments at intersections will occur in later design phases." Recommendations from the Pedestrian Plan will be worked into that detailed intersection design. In addition, the City is conducting a study funded by BART on whether to reduce the number of mixed-traffic lanes on Adeline north of Martin Luther King Jr. Way.



Low Estimate
\$2,540,000

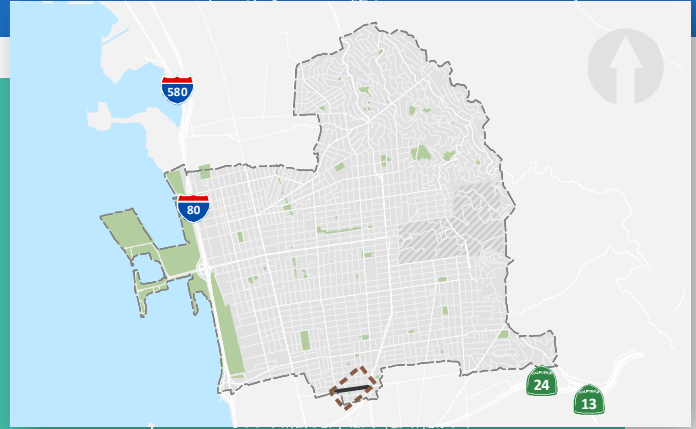
High Estimate
\$4,730,000

Alcatraz Avenue

Sacramento Street to Adeline Street

SEGMENT CHARACTERISTICS

- The study segment is a 2-lane Collector street. There are 25 mph speed limit signs posted throughout the segment.
- There are 5 intersections (2 signalized and 3 unsignalized) in 0.35 miles.
- This segment is in a historically underserved area.



PEDESTRIAN COLLISIONS, 2008–2017

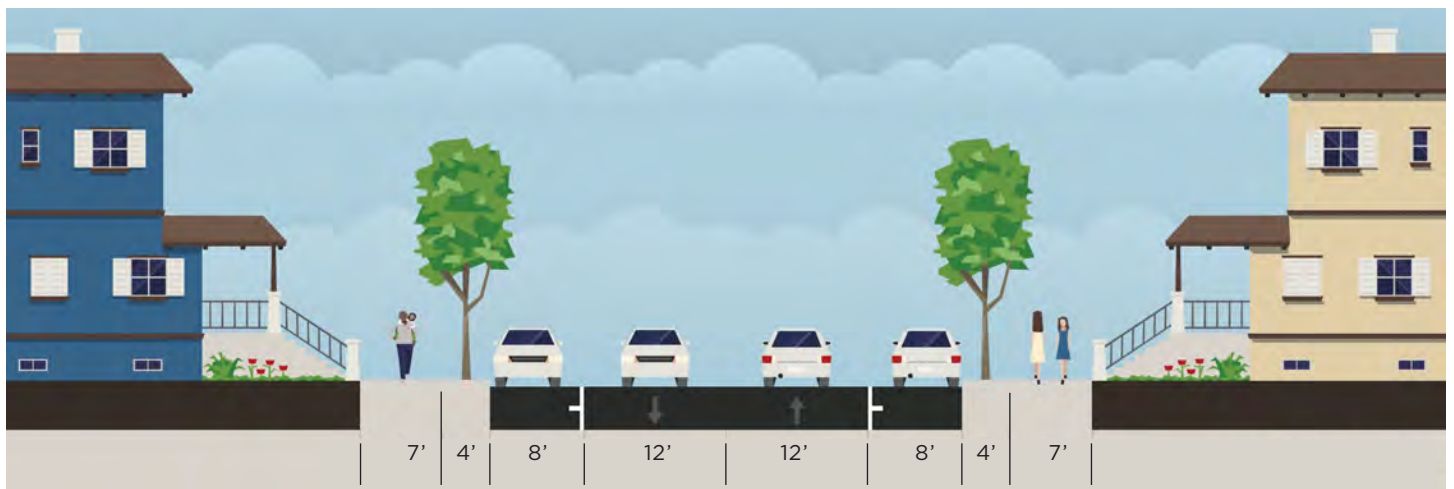
	Daylight	Dawn/Dusk/Night
Crossing in Crosswalk at Intersection	6	4
Crossing not in Crosswalk	0	1
Not In Road	1	0

Severe Injury Collisions Other Injury Collisions



Alcatraz Avenue at King Street. Faded crosswalk markings decrease pedestrian visibility and awareness.

EXISTING CROSS-SECTION Alcatraz Avenue – Sacramento Street to Adeline Street



Alcatraz Avenue Proposed Intersection Improvements

OBSERVATIONS

- The crosswalk across Alcatraz Avenue at Ellis Street lands at a driveway. The crosswalk could be moved to the east side of the intersection to eliminate this pedestrian conflict.
- The Pedestrian Plan's recommendations for the Adeline Street/Alcatraz Avenue intersection take into account the recommended design features identified in the Adeline Corridor Specific Plan, such as reducing the number of lanes. The Adeline Corridor Specific Plan notes that "detailed design of pedestrian and bicycle treatments at intersections will occur in later design phases." In the later design phases, recommendations from the Pedestrian Plan will be worked into the detailed design of the Adeline Corridor.
- King Street is a bike boulevard, but bicyclists and pedestrians both currently have a difficult time crossing Alcatraz Avenue.



Add a **leading pedestrian interval** for all crossings at signalized intersections.

Modify all signalized intersections to include a **left-turn phase** that is **fully separate from the conflicting pedestrian crossing phase** wherever this conflict exists. Signalized intersections will be reconfigured to add left-turn pockets where these do not exist.

Add **RRFB** to the west side of the **Alcatraz Avenue/King Street** intersection

Add **stop bars** to all approaches at signalized intersections.

Add **overhead lighting to crosswalks** that cross the major street where no such lighting exists.

Either an **RRFB** or a **STOP sign** can be implemented at the **Alcatraz Avenue/California Street** intersection.

- AC Transit Bus Stops
- Severe Injury Collisions
- Other Injury Collisions

Low Estimate
\$315,000

High Estimate
\$1,055,000

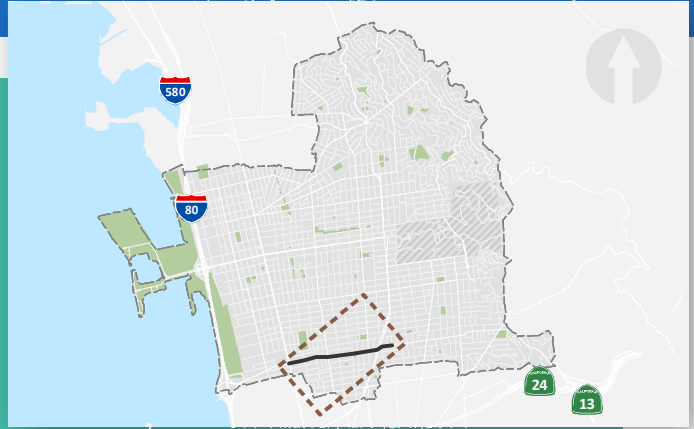


Ashby Avenue

San Pablo Avenue to Shattuck Avenue

SEGMENT CHARACTERISTICS

- The study segment, also known as State Route 13, is a 4-lane, Major Street. There is a part-time curbside parking lane in both directions for vehicles outside of peak hour times. There are left- and right-turn pockets at several intersections and 25 mph speed limit signs posted.
- There are 17 intersections (7 signalized and 10 unsignalized) in 1.2 miles.
- The Ashby BART station is located on the south side of Ashby Avenue between Martin Luther King Jr. Way and Adeline Street.
- This segment is in a historically underserved area.



PEDESTRIAN COLLISIONS, 2008–2017

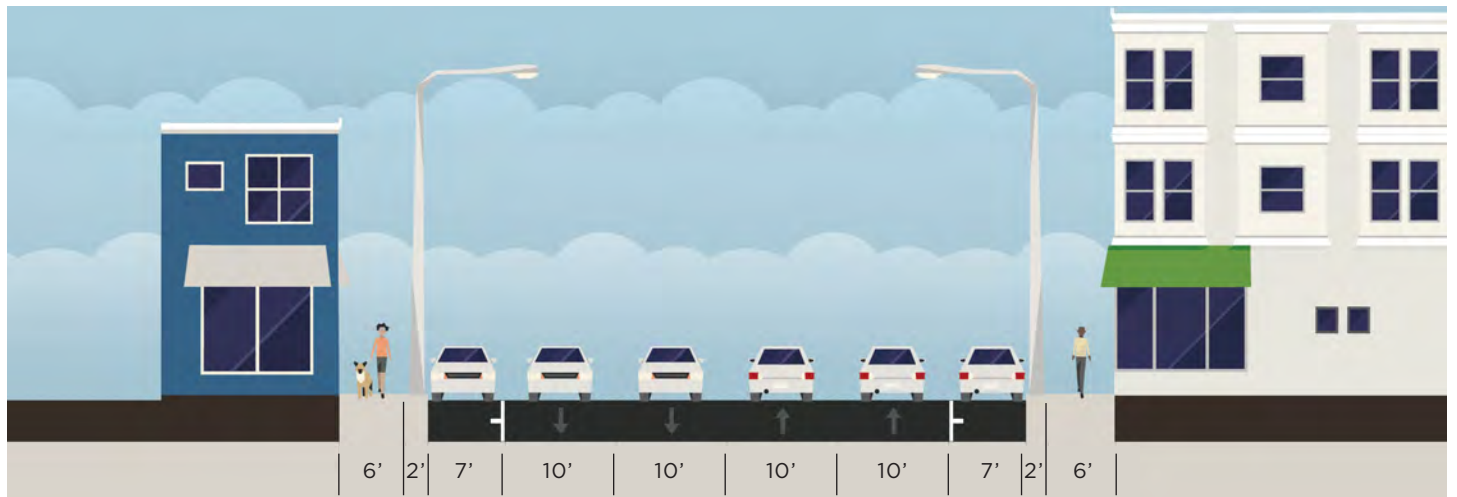
	Daylight	Dawn/Dusk/Night
Crossing in Crosswalk at Intersection	28 	9
Crossing not in Crosswalk	7 	2
In Road, Including Shoulder	0	3
Not In Road	4 	1

Severe Injury Collisions ■ Other Injury Collisions ■
 Fatal Injury Collisions ■



Ashby Avenue at Adeline Street. This intersection next to a BART station does not foster a welcoming pedestrian environment.

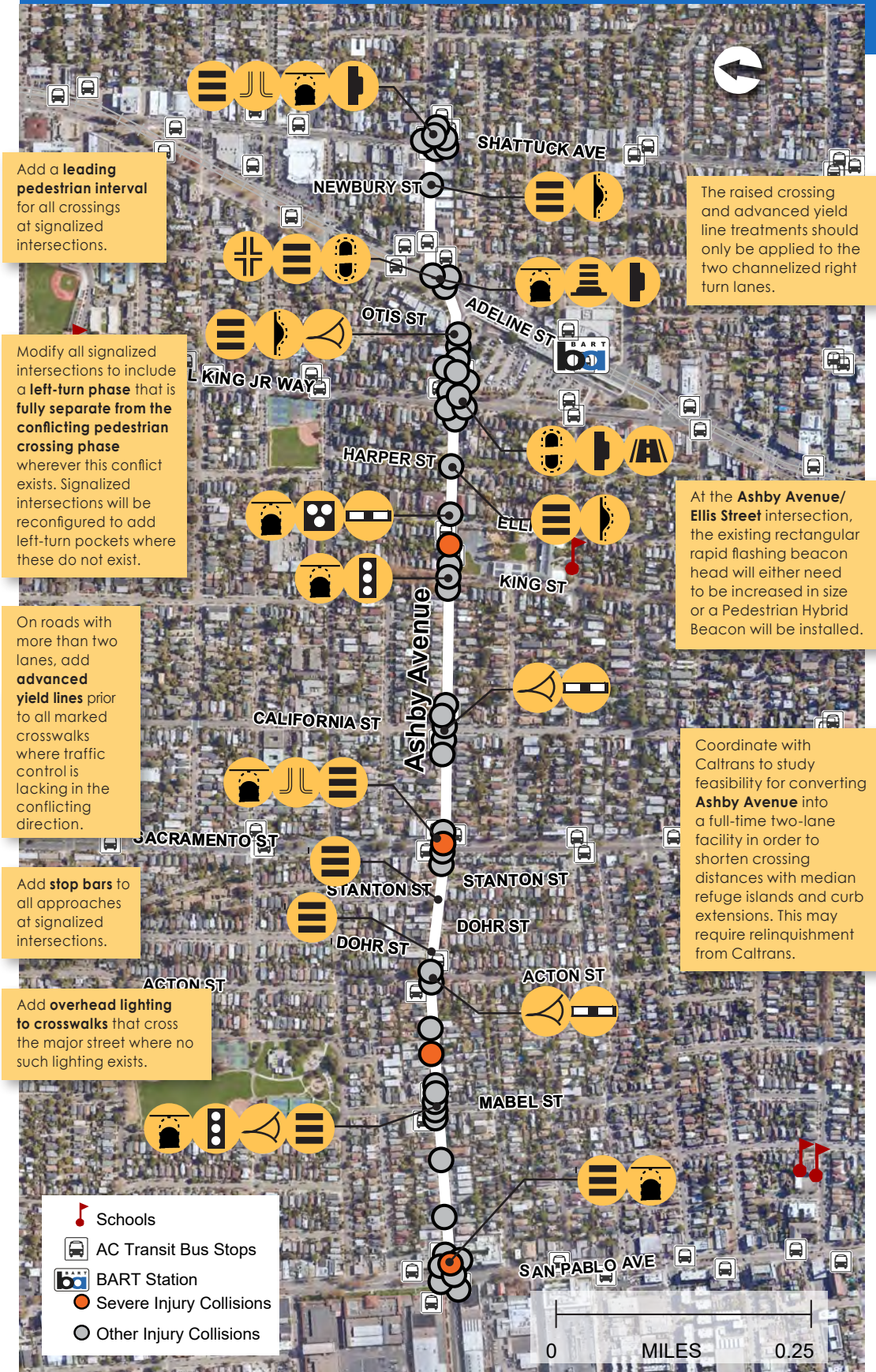
EXISTING CROSS-SECTION Ashby Avenue – San Pablo Avenue to Shattuck Avenue



Ashby Avenue Proposed Intersection Improvements

OBSERVATIONS

- Several intersections lack pedestrian-scale lighting, which impacts pedestrians' safety and comfort when crossing minor streets adjacent to Ashby Avenue.
- There are traffic signals and rectangular rapid flashing beacons to help students cross Ashby Avenue from Malcolm X Elementary School, but these students must cross four lanes of traffic.
- Buses run along Ashby Avenue and on intersecting streets, such as San Pablo Avenue Sacramento Street, Martin Luther King Jr. Way, Adeline Street, and Shattuck Avenue. There are no bus bulbs on this segment, which would prioritize pedestrian access to transit.



Add a **leading pedestrian interval** for all crossings at signalized intersections.

Modify all signalized intersections to include a **left-turn phase** that is **fully separate from the conflicting pedestrian crossing phase** wherever this conflict exists. Signalized intersections will be reconfigured to add left-turn pockets where these do not exist.

On roads with more than two lanes, add **advanced yield lines** prior to all marked crosswalks where traffic control is lacking in the conflicting direction.

Add **stop bars** to all approaches at signalized intersections.

Add **overhead lighting to crosswalks** that cross the major street where no such lighting exists.

The raised crossing and advanced yield line treatments should only be applied to the two channelized right turn lanes.

At the **Ashby Avenue/Ellis Street** intersection, the existing rectangular rapid flashing beacon head will either need to be increased in size or a Pedestrian Hybrid Beacon will be installed.

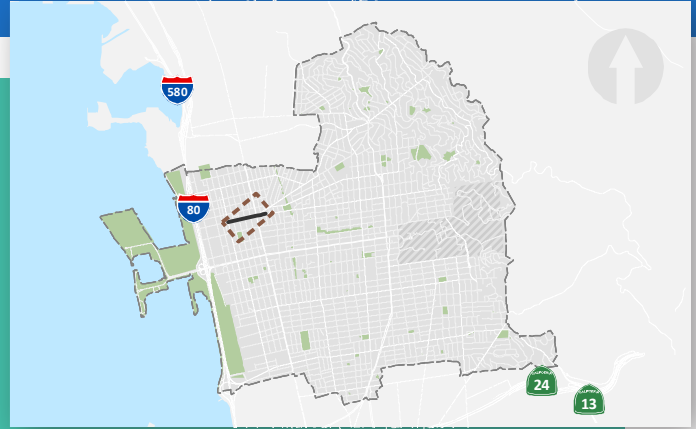
Coordinate with Caltrans to study feasibility for converting **Ashby Avenue** into a full-time two-lane facility in order to shorten crossing distances with median refuge islands and curb extensions. This may require relinquishment from Caltrans.

Low Estimate
\$2,155,000

High Estimate
\$7,075,000

SEGMENT CHARACTERISTICS

- The study segment, classified as a Collector Street, is a 2-lane roadway with a splitter island at Hopkins Street. There are 25 mph speed limit signs posted throughout the segment.
- There are 8 intersections (2 signalized and 6 unsignalized intersections) in 0.4 mile.
- This segment is in a historically underserved area.



PEDESTRIAN COLLISIONS, 2008–2017

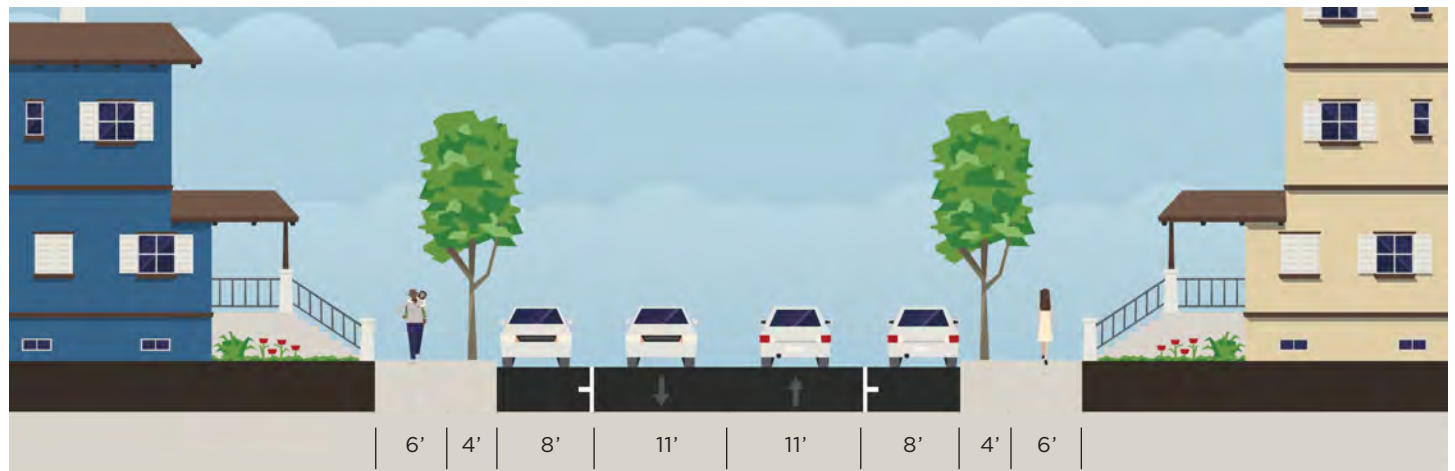
	Daylight	Dawn/Dusk/Night
Crossing in Crosswalk at Intersection	2	2
In Road, Including Shoulder	1	0

Severe Injury Collisions
 Other Injury Collisions



Cedar Street at San Pablo Avenue. The wide vehicle lanes and lack of refuge space leads to long crossings.

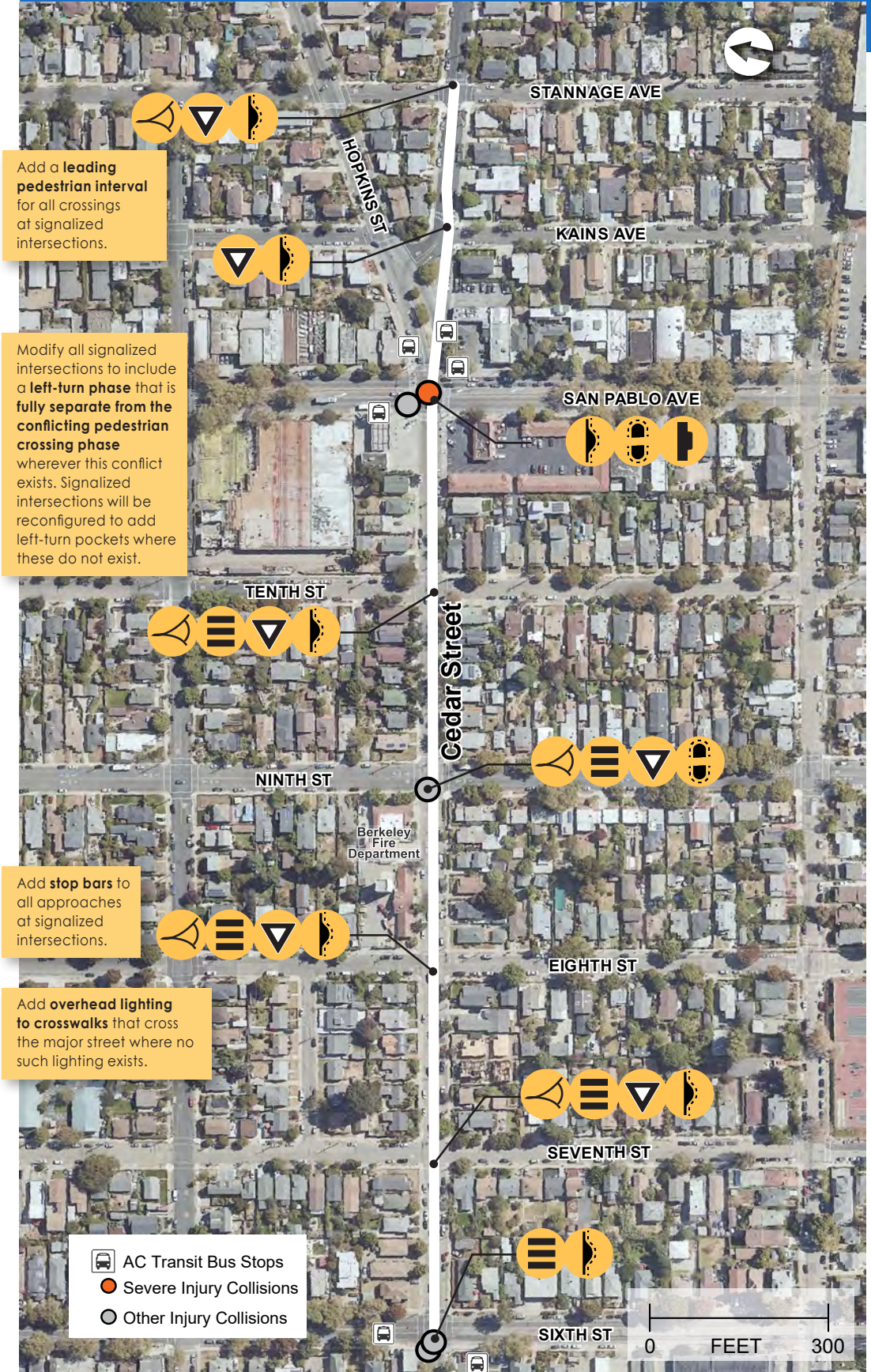
EXISTING CROSS-SECTION Cedar Street – Sixth Street to Stannage Avenue



Cedar Street Proposed Intersection Improvements

OBSERVATIONS

- Several intersections lack crosswalk striping or have faded transverse striping
- One of the city's seven fire stations is located between Eighth Street and Ninth Street
- There are no curb extensions for pedestrians looking to cross Cedar Street, except along the western crosswalk at the Cedar Street/Stannage Avenue intersection



Low Estimate
\$855,000

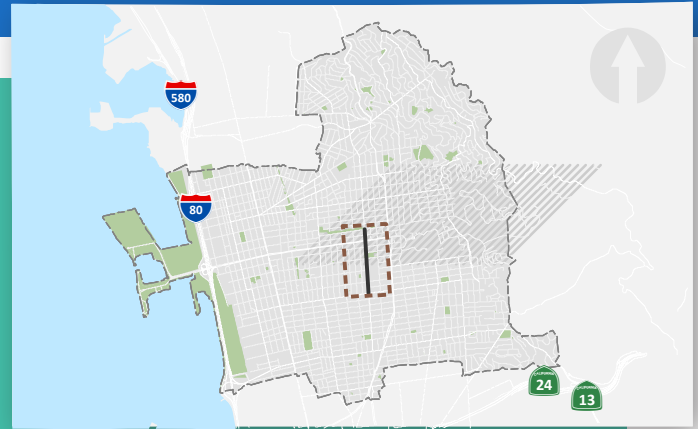
High Estimate
\$3,310,000

Martin Luther King Jr. Way North

Hearst Avenue to Dwight Way

SEGMENT CHARACTERISTICS

- The segment, classified as a Major Street, is generally a 4-lane roadway with two travel lanes in each direction, on-street parking on both sides, and a posted 25 mph speed limit throughout.
- There are 10 intersections (9 signalized and 1 unsignalized) in 0.7 miles.
- This segment is in a historically underserved area.



PEDESTRIAN COLLISIONS, 2008–2017

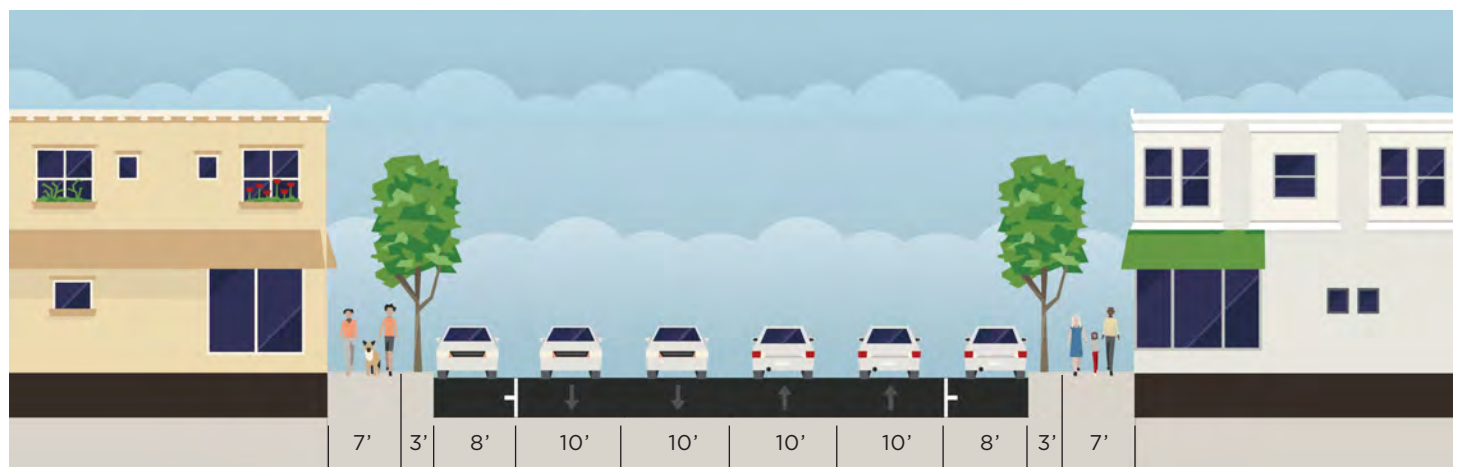
	Daylight	Dawn/Dusk/Night
Crossing in Crosswalk at Intersection	15	5
Crossing not in Crosswalk	2	1
In Road, Including Shoulder	2	2
Not In Road	1	0

Severe Injury Collisions Other Injury Collisions



Martin Luther King Jr. Way at Allston Way. Crossing pedestrians and left-turning vehicles are in conflict.

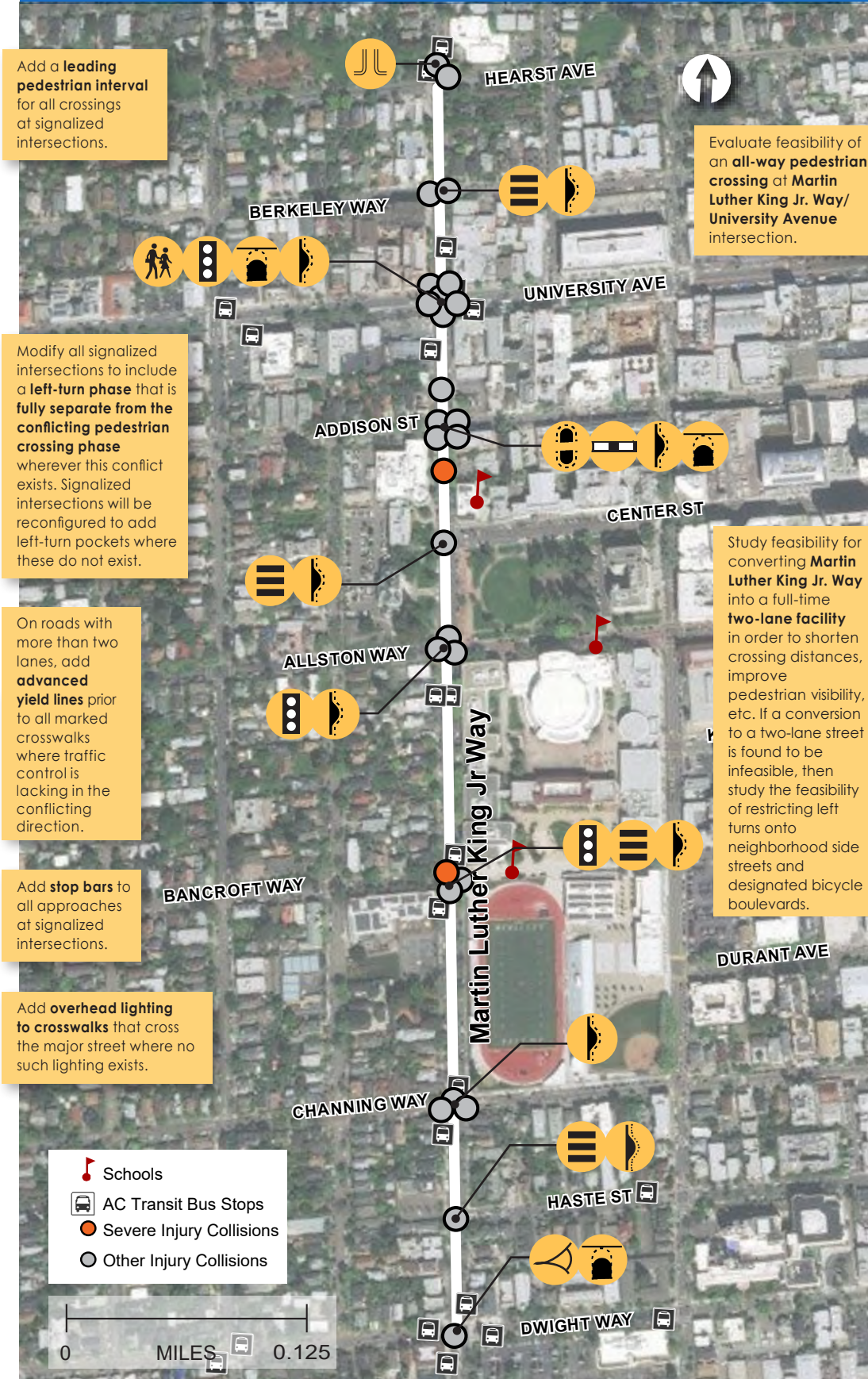
EXISTING CROSS-SECTION Martin Luther King Jr. Way – Hearst Avenue to Dwight Way



Martin Luther King Jr. Way North Proposed Intersection Improvements

OBSERVATIONS

- There are two westbound approach lanes at Martin Luther King Jr. Way and Allston Way, but there are no pavement markings to show where there are left-turn, through, or right-turn lanes.
- AC Transit bus lines 12 and 25 run along this segment of Martin Luther King Jr. Way. Moving bus stops from the near side to the far side of intersections can increase visibility of crossing pedestrians.
- There are nine signalized intersections in this segment, and every signal (except at Haste Street, where one-way traffic makes this impossible) allows permitted left-turns, which creates vehicle-pedestrian conflicts.
- There is on-street parking at several intersections. Parked cars can block sightlines.



Add a **leading pedestrian interval** for all crossings at signalized intersections.

Evaluate feasibility of an **all-way pedestrian crossing** at Martin Luther King Jr. Way/ University Avenue intersection.

Modify all signalized intersections to include a **left-turn phase** that is **fully separate from the conflicting pedestrian crossing phase** wherever this conflict exists. Signalized intersections will be reconfigured to add left-turn pockets where these do not exist.

Study feasibility for converting **Martin Luther King Jr. Way** into a full-time **two-lane facility** in order to shorten crossing distances, improve pedestrian visibility, etc. If a conversion to a two-lane street is found to be infeasible, then study the feasibility of restricting left turns onto neighborhood side streets and designated bicycle boulevards.

On roads with more than two lanes, add **advanced yield lines** prior to all marked crosswalks where traffic control is lacking in the conflicting direction.

Add **stop bars** to all approaches at signalized intersections.

Add **overhead lighting to crosswalks** that cross the major street where no such lighting exists.

Low Estimate
\$1,665,000

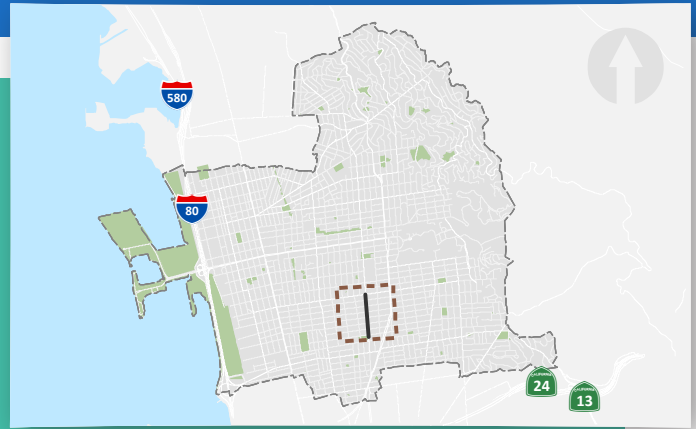
High Estimate
\$8,980,000

Martin Luther King Jr. Way South

Dwight Way to Adeline Street

SEGMENT CHARACTERISTICS

- The segment, classified as a Major Street, is generally a 4-lane roadway with two travel lanes in each direction, on-street parking on both sides, and a posted 25 mph speed limit throughout. There is a median between Ashby and Adeline.
- The 0.9-mile study segment includes 14 intersections (5 signalized and 9 unsignalized intersections).
- This segment is in a historically underserved area.



PEDESTRIAN COLLISIONS, 2008–2017

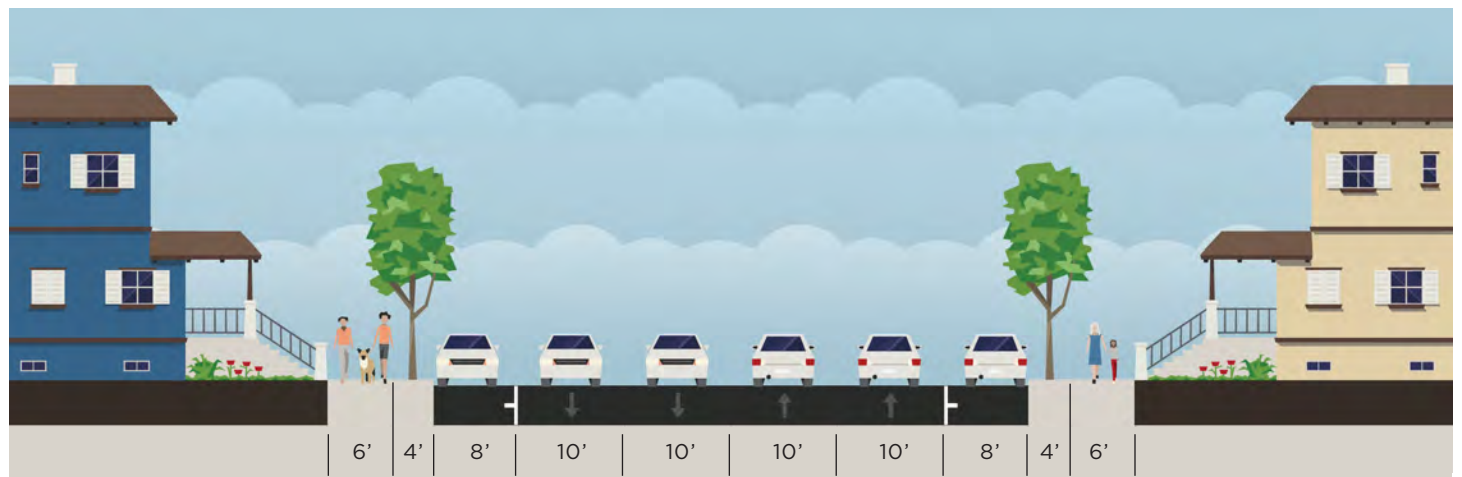
	Daylight	Dawn/Dusk/Night
Crossing in Crosswalk at Intersection	16	11
Crossing in Crosswalk not at intersection	0	3
Crossing not in Crosswalk	3	4
In Road, Including Shoulder	1	1
Not Stated	1	0

Severe Injury Collisions Other Injury Collisions



Martin Luther King Jr. Way at Carleton Street. All along this segment, pedestrians must cross four lanes of traffic.

EXISTING CROSS-SECTION Martin Luther King Jr. Way – Dwight Way to Adeline Street



Martin Luther King Jr. Way South Proposed Intersection Improvements

OBSERVATIONS

- Several multi-lane crossings include two or three lanes in each direction with a median separating travel directions. Where possible, curb extensions can further reduce this exposure.
- There are several major pedestrian destinations along this section of Martin Luther King Jr. Way, including Ashby BART, Grove Park, Berkeley Technology Academy, and Ashby Super Market. Adding rectangular rapid flashing beacons at locations near pedestrian destinations would make crossing pedestrians more visible.

Add a **leading pedestrian interval** for all crossings at signalized intersections.

Modify all signalized intersections to include a **left-turn phase** that is **fully separate from the conflicting pedestrian crossing phase** wherever this conflict exists. Signalized intersections will be reconfigured to add left-turn pockets where these do not exist.

On roads with more than two lanes, add **advanced yield lines** prior to all marked crosswalks where traffic control is lacking in the conflicting direction.

Add **stop bars** to all approaches at signalized intersections.

Add **overhead lighting to crosswalks** that cross the major street where no such lighting exists.

Study feasibility for converting **Martin Luther King Jr. Way** into a full-time **two-lane facility** in order to shorten crossing distances, improve pedestrian visibility, etc. If a conversion to a two-lane street is found to be infeasible, then study the feasibility of restricting left turns onto neighborhood side streets and designated bicycle boulevards.

ADELINE CORRIDOR SPECIFIC PLAN

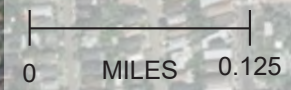
- All recommendations at the Shattuck Avenue/Adeline Street intersection are consistent with the Adeline Corridor Specific Plan.
- The 2019 Adeline Corridor Specific Plan includes a redesign of the Adeline/Martin Luther King Jr Way/Woolsey Street intersection, which would remove channelized turn lanes and provide curb extensions and a new marked crossing at Woolsey Street across Martin Luther King Jr Way.

Low Estimate
\$1,390,000

High Estimate
\$6,350,000

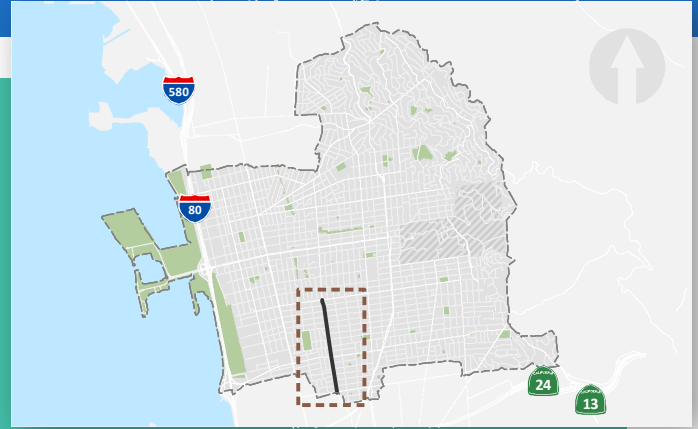


- 🚦 Schools
- 🚌 AC Transit Bus Stops
- 🚇 BART Station
- 🔴 Severe Injury Collisions
- ⊙ Other Injury Collisions



SEGMENT CHARACTERISTICS

- The study segment, classified as a Major Street, has two travel lanes in each direction, divided by a landscape median with on-street parking throughout the corridor.
- The posted speed limit is 30 mph.
- The 1-mile segment includes 18 intersections (4 signalized, 14 unsignalized).
- This segment is in a historically underserved area.



PEDESTRIAN COLLISIONS, 2008–2017

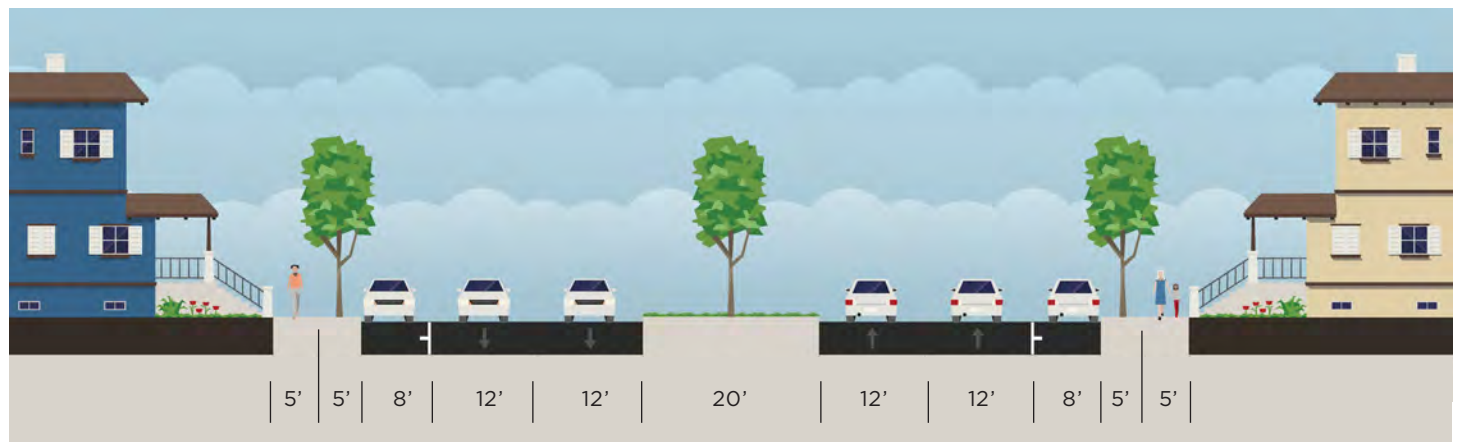
	Daylight		Dawn/Dusk/Night	
Crossing in Crosswalk at Intersection	11		11	
Crossing in Crosswalk not at intersection	1		1	
Crossing not in Crosswalk	3		0	
In Road, Including Shoulder	0		1	
Not In Road	2		0	
Not Stated	1		0	

Severe Injury Collisions Other Injury Collisions



Sacramento Street at Fairview Street. There is no traffic control to help pedestrians cross the street.

EXISTING CROSS-SECTION Sacramento Street, Dwight Way to Southern City Limits



Sacramento Street Proposed Intersection Improvements

OBSERVATIONS

- At several intersections, medians extend into the marked crosswalk and obstruct the full width of the crosswalk.
- At many intersections, a wide outside lane with a transit stop creates a de facto right-turn lane. Bus bulbs or curb extensions can shorten crossing distances and reduce possible conflicts with right-turning vehicle movements.
- AC Transit lines 88 and J run along portions of this segment. A stopped bus at a near-side stop can reduce visibility of crossing pedestrians.
- Major pedestrian destinations along this section of Sacramento Street include Longfellow Middle School, Lifelong Over 60 Health Center, numerous multi-family housing complexes.

Add a **leading pedestrian interval** for all crossings at signalized intersections.

Modify all signalized intersections to include a **left-turn phase** that is **fully separate from the conflicting pedestrian crossing phase** wherever this conflict exists. Signalized intersections will be reconfigured to add left-turn pockets where these do not exist.

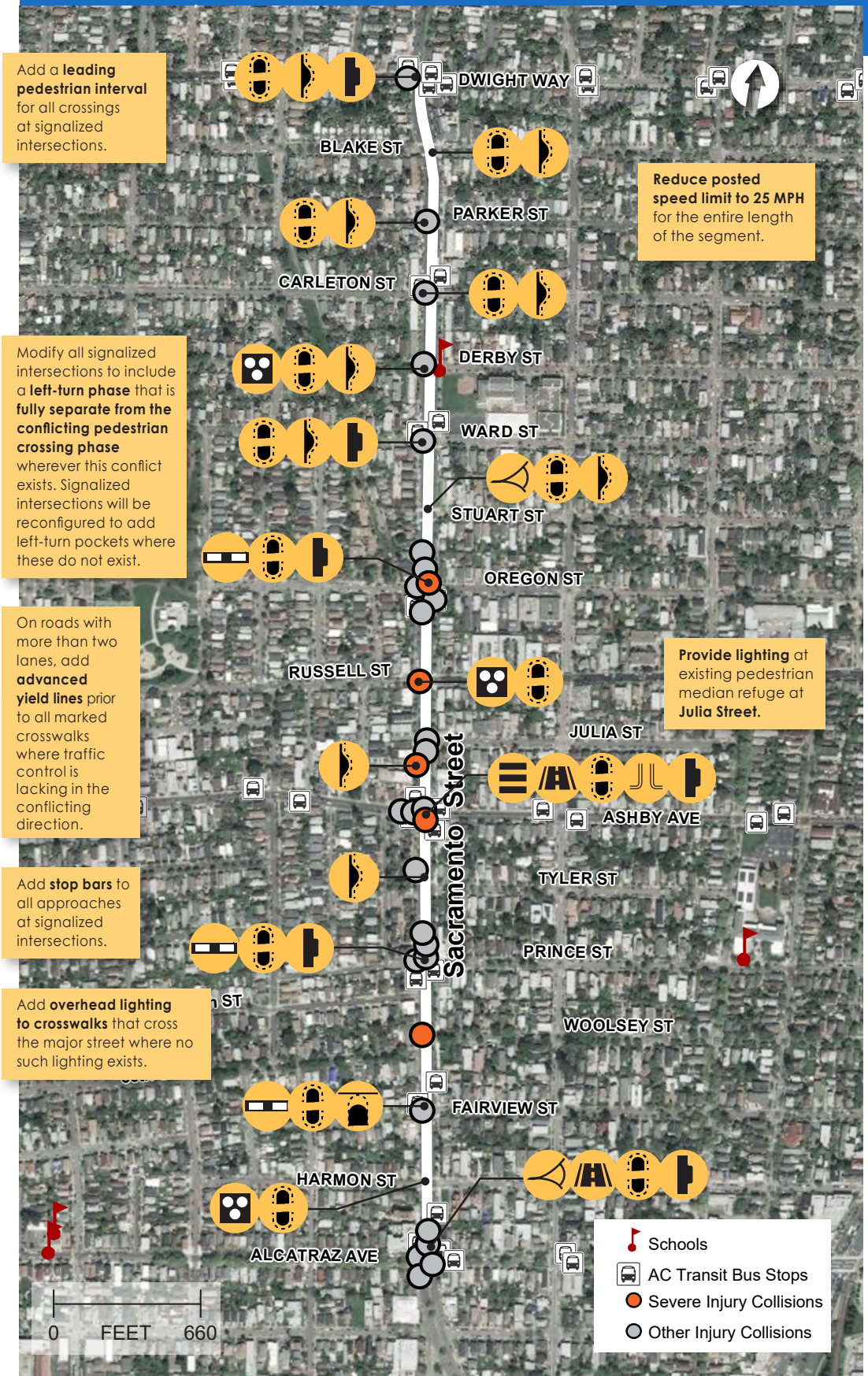
On roads with more than two lanes, add **advanced yield lines** prior to all marked crosswalks where traffic control is lacking in the conflicting direction.

Add **stop bars** to all approaches at signalized intersections.

Add **overhead lighting to crosswalks** that cross the major street where no such lighting exists.

Reduce posted **speed limit to 25 MPH** for the entire length of the segment.

Provide **lighting** at existing pedestrian median refuge at **Julia Street**.



Low Estimate
\$2,855,000

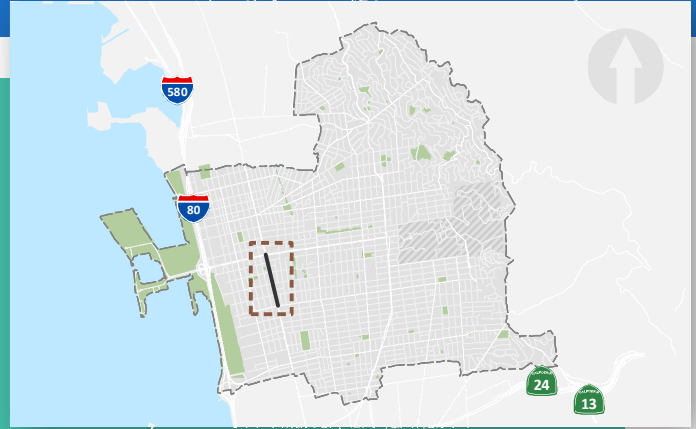
High Estimate
\$9,100,000

San Pablo Avenue

University Avenue to Dwight Way

SEGMENT CHARACTERISTICS

- The study segment, also known as State Route 123, is a four-lane roadway classified as a Major Street with 2 lanes in each direction divided by a landscaped median. Left-turn pockets are present at all signalized intersections, and the segment has a posted 30 mph speed limit.
- There are 8 intersections (3 signalized, 5 unsignalized) in 0.6 miles.
- This segment is in a historically underserved area.



PEDESTRIAN COLLISIONS, 2008–2017

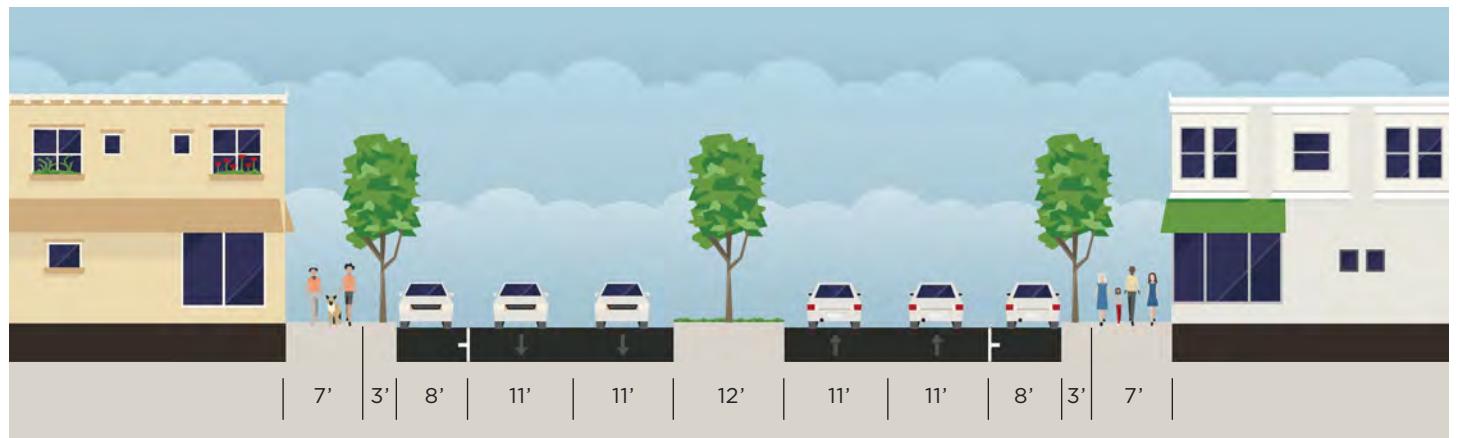
	Daylight		Dawn/Dusk/Night	
Crossing in Crosswalk at Intersection	11		6	
Crossing in Crosswalk not at intersection	2		1	
Crossing not in Crosswalk	2		1	
In Road, Including Shoulder	2		1	
Not In Road	3		1	

Severe Injury Collisions Other Injury Collisions



San Pablo Avenue at Bancroft Way. A future signal here will help pedestrians cross this five-lane street.

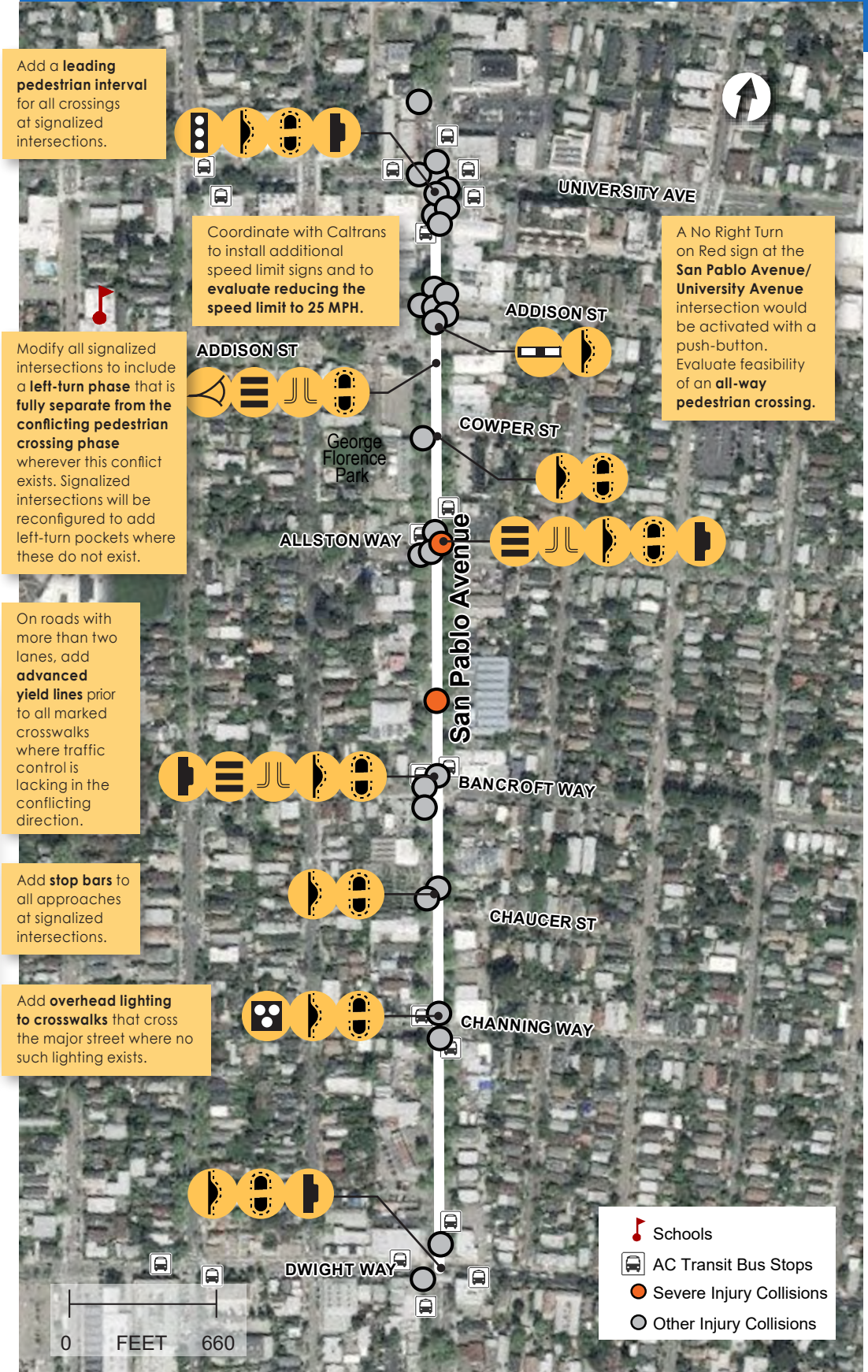
EXISTING CROSS-SECTION San Pablo Avenue, University Avenue to Dwight Way



San Pablo Avenue Proposed Intersection Improvements

OBSERVATIONS

- The parking lane and presence of bus stops at University Avenue provide informal right-turn lanes with limited visibility.
- The T-intersections at Cowper Street and at Chaucer Street only provide one marked crossing across San Pablo Avenue.
- Unsignalized intersections along the segment feature marked crossings, advanced yield striping/signage, and warning signs but no accessible refuge. There is informal refuge space here that could be upgraded to accessible median refuges.
- Multilane unsignalized crossings would also benefit from pedestrian-scale lighting and crossing enhancement (an RRFB or PHB).
- The intersection at San Pablo Avenue and Bancroft Way has been identified for future signalization.



Add a **leading pedestrian interval** for all crossings at signalized intersections.

Coordinate with Caltrans to install additional speed limit signs and to **evaluate reducing the speed limit to 25 MPH.**

A No Right Turn on Red sign at the **San Pablo Avenue/University Avenue** intersection would be activated with a push-button. Evaluate feasibility of an **all-way pedestrian crossing.**

Modify all signalized intersections to include a **left-turn phase that is fully separate from the conflicting pedestrian crossing phase** wherever this conflict exists. Signalized intersections will be reconfigured to add left-turn pockets where these do not exist.

On roads with more than two lanes, add **advanced yield lines** prior to all marked crosswalks where traffic control is lacking in the conflicting direction.

Add **stop bars** to all approaches at signalized intersections.

Add **overhead lighting to crosswalks** that cross the major street where no such lighting exists.

BERKELEY BICYCLE PLAN

The Berkeley Bicycle Plan calls for studying a potential cycle track along San Pablo Avenue. Alameda CTC is conducting a corridor study to evaluate adding bus rapid transit and/or cycle tracks. Curb extensions would conflict with any future cycle track, but pedestrian refuge islands in the buffer zone between vehicle traffic and a cycle track could be a solution.

Low Estimate
\$1,375,000

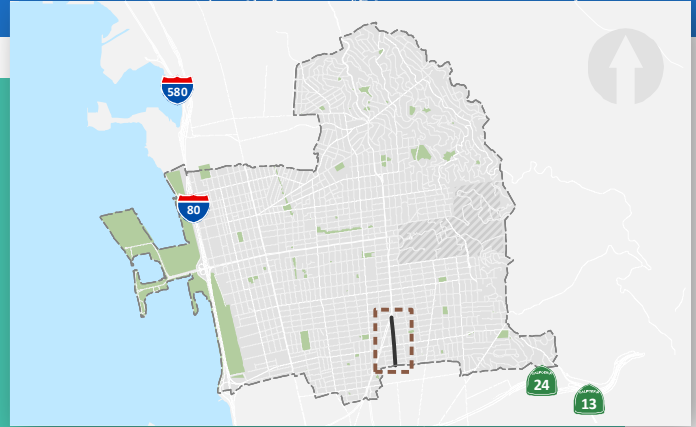
High Estimate
\$4,085,000

Shattuck Avenue

Adeline Street to Southern City Limits

SEGMENT CHARACTERISTICS

- The study segment, classified as a Major Street, is generally a two-lane road, with a single lane in each direction with on-street parking on both sides of the street.
- The 0.5-mile segment includes 9 intersections (2 signalized, 7 unsignalized) and has a 25 mph speed limit throughout.
- This segment is in a historically underserved area.



PEDESTRIAN COLLISIONS, 2008–2017

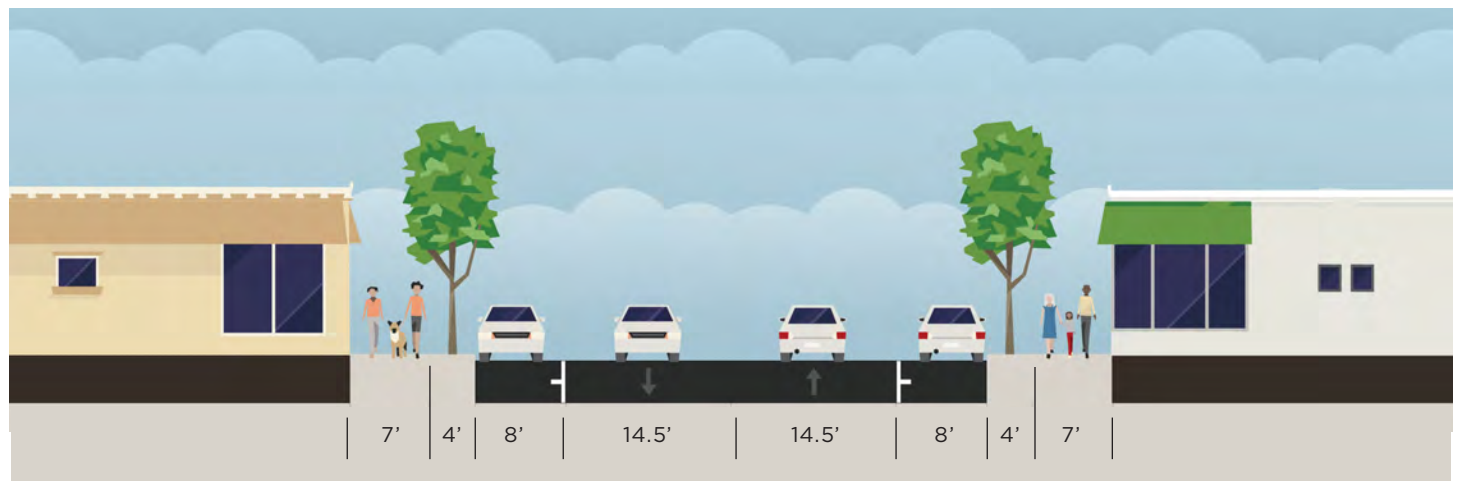
	Daylight	Dawn/Dusk/Night
Crossing in Crosswalk at Intersection	9	12
Crossing not in Crosswalk	2	0
In Road, Including Shoulder	3	0
Not In Road	1	1

Severe Injury Collisions Other Injury Collisions



Shattuck Avenue at Ashby Avenue. A left-lane merge just beyond a crosswalk could cause conflict.

EXISTING CROSS-SECTION Shattuck Avenue, Adeline Street to Southern City Limits



Shattuck Avenue Proposed Intersection Improvements

OBSERVATIONS

- The highest pedestrian volumes are located on the northern portion of the segment closest to Adeline Street and around Berkeley Bowl, as well as at the Shattuck Avenue/Ashby Avenue intersection.

ADELINE CORRIDOR SPECIFIC PLAN

The Adeline Corridor Specific Plan is a long-range plan for the Adeline Corridor to promote transit-oriented development and safe access for users of all modes of transportation. The planning process began in 2015 and the community was involved heavily.

The Adeline Corridor Specific Plan's study area starts on Shattuck Avenue from Dwight Way to Adeline Street, continuing on Adeline Street from Shattuck Avenue until the southern City limits.

The recommendations for the Pedestrian Plan's priority segment of Adeline Street take into account the recommended design features identified in the Adeline Corridor Specific Plan, such as reducing the number of lanes. The Adeline Corridor Specific Plan notes that "detailed design of pedestrian and bicycle treatments at intersections will occur in later design phases." In the later design phases, recommendations from the Pedestrian Plan will be worked into the detailed design of the Adeline Corridor including the Adeline Street/Shattuck Avenue intersection.



Low Estimate
\$1,675,000

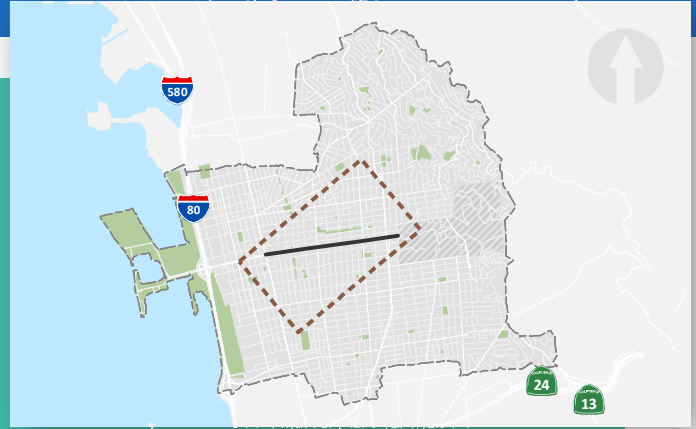
High Estimate
\$4,140,000

University Avenue

San Pablo Avenue to Oxford Street

SEGMENT CHARACTERISTICS

- The study segment, classified as a Major Street, is a 4-lane roadway with a raised median. There are left- and right-turn pockets at several intersections and 25 mph speed limit signs posted.
- There are 18 intersections (11 signalized and 7 unsignalized intersections, with 1 midblock crossing) in 1.5 miles.
- The portion of this segment from San Pablo Avenue to Bonita Avenue is in a historically underserved area.



PEDESTRIAN COLLISIONS, 2008–2017

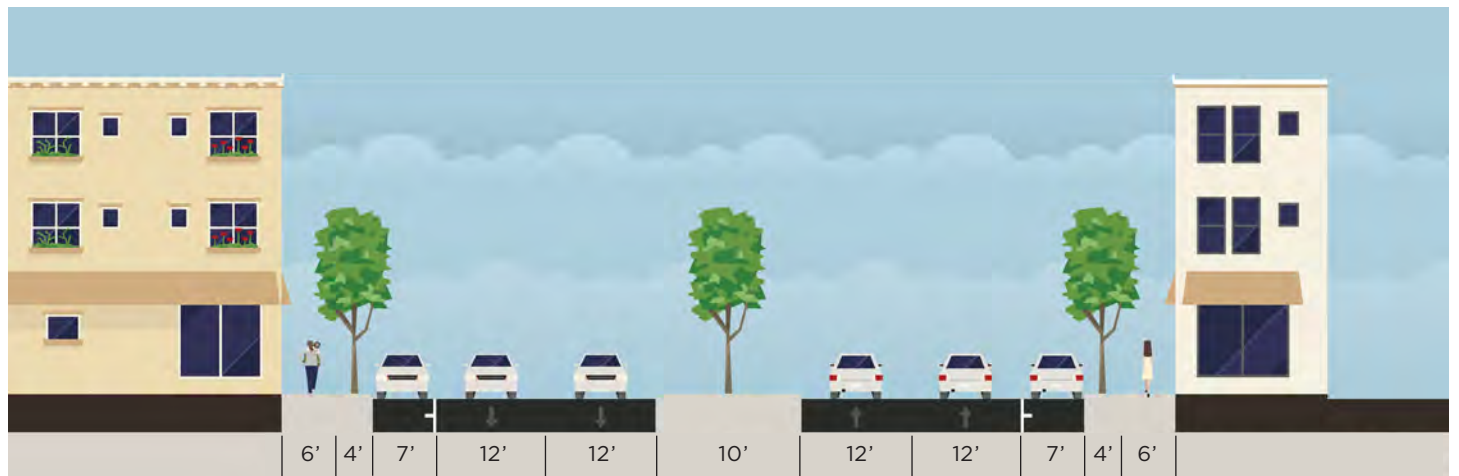
	Daylight	Dawn/Dusk/Night
Crossing in Crosswalk at Intersection	34	17
Crossing in Crosswalk not at intersection	1	2
Crossing not in Crosswalk	3	2
In Road, Including Shoulder	6	1
Not In Road	0	1
Not Stated	1	1



University Avenue at Martin Luther King Jr. Way. Protected left-turn phasing would reduce conflicts with pedestrians.

Severe Injury Collisions Other Injury Collisions Fatal Injury Collisions

EXISTING CROSS-SECTION University Avenue – San Pablo Avenue to Oxford Street



University Avenue Proposed Intersection Improvements

OBSERVATIONS

- Several intersections lack pedestrian scale lighting. For example, the lighting at the West Street Trail crossing is behind the crosswalk
- There are high left-turn volumes at several locations, such as to/from Oxford Street, that pose potential conflicts with pedestrians in the crosswalk
- There are several locations where bus stops are at the near side of an intersection, such as at the Berkeley Unified School District building at Bonar Street. These locations limit pedestrian visibility when crossing the street. Where feasible, bus stops should be moved to the far side of an intersection.

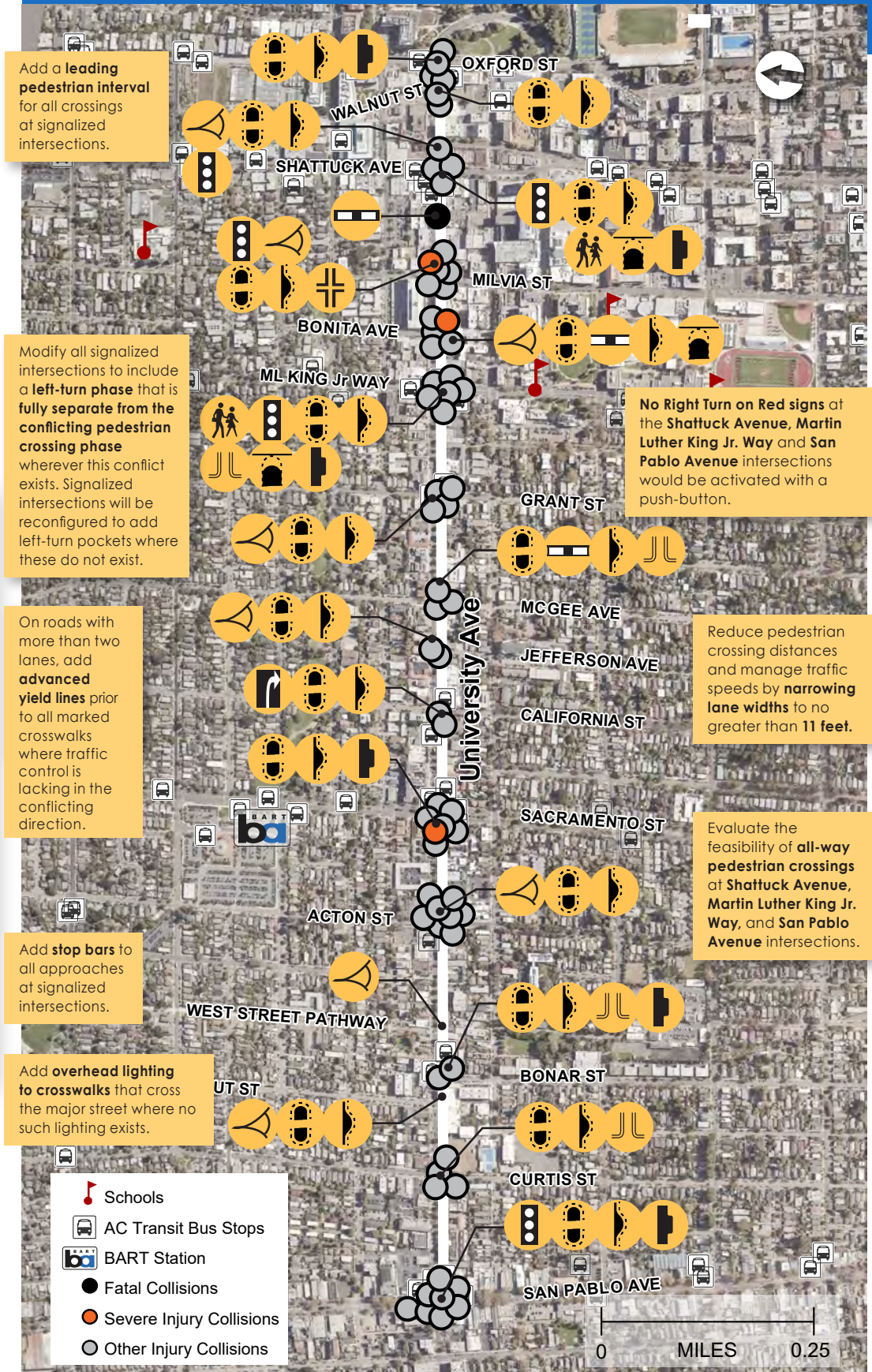
BERKELEY BICYCLE PLAN

The Berkeley Bicycle Plan calls for studying a potential cycle track along University Avenue from Oxford Street to Fourth Street. The City will need to study the corridor to assess impacts to transit, including potential dedicated bus lanes. Curb extensions would conflict with any future cycle track, but pedestrian refuge islands in the buffer zone between vehicle traffic and a cycle track could be a solution.

The plan also calls for a protected intersection at University Avenue/Milvia Street, and the plan estimates that this will cost \$650,000 to construct.

Low Estimate
\$3,595,000

High Estimate
\$12,630,000



Policies, Programs, and Practices

Achieving the goals of the Plan will require policies, programs, and practices that support it and other City efforts to improve walkability in Berkeley. The recommended policies, programs, and practices to achieve the Plan's goals are consistent with the City's approach to pedestrian planning and align with best practices to improve walking safety, connectivity, and enjoyment.

The Plan's recommended programs and policies are described in this section and fit within the following three themes:

- **Reducing conflicts between pedestrians and vehicles**
- **Making pedestrians more visible on the street**
- **Upgrading and adding enhanced crossings**

Within each theme are specific priority topics that together create a comprehensive approach to improving Berkeley's pedestrian network and an action plan of policies, programs, and practices. Some recommendations will be addressed through this Plan, while others inform and support the City's Vision Zero Action Plan and other ongoing efforts.



Using a mobility device to cross the Ashby Avenue and Shattuck Avenue intersection.

The priority program areas are presented below with a sub-set of specific priority programs. These are to be implemented throughout Berkeley. For example, improving lighting to make pedestrians more visible on the street will be implemented based on the lighting needs analysis in **Appendix F: Pedestrian Lighting Needs Inventory**.



Reducing Conflicts Between Pedestrians and Vehicles

Implement protected left turns: Implement protected left turn phases to address multiple collision factors consistent with the City's of Berkeley's Vision Zero policy.



Making Pedestrians More Visible on the Street

Install pedestrian-scale lighting: Install solar-powered LED lighting citywide at all crosswalks lacking such lighting on one or both sides.

Removing visual obstructions at intersections: Install red curb for approaches to pedestrian crossings in order to make pedestrians attempting to cross streets more visible.



Upgrading and Adding Enhanced Crossings

Apply crosswalk policy (re-timing, leading pedestrian interval): Apply the crosswalk policy as a transparent and predictable process for crosswalk installation and design based on street characteristics and context which can be found in **Appendix B: Engineering & Design Guidance**.

The full list of program and policy recommendations is summarized below in **Table 8** and in **Appendix D: Recommendations and Cost Estimates**. The recommended improvements augment the four priority areas listed above by providing additional means and methods for improving experience of walking in Berkeley. Topic areas for these program and policy recommendations range from inter- and intra-agency coordination to street design and pedestrian crossings. Design guidance for implementing project and program recommendations is provided in **Appendix B: Engineering & Design Guidance**. Pedestrian lighting needs along the City's High Injury Street network is provided in **Appendix E: Pedestrian Lighting Needs Inventory**.

TABLE 8: SUMMARY OF ALL RECOMMENDATIONS FOR PEDESTRIAN-RELATED POLICIES, PROGRAMS, AND PRACTICES

Topic Area	Recommendations	
Infrastructure and Operations		
Street Design	<ul style="list-style-type: none"> • Utilize pedestrian design guidance and treatment selection policies shown in Appendix B: Engineering & Design Guidance. • Adopt the Caltrans Temporary Pedestrian Access Routes Handbook (2020) and utilize it for City construction projects in the public right of way. Train City inspectors on its use. Provide it to developers and utility service providers when construction impacts the public right of way. • Integrate bus stop amenities, including bus bulbs, into pedestrian amenities when making street improvements, as funding allows. • Continue the City’s Parklet Program and incorporate pedestrian amenities, including benches/seating and lighting, into grant applications when seeking funding, and into projects as opportunities arise. • The addition of accessible parking (blue zone spaces) should be prioritized when making street improvements, particularly along streets near commercial destinations, to support convenient access for people with disabilities. 	
	Pedestrian Crossings	<ul style="list-style-type: none"> • Utilize the pedestrian crosswalk policy and enhancement guidelines shown in the Engineering and Design Guidance Appendix to this Plan. Marked crosswalks should be provided on all legs of all four way intersections except where doing so would decrease safety. • Install solar-powered LED lighting citywide at all crosswalks lacking such lighting on one or both sides. • In order to make pedestrians attempting to cross streets more visible, install red curb for approaches to pedestrian crossings.
		<ul style="list-style-type: none"> • Consistent with the Vision Zero Action Plan and the Engineering and Design Guidance in the Appendix to this Plan, utilize only protected left-turn signals at all new or modified signalized intersections and embark on a program to convert existing permissive left-turn operations to protected left turns as roadway geometry permits. • Utilize automatic walk signals (recall to walk) of the pedestrian signal at all locations and times of day where and when the concurrent (parallel) traffic phase has a green light indication and this concurrent traffic phase has enough time allocated for a pedestrian crossing. • Pedestrians should automatically receive a walk signal (recall to walk) without having to push the button at all intersections with high pedestrian demand. • Provide Leading Pedestrian Intervals (LPIs) when new signals are installed and when signal timing is modified.

Topic Area	Recommendations
Speed Management and Traffic Calming	<ul style="list-style-type: none"> • Revise criteria for the neighborhood traffic calming program to allow neighborhood streets with prevailing speeds above 25 mph to qualify, with a maximum of 20 applications evaluated per year. • Advocate for State legislation to allow local jurisdictions to reduce speed limits on neighborhood streets to below 25 mph, similar to many other states, such that Berkeley could establish a 20 mph speed limit on two-lane neighborhood streets and a 15 mph speed limit at all times on two-lane residential streets adjacent to schools, parks, and senior centers. • Advocate for State legislation to allow local jurisdictions to set speed limits based on safety goals rather than the existing prevailing (85th percentile) traffic speed, which would allow for a 20 MPH speed limit on neighborhood streets, consistent with “20 Is Plenty” traffic safety campaigns.
Accessibility	<ul style="list-style-type: none"> • Design curb ramps to align with the direction of the crosswalk where technically feasible. • Retain automatic walk signals after the installation of accessible pedestrian signals. • Prioritize bus stops for receiving accessibility improvements to facilitate boarding and alighting from buses. • Propose a property-tax or other assessment to Berkeley voters to raise funds for maintenance of public sidewalks and public pathways, and for staff resources to manage this maintenance program and potentially for adding sidewalk lighting and enforcing municipal codes requiring that sidewalks be kept clear of overgrowing vegetation and other obstructions. • Develop a strategy for prioritizing repaving crosswalks to eliminate tripping hazards in the near term, even if the street will be repaved farther in the future. • The addition of accessible parking (blue zone spaces) should be prioritized when making street improvements, particularly along streets near commercial destinations, to support access for people with disabilities (as stated in the “Street Design” section above). • Adopt the Caltrans Temporary Pedestrian Access Routes Handbook (2020) and utilize it for City construction projects in the public right of way. Train City inspectors on its use. Provide it to developers and utility service providers when construction impacts the public right of way (as stated in the “Street Design” section above). • Continue to include curb ramps and sidewalks compliant with Americans with Disabilities Act (ADA) standards in street rehabilitation and modification projects, and continue to require ADA compliant curb ramps and sidewalks on the frontage of private development projects.
Evaluation and Planning	
Pedestrian Volumes	<ul style="list-style-type: none"> • Require pedestrian and bicycle counts as part of the traffic impact analysis that is required of development projects.
Pedestrian Safety	<ul style="list-style-type: none"> • Evaluate pedestrian safety outcomes after transportation capital projects are implemented. • Coordinate with the City’s Fatal Accident Investigation Team to develop rapid-response projects for fatal and severe injury collision locations. • Conduct Road Safety Audits (RSAs) and implement safety projects on all high-injury streets by 2028.

3. Improvements & Recommendations

Topic Area	Recommendations
Project Implementation	
Intra- and Inter-Agency Coordination	<ul style="list-style-type: none"> • Continue to collaborate with transit agencies, Caltrans, and adjacent cities. • Explore opportunities for better aligning street design for reduced traffic speeds with emergency response equipment and service standards.
Funding	<ul style="list-style-type: none"> • Propose a property-tax or other assessment to Berkeley voters to raise funds for maintenance of public sidewalks and public pathways, and for staff resources to manage this maintenance program and potentially for adding sidewalk lighting and enforcing municipal codes requiring that sidewalks be kept clear of overgrowing vegetation (as stated in the “Accessibility” section above). • Fund projects to fill high-priority sidewalk gaps through the City Capital Improvement Plan (CIP). • Develop a line item in the CIP for implementation of the Pedestrian Plan. • Seek funding opportunities for all high-injury streets in the historically underserved area of Berkeley. • Ensure that pedestrian improvements continue to be included in street rehabilitation and modification projects, such as resurfacing, bridge replacement, or lane reconfiguration. • Explore the possibility of obtaining Highway Safety Improvement Program (HSIP) funds for pedestrian safety projects. • Through the Vision Zero Program, secure a funding source to be used for broader pedestrian safety education efforts, targeting speeding and failure to yield to pedestrians.
Education and Equitable Enforcement	
Safety Education	<ul style="list-style-type: none"> • Continue to promote walking and bicycling to school through participation in the Alameda County Safe Routes to School program. • Develop and implement a targeted safety education campaign through the Vision Zero Program, focusing on equity and culturally appropriate messaging.
Enforcement	<ul style="list-style-type: none"> • Utilize the equitable enforcement strategy to be developed through the Vision Zero Program. • Support state-wide traffic safety legislation allowing automated speed enforcement by local agencies. Utilize existing legislated automated enforcement strategies, such as red light cameras.

4

COST ESTIMATES

& FUNDING



Cost estimates and funding sources are both critical to implementation. Cost estimates help to determine how to fund the implementation of recommended projects and programs. In turn, identifying funding sources provides sustainable and responsible ways of implementing recommended projects and programs.

This chapter includes the following sections:

- **Cost estimates** for projects on the ten priority high-injury street segments and recommended program elements
- **Funding and revenue sources**, ranging from local and countywide sources to statewide and federal sources

COST ESTIMATES

Cost estimates for each proposed improvement are presented in **Table 9**. Low and high cost estimates have been provided to show a range of possible costs and to account for a variety of circumstances at each installation location. Low and high cost estimates for each priority project are shown alphabetically in **Table 10**. The full cost estimate worksheets for each of the ten priority street segments can be found in **Appendix D: Recommendations and Cost Estimates**.

TABLE 9: COST ESTIMATES FOR PROPOSED IMPROVEMENTS

CATEGORY	ITEM	UNIT	ESTIMATED COST
Signals	Add All-way Pedestrian Phase (Pedestrian Scramble)	Per Location	\$90,000 - \$150,000
	Restrict Right Turn on Red	Per Approach	\$500 - \$15,000
	Convert Permissive Left-Turn Phase to Protected	Per Location	\$40,000 - \$300,000
	Pedestrian Countdown Timers	Per Device	\$1,000
	Leading Pedestrian Interval	Per Location	\$500 - \$1,500
Intersections	Red Curb	Per Approach	\$500
	Stripe Advance Yield Lines	Per Crossing	\$500
	STOP Sign	Per Sign	\$600
	Pavement Markings	Per Approach	\$800
	High Visibility Crosswalk Pavement Markings	Per Crossing	\$2,500 - \$5,000
	Median as Pedestrian Refuge Island - paint and posts	Per Island	\$2,500 - \$4,000
	Raised Median as Pedestrian Refuge Island - concrete	Per Island	\$15,000 - \$25,000
	Curb Extension - paint and posts	Per Extension	\$2,500 - \$4,000
	Curb Extension - concrete and landscaping	Per Extension	\$15,000 - \$45,000
	Closing Curb Cut (redoing curb and sidewalk)	Per Location	\$5,000 - \$10,000
	Pedestrian Lighting	Per Light	\$5,000 - \$7,500
	Rectangular Rapid Flashing Beacon	Per Installation	\$25,000 - \$40,000
	Pedestrian Hybrid Beacon	Per Installation	\$250,000
	Raised Intersection or Raised Pedestrian Crossing	Per Crossing/ Intersection	\$10,000 - \$50,000
	Protected Intersection	Per Location	\$650,000
Realigned Intersection	Per Intersection	\$800,000 - \$1,250,000	
Segments	Centerline Hardening - paint and flexible posts	Per Location	\$2,000 - \$4,000
	Bus Bulb	Per Location	\$15,000 - \$70,000
	Lane Narrowing - striping shoulder or adding bike lane	Per Mile	\$750 - \$1,000
	Lane Reduction / Road Diet	Per Mile	\$25,000 - \$120,000

TABLE 10: COST ESTIMATES FOR PRIORITY STREET SEGMENT PROJECTS

PRIORITY PROJECT	FROM	TO	LOW ESTIMATE COST	HIGH ESTIMATE COST
Adeline Street	Ashby Avenue	Southern City Limits	\$2,540,000	\$4,730,000
Alcatraz Avenue	Sacramento Street	Adeline Street	\$315,000	\$1,055,000
Ashby Avenue	San Pablo Avenue	Shattuck Avenue	\$2,155,000	\$7,075,000
Cedar Street	Sixth Street	Stannage Avenue	\$855,000	\$3,310,000
Martin Luther King Jr. Way (North)	Hearst Avenue	Dwight Way	\$1,665,000	\$8,980,000
Martin Luther King Jr. Way (South)	Dwight Way	Adeline Street	\$1,390,000	\$6,350,000
Sacramento Street	Dwight Way	Southern City Limits	\$2,855,000	\$9,100,000
San Pablo Avenue	University Avenue	Dwight Way	\$1,375,000	\$4,085,000
Shattuck Avenue	Adeline Street	Southern City Limits	\$1,675,000	\$4,140,000
University Avenue	San Pablo Avenue	Oxford Street	\$3,595,000	\$12,630,000
TOTAL			\$18,420,000	\$61,455,000

FUNDING AND REVENUE SOURCES

Funding opportunities for implementing the Plan's recommendations are identified in this section. Pedestrian infrastructure can be funded from programs at federal, state, regional, countywide, and local levels. Pedestrian projects in Berkeley are funded through a combination of ballot measure monies (e.g., Alameda County Measure B and BB), the City General Fund, developer-funded projects, and State and federal grants. The City routinely uses local funds to provide matching funds required by grant programs.

Funding sources are summarized in **Table 11** below. Funding and revenue sources were identified with the purpose of matching potential projects to a range of sustainable funding sources.

The list of funding sources includes:

- **Local programs:** Berkeley Measure T1, General Fund
- **Countywide and Regional programs:** Measures B, BB, and F, Transportation Development Act Article 3
- **Statewide programs:** Active Transportation Program (ATP), Caltrans Sustainable Transportation Planning Program (Sustainable Communities Grants and Strategic Partnerships Grants), Affordable Housing & Sustainable Communities (AHSC) grants, State Highway Operation and Protection Program (SHOPP), State Transportation Improvement Program (STIP), Highway Safety Improvement Program (HSIP), Gas Tax Revenue
- **Federal funding:** One Bay Area Grant (OBAG), which utilizes the regional share of Federal Surface Transportation Program (STP) and Congestion Mitigation & Air Quality (CMAQ) funds



TABLE 11: FUNDING SOURCES APPLICABLE TO THE BERKELEY PEDESTRIAN PLAN

FUND NAME	ADMINISTERING AGENCY	PROJECT TYPES	FUNDING LEVELS	LIMITATIONS	FREQUENCY
Local					
Measure T1, Phase 2	City of Berkeley	Paving, sidewalks, green infrastructure, facilities	\$40 million for 2022-2025	<ul style="list-style-type: none"> Projects must have a 30-year useful life Complete Streets comprised 17 percent of Phase 1 	Begins 2022
General Fund & Capital Improvement Program ¹	City of Berkeley	Capital improvements without other funding sources regularly available	\$5 million annually ²	Streets, sidewalks, and transportation account for about \$2.6 million annually	Updated with CIP
Countywide and Regional					
Measure B ³	Alameda County Transportation Commission	<p>Bicycle and Pedestrian Program: Capital projects, programs, and plans that directly address bicycle and pedestrian access, convenience, safety, and usage</p> <p>Local Streets and Roads Program: Capital projects, programs, maintenance, or operations that directly improve local streets and roads and local transportation</p>	\$4.0 million in FY 2018-19 ⁴	<p>Bicycle and Pedestrian Program: Cannot be used for repaving of an entire roadway or programs that exclusively serve City staff.</p> <p>Local Streets and Roads Program: Cannot be used for programs that exclusively serve City staff</p>	Monthly direct disbursements, also competitive discretionary funding awarded every 2 years

1 <https://www.cityofberkeley.info/citybudget/>

2 <https://www.cityofberkeley.info/uploadedFiles/Manager/Budget/FY-2020-2021-CIP-budget.pdf>

3 <https://www.alamedactc.org/funding/fund-sources/measure-b/>

4 https://www.alamedactc.org/wp-content/uploads/2018/12/FY18-19_2000MB_Sales_Tax_Projections_20180510.pdf

FUND NAME	ADMINISTERING AGENCY	PROJECT TYPES	FUNDING LEVELS	LIMITATIONS	FREQUENCY
Measure B/BB	Alameda County Transportation Commission	<p>Bicycle and Pedestrian Program: Capital projects, programs, and plans that directly address bicycle and pedestrian access, convenience, safety, and usage</p> <p>Local Streets and Roads Program: Capital projects, programs, maintenance, or operations that directly improve local streets and roads and local transportation</p>	\$3.7 million in FY 2018-19 ⁵	<p>Bicycle and Pedestrian Program: Cannot be used for repaving of an entire roadway or programs that exclusively serve City staff</p> <p>Local Streets and Roads Program: Cannot be used for programs that exclusively serve City staff</p>	Monthly direct disbursements, also competitive discretionary grants awarded every two years
Measure F ⁶	Alameda County Transportation Commission	<p>Bicycle and Pedestrian Program: Capital projects, programs, and plans that directly address bicycle and pedestrian access, convenience, safety, and usage</p> <p>Local Streets and Roads Program: Capital projects, programs, maintenance, or operations that directly improve local streets and roads and local transportation</p>	\$280,000 annually for Berkeley	<p>Bicycle and Pedestrian Program: Cannot be used for repaving of an entire roadway or programs that exclusively serve City staff</p> <p>Local Streets and Roads Program: Cannot be used for programs that exclusively serve City staff</p>	Monthly direct disbursements, also competitive discretionary funding awarded every 2 years

5 According to https://www.alamedactc.org/wp-content/uploads/2018/12/FY18-19_2014MBB_Sales_Tax_Projections_20180510-2.pdf, Berkeley received \$3.1 million for Local Streets and Roads, \$320,000 from the Bicycle and Pedestrian Program, and \$320,000 for Paratransit

6 <https://www.alamedactc.org/funding/fund-sources/vehicle-registration-fee/>

FUND NAME	ADMINISTERING AGENCY	PROJECT TYPES	FUNDING LEVELS	LIMITATIONS	FREQUENCY
Transportation Development Act (TDA) Article 3 ⁷	Alameda County	Pedestrian and bicycle plans; design and construction of walkways, bike paths, bike lanes, safety education programs	\$3 million regionwide annually	<ul style="list-style-type: none"> • Must be in adopted general plan or bicycle plan • All projects must be reviewed by the City or County Bicycle & Pedestrian Advisory Committee 	Every 2-3 years
Statewide					
Statewide Gas Tax Revenue	California Transportation Commission	Construction, engineering, and maintenance	\$945,000 annually for Berkeley	Ineligible expenses include decorative lighting, transit facilities, park features, new utilities	Annual
Active Transportation Program ⁸ (ATP)	California Transportation Commission	<ul style="list-style-type: none"> • Infrastructure projects • Plans, including bicycle, pedestrian, active transportation, and Safe Routes to School Plans • Education, encouragement, and enforcement activities 	\$238 million in Cycle 4	<ul style="list-style-type: none"> • Very competitive program. Projects in disadvantaged communities score highly • Cannot be used for fully funded projects or for cost increases • Infrastructure projects must exceed \$250,000 • The Quick-Build Project Pilot Program funds interim capital projects 	Approximately every 2 years
Sustainable Communities	Caltrans	Multimodal transportation and land use planning projects that further the region's Sustainable Communities Strategy	\$29.5 million, split between statewide and regional competitive funds	<ul style="list-style-type: none"> • Requires 11.47 percent local match • Often federalized 	Annual

7 <https://mtc.ca.gov/our-work/fund-invest/investment-strategies-commitments/transit-21st-century/funding-sales-tax-and-O>

8 http://www.catc.ca.gov/programs/atp/2019/docs/051618_2019_ATP_Guidelines_Final_Adopted.pdf

FUND NAME	ADMINISTERING AGENCY	PROJECT TYPES	FUNDING LEVELS	LIMITATIONS	FREQUENCY
Strategic Partnerships	Caltrans	Planning efforts that identify and address statewide, interregional, and regional transportation deficiencies on the State Highway System in partnership with Caltrans	\$4.5 million, \$3 million of which is dedicated to projects that relate to transit	<ul style="list-style-type: none"> Requires 20 percent local match Federalized City of Berkeley would need to apply as sub-applicant to MTC 	Annual
State Highway Operation and Protection Program (SHOPP) ⁹	Caltrans	<p>Repair and preservation, emergency repairs, safety improvements, and some highway operational improvements on the State Highway System</p> <p>Elements include pavement, bridges, culverts, and transportation management systems</p>	\$18 billion statewide for four years	<p>Projects must be on the State Highway System:</p> <ul style="list-style-type: none"> San Pablo Avenue (SR 123) Ashby Avenue (SR 13) Freeway interchanges 	Portfolio is updated every 2 years projects are selected and administered by Caltrans, but the City can influence them
State Transportation Improvement Program (STIP)	California Transportation Commission	<p>Any transportation project eligible for State Highway Account or Federal Funds.</p> <p>Example: Gilman Interchange improvements Projects</p>	\$62 million for Alameda County ¹⁰	Projects need to be nominated in Regional Transportation Improvement Program (TIP), but MTC may nominate fund categories	STIP is updated every 2 years
Highway Safety Improvement Program (HSIP)	Caltrans	Focuses on infrastructure treatments with known collision reduction factors	\$418 million statewide	Countermeasures at locations with documented collision and safety issues	Every 1-2 years

9 http://www.dot.ca.gov/hq/transprog/SHOPP/2018_shopp/2018-shopp-adopted-by-ctc.pdf

10 http://www.catc.ca.gov/programs/stip/2018-stip/2018_ORANGE_BOOK.pdf

FUND NAME	ADMINISTERING AGENCY	PROJECT TYPES	FUNDING LEVELS	LIMITATIONS	FREQUENCY
Affordable Housing and Sustainable Communities Program (ASHC)	California Department of Housing and Community Development	Transit oriented development projects that which achieve greenhouse gas reductions and increase accessibility of affordable housing	Minimum award of \$1 million, maximum award of \$30 million	Developer must lead the application	Annual
Federal					
Better Utilizing Investments to Leverage Development (BUILD) grants	US DOT	Major infrastructure projects, especially with road, bridge, transit, or intermodal components Example: BUILD awarded \$15 million to Better Market Street in San Francisco	\$500 million - \$1.5 billion nationally	Minimum grant size of \$5 million but program of projects is possible	Annual
One Bay Area Grant (OBAG)	Metropolitan Transportation Commission	<ul style="list-style-type: none"> Local street and road maintenance Streetscape enhancements Bicycle and pedestrian improvements Safe Routes to School projects Transportation planning 	\$916 million in OBAG 2 regionwide ¹¹ <ul style="list-style-type: none"> \$530 million in Regional Program \$386 million in County Programs 	Most projects must be in a Priority Development Area (PDA) or have a connection to a PDA	Every 5 years
Congestion Mitigation & Air Quality (CMAQ)	Federal Highway Administration. Funds distributed to MPOs	Transportation projects or programs that contribute to attainment of national air quality standards	\$70.5 million regionwide	Must reduce air pollution and be included in Regional Transportation Plan	Annual

¹¹ <https://mtc.ca.gov/our-work/fund-invest/federal-funding/obag-2>

FUND NAME	ADMINISTERING AGENCY	PROJECT TYPES	FUNDING LEVELS	LIMITATIONS	FREQUENCY
Surface Transportation Block Grant (STBG)	Federal Highway Administration	Improve conditions and performance on any federal-aid highway, bridge or tunnel projects on a public road, pedestrian and bicycle infrastructure	\$1 billion annually to California, divided into population-based and statewide funds	In general, funds aren't used on local roads, but there are many exceptions to this ¹²	Annual



¹² <https://www.fhwa.dot.gov/fastact/factsheets/stbgfs.cfm>